Sunnyvale

2025 Urban Water Management Plan





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HydroScience

City of Sunnyvale

2025 Urban Water Management Plan DRAFT

Prepared by HydroScience Engineers, Inc.

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May 15, 2026

HydroScience
Strategic Water Solutions

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACS	American Community Survey
ACWD	Alameda County Water District
AF	acre-feet, acre-foot
AFU	affordable rental units
AFY	acre-feet per year
AWIA	America's Water Infrastructure Act
AWSP	Alternative Water Supply Planning
AWWA	American Water Works Association
BAIRWMP	Bay Area Integrated Regional Water Management Plan
BARDP	Bay Area Regional Desalination Project
BARR	Bay Area Regional Reliability
BAWSCA	Bay Area Water Supply and Conservation Agency
BayQWEL	Bay Area Qualified Water Efficient Landscaper Training
BMR	below market rate
Cal Water	California Water Service Company
CalWEP	California Water Efficiency Partnership
CAP 1.0	Sunnyvale’s 2014 Climate Action Plan
CCAP	Climate Change Action Plan
CCF	hundred cubic feet
CCWD	Contra Costa Water District
CII	commercial, industrial, and institutional
City	City of Sunnyvale
CMIP5	Coupled Model Intercomparison Project Phase 5
Corps	Army Corps of Engineers
COVID-19	Coronavirus
CPC	California Plumbing Code
CVP	Central Valley Project
CWRMP	Countywide Water Reuse Master Plan
DCR	Delivery Capability Report
DDW	State Water Resources Control Board, Division of Drinking Water

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ACRONYMS AND ABBREVIATIONS

Demand Study	BAWSCA Regional Water Demand and Conservation Study, December 2025
DEOP	Division Emergency Operations Plan
DMMs	demand management measures
DOF	Department of Finance
DOSD	Division of Safety of Dams
DRA	drought risk assessment
DSS Model	Demand Side Management Least Cost Planning Decision Support System model
DWR	Department of Water Resources
EBMUD	East Bay Municipal Utilities District
EIR	Environmental Impact Report
EO	education outreach
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
ERP	Emergency Response Plan
ESSU	Emergency Services and Security Unit
FEMA	Federal Emergency Management Agency
ft	feet, foot
FY	fiscal year
GHG	greenhouse gas
GMP	Groundwater Management Plan
gpcd	gallon per capita per day
gpf	gallon(s) per flush
GSA	Groundwater Sustainability Agency
GSI	green stormwater infrastructure
GSP	Groundwater Sustainability Plan
GSR	Groundwater Storage and Recovery
Guidebook	Final Draft 2020 Urban Water Management Plans: Guidebook for Urban Water Suppliers
HET	high-efficiency toilet
HEU	high-efficiency urinal
HHLSM	Hetch Hetchy and Local Simulation Model

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ACRONYMS AND ABBREVIATIONS

HydroScience	HydroScience Engineers, Inc
IPCC	International Panel on Climate Change
IRP	Infrastructure Reliability Plan
ISG	Individual Supply Guarantee
ITR	industrial to residential
JPA	Joint Powers Authority
kWh	kilowatt-hour
L2L	Graywater Laundry to Landscape
LCSD	Lower Crystal Springs Dam
LHMP	Local Hazard Mitigation Plan
LOS	Level of Service
LTVA	Long Term Vulnerability Assessment
LVE	Los Vaqueros Reservoir Expansion
MAP	Monitoring and Assessment Program
MCL	maximum contaminant level
MGD	million gallons per day
MID	Modesto Irrigation District
MMWD	Marin Municipal Water District
MRP	Municipal Regional Stormwater Permit
NPDES	National Pollutant Discharge Elimination System
NPDWR	National Primary Drinking Water Regulation
OCF	Our City Forest
OES	Office of Emergency Services
PFAS	Per- and Polyfluoroalkyl Substances
Playbook	Sunnyvale's Climate Action Playbook
PRSV	pre-rinse spray valves
psi	pounds per square inch
RCP	representative concentration pathways
RGSR	Regional Groundwater Storage and Recovery
RWJC	Recycled Water Joint Committee
RWS	City and County of San Francisco's Regional Water System
SB	Senate Bill

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ACRONYMS AND ABBREVIATIONS

SBX7-7	Senate Bill Seven of the Senate's Seventh Extraordinary Session of 2009
SCADA	supervisory control and data acquisition
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SFPUC	San Francisco Public Utilities Commission
SGMA	Sustainable Groundwater Management Act
SMaRT® Station	Sunnyvale Materials Recovery and Transfer Station
sq ft	square feet
State	State of California
STORMS	Strategy to Optimize Resource Management of Stormwater
SVCE	Silicon Valley Clean Energy
SVCW	Silicon Valley Clean Water
SWAP	Shared Water Access Program
SWP	State Water Project
SWRCB	State Water Resources Control Board
TID	Turlock Irrigation District
U.S.	United States
USBR	U.S. Bureau of Reclamation
USD	Union Sanitary District
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
UWUO	Urban Water Use Objective
Valley Water	Santa Clara Valley Water District
WEAP	Water Evaluation and Planning
WPCP, Plant	Sunnyvale's Water Pollution Control Plant
WRPS	Wolfe Road Pump Station
WSA	Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County
WSAP	Water Shortage Allocation Plan
WSCP	Water Shortage Contingency Plan
WSIP	Water System Improvement Program
WSMP	Water Supply Master Plan

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SECTION 1 – INTRODUCTION AND OVERVIEW

The City of Sunnyvale's (City) 2025 Urban Water Management Plan (UWMP) was prepared to provide a comprehensive update to the 2020 UWMP, which was adopted by City Council on June 29, 2021. The 1983 California Urban Water Management Act (Act), also referred to as Assembly Bill (AB) 797, requires all urban water suppliers (Suppliers) who directly serve 3,000 or more customers or who provide 3,000 or more acre-feet of water per year (AFY), to prepare a UWMP every five years.

The UWMP will enable the Department of Water Resources (DWR) to make projections on water usage and determine the status of water conservation efforts throughout the State. Although the efficient use of water supplies is a statewide concern, the planning and implementation of such use can best be accomplished at the local level.

The 2025 update to the City's 2020 UWMP builds upon previous updates, incorporates relevant water management issues, addresses supply and demand projections within the City for the next 20 years, and presents future water supply reliability. It demonstrates compliance with State legislative mandates that have been enacted, in particular Senate Bill (SB) X7-7 Water Conservation Act of 2009, AB 1420 Water Demand Management Measures, and 2018 Water Conservation Legislation AB 1668 (Friedman) and SB 606 (Hertzberg).

SBX7-7 targeted a 20% water use reduction per capita by December 31, 2020, and required Suppliers to identify their base daily per capita water use (baseline), urban water use target, interim water use target, and compliant daily per capita water use. The City demonstrated compliance with SBX7-7 in 2020, as documented in the 2020 UWMP. The 2018 Water Conservation Legislation AB 1668 and SB 606 established additional requirements for the UWMP, including requiring Suppliers to develop and adopt a standalone Water Shortage Contingency Plan (WSCP).

The 2025 UWMP must also include information on water deliveries and uses; water supply sources; efficient water uses; and demand management measures, including implementation strategy and schedule. DWR is responsible for reviewing the UWMP and determining whether it addresses the requirements of the Act. A current UWMP is required to be eligible for a water management grant or loan administered by the State including DWR, the State Water Resources Control Board (SWRCB), or the Delta Stewardship Council.

The goals of the 2025 UWMP update include:

- To provide a valuable resource tool to be used by policy makers at City, County, and local government levels to facilitate making sound and consistent decisions relating to water management and regional growth in the area.
- To meet all Federal and State regulatory requirements.
- To update the City's water conservation plan and projections for future conservation efforts.
- To prepare a realistic Drought Risk Assessment.
- To update the City's Water Shortage Contingency Plan and Seismic Risk Assessment and Mitigation Plan.
- To calculate water service energy usage.

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- To identify communication links between key departments at both City and County levels, and to strengthen ties for cooperatively addressing water supply and land use planning issues.
- To continue to solidify relationships with other retailers and wholesalers to address regional issues concerning water supply and demand.

1.1 Lay Description

The City owns, operates, and maintains a drinking water system that serves its approximately 160,000 residents. Most of the City's water comes from treated surface water from two wholesalers: the San Francisco Public Utilities Commission (SFPUC) and Santa Clara Valley Water District (Valley Water). The remainder of the City's water is comprised of groundwater from six City-owned wells. The City also owns and operates a recycled water system that supplies water for irrigation to some customers in the City. The recycled water is produced at the City's Water Pollution Control Plant (WPCP or Plant). The City's water demand projections have been updated in this 2025 UWMP to reflect population growth, planned development, water conservation estimates, and the anticipated effects of climate change. Water demands within City boundaries are expected to increase from 18,806 acre-feet per year (AFY) in 2025 to approximately 29,014 AFY in 2045.

There are several factors in determining the City's water supply reliability. In December 2018, the SWRCB adopted amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan Amendment) to establish water quality objectives with the stated goal of increasing salmon populations in three San Joaquin River tributaries (the Stanislaus, Merced, and Tuolumne Rivers) and the Bay-Delta. It remains unclear how or if the Bay-Delta Plan Amendment will be implemented. This UWMP assumes the Bay-Delta Plan Amendment will be implemented in 2030, consistent with SFPUC's 2025 UWMP, leading to cutbacks in projected wholesaler supplies. SFPUC expects that some of these cutbacks will trickle down to its retailers, including the City. Even with some expected cutbacks by SFPUC and Valley Water, based on the information provided by both wholesalers, the City will be able to meet projected water demands under normal, single-dry, and five consecutive dry-year conditions both in the near term and long term (through 2040). The City only anticipates shortfalls up to 4% during a multi-year drought beginning in 2045.

The City will work closely with SFPUC, Valley Water, and other water retail agencies to implement any stages of action as appropriate to reduce the demand for water during water shortage conditions. The City's WSCP describes the City's approach and response in the event of a water shortage ranging from 10% to greater than 50%. If a shortage is identified, the WSCP outlines the appropriate response actions, such as restrictions on irrigation and expanding public information campaigns, and relevant enforcements to mitigate the shortage. In the event of a decrease of local supplies, the City would respond by implementing demand reduction strategies outlined in this UWMP in line with the severity of the supply shortage. Thus, any supply deficits would be compensated for by increased conservation and restrictions in consumption, if needed.

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SECTION 2 – PLAN PREPARATION

The UWMP was prepared in accordance with the *Final 2025 Urban Water Management Plan Guidebook* dated January 2026 (Guidebook). The City retained HydroScience Engineers, Inc. (HydroScience) to prepare the 2025 UWMP update. HydroScience worked closely with the City's Environmental Services Department during the development of the UWMP to assure accurate and updated information was collected and incorporated. Based on the number of municipal connections as shown in **Table 2-1**, the City is required to prepare an update to the 2020 UWMP.

Table 2-1: Public Water System

Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025[1]
CA4310014	City of Sunnyvale	28,514	18,806

Note:
1. Volume of water in acre-feet (AF) supplied within City limits.

The UWMP organization and coordination efforts are detailed below.

2.1 Plan Organization

The 2025 UWMP is organized as recommended in the Guidebook to expedite review and approval by DWR. The sections contained in the 2025 UWMP are as follows:

- Section 1 – Introduction and Overview
- Section 2 – Plan Preparation
- Section 3 – System Description
- Section 4 – Water Use Characterization
- Section 5 – SBX7-7 Baselines and Targets
- Section 6 – Water Supply Characterization
- Section 7 – Water Supply Reliability and Drought Risk Assessment
- Section 8 – Water Shortage Contingency Plan
- Section 9 – Demand Management Measures
- Section 10 – Plan Adoption, Submittal, and Implementation

2.2 Inclusion of All 2025 Data

The 2025 UWMP includes all data for water use and planning for the calendar year of 2025. Data is shown in calendar year with units in acre-feet (AF) (**Table 2-2**).

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Table 2-2: Supplier Identification

Supplier and UWMP Format	
Type of Supplier	
	Supplier is a wholesaler
X	Supplier is a retailer
Fiscal or Calendar Year	
X	UWMP Tables are in calendar years
	UWMP Tables are in fiscal years
Units of measure used in UWMP	
Unit	Acre-Feet (AF)

2.3 Coordination

This UWMP was developed as an individual UWMP (**Table 2-3**) but included coordination with several regional partners.

Table 2-3: Plan Identification

Select Only One	Type of Plan
X	Individual UWMP
	Water Supplier is also a member of a RUWMP
	Water Supplier is also a member of a Regional Alliance
	Regional Urban Water Management Plan (RUWMP)

The City participates in area and regional planning with the Bay Area Water Supply and Conservation Agency (BAWSCA), SFPUC, and Valley Water. The City also participates in basin-wide groundwater and conservation planning with Valley Water. Valley Water provides management of local groundwater resources and contracts for imported water to Santa Clara County. Participation in these planning efforts helps ensure that the City will receive an adequate amount of water to provide for its residents and businesses. It also provides for drought-condition planning and coordination with the rest of the region so that no water provider is unduly impacted by lack of water.

BAWSCA provides regional water reliability planning and conservation programming for the benefit of its 26 member agencies that purchase wholesale water supplies from SFPUC. Collectively, the BAWSCA member agencies deliver water to over 1.8 million residents and nearly 40,000 commercial, industrial, and institutional accounts in Alameda, San Mateo, and Santa Clara Counties.

BAWSCA also represents the collective interests of these wholesale water customers on all significant technical, financial, and policy matters related to the operation and improvement of the SFPUC's Regional Water System (RWS).

BAWSCA's role in the development of the 2025 UWMP updates is to work with its member agencies and the SFPUC to seek consistency among UWMP documents. The City contacted the

SFPUC (through BAWSCA) and Valley Water for assistance with its UWMP and at the same time provided those agencies with pertinent data for their own plans.

The City encouraged the involvement of social, cultural, and economic community groups during the preparation of the 2025 UWMP. Specific efforts were made to send out a public notification mailer to all community groups, including public and private water suppliers. BAWSCA agencies were notified of the 2025 preparation process. The City directed these agencies to the location of the Draft UWMP and solicited comments and suggestions.

The City published its intention to update the 2020 UWMP and invited public comments on the City's Web page. Copies of notices for participation in the 2025 UWMP preparation can be found in **Appendix A**.

A Notice of Preparation of the UWMP was sent on February 2, 2026 to the following agencies listed in **Table 2-4**.

Table 2-4: List of Notified Agencies

Agency Name	
Alameda County Water District	Santa Clara Valley Water District
City of Hayward	Mid-Peninsula Water District
City of Milpitas	North Coast County Water District
City of Mountain View	City of East Palo Alto
City of Palo Alto	Westborough Water District
City of Santa Clara	California Water Service Company
Stanford University	San Jose Water Company
Purissima Hills Water District	City of San Jose
City of Brisbane	City of San Bruno
City of Burlingame	Coastside County Water District
City of Daly City	City of Foster City
Town of Hillsborough	County of Santa Clara
City of Menlo Park	Bay Area Water Supply & Conservation Agency
City of Millbrae	San Francisco Public Utilities Commission
City of Redwood City	

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SECTION 3 – SYSTEM DESCRIPTION

This section provides information about the City and service area including the organization structure and history, climate, demographics, and the water distribution system.

3.1 History

The City of Sunnyvale is in Santa Clara County, just minutes from the City of San José and approximately 40 miles south of the City and County of San Francisco. The City of Sunnyvale was incorporated in 1912 and became an official charter city in 1950. When the City was incorporated in 1912, its population was approximately 1,500 and the entire municipal water system relied exclusively on groundwater for its potable water supply source. The original water supply source was from a privately-owned well at the Joshua Hendy Iron Works Factory in Sunnyvale. By 1926, a total of three wells were operational, none of which are in use today. During World War II, the Federal government awarded several war contracts that led to the development of the Central Water Plant and groundwater well, which were more recently decommissioned.

At the close of World War II, Sunnyvale began to grow very quickly. By the early 1950s, demand for water surpassed the supplies available from groundwater and led to overdraft of the aquifers. As a direct consequence of the overdraft of the groundwater, land subsidence in the northern region of the City was at 0.3 feet per year. By 1952, the population had grown to 10,000, and it was at that time that Sunnyvale entered into a contractual agreement with the City and County of San Francisco for delivery of imported SFPUC water. That same year, three connections were made to the SFPUC supply to serve as a primary water source, to be supplemented by additional City-owned and operated wells located throughout the City at that time. In the 17 years that followed, the City population grew to 96,000. Sunnyvale realized the need for an additional water supply source and contracted with Valley Water for two connections to the Valley Water's West Pipeline. By 1970, the City had developed three of its four current water supply sources (SFPUC/Hetch Hetchy, Valley Water Central Valley Project water, and City-owned wells).

As the demand for water was steadily on the rise during the period of 1970 through the mid-1980s, the City expanded the number of Hetch Hetchy connections to its current total of six. Sunnyvale also added two well water producing facilities, which gave the City a total of 11 City-owned and operated wells at that time.

The City also expanded its interconnections with surrounding water utilities in the immediate area to ensure a sustainable water supply during times of emergencies, thus adding to the system's reliability. The City has, at the present time, connections to the cities of Mountain View, Cupertino, and Santa Clara, as well as to the California Water Service Company.

The City's water demand reached an all-time high in 1987 and demand was expected to increase, reaching approximately 36,000 AFY at the projected system build-out. The six-year drought that started in the late 1980s and ended in the mid-1990s brought about many changes in water usage, which came largely from the industrial sector. Conservation measures and a recycled water program adopted by the City were some of the most important drought-induced changes. Changes in the economic dynamics of the area occurring after 2001 brought about new reductions to water demand. Current projections for the water system build-out expect a slow increase to less than 30,000 AFY over the next 30 years.

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3.2 Organization Structure

The City operates under a Council-manager form of government. Council, as the legislative body, represents the entire community and is empowered by the City Charter to formulate citywide policy. Six Council members are elected by District by City voters for numbered seats and serve four-year terms. The mayor is elected city-wide by the voters. The City Charter limits the Mayor and Council members to serving two consecutive terms. The Vice Mayor is selected from among the ranks of the Council. The City Manager is appointed by Council and serves as the Chief Executive Officer, responsible for day-to-day administration of City affairs and implementation of Council policies. Boards and commissions, through public meetings, advise the City Council on policy issues. The City Council meetings are open to the public with few exceptions as allowed by law and take place between one and four Tuesdays per month.

The City's water utility is managed, operated, and maintained by the Water and Sewer Division in the Environmental Services Department. This Division is responsible for the purchase and distribution of potable and non-potable water as well as construction of new and replacement infrastructure.

3.3 Climate

The City enjoys a generally mild, temperate climate with relatively low levels of precipitation. Daytime temperatures range from the mid 80's during the summer to typically not less than 45°F in the winter. Climate information for the area is illustrated in **Table 3-1**.

Table 3-1: Local Climate Data

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Tot/ Avg
Monthly Average ET_o (inches)[1,2]	1.38	1.94	3.21	4.45	5.48	6.10	6.34	5.60	4.41	3.14	1.68	1.25	44.98
Precipitation (inches)[3]	4.7	4.0	3.7	1.7	0.7	0.1	0.0	0.0	0.2	1.1	2.5	4.3	23.0
Average Max Temperature (°F)[3]	55.1	57.7	60.7	65.3	71.2	78.2	83.2	82.7	80.4	73.3	62.9	55.8	68.9
Average Min Temperature (°F)[3]	37.3	39.0	40.2	42.1	46.5	51.1	55.3	55.2	53.2	48.3	41.5	37.4	45.6
Average Temperature (°F)[3]	46.2	48.4	50.5	53.7	58.9	64.6	69.2	68.9	66.8	60.8	52.2	46.6	57.2

Notes:
1. ETo = Evapotranspiration is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues).
2. 2001-2025 data from California Irrigation Management Information System (CIMIS) Station 171 – Union City.
3. 1895-2025 data for Santa Clara County from the National Oceanic and Atmospheric Administration (NOAA).

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3.3.1 Climate Change Impacts

Several scientific reports have confirmed that greenhouse gas (GHG) emissions from human activities are contributing to a progressively warming climate. A slight increase in global temperatures could cause several environmental impacts, including increased wildfires, reduced snowpack, sea level rise, intensifying droughts and storms, and shorter and more intense water seasons. Some climate change effects are already apparent in the State. Precipitation in the Bay Area has had high variability each year, leading to some very wet years and some very dry years. This variability is expected to continue, leading to potential changes in water supply and management. Additionally, the State is predicted to experience longer and deeper droughts due to increasing temperatures, which could pose a significant challenge to water supply reliability.

The City has consistently incorporated sustainability and climate action into their goals and planning efforts to address these potential threats. In 2014, the City created the Climate Action Plan (CAP 1.0) to set sustainability goals and outline strategies to reduce emissions. The City built on CAP 1.0 and adopted a new Climate Action Playbook in 2019 along with Game Plan 2022, which identified a three-year work plan of specific actions to help the City meet State level targets for carbon neutrality. The most recent update of the 2019 plan is the June 2024 Climate Action Playbook Update and Game Plan 2028 (Playbook), available at the following link: https://www.sunnyvale.ca.gov/home/showpublisheddocument/1066/638606111674670000. The Playbook identifies an updated five-year work plan of strategies and actions to continue progress towards the State level GHG emissions reduction targets, which include:

- 1990 levels by 2020 (AB 32, 2006)
- 40% below 1990 levels by 2030 (SB 32, 2016)
- 80% below 1990 levels by 2050 (Executive Order S-3-05, 2005)

The City has already met the 2020 emissions goal and has several emission reducing actions in place to meet 2030 levels. The Playbook outlines strategies to meet the 2050 goal, including promoting clean electricity, decarbonizing buildings, decarbonizing transportation, sustainable land use, and managing resources sustainably.

3.4 Service Area Population

The City currently provides water service to a population of 159,673 people. Since the City's service area overlaps the City boundaries by more than 95%, the 2025 population estimate was sourced from the 2025 Department of Finance (DOF) E-5 Population and Housing Estimates for Cities. According to the DOF data, the average annual population growth rate between 2010 and 2025 is approximately 0.88%. This rate was used to project the population of the water service area through 2045. As shown in **Table 3-2,** city population is projected to increase approximately 19% in the next 20 years.

Table 3-2: Population Projections for City of Sunnyvale

	2025	2030	2035	2040	2045
City Population[1]	159,673	166,813	174,272	182,065	190,206

Note:
1. Department of Finance 2025 estimate and 2030-2045 projections based on the 2010-2025 historical annual growth rate of 0.88%.

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3.5 Demographics

The City is a diverse community with a residential population of 159,673. Approximately 60% of residents speak a language other than English at home. The percent population by race is summarized in **Table 3-3**.

Table 3-3: Population by Race for City of Sunnyvale

Race	Percent
Asian alone	49.6%
White alone	28.4%
Black or African American alone	1.6%
Native American and Alaska Native alone	0.6%
Native Hawaiian and Other Pacific Islander alone	0.4%
Some other race alone	9.5%
Two or more races	9.9%

Source: 2020-2024 American Community Survey 5-Year Narrative Profile

According to the 2020-2024 American Community Survey (ACS) 5-Year Narrative Profile, the City's median household income is estimated to be $186,170, which is one of the highest in the nation. The City has a solid economic base, and poverty levels in the City have remained consistently lower than those of Santa Clara County or the State. Residents are generally well educated, with approximately 69% having a bachelor's degree or higher. With its Silicon Valley location, the City has an established high-tech presence having transitioned from agricultural to defense to the current high-tech economy. It has remained on the cutting edge of Silicon Valley's innovation. According to the City's July 2025 Business License Database, the number of firms in the City is estimated to be 6,978. The top industries in the City include professional, scientific, management, and administrative and waste management services (29.0%); manufacturing (15.7%); education services, health care and social assistance (14.3%); information (12.7%); and retail trade (8.1%). The City is home to growing clusters of emerging technology companies in the high-tech and biotechnology industries.

3.5.1 Low-Income Housing

In December 2023, the City adopted the 2023-2031 Housing Element (Housing Element), which provides a roadmap for the City to address current and projected housing needs. Per the Housing Element, there were approximately 55,424 housing units in the City in 2023. Based on the 2021 Association of Bay Area Governments (ABAG) projections, the City is estimated to need an additional 11,966 housing units through the year 2030.

Over 1,800 City housing units are designated as low-income housing. The City has actively supported affordable rental housing utilizing a variety of local, State, and Federal funds, and works extensively with non-profit housing developers in the ownership and management of its projects. Rent-restricted housing in Sunnyvale includes both publicly subsidized affordable housing, generally assisted with any combination of Federal, State, local, and/or private subsidies, and deed-restricted rental units provided through the City's Below Market Rate (BMR) program. The City's BMR program currently requires that a percentage of units within some market-rate rental properties be offered at BMR rent for lower-income residents. Lower-income residents are

defined as households at 80% of the Area Median Income. Very low-income residents, defined as households at 50% of the Area Median Income, can take advantage of a subset of BMR units referred to as Affordable Rental Units (ARUs). Additional detailed demographic data can be found in **Appendix B**.

3.6 Land Uses within Service Area

The City service area encompasses approximately 24 square miles. Although the City is mostly built-out, factors such as population growth and climate change call for changes in the City's land use over time. The 2024 Update to the Land Use and Transportation Section of the Sunnyvale General Plan identified areas of the City that will be preserved, enhanced, and transformed over a 20-year planning horizon (Horizon 2035). Preserved and enhanced areas are expected to have minor upgrades but no major character shift. Transformed areas include older shopping centers and office areas that will be transformed into new mixed-use developments called Village Centers. The Village Centers are meant to provide residential diversity in existing residential areas. On July 1, 2025, the City adopted the Village Center Master Plan (VCMP), which outlines a detailed framework to facilitate the continued development of Village Center sites.

As part of the 1993 "Industrial to Residential" program (ITR), the City has encouraged specific industrial areas to redevelop to residential use. Each ITR site allows industrial, office, commercial, and residential uses to exist within the same district while gradually converting to residential use. As of 2007, ITR designated sites totaled approximately 320 acres, accommodating up to 7,700 dwelling units. Moffett Park is one of the City's largest employment centers and is the newest area in the City planned for transition from industrial to residential. The Moffett Park Specific Plan was adopted in July 2023.

3.7 Water Supply Sources

The City has three sources of potable water supplies: purchased water from SFPUC, treated purchased water from Valley Water, and City-owned and operated groundwater wells. In addition, the City has multiple potable water interties with the City of Santa Clara, the City of Mountain View, the City of Cupertino, and the California Water Service Company (Cal Water), which can all provide water service in the event of an emergency. The City also has a recycled water program that supplies water treated at the City's WPCP for non-potable purposes such as landscape irrigation and watering golf courses.

3.8 Distribution System

The City retails potable drinking water and non-potable (recycled) water within the City limits. The City also wholesales recycled water through a developed recycled water program in partnership with Valley Water. Recycled water pipelines serve communities both within and beyond city limits. Cal Water retails potable drinking water from Cal Water owned groundwater wells in pocket areas of the City (see **Figure 3-1**).

The City owns, operates, and maintains a water supply and distribution system worth more than $200 million. The system is a closed network consisting of three different pressure zones. Sunnyvale's elevation varies from sea level at the northern end of town to approximately 300 feet above sea level at the southwest corner of town. Zone I extends roughly from El Camino Real

northward to the San Francisco Bay and is supplied primarily by SFPUC water. Zone II consists of everything south of Zone I except for the southwest corner of the City and is served by a supply mixture of SFPUC water, City groundwater wells, and Valley Water treated water. Zone III serves the southwest section of town with Hollenbeck Avenue on the east side and Fremont Avenue on the north side and is served by a combination of Valley Water treated water and City well water. The conveyance system extends approximately 339 miles in length, with pipe diameters ranging from 4 inches to 36 inches.

Water pressure within the distribution system is maintained within a range of 40 pounds per square inch (psi) to 105 psi throughout all three zones. A Supervisory Control and Data Acquisition (SCADA) system allows the City to maintain a balanced system, generally keeping water deliveries between those pressure readings. The average operating pressure is 68 psi. Zone I receives direct downstream pressure from the SFPUC pipeline system with an operating pressure of approximately 130 psi in the winter and 120 psi in the summer, though that pressure is reduced by pressure regulating valves before it is delivered to customers.

Several pocketed areas within the City boundaries, located primarily along Fremont Avenue and Sunnyvale-Saratoga Road, receive water from Cal Water. These areas were at one time part of unincorporated Santa Clara County, but have since been annexed by the City. Cal Water produces its own water from wells the company owns exclusively. The City, through a cooperative effort, provides emergency connections to Cal Water's system to improve fire flows when needed.

There are eight active potable water storage reservoirs at four different locations throughout the City with a total storage capacity of 26.5 million gallons (81 AF). There is also one recycled water reservoir with a storage capacity of 1.5 million gallons (4.7 AF). This volume of water can meet at least one day of average water demand during the summer for the entire City.

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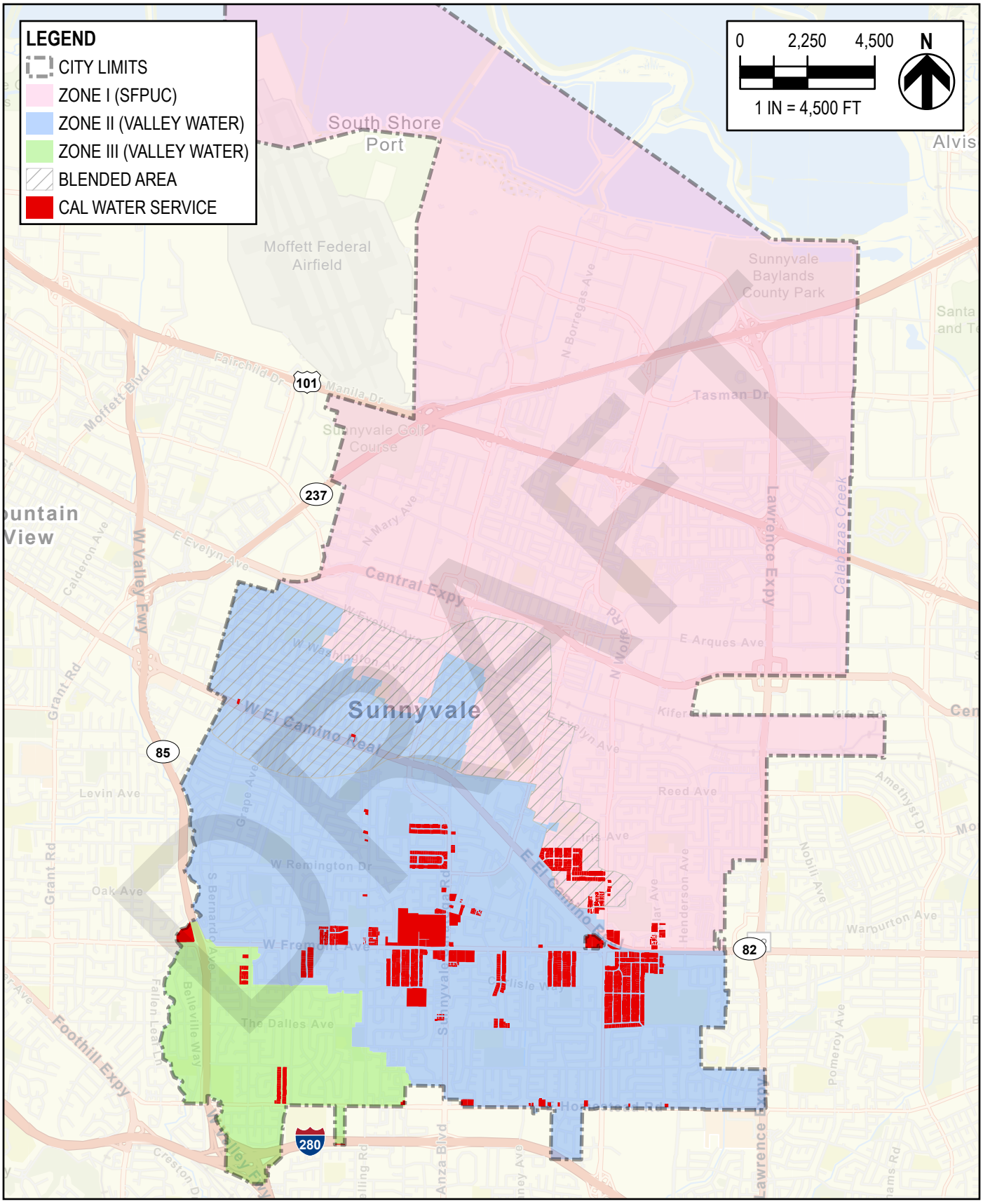


FIGURE 3-1
CITY OF SUNNYVALE
URBAN WATER MANAGEMENT PLAN
SERVICE AREA MAP

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SECTION 4 – WATER USE CHARACTERIZATION

This section provides information on past, current, and projected water use within the City's service area. Note that water use is provided on a calendar year basis.

4.1 Water Use Objectives

In 2018, California State Legislature and Governor Brown passed into law SB 606 (Hertzberg) and AB 1668 (Friedman) which were attributed from the Making Water Conservation a Way of Life Executive Order from 2016. The purpose of these bills is to improve water conservation and drought planning through the development of new standards for water use. In July 2024, California adopted regulations that established an annual Urban Water Use Objective (UWUO) for water suppliers and introduced Performance Measures for commercial, industrial, and institutional water users. The UWUO is a water-budget-based framework tailored to each Supplier based on their individual standards for the following components:

- Indoor residential water use;
- Outdoor residential water use;
- Commercial, industrial, and institutional water use for landscape irrigation with dedicated meters; and,
- Water loss.

Beginning in 2027, Suppliers will be required to annually assess whether their total water use complies with their established UWUO. Some State standards will become progressively more stringent over time, which may require additional conservation efforts to achieve compliance. Because compliance with the UWUO requirements is under the authority of the SWRCB, UWUO compliance projections are not required as part of this UWMP per the Guidebook. Therefore, UWUO projections are considered but not explicitly included herein, with the exception of the City's water loss standard. Pursuant to the Water Code, the City has included data in **Section 4.3.2** that demonstrates the City's progress towards meeting its water loss performance standard.

4.2 Non-Potable Versus Potable Water Use

The City supplies both treated drinking water (potable) and recycled water (non-potable) to service area customers. Recycled water is supplied for non-potable purposes such as irrigation and toilet flushing. Potable water is available as a backup supply to supplement the recycled water system when needed. Although some potable water is used in the recycled water system, potable and recycled water are reported separately throughout this UWMP. Potable water supply totals include any potable water added to the recycled water system. Recycled water is discussed further in **Section 6**.

4.3 Past, Current, and Projected Water Use by Sector

The City of Sunnyvale categorizes its water accounts into six broad customer categories: single-family, multi-family, commercial (incorporating industrial), institutional, irrigation, and fire services. The commercial sector includes all non-residential accounts that are not classified as irrigation or

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institutional. These six sectors include all service area accounts and will be used to report past, current, and projected water use throughout this UWMP.

4.3.1 Historical Water Use

Water use varies depending on factors such as population, weather, policy change, and the economic climate. Recognizing these factors and long-term general trends in water use is valuable in projecting future supply needs. Historical water production is generally representative of water demand and can be used as a surrogate to quantify historical water use.

The City has three potable water supply sources: SFPUC, Valley Water, and groundwater wells. In the 1990's, the City modified its traditional sewer treatment plant to produce recycled water. The City began using recycled water in 1999, supplementing the overall water supply.

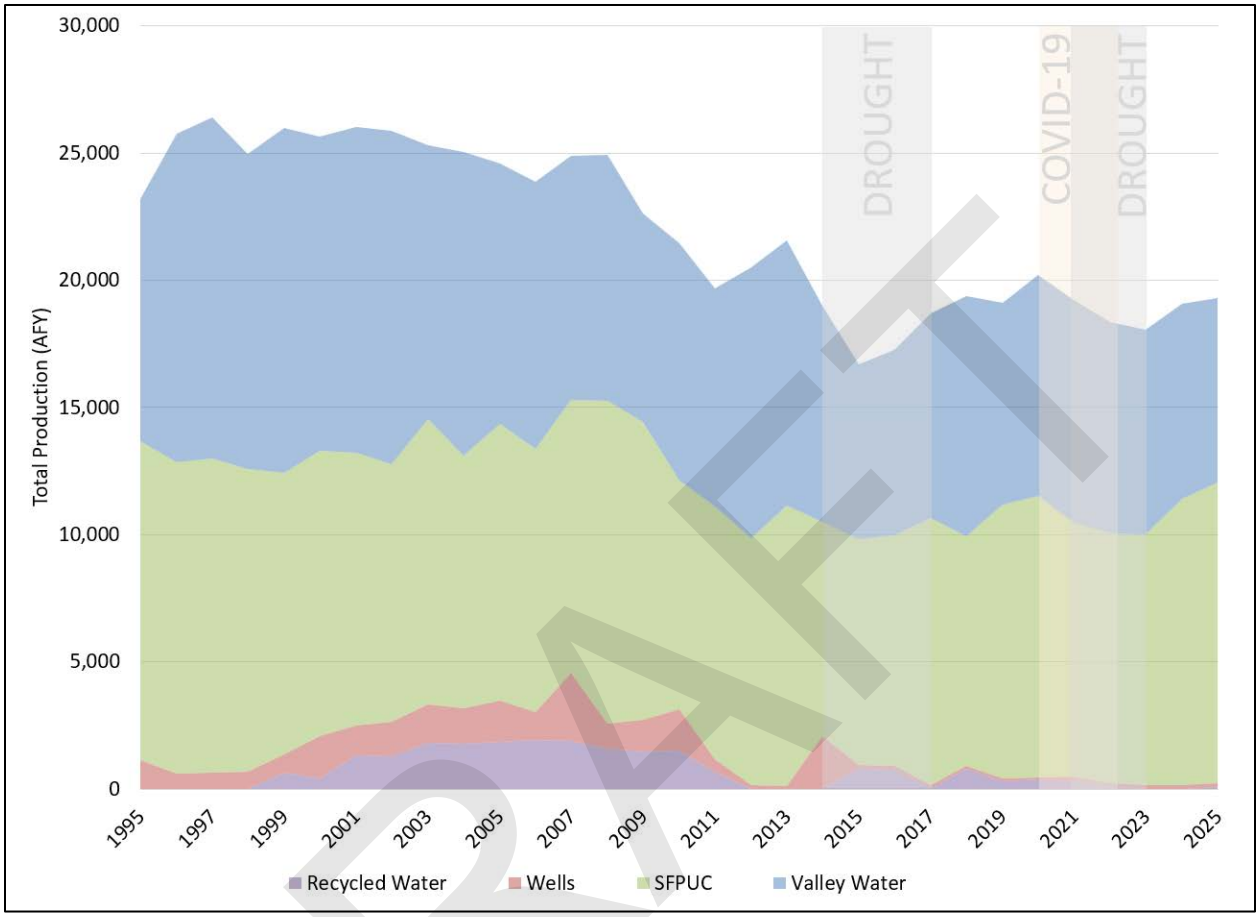
Figure 4-1 is a graphical depiction of the total annual water supply in AFY categorized by supply source from 1995 to 2025. The City purchases water from Valley Water and SFPUC, so the increase in deliveries from one source will generally be accompanied by a decrease from the other. Water use in Sunnyvale generally remained consistent from 1996 to 2001. After 2002, water use began to decline in response to drought-related conservation measures, economic factors, and contractual limitations previously negotiated. The sharp decline in water use from 2008 to 2011 and again from 2013 to 2015 was due to drought conditions and implementation of local and regional water conservation measures.

Water use increased from 2015 to 2020, which can be attributed to recovery from the drought. Although total water use in 2020 remained consistent with historical non-drought condition trends, demand patterns for 2020 were greatly affected by the Coronavirus (COVID-19) pandemic. The pandemic began in early 2020 and led to several Regional Shelter-In-Place/Stay-at-Home Orders and local emergency restrictions. Most non-essential businesses shifted to remote work, and several businesses were unable to continue operation due to the Stay-at-Home Orders. These conditions caused a shift in water demand from all sectors to predominantly residential use but did not have a significant effect on overall water use.

Water use declined again from 2020 to 2023 due to returning drought conditions and voluntary local and statewide water use reduction measures. Since 2023, water use has partially recovered as drought conditions have eased.

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Figure 4-1: Annual Water Production 1995-2025 (AFY)



4.3.2 Distribution System Water Loss

Water loss within the City's distribution system may be due to leaks, breaks, malfunctioning valves, and water meter inaccuracies. Other losses come from legitimate uses such as water/sewer main and hydrant flushing, tests of fire suppression systems, and street cleaning. SB 555, approved in October 2015, requires all water retailers to report distribution system losses annually based on the American Water Works Association's (AWWA) Water Audit Software.

In accordance with SB 555 and the 2018 Water Conservation Legislation AB 1668 and SB 606, the SWRCB adopted new water loss performance standards for Suppliers in October 2022. The regulation requires that the City monitor and reduce real water losses in accordance with the State established standard that was developed based on the City's water system characteristics and historical water loss data. Compliance with the water loss performance standard is assessed based on water audit data submitted for the preceding three years. Although compliance begins January 1, 2028, the City is required to report on its progress towards meeting its water loss performance standard in the 2025 UWMP. The water loss performance standard is composed of the following two parts:

- **Real Water Loss Standard**: Real losses are defined as physical water losses from the water distribution system and storage tanks, up to the customer meter.

- **Apparent Water Loss Standard**: Apparent losses include inaccuracies associated with customer metering, systematic data handling errors, and unauthorized consumption.

The City's water loss standards are summarized in **Table 4-1**. **Table 4-1** also presents results from the most recent AWWA Water Loss Audit, completed for calendar year 2024, to demonstrate the City's progress toward meeting the 2028 water loss standard.

Table 4-1: Progress Toward 2028 Water Loss Standard

Most Recent AWWA Water Loss Audit (2024)			2028 State Water Board Standard			
Number of Service Connections	Volume of Real Loss (AF)	Volume of Apparent Loss (AF)	Real Water Loss (gpscd)	Apparent Water Loss (gpscd)	Real Water Loss Standard (gpscd)	Apparent Water Loss Standard (gpscd)
29,717	1,509	255	45.3	7.7	29.4	7.9

Note:
1. gpscd = gallons per service connection per day.

The City met its apparent water loss standard in 2024 but did not meet the real water loss standard. However, real water loss in 2024 exceeded historical levels and represents an outlier compared to prior years. The water losses from 2020 to 2024 are summarized in **Table 4-2**. As seen in the data, total system losses were consistently between 7% and 8% of total water supplied prior to 2024, and real water loss historically remained below 40 gpscd. The City met both water loss performance standards in 2023, and real water loss is expected to match historical levels in the future.

Table 4-2: Water Loss Audit Reporting

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss (AFY)[1]	System Loss Percentage[2]	Real Water Loss (gpscd)	Apparent Water Loss (gpscd)
01/2020	1,401	7%	34.1	8.2
01/2021	1,418	8%	35.0	7.7
01/2022	1,519	8%	38.5	7.5
01/2023	1,180	7%	28.0	7.4
01/2024	1,764	9%	45.3	7.7

Notes:
1. Values were reported to DWR in the City's annual Water Loss Audit Reports, available at the following link: https://wuedata.water.ca.gov/awwa_plans.
2. Percentage of water loss out of total water supplied each year.

The system loss projections and total demand projections contained in this UWMP assume a future system loss percentage of approximately 8%, which represents an average of actual system losses experienced by the City over the past five years. Saline water intrusion barriers, groundwater recharge, and conjunctive use are not included in water loss estimates for this UWMP since these uses are managed by Valley Water and are reflected in Valley Water's UWMP for the entire County.

4.3.3 Current Water Use

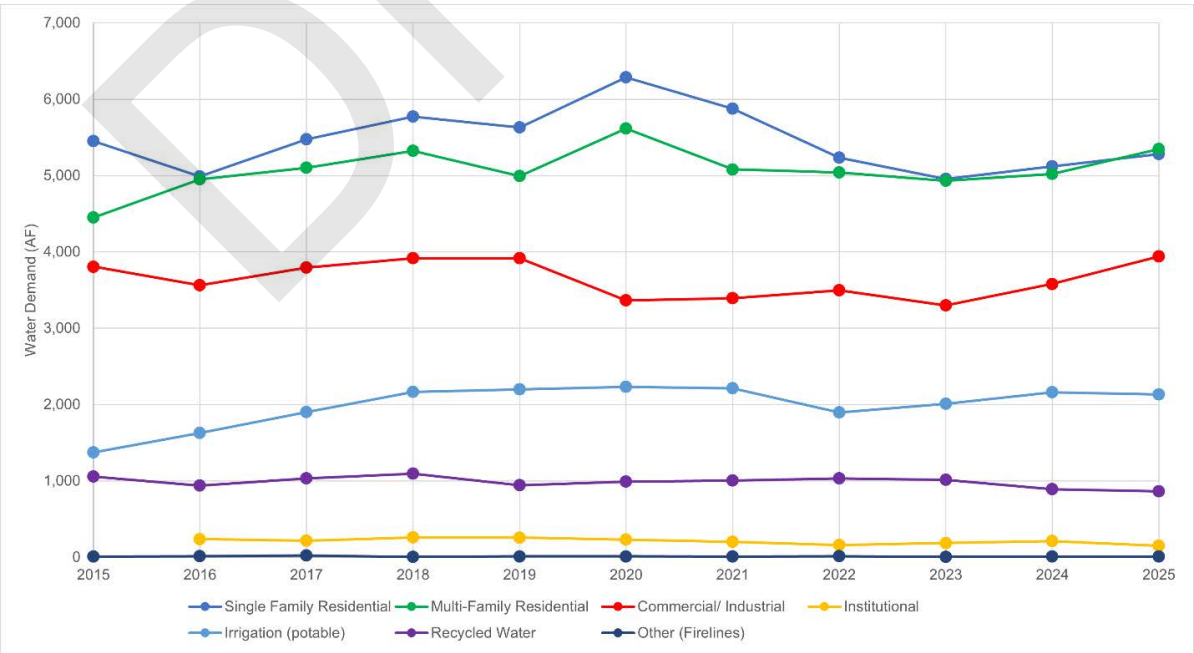
Table 4-3 presents the City's 2025 potable and non-potable water use within the City's service area categorized by customer type, including estimated system losses. **Figure 4-2** shows these demands compared to historic potable water use by customer type and total recycled water (non-potable) use from 2015 to 2025. Recycled water demands are discussed further in **Section 6.**

Table 4-3: 2025 Demands for Potable and Non-Potable Water

Customer Type	Potable or Non-Potable[1]	Volume (AFY)
Single Family Residential	Potable	5,282
Multi-Family Residential	Potable	5,348
Commercial/Industrial (combined)	Potable	3,939
Institutional	Potable	152
Landscape Irrigation	Potable	2,132
Other (Firelines)	Potable	8
System Losses[2]	Potable	1,304
Commercial/Industrial (combined, recycled water)[3]	Non-Potable	90
Landscape Irrigation (recycled water)	Non-Potable	551
	Subtotal Potable	**18,165**
	Subtotal Non-Potable	**641**
	Total	**18,806**

Notes:
1. Non-potable use includes recycled water and any potable water added to the recycled water system.
2. Water loss is estimated as the difference between actual water sales and water supplied.
3. Recycled water used for commercial dual plumbing and industrial cooling.

Figure 4-2: Potable and Non-Potable Water Demands by Sector 2015 to 2025 (AFY)



Note: Recycled water use includes services outside City limits, specifically Moffett Field and Apple® Campus 2.

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Total annual potable water use in 2025 was approximately 1,100 AF less than the projected 2025 water use from the previous UWMP. Overall demand increased from 2023 to 2025, which can be attributed to the relaxation of water rationing mandates and measures related to the drought.

As mentioned previously, water use in 2020 was affected by the COVID-19 pandemic. Commercial water use in 2020 showed a significant decline compared to 2019 demand and trends from 2015 to 2019. The decline in commercial use was offset by the increase in single-family and multi-family residential water use. This shift is attributed to the Regional Shelter-In-Place/Stay-at-Home Orders. Following the end of the COVID-19 pandemic, water use patterns have gradually returned to pre-pandemic conditions. Residential demand sharply declined from 2020 to 2021, attributed to the lifting of Stay-at-Home Orders, and followed an increasing trend from 2023 to 2025. Commercial demand generally increased to 2019 levels from 2020 to 2025. It is expected that water use trends will continue to follow pre-pandemic trends in the future.

4.3.4 Projected Water Use

Projected water demands are an important factor in predicting water system reliability. These estimates provide a basis to ensure that there is adequate water supply to meet future demands. All potable water projections in this section are based on methodologies implemented in the BAWSCA Regional Water Demand and Conservation Study, December 2025 (Demand Study). The Demand Study included long-term water demand estimates with and without passive/active conservation developed specifically for the City. Only passive conservation is considered for the purpose of projecting future water demand for this UWMP. The full Demand Study is included as **Appendix C**.

The potable water use projections were developed using a hybrid water demand forecasting framework that integrates econometric modeling with conservation accounting tools. The econometric regression-based model (Econometric Model) links key drivers such as demographic growth, weather conditions, economic factors, and water rates to historical water use in order to estimate a historical rate of use per driver. This rate was then used to estimate long-term projected water use. This approach generated monthly projections of baseline demand for the City that reflects structural drivers of water use. The model considered expected service area population and economic growth as well as passive conservation from plumbing codes and fixture turnover over time. The full description of the Econometric Model and water demand forecasting framework is included in the Demand Study, attached as **Appendix C**. Projected additional water demand from planned new development and redevelopment within the City's service area were added to the Demand Study projections.

Projected City potable and recycled (non-potable) water use is summarized by customer classification in **Table 4-4**. Projected recycled water use is based on anticipated recycled water development. Recycled water is discussed further in **Section 6**. Because the City is largely built-out, it is expected that water use will continue to rise in future years primarily due to increasing population density. The City provides projected demands to each wholesale water agency (attached as **Appendix D**) to help with each wholesaler's supply reliability assessment and UWMP update.

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Table 4-4: Projected Potable and Non-Potable Water Use by Customer Type (AFY)

Customer Type	Potable or Non-Potable[1]	2030	2035	2040	2045
Single Family Residential	Potable	5,323	5,254	5,231	5,209
Multi-Family Residential	Potable	6,106	7,232	8,408	9,568
Commercial/Industrial (combined)	Potable	4,933	6,241	7,086	7,910
Institutional	Potable	315	398	452	505
Irrigation	Potable	2,144	2,164	2,180	2,198
Other (Firelines)	Potable	133	133	133	133
System Losses[2]	Potable	1,648	1,863	2,043	2,219
Commercial/Industrial (combined, recycled water)	Non-Potable	95	119	142	165
Irrigation (recycled water)	Non-Potable	637	794	950	1,107
Subtotal Potable[3]		**20,602**	**23,285**	**25,533**	**27,742**
Subtotal Non-Potable[4]		**732**	**913**	**1,092**	**1,272**
Total		**21,334**	**24,198**	**26,625**	**29,014**

Notes:
1. Non-potable use includes recycled water and any potable water added to the recycled water system.
2. Projected system losses are 8% of projected potable demand.
3. Projected potable water from the BAWSCA 2025 Demand Study with passive conservation categorized by customer use type and projected additional demand from planned new development and redevelopment within the City's service area.
4. Projected non-potable use is described in **Section 6**.
5. Water use within the City's service area.

4.4 Future Water Savings

Future water use estimates were based on Demand Study projections with passive conservation. Passive conservation considers any codes or standards that could affect future water use. The model used for the Demand Study projections incorporated passive conservation savings from plumbing codes, which is based on Federal and State legislated efficiency standards (Energy Policy Act of 1992, CALGreen Building Code, and Title 20). These standards govern the available type of fixtures and appliances such as toilets, showers, and washers, which in turn are expected to reduce water usage. Projected passive water conservation savings as outlined in the Demand Study are shown in **Table 4-5**. Passive conservation is expected to increase in the future due to fixture and appliance replacement over time.

Table 4-5: Projected Passive Water Conservation Savings

Conservation	2030	2035	2040	2045
Passive Conservation Savings	358	616	831	1,008

Note:
1. Data from the 2025 BAWSCA Demand Study.

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4.5 Low-Income Housing Water Use Projection

Section 10631.1(a) of the California Water Code requires that water use projections specifically identify the projected water use for lower-income single-family and multi-family residential homes. As stated in **Section 3**, lower-income residents are defined as households at 80% of the Area Median Income. The City records the annual number of low- to moderate-income units but does not track the difference between single-family and multi-family homes. For this reason, this section reports total residential (single-family and multi-family) demand for low-income units. These demands are already included in **Table 4-4** (see **Table 4-6**).

Table 4-6: Inclusion in Water Use Projections

Parameter	Response
Are future water savings included in projections?	Yes
If "yes" to above, state the section or page number where citations of the codes, ordinances, etc. utilized in projections are found.	Section 4.4
Are lower income residential demands included in projections?	Yes

The City has 1,828 low-income units and 770 moderate-income units as of December 31, 2025. The City projects that there will be an additional 761 low-income units and 75 moderate-income units by 2030. City projections do not go beyond 2030 thus it is assumed that the number of units will remain the same beyond 2030.

Projected low-income water use is based on the number of units, the average household size within the City, and the projected water use factors. **Table 4-7** provides the water use projections for low-income households within the City service area.

Table 4-7: Low-Income Estimated Current and Projected Water Use (AFY)

Parameter	2025	2030	2035	2040	2045
Low-Income Units	1,828	2,589	2,589	2,589	2,589
Low-Income Residential Water Use (AF)	558	790	790	790	790

Notes:
1. Average Household Size of 2.59 determined from the 2025 Department of Finance E-5 Population and Housing Estimates for Cities.
2. Projected water use factors are based on 2025 per capita water use (105 gallons per capita per day [gpcd]) and assumed to be constant.

4.6 Climate Change Considerations

As described in **Section 3**, global climate change has a significant effect on water supply reliability. One of the risks of climate change is the potential for longer and deeper droughts. Although the City addresses ways to ensure reliability in the event of a drought in its WSCP, it is also important to incorporate climate change impacts in water use projections.

Future water use estimates in this UWMP were determined from Demand Study projections, which account for potential effects of climate change. The Demand Study incorporates climate change assumptions by adjusting future temperatures using projections obtained from CalAdapt's Local Climate Change Snapshot tool. Background data for the Cal-Adapt tool is sourced from

the Coupled Model Intercomparison Project Phase 5 (CMIP5). The Demand Study incorporated CMIP5 data from two International Panels on Climate Change (IPCC) climate change scenarios, which are referred to as Representative Concentration Pathways (RCPs). These scenarios provide estimates of global temperature based on CO_2 emissions under a variety of mitigation conditions.

Modeled temperatures from the CalAdapt CMIP5 RCP 4.5 and RCP 8.5 datasets for Santa Clara County estimate an annual mean temperature increase of 1.25 degrees Fahrenheit to 2.05 degrees Fahrenheit for the 2020-2050 period. This temperature increase was incorporated into all water use projections.

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SECTION 5 – BASELINES AND TARGETS

The Water Conservation Bill of 2009 (SBX7-7) required a statewide reduction in urban per capita water use by 20% by the year 2020. To achieve this statewide objective, the California Legislature required each water retail supplier to develop a 2020 water use target based on population to help the State collectively achieve a 20% reduction. Reporting for SBX7-7 began in the 2010 UWMP with the calculation of the Baseline, the 2015 Interim Target, and the 2020 Target, each in units of gpcd. In the 2015 UWMP, each retail agency was required to demonstrate compliance with its 2015 Interim Target to ensure they were on track to meet the goal of 20% reduction by 2020. In the 2020 UWMP, each retail agency was required to demonstrate compliance with its 2020 Target. The Baseline, 2015 Interim and 2020 Targets, and 2020 Compliance are calculated through completion of the SBX7-7 Verification Form prepared by DWR, submitted as part of the 2020 UWMP and attached as Appendix E.

The City's 2020 per capita water use was 115 gpcd, well below the 2020 target of 139 gpcd. Thus, the City achieved compliance with SBX7-7 as presented in the 2020 UWMP.

Table 5-1 presents the final 2020 water use and confirmed compliance with SBX7-7.

Table 5-1: 2020 Compliance with SBX7-7

2020 Target (gpcd)	Actual 2020 gpcd	Did Supplier Achieve Targeted Reduction for 2020? Y/N
139	115	Y

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SECTION 6 – WATER SUPPLY CHARACTERIZATION

The section presents the City's past, current, and future water supply for potable and non-potable demand. The City has three sources of potable water supply: purchased surface water from SFPUC, purchased treated surface water from Valley Water, and groundwater from six City-owned and operated wells. Recycled water (non-potable) is supplied by the City's WPCP. The City also has an additional stand-by well for emergency use and emergency interties to the City of Cupertino, the City of Mountain View, the City of Santa Clara, and Cal Water.

6.1 Purchased Water

Most of the City's water supply comes from purchased surface water from SFPUC and Valley Water. The City does not use any other surface water for supply. The following section describes each wholesaler in more detail.

6.1.1 SFPUC – Wholesaler (Surface Water)

The City receives surface water from the City and County of San Francisco's RWS, operated by SFPUC. This supply is predominantly from the Tuolumne River watershed in the Sierra Nevada Mountains, delivered through the Hetch Hetchy aqueduct, but also includes treated water produced by SFPUC from local watersheds and facilities in Alameda and Santa Clara counties. The Alameda watershed, located in Alameda County, is designed to capture local runoff.

The amount of imported water available to SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. Due to these constraints, SFPUC is dependent on reservoir storage to ensure ongoing water supply.

The business relationship between the SFPUC and its wholesale customers is largely defined by the "Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County" (WSA), effective since July 2009. This 25-year WSA replaced the Settlement Agreement and Master Water Sales Contract that expired in June 2009. The WSA addresses the rate-making methodology used by the SFPUC in setting wholesale water rates for its customers in addition to addressing water supply and water shortages for the RWS. The WSA, as amended and restated in 2025, describes the current contractual relationship between the SFPUC and the City.

The WSA is supplemented by an individual Water Supply Contract between SFPUC and each individual retailer, also active since July 2009. These contracts expire in 25 years. The City has an Individual Supply Guarantee (ISG) of 12.58 MGD (approximately 14,100 AFY). Although the WSA and accompanying Water Supply Contract expire in 2034, the ISG (which quantifies San Francisco's obligation to supply water to its individual wholesale customers) surpasses their expiration and continues indefinitely. The City's contract also includes a minimum purchase amount of 7.412 MGD (8,308 AFY), which Sunnyvale agrees to buy, regardless of whether sales drop below this level.

The WSA provides for a 184 MGD (expressed on an annual average basis) Supply Assurance to the SFPUC's wholesale customers. This Assurance is subject to reduction, to the extent and for the period made necessary by reason of water shortage, due to drought, emergencies, or by

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scheduled RWS maintenance activities. The WSA does not guarantee that San Francisco will meet peak daily or hourly demands of SFPUC's wholesale customers when their annual usage exceeds the Supply Assurance. The SFPUC's wholesale customers have agreed to the allocation of the 184 MGD Supply Assurance among themselves, with each entity's share of the Supply Assurance set forth on Attachment C to the WSA.

6.1.2 Valley Water – Wholesaler (Surface Water)

Valley Water supplies the City of Sunnyvale with treated surface water through an entitlement of imported water that is Delta-conveyed from the Central Valley Project (CVP) and State Water Project (SWP), as well as surface water from local reservoirs. The City has a 70-year contractual agreement with Valley Water, effective 1981 to 2051.

Valley Water's imported water is conveyed through the Sacramento-San Joaquin Delta and pumped and delivered to the county through three main pipelines: the South Bay Aqueduct, which carries water from the SWP, and the Santa Clara Conduit and Pacheco Conduit, which convey water from the Federal CVP. More than 70% of this supply is delivered to treatment plants, about 15% is diverted upstream by the SFPUC and delivered to cities in northern Santa Clara County, and almost 15% is used for recharge. Any excess Delta-conveyed supplies are stored in the Semitropic Groundwater Bank in San Joaquin Valley for later use, such as withdrawal during dry periods. Valley Water can also store imported water supplies locally in the Anderson and Calero Reservoirs; however, the Anderson Reservoir is currently drained down due to seismic concerns. Valley Water is working on rebuilding the dam, with completion expected by the end of 2033 (2050 WSMP, 2025).

Local runoff is captured in local reservoirs for recharge into the groundwater basin or treatment at one of Valley Water's three water treatment plants. The total storage capacity of the ten Valley Water operated reservoirs in Santa Clara County is approximately 166,000 AF, however, several reservoirs are operating at restricted capacity due to seismic stability concerns. Local water captured in local reservoirs and natural groundwater recharge provides up to 30% of Santa Clara County's water supply. Reservoir operations are coordinated with imported Bay-Delta water received from the SWP and the CVP.

Valley Water has a contract for 100,000 AFY from the SWP and 152,500 AFY from the CVP. However, the actual amount of water delivered is typically less than these contractual amounts and depends on hydrology, conveyance limitations, and environmental regulations. Valley Water expects average allocations of Delta-conveyed water to generally decline over time due to impacts of climate change, potential environmental regulations affecting the Sacramento–San Joaquin Delta, and State mandates to reduce reliance on the Delta (2050 WSMP, 2025). However, over the years, Valley Water has attempted to sustain overall existing supplies by participating in projects that would offset the predicted decline of Delta-conveyed imported water supplies. In October 2019, Valley Water voted to support the Delta Conveyance Project, which is a proposed plan to improve the infrastructure that conveys water through the Sacramento-San Joaquin Delta. This plan would potentially provide on average 14,000 AFY of imported water supply benefits to Valley Water (2050 WSMP, 2025).

Valley Water has also been evaluating water reuse opportunities, including potable reuse, as a reliable, locally controlled supply that can mitigate drought risks and further diversify its water supply portfolio. In October 2024, the State enacted the Direct Potable Reuse (DPR) regulations, enabling water supply agencies to pursue a new and more flexible approach to potable reuse.

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Valley Water aims to develop 24,000 AFY of potable reuse by 2035, with a long-term vision of expanding water reuse in the county to up to 32,000 AFY by 2050.

Valley Water's conjunctive management of groundwater and surface water makes it infeasible to directly quantify or demonstrate reduced Delta reliance at a retailer level. However, Valley Water, with the support of all retailers including the City, has made significant investments in demand management and local supplies to reduce Santa Clara County's reliance on the Delta. Additional information on Valley Water's reduced reliance on the Delta is provided in Appendix H of Valley Water's 2025 UWMP.

6.2 Groundwater

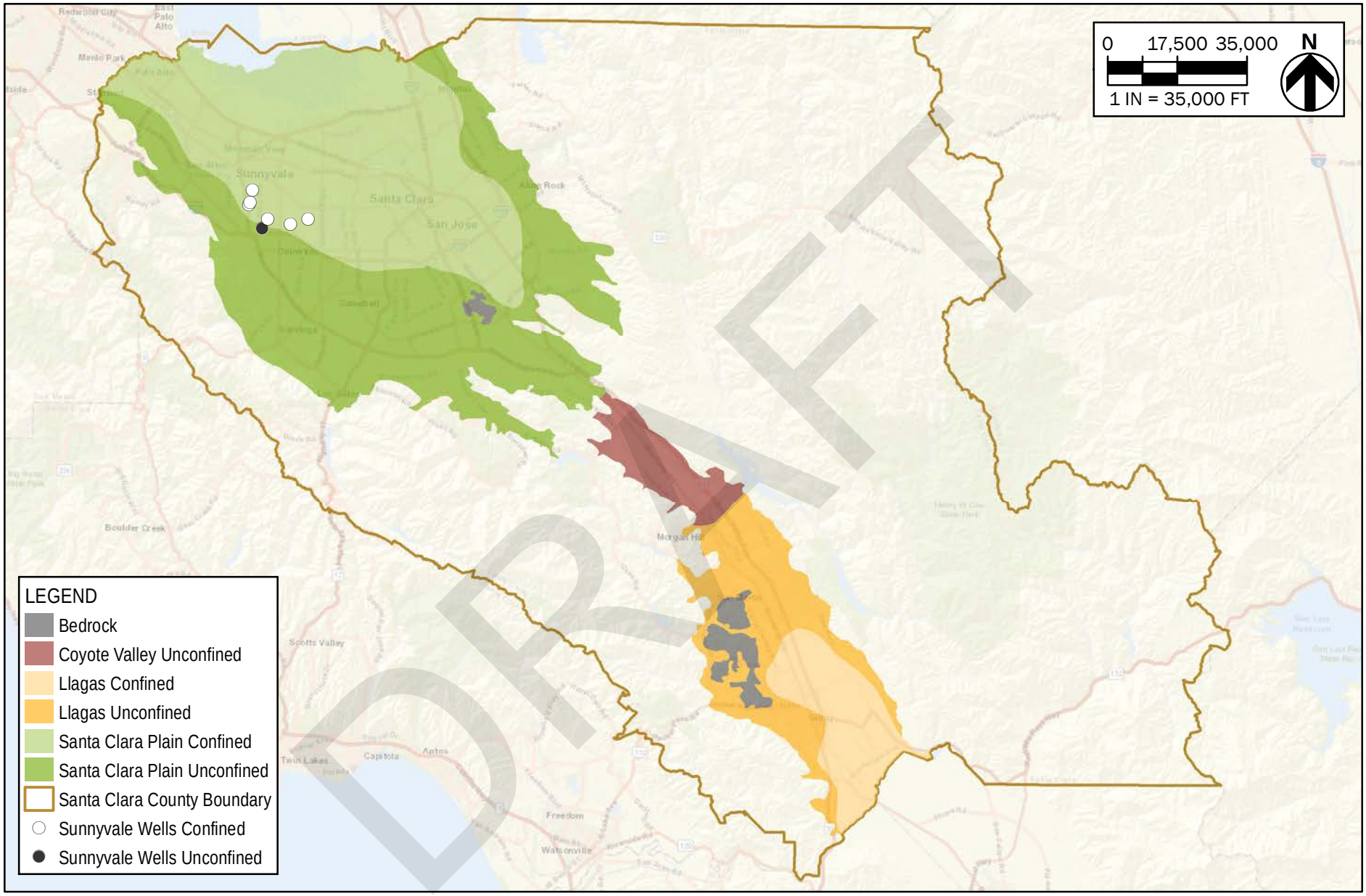
The City of Sunnyvale has six active wells and one well on stand-by for emergencies. Groundwater makes up a small percentage of the City's total water supply and is used to supplement imported SFPUC and Valley Water supply.

Valley Water manages the groundwater basin and provides county-wide groundwater and conservation planning assistance. Local groundwater supplies represent up to half of the county's water supply during normal years and are crucial to the region's future water supply reliability. Valley Water uses conjunctive use management, a practice by which the groundwater basin is pumped more in drier years and then replenished (or recharged) during wet and average years, to ensure the sustainability of groundwater basins. Groundwater is replenished naturally from rainfall and augmented by Valley Water-operated recharge. Conjunctive use helps to protect the groundwater basin from overdraft, land subsidence, and saltwater intrusion, and provides critical groundwater storage reserves.

Within Santa Clara County, Valley Water manages two groundwater subbasins that transmit, filter, and store water: the Santa Clara Subbasin (DWR Subbasin 2-9.02) and the Llagas Subbasin (DWR Subbasin 3-3.01). The Santa Clara Subbasin is part of the Santa Clara Valley Basin. For water supply planning purposes, Valley Water frequently splits the Santa Clara Subbasin into two subareas for water, the Santa Clara Plain and the Coyote Valley. These two subareas are in separate groundwater charge zones and have different groundwater management challenges and opportunities. The City's groundwater is supplied by the Santa Clara Plain subarea of the Santa Clara subbasin. A general discussion of this subarea is provided below.

6.2.1 Basin Description

The Santa Clara Plain is part of the Santa Clara Subbasin, located in a structural trough that is bounded by the Santa Cruz Mountains to the west and the Diablo Range to the east. The Plain, which is approximately 22 miles long, narrows from a width of 15 miles near the county's northern boundary to about half a mile wide at the Coyote Narrows, where the two ranges nearly converge. The Santa Clara Plain covers a surface area of approximately 280 square miles, which is approximately 17 square miles smaller than the Santa Clara Subbasin. This is because the Santa Clara Plain does not include the Coyote Valley portion of the Santa Clara Subbasin. Although hydraulically connected, Valley Water refers to the Coyote Valley separately since it is in a different groundwater charge zone and has fewer water supply options than the Santa Clara Plain. **Figure 6-1** illustrates the groundwater basin in relationship to the City's groundwater wells.



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FIGURE 6-1
CITY OF SUNNYVALE
URBAN WATER MANAGEMENT PLAN
SANTA CLARA VALLEY BASIN

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These subbasins contain young alluvial fill formation and the older Santa Clara Formation. Both formations are similar in character and consist of gravel, sandy gravel, gravel and clay, sand, and silt and clay. The coarser materials are usually deposited along the elevated lateral edges of the subbasins, while the flat subbasin interiors are predominantly thick silt and clay sections inter-bedded with smaller beds of clean sand and gravel.

Valley Water manages the groundwater supply in Santa Clara County and works with various water retailers in the area to prevent subsidence and overdraft of the basin. The Santa Clara Valley Basin is currently not adjudicated and has not been identified as critically overdrafted by DWR. The Santa Clara Subbasin is designated by the DWR as a high priority subbasin based on a variety of factors identified in statue such as population, irrigated acreage, and the number of wells (Water Code Section 10933(b)). Basin Prioritization is based on the Sustainable Groundwater Management Act (SGMA) Basin Prioritization program, updated in 2019. SGMA requires high-priority basins to develop Groundwater Sustainability Agencies (GSAs) and Groundwater Sustainability Plans (GSPs) to manage groundwater for long-term sustainability.

6.2.2 Historical Groundwater Pumping

Valley Water conducts continuous operational planning to balance water supply and demand, protect groundwater reserves, and maintain sufficient carryover storage. The annual operations planning process begins each fall, when imported and local supplies are estimated and operations scenarios are developed for the following year under varying hydrologic projections. Typically by late spring, when the quantity of imported water available to Valley Water by contract and the local water yield can be estimated with more certainty, Valley Water refines the projections and modifies its groundwater management strategy. As the water year progresses and more information becomes available, the operations plans are revised accordingly to optimize local water supply reliability. A copy of the 2021 Santa Clara Valley Water District Groundwater Management Plan (GMP) is included as **Appendix F**.

Groundwater is extracted by way of wells, either owned or operated by area retailers or private property owners. The allowable withdrawal of groundwater by the City depends on multiple factors, including withdrawals by other water agencies, the quantity of water recharged, and carry-over storage from the previous year. According to Valley Water's 2024 Annual Groundwater Report, the City accounts for less than 1% of the total groundwater pumping for the Santa Clara Plain subbasin designated as North County (Zone W-2).

The City has six active wells that can produce up to 8,000 AF annually. However, the City seldom uses these wells since water demand can be adequately met with purchased treated water from SFPUC and Valley Water. The City has on average pumped about 138 AF annually to prevent stagnation and keep the wells active for sampling. The City plans to continue operating the wells in this manner. **Table 6-1** shows historic metered groundwater pumping data for the City from 2021 to 2025.

Table 6-1: Past and Current Groundwater Volume Pumped (AFY)

Groundwater Type	Basin Name	2021	2022	2023	2024	2025
Alluvial Basin	Santa Clara Plain Subarea	126	113	138	158	157

6.3 Stormwater

The City owns and operates approximately 150 miles of storm drains and two pump stations that collect runoff and discharge to creeks and sloughs. Stormwater is conveyed through the City's storm sewer system, separate from the sanitary sewer system, to four waterways that flow to San Francisco Bay: Sunnyvale West Channel, Sunnyvale East Channel, Stevens Creek, and Calabazas Creek. The City does not currently utilize stormwater to meet local water supply demands. However, the City is subject to regulations that aim to improve the quality of stormwater runoff and manage stormwater flows.

The 2014 California Water Action Plan led to the State Water Board's "Strategy to Optimize Resource Management of Stormwater" (STORMS), which was created to promote stormwater as a valuable resource and provide support and funding for collaborative watershed-level storm water management and pollution prevention. STORMS is one of many Federal and State initiatives that have influenced new stormwater management requirements in Bay Area municipal stormwater National Pollutant Discharge Elimination System (NPDES) permits.

Since 2016, the City is subject to the requirements of the Municipal Regional Stormwater NPDES Permit (MRP) for Phase I municipalities and agencies in the San Francisco Bay area. The current MRP (MRP 3, Orders R2-2022-0018 and R2-2023-0019) includes new requirements and targets concerning reducing trash loads from stormwater, improving water quality of discharge, implementing green stormwater infrastructure (GSI), and utilizing low impact development (LID) site design. GSI attempts to mimic natural watershed processes by using plants and soil systems to capture stormwater, therefore reducing stormwater runoff and pollutant load discharged into receiving surface waters. LID uses site design approaches and management practices for new development or redevelopment to help decentralize stormwater management and maintain hydrologically functional landscapes. Examples of LID site design include reducing or disconnecting impervious surfaces, implementing bioretention or other small-scale stormwater controls, and preserving natural area and open space. The City's Green Stormwater Infrastructure Plan, adopted September 2019, provides a framework to gradually transform the City's traditional storm drainage infrastructure to GSI.

The City is a member of the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), which is an association of thirteen cities and towns in the Santa Clara Valley, the County of Santa Clara, and Valley Water that collaborate on stormwater regulatory activities and compliance. This program aims to improve the water quality of south San Francisco Bay and the streams of Santa Clara County by reducing nonpoint source pollution in storm water runoff and other surface flows.

6.4 Wastewater and Recycled Water

The City treats its wastewater and produces recycled water at the WPCP located at 1444 Borregas Avenue. A wastewater reclamation program was developed in 1991 when the City first identified short-term goals of recycling 20-30% of wastewater to produce high-quality effluent from the Plant. Today the City has a developed recycled water program, in partnership with Valley Water, which today serves parks, golf courses and the landscaping needs of diverse industries. The long-term goal of the City is to maximize the use of recycled water which has the potential to reach 2.1 MGD for non-potable uses.

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6.4.1 Wastewater Collection, Treatment, and Disposal

The WPCP has a permitted dry weather flow capacity of 29.5 MGD with a 40 MGD peak wet weather flow capacity, though current flows average approximately 15 MGD. The amount of influent wastewater handled by the Plant varies with the time of day and seasonal changes in demand. Wastewater is collected from the sanitary sewer system, which consists of more than 380 miles of gravity fed pipes that converge at the Plant. Collected wastewater is then treated to tertiary standards before it is either distributed back to the City for recycled water uses or discharged to the Lower South Bay subembayment of the San Francisco Bay via the Moffett Channel and Guadalupe Slough. The overall treatment consists of the following processes:

- Primary Treatment (Sedimentation)
- Secondary Treatment (Oxidation)
- Tertiary Treatment (Filtration and Disinfection)

These processes provide treatment to a level that will meet NPDES discharge requirements. Most of the treated water is discharged to the San Francisco Bay via the Moffett Channel and Guadalupe Slough. Approximately 10% of the Plant flow is treated to a higher level to meet the necessary recycled water quality and delivered to customers for non-potable uses, primarily irrigation.

Sunnyvale has experienced a slight decrease in Plant influent over the past five years but anticipates a conservative influent flow of 15 MGD over the next 25 years. **Table 6-2** and **Table 6-3** summarize the City's collected, treated, and discharged wastewater in 2025.

6.4.2 Future Wastewater Improvement Projects

The WPCP was originally constructed in 1956 and is one of the oldest wastewater treatment facilities on the West Coast. Although the Plant continues to provide reliable wastewater treatment, several of the Plant's existing facilities are nearing the end of their useful life. The City created the Cleanwater Program to upgrade the Plant through a series of projects that will rehabilitate existing Plant facilities and construct new facilities, ensuring future wastewater treatment reliability. These projects include upgrades to the secondary and tertiary treatment facilities, construction of new biosolids handling facilities, and construction of new administration and maintenance buildings at the Plant. Several improvements are currently in design phase and some have started construction. The projects associated with the Cleanwater Program are outlined in more detail on the Sunnyvale Cleanwater website (https://www.sunnyvalecleanwater.com) and in the WPCP Master Plan (2014-2016). The City is currently preparing a WPCP Master Plan Update, anticipated to be completed November 2026, that will provide a more detailed roadmap for the next phase of the Cleanwater Program.

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Table 6-2: Wastewater Collected within Service Area in 2025 (AFY)

Wastewater Collection			Recipient of Collected Wastewater	
Name of Wastewater Collection Agency	**Wastewater Volume Metered or Estimated?**	**Volume of Wastewater Collected from UWMP Service Area 2025**	**Name of Wastewater Treatment Plant and Place ID Number**	**Is WWTP Located within UWMP Area?**
City of Sunnyvale	Metered	15,817	Sunnyvale WPCP, Place ID 259507	Yes

Table 6-3: Wastewater Treatment and Discharge Within Service Area in 2025

				2025 Outcomes of Treated Water				
Wastewater Treatment Plant Name and Place ID Number	**Does This Plant Treat Wastewater Generated Outside the Service Area?[1]**	**Treatment Level**	**Total 2025 Volume of Water Treated (AF)**	**Water Recycled Within Service Area (AF)[2]**	**Water Recycled Outside of Service Area (AF)[2,3]**	**Effluent Discharge that is not a Permitted Recycled Water Use[4]**	**Required Discharge for Instream Flow[5]**	**Delivered to Another Entity for Additional Treatment**
Sunnyvale WPCP, Place ID 259507	Yes	Tertiary	15,817	641	494	13,663	-	0

Notes:

1. The City treats wastewater for the small pockets of Cal Water customers within City limits as well as a pocket of customers in Cupertino.
2. Total usage includes recycled water and potable water delivered through the recycled water system. Recycled water produced at the WPCP accounts for approximately 8% of total usage. Usage does not include disinfected secondary recycled water diverted for WPCP process prior to recycled water distribution system, which is not counted towards Statewide Recycled Water volume.
3. Services outside City limits include Moffett Field and the Apple® Campus 2.
4. Effluent flows do not include No. 3 water (non-potable Plant service water used internally for operations) or backwash water. No. 3 water is used in several plant processes, including polymer dilution, washdown water, Synagro dewatering, and other miscellaneous purposes.
5. The City does not currently have instream flow requirements.

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6.4.3 Recycled Water System Description

The City's current recycled water system consists of the Recycled Water Pump Station located at the WPCP, the Sunnyvale Golf Course pump station, the San Lucar Tank and Pump Station, the Wolfe Road Pump Station (WRPS), and approximately 22 miles of recycled water pipelines ranging in diameter from 6- to 36-inches. The WRPS was completed in 2018 as part of the Wolfe Road Pipeline Extension Project, which added approximately 13,000 feet of pipeline to extend the recycled water system along Wolfe Road, reaching the Apple® Campus 2. Both the WRPS and the pipeline extension are owned by Valley Water and maintained by the City's Water and Sewer Services Division. In 2018, the City completed a Capital Improvement Project to facilitate parallel production of recycled water and NPDES discharge, thereby providing enhanced production and delivery reliability.

The use of recycled water provides substantial benefits to the environment and a variety of communities. The following examples outline how the City's use of recycled water positively impacts different groups:

- Potable water users benefit from the decreased reliance on imported supply.
- All Sunnyvale residents benefit from securing a long-term adequate water supply to sustain economic growth and ensure public health.
- Recycled water users benefit by avoiding strict conservation requirements and water use restrictions during times of drought, and by paying less than the cost of potable water.
- All water users benefit from bringing in another water source to augment supplies.
- Area wetlands benefit from reduced freshwater discharges into the saline wetlands.

6.4.4 Potential, Current, and Projected Recycled Water Use

The City supplements their recycled water system with potable water additions at the Plant or the San Lucar Pump Station. This is used to offset the difference between recycled water production and demand and to improve water quality for irrigation of sensitive plants. The City's recycled water system supplies an average of 1.0 MGD for over 100 services within the City limits as well as Moffett Field and the Apple® Campus 2. Current and projected recycled water usage is categorized by reuse application, or beneficial use type, and reported in **Table 6-4**. Projected recycled water usage was estimated based on projected phased expansion described in the City's 2024 Recycled Water Master Plan Update (RWMPU), discussed further in **Section 6.4.5**.

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Table 6-4: Current/Projected Recycled Water Direct Beneficial Uses within Service Area

Beneficial Use Type	Potable or Non-Potable	General Description of 2025 Uses	2025[1]	2030	2035	2040	2045	Volume of Recycled Water Available for Use[2]
Landscape Irrigation (excl. golf courses)	Non-Potable	Parks, Green Belts, Schools, etc.	480	522	678	835	992	90
Golf Course Irrigation	Non-Potable	Fairway Irrigation	71	115	115	115	115	0
Commercial Use	Non-Potable	Dual Plumbing	76	73	91	109	127	0
Industrial	Non-Potable	Cooling	14	22	27	33	38	0
Total Non-Potable			**641**	**732**	**912**	**1,092**	**1,272**	**90**

Notes:
1. Although 90 AF of recycled water was produced at the WPCP, approximately 1,045 AF of purchased potable water from SFPUC was added to the recycled water distribution system, making the total recycled water demand 1,135 AF. Approximately 641 AF was distributed within City limits, with the remaining 494 AF distributed to services outside City limits (Moffett Field and the Apple® Campus 2).
2. The City has historically produced significantly more than 90 AF of recycled water; however, production was limited in 2025 due to challenges in meeting Title 22 turbidity requirements. The City is currently constructing a new secondary treatment system at the WPCP that is expected to produce effluent with significantly lower turbidity compared to the existing treatment process.
3. Units in AFY.

Table 6-5 compares the actual 2025 uses of recycled water to the projected uses in the 2020 UWMP. Total recycled water use in 2025 decreased from 2020 levels by approximately 72 AF and was approximately 255 AF less than projected in 2020. The greatest difference occurred in projected golf course irrigation demand, which is 222 AF lower than the amount projected in 2020. One potential reason for this difference is that the 2025 value reflects recycled water use within City limits and excludes Moffett Field, which had a total recycled water use of 214 AF in 2025. Additionally, the City has an upcoming recycled water project, described further in **Section 6.4.5**, that will connect Sunken Gardens Golf Course to the recycled water system, potentially increasing recycled water use for golf course irrigation within City limits in the near future.

Table 6-5: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual (AFY)

Use Type	2020 Projection for 2025	2025 Actual Use
Landscape Irrigation (excl. golf courses)	486	480
Golf Course Irrigation	293	71
Commercial	90	76
Industrial	27	14
Total	**896**	**641**

Note: Recycled water use within service area.

6.4.5 Projected Future Uses of Recycled Water

The City conducted a Feasibility Study in 2013 to identify potential expansions of the recycled water system. In July 2024, the RWMPU was completed to provide a comprehensive update to the Feasibility Study. The RWMPU reviews existing demands and infrastructure and evaluates potential customer demands and proposed infrastructure through desktop analyses and hydraulic modeling.

Estimates of potential recycled water demand for sites within the City's service area were determined using City water billing records. Based on these estimates, recycled water pipeline alignments were developed to extend the existing system to major potential customers in a cost-effective manner. Additional alignments were identified to provide opportunities for system looping to improve reliability. Multiple alignments and expansion alternatives were evaluated using hydraulic modeling, with alignments grouped to accommodate a phased approach to construction. The key findings detailed in the RWMPU are summarized into the following potential phases for future expansion:

- **Infill Connections:** This phase would consist of connecting to customers that have been identified along existing recycled water pipelines and require only retrofits of existing sites to receive recycled water. These are the most cost-effective connections and provide the highest opportunity for near-term recycled water expansion. Most of this potential is located within the Moffett Park Specific Plan area.
- **Maximize Existing System and Facility Capacity:** This phase includes expanding the existing system with pipeline alignments that branch from the existing system in the northern area of the City, identified in the RWMPU as the lower pressure zone, to maximize the existing recycled water system capacity. These alignments could be constructed without any storage or pumping capacity improvements.
- **System Looping and Storage and Pumping Upgrades**: This phase includes pipeline alignments to loop the existing recycled water system for reliability and connect to a future storage tank and pump station site to provide opportunities for further expansion in the south side of the City.
- **Full Buildout with System and Facility Upgrades:** This phase assumes full buildout of the City's recycled water system and full expansion in the southern area of the City, identified in the RWMPU as the upper pressure zone. The additional branching and looping pipeline alignments identified in this alternative require storage and pumping capacity improvements to meet the total potential recycled water demand.

Figure 6-2 illustrates the existing recycled water distribution system and the potential expanded recycled water system based on the RWMPU.

As part of the FY 2025-26 Adopted Budget, the City has approved the construction of approximately 2,370 feet of recycled water pipeline as part of CIP Project #837450. This project serves to expand the distribution system in two areas: 1) 1,400 feet to connect existing pipelines and remove dead ends in the existing system to increase reliability, and 2) 970 feet extending from the existing system to serve the Sunken Gardens Golf Course. The estimated demand to be served at the golf course is 44 AFY. **Table 6-6** lists the recycled water projects planned for implementation by the City to encourage and expand future recycled water use.

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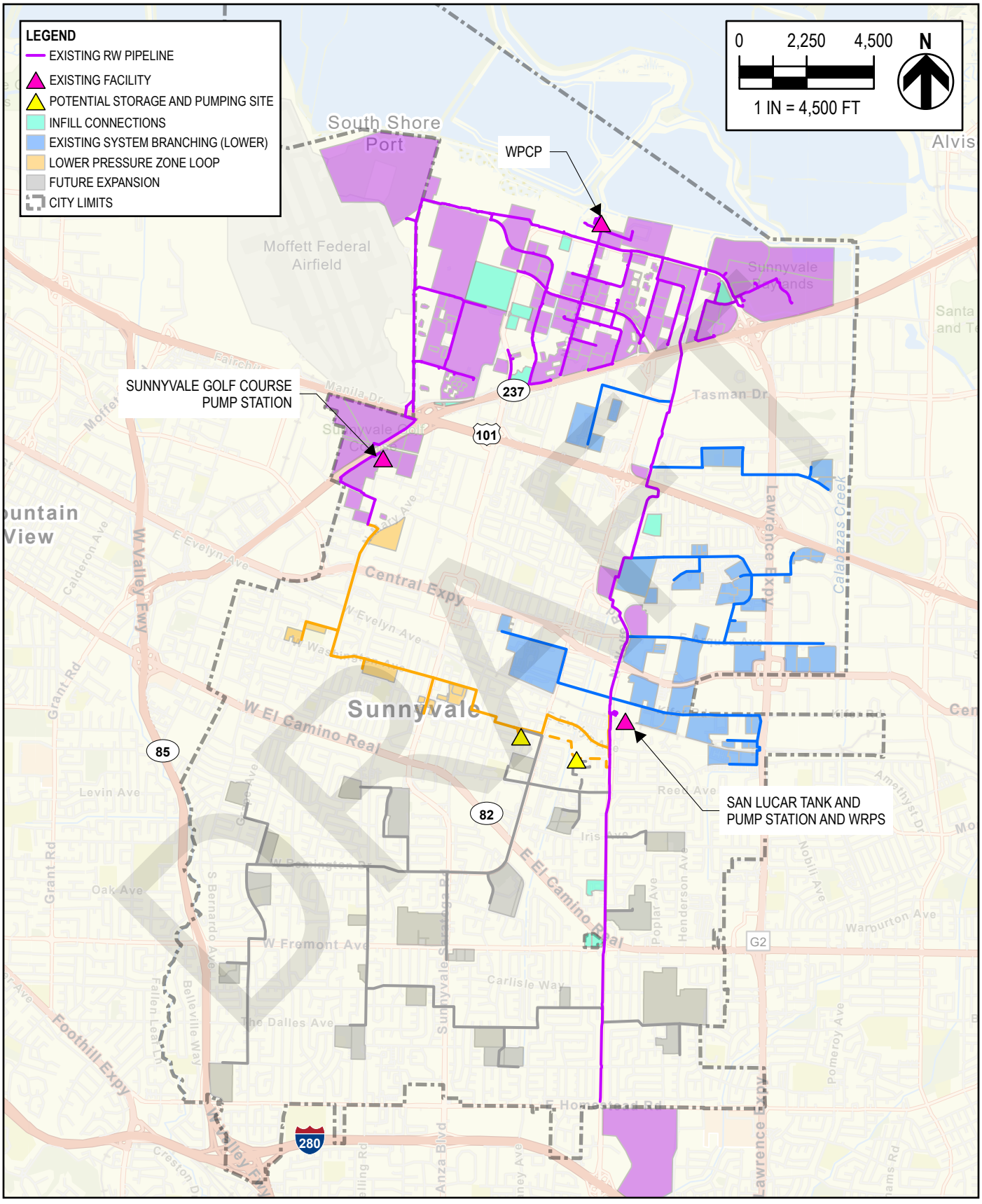


FIGURE 6-2
CITY OF SUNNYVALE
URBAN WATER MANAGEMENT PLAN
POTENTIAL RECYCLED WATER SYSTEM EXPANSION

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Table 6-6: Methods to Encourage Future Recycled Water Use (AFY)

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (AF)
Recycled Water Pipeline Expansion (CIP #837450)	Installation of approximately 970 lineal feet of 6" RW pipeline will allow for the irrigation of the existing Sunken Gardens Golf Course	2027/2028	44
		Total	**44**

Valley Water, in collaboration with the City and other local stakeholders, developed a Countywide Water Reuse Master Plan (CWRMP) in June 2021. This plan outlines strategies to integrate and expand recycled and purified water throughout Santa Clara County. The plan includes options to build purified water pipelines or extend recycled water pipelines through Sunnyvale, potentially creating future opportunities to expand the City's recycled water system.

6.4.6 Recycled Water Optimization and Incentives

Division 7, Chapter 7 of the Water Code, known as the Water Recycling Law, provides a legal basis for mandating the use of recycled water. The law states that the use of potable water for non-potable purposes (including irrigation) constitutes a waste or unreasonable use of water if recycled water of suitable quality is available at reasonable cost. Based on State law, some jurisdictions have implemented "mandatory use" policies through local ordinance.

The City currently has several incentives to encourage the use of recycled water, including:

- **Reduced cost:** Recycled water is priced at 90% of the prevailing, first-tier potable water rate. Additionally, the monthly service fee is cheaper for recycled water than for potable water. The City intends to continue these financial incentives in the foreseeable future. With few exceptions, the pricing policy has been successful in encouraging prospective users to convert to use of recycled water in areas where it is available.
- **Dual plumbing:** The City is seeing growth through redevelopment, bringing opportunity to install dual plumbed systems in commercial buildings under new construction. Dual plumbed buildings use recycled water for toilets and urinals, cooling towers, and any other identified non-potable water use.
- **Permit process enhancement:** The City provides fast-tracked permit processing for recycled water applications.
- **Public outreach and marketing:** The active public education process increases awareness on recycled water.
- **Retrofit assistance:** The City offers retrofit assistance for dedicated irrigation meters.

These incentives are planned to be implemented on an ongoing basis. Environmental changes such as a re-occurrence of drought conditions and future regulatory changes are also expected to cause further interest in recycled water. In 2023, California State Legislature enacted AB 1572, which prohibits the use of potable water to irrigate non-functional turf on certain properties beginning in 2027. This policy change may encourage both existing customers and new developments to use recycled water to irrigate non-functional turf areas.

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6.4.7 Recycled Water Streamflow Augmentation and Groundwater Recharge

Non-irrigation uses such as stream flow augmentation and groundwater recharge represent long-term options and solutions that could potentially accommodate large amounts of recycled water flow. The City relies on Valley Water activities to maintain sustainable supplies, including managed groundwater recharge and in-lieu groundwater recharge (e.g., treated surface water deliveries, demand management programs, and SFPUC supply).

6.4.8 Recycled Water Coordination

The City collaborated with the Valley Water, Cal Water, DWR, and Apple® to complete the Wolfe Road Pipeline Extension Project in 2018.

The City partnered with Valley Water through the Recycled Water Joint Committee (RWJC), which facilitates partnership opportunities such as expanding recycled water beyond City borders and exploring the potential of advanced treatment of recycled water for potable reuse. The City also collaborated with Valley Water on the 2021 CWRMP.

The SWRCB Division of Drinking Water (DDW) and the SWRCB regulate the production and use of recycled water in the State of California. The City complies with Water Reclamation Requirements for Recycled Water Use (Order WQ 2016-0068-DDW, General Order), adopted by the SWRCB on June 7, 2016. The General Order outlines standard conditions concerning recycled water. Recycled water provided by the City meets the requirements of California Code of Regulations Title 22 as disinfected tertiary treated water.

6.5 Desalinated Water

Both SFPUC and Valley Water are working together with the East Bay Municipal Utilities District, Contra Costa Water District, and the Zone 7 Water Agency as the Bay Area Regional Desalination Project (BARDP). BARDP was created in 2002 and originally proposed a 120 MGD desalination facility that would remove salt from seawater or other brackish water sources. This facility was intended to be used during major facility outages and emergencies. Over the years the concept has evolved to consist of locating one 10-20 MGD desalination facility in eastern Contra Costa County. Desalination would provide potential potable water supply for municipal and industrial use. The goals of desalination are to:

- Increase supply reliability by providing water supply when needed from a regional facility.
- Provide additional source of water during emergencies such as earthquakes or levee failures.
- Provide a supplemental water supply source during extended droughts.
- Allow other major facilities, such as treatment plants, water pipelines, and pump stations, to be taken out of service for maintenance or repairs.

In 2023, Valley Water completed a preliminary environmental feasibility study for the development of a desalination project in Santa Clara County (Desalination Environmental Feasibility and Planning Study, https://assets.valleywater.org/files/Desal_Environmental_Study_Final_July2023b.pdf). The study represents the first phase in evaluating a potential desalination project in the county and indicates that a desalination facility in the county may be feasible provided certain

environmental issues are addressed. The dates for design completion, permitting, and construction are still to be determined. Additional details regarding desalinated water opportunities can be found in the SFPUC and Valley Water UWMPs.

6.6 Water Exchanges and Transfers

The City is currently connected to the City of Cupertino, the City of Mountain View, the City of Santa Clara, and Cal Water through service connections located within Sunnyvale. These interties are intended for use during emergency situations, as presented in **Table 6-7**.

Table 6-7: Transfer and Exchange Opportunities

Transfer Agency	Transfer or Exchange	Short Term or Long Term	Proposed Volume (AFY)
City of Cupertino	Emergency Transfer	Short Term	0
City of Mountain View	Emergency Transfer	Short Term	0
City of Santa Clara	Emergency Transfer	Short Term	0
California Water Service Company	Emergency Transfer	Short Term	0

Note:
1. The City is not proposing to transfer or exchange any water other than in the case of emergency.

Most of the regional transfer/exchange opportunities are managed by the wholesalers SFPUC and Valley Water. In general, SFPUC can purchase additional water from the Tuolumne River and those sellers south of the Delta with water rights or entitlements to water diverted from the Delta. Water can also be purchased upstream of the Delta from sellers along the Sacramento, Feather, Yuba, American, and San Joaquin Rivers; and their tributaries.

Valley Water conducts short-term water transfers and exchanges as a part of its routine imported water operations. Although Valley Water considers water exchange and transfers as one of the potential options to secure additional water during critical dry years through long term agreements, due to the uncertainties regarding long term costs and ability to make transfers in critical dry years, Valley Water did not include water transfers and exchanges in its 2025 UWMP projected water supplies. Instead, they are used as supplemental supply during multi-year droughts to address potential shortages, consistent with Valley Water's drought management practices.

6.7 Future Water Projects

The City's water is supplied primarily by the two wholesale providers, Valley Water and SFPUC. Groundwater is typically used to offset peak daily demands and for emergency purposes such as drought conditions and wholesale water service interruptions. The 20-year budget includes conceptual funding to reconstruct the Central Well, which has been out of working order since 2007. This well would be used as a backup to Valley Water and SFPUC supply. Preliminary investigation and design are anticipated to commence in FY 2027/28, with construction following in FY 2028/29. This project is not a joint project with other suppliers.

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6.8 Summary of Existing and Planned Sources of Water

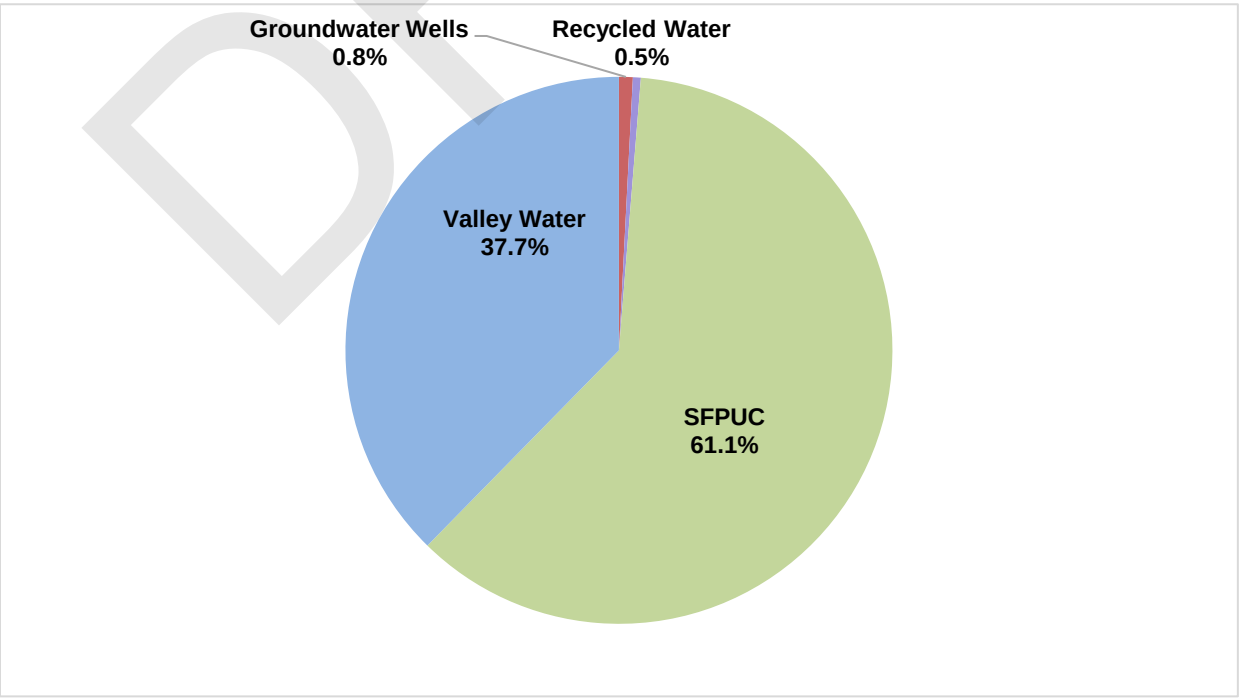
As outlined in this section, the City's existing water supply sources are purchased surface water from SFPUC and Valley Water, groundwater, and recycled water. A breakdown of the City's 2025 water supply sources is provided in **Table 6-8** and presented in **Figure 6-3**.

Table 6-8: 2025 Water Supplies – Actual (AFY)

Water Supply	Additional Detail on Water Supply	Potable or Non-Potable	Actual Volume	Total Entitlement or Safe Yield
Purchased Water[1]	SFPUC	Potable	11,786	14,100
Purchased Water[2]	Valley Water	Potable	7,267	9,700
Groundwater	Wells	Potable	157	8,000
Recycled Water[3]	Produced recycled water	Non-Potable	90	-
		Subtotal Potable	**19,210**	**31,800**
		Subtotal Non-Potable	**90**	**-**
		Total	**19,300**	**31,800**

Notes:
1. Approximately 1,045 AF of purchased potable water was added to the recycled water distribution system.
2. Contractual volumes from Valley Water vary from year to year. Valley Water temporarily suspended deliveries to the City in November 2025 due to the West Pipeline Phase 1 Project. The project includes inspection and repair of segments of the West Pipeline, which carries treated water from the Rinconada WTP to the City.
3. Although 90 AF of recycled water was produced at the WPCP, approximately 1,045 AF of purchased potable water from SFPUC was added to the recycled water distribution system, making the total recycled water demand 1,135 AF. Approximately 641 AF was distributed within City limits, with the remaining 494 AF distributed to services outside City limits (Moffett Field and the Apple® Campus 2).

Figure 6-3: Percentage of Water Supply Sources (2025)



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Supply projections for the City's four sources of potable and non-potable water provide a basis for assessing water supply reliability. The breakdown of total supply by source was determined using the City's contractual agreements with each wholesaler, projected demands provided to each wholesaler, and historical production trends. Current and projected water supply is listed by source in **Table 6-9**.

Table 6-9: Water Supplies – Projected (AFY)

Water Supply	Additional Detail on Water Supply	Potable or Non-Potable	2030	2035	2040	2045
Purchased Water[1]	SFPUC	Potable	12,008	12,490	13,389	14,091
Purchased Water[2]	Valley Water	Potable	9,341	11,222	11,928	12,163
Groundwater[3]	Wells	Potable	8,000	8,000	8,000	8,000
Recycled Water	Recycled Water	Non-Potable	732	912	1,092	1,272
		Subtotal Potable	**29,349**	**31,712**	**33,317**	**34,254**
		Subtotal Non-Potable	**732**	**912**	**1,092**	**1,272**
		Total	**30,081**	**32,624**	**34,409**	**35,526**

Notes:
1. Total available supply from SFPUC is equal to the City's ISG of approximately 14,100 AF; however, for planning purposes, the reasonably available volume presented herein reflects the projections provided to SFPUC based on the City's projected demand and the availability of other supplies.
2. The projections provided herein reflect projections provided to Valley Water based on the City's projected demand and availability of other supplies. The City can purchase additional available water from Valley Water during non-dry years when water is available.
3. Although the City has on average pumped about 138 AF annually, the total safe yield of groundwater is 8,000 AFY.

As can be seen from the data presented, the City has adequate supply to meet the projected water demand outlined in **Section 4** under normal year conditions.

6.9 Energy Intensity

Water Code section 10631.2.(a) details requirements for each Supplier to address the amount of energy used to extract, divert, convey, distribute, treat, and store treated or non-treated water supply, based on readily available information. For the purposes of this UWMP, energy consumption from utility bills was analyzed to determine the quantity of energy used for water management processes.

Monthly PG&E billing data for the City's six active wells (Hamilton Wells 2 and 3, Serra, Ortega, Westmoor, and Raynor) and the Hamilton Well Pump Station were used to determine metered electric usage for 2025. Since wells and pumps were combined on the utility bills, energy use from all wells and pumps is totaled as a lump sum for all potable water management processes. Estimated electric usage for 2025, based on available data, is shown in **Table 6-10**.

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Table 6-10: Energy Usage for Calendar Year 2025

Sum of All Potable Management Processes (Total Utility)	
Volume of Potable Water Delivered (AF)	**18,165**
Energy Consumed (kWh)	177,093

Notes:
1. The City does not currently utilize non-consequential hydropower; therefore, this energy source was not included in the table.
2. Energy consumed reflects the sum of available data only.

In 2016, the City and twelve other local communities formed Silicon Valley Clean Energy (SVCE) to provide the region with clean electricity and reduce greenhouse gas emissions. SVCE supplies electricity principally from wind, solar and hydro resources, and is helping communities switch from fossil fuels to clean electricity in buildings and transportation. The City currently purchases clean energy from SVCE.

Energy demands to treat recycled water supplies at the WPCP are supplied in large part by cogeneration. Cogeneration is a process which uses an internal combustion engine to produce heat and electrical power from biogas, or methane, emitted during the treatment process. Biogas produced in the Plant's anaerobic digesters and the adjacent landfill satisfy most of the Plant's operational energy demands. The City's budget includes funds dedicated to replacing existing cogeneration facilities and upgrading units with newer technologies. As part of the Cleanwater Program, the City is currently working on a Cogeneration Upgrade Design that will replace the Plant's outdated engines to improve reliability of on-site renewable power production, reduce natural gas usage, and decrease overall air emissions from the Plant. The design completion of the Cogeneration Upgrade is expected in 2027.

In addition to energy from biogas, the City is expanding solar power generation at several municipal facilities. In 2024, the City installed solar panels at the Sunnyvale Materials Recovery and Transfer Station (SMaRT® Station) that provide renewable power for the onsite processing systems. This reduces operational energy costs for the facility and reduces greenhouse gas emissions, aligning with the City's Energy Policy and the goals outlined in the City's Playbook. The City's new City Hall building, completed in 2024, also incorporates on-site solar generation and battery storage to allow the facility to operate using solar power.

6.10 Climate Change Impacts to Supply

The region is subject to growing water supply challenges concerning climate change, including recurring droughts and increased demand from population growth. The City's potable water is primarily supplied by SFPUC and Valley Water; as such, the City relies on each wholesaler to address the effects of climate change in their long-term planning efforts.

As mentioned in **Section 3**, the City has considered the effects of climate change on water supply in local projects and plans. The City updated its 2019 Climate Action Playbook in June 2024 (Climate Action Playbook Update and Game Plan 2028, Playbook). The Playbook's Strategy 4 (Managing Resources Sustainably) includes a goal (Play 4.2) to ensure the resilience of the City's water supply in the face of climate change. Methods listed to achieve this goal include reducing the amount of water consumed and promoting water conservation and water reuse, in the form of recycled and purified water. The City will continue to develop specific actions (called "Moves") every five years to ensure the goal of resilient water supply is achieved.

Most of the City's water supply comes from SFPUC and Valley Water. Valley Water released the 2050 Water Supply Master Plan (2050 WSMP, https://fta.valleywater.org/dl/RQWqGqbX3rrk) in 2025, which includes a discussion on the effects of climate change on water supply reliability. Some of the outlined effects include decreased imported water supplies, increased seasonal irrigation demands, and increased cooling water demand.

SFPUC has been conducting climate change research since 2009. In partnership with The Water Research Foundation, SFPUC developed the Long Term Vulnerability Assessment (LTVA, https://www.sfpuc.gov/about-us/reports/long-term-vulnerability-assessment) of the RWS, which was completed in 2021 and amended in 2024. The LTVA evaluates how climate change could impact the RWS through 2070 by assessing the potential impacts of increases in temperature and changes in precipitation. The LTVA finds that while climate change may exacerbate other external drivers of vulnerability, the RWS remains resilient under a baseline demand of 227 MGD.

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SECTION 7 – WATER SUPPLY RELIABILITY AND DROUGHT RISK ASSESSMENT

Water service reliability reflects the City's ability to meet the water needs of its customers under varying conditions. Assessing water service reliability and potential risk is critically important to future City planning and water management. This section evaluates and addresses the City's long-term reliability of local and regional water supplies under normal conditions, a single dry year, and five consecutive dry years. Supply and demand projections from **Section 4** and **Section 6** are used for this analysis, along with consideration of foreseeable hydrologic variability, regulatory variability, climate conditions, etc. that may affect supply. This section also includes a Drought Risk Assessment (DRA) to evaluate the City's risk under a severe drought period lasting for the next five consecutive years.

The City relies on four water supply sources; surface water from SFPUC, treated surface water from Valley Water, groundwater, and recycled water. Surface water from the two wholesalers, SFPUC and Valley Water, provides most of the City's water supply, averaging about 97% since 2015. City owned- and operated-wells provide less than 1% of water supply, and recycled water makes up the remaining 2%.

7.1 Constraints on Water Sources

In addition to drought, constraints such as water quality, climate change, and changes in regulation can impact water supply. The City relies on their diversification of water supply, continuous work with SFPUC and Valley Water, demand management strategies as discussed in **SECTION 9**, and a Water Conservation Plan (included as **Appendix G**) to address these constraints.

7.1.1 Water Quality Impacts on Reliability

SFPUC

Surface water supplies available to the RWS include the Tuolumne River and local Bay Area reservoirs. Most of the water supply originates in the upper Tuolumne River watershed high in the Sierra Nevada Mountains, where the watershed is protected from development and pollution. Water from Hetch Hetchy Reservoir is conveyed to the Bay Area through a system of pipes and tunnels and requires only primary disinfection, ultraviolet light disinfection at the Tesla Treatment Facility, and pH adjustment for corrosion control.

The United States Environmental Protection Agency (USEPA) and SWRCB DDW have approved the use of this drinking water source without filtration. In contrast, water from the SFPUC's local watersheds requires filtration to meet drinking water quality standards. The SFPUC blends filtered and treated local water with water from Hetch Hetchy Reservoir, and most customers receive this blended supply. The SFPUC continuously monitors and tests both raw and treated water to ensure that water delivered to customers meets or exceeds Federal and State drinking water and public health requirements. The SFPUC expects to continue relying on these high-quality water sources and does not anticipate future degradation of water quality.

Each spring, the SFPUC publishes an annual water quality report (Consumer Confidence Report), available at www.sfpuc.gov/waterqualityreport.

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Valley Water

Valley Water provides treated surface water to local municipalities and private water retailers who deliver the water directly to homes and businesses in Santa Clara County. Valley Water's surface water is mainly imported from the South Bay Aqueduct, Dyer Reservoir, Lake Del Valle, and San Luis Reservoir, which all draw water from the Sacramento-San Joaquin Delta watershed. Valley Water's local water sources include Anderson and Calero Reservoirs. Water from imported and local sources is pumped to and treated at three water treatment plants located in Santa Clara County. Treatment of surface water is necessary to ensure that the water provided meets or exceeds all Federal and State drinking water standards. Surface water quality programs include treating local and imported surface water for sale to retailers; participating in regional and statewide coalitions to safeguard source water quality protection; and investigating opportunities for water quality improvements through partnership in regional facilities or exchanges.

Valley Water's source waters are vulnerable to potential contamination from a variety of land use practices, such as agricultural and urban runoff, recreational activities, livestock grazing, and residential and industrial development. The imported sources are also vulnerable to wastewater treatment plant discharges, seawater intrusion, and wildfires in open space areas. In addition, local sources are also vulnerable to potential contamination from commercial stables and historic mining practices. No contaminant associated with any of these activities has been detected in Valley Water's treated water. The water treatment plants provide multiple barriers for physical removal of contaminants and disinfection of pathogens.

Groundwater

Valley Water monitors groundwater quality to assess current conditions and identify trends or areas of special concern. Wells are monitored for major ions, such as calcium and sodium, nutrients such as nitrate, and trace elements such as iron. Wells are also monitored for man-made contaminants, such as organic solvents. The type and frequency of monitoring depends on the well location, historic and current land use, and the availability of groundwater data in the area. As the groundwater management agency in Santa Clara County, Valley Water has ongoing groundwater protection programs to ensure high water quality and more reliable water supplies. These programs include water quality monitoring, well permitting, well destruction, wellhead protection, land use and development review, nitrate management (targeted to areas of elevated nitrate in the Coyote Valley and the Llagas Subbasin), saltwater intrusion prevention programs, and providing technical assistance to regulatory agencies to ensure local groundwater resources are protected. Valley Water also supports groundwater sustainability through groundwater recharge operations, water conservation, and recycled water use. Additional details about constraints on groundwater supply and quality and Valley Water's comprehensive groundwater management strategies are described in the 2021 Groundwater Management Plan (**Appendix F**).

In general, the Santa Clara and Llagas Subbasins have high-quality groundwater, with few exceptions, briefly discussed below.

Nitrate: Some wells in the Coyote Valley and Llagas Subbasin have elevated levels of nitrate from historic and ongoing sources including fertilizers, septic systems, and animal waste. Nitrate in the environment comes from both natural and anthropogenic sources. Small amounts of nitrate in groundwater (less than 10 mg/L) are normal, but higher concentrations suggest an anthropogenic origin. Common anthropogenic sources of nitrate in groundwater are fertilizers, septic systems, and animal waste. The maximum contaminant level (MCL) for nitrate in drinking

water is 10 mg/L as nitrogen. Since the Santa Clara Valley has a long history of agricultural production and septic systems are still in use in the unincorporated areas of the county, monitoring for nitrate contamination is an essential groundwater management function. The City's groundwater nitrate concentrations are generally stable or declining and Valley Water has many programs to protect groundwater quality, including several targeted to improve nitrate in groundwater.

Per- and Polyfluoroalkyl Substances (PFAS): PFAS are manufactured chemicals that have been used in industry and consumer products since the 1940s. The USEPA published a Final PFAS National Primary Drinking Water Regulation (NPDWR) on April 26, 2024, for six PFAS compounds which have been detected in drinking water across the nation. The rule became effective on June 25, 2024. To date, five of the six PFAS compounds have been detected in Santa Clara Subbasin and Llagas Subbasin water supply wells.

Valley Water continues to evaluate and analyze PFAS data from all sources including public water supply wells and Valley Water's voluntary sampling programs. Since October 2020, staff from Valley Water and local water retailers and regulatory agencies have met regularly to discuss regional PFAS conditions, including impacted water supply wells. Valley Water will continue to collaborate with water retailers and regulatory agencies to better understand PFAS occurrence, evaluate potential sources, and identify any actions that may be needed to protect local water supplies.

7.1.2 Impacts of Climate Change

Impacts to the City's supply reliability due to climate change are discussed in **Section 6.10**. The following discussion addresses climate change impacts to the City's wholesalers.

SFPUC

Climate change has become an important factor in water resources planning in California and is frequently considered in urban water management planning, although the extent and precise effects of climate change remain uncertain. Increasing concentrations of GHGs have caused and will likely continue to cause a rise in temperatures around the world, which will result in a wide range of changes in climate patterns. Moreover, observational data show that a warming trend occurred during the latter part of the 20th century, the first quarter of the 21st century, and will likely continue through the end of the 21st century. Numerous studies have been conducted to determine the potential impacts of climate change on water resources. These climate change impacts are likely to affect both the Tuolumne River watershed and local watersheds in the Bay Area and include the following:

- Reductions in the average Sierra Nevada Mountain annual snowpack due to a rise in the snowline elevation and a shallower snowpack at lower elevations, and a shift in snowmelt runoff to earlier in the year;
- Changes in the timing, annual average, intensity, and variability of precipitation, and an increased amount of precipitation falling as rain instead of as snow;
- Long-term changes in watershed vegetation and increased incidence of wildfires that could affect water quality and quantity;
- Sea level rise and an increase in saltwater intrusion;

- Increase in water temperatures with accompanying potential adverse effects on some fisheries and water quality;
- Increases in evaporation and concomitant increase in irrigation need; and
- Changes in urban and agricultural water demand.

SFPUC Climate Change Study

The SFPUC views assessment of the effects of climate change as an ongoing need that requires regular updating to reflect improvements in climate science, atmospheric/ocean modeling, observations, and human response to the threat of GHG emissions. Climate change research by the SFPUC began in 2009 and continues to be refined.

The SFPUC partnered with The Water Research Foundation to develop the Long Term Vulnerability Assessment (LTVA) of the RWS. The study was conducted by the University of Massachusetts Amherst Hydrosystems Research Group with input from National Center for Atmospheric Research, other climate scientists, and Deltares. The goal of the LTVA is to help quantitatively and qualitatively assess to what extent climate change will be a threat to the RWS in comparison to, or in combination with, other external drivers of change over the next 50 years (2020-2070). The LTVA was completed in 2021 and amended in 2024.

The key findings of the LTVA are:

- Climate change exacerbates impacts from other external drivers of change and is not the single most important driver of vulnerability for the RWS.
- The RWS at a baseline demand of 227 MGD is resilient to changes in climate and other external drivers.
- The RWS water supply performance declines with reductions in mean precipitation but is mostly insensitive to increases in temperature.
- The RWS is more vulnerable to changes in demand and instream flow requirements than changes in mean annual temperature and precipitation.
- The RWS is vulnerable to changes to mean climate when demand or regulatory instream flow requirements increase.

Further details of the LTVA can be found in Section 6 of the 2025 SFPUC UWMP, which can be found at https://www.sfpuc.gov/about-us/policies-plans/urban-water-management-plan.

Valley Water

Climate change impacts such as warming temperatures, shrinking snowpack, increasing weather extremes, and prolonged droughts pose significant challenges in water resources management, potentially including Valley Water's operational flexibility and water supply availability. Future increases in temperature will likely cause longer and deeper droughts. Precipitation will continue to exhibit high year-to year variability, with very wet and very dry years. Statewide and local changes in precipitation and temperature could significantly impact Valley Water's water supplies and operations, the effectiveness of potential water supply investments, and water demand patterns. Specifically, Valley Water's water supply vulnerabilities to climate change include:

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- **Decreases in the quantity of imported water supplies.** Currently the Sierra snowpack acts as a reservoir that captures precipitation as snow in the winter and releases it as runoff through the spring and summer where it is captured by reservoirs in the SWP and CVP system. More precipitation falling as rain and earlier snowmelt in the Sierra may exceed the storage capabilities of the existing SWP and CVP reservoirs, meaning much of this runoff would be lost as a water supply. Increases in temperature and evapotranspiration may also lead to a higher intensity of droughts, which can decrease imported water allocations. Rising air temperatures will also increase water temperatures in reservoirs and the Delta, which can lead to increased evaporation rates, a higher risk of harmful algal blooms, and negative impacts to fish and wildlife, all of which can impact the availability of imported water supplies for Valley Water. Sea level rise will also have negative impacts on imported water supplies, largely because of saltwater intrusion into the Delta. Saltwater intrusion can impact water supply allocations, as more fresh water will be needed to flow through the Delta and into San Francisco Bay to hold back saltwater, making it unavailable for CVP and SWP use.
- **Decreases in the ability to utilize local surface water supplies.** Shifts in the timing and intensity of rainfall and runoff could affect Valley Water's ability to capture and use local surface water supplies. It is difficult to capture rainfall when it comes in a few intense storms because reservoirs are more likely to fill and spill, or additional releases will be needed to make room for the storm flows. When it is wet, there are typically lower demands for water, so storm flows and releases to provide additional storage capacity are difficult to put to immediate use. Thus, even if average annual rainfall stays the same, the ability to utilize local supplies may decrease.
- **Increases in irrigation and cooling water demands.** Higher temperatures will increase irrigation demands for agricultural, residential, and commercial/institutional uses, which account for about 40% of water use in the county. Also, the county has several energy plants, multiple data centers, and facilities with cooling towers. Higher temperatures may also increase demands by these users.
- **Decreases in water quality.** Higher temperatures, wildfire, and changes in flow patterns could result in more algal blooms, and increased turbidity in imported and local surface water supplies. Sea level rise could also contribute to increased salinity in Delta conveyed supplies. At a minimum, changes in water quality require additional monitoring. Often, degrading in water quality requires changes to treatment processes, and sometimes, can result in the interruption of supplies from the CVP or SWP.
- **Increases in the severity and duration of droughts.** Droughts are already Valley Water's greatest water supply challenge. With increases in demands and potential reductions in supplies from climate change, this challenge will only grow. Without additional supplies and demand management measures, Valley Water would need to call for more frequent and severe water use reductions. These actions affect the economic and social well-being of the county. More severe and longer droughts will also affect the environment. Valley Water needs to implement a water supply strategy that will adapt well to future climate change by managing demands, providing drought-resilient supplies, and increasing system flexibility in managing supplies and water quality.

Recognizing the challenges posed by climate change to water supply reliability, Valley Water has incorporated climate change impacts into future demand and supply projections for its water supply planning. In addition, Valley Water's water supply strategy of managing demands, providing drought-resilient supplies, and increasing system flexibility helps adapt to future climate change.

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Furthermore, to address climate change impacts to ensure it can continue to provide a clean, reliable water supply, natural flood protection, and water resources stewardship in the future, Valley Water developed a Climate Change Action Plan (CCAP). The CCAP provides goals, strategies, and actions for each of Valley Water's mission areas, including water supply reliability, flood risk reduction, and water resources stewardship, as well as for emergency response. The goals and strategies developed through the CCAP planning process will guide the implementation of specific actions to address climate change. More information about the CCAP can be found at: https://www.valleywater.org/your-water/climate-change-action-plan.

For the implementation actions, Valley Water is actively promoting water conservation and reuse to increase resilience and mitigate climate change impacts. Valley Water's long-term and comprehensive water conservation and demand management efforts are described in the Valley Water 2025 UWMP.

7.1.3 Additional Supply Constraints

Valley Water's many supply sources are subject to hydrologic variability and additional constraints including regulatory and permit constraints, seismic threats to the Delta levee system, and infrastructure capacities. A summary of all constraints to Valley Water's water supply sources is provided in more detail in Valley Water's UWMP.

The SFPUC has identified additional potential constraints on water supplies that could affect the availability of water for the City. Additional constraints on SFPUC supplies are discussed below and in more detail in the SFPUC's UWMP.

Bay-Delta Plan Amendment

In December 2018, the SWRCB adopted amendments to the Water Quality Control Plan for the Bay-Delta Plan (Bay-Delta Plan Amendment) to establish water quality objectives for the Bay-Delta watershed. The SWRCB is required by law to regularly review this plan. The adopted Bay-Delta Plan Amendment was developed with the stated goal of increasing salmonid populations in three San Joaquin River tributaries (the Stanislaus, Merced, and Tuolumne Rivers) and the Bay-Delta. The Bay-Delta Plan Amendment requires the release of 30-50% of the "unimpaired flow" on the three tributaries from February through June in every year type.

In SFPUC modeling of the new flow standard, it is assumed that the required release is 40% of unimpaired flow. If the Bay-Delta Plan Amendment is implemented, the SFPUC will be able to meet the projected water demands presented in their 2025 UWMP in normal years but is expected to experience supply shortages in single dry years or multiple dry years. Implementation of the Bay-Delta Plan Amendment could require rationing in all single dry years and multiple dry years.

Implementation of the Bay-Delta Plan Amendment remains uncertain for multiple reasons.

- Over a dozen lawsuits have been filed in both State and Federal courts challenging the SWRCB's adoption of the Bay-Delta Plan Amendment, including a legal challenge filed by the Federal government at the request of the USBR. This litigation is currently at the appellate level.
- The Bay-Delta Plan Amendment is not self-implementing and does not automatically allocate responsibility for meeting its new flow requirements to San Francisco or any other water rights holders. Rather, the Bay-Delta Plan Amendment merely provides a regulatory framework for

implementing water quality objectives, which must be accomplished by other regulatory and/or adjudicatory proceedings, such as a comprehensive water rights adjudication or, in the case of the Tuolumne River, may be implemented through the water quality certification process set forth in section 401 of the Clean Water Act as part of the Federal Energy Regulatory Commission's licensing proceedings for the Don Pedro and La Grange hydroelectric projects. It is currently unclear when the license amendment process is expected to be completed. This process and the other regulatory and/or adjudicatory proceedings may face legal challenges and have lengthy timelines, and quite possibly could result in a different assignment of flow responsibility (and therefore a different water supply impact on the City).

In recognition of the obstacles to implementation of the Bay-Delta Plan Amendment, the SWRCB Resolution No. 2018-0059 adopting the Bay-Delta Plan Amendment directed staff to help complete a "Delta watershed-wide agreement, including potential flow measures for the Tuolumne River," and to incorporate such agreements as an "alternative" for a future amendment to the Bay-Delta Plan to be presented to the SWRCB "as early as possible after December 1, 2019." On March 26, 2019, the SFPUC adopted Resolution No. 19-0057 to support the SFPUC's participation in the Voluntary Agreement negotiation process. To date, those negotiations are ongoing under the California Natural Resources Agency and the leadership of the Newsom administration. On November 10, 2022, the SFPUC along with the Modesto and Turlock Irrigation Districts signed a Memorandum of Understanding Advancing the Term Sheet for the Voluntary Agreements to Update and Implement the Bay-Delta Water Quality Control Plan and Other Actions. Voluntary Agreements are now referred to as the Agreements to Support Healthy Rivers and Landscapes and negotiations remain ongoing.

Because of the uncertainty surrounding implementation of the Bay-Delta Plan Amendment, the water service reliability assessment in the SFPUC's 2025 UWMP looks at two future supply scenarios:

- Implementation of the Bay-Delta Plan Amendment, and
- SFPUC system's current conditions without implementation of the Bay-Delta Plan Amendment.

The two scenarios provide a bookend for the possible future scenarios regarding RWS supplies. Since the Bay-Delta Plan Amendment implementation start date is unknown, for the purposes of the supply reliability analysis, it is included in the 2030 modeling scenarios.

Per the Valley Water 2050 WSMP, if SFPUC supplies were to be reduced significantly due to the Bay-Delta Plan Amendment, it could have ramifications for Valley Water's future water supply outlook and investment strategy.

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7.2 Regional Supply Reliability

The City relies mostly on SFPUC and Valley Water for its water supply and is directly affected by the water supply conditions each wholesaler faces. The following describes the measures each wholesaler is taking to ensure regional supply reliability.

7.2.1 SFPUC

Tier 1 Drought Allocations

The WSA between the SFPUC and the wholesale customers, discussed previously in **Section 6.1.1**, includes as "Attachment H" a Water Shortage Allocation Plan (WSAP), also known as the Tier 1 Shortage Plan. This plan describes the method for allocating water from the RWS between the SFPUC's retail customers, on the one hand, and the wholesale customers collectively, on the other, during system-wide shortages caused by drought. The Tier 1 Shortage Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, as set forth in a declaration of water shortage emergency by the SFPUC; in the absence of such a declaration, the SFPUC also may opt to request voluntary cutbacks from its retail and wholesale customers to achieve water use reductions. The SFPUC and the wholesale customers most recently amended the Tier 1 Shortage Plan in 2025.

The SFPUC allocates water under the Tier 1 Shortage Plan when it determines that the projected available water supply is less than projected system-wide water purchases for the upcoming Supply Year, defined as the period from July 1 through June 30. The following table shows the retail customers' share and the wholesale customers' share of the annual water supply available during shortages depending on the level of system-wide reduction in water use that is required. If the SFPUC determines that the level of system-wide reduction required during a shortage is greater than 20%, the SFPUC and the wholesale customers will meet to discuss the appropriate retail and wholesale customers' shares of available water – also known as the retail and wholesale customers' Tier 1 Allocations. The wholesale customers' Tier 1 Allocation will be apportioned among the individual wholesale customers based on a separate methodology, known as the Tier 2 Drought Response Implementation Plan (Tier 2 Plan), which is separately adopted by all the wholesale customers without the SFPUC's involvement as discussed further below.

Table 7-1: SFPUC Tier 1 Drought Allocations

Level of System-Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Retail Customers' Share	Wholesale Customers' Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The Tier 1 Shortage Plan allows for voluntary transfers of shortage allocations between the SFPUC and any wholesale customer as well as between wholesale customers themselves. In addition, voluntary transfers of water "banked" by the SFPUC or a wholesale customer, through reductions in usage greater than required, may occur.

Under the Tier 1 Shortage Plan if the retail customers' Tier 1 Allocation results in the retail customers receiving a "positive allocation" (i.e., a supply of additional water rather than a required

reduction in water use), then the excess percentage for retail is re-allocated to the wholesale customers' Tier 1 Allocation. The retail customers are also required to conserve a minimum of 5% for any level of reduction in system-wide water use. The additional water conserved by retail customers up to the minimum 5% level is deemed as remaining in RWS storage for inclusion in the calculation of projected available water in future successive dry years.

The Tier 1 Shortage Plan will expire at the end of the term of the WSA in 2034, unless the SFPUC and the wholesale customers mutually agree to revise or terminate it prior to that date.

Tier 2 Drought Allocations

The wholesale customers have negotiated and adopted the Tier 2 Plan, referenced above, which allocates the wholesale customer Tier 1 Allocation from the Tier 1 Shortage Plan among each of the 26 wholesale customers. These Tier 2 Allocations are based on a formula that takes into account multiple factors for each wholesale customer including:

- Residential population;
- Non-residential "base" (i.e., indoor) use;
- Seasonal uses;
- Total RWS purchases in recent non-drought years; and
- ISG.

The Tier 2 Plan employs a structured, sequential, five-step method to allocate water to each wholesale customer. The allocations are constrained by minimum and maximum cutbacks, which establish the maximum final allocation and minimum guaranteed final allocation, respectively. No agency's final allocation can fall outside of these bounds. The allocation then proceeds by prioritizing indoor uses.

The subsequent steps systematically allocate the remaining available water based on different customer demands. First focusing on indoor demand, water is allocated based on an agency's residential population and the State residential efficient indoor standard (47 gallons per person per day [gpcd] in 2025), followed by an allocation based on non-residential "base" (i.e., indoor) use. A limited amount of water is allocated based on seasonal use (e.g., cooling towers and irrigation). Finally, the remaining supply is allocated based on a weighted share of two-thirds RWS purchases in the recent non-drought years and one-third ISG.

The result of the Tier 2 Plan is each wholesale customers' proportion, expressed as a percentage, of the available Tier 1 Allocation (Allocation Factor).

The Tier 2 Plan requires that the Allocation Factors be calculated by BAWSCA each year in preparation for a potential water shortage emergency. As the wholesale customers change their water use characteristics (e.g., increases or decreases in RWS purchases and use of other water sources, changes in monthly water use patterns, or changes in population), the Allocation Factor for each wholesale customer will also change. However, for long-term planning purposes, each wholesale customer may use as its Allocation Factor, the value identified in the Tier 2 Plan when adopted.

The Tier 2 Plan was renegotiated and adopted by all wholesale customers in 2025.

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SFPUC Water System Improvement Program (WSIP)

Initiated in 2008, SFPUC's Water System Improvement Program (WSIP) is a $4.8 billion, multi-year capital program to upgrade the RWS as well as the SFPUC's local water system. The program is delivering capital improvements that enhance the SFPUC's ability to provide reliable, affordable, high quality drinking water in an environmentally sustainable manner to its retail and wholesale customers. The SFPUC structured the WSIP to cost-effectively meet water quality requirements, improve seismic and delivery reliability goals through the year 2030, and fulfill water supply objectives through the year 2018. The SFPUC completed the San Francisco portion of the WSIP in October 2020. As of June 30, 2025, the regional portion of the WSIP was 99.3% complete, having repaired, replaced, and seismically upgraded crucial portions of the RWS; only two regional projects remain in planning and construction, while 49 regional projects have been completed or are in close-out. The SFPUC forecasts that the overall WSIP will be complete in June 2032.

The SFPUC undertook the WSIP to ensure the ability of the RWS to meet Level of Service (LOS) Goals and Objectives for water quality, seismic reliability, delivery reliability, and water supply. The Water Supply LOS goal, stated in the WSIP and adopted in 2008, is to meet customer water needs in non-drought and drought periods. The SFPUC amended and updated the LOS Goals and Objectives in November 2023. The SFPUC's current LOS Goals and Objectives related to water supply include the following:

- Meet an average annual water demand of 265 MGD from the SFPUC watersheds for retail and wholesale customers during non-drought years consistent with the WSA.
- Meet dry-year delivery needs while limiting rationing to a maximum 20% system-wide reduction in water service during extended droughts.
- Diversify and improve use of new water sources and drought management, including groundwater, recycled water, conservation, transfers, storage expansion, purified water, desalinated water, and technological innovations that can increase supply and/or water use efficiency.
- Maintain San Francisco retail residential potable water use below 45 gpcd.
- Realize annual Real Water Losses of less than 10% of water supplied to San Francisco.
- Meet 80% of San Francisco's Recreation and Parks Department irrigation demands with recycled water by December 31, 2025.

WSIP Dry Year Water Supply Projects

With the WSIP, the SFPUC has undertaken several water supply projects to meet dry-year demands. Those projects include the following:

- **Calaveras Dam Replacement Project.** Calaveras Dam is in the East Bay near a seismically active fault zone, and following the Loma Prieta earthquake in 1989, it was determined to be seismically vulnerable. To address the dam's vulnerability, the SFPUC constructed a new dam of equal height downstream of the existing dam. This project was completed in 2022. Calaveras Reservoir was completely refilled in 2023 and is now operating at full capacity.
- **Alameda Creek Recapture Project.** The Alameda Creek Recapture Project includes new facilities in and around an existing quarry pit in Sunol Valley to recover the loss of water supply

associated with instream flow release and bypass requirements related to the Calaveras Dam Replacement Project. The project is anticipated to be completed in 2032.

- **Lower Crystal Springs Dam Improvements.** The Lower Crystal Springs Dam Improvements Project was completed in May 2012. The related joint San Mateo County/SFPUC Bridge Replacement Project to replace the bridge across the Lower Crystal Springs Dam was completed in January 2019.
- **Regional Groundwater Storage and Recovery Project.** The Regional Groundwater Storage and Recovery (RGSR) Project is a strategic partnership between the SFPUC and three wholesale customers in San Mateo County: the California Water Service Company (serving South San Francisco and Colma), the City of Daly City, and the City of San Bruno. The project sustainably manages groundwater and surface water resources to provide the RWS with additional supplies during times of drought. During years of normal or heavy rainfall, the SFPUC provides additional surface water from the RWS to the three agencies in northern San Mateo County, allowing them to reduce the amount of groundwater that they pump from the southern Westside Groundwater Basin. Over time, the reduced pumping allows the aquifer to naturally recharge and result in increased groundwater storage of up to 61,000 AF of new water supply available during dry years. As of December 2025, the SFPUC had accumulated approximately 14 billion gallons of groundwater storage credits (about 43,093 AF) through the project.

  The RGSR project has two phases. Phase 1, which included building 13 production wells and treatment facilities, is complete. Phase 2 design began in early 2020 and covers rehabilitating and reinstalling well pumps, installing two new variable frequency drivers, and conducting start-up testing and well disinfection. Pumps at the Hickey, Southwood Drive, and Mission wells were rehabilitated, packed, and stored due to staff shortages, operational challenges, and elevated ammonia levels at the Southwood Drive Well; they may be reinstalled later. Construction on Phase 2B began in 2024 and would transport groundwater from SFPUC South San Francisco Main Well to California Water Service Company Treatment Station in South San Francisco. The project will make improvements at the existing well site which includes mechanical, electrical, structural, and corrosion protection upgrades. The SFPUC also prepared a conceptual engineering report and initiated design work for additional treatment to address the high ammonia levels at the South Spruce Lane Well and Treatment Facility. Minor amounts of groundwater pumping from RGSR wells have occurred during start-up testing and monthly maintenance.
- **Regional Groundwater Treatment Improvements Project.** The SFPUC approved this new project in the 10-Year Water Enterprise Capital Improvement Program for FY 2021-2030. The project includes treatment facilities for several of the RGSR project wells to address groundwater quality issues that have emerged since the wells were constructed.
- **Water Transfers.** During the planning and implementation of the WSIP, the SFPUC pursued a long-term agreement to transfer 2 MGD from Modesto Irrigation District to the SFPUC in drought years. Negotiations with Modesto Irrigation District ended in 2012 when an agreement could not be reached. The dry-year transfer project is now being included as part of the new SFPUC Alternative Water Supply Program and is described in further detail below.

Alternative Water Supply Planning Program

In 2019, the SFPUC established the Alternative Water Supply (AWS) Program to identify and plan water supply and storage projects and actions that increase the dry-year reliability of the RWS. Based on the 2045 planning horizon that the SFPUC applied in its February 2024 AWS Plan, the

SFPUC anticipates a water supply gap will occur in future dry years. The AWS Program aims to help fill the gap through local and regional capital projects. The February 2024 AWS Plan identified six regional projects that might partially address the future water supply gap and the priorities for this planning effort. Since the development of that plan, three projects have been deferred (Daly City Recycled Water Expansion, Alameda County Water District-Union Sanitary District Purified Water, and Calaveras Reservoir Expansion) and one project has been canceled (Los Vaqueros Reservoir Expansion). The AWS Program is continuing to pursue the following two projects:

- **PureWater Peninsula.** PureWater Peninsula (formerly known as the Crystal Springs Purified Water Project) is a purified water project that could provide 6 MGD of additional potable water supply to the RWS through surface water augmentation at the SFPUC's Crystal Springs Reservoir. The currently proposed project involves treating wastewater effluent from Silicon Valley Clean Water at a new advanced purified water facility located on the Peninsula and transmitting that purified water to Crystal Springs Reservoir, where it would blend with RWS surface water supplies before the SFPUC treats it again at Harry Tracy Water Treatment Plant. A future phase could provide an additional 6 MGD of additional potable water supply to the RWS. Project partners include the SFPUC, Silicon Valley Clean Water, BAWSCA, Mid-Peninsula Water District, California Water Service Company, City of Redwood City, City of Foster City, and City of San Mateo.
- **South Bay Purified Water.** In 2023, the SFPUC, the City of San Jose, and the City of Santa Clara completed an initial feasibility study for the South Bay Purified Water project, envisioned as a 10 MGD purified water project that would serve the local demands of San Jose and Santa Clara during all types of water years and deliver an additional volume of water supply to the RWS in dry years. Currently, Valley Water is working with San Jose and Santa Clara to design a larger project to meet broader regional needs. The SFPUC's participation in this project will be based on the regional benefits to the RWS customers.

If both AWS projects that SFPUC staff has identified through the current planning process can be implemented, there would still be a supply shortfall to meet projected needs associated with implementation of the Bay-Delta Plan Amendment. Furthermore, both alternative water supply options are in the planning phase and are subject to changes in institutional structure and design. Given the limited availability of water supply alternatives, unless the supply risks are significantly reduced, the SFPUC will continue to plan, develop, and implement all potential projects that can help bridge the anticipated water supply gap during droughts.

Outside of the AWS Program, the following additional regional projects are included in the Agreements to Support Healthy Rivers and Landscapes discussed in the Bay-Delta Plan Amendment section above. Progress on these water supply options will be guided by scientific monitoring and collaborative decision making.

- **Groundwater Banking.** Groundwater banking projects in the Modesto Irrigation District and Turlock Irrigation District service areas could provide the SFPUC with some additional water supply to meet instream flow releases in dry years, reducing water supply impacts on the RWS. A feasibility study of this option is included in the Agreements to Support Healthy Rivers and Landscapes.
- **Inter-Basin Collaborations.** Inter-Basin Collaborations could include establishing a partnership between interests on the Tuolumne River (such as the SFPUC) and those on the Stanislaus River, which would allow responsibility for streamflow to be assigned variably based on the annual hydrology. The Tuolumne system tends to spill more excess flow in

wetter years than the Stanislaus system, and this excess flow could be shaped and credited to meet Stanislaus system requirements, while New Melones Reservoir in the Stanislaus system is refilling. Then the stored water could be partially used to provide required streamflow to meet Stanislaus and Tuolumne requirements in future dry years.

- **Dry-Year Transfers.** The SFPUC initiated discussions with irrigation districts under the WSIP to secure a dry-year transfer (see WSIP Dry-Year Water Supply Projects section above). While no transfer was secured, the SFPUC continues to engage in discussions with irrigation districts to explore potential transfer opportunities.

The SFPUC's AWS Plan published in February 2024 included a planning framework for the SFPUC to consider water supply needs and related tradeoffs; guide the decisions to proceed with environmental review; and continue the development of projects that can best meet anticipated water supply needs. In June 2025, the SFPUC prepared a progress report that provided status updates on the AWS projects. In 2027, the SFPUC plans to review and revise its AWS Plan based on updated information.

Regional Water Demand and Conservation Projections

In December 2025, BAWSCA completed the Regional Water Demand and Conservation Projections Report (Demand Study). The goal of the Demand Study was to develop transparent, defensible, and uniform demand and conservation savings projections for each wholesale customer using a common methodology to support both regional and individual agency planning efforts and compliance with the new statewide water efficiency targets required by AB 1668 and SB 606.

Through the Demand Study process, BAWSCA and the wholesale customers:

- Quantified the total average-year water demand for each wholesale customer through 2050,
- Quantified passive and active conservation water savings potential for each individual wholesale customer through 2050, and
- Identified conservation programs with high water savings potential and/or BAWSCA Member Agency interest.

Implementation of these conservation measures, along with passive conservation, is anticipated to yield an additional 16.14 MGD of water savings by 2050. Based on the revised water demand projections, the identified water conservation savings, increased development and use of other local supplies by the wholesale customers, and other actions, the collective purchases of the BAWSCA Member Agencies from the SFPUC are projected to stay below 184 MGD through 2050.

As part of the Demand Study, each wholesale customer was provided with a demand model that can be used to support ongoing demand and conservation planning efforts, including UWMP preparation.

BAWSCA's Strategy 2050 Future Water Supply Projects and Programs

The SFPUC is supporting BAWSCA in the development of its Long-Term Reliable Water Supply Strategy 2050 (Strategy 2050), a regional assessment of Member Agencies' water supply needs. Strategy 2050 will identify the water supply and demand management needs and opportunities

for the BAWSCA region and establish a framework to collectively support water reliability and resilience. The main objectives of Strategy 2050 include:

- Providing a comprehensive picture of the region's supply and demand management needs and options;
- Establishing a framework for collectively maintaining and improving regional water supply reliability and resilience;
- Elevating awareness of and supporting the region's interests in new and emerging regulations that impact water supply and demand management;
- Expanding regional dialogue and collaboration to collectively address common needs;
- Closing the gap on funding needed for water supply resilience and reliability; and
- Supporting availability of affordable water supplies and demand management strategies to all customers.

Strategy 2050 is actively evaluating opportunities to enhance water supply reliability in the BAWSCA region, including projects involving physical infrastructure and actions involving non-infrastructure interventions, such as policies, programs, and/or contractual agreements. A total of 70 local and regional projects and actions will be considered, including stormwater capture projects, technical assistance programs for onsite reuse, groundwater banking partnerships, new and replacement well projects, and interties development and optimization, among others.

Strategy 2050 plan is anticipated to be completed by 2027. From 2027 onward, the Strategy 2050 effort is anticipated to involve implementing the actions identified in the plan, tracking and reporting on the progress, and incorporating the findings from the implementation activities into BAWSCA's following fiscal year Work Plan.

7.2.2 Valley Water

To maintain water supply reliability and flexibility, Valley Water's water supply includes a variety of sources including natural groundwater recharge, local surface water, imported water from the State and Federal projects, and recycled and purified water. Valley Water has an active conjunctive water management program to optimize the use of groundwater and surface water, and to prevent groundwater overdraft and land subsidence.

Valley Water's basic water supply strategy to compensate for supply variability is to store excess wet year supplies in the groundwater basin, local reservoirs, San Luis Reservoir, and/or Semitropic Groundwater Bank, and draw on these reserve supplies during dry years to help meet demands. These reserves, along with existing and planned future projects in the 2050 WSMP, help Valley Water meet demands during a prolonged drought.

Valley Water's LOS goal is to meet 100% of annual water demand during non-drought years and at least 80% of annual water demand in drought years. Future projects and programs recommended in the 2050 WSMP, including additional long-term water conservation savings, potable reuse, recharge capacity increases, and banking and storage, were developed in accordance with this policy to minimize the need to call for water use reductions greater than 20%. As part of the ongoing master planning process to address future uncertainties with demands, existing supplies, and proposed projects, Valley Water conducts annual evaluation of

WSMP projects to determine which projects should continue to be invested in to meet the LOS goal and potentially for other benefits such as operational flexibility, supply diversification, and resiliency to future uncertainties.

7.2.3 Groundwater

The City's water supply includes groundwater pumped from a conjunctively managed groundwater basin. The groundwater basins in Santa Clara County span nearly 400 square miles, with thousands of well users pumping groundwater for beneficial use. Protecting the local groundwater basins is critical to maintaining water supply reliability in the County of Santa Clara.

The City relies on Valley Water activities to maintain sustainable supplies, including managed groundwater recharge and in-lieu groundwater recharge (e.g., treated surface water deliveries, demand management programs, and SFPUC supply). Valley Water's 2050 WSMP ensures that local groundwater resources are sustained and protected. Groundwater management encompasses activities and programs that identify and mitigate contamination threats to the groundwater basin, replenish and recharge groundwater supplies, prevent groundwater overdraft and land subsidence, and sustain storage reserves. Valley Water programs to sustain and protect groundwater resources are described in detail in their 2050 WSMP.

7.3 Water Service Reliability Assessment

The City's water service reliability was assessed by comparing supplies and demands under an average/normal year, a single dry year, and five consecutive dry years. The following section describes the basis and results of the City's water service reliability assessment.

7.3.1 Year Type Characterization

There are three year-types included in the water service reliability assessment. These include:

Average/Normal Year

The "normal" year for the purposes of this Plan, is a year in the historical sequence that most closely represents median runoff levels and patterns. For planning purposes, the SFPUC "normal year" is based on historical hydrology under conditions that allow the RWS reservoirs to be filled over the course of the snowmelt season, allowing full deliveries to their customers.

The SFPUC used its Hetch Hetchy and Local Simulation Model (HHLSM) to perform the water supply analyses presented in their 2025 UWMP. HHLSM combines a historical record of hydrology from 1920 through 2025 with a current representation of RWS infrastructure and operations.

Valley Water used the Water Evaluation and Planning (WEAP) model, developed by Stockholm Environment Institute, to assess their water service reliability and determine base years for all year types. Valley Water's WEAP water supply planning model operates on a monthly time-step that simulates the water supply and demand over 100 years, using the historic hydrologic sequence of 1922 through 2021. Valley Water used the average annual supply over the 100 modeled years to represent the average year condition.

The City selected the average of the period from 1922-2021 as a representation of a “normal” or “average” water year to stay consistent with the average year determined by Valley Water.

Single Dry Year

The single dry year supply is defined as the year with the minimum usable supply. The hydrology of 1977 represents the minimum total supply that has been observed in the historical record, according to Valley Water.

The City selected 1977 as the single dry year since groundwater managed by Valley Water will be relied upon to make up any deficit from water wholesalers.

Five-Consecutive-Year Drought (Multiple Dry Year)

An analysis of a multiple dry year scenario is particularly useful in the evaluation of carryover storage. Evaluating the availability of the county’s water supplies requires an understanding of the driest periods that can reasonably be expected to occur. The SFPUC combined historical data with a hypothetical drought more severe than what the RWS has historically experienced to assess reliability over a multi-year drought. The design drought sequence used by the SFPUC for reliability planning is an 8.5-year period comprised of:

- Historical hydrology from July 1987 to June 1992;
- A prospective drought that includes the 1976-77 drought (to represent a drought sequence worse than historical); and
- A system recovery period for the last six months of the design drought.

While the 2012-2016 and 2020-2023 droughts include some of the driest years on record for the SFPUC’s watersheds, the design drought still represents a more severe drought in duration and overall water supply deficit.

Valley Water’s WEAP modeling results indicate that the county’s water supply system is more vulnerable to successive dry years, such as those that occurred in 1988 through 1992 and in 2012 through 2016. Valley Water chose the period from 1988 to 1992 as their five dry-year base period, which was an extended and more severe drought within historic record and WEAP modeling period.

The City chose 1988 to 1992 as the five-year drought base period to match the period used by Valley Water and SFPUC.

Table 7-2 presents the base years for each of the three conditions described above.

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Table 7-2: Basis of Water Year Data

Year Type	Base Year[1]
Average Year	1922-2021
Single-Dry Year	1977
Five Consecutive Dry Years 1st Year	1988
Five Consecutive Dry Years 2nd Year	1989
Five Consecutive Dry Years 3rd Year	1990
Five Consecutive Dry Years 4th Year	1991
Five Consecutive Dry Years 5th Year	1992

Note:
1. All base years are consistent with Valley Water.

7.3.2 Supply and Demand Comparison

This section utilizes the water demand projections presented in **Section 4** and water supply projections presented in **Section 6** to assess the City's water service reliability in all scenarios outlined in **Table 7-2**. As discussed in **Section 4** and **Section 6**, both demand and supply projections incorporate potential impacts associated with climate change. The reliability analysis assumes reduced supply from SFPUC from the implementation of the Bay-Delta Plan, described above in **Section 7.1.3**. The Bay-Delta Plan would require 30-50% unimpaired flow; however, because the plan is currently in negotiation, the timing of implementation remains uncertain. For the purposes of the 2025 UWMP analysis, the SFPUC assumed implementation beginning in 2030.

The SFPUC has conducted an analysis of the RWS supply reliability under both conditions, with and without 40% unimpaired flow. The SFPUC also modeled two separate cutback scenarios: one based on the actual projected wholesale demands through 2045 and another scenario based on the wholesale contract amount of 184 MGD. The City is reporting the more conservative modeled scenario based on Bay-Delta Plan implementation in 2030 and projected demands for consistency with the SFPUC UWMP; however, the SFPUC has acknowledged the contractual obligation to supply 184 MGD to the wholesale customers during non-drought years and thus has retained the second modeled scenario for planning purposes. Both SFPUC modeled scenarios are provided in **Appendix H**.

Valley Water's supply reliability analysis is based on historic hydrology, as described in the previous section. Projected supplies are based on Valley Water's 2050 WSMP recommended lower cost portfolio, which includes semitropic storage (350,000 AF) through 2035, groundwater banking (250,000 AF) starting in 2040, Sisk Reservoir expansion in 2035, Delta Conveyance Project in 2045, and Pure Water Silicon Valley in 2035. Valley Water modeled data is provided in **Appendix H**.

Recycled water is a drought-proof source of supply and is assumed to have equal supply and demand in all scenarios, thus not affecting potable water. Projected recycled water demands for 2045 assume an increase in recycled water use of approximately 630 AF compared to 2025; however, to be conservative, no adjustments were made to projected potable irrigation demand, even though customers converting to recycled water irrigation would be expected to offset potable water irrigation demand. Since the City is largely built-out, expansion of the recycled water system

would likely be accompanied by a corresponding reduction in potable water demand, which would result in lower projected demand.

Note that the total groundwater availability is shown in all year types; however, the actual production will only supplement wholesaler supplies as needed and for water quality/maintenance purposes.

Normal Year

Table 7-3 presents the water service supply reliability assessment for a normal water year based on water supply and demand projections. During normal water years, water supplies are adequate to meet projected demands despite implementation of the Bay-Delta Plan.

Table 7-3: Normal Year Supply and Demand Comparison (AFY)

	2030	2035	2040	2045
Supply Totals[1]	30,081	32,624	34,409	35,526
Demand Totals[2]	21,334	24,198	26,625	29,014
Difference	**8,747**	**8,426**	**7,784**	**6,512**

Notes:
1. Includes total groundwater well capacity.
2. Projected demands include passive conservation.
3. Includes potable and recycled water.

Single Dry Year

The SFPUC is expecting up to 30% cutbacks to supply in a single critical dry year from 2030 through 2045, assuming implementation of the Bay-Delta Plan in 2030. This translates to slightly deeper cutbacks for retailers and the City can expect up to a 37% cutback. For a single dry year prior to the assumed implementation of the Bay-Delta Plan, the SFPUC is expecting no shortages of RWS supplies and therefore no cutbacks to retailers.

Valley Water supplies are projected to be sufficient to meet demands during a single dry year through 2045. This assumes that reserves are at healthy levels at the beginning of the year and that the projects and programs identified in Valley Water's 2050 WSMP are implemented. As such, the City assumed no reduction in supply from Valley Water during a single dry year. It is noted that there may be voluntary cutbacks in dry years that the City would actively promote to customers in the interest of overall water conservation efforts.

In the case of a single dry year, the City projects no reduction in supply availability from groundwater. The resulting analysis of available supplies shows no projected shortfalls (**Table 7-4**).

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Table 7-4: Single Dry Year Supply and Demand Comparison (AFY)

Parameter	2030	2035	2040	2045
Supply Totals[1,2]	26,340	28,499	29,697	30,333
Demand Totals[3]	21,334	24,198	26,625	29,014
Difference	**5,006**	**4,301**	**3,072**	**1,319**

Notes:
1. Includes interruption from SFPUC due to Bay-Delta Plan in 2030 and Tier 2 reduction plan.
2. Includes total groundwater well capacity.
3. Projected demands include passive conservation.
4. Includes potable and recycled water.

Multiple Dry Year

The SFPUC has indicated that during multiple dry years retailers can expect cutbacks as high as 47% of normal SFPUC supplies by the second year of a five-year drought beginning in 2045. SFPUC supply and retail cutbacks are detailed in **Appendix H**.

Valley Water indicated in their 2025 UWMP that with existing and planned projects' supplies, Valley Water's diverse water supplies are sufficient to meet demands throughout the first three-year period in a five-year drought in all demand years without having to call for short-term water use reductions. However, supply shortages are projected in the fourth and fifth years of a five-year drought period beginning in 2030 and 2045, which may result in reductions to the City's supply allocation. For planning purposes, the City assumed Valley Water supply cutbacks proportional to the ratio of projected shortage to projected demand identified in Valley Water's multiple dry year analysis.

The City does not anticipate any reduction in groundwater availability during a five-year drought. As such, the City would be able to increase the amount of groundwater pumped to offset anticipated deficiencies from other sources. The City's groundwater basin is not adjudicated, which means the right to pump groundwater from the basin has not been given by judgment of a court or board. During a critical five dry year event, voluntary and mandatory conservation measures would be expected to reduce potable water demand and therefore, reduce the amount of groundwater needed to supplement supply.

Table 7-5 details the results of the multiple dry year analysis. Based on the anticipated cutbacks to SFPUC and Valley Water supplies, and considering maximum groundwater well capacity, the City is able to meet demands in all year types from 2030-2040, with shortages only up to 4% anticipated in years two through five of a five-year drought beginning in 2045.

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Table 7-5: Multiple Dry Years Supply and Demand Comparison (AFY)

Year	Parameter	2030	2035	2040	2045
First year	Supply totals	26,340	28,499	29,697	30,333
	Demand totals	21,334	24,198	26,625	29,014
	Surplus/(shortfall)	**5,006**	**4,301**	**3,072**	**1,319**
Second year	Supply totals	25,013	27,262	28,373	28,935
	Demand totals	21,334	24,198	26,625	29,014
	Surplus/(shortfall)	**3,679**	**3,064**	**1,748**	**(79)**
Third year	Supply totals	25,013	27,262	28,373	28,935
	Demand totals	21,334	24,198	26,625	29,014
	Surplus/(shortfall)	**3,679**	**3,064**	**1,748**	**(79)**
Fourth year	Supply totals	24,192	27,262	28,373	27,977
	Demand totals	21,334	24,198	26,625	29,014
	Surplus/(shortfall)	**2,858**	**3,064**	**1,748**	**(1,037)**
Fifth year	Supply totals	24,419	27,262	28,373	28,272
	Demand totals	21,334	24,198	26,625	29,014
	Surplus/(shortfall)	**3,085**	**3,064**	**1,748**	**(742)**

Notes:
1. Includes interruption from SFPUC due to Bay-Delta Plan in 2030 and Tier 2 reduction plan.
2. Projected demands include passive conservation.
3. Includes total groundwater well capacity.

SFPUC has indicated that implementation of the AWS Program and associated potential projects is expected to reduce anticipated supply shortfalls, which could translate to smaller cutbacks to retailers. Valley Water has indicated that potential shortages may be addressed through supply augmentation measures rather than relying solely on demand reduction, which could also reduce potential cutbacks to the City's Valley Water supply.

Actual availability of each supply during any given year depends on hydrology, groundwater recharge operations and conditions, and other factors. The water supply available to individual retailers will ultimately be determined by Valley Water and SFPUC. The City will work closely with Valley Water, SFPUC, and other water retail agencies to implement any stages of action to reduce the demand for water during water shortages. Any supply deficit would be compensated for by increased conservation levels through marketing and implementation of Demand Management Measures (DMMs) (see **Section 9**) and restrictions in consumption dictated by the City's Water Shortage Contingency Plan (see **Section 8**).

7.4 Drought Risk Assessment

The City is required to prepare a Drought Risk Assessment (DRA) that compares total water supply sources available to projected water use to assess the City's water service reliability and risk. The following section describes the City's DRA under a drought period lasting for the next five consecutive years. The DRA is intended to be a stand-alone section of the UWMP and thus, information regarding supply and demand are duplicated herein.

7.4.1 Data, Methods, and Basis for Water Shortage Condition

DRA Data

The DRA was based on the five driest consecutive years on record. The City chose to use 1988 to 1992 as the base period for the DRA based on Valley Water's WEAP modeling analysis. This period represents an extended drought within historic record and WEAP modeling period. The DRA assumes those driest years occur over the next five years, from 2026 through 2030.

The DRA evaluation was developed using data and modeling provided by SFPUC and Valley Water for a five-year consecutive drought. The DRA can be updated as needed, based on updated supply and demand data and unforeseen regulatory changes.

The expected gross water use (potable and recycled) for the next five years is based on a linear interpolation between 2025 actual water use and projected 2030 water use. Actual gross water use within the City's service area in 2025 is approximately 18,806 AF. The potable water use projection for 2030 was based on the BAWSCA Regional Water Demand and Conservation Study, December 2025 (Demand Study) and projected additional demand from planned new development and redevelopment within the City's service area. The Demand Study projections were developed using a hybrid water demand forecasting framework that integrates econometric modeling with conservation accounting tools. The projections from the Demand Study used in this DRA considered expected service area population, climate change conditions, water rates, and economic growth as well as passive conservation from plumbing codes and fixture turnover over time. The full description of the econometric modeling and water demand forecasting framework is included in the Demand Study, attached as **Appendix C**. Projected recycled water use is based on anticipated recycled water development. The City's projected gross water use in 2030 is 21,334 AF.

The City has three sources of potable water supply: purchased surface water from SFPUC, purchased treated surface water from Valley Water, and groundwater from six City-owned and operated wells. The breakdown of total potable supply by source is outlined in **Section 6.8**, **Table 6-9**, and was determined using the City's contractual agreements with each wholesaler, projected demands provided to each wholesaler, and historical production trends. Although the supply projections for SFPUC are based on the City's projected demand, the City's contractual agreement with SFPUC is 14,100 AFY. Supply projections from Valley Water are based on projected demands and historical production trends. The City can purchase additional available water from Valley Water during non-dry years when water is available. Groundwater supply is based on the City's sustainable yield of 8,000 AFY.

Recycled water (non-potable) is supplied by the City's Water Pollution Control Plant (WPCP). Recycled water is a drought-proof source of supply and is assumed to have equal supply and demand in all scenarios, thus not affecting potable water. Projected recycled water demands for 2045 assume an increase in recycled water use of approximately 630 AF compared to 2025; however, to be conservative, no adjustments were made to projected potable irrigation demand, even though customers converting to recycled water irrigation would be expected to offset potable water irrigation demand. Since the City is largely built-out, expansion of the recycled water system would likely be accompanied by a corresponding reduction in potable water demand, which would result in lower projected demand.

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DRA Methods

The percentage of water supply volume available during a five-year consecutive drought was based on the information provided by the SFPUC and Valley Water, found in **Appendix H**. The SFPUC has indicated that there are sufficient supplies to serve retailer demands in the event of a five-year drought starting in 2026. The recycled water and groundwater projects that the SFPUC has planned for implementation within the next five years were integrated into their available supply portfolio for this five-year drought scenario. More details on the SFPUC's DRA can be found in **Section 8.5** of their 2025 UWMP.

The percent reduction of average year supplies and projected deliveries from Valley Water during a five-year consecutive drought were estimated based on the projected shortages identified in Valley Water's five-year drought analysis beginning in 2030. Supply shortages are projected in the fourth and fifth years of the five-year drought period, which may result in reductions to the City's supply allocation. For planning purposes, the City assumed Valley Water supply cutbacks proportional to the ratio of projected shortage to projected demand identified in Valley Water's multiple dry year analysis, as shown in **Table 7-6**.

Reductions in supplies associated with implementation of the Bay-Delta Plan were not included in this DRA because the timing of implementation remains uncertain. The Bay-Delta Plan is discussed in more detail in **Section 7.1.3**.

Table 7-6: Anticipated Percent Supply Reduction from Wholesale Suppliers

Wholesale Supplier	2026	2027	2028	2029	2030
Valley Water	0%	0%	0%	9%	6%
SFPUC	0%	0%	0%	0%	0%

The City's groundwater supply is not expected to be limited by climate effects; as such, the City will consistently be able to pump groundwater up to the sustainable yield of 8,000 AFY.

Basis for Water Shortage Conditions

The City's updated Water Shortage Contingency Plan (WSCP) is detailed in **Section 8**. Sunnyvale staff, in anticipation of 10%, 20%, 50%, and greater than 50% supply reductions, developed a water shortage contingency plan adopted in March of 1989, and most recently amended in June 2020, that includes mandatory (and voluntary) water use restrictions, rate block adjustment, and approaches for enforcement associated with each stage of anticipated reduction. The WSCP amends the stages to correlate with the six stages prescribed by statute. The City initiates the stage based on the Assessment described in **Section 8.2** which includes coordination with the wholesalers' declaration of shortages and restrictions.

7.4.2 Water Source Reliability

Reliability of Treated Surface Water from SFPUC

San Francisco has a perpetual commitment (Supply Assurance) to deliver 184 MGD (206,107 AFY) to the 24 permanent wholesale customers collectively. San Jose and Santa Clara are not

included in the Supply Assurance commitment and each has temporary and interruptible water supply contracts with San Francisco. Sunnyvale's ISG is 14,100 AFY.

Tier 1 Drought Allocations

The WSA between the SFPUC and the wholesale customers, discussed previously in **Section 6.1.1**, includes as "Attachment H" a Water Shortage Allocation Plan (WSAP), also known as the Tier 1 Shortage Plan. This plan describes the method for allocating water from the RWS between the SFPUC's retail customers, on the one hand, and the wholesale customers collectively, on the other, during system-wide shortages caused by drought. The Tier 1 Shortage Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, as set forth in a declaration of water shortage emergency by the SFPUC; in the absence of such a declaration, the SFPUC also may opt to request voluntary cutbacks from its retail and wholesale customers to achieve water use reductions. The SFPUC and the wholesale customers most recently amended the Tier 1 Shortage Plan in 2025.

The SFPUC allocates water under the Tier 1 Shortage Plan when it determines that the projected available water supply is less than projected system-wide water purchases for the upcoming Supply Year, defined as the period from July 1 through June 30. The following table shows the retail customers' share and the wholesale customers' share of the annual water supply available during shortages depending on the level of system-wide reduction in water use that is required. If the SFPUC determines that the level of system-wide reduction required during a shortage is greater than 20%, the SFPUC and the wholesale customers will meet to discuss the appropriate retail and wholesale customers' shares of available water – also known as the retail and wholesale customers' Tier 1 Allocations. The wholesale customers' Tier 1 Allocation will be apportioned among the individual wholesale customers based on a separate methodology, known as the Tier 2 Drought Response Implementation Plan (Tier 2 Plan), which is separately adopted by all the wholesale customers without the SFPUC's involvement as discussed further below.

Table 7-7: SFPUC Tier 1 Drought Allocations

Level of System-Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Retail Customers' Share	Wholesale Customers' Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The Tier 1 Shortage Plan allows for voluntary transfers of shortage allocations between the SFPUC and any wholesale customer as well as between wholesale customers themselves. In addition, voluntary transfers of water "banked" by the SFPUC or a wholesale customer, through reductions in usage greater than required, may occur.

Under the Tier 1 Shortage Plan if the retail customers' Tier 1 Allocation results in the retail customers receiving a "positive allocation" (i.e., a supply of additional water rather than a required reduction in water use), then the excess percentage for retail is re-allocated to the wholesale customers' Tier 1 Allocation. The retail customers are also required to conserve a minimum of 5% for any level of reduction in system-wide water use. The additional water conserved by retail customers up to the minimum 5% level is deemed as remaining in RWS storage for inclusion in the calculation of projected available water in future successive dry years.

The Tier 1 Shortage Plan will expire at the end of the term of the WSA in 2034, unless the SFPUC and the wholesale customers mutually agree to revise or terminate it prior to that date.

Tier 2 Drought Allocations

The wholesale customers have negotiated and adopted the Tier 2 Plan, referenced above, which allocates the wholesale customer Tier 1 Allocation from the Tier 1 Shortage Plan among each of the 26 wholesale customers. These Tier 2 Allocations are based on a formula that takes into account multiple factors for each wholesale customer including:

- Residential population;
- Non-residential "base" (i.e., indoor) use;
- Seasonal uses;
- Total RWS purchases in recent non-drought years; and
- ISG.

The Tier 2 Plan employs a structured, sequential, five-step method to allocate water to each wholesale customer. The allocations are constrained by minimum and maximum cutbacks, which establish the maximum final allocation and minimum guaranteed final allocation, respectively. No agency's final allocation can fall outside of these bounds. The allocation then proceeds by prioritizing indoor uses.

The subsequent steps systematically allocate the remaining available water based on different customer demands. First focusing on indoor demand, water is allocated based on an agency's residential population and the State residential efficient indoor standard (47 gallons per person per day [gpcd] in 2025), followed by an allocation based on non-residential "base" (i.e., indoor) use. A limited amount of water is allocated based on seasonal use (e.g., cooling towers and irrigation). Finally, the remaining supply is allocated based on a weighted share of two-thirds RWS purchases in the recent non-drought years and one-third ISG.

The result of the Tier 2 Plan is each wholesale customers' proportion, expressed as a percentage, of the available Tier 1 Allocation (Allocation Factor).

The Tier 2 Plan requires that the Allocation Factors be calculated by BAWSCA each year in preparation for a potential water shortage emergency. As the wholesale customers change their water use characteristics (e.g., increases or decreases in RWS purchases and use of other water sources, changes in monthly water use patterns, or changes in population), the Allocation Factor for each wholesale customer will also change. However, for long-term planning purposes, each wholesale customer may use as its Allocation Factor, the value identified in the Tier 2 Plan when adopted.

The Tier 2 Plan was renegotiated and adopted by all wholesale customers in 2025.

Reliability of Treated Surface Water from Valley Water

Current Valley Water supply and demand projections show anticipated supply shortages in the fourth and fifth years of a five-year drought period beginning in 2030 and 2045. Valley Water's basic water supply strategy to compensate for supply variability is to store excess wet year supplies in the groundwater basin, local reservoirs, San Luis Reservoir, and/or Semitropic

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Groundwater Bank, and draw on these reserve supplies during dry years to help meet demands. These reserves, along with existing and planned future projects in the 2050 WSMP, help Valley Water meet demands during a prolonged drought. Current modeling incorporates projects identified in the 2050 WSMP to improve water supply reliability and to help meet increasing demands through 2045.

Reliability of Groundwater

The City's water supply includes groundwater pumped from a conjunctively managed groundwater basin. The groundwater basins in Santa Clara County span nearly 400 square miles, with thousands of well users pumping groundwater for beneficial use. Protecting the local groundwater basins is critical to maintaining water supply reliability in the County of Santa Clara.

The City relies on Valley Water activities to maintain sustainable supplies, including managed groundwater recharge and in-lieu groundwater recharge (e.g., treated surface water deliveries, demand management programs, and SFPUC supply). Valley Water's 2050 WSMP ensures that local groundwater resources are sustained and protected. Groundwater management encompasses activities and programs that identify and mitigate contamination threats to the groundwater basin, replenish and recharge groundwater supplies, prevent groundwater overdraft and land subsidence, and sustain storage reserves. Valley Water programs to sustain and protect groundwater resources are described in detail in the 2050 WSMP.

The allowable withdrawal of groundwater by the City depends on multiple factors, including withdrawals by other water agencies, the quantity of water recharged, and carry-over storage from the previous year. The City has six active wells that can produce up to 8,000 AF annually. In the case of a drought, groundwater is expected to supplement purchased surface water from wholesalers to meet system demands.

Reliability of Recycled Water

Recycled water is not vulnerable to seasonal or climatic shortage. Therefore, recycled water is assumed to be a drought-proof water supply.

7.4.3 Total Water Supply and Use Comparison

The DRA total water supply and use comparison is presented in **Table 7-8**. The DRA evaluates the implementation of the WSCP shortage response actions for varying levels of water shortage based on the supply and demand projections and presents the estimated savings due to these actions.

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Table 7-8: Five-Year Drought Risk Assessment

	2026	2027	2028	2029	2030
Gross water use	19,228	19,649	20,070	20,491	21,334
Total supplies	27,512	27,971	28,431	28,105	28,754
Surplus/(shortfall) w/o WSCP action	**8,284**	**8,322**	**8,361**	**7,614**	**7,420**
Planned WSCP actions (use reduction and supply augmentation)					
WSCP – use reduction savings benefit	0	0	0	0	0
WSCP – supply augmentation benefit	0	0	0	0	0
Revised surplus/(shortfall)	8,284	8,322	8,361	7,614	7,420
Resulting % use reduction from WSCP action	0%	0%	0%	0%	0%

The DRA indicates that the City will be able to meet demands in the event of a five-year drought. Although the results indicate no shortfalls, the City will work closely with SFPUC, Valley Water, and other water retail agencies to implement any stages of action to reduce the demand for water during water shortages. In the event of a decrease of local supplies, the City would respond by pursuing demand reduction programs (see **SECTION 9**) in accordance with the severity of the supply shortage. Any supply deficit would be compensated for by increased conservation levels and restrictions in consumption.

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SECTION 8 – WATER SHORTAGE CONTINGENCY PLANNING

A water shortage is defined as a case where the available water supply is insufficient to meet normally expected customer water use. A water shortage contingency plan (WSCP) is a detailed proposal for how a Supplier intends to act in the case of an actual water shortage condition. This plan is essential to a sound drought policy even if a Supplier appears to have low risk of water supply shortage conditions.

As required by §10632(a) of the Water Code, this chapter presents the City of Sunnyvale's (City's) WSCP including:

- A summary of the City's water supply reliability analysis presented in **Section 7** of the UWMP;
- The City's procedure for conducting and submitting its annual water supply and demand assessment;
- The legal authority that the City has for implementation and enforcement of its WSCP;
- The water shortage levels of the WSCP and the demand reduction measures, supply augmentation measures, and/or operational changes implemented in each stage as it relates to the six stages required by the Water Code;
- The methods for monitoring and reporting a water shortage condition and water use reductions;
- The methods for ensuring compliance and enforcing demand reduction measures;
- The protocols for communicating a water shortage condition and the measures implemented;
- The financial consequences of implementing the WSCP and methods for mitigating revenue losses; and
- A summary of the WSCP adoption, submittal, and refinement procedures.

Each Supplier is required to adopt its WSCP as part of its Urban Water Management Plan (UWMP) and as a standalone document that can be refined and updated outside of the five-year UWMP planning cycle. For this reason, some information summarized in this chapter of the UWMP is duplicated from previous chapters for clarity such that the chapter can serve as a standalone document.

8.1 Water Supply Reliability Analysis

The analysis of water supply reliability assessment is based on three different analyses: annual, near-term (5 years), and long-term (20 years). The following summarizes the following analyses that were included in **Sections 4, 6, and 7** of the UWMP:

- The methods for projecting water demands (**Section 4**),
- The methods for projecting water supply (**Section 6**), and
- The results of the water service reliability assessment (**Section 7**).

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8.1.1 Demand Projections

The potable water use projections are based on the BAWSCA Regional Water Demand and Conservation Study, December 2025 (Demand Study). The Demand Study projections were developed using a hybrid water demand forecasting framework that integrates econometric modeling with conservation accounting tools. The econometric regression-based model (Econometric Model) links key drivers such as demographic growth, weather conditions, economic factors, and water rates to historical water use in order to estimate a historical rate of use per driver. This rate was then used to estimate long-term projected water use. This approach generated monthly projections of baseline demand for the City that reflects structural drivers of water use. The model considered expected service area population and economic growth as well as passive conservation from plumbing codes and fixture turnover over time. Demand Study projections also account for potential effects of climate change. The full description of the Econometric Model and water demand forecasting framework is included in the Demand Study, attached as **Appendix C** of the UWMP. Projected additional water demand from planned new development and redevelopment within the City's service area were added to the Demand Study projections.

Projected City potable and recycled (non-potable) water use is summarized by customer classification in **Table 8-1**. Because the City is largely built-out, it is expected that water use will continue to rise in future years primarily due to increasing population density.

Table 8-1: Projected Potable and Non-Potable Water Use by Customer Type (AFY)

Customer Type	Potable or Non-Potable[1]	2030	2035	2040	2045
Single Family Residential	Potable	5,323	5,254	5,231	5,209
Multi-Family Residential	Potable	6,106	7,232	8,408	9,568
Commercial/Industrial (combined)	Potable	4,933	6,241	7,086	7,910
Institutional	Potable	315	398	452	505
Irrigation	Potable	2,144	2,164	2,180	2,198
Other (Firelines)	Potable	133	133	133	133
System Losses[2]	Potable	1,648	1,863	2,043	2,219
Commercial/Industrial (combined, recycled water)	Non-Potable	95	119	142	165
Irrigation (recycled water)	Non-Potable	637	794	950	1,107
Subtotal Potable[3]		**20,602**	**23,285**	**25,533**	**27,743**
Subtotal Non-Potable[4]		**732**	**912**	**1,092**	**1,272**
Total		**21,334**	**24,197**	**26,625**	**29,015**

Notes:
1. Non-potable use includes recycled water and any potable water added to the recycled water system.
2. Projected system losses are 8% of projected potable demand.
3. Projected potable water from the BAWSCA 2025 Demand Study with passive conservation categorized by customer use type and projected additional demand from planned new development and redevelopment within the City's service area.
4. Water use within the City's service area.

8.1.2 Supply Projections

The City relies on four water supply sources; surface water from San Francisco Public Utilities Commission (SFPUC), treated surface water from Santa Clara Valley Water District (Valley Water), groundwater, and recycled water. Surface water from the two wholesalers, SFPUC and Valley Water, provides most of the City's water supply, averaging about 97% since 2015. City owned- and operated-wells provide less than 1% and approximately 2% comes from recycled water. Since most of the City's water supply is reliant on SFPUC and Valley Water, the City is directly affected by the water supply conditions faced by each wholesaler.

SFPUC Supply

The City receives surface water from the City and County of San Francisco's Regional Water System (RWS), operated by SFPUC. This supply is predominantly from the Tuolumne River watershed in the Sierra Nevada Mountains, delivered through the Hetch Hetchy aqueduct, but also includes treated water produced by SFPUC from local watersheds and facilities in Alameda and Santa Clara counties. The Alameda watershed, located in Alameda county, is designed to capture local runoff.

The amount of imported water available to SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. Due to these constraints, SFPUC is dependent on reservoir storage to ensure ongoing water supply.

The business relationship between the SFPUC and its wholesale customers is largely defined by the "Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County" (WSA), effective since July 2009. This 25-year WSA replaced the Settlement Agreement and Master Water Sales Contract that expired in June 2009. The WSA addresses the rate-making methodology used by the SFPUC in setting wholesale water rates for its customers in addition to addressing water supply and water shortages for the RWS. The WSA, as amended and restated in 2025, describes the current contractual relationship between the SFPUC and the City.

The WSA is supplemented by an individual Water Supply Contract between SFPUC and each individual retailer, also active since July 2009. These contracts expire in 25 years. The City has an Individual Supply Guarantee (ISG) of 12.58 MGD (approximately 14,100 AFY). Although the WSA and accompanying Water Supply Contract expire in 2034, the ISG (which quantifies San Francisco's obligation to supply water to its individual wholesale customers) surpasses their expiration and continues indefinitely. The City's contract also includes a minimum purchase amount of 7.412 MGD (8,308 AFY), which Sunnyvale agrees to buy, regardless of whether sales drop below this level.

The WSA provides for a 184 MGD (expressed on an annual average basis) Supply Assurance to the SFPUC's wholesale customers. This Assurance is subject to reduction, to the extent and for the period made necessary by reason of water shortage, due to drought, emergencies, or by scheduled RWS maintenance activities. The WSA does not guarantee that San Francisco will meet peak daily or hourly demands of SFPUC's wholesale customers when their annual usage exceeds the Supply Assurance. The SFPUC's wholesale customers have agreed to the allocation of the 184 MGD Supply Assurance among themselves, with each entity's share of the Supply Assurance set forth on Attachment C to the WSA.

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Additional information regarding SFPUC supply reliability can be found below in the summary of SFPUC's WSCP. For more detailed information, please refer to SPFUC's current UWMP and/or WSCP.

Valley Water Supply

Valley Water supplies the City with treated surface water through an entitlement of imported water that is Delta-conveyed from the Central Valley Project (CVP) and State Water Project (SWP), as well as surface water from local reservoirs. The City has a 70-year contractual agreement with Valley Water, effective 1981 to 2051.

Valley Water's imported water is conveyed through the Sacramento-San Joaquin Delta and pumped and delivered to the county through three main pipelines: the South Bay Aqueduct, which carries water from the SWP, and the Santa Clara Conduit and Pacheco Conduit, which convey water from the Federal CVP. More than 70% of this supply is delivered to treatment plants, about 15% is diverted upstream by the SFPUC and delivered to cities in northern Santa Clara County, and almost 15% is used for recharge. Any excess Delta-conveyed supplies are stored in the Semitropic Groundwater Bank in San Joaquin Valley for later use, such as withdrawal during dry periods. Valley Water can also store imported water supplies locally in the Anderson and Calero Reservoirs; however, the Anderson Reservoir is currently drained down due to seismic concerns. Valley Water is working on rebuilding the dam, with completion expected by the end of 2033 (2050 WSMP, 2025).

Local runoff is captured in local reservoirs for recharge into the groundwater basin or treatment at one of Valley Water's three water treatment plants. The total storage capacity of the ten Valley Water operated reservoirs in Santa Clara County is approximately 166,000 AF, however, several reservoirs are operating at restricted capacity due to seismic stability concerns. Local water captured in local reservoirs and natural groundwater recharge provides up to 30% of Santa Clara County's water supply. Reservoir operations are coordinated with imported Bay-Delta water received from the SWP and the CVP.

Valley Water has a contract for 100,000 AFY from the SWP and 152,500 AFY from the CVP. However, the actual amount of water delivered is typically less than these contractual amounts and depends on hydrology, conveyance limitations, and environmental regulations. Valley Water expects average allocations of Delta-conveyed water to generally decline over time due to impacts of climate change, potential environmental regulations affecting the Sacramento–San Joaquin Delta, and State mandates to reduce reliance on the Delta (2050 WSMP, 2025). However, over the years, Valley Water has attempted to sustain overall existing supplies by participating in projects that would offset the predicted decline of Delta-conveyed imported water supplies. In October 2019, Valley Water voted to support the Delta Conveyance Project, which is a proposed plan to improve the infrastructure that conveys water through the Sacramento-San Joaquin Delta. This plan would potentially provide on average 14,000 AFY of imported water supply benefits to Valley Water (2050 WSMP, 2025).

Valley Water has also been evaluating water reuse opportunities, including potable reuse, as a reliable, locally controlled supply that can mitigate drought risks and further diversify its water supply portfolio. In October 2024, the State enacted the Direct Potable Reuse (DPR) regulations, enabling water supply agencies to pursue a new and more flexible approach to potable reuse. Valley Water aims to develop 24,000 AFY of potable reuse by 2035, with a long-term vision of expanding water reuse in the county to up to 32,000 AFY by 2050.

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For more detailed information regarding Valley Water's supply reliability, please refer to Valley Water's current UWMP and/or WSCP.

Groundwater

The City owns and operates six active wells and one well on stand-by for emergencies. Groundwater makes up a small percentage of the City's total water supply and is used to supplement imported SFPUC and Valley Water supply.

Valley Water manages the groundwater basin and provides county-wide groundwater and conservation planning assistance. Local groundwater supplies represent up to half of the county's water supply during normal years and are crucial to the region's future water supply reliability. Valley Water uses conjunctive use management, a practice by which the groundwater basin is pumped more in drier years and then replenished (or recharged) during wet and average years, to ensure the sustainability of groundwater basins. Groundwater is replenished naturally from rainfall and augmented by Valley Water-operated recharge. Conjunctive use helps to protect the groundwater basin from overdraft, land subsidence, and saltwater intrusion, and provides critical groundwater storage reserves.

Recycled Water

The City's current recycled water system consists of the Recycled Water Pump Station located at the WPCP, the Sunnyvale Golf Course pump station, the San Lucar Tank and Pump Station, the Wolfe Road Pump Station (WRPS), and approximately 22 miles of recycled water pipelines ranging in diameter from 6- to 36-inches. The WRPS was completed in 2018 as part of the Wolfe Road Pipeline Extension Project, which added approximately 13,000 feet of pipeline to extend the recycled water system along Wolfe Road, reaching the Apple® Campus 2. Both the WRPS and the pipeline extension are owned by Valley Water and maintained by the City's Water and Sewer Services Division. In 2018, the City completed a Capital Improvement Project to facilitate parallel production of recycled water and NPDES discharge, thereby providing enhanced production and delivery reliability.

The City's 2024 Recycled Water Master Plan Update (RWMPU) details the City's existing recycled water demands and infrastructure and evaluates potential customer demands and proposed infrastructure through desktop analyses and hydraulic modeling. The RWMPU is detailed further in **Section 6.4.5** of the UWMP.

In 2023, California State Legislature enacted AB 1572, which prohibits the use of potable water to irrigate non-functional turf on certain properties beginning in 2027. This policy change may encourage both existing customers and new developments to use recycled water to irrigate non-functional turf areas.

Impacts of Climate Change

The region is subject to growing water supply challenges concerning climate change, including recurring droughts and increased demand from population growth. The City's potable water is primarily supplied by SFPUC and Valley Water; as such, the City relies on each wholesaler to address the effects of climate change in their long-term planning efforts. Valley Water released the 2050 Water Supply Master Plan (2050 WSMP, https://fta.valleywater.org/dl/RQWqGqbX3rrk) in 2025, which includes a discussion on the effects of climate change on water supply reliability. The SFPUC, in partnership with The Water Research Foundation, developed the Long Term

Vulnerability Assessment (LTVA, https://www.sfpuc.gov/about-us/reports/long-term-vulnerability-assessment) of the RWS, which was completed in 2021 and amended in 2024. The LTVA evaluates how climate change could impact the RWS through 2070 by assessing the potential impacts of increases in temperature and changes in precipitation. Additional detail on how climate change impacts were incorporated into wholesaler supply projections can be found in each wholesaler's respective UWMP.

Supply projections for the City's four sources of potable and non-potable water provide a basis for assessing water supply reliability. The breakdown of total supply by source was determined using the City's contractual agreements with each wholesaler, projected demands provided to each wholesaler, and historical production trends. Projected water supply is listed by source in **Table 8-2**.

Table 8-2: Water Supplies – Projected (AFY)

Water Supply	Additional Detail on Water Supply	Potable or Non-Potable	2030	2035	2040	2045
Purchased Water[1]	SFPUC	Potable	12,008	12,490	13,389	14,091
Purchased Water[2]	Valley Water	Potable	9,341	11,222	11,928	12,163
Groundwater[3]	Wells	Potable	8,000	8,000	8,000	8,000
Recycled Water	Recycled Water	Non-Potable	732	912	1,092	1,272
		Subtotal Potable	**29,349**	**31,712**	**33,317**	**34,254**
		Subtotal Non-Potable	**732**	**912**	**1,092**	**1,272**
		Total[2]	**30,081**	**32,624**	**34,409**	**35,526**

Notes:
1. Total available supply from SFPUC is equal to the City's ISG of approximately 14,100 AFY; however, for planning purposes, the reasonably available volume presented herein reflects the projections provided to SFPUC based on the City's projected demand and the availability of other supplies.
2. The projections provided herein reflect projections provided to Valley Water based on the City's projected demand and availability of other supplies. The City can purchase additional available water from Valley Water during non-dry years when water is available.
3. Although the City has on average pumped about 138 AF annually, the total safe yield of groundwater is 8,000 AFY.

In the event of a decrease in wholesaler supplies, the City would increase the use of groundwater supplies and respond by pursuing demand reduction programs in accordance with the severity of the supply shortage. Any supply deficit would be compensated for by increased groundwater supply, conservation levels, and restrictions in consumption.

8.1.3 Water Supply Reliability Assessment

The water service reliability assessment requires the comparison of supply and demand projections for three scenarios:

- Normal year,
- Single dry year, and
- Five consecutive dry years.

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The percent of total annual supply available for each scenario is based on the historical hydrology identified by Valley Water and cutbacks determined by the City's wholesalers (**Appendix H**). The City has elected to use the base years used by Valley Water for consistency, since groundwater managed by Valley Water will be relied upon to make up any deficit from water wholesalers. Because allowable groundwater pumping is based only on the sustainable yield, groundwater supply availability is not expected to decrease during dry years. Additionally, recycled water is not dependent on climatic effects and is assumed to be unaffected by any drought conditions. **Table 8-3** presents the base years for each of the three conditions described above.

Table 8-3: Basis of Water Year Data

Year Type	Base Year[1]
Average Year	1922-2021
Single-Dry Year	1977
Five Consecutive Dry Years 1st Year	1988
Five Consecutive Dry Years 2nd Year	1989
Five Consecutive Dry Years 3rd Year	1990
Five Consecutive Dry Years 4th Year	1991
Five Consecutive Dry Years 5th Year	1992

Note:
1. All base years are consistent with Valley Water.

Using the water supply and demand projections and the portion of supplies available during normal year, single dry year, and five consecutive dry year conditions, this section presents the comparison between projected supply and projected demand for each condition in five-year increments through 2045.

The reliability analysis assumes reduced supply from SFPUC from the implementation of the amendments to the Water Quality Control Plan for the Bay-Delta Plan (Bay-Delta Plan Amendment) described in **Section 7.1.3** of the UWMP and detailed further in the SFPUC's UWMP. The Bay-Delta Plan would require 30-50% unimpaired flow; however, because the plan is currently in negotiation, the timing and requirements of implementation remains uncertain. For the purposes of the 2025 UWMP analysis, the SFPUC assumed implementation beginning in 2030.

The SFPUC conducted an analysis of the RWS supply reliability under both conditions, with and without 40% unimpaired flow. The SFPUC also modeled two separate cutback scenarios: one based on the actual projected wholesale demands through 2045 and another scenario based on the wholesale contract amount of 184 MGD. The City is reporting the more conservative modeled scenario based on Bay-Delta Plan Amendment implementation in 2030 and projected demands for consistency with the SFPUC UWMP; however, the SFPUC has acknowledged the contractual obligation to supply 184 MGD to the wholesale customers during non-drought years and thus has retained the second modeled scenario for planning purposes.

The supply reliability analysis also considered potential cutbacks to Valley Water supply during dry years. Valley Water indicated in their 2025 UWMP that with existing and planned projects' supplies, Valley Water's diverse water supplies are sufficient to meet demands throughout the first three-year period in a five-year drought in all demand years without having to call for short-term water use reductions. However, supply shortages are projected in the fourth and fifth years

of a five-year drought period beginning in 2030 and 2045, which may result in reductions to the City's supply allocation. For planning purposes and for a more conservative approach, the City assumed Valley Water supply cutbacks proportional to the ratio of projected shortage to projected demand identified in Valley Water's multiple dry year analysis. Additional detail on Valley Water's multiple dry year analysis can be found in Valley Water's most current WSCP and UWMP. **Table 8-4** presents the service supply reliability assessment for each condition.

Table 8-4: Water Service Reliability Supply and Demand Comparison

		2030	2035	2040	2045
Normal Year					
Supply Totals		30,081	32,624	34,409	35,526
Demand Totals		21,334	24,197	26,625	29,015
Surplus/(shortfall)		**8,747**	**8,427**	**7,784**	**6,511**
% Shortage		**0%**	**0%**	**0%**	**0%**
Single Dry Year					
Supply Totals		26,340	28,499	29,697	30,333
Demand Totals		21,334	24,197	26,625	29,015
Surplus/(shortfall)		**5,006**	**4,302**	**3,072**	**1,318**
% Shortage		**0%**	**0%**	**0%**	**0%**
Five Consecutive Dry Years					
First Year	Supply Totals	26,340	28,499	29,697	30,333
	Demand Totals	21,334	24,197	26,625	29,015
	Surplus/(shortfall)	**5,006**	**4,302**	**3,072**	**1,318**
	% Shortage	**0%**	**0%**	**0%**	**0%**
Second Year	Supply Totals	25,013	27,262	28,373	28,935
	Demand Totals	21,334	24,197	26,625	29,015
	Surplus/(shortfall)	**3,679**	**3,065**	**1,748**	**(80)**
	% Shortage	**0%**	**0%**	**0%**	**0.3%**
Third Year	Supply Totals	25,013	27,262	28,373	28,935
	Demand Totals	21,334	24,197	26,625	29,015
	Surplus/(shortfall)	**3,679**	**3,065**	**1,748**	**(80)**
	% Shortage	**0%**	**0%**	**0%**	**0.3%**
Fourth Year	Supply Totals	24,192	27,262	28,373	27,977
	Demand Totals	21,334	24,197	26,625	29,015
	Surplus/(shortfall)	**2,858**	**3,065**	**1,748**	**(1,039)**
	% Shortage	**0%**	**0%**	**0%**	**3.6%**
Fifth Year	Supply Totals	24,419	27,262	28,373	28,272
	Demand Totals	21,334	24,197	26,625	29,015
	Surplus/(shortfall)	**3,085**	**3,065**	**1,748**	**(744)**
	% Shortage	**0%**	**0%**	**0%**	**2.6%**

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Given the supply and demand comparison presented in **Table 8-4**, the results of the supply reliability assessment can be summarized as follows:

- **Normal Year** – The City can anticipate meeting all water demands through 2045 under normal year supply conditions given the stated assumptions.
- **Single Dry Year** – The City can anticipate meeting all water demands through 2045 under single dry year supply conditions given the stated assumptions.
- **Five Consecutive Dry Years** – The City can anticipate meeting all water demands through 2040 under consecutive five dry-year supply conditions given the stated assumptions. The City anticipates shortfalls only up to 4% from the second to fifth year of a five-year drought period beginning in 2045.

As shown in the tables above, Sunnyvale would be able to increase the amount of groundwater pumped to offset anticipated deficiencies from other sources. The Sunnyvale groundwater basin is not adjudicated, which means the right to pump groundwater from the basin has not been given by judgment of a court or board.

For each of the five-year increments presented above, the five-year dry period indicates that supplies will be able to meet demands out to 2040 through increased groundwater pumping and implementation of drought conservation programs. Since the projected shortfalls anticipated during a multi-year drought in 2045 do not exceed 4% of projected demand, the City will be able to address any supply deficiency with minimal rationing.

8.1.4 Drought Risk Assessment

For the near-term water supply reliability, the DRA requires the analysis of five consecutive dry years beginning in 2026 including the consideration of climate change effects and any potential regulatory or other locally applicable conditions in conjunction with WSCP implementation. For this assessment, the same procedures described above were used to develop supply and demand projections for the next five years (2026-2030).

The DRA total water supply and use comparison is presented in **Table 8-5**.

Table 8-5: Five-Year Drought Risk Assessment

	2026	2027	2028	2029	2030
Gross water use	19,228	19,649	20,070	20,491	21,334
Total supplies	27,512	27,971	28,431	28,105	28,754
Surplus/shortfall w/o WSCP action	**8,285**	**8,322**	**8,360**	**7,614**	**7,421**
Planned WSCP actions (use reduction and supply augmentation)					
WSCP – use reduction savings benefit	0	0	0	0	0
WSCP – supply augmentation benefit	0	0	0	0	0
Revised surplus/(shortfall)	8,285	8,322	8,360	7,614	7,421
Resulting % use reduction from WSCP action	0%	0%	0%	0%	0%

The DRA indicates that the City will be able to meet demands in the event of a five-year drought. Although the results indicate no shortfalls, the City will work closely with SFPUC, Valley Water, and other water retail agencies to implement any stages of action to reduce the demand for water during water shortages. In the event of a decrease of local supplies, the City would respond by pursuing demand reduction programs (see **Section 9**) in accordance with the severity of the supply shortage. Any supply deficit would be compensated for by increased conservation levels and restrictions in consumption.

8.2 Annual Water Supply and Demand Assessment Procedures

In accordance with Water Code §10632.1, every Supplier is required to conduct an annual water supply and demand assessment (Assessment) and submit an Assessment Report to DWR on or before July 1st of each year. The purpose of the Assessment is to evaluate the reliability of the water supplier's water supply system on a short-term basis. This will aid the Supplier in identifying near-term (yearly or monthly) water shortages and implement the appropriate shortage response actions as laid out in the WSCP. The Assessment will also allow the City to determine the effectiveness of the WSCP and update the plan accordingly.

The Assessment will be based on the previous year's available supply and measured demand. First, the anticipated unconstrained demand for the current year will be developed. Then, any anticipated climatic variations, population growth, demographic changes, current and/or proposed development, State or local regulations, and existing infrastructure capabilities will be considered in altering the unconstrained demand. Considering each of these factors and how they may affect anticipated supply and/or demand, a supply and demand comparison will be completed for the current year under normal hydrologic conditions and under dry conditions. This comparison will allow the City to identify any potential water shortages and obtain City Council approval to activate the appropriate WSCP stage.

8.2.1 Decision-Making Process

On an annual basis, the Water and Sewer Division (Division) of the City will perform the Assessment once data has been received from the wholesalers, SFPUC and Valley Water, in mid-April. The wholesalers will inform the City if they will be able to meet water supply commitments for the City or if they will be requesting voluntary or mandatory reductions. If the projected unconstrained demands can be met by the City, then approval of the Assessment by City Council will not be required. When water supply shortfalls trigger the need for demand reduction, then approval of the Assessment by City Council shall be obtained no later than May 31st. City Council approval of the Assessment, which shall include the recommended stage for cutbacks as described in **Section 8.3** below, will allow implementation of the recommended stage and no additional approval shall be required. Removal or elevation of the stages will require City Council approval.

For example, data from wholesalers for Fiscal Year (FY) 2026-2027 will be received by April 15, 2026. The Assessment will be prepared by the Division to determine if the supply for the projected demand for FY 2026-2027 will trigger the need for shortage response actions as identified in **Section 8.3**. Stages 1 – 6 will require City Council approval by May 31, 2026 for it to be effective by July 1, 2026 through June 30, 2027. The Assessment Report will be finalized and submitted to DWR on or before July 1st on an annual basis.

8.2.2 Data and Methodology

The methodology that will be used by the City to determine water demands for the Assessment year includes projecting demands based on historical post-drought recovery considering factors such as economic growth and new developments, rate increases, conservation activity, climate change, any global and regional events, and population density. Demand data available at the time of Assessment preparation will be used to calibrate, evaluate, and accurately estimate the demands for the Assessment year under normal and dry hydrological conditions.

Unconstrained demand is water demand absent any water supply and demand restrictions. The following methodology will be used in estimating the Assessment year's unconstrained demand:

1. Identify the most recent 12-month period in which no supply shortages or demand restrictions were put in place.
2. Collect monthly water billing data for the period selected in Step 1.
3. Identify factors that may have influenced water demand, such as weather and economy, and apply adjustments as appropriate.

Supply data from Valley Water and SFPUC will also be used to determine the reliability of the water supply system. The City will use the projected demand and supplies to assess whether shortfalls will exist under normal and dry hydrological conditions due to unanticipated changes not projected in the 2025 UWMP. The shortfalls will be quantified and correlated with the appropriate WSCP stages to identify the shortage level response action that will be triggered to offset the shortage in water supplies and determine if other actions are necessary (i.e., increase groundwater pumping or other water conservation measures).

Using the report template developed for the purposes of this Assessment, the City will draft a report presenting the data available and detailing the processes used to project the supplies and demands for the Assessment year and complete the analysis. The report will identify any anticipated water supply shortfalls and the corresponding WSCP stage along with any WSCP actions proposed to mitigate the supply shortfalls. This report will be presented at a City Council meeting in or before June of each year if implementation of a WSCP stage is required and any WSCP actions will be implemented beginning by or before July. The report will then be submitted to DWR no later than July 1st.

Based on the processes described above, **Table 8-6** presents the timeline the City will adhere to for the process of completing the annual Assessment and submitting the Assessment Report.

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Table 8-6: Assessment Completion Timeline

Month	Activities	Completed By
February	Obtain monthly water use data by customer type from Finance Department for previous year.	Water and Sewer Division
February	Determine monthly water production data (surface water, potable groundwater, recycled water) for previous year.	Water and Sewer Division
February	Obtain population estimates for previous year from DOF (https://www.dof.ca.gov/Forecasting/Demographics/Estimates/).	Water and Sewer Division
March	Complete analysis for previous year (supply and demand comparison, hydrologic and regulatory conditions, infrastructure constraints, etc.).	Water and Sewer Division
March	Calculate projected unconstrained demand for current year and identify/describe projection methods (projected population growth, etc.).	Water and Sewer Division
April	Identify projected hydrologic conditions for current year and obtain any anticipated surface water supply constraints from wholesalers for current year.	Water and Sewer Division
April	Determine current conditions of groundwater supply and groundwater table to anticipate any groundwater supply constraints for current year.	Water and Sewer Division
April	Complete analysis for current year based on a "dry year." Determine the anticipated monthly water supply reliability for the current year using calculation spreadsheet.	Water and Sewer Division
April	Determine if/when water supply shortages will occur and what WSCP stage the shortage will fall into. Determine what (if any) WSCP actions will need to be implemented to mitigate supply shortage.	Water and Sewer Division
May	Prepare Assessment Report presenting the findings of the Assessment and WSCP actions to be implemented.	Water and Sewer Division
May/ June	Present findings and Assessment Report to City Council.	Water and Sewer Division
by July	Implement the WSCP actions as approved by City Council.	Water and Sewer Division
July	Submit final Assessment Report to DWR by July 1st.	Water and Sewer Division

Note: Months are approximate and can be adjusted as needed.

8.3 Standard Water Shortage Stages

In response to the severe drought of 2012-2016, legislation in 2018 created a WSCP mandate replacing the water shortage contingency analysis under former law. Suppliers are authorized to continue using their own water shortage levels that may have been included in past WSCPs provided the Supplier includes a narrative or graphic describing the Supplier's water shortage levels in relationship to the six standard water shortage levels prescribed by statute - six standard water shortage levels corresponding to progressive ranges of up to 10%, 20%, 30%, 40%, 50%, and greater than 50% shortage.

This section provides a general description of the WSCP for each of the water wholesalers and a detailed description of the City's water shortage stages. For more information regarding each wholesaler's response to water shortage, please refer to the wholesaler's most current WSCP.

8.3.1 SFPUC Water Shortage Allocation Plan

The WSA between the SFPUC and the wholesale customers, discussed previously in **Section 8.1.2**, includes as "Attachment H" a Water Shortage Allocation Plan (WSAP), also known as the Tier 1 Shortage Plan. This plan describes the method for allocating water from the RWS between the SFPUC's retail customers, on the one hand, and the wholesale customers collectively, on the other, during system-wide shortages caused by drought. The WSAP identifies the retail customers' and wholesale customers' respective shares of the annual water supply available during shortages that require system-wide reductions in water use of 20% or less. These percentage shares, referred to as the retail customers' Tier 1 Allocation and the wholesale customers' Tier 1 Allocation, are shown in the first four rows of **Table 8-7** (Shortage Levels 1 and 2). For example, when the required level of system-wide reduction in water use is 6 to 10%, the retail customer Tier 1 Allocation is 36% of the annual water supply available, and the wholesale customer Tier 1 Allocation is 64% of the annual water supply available. Under the WSAP, if the retail customers' Tier 1 Allocation results in the retail customers having a "positive" allocation (i.e., a supply of additional water rather than a required percentage reduction in water use), then the retail customers' percentage share of the available water supply would be reduced to eliminate any positive allocation to retail customers, with a corresponding increase in the percentage share of the available water supply allocated to the wholesale customers. For any level of required reduction in system-wide water use, the SFPUC shall require retail customers to conserve a minimum of 5%, with any resulting reallocated supply credited to storage for inclusion in the calculation of projected available RWS water supply in a subsequent year. **Table 8-7** includes a cross-reference relating the existing WSAP levels of system-wide water use reduction to the six standard water shortage levels, consistent with California Water Code Section 10632(3)(b). The WSAP does not define Tier 1 Allocations for the retail customers and the wholesale customers for system-wide shortages requiring greater than a 20% reduction in water use. For the purposes of this WSCP, the SFPUC assumes that the Tier 1 Allocations for the 16-20% reduction in water use level (37.5% for retail and 62.5% for wholesale) would apply to all higher shortage levels. In practice, the WSAP defines a process for the SFPUC and the wholesale customers to determine whether the application of those Tier 1 Allocations to shortage levels greater than 20% is appropriate or whether a change is required (for further information about this process, see Appendix D of SFPUC's most recent WSCP).

The WSAP also implements a method for allocating the wholesale customers' Tier 1 Allocation among the respective wholesale customers, known as the "Tier 2 Drought Response Implementation Plan," which has separately been adopted by the wholesale customers and does not include the SFPUC. The SFPUC's shortage response actions as they relate to the wholesale customers are defined in the WSAP and are included in this WSCP by reference.

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Table 8-7: SFPUC Retail and Wholesale RWS Allocations during System-wide Shortage

Shortage Level	Required Level of System-wide Reduction in Water Use	SFPUC Retail Share of Available RWS Supply[1]	Collective Wholesale Customers' Share of Available RWS Supply
1	5% or less	35.5%	64.5%
1	6 – 10%	36.0%	64.0%
2	11 – 15%	37.0%	63.0%
2	16 – 20%	37.5%	62.5%
3[2]	Up to 30%	37.5%	62.5%
4[2]	Up to 40%	37.5%	62.5%
5[2]	Up to 50%	37.5%	62.5%
6[2]	>50%	37.5%	62.5%

Notes:
1. While Groveland CSD is reported in the SFPUC UWMP as a wholesale customer, it is not a party to the WSA, and it is considered a retail customer of the SFPUC for the purpose of allocating RWS supplies between retail and wholesale customers under the WSAP. Thus, RWS supplies to Groveland CSD are accounted for in the retail supply allocation.
2. The WSAP does not define supply allocations for the retail Customers and the wholesale Customers for system-wide shortages requiring greater than a 20% reduction in water use. Instead, the WSAP sets forth a process for the SFPUC and the wholesale customers to determine whether the application of the allocations for the 16-20% reduction in water use level to shortage levels greater than 20% is appropriate or whether a change is required.

8.3.2 Valley Water's Water Shortage Contingency Plan

Valley Water's basic water supply strategy to compensate for supply variability is to store excess wet year supplies in the groundwater subbasins, local reservoirs, San Luis Reservoir, and Semitropic Groundwater Bank, then to draw on these stored supplies during dry years to help meet demands. Based on projected demands, and Valley Water's existing and planned sources of supply, Valley Water will be able to meet countywide demands through 2050 under normal and single dry conditions. Under five consecutive dry year conditions, Valley Water's diverse water supplies are sufficient to meet demands throughout the full five-year drought in demand years 2035 and 2040, but there will be small shortages (less than 10%) in the last two years of the drought in demand years 2030 and 2045. Those shortages will be addressed through the combination of supply augmentation from transfer and exchange and water use reductions.

The DRA indicates that if a five-year drought were to occur under existing conditions, Valley Water's existing supply is sufficient to meet expected demands for the first three years. During the last two years of this near-term drought, however, estimates of projected water supply and use reveal that there could be a possible shortfall of 14,600 AF in 2029 and 25,000 AF in 2030. The shortfall is largely attributed to assumed low imported water supply as occurred during the two most recent severe droughts in the last 10 years. If such shortfalls were to happen, Valley Water will implement its WSCP actions including calling for water use reduction and augmenting supplies with supplemental sources such as water transfers and exchanges, to meet potential shortage.

Valley Water uses six stages to categorize its water supply shortage, outlined in **Table 8-8**. Valley Water's shortage levels are determined based on projected end-of-year groundwater storage and surface water (imported and local) availability. The shortage stages also include catastrophic interruption of water supplies due to earthquakes and other emergency events.

Table 8-8: Valley Water's WSCP Six Standard Shortage Stages

Shortage Level/Stage	Stage Title	Water Shortage
1	Alert	≤ 10%
2	Warning	10-20%
3	Severe	20-30%
4	Critical	30-40%
5	Extreme	40-50%
6	Emergency	> 50%

- Stage 1 is the alert stage that is meant to warn the public that current water use is tapping groundwater reserves. This stage is triggered when local groundwater and/or reservoir storage is projected to drop below normal stage and/or surface water supplies are reduced.
- Stage 2 is the warning stage. Shortage conditions continue to progress, requiring the initiation of drought response actions and close coordination with retailers and cities to encourage enacting of water use restrictions.
- Stage 3 is the severe stage. Shortage conditions are worsening, requiring close coordination with retailers and cities to encourage increase of enforcement activities.
- Stage 4 represents critical conditions. This is typically the most severe stage in a multi-year drought. This stage is triggered when groundwater storage and expected surface water deliveries are projected to fall below the lower threshold of Stage 3.
- Stage 5 and 6 are for extreme and emergency situations. These stages are meant to address an immediate crisis such as a major infrastructure failure when water supply may only be available to meet health and safety needs. Stage 5 or 6 can also be triggered in a deep drought when groundwater basin and reservoir storage levels are projected to be dangerously low.

Valley Water's WSCP establishes procedures for shortage levels, the actual implementation of a water level, however, needs to consider additional factors, including proactively declaring a shortage to allow time for behavior changes to achieve water use reduction, customer response to the current level, and available response actions.

During droughts or shortages, Valley Water considers all available tools to minimize their impact. Valley Water's shortage response actions broadly fall into four categories – supply augmentation, demand reduction, operational changes, and mandatory prohibitions against specific water use practices.

Valley Water's LOS goal is to meet 100% demand during normal years and at least 80% demand during droughts. Valley Water's drought response actions aim to achieve this service goal and minimize shortage impacts on the community. Based on lessons learned from the 2012-2016 and 2020-2022 droughts, Valley Water updated the actions that it may take in response to a declaration of a water shortage. **Table 8-9** provides a summary of Valley Water's shortage response actions for each stage. Because each drought is different, it is important to keep flexibility within each drought stage for when to implement each drought response action. This allows Valley Water to identify and implement the actions that will provide the most benefit for the specific drought conditions. The determination of specific actions at each shortage level will be based on the evaluation of cost, timing, supply availability, storage conditions, and other factors.

Table 8-9: Water Shortage Response Actions

Stage	Water Shortage	Response Actions
1 – Alert	≤10%	• 0–10% from demand reduction • 0–10% met by Storage
2 – Warning	10–20%	• 0–20% from demand reduction • 0–20% met by Storage • Supply augmentation • Operational changes
3 – Severe	20–30%	• 0–20% from demand reduction • 0–30% met by Storage • Supply augmentation • Operational changes
4 – Critical	30–40%	• 0–20% from demand reduction • 0–40% met by Storage • Supply augmentation • Operational changes
5 – Extreme	40–50%	• ≥20% from demand reduction • 0–50% met by Storage • Supply augmentation • Operational changes
6 – Emergency	>50%	• ≥20% from demand reduction • 0–50% met by Storage • Supply augmentation • Operational changes

Factors Impacting Supply Reliability

Many factors and events affect Valley Water's water supply availability in any given year. To evaluate water supply conditions each year, Valley Water uses information on anticipated CVP and SWP allocations for imported supply, precipitation in local watersheds to estimate reservoir inflow and natural groundwater recharge, and groundwater storage for groundwater availability. In addition, the determination of projected available water supply also considers supplies from SFPUC, carryover storage, and out-of-county storage.

Valley Water's many supply sources are subject to hydrologic variability and additional constraints including regulatory and permit constraints, seismic threats to the Delta levee system, and infrastructure capacities. A summary of all constraints to Valley Water's water supply sources is provided in more detail in Valley Water's UWMP.

8.3.3 Sunnyvale's Shortage Stages of Action

Sunnyvale staff, in anticipation of 10%, 20%, 50%, and greater than 50% supply reductions, developed a WSCP adopted in March of 1989 that includes mandatory (and voluntary) water use restrictions, rate block adjustment, and approaches for enforcement associated with each stage of anticipated reduction. The City's WSCP was most recently amended in June 2020, with changes including updating the previous stages to correlate with the six stages prescribed by statue.

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The following **Table 8-10** describes the six standard water shortage levels. The City initiates the stage based on the Assessment as described in **Section 8.2** which includes coordination with the wholesalers' declaration of shortages and restrictions.

Table 8-10: Water Shortage Contingency Plan Levels

Shortage Level/Stage	% Shortage Range	Shortage Condition	Shortage Response Actions Summary
1	≤ 10%	Alert	• Increase public information campaigning • Increase educational programs • Reduce system flushing
2	10-20%	Moderate	• Increase water waste patrols and enforcement of permanent water use restrictions • Restrict landscape irrigation to certain days
3	20-30%	Severe	• Additional restrictions on outdoor and non-essential water use • Drought surcharges and increased rates • Flow restrictors • Increase production monitoring
4	30-40%	Critical	• Additional restrictions on outdoor and non-essential water use • Allocations and mandatory conservation • Restrict use of decorative fountains and filling/refilling swimming pools • No new swimming pool or pond construction or installation of new lawns
5	40-50%	Catastrophic	• Additional restrictions on outdoor and non-essential water use • Moratorium or net zero demand increase on new connections • Restrict irrigation to certain months
6	> 50%	Catastrophic	• Additional restrictions on outdoor and non-essential water use • Increase use of non-potable water

8.4 Shortage Response Actions

The Water Code requires documentation of the specific actions to be undertaken during a water shortage. The City has developed a set of demand reduction measures, as well as supply augmentation options and operational changes, to be undertaken in response to each shortage level identified in **Table 8-10**. The WSCP information presented herein is based on the City's response to the 2012-2016 and 2021-2023 drought conditions and can be updated, as necessary.

City Council must approve the activation of the City's WSCP, and it is prepared to act in a timely manner to impose any water use restrictions and regulations deemed necessary in a water supply shortage emergency. Before imposing mandatory water use restrictions, the water shortage would be assessed based on the relative severity of the current drought/water shortage condition and the implementation of any State mandated water use cutbacks. A water shortage level would be recommended by the Environmental Services Director and approved by the City Council based on the levels listed in **Table 8-10**, and a water shortage declaration would be issued by the City Council. City Council would then determine the overall strategy and specific mix of voluntary and mandatory water consumption reduction measures to be implemented. Customers would be notified in accordance with standard Brown Act notification requirements. Customer and public notification methods that the City may employ in the event of a current or anticipated water shortage include, but are not limited to:

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- Posts on the City's website,
- Social media posts,
- Bill stuffers or flyers, and
- Press releases.

Additional detail on the City's notification procedures can be found in the City's Emergency Response Plan (ERP), which also outlines communication protocol with local, regional, and State government agencies. The City's ERP is discussed in more detail in **Section 8.8.1**.

The steps required to activate and implement the City's WSCP are summarized as follows:

- **STEP 1:** The City identifies that water shortage conditions exist (due to supply shortfalls, State cutbacks, or emergency conditions).
- **STEP 2:** The City identifies the appropriate water shortage response measures to be considered in response to the water shortage level in the following three categories of demand management:
    - **Voluntary Conservation Measures** – The City authorizes implementation of voluntary demand reduction measures – implemented in Stages 1 and 2.
    - **Mandatory Conservation Measures** – The City authorizes implementation of mandatory demand reduction measures, including enforcement actions and fines – implemented in Stages 3-6.
    - **Allocation/Rate-Based Measures** – The City authorizes implementation of water allocation and/or drought surcharge-based measures as deemed necessary to meet water shortage demand reduction targets while maintaining adequate water system revenues to operate the water system – implemented in Stages 3-6.

      Actual demand management measures may be adjusted based on activation of any supply augmentation measures in parallel with demand reduction measures as well as the need to meet water system revenue requirements that are not being met due to the water shortage condition.
- **STEP 3:** City Council approves activation of the City's WSCP and the suite of voluntary, mandatory, and/or allocation/rate-based measures to be implemented in response to a given water shortage level. The City must request approval of additional demand reduction measures as necessary to meet shortage level water use reduction targets.
- **STEP 4:** City Council deactivates or downgrades the implemented WSCP measures as water shortage levels decrease or the need no longer exists.

The actions to be undertaken during each stage cannot be implemented until necessary City Council approvals have been executed. The types of measures that may be implemented in each stage are described below. These measures may be updated/altered based on City Council direction and approval, State policy directives, emergency conditions, and/or to improve customer response. This six-stage response approach provides the City with the flexibility to address any given water shortage as it comes, and as conditions change.

Table 8-11 details the use restrictions for each stage of reduction declared by the City and outlines the penalties and charges associated with water use violations.

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Table 8-11: Demand Reduction Actions

Shortage Level	Demand Reduction Actions	Reduction in Shortage Gap (%)	Penalty, Charge, or Enforcement
Normal	*Permanent water use prohibitions please refer to City's Municipal Code 12.34.020* • Allowing plumbing fixtures to leak • Using potable water in a manner where it floods premises and runoff into the street • Using a hose to wash vehicles without shut off valve • Using a hose to wash driveways, sidewalks (except for health and safety) • Service of water to restaurants patrons without being requested • Installation of single pass cooling process in new construction • Sprinkler irrigation between the hours of 9 AM – 6 PM when daylight savings is in effect • Irrigating for more than 15 minutes per day per station • Irrigation with potable water during and within 48 hours after measurable rainfall is prohibited • Irrigation with potable water of ornamental turf on public street medians • Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily • Use of decorative fountains[1] without recirculation • Irrigating landscapes outside newly constructed homes or buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development	≤ 10%	No
Stage 1 up to 10%	• All the above • Expand public information campaign which includes water use surveys and promoting available rebate programs such as turf replacement, water use efficiency devices, or conversion to recycled water if available • Enforcement of permanent water use restriction Ordinance (Muni Code 12.34.020) • Decrease hydrant/line flushing (unless for public health or safety)	10%	No
Stage 2 up to 20%	• All the above • Increase water waste patrols and enforcement of permanent water use restriction Ordinance (Muni Code 12.34.020) • Set maximum weekly three-day irrigation schedule • Reduce system water loss	20%	• 1st and 2nd violation: $0 – written warning • 3rd violation: $250 • 4th violation: $500

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Shortage Level	Demand Reduction Actions	Reduction in Shortage Gap (%)	Penalty, Charge, or Enforcement
Stage 3 up to 30%	• All the above • Irrigation of ornamental landscapes with potable water more than two days per week is prohibited • Washing vehicles with potable water except at commercial vehicle washing facility • Implement or modify drought rate structure or surcharge • Increase frequency of meter reading	30%	• Fine for non-essential water uses as described in City ordinance: Not to exceed $1,000 • Cost recovery for Installation and removal of flow restricting valves: $100
Stage 4 up to 40%	• All the above • Water allocation may be imposed • New installations of lawns • Irrigating with potable water of golf courses except for tees and greens • Use of decorative fountains[1] • New swimming pool or pond construction • Filling or refilling swimming pools	40%	• Fine for non-essential water uses and those listed in demand reduction action: Not to exceed $1,000 • Cost recovery for Installation and removal of flow restricting valves: $100
Stage 5 Up to 50%	• All the above • Moratorium or net zero demand increase on new connections • New swimming pool or pond construction • Filling or refilling swimming pools • Outdoor watering December through March • Watering turf, grass or dichondra lawns (can provide minimal water for sports playing fields)	50%	• Fine for non-essential water uses and those listed in demand reduction action: Not to exceed $1,000 • Cost recovery for Installation and removal of flow restricting valves: $100
Stage 6 Greater than 50%	• All the above • Landscape irrigation with potable water of any City-owned premises or businesses where recycled water is available for connection • Irrigation of ornamental landscapes with potable water • Watering turf, grass or dichondra lawns with potable water including sports and playing fields and tees and greens for golf courses	>50%	• Fine for non-essential water uses and those listed in demand reduction action: Not to exceed $1,000 • Cost recovery for Installation and removal of flow restricting valves: $100

Note:
1. “Decorative fountains” are considered ornamental water features that are artificially supplied with water and include ponds, lakes, waterfalls, and fountains. These facilities are considered ornamental and not for recreation.

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In addition to the demand reduction actions noted in **Table 8-11**, the City may consider augmenting supply with increased groundwater pumping to help meet demands, as detailed in **Table 8-12**. The City primarily relies on imported water from wholesalers, and typically only pumps groundwater to exercise the wells and conduct sampling. However, as indicated in the supply reliability assessment summarized in **Section 8.1**, the City has the capability to increase the amount of groundwater pumped to offset anticipated deficiencies from other sources during any shortage condition.

Table 8-12: Supply Augmentation and Other Actions

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	Reduction in shortage gap? (%)
All	Augment supply with groundwater use if needed	10% – >50%

8.5 Consumption Reduction Methods

There are several methods actively implemented by the City to encourage consumption reduction, which are described below.

8.5.1 Public Outreach/Rebates

The City participates in public information campaigns and available water conservation rebates managed by each wholesaler encouraging water conservation. During dry periods, the City notifies the public of water conservation programs available through the City's website, bill stuffers, and direct mailing.

8.5.2 Water Rate Structure for Conservation

A major part of Sunnyvale's strategy for water conservation developed in 1989 is a block rate pricing structure involving a lifeline rate set at 15% above the existing rates, a conservation block rate set at a multiple of two times usage in applicable existing rate blocks, and a high impact/high use category at a multiple of three and a half times the existing rate blocks. The lifeline category exists for all categories of users whereas the conservation and high use rates are applied to recognize the greatest opportunities and needs for reduction and to be sensitive to the importance of manufacturing production and commercial needs. The same approach would be used should the City move to other shortage levels or stages. However, the multipliers would escalate.

The City restructured its residential water rate tiers in 2018, collapsing a four-tier inclining block structure into a two-tier indoor-versus-outdoor framework effective July 1, 2018; subsequent rate actions have modified prices but not tier definitions.

Separate metering systems have been set up for fire and landscape uses with potable water utilized for landscaping purposes at a different rate than domestic water.

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8.5.3 Enforcement Approach

The thrust of enforcement of Sunnyvale's conservation program is to solicit cooperation from water users who are unaware of the restrictions or have failed to comply with the provisions of the ordinance. Every effort is made to inform these users of the need for conserving water. If discussions with the user are unsuccessful in obtaining compliance, enforcement mechanisms are available.

The Environmental Services Department (ESD) and the Department of Public Safety (DPS) cooperate on the responsibility for enforcement of the City's conservation plan. Computerized systems track complaints throughout the enforcement process. The process involves first establishing contact with the individual who may be in violation; giving the individual information about code requirements; and verbally requesting that the user comply with these requirements. If a complaint has been registered with Neighborhood Preservation, the complainant is contacted and notified of the results of the preliminary investigation. The complainant is kept informed at each step of the process. Upon receipt of a second violation complaint, the violator will receive a written notice to comply and a warning that the next violation may result in a citation and/or the installation of a flow restricting device at the water meter. This flow restricting device would reduce the flow of water to a trickle, thereby allowing the occupant only enough water for health and sanitation purposes. If there are further complaints and a citation is to be issued, DPS is called to issue the citation.

A "hot line" telephone number is established for drought information and to register complaints. Trained staff are available to provide information and to respond to complaints.

8.6 Water Use Monitoring Procedure

Water Code §10632(a)(9) requires the description of the monitoring and reporting procedures that will ensure data is collected, tracked, and analyzed for purposes of monitoring customer compliance with, and effectiveness of, WSCP measures implemented during a drought/water shortage. During normal conditions, the City can monitor long-term water use through regular meter readings, allowing them to flag exceptionally high usage for verification of water loss or abuse. Additional and more frequent monitoring may be undertaken to improve the precision of water use data to meet specific water use reduction targets, depending on water shortage conditions.

Table 8-13 lists the mechanisms available for the City to monitor water use and determine actual reductions in water use, as well as the type and quality of data expected.

Table 8-13: Water Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type and Quality of Data Expected
Customer meter readings	Hourly/daily/monthly water consumption data for a specific user depending on frequency of readings
Production meter readings	Hourly/daily/monthly water production data depending on frequency of readings; includes customer water use plus system losses

During a drought/water shortage, these data would be analyzed with increased frequency as the water shortage condition worsens, and any concerns would be brought to City Council to support the need for implementation of additional water conservation measures as needed.

8.6.1 Determining Water Shortage Reductions

As customers begin to comply with water reduction measures the overall water use will decrease. The City continuously monitors water usage each month from billed consumption through water meters and will be able to determine the amount of water reductions compared to previous years. The City's billing system provides the capability for the City to evaluate water consumption from customer types. In stages 3 and higher, the City would expect to see large reductions from the dedicated landscape meters and residential customers due to mandatory restrictions on outdoor irrigation.

8.7 Analysis of Revenue Impacts of Reduced Sales during Shortages

In the event of a water shortage scenario, water fund revenues may decrease from the implementation of conservation measures and corresponding reduction in water sales. Conversely, expenses will increase because of the implementation and enforcement of water conservation measures. Expenditures will also rise on a per-unit basis, as wholesalers increase their per-unit price to compensate for the loss of revenue from wholesale sales.

The City has several options to address financial issues during a water shortage. First, the City retains two significant reserves, one for operating contingencies (Contingency Reserve) such as water shortages that is set at 25% of operations and purchased water costs, and a second for the purpose of stabilizing rates over time (Rate Stabilization Reserve). Each will help the City balance the Water Supply and Distribution fund during supply shortages. Finally, the City has four sources of supply and the ability to move most of its supply from any one point to any other point (the exception being recycled water). In the event of a water shortage, especially in the short term, the City has multiple supply options that should contribute to a more stable revenue base than if the City were under very limited wholesale supplies.

8.8 Emergency Response Plan

Water Code §10632(a)(3)(A) specifies that WSCP shortage levels shall also apply to other catastrophic interruptions of water supplies including, but not limited to, a regional power outage, an earthquake, or other potential emergency event.

8.8.1 Sunnyvale Emergency Response Plan

America's Water Infrastructure Act of 2018 §2013(b) also requires community water systems serving populations greater than 3,300 to develop or update an ERP that describes strategies, resources, communication protocols, and procedures that the utility can use to prepare for and respond to an incident, natural or man-made, that threatens life, property, or the environment. In accordance, the City's ERP was last updated in 2025.

The ERP coordinates the overall City response to disasters of various types in its service area. In addition, the ERP requires the City to have a local disaster plan that coordinates emergency responses with other agencies in the area. The ERP provides a detailed set of actions to be undertaken during specific catastrophic events, and **Table 8-14** provides a summary of actions for three of the most common possible catastrophic events: regional power outages, earthquakes, and malevolent acts.

In addition to the specific actions listed in **Table 8-14**, the City performs regular maintenance activities – such as annual inspections – for earthquake safety and budgets for emergency items – such as auxiliary generators – to prepare for potential catastrophic events and protect the local surface water and groundwater resources.

Table 8-14: Summary of Actions for Catastrophic Events

Event	Summary of Actions
Regional power outage	• Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water. • Establish water distribution points and ration water if necessary. • If water service is restricted, attempt to provide potable water tankers or bottled water to the area. • Make arrangements to conduct bacteriological tests, to determine possible contamination. • Utilize backup power supply to operate pumps in conjunction with elevated storage. • Manually reset wells that experience a power surge due to the restoration of power.
Earthquake	• Assess the condition of the water supply system. • Complete the damage assessment checklist for reservoirs, water treatment plants, wells and boosters, system transmission and distribution. • Coordinate with California Emergency Management Agency (Cal EMA) utilities group or fire district to identify immediate firefighting needs. • Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water. • Prepare report of findings, report assessed damages, advise as to materials of immediate need, and identify priorities including hospitals, schools, and other emergency operation centers. • Take actions to preserve storage. • Determine any health hazard of the water supply and issue any “Boil Water Order” or “Unsafe Water Alert” notification to the customers, if necessary. • Cancel the order or alert information after completing comprehensive water quality testing. • Make arrangements to conduct bacteriological tests, to identify possible contamination.
Malevolent acts	• Assess threat or actual intentional contamination of the water system. • Notify local law enforcement to investigate the validity of the threat. • Get notification from public health officials if potential water contamination. • Determine any health hazard of the water supply and issue any “Boil Water Order” or “Unsafe Water Alert” notification to the customers, if necessary. • Assess any structural damage from an intentional act. • Isolate areas that will take the longest to repair and or present a public health threat. Arrange to provide emergency water.

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8.8.2 SFPUC Emergency Preparedness Plan

Following the 1989 Loma Prieta earthquake, the SFPUC created a departmental Emergency Operations Plan (EOP). The SFPUC EOP was originally released in 1992 and has since been updated as necessary. The SFPUC EOP addresses a broad range of potential emergency situations that may affect the SFPUC and supplements the City's Emergency Response Plan, which was prepared by the Department of Emergency Management and most recently updated in 2017. The purpose of the SFPUC EOP is to describe the SFPUC's emergency management organization, roles and responsibilities, and emergency policies and procedures.

In addition, the SFPUC's enterprises each have their own emergency plans (in alignment with the SFPUC EOP), which detail that entity's specific emergency management organization, roles and responsibilities, emergency policies and procedures, and response to hazardous events (e.g., hazardous materials, power interruption, etc.). In 2025, the SFPUC developed a Water Emergency Operations Plan (Water EOP) to comply with the America's Water Infrastructure Act passed in 2018. The Water EOP integrates directly into, and functions as an annex to, the SFPUC EOP. The Water EOP addresses SFPUC water transmission and distribution systems and identifies the agency's enterprises, divisions, and bureaus with direct roles and responsibilities for those systems. The SFPUC EOP functions as a front end for the SFPUC's enterprise EOPs, covering emergency response at the department level, while each enterprise EOP covers enterprise-specific information on the enterprise's emergency organization and response procedures specific to enterprise responsibilities, assets, technical scope, and operations.

The SFPUC exercises its EOPs on a regular basis by conducting emergency exercises and through real-world response. Through these exercises and activations, the SFPUC learns how well the plans and procedures will or will not work in response to an emergency. EOP improvements are based on the results of these exercises and real-world event response and evaluation. The SFPUC also has an emergency response training plan that is based on Federal, State, and local standards and exercise and incident improvement plans. SFPUC employees have emergency training assignments based on their emergency response roles, as identified in the EOPs.

The types of events affecting the SFPUC that require emergency plans include but are not limited to:

- Major earthquake
- Loss of power
- Loss of water supply
- Major fire
- Hazardous material release that threatens water supply or environment
- Major pipeline breaks
- Dam incident
- Significant outage of SFPUC services
- Man-made or intentional acts of terrorism resulting in damage to the system or interruption in service

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In addition to the documents described above, the SFPUC also maintains various plans and procedures that deal with the possibility of alternate supply schemes and options. These plans and procedures include:

- Emergency Disinfection and Recovery Plan
- Emergency Response Action Plan
- Emergency Drinking Water Equipment and Alternatives Report
- Disinfection of SFPUC Water Trailers Procedure
- San Francisco Water Division Hydrant Manifold Standard Operating Procedure

SFPUC Emergency Drinking Water Planning

The SFPUC has implemented several projects to increase its capability to provide emergency drinking water during a catastrophic emergency. These projects include:

- Completion of many WSIP projects and other capital upgrades to improve security, detection, and communication (see Section 10.4);
- Development of public information and educational materials for residents and businesses;
- Construction of a disinfection and fill station at the existing San Francisco Zoo well, and obtaining a permit to utilize this well as a standby emergency drinking water source;
- Construction of six wells as part of the San Francisco Groundwater Supply Project, two of which also serve as emergency drinking water supplies, including a distribution system to fill emergency water tankers;
- Purchase and engineering of emergency-related equipment, including water tanker trucks and water distribution manifolds, to help with distribution post-disaster; and
- Coordination of planning with other City departments, neighboring jurisdictions, and other public and private partners to maximize resources and supplies for emergency response.

The SFPUC also maintains a Water Quality Notifications and Communications Plan. Initially prepared in 1996 and most recently updated in 2022, this plan provides contact information and guidelines on notifications that SFPUC staff will issue in the event of water quality impacts that warrant communications internally and externally with the State, the wholesale customers, and/or public. The plan treats water quality issues as potential or actual supply problems, which fall under the emergency response structure of the SFPUC EOP.

Power Outage Preparedness and Response by SFPUC

The SFPUC's water transmission system is primarily gravity fed from Hetch Hetchy Reservoir to the City. Within the in-City distribution system, key pump stations have generators on site, and all others have connections in place that would allow the use of portable generators.

Although power outages would not greatly impact water conveyance throughout the RWS because it is gravity fed, the SFPUC has prepared for potential regional power outages as follows:

- The Tesla Treatment Facility, the Sunol Valley Water Treatment Plant (SVWTP), the Sunol Valley Chloramination Facility (SVCF), and the San Antonio Pump Station (SAPS) have back-

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up power on site in the form of generators. Additionally, SVWTP, SVCF, and SAPS would not be impacted by a failure of the regional power grid because these facilities are powered by hydropower generated by Hetch Hetchy Water and Power via the Calaveras Substation.

- Both the Harry Tracy Water Treatment Plant and the Baden Pump Station (part of the Peninsula System) have back-up generators in place.
- Administrative facilities that may act as emergency operation centers also have back-up power.
- The SFPUC has a water supply connection with the Santa Clara Valley Water District (Valley Water or VW), known as the SFPUC-VW Intertie, which also has back-up generators in place.
- Additionally, various WSIP projects expanded the SFPUC's ability to remain in operation during power outages and other emergency situations.

8.8.3 Valley Water Catastrophic Interruption Planning

This section describes planning that Valley Water has undertaken to prepare for catastrophic interruption of water supplies during a disaster.

Infrastructure Reliability Plan

Valley Water completed its first Infrastructure Reliability Plan (IRP) in 2005 and updated it in 2016. The IRP analyzes several outage scenarios for Valley Water's system, including an earthquake, extreme storm, Delta outage, and power outage. Valley Water and retailers agreed on a reliability target during an emergency that Valley Water should be able to restore treated water deliveries to meet the equivalent of a winter month's demand (i.e., February) within 30 days after a major disaster event. Modeling and analyses estimated service restoration time of Valley Water's existing system for minimum winter demands in each of the outage scenarios.

The worst-case outage scenario was a magnitude 7.9 earthquake on the San Andreas fault, which would result in an estimated 30-day outage time before Valley Water can provide minimum treated water demands to retailers. In the Delta outage scenario, modeling demonstrated Valley Water can continue limited service (at an assumed 20% demand reduction) for a 24-month period with no imported water supplies if it occurred in a normal hydrologic year and started with normal groundwater supplies. In a regional power outage, Valley Water can operate facilities on backup fuel storage for an estimated 3 to 10 days, or longer given regular external fuel deliveries.

The 2016 IRP recommends efficient and targeted opportunities to improve system reliability and performance by either shortening Valley Water system outage time following an event or strengthening retailer capability to withstand Valley Water system outages. Important concepts that were incorporated into the identification of project opportunities and the analysis methodology are:

1. *Incorporate recent operational knowledge*: Planned and unplanned maintenance outages of Valley Water pipelines and treatment plants have allowed retailers to learn how to operate their systems without Valley Water treated water supplies. Retailers have operated with Valley Water treated water supply interruptions for up to eight weeks in some cases.

2. *Account for backup supply redundancy*: Most retailer service areas have adequate groundwater pumping capacity to serve as a backup to treated water deliveries and may not require large investments in additional reliability.
3. *Consider raw water and treated water system interdependencies*: Strengthening Valley Water's treated water pipeline system alone may not dramatically improve reliability in scenarios where raw water pipelines fail. The opposite also applies, as strengthening Valley Water's raw water pipeline system alone may not dramatically improve reliability in cases where treated water pipelines fail. Strengthening key portions of both the raw and treated water pipeline systems is needed to provide improved reliability. These improvements are being planned and recommended through the development of a distribution system master plan.
4. *Leverage existing investments*: Where possible and beneficial, leveraging existing assets is preferred, as Valley Water, retailers, and SFPUC have made significant investments in increasing system reliability and operational flexibility since the 2005 IRP.
5. *Favor frequently used assets*: Assets that can be used more frequently to enhance daily operations or periodic maintenance operations, are preferred over assets that would be designated as standby for infrequent use only during major emergencies.
6. *Address specific vulnerable areas*: There are specific retailer service areas that are more vulnerable to outages of Valley Water treated water or managed recharge. Focusing on localized solutions to improve reliability in these specific areas may be more effective, with lower costs, than major infrastructure improvements.

Ultimately, Valley Water and retailers determined that targeting specific vulnerable areas for improvement will effectively address identified reliability needs. A total of 20 projects are identified in the 2016 IRP to improve reliability in these specific areas. Some projects were identified for retailer implementation, some for Valley Water implementation, and others for joint implementation. Valley Water has been working to complete the identified projects since 2016.

Emergency Operations Center

Valley Water finalized the updated Emergency Operations Plan (EOP) in 2025. Valley Water's EOP establishes the framework for coordinated response and recovery during emergencies and disasters. The plan defines roles, responsibilities, and operational procedures to ensure effective activation and management of the Emergency Operations Center (EOC).

The EOC serves as the central location for coordination, communication, and decision-making during incidents that impact Valley Water's facilities, infrastructure, or service delivery. Through the EOC, Valley Water coordinates with Santa Clara County, local jurisdictions, state and federal agencies, and other partners to support life safety, protect critical infrastructure, maintain essential water and flood protection services, and provide timely, accurate information to the public during emergencies.

Emergency operations are conducted in alignment with the Standardized Emergency Management System (SEMS), the National Incident Management System (NIMS), and applicable local, state, and federal requirements. These coordinated efforts help ensure Valley Water can effectively respond to emergencies while supporting the public, critical infrastructure and impacted communities through communication, situational awareness, and service continuity. During any emergency, Valley Water continues the primary missions of providing clean, safe water and flood protection to the people of Santa Clara County. Valley Water maintains a full-time professional

emergency management staff trained and equipped to respond quickly to support Valley Water's EOC and field responders. To ensure rapid response and continuous readiness, Valley Water's Office of Emergency Services (OES) maintains 24 hours a day, seven days a week on-call staffing. OES staff are available at all times to monitor incidents, coordinate notifications, support EOC activation, and facilitate timely communication and operational coordination. These efforts help maintain situational awareness, reduce misinformation, and support impacted communities throughout the incident lifecycle.

Milpitas Intertie

During an emergency, in addition to retailers relying on groundwater and their own supplies, Valley Water has a 40-MGD intertie with the SFPUC located in the City of Milpitas, which allows the SFPUC and the East Pipeline systems to exchange water during emergencies and planned maintenance.

Treatment Plant and Pipeline Shutdown Notification

Valley Water has emergency plans to cover the shutdown of pipelines and plant processes due to earthquakes, fire, or other disturbances to water quality or delivery. Efficient communication with Valley Water's retailers is imperative in the case of an emergency, so Valley Water utilizes the Rapid Notification Plan to ensure prompt notification of emergencies that impact treated water deliveries to retailers. The Rapid Notification Plan is implemented in the event of any water quality or plant failure, a reduction in service, or a startup/shutdown condition.

Delta-Conveyed Supply Interruption

Valley Water relies on imported water from the Delta for about 40% of its annual supply. The interruption of Delta-conveyed supply will pose significant risks to Valley Water's water supply reliability. In the event of an outage in the Delta, a strategy was developed by DWR, the Army Corps of Engineers (Corps), Bureau of Reclamation, California Office of Emergency Services (Cal OES), and the State Water Contractors to provide water supply protections that would enable resumption of at least partial deliveries from the Delta in less than six months in the event of an outage.

Valley Water analyzed the impacts of a six-month Delta outage to determine the effect on service. The analysis assumed that all local infrastructure remains intact, as an earthquake or flood in the Delta is unlikely to badly damage local infrastructure. The analysis also assumed normal hydrologic conditions and starting storage conditions, rather than stacking disaster upon disaster (i.e., earthquake plus drought, etc.), access to SFPUC supplies, and implementation of water use reductions of 20 percent. The impacts of such an outage are largely operational as retailers would be required to use groundwater instead of their usual treated water supplies and Valley Water would actively manage the groundwater recharge program to meet countywide needs. Even with increased pumping, groundwater storage is estimated to remain in the normal (Stage 1) range. Thus, the impacts of a six-month Delta outage are manageable assuming a normal starting position. Valley Water would potentially need to call for more aggressive water use reductions if a Delta outage were to occur during or immediately following a drought.

The Delta Flood Emergency Management Plan (DWR, 2018) provides strategies for responses to Delta levee failures, including earthquake-induced numerous levee failures during dry conditions with multiple flooded islands and extensive saltwater intrusion, resulting in curtailment of export operations. Under these severe conditions, an emergency freshwater pathway would

be established from the central Delta along Middle River and Victoria Canal to the export pumps in the south Delta. The plan includes the pre-positioning of emergency construction materials at stockpile and warehouse sites in the Delta, and development of tactical modeling tools (DWR Emergency Response Tool) to predict levee repair logistics, timelines of levee repair, and suitable water quality to restore exports. Using pre-positioned materials, multiple earthquake-generated levee breaches and levee slumping along the freshwater pathway can be repaired in less than six months. Significant improvements to the central and south Delta levee systems along the emergency freshwater pathway began in 2010 and are continuing. Continued efforts under analysis strive to mitigate not only flood and earthquake risk but also address future sea-level rise risk.

8.9 Seismic Risk Assessment and Mitigation Plan

8.9.1 Sunnyvale Seismic Risk Assessment and Mitigation Plans

In 2023, Santa Clara County, in coordination with the City and other local jurisdictions, completed an update to the Santa Clara County Multijurisdictional Hazard Mitigation Plan (MJHMP). This plan provides a comprehensive strategy for reducing risks from natural and human-caused hazards. The 2023 update significantly enhances the previous plan by incorporating updated hazard data, addressing and emphasizing the impacts of climate change, and refining mitigation strategies specific to each participating jurisdiction. Volume I of the MJHMP can be found at the following link: Santa Clara County MJHMP.

The City has an annex within Volume II of the MJHMP (included as **Appendix I** of the UWMP) which, together with Volume I, explicitly addresses the City's unique risks, and mitigation priorities, related to hazards such as earthquakes, flooding, and extreme heat, while also considering the City's growth and development trends. Mitigation strategies outlined in the City's annex include seismic retrofitting critical facilities, flood control measures, and public education initiatives to increase community resilience. The annex was developed in coordination with various stakeholders, including neighboring jurisdictions, non-profits, and local businesses, ensuring a comprehensive and inclusive approach to hazard mitigation.

The City also completed a Seismic Engineering Study in 2025 that presents a detailed seismic risk assessment of the City's water system facilities and identifies recommended seismic mitigation projects to address vulnerabilities identified during the evaluation.

8.9.2 SFPUC Seismic Risk Assessment and Mitigation Plan

As part of the SFPUC's Facilities Reliability Program and WSIP, the SFPUC performed an extensive multi-year evaluation of seismic risks to its water system that resulted in major capital improvements to increase seismic reliability. The goals of WSIP include enhancing the ability of the SFPUC water system to meet identified levels of service goals for water quality, seismic reliability, delivery reliability, and water supply. One of the reasons the SFPUC developed WSIP was to reduce the likelihood of shortages, thereby reducing the likelihood of needing to implement the WSCP. Several WSIP projects located in San Francisco improved the seismic reliability of the in-City distribution system, such as additional wells that can be used as emergency drinking water sources. Many WSIP projects related to the RWS outside of San Francisco, the majority of which are now complete, addressed both seismic reliability and overall system reliability. The

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SFPUC completed the San Francisco portion of WSIP as of October 2020 and forecasts that the overall WSIP will be complete in June 2032.

The Level of Service (LOS) Goals and Objectives for seismic reliability informed development of WSIP capital projects and guided program implementation. The LOS established post-earthquake delivery and recovery objectives under the following seismic scenarios:

- Magnitude 7.9 event on the San Andreas fault
- Magnitude 7.3 event on the Hayward fault
- Magnitude 6.9 event on the Calaveras fault

An assessment of seismic risk and resilience is contained in the body of analysis performed to support the WSIP. The risks associated with the seismic scenarios considered are reflected in the delivery objectives established in the LOS, specifically:

- Delivery of winter month demand 24 hours after a major earthquake, and
- Delivery of average day demand 30 days after a major earthquake

In addition to the improvements that have or will come from the WSIP, the SFPUC has already constructed system interties for use during catastrophic emergencies, short-term facility maintenance and upgrade activities, and times of water shortages. These are listed below:

- An intertie that may transfer up to 30 mgd between the SFPUC and East Bay Municipal Utilities District (EBMUD) systems, allowing EBMUD to serve the City of Hayward (an SFPUC wholesale customer) and/or supply the SFPUC directly (and vice versa);
- An intertie that may transfer up to 40 mgd between the SFPUC and Valley Water systems; and,
- An intertie between the SFPUC the South Bay Aqueduct that the SFPUC used in 1991-1992 and may upgrade to enable the SFPUC to receive State Water Project water in the event of a future emergency.

The WSIP also includes projects related to standby power facilities at various locations. These projects provide for standby electrical power at six critical facilities to keep them in operation during power outages and other emergency situations. Permanent engine generators are located at four locations (San Pedro Valve Lot, Millbrae Facility, Alameda West, and Harry Tracy Water Treatment Plant), while hookups for portable engine generators are at two locations (San Antonio Reservoir and Calaveras Reservoir).

The City and County of San Francisco also have a Hazards and Climate Resilience Plan (https://www.onesanfrancisco.org/hazards-and-climate-resilience-plan) which was last updated in July 2025. This plan is a roadmap to minimizing the impacts of natural hazards and climate change on buildings, infrastructure, and communities. The plan also serves as San Francisco's Local Hazard Mitigation Plan which it updates every five years to include the latest understanding of natural hazards and climate change impacts, local risks, and community priorities. Examples of hazards analyzed in the plan include dam or reservoir failure, flooding, drought, and wildfire.

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8.9.3 Valley Water Local Hazard Mitigation Plan

Valley Water's Local Hazard Mitigation Plan (LHMP) identifies capabilities, resources, information, and strategies for building resilience and reducing physical and social vulnerabilities to disasters. It also coordinates mitigation actions, providing essential guidance for Valley Water to reduce its vulnerability to disasters. Valley Water developed the LHMP to be consistent with current legislation, conditions, and best available science. This ensures that hazards are accurately profiled; policies are consistent with current Valley Water standards and relevant Federal, State, or regional regulations; and Valley Water has an updated LHMP consistent with Federal Emergency Management Agency (FEMA) ERP requirements. The LHMP also includes strategies to reduce vulnerability to disaster through education and outreach programs, foster the development of partnerships, and implement risk reduction activities.

Since 2017, Valley Water's LHMP is attached an annex to the Santa Clara County's MJHMP, maintained by the Santa Clara County Office of Emergency Management. The Valley Water LHMP was most recently updated in 2023 and approved by FEMA in February 2024 and is valid for the period of February 8, 2024, through February 7, 2029.

8.10 Legal Authority

The City regulates water use under Sunnyvale's Municipal Code Chapter 12. With the approval of City Council, the City has the authority to establish a WSCP to prepare a set of actions to respond to water supply restrictions caused by drought conditions, supply disruptions, and/or any other unforeseen emergencies. Typically, City Council reviews and approves all WSCP policies and programs as part of the UWMP planning process before they can be implemented and placed into practice. However, because the WSCP is a standalone document, it can be modified and updated as a separate process as described further in this section.

When a water shortage is suspected, the City will work with its wholesalers and other regional partners to discuss the possible proclamation of a local emergency per the California Government Code, California Emergency Services Act (Article 2, §8558). The City's Environmental Services Director will identify and recommend a water shortage level to be acknowledged, and upon approval, City Council shall declare a water shortage emergency, in accordance with Water Code Division 1, §350.

8.11 Plan Adoption, Submittal, and Availability

As part of the 2025 UWMP planning cycle, the City's 2025 WSCP was adopted together with the 2025 UWMP. However, because the Water Code requires that the WSCP be adopted as a standalone plan, the WSCP can be amended or updated as necessary outside of the five-year UWMP planning cycle. This section describes the steps taken by the City to meet the requirements of the Water Code pertaining to public availability, adoption, submittal, and availability of the 2025 WSCP as well as the steps needed to amend the WSCP. The resolution approving the 2025 WSCP for the City is included in **Appendix L** of the UWMP.

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8.11.1 60-Day Notification

Notifications indicating preparation of the City's 2025 WSCP were provided to the cities and counties listed in **Table 8-15** at least 60 days in advance of the public hearing as required by the Water Code; a copy of the notice is included in **Appendix A** of the UWMP**.**

8.11.2 Notice to Cities and Counties

The public hearing notice for the 2025 UWMP and WSCP was sent to the cities and counties listed in **Table 8-15** and prior to the public hearing. Three notices were posted in the Sunnyvale Sun to inform the public of the upcoming public hearing. The notices include the time and place of the hearing, as well as locations where the plans were made available for public inspection. The first notice was published on May 15, 2026, the second on May 22, 2026, and the third on May 29, 2026. A copy of the notice is included in **Appendix A** of the UWMP.

Table 8-15: Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
City of Hayward	☑	☑
City of Milpitas	☑	☑
City of Mountain View	☑	☑
City of Palo Alto	☑	☑
City of Santa Clara	☑	☑
City of Brisbane	☑	☑
City of Burlingame	☑	☑
City of Daly City	☑	☑
City of Menlo Park	☑	☑
City of Millbrae	☑	☑
City of Redwood City	☑	☑
City of San Bruno	☑	☑
City of East Palo Alto	☑	☑
City of San Jose	☑	☑
City of Foster City	☑	☑
County Name	**60 Day Notice**	**Notice of Public Hearing**
Alameda County	☑	☑
Santa Clara County	☑	☑

The draft plans were made available for the community and posted on the City's website (www.sunnyvale.ca.gov) on May 15, 2026. Copies of all public notices of the hearing are included in **Appendix A**.

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8.11.3 Public Hearing and Adoption

The public hearing for consideration and adoption of the 2025 UWMP and WSCP by the City Council took place on June 16, 2026 during a normal City Council session. The session began with the public hearing to allow community input prior to the formal adoption of both plans by City Council. All public input received was considered before final adoption of both documents. The adopted resolution is included in **Appendix L** of the UWMP.

8.11.4 Plan Submittal

Upon adoption of the 2025 UWMP and WSCP by City Council, implementation took place as identified in this document. Submission of the adopted plans to DWR was done electronically within 30 days from the date of adoption, and no later than July 1, 2026.

8.11.5 Public Availability

The adopted UWMP and WSCP were posted on the City's website (www.sunnyvale.ca.gov) within 30 days of submission to DWR and were submitted to the California State Library.

8.11.6 Amending an Adopted WSCP

This WSCP has been developed to act as a set of guidelines for steps to take during a drought/water shortage. Given the variable nature of water and the climate and the intersection of many different factors, no two drought situations will be identical, and therefore, there must be room for improvement/alteration in the way that the City responds to each individual water shortage condition as it is encountered. This WSCP is an adaptive framework that is based on the City's response to the 2012-2016 and 2021-2023 droughts, but it is open to refinement and amendment as the effectiveness of current practices is evaluated, new and different conditions are experienced, and new options for drought mitigation measures (demand management, supply augmentation, etc.) become available.

Based on the results of monitoring and reporting processes described in **Section 8.6**, the City can amend the procedures outlined in this WSCP pending the approval of City Council. The City's 2025 WSCP will only be modified following notification, public hearing, adoption, and submittal as prescribed in the Water Code.

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SECTION 9 – DEMAND MANAGEMENT MEASURES

The City of Sunnyvale has a commitment to water conservation and implementation of the Demand Management Measures (DMMs) identified by the State. DMMs can be water conservation programs, outreach, or monetary incentives offered to customers as well as institutional tools to help water purveyors reduce water use.

Many of the DMMs offered by the City to customers are programs run by, or coordinated through, the wholesaler Valley Water or BAWSCA. The programs are either funded through the wholesale water rates paid by the City or are directly reimbursed by the City. Additional program descriptions including implementation over the past five years and the nature and extent of each program component within a DMM are explained in this section.

Table 9-1 below lists current and planned program components implemented by the City for each measure and indicates who administers the program.

Table 9-1: Demand Management Measures (DMMs)

Demand Management Measure	City Program	Valley Water Program	BAWSCA Program
Water Waste Prevention Ordinance			
Adopted water waste prohibition ordinance	X		
Metering			
Fully metered service connections	X		
Retrofit or replacement of aging meters	X		
Submeter rebate program		X	
Conservation Pricing			
Conservation rate structures	X		
Public Education and Outreach			
Public information programs	X	X	
School education programs	X	X	
Programs to assess and manage distribution system real loss			
System water audits, leak detection, AMI meters, and repair	X		
Water loss management program			X
Water Conservation Program Coordination and Staffing Support			
Dedicated water conservation coordinator	X		
Other Demand Management Measures			
Residential surveys and water use reports		X	
Residential plumbing retrofit		X	
Large landscape conservation programs and incentives		X	
Graywater landscape irrigation rebates and incentives		X	
Rain barrel rebate program	X		X
Conservation programs for residential, and Commercial, Industrial, Institutional (CII) customers		X	
Regional Water Conservation Program			X

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The City, as a municipally owned water utility, has the legal authority to implement DMMs by ordinance or resolution of the City Council. This authority has been exercised through past implementation of DMMs, fees, and penalties. This section describes the DMMs that are implemented within the City's service area to continue to encourage water conservation in support of the City's supply reliability.

9.1 Demand Management Measures for Wholesale Agencies

Both Valley Water and SFPUC implement DMMs to promote conservation and reduce demand on water supply through metering, public education and outreach, and water conservation program coordination.

9.2 Demand Management Measures for Retail Agencies

Below is a description of the various DMMs that are implemented within the City either by the City, Valley Water, or BAWSCA.

9.2.1 Water Waste Prevention Ordinances

Implementation: Drought and water conservation requirements are implemented by the City and will continue to be implemented by the City in the future.

Description: On May 12, 2015, the City Council adopted a resolution and established a 30% water use reduction target from 2013 levels (increased from 15%) through June 2016 out of concern for drought conditions, groundwater depletion and land subsidence. The City's resolution instituted a two-day watering schedule, prohibits outdoor irrigation within 48 hours of rainfall, and requires hotels to give patrons the option of having linens laundered daily.

In June 2016, the City Council adopted an ordinance to declare a continued drought condition through June 2017. The ordinance set a 15% water use reduction target from 2013 levels and limited the use of potable water for landscape and turf irrigation to three days a week. The ordinance also prohibits the use of potable water to irrigate ornamental turf on public street medians. Prohibitions implemented by the City include:

- Water waste due to broken or defective plumbing, sprinkler, watering, or irrigation systems;
- The application of potable water to outdoor landscapes in a manner that causes runoff;
- Landscape irrigation between the hours of 9 AM and 6 PM;
- Landscape irrigation for more than 15 minutes per day per station when using a landscape irrigation system or a watering device that is not continuously attended;
- Using a hose without a positive shutoff valve to wash cars, buses, boats, or trailers;
- The application of potable water to driveways and sidewalks;
- The use of potable water in a fountain or other decorative water features unless the water is part of a recirculating system;
- The application of potable water to outdoor landscapes within 48 hours or rainfall;

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- Serving water in restaurants except upon request;
- The use of potable water to irrigate ornamental turf on public street medians; and
- The installation of single pass cooling process in new construction.

Violation of these provisions may escalate to installation of a flow restricting device upon the water service lines and cumulative fines. The Water Conservation Plan and Municipal Code are included as **Appendix G** and **Appendix J**, respectively.

9.2.2 Metering

Implementation: The City implements metering requirements within the service area and will continue to do so. Additionally, the City implements a program to retrofit and replace meters as they age. Through Valley Water, the City offers multi-family housing the opportunity to receive a rebate for installation of submeters.

Description: The City requires that all service connections within the service area are metered. All new service connections are metered and are billed by volume of water used. There are no known connections operating without a meter. Connections to the City are governed by Chapter 12.24 of the Sunnyvale Municipal Code, which is provided as **Appendix J**.

Sunnyvale encourages all new commercial, industrial, and multi-family developments to have dedicated water meters and separate accounts and meters for landscape irrigation. As older developments are replaced with newer ones, any customers without a dedicated landscape irrigation meter will be encouraged to acquire one.

Valley Water's Submeter Rebate Program: Beginning as a pilot in 2001 and extended in 2008, this program provides a $150 rebate for every submeter installed at multi-family housing complexes, such as mobile home parks and condominium complexes. Individual well owners, homes on a shared well, and ADUs also qualify. Cost sharing agreements increase the rebate rate in some areas.

Water use records from participating mobile home parks showed an average water savings of 23% per mobile home in a pilot study. This program has issued 7,588 rebates to date. The increase in development and use of ADUs on residential properties in recent years provides an opportunity to generate more participation in this program. Valley Water plans to continue to offer this program in the future to reach the region's long-term water conservation goals.

9.2.3 Conservation Pricing

Implementation: Conservation pricing is implemented by the City and will continue to be implemented by the City in the future.

Description: In March 1989, in response to drought conditions, the City adopted a water conservation plan that required implementation of DMMs such as an inverted rate structure, deterrents to water waste, landscaping restrictions and the institution of a recycled water program.

Prior to the 1976-1978 drought, the City had a traditional declining-rate block structure, which meant that the more water that was used by a customer, the lower the cost per unit. In 1977, a

flat-rate block structure was established with costs fixed regardless of the quantity used. In the year following the drought, an inverted rate structure was adopted and was regularly modified to ensure water conservation and to adequately reflect the high cost of developing new water resources projects. The City restructured its residential water rate tiers in 2018, collapsing a four-tier inclining block structure into a two-tier indoor-versus-outdoor framework effective July 1, 2018; subsequent rate actions have modified prices but not tier definitions.

Sunnyvale's Fiscal Year 2024/2025 Utility Fee Schedule is attached as **Appendix K**.

9.2.4 Public Education and Outreach

City of Sunnyvale Public Information Campaigns

Implementation: The City participates in developing and implementing public information programs. The City also implements outreach programs in the service area. The City will continue to implement public information programs in the future.

Description: The City has carried out various public information campaigns in the past and continues to do so. Multi-media advertising has covered topics such as water conservation, urban runoff pollution prevention, water quality, groundwater recharge, water supply, water recycling, watershed and flood protection, and stream stewardship. Efforts included paid advertising, public service announcements, bill inserts/brochures, targeted mailings, website development, social media, community outreach, school programs, and special events. One highlight was for a high efficiency washing machine, encouraging participation in rebate programs, and learning more about the City's conservation efforts. Campaigns have been carried out in various languages including English, Spanish, Vietnamese, and Chinese.

The City also participates by including inserts and information flyers in customer utility bills, and by distributing articles and information in newsletters and reports sent to City residents. All utility bills include a water usage chart comparing current year to previous year usage to help customers who have unknowingly increased their water consumption to check on the cause of the increase.

Sunnyvale also participates in public activities such as the Farmer's Market and Earth Day Celebration. Partnerships with the Public Safety and Community Services departments in activities sponsored by those departments (Pancake Breakfast, Summer Camp) provide more opportunities to reach youth and the public with a message extolling the virtue of water conservation.

The City maintains a water conservation page on the City's website that provides information on water conservation program incentives and rebates, water conservation tips and tools, drought restrictions, and links to wholesaler water conservation programs or other informative websites.

City of Sunnyvale School Education Programs

Implementation and Description: The City also has a water pollution and conservation outreach program spearheaded by Sunnyvale's Environmental Services Department (ESD) staff. This program offers tours of the WPCP, classroom presentations, City Hall field trips, and a creek water education program. Plant tours teach youth about the function of wastewater treatment, water pollution prevention, and water conservation. Oftentimes, the tour is a supplement to a

water study module in the classroom, and approximately 50% are repeat tours scheduled year after year by teachers.

The Creek Education program provides watershed, urban runoff, water pollution prevention, storm water, creek education, water conservation and wastewater information to Sunnyvale students at schools in the Cupertino & Sunnyvale school districts. Students take a yearly field trip to Stevens Creek at McClellan Ranch Park after studying water and structures of life courses in class.

Classroom presentations involve a watershed pollution demonstration designed to correlate with the State of California curriculum standards for earth sciences. Subjects covered include water cycle, groundwater, aquifers, water pollution and water conservation.

City Hall Field Trips allow students to meet City staff and learn how departments such as ESD and Public Safety keep the City running. The field trips include presentations on the responsibilities of ESD and water conservation tips that students can apply in their daily lives.

All City School Education Programs were halted in 2020 due to the COVID-19 outbreak and in the interest of public health and safety. All City School Education Programs have been reinstated in 2022. However, due to construction and safety concerns of the COVID-19 pandemic, plant tours are limited to staff and specific groups such as Leadership Sunnyvale since 2023.

Valley Water Public Information Campaigns

Implementation and Description: Valley Water conducts outreach activities which include multi-media marketing campaigns directed at the diverse county population, website development and maintenance, social media, publications, public meetings, community events, interagency partnerships, water conservation workshops and seminars, and a speaker's bureau. Outreach efforts focus on supporting customers, water retailers, and other key stakeholders to make conservation a way of life in Santa Clara County (in alignment with Board Resolution 23-52), as well as advancing community knowledge, awareness, and understanding of the conservation and water supply services provided by Valley Water.

Recognizing that landscape irrigation accounts for more than half of residential water use, Valley Water's water conservation campaigns encourage Santa Clara County residents to replace water-intensive lawns with drought-tolerant landscapes and to schedule free outdoor water surveys to identify opportunities to improve outdoor water efficiency. The annual multilingual effort focuses on accessibility, clear calls to action, and culturally relevant stories of landscape transformations.

- **Multilingual Digital Outreach:** Ads and landing pages are shared in English, Spanish, Vietnamese, and written Chinese, ensuring that Santa Clara County's diverse community can connect with the call to conserve water in culturally relevant ways.
- **Landscape Rebate Program Stories:** Valley Water's multilingual resident-driven videos highlight real homeowners who have transformed their yards. The stories help build trust and emotional connection while showcasing the benefits and beauty of drought-tolerant landscapes.

Through targeted messaging and inclusive storytelling, Valley Water reaches underserved and non-English-speaking communities, building trust and inspiring lasting behavioral change. By combining digital innovation, inclusive storytelling, and community-centered engagement, Valley Water demonstrates how strategic communications can drive meaningful behavior change.

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Valley Water's public outreach efforts also include social media and updates to its water conservation program website (www.watersavings.org). The website is updated throughout the year to include the latest program information, new reports/studies, and updates on workshops.

Landscape Summit: Since 2016, Valley Water has annually held the Landscape Summit, an event developed through Valley Water's Landscape Committee as a forum for landscape professionals to learn about water issues in the county and California as a whole, and how water relates to the landscaping industry. It is also an opportunity for Valley Water to get valuable feedback from landscape professionals, and for attendees to collaborate and exchange ideas. The 10th Annual Landscape Summit was held in-person and virtually on February 27, 2025.

Nursery Program: To increase the public's awareness of water-efficient gardening techniques, Valley Water developed the Nursery Program in 1995. This program distributes, at least quarterly, a series of educational materials to nurseries, irrigation supply stores, and big box store retailers throughout the county. In March 2025, Valley Water developed nursery outreach pedestal signs to be placed in participating nurseries. These pedestals streamline program marketing to customers of relevant stores by displaying QR codes that redirect to conservation program resources and program applications. The Nursery Program literature is currently being distributed to and displayed at more than 30 participating nurseries and vendors.

Demonstration Gardens: Demonstration gardens can inspire community members to incorporate sustainable, ecological, or water-wise plants and techniques into their landscaping. Valley Water has maintained a list of water-wise and California-native plant demonstration gardens to help guide community members in converting their own gardens to be more water-efficient. In June 2025, Valley Water finalized a contract with BFS Landscape Architects to provide design services for a planned demonstration garden at Valley Water's Headquarters building. The approximately 26,000 square feet garden will showcase water conservation and sustainable practices, serve as a public gathering and educational space, and emphasize Valley Water's Landscape Rebate Program requirements. The garden will highlight a watershed approach by incorporating features such as native and climate-appropriate plants, high-efficiency irrigation systems, educational signage, and integrated rainwater capture. Funded through the Safe, Clean Water and Natural Flood Protection Program, the design of the demonstration garden is expected to be completed in 2026, and construction will be completed by the close of FY 2028.

Workshops: Valley Water promotes water conservation through workshops and trainings throughout the community. Examples of these include Graywater Laundry to Landscape workshops and presentations to schools, local universities, industry association gatherings, nursery staff, community gardens, native plant society members, corporate events, local Master Gardeners, water conservation peers at various conferences, and many more. On average, Valley Water conservation staff attend over forty-five presentations and present at over a dozen events (excluding webinars discussed below) each year. In April 2022, Valley Water began offering "Office Hours" to provide drop-in opportunities for customers to ask about program benefits and the application process. This has been a particularly effective service reaching customers in small groups during regularly scheduled events throughout each month. In addition, Valley Water launched a Webinar series to amplify awareness of its water conservation rebates and services. The webinars were live translated into Spanish, Vietnamese, and Mandarin and are uploaded to www.youtube.com/valleywater.

Growing Native Garden Tour: To showcase exemplary native plant gardens, Valley Water has been a sponsor of the Growing Native Garden Tour every spring since 2003. Each year, thousands of participants visit upwards of 60 gardens. These native plant gardens demonstrate

the beauty and efficiency of well-maintained native gardens to residents of Santa Clara and San Mateo counties. In addition to showcasing native plants, at least one garden offers native plants for sale each year. As an expanded community-based outreach opportunity, Valley Water has produced eight Landscape Rebate Success Story testimonial videos featuring gardens on the tour to help promote Valley Water's Landscape Rebate Program.

Community Events: Each year, Valley Water staff participate in a variety of public events to engage with the Santa Clara County community on water-related issues, such as water conservation, water recycling and purification, flood preparedness, and community-specific projects. The agency's community outreach effort provides opportunities for collaboration with Valley Water's civic, business, and nonprofit partners through hosting informational booths at more than 170 conferences, symposia, science fairs, and other community events from 2021 through 2025.

Valley Water School Education Programs

Implementation and Description: Valley Water's Education Outreach (EO) program was established in 1995 to develop and implement water education programs. Education Outreach provides free grade-level appropriate classroom presentations, assemblies, and field trips at Valley Water outdoor classrooms to schools and youth serving organizations within Santa Clara County. The objective is to educate youth about water with a focus on water conservation, water supply, watershed stewardship, pollution reduction, and flood preparedness. EO also provides free education materials to educators, including workbooks and videos.

From 2021 to 2025, Valley Water's EO program reached an average of 9,000 youth per year, engaging a total of 54,546 youth. EO has supported over 2,526 educators through classroom presentations, field trips, and resources. Youth from over 1,873 classrooms have participated in hands-on, Next Generation Science Standards related programs and field trips. Examples include lessons using storytelling for pre-K and early elementary students and using hands-on science activities for middle school and high school students.

9.2.5 Programs to Assess and Manage Distribution System Real Loss

Implementation: The City continuously implements water audits and leak detection and repair for the water distribution system. In addition to City staff continuously monitoring the water distribution system through SCADA technology and field inspections, the City maintains an active leak detection program. The City also has an upcoming project to modernize water meters with Advanced Metering Infrastructure (AMI) meters that would further reduce water losses. The City expects this to be an ongoing program.

Description: To fulfill this measure, all accounts within the City service area are metered. The City also offers help to its residential customers in determining if a leak exists at the property. Water Meter Readers report leaky meters or water meters running when a residence does not appear to be occupied so that a technician can be dispatched to investigate and make repairs as needed.

Additionally, a leak detection company conducts annual inspections of distribution pipeline. The length of pipe inspected annually is determined by the City. The leak detection contractor generates a condition assessment report for the inspected pipeline, and reported leaks are

promptly remediated by City staff or a hired contractor. These programs have helped the City track and reduce system losses.

The City has an upcoming AMI meter project that will replace existing meters with newer, more accurate technology. The transition to AMI meters is expected to further reduce water losses from leaks or unregistered consumption. The AMI meter project will include an online customer portal that allows customers to monitor their water use and receive alerts for unusual consumption, which may result in behavioral changes that support water conservation.

BAWSCA's Water Loss Management Program (WLMP): Established in 2018, this program supports participating BAWSCA member agencies in reducing water losses to an economically optimized level and complying with water loss requirements implemented by the SWRCB per SB 555. The program includes two components:

- **Loss Evaluation & Knowledge (LEAK) workgroup:** A Core Conservation Program to provide water loss control education and peer-to-peer learning opportunities for BAWSCA member agencies.
- **WLMP Subscription Program:** Offers individualized support to BAWSCA agencies on water audit completion, validation, and other tasks associated with water loss management.

9.2.6 Water Conservation Program Coordination and Staffing Support

Implementation and Description: Since 1999, the City's regular staffing has included an Environmental Programs Specialist position (formerly Environmental Outreach Coordinator) whose scope has included education, outreach, and implementation of programs for water conservation. The current Environmental Programs Specialist's information is provided below. It is expected that there will continue to be a staff member whose scope includes water conservation programs.

Environmental Programs Specialist:

Name:	Claire Wong
Title:	Environmental Programs Specialist, Environmental Services Department
Address:	City of Sunnyvale 456 W. Olive Ave Sunnyvale, CA 94086
Phone:	(408) 730-7734
Email:	wwong@sunnyvale.ca.gov

9.2.7 Other Demand Management Measures

Residential Programs

Implementation and Description: The Water Wise Survey Program, formerly known as the Water Wise House Call Program, was first implemented in July of 1998 as a pilot program. Since then, there have been multiple residential programs administered by Valley Water to meet the

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region's long-term water conservation goals. The City shares the cost to support these programs. The implementation of each program is described below:

- **Water Use Reports:** Water use reports have been proven effective at encouraging residents to save water and when combined with Advanced Metering Infrastructure, can inform residents about water leaks quickly. In FY 2014, Valley Water started a program to share costs with the local water retailers on home water use reports. The program has expanded to provide services beyond single-family residential homes. Since the start of this cost sharing program, nearly 4.4 million reports have been distributed. In FY 2025, over 106,000 sites received water use reports (the number of sites varies over the year and by water retailer). These metrics exclude other service areas that offer water use reports independent of Valley Water funding. Valley Water plans to continue to share in the cost of various programs that benefit customers' awareness of how they use water.
- **Water Wise Survey Program:** Valley Water is the administrator for the City and County residential Water Wise Survey Program, formerly known as the Water Wise House Call Program. Water Wise Outdoor Survey Program offers a free, comprehensive consultation from a trained irrigation professional to single-family and small multi-family sites with a working irrigation system. The consultation includes evaluating the irrigation system, flagging issues onsite, irrigation scheduling assistance, identifying rebate programs for which participants may also qualify, and creating a custom report detailing the survey findings. Since it launched in 2017, Valley Water performed 1,296 residential Water Wise Outdoor Surveys.

  Valley Water's residential survey program includes educating the customer on how to read a water meter; checking flow rates; installing low-flow devices; checking for leaks; checking the irrigation system for efficiency; measuring landscaped area; developing an efficient irrigation schedule for different seasons; and providing the customer with evaluation results, water savings recommendations, and other educational materials. Valley Water increased efficiency and participation by using landscape measurements from this program as an initial qualifying step for the Landscape Rebate Program.
- **Fixture Distribution:** Valley Water also distributes high-quality, low-flow showerheads and faucet aerators to community members through water retailers and public events. To improve distribution efficiency and expand program accessibility, Valley Water launched the Online Shopping Program (eCart Program) in 2021. This program offers a centralized online platform through which customers can order a range of water-efficient devices. Since its inception, the eCart Program has processed a total of 18,386 orders. Distribution to single-family residential customers includes 14,924 faucet aerators, 11,166 showerheads, and 3,066 DIY kits, in addition to other conservation devices and educational materials.

  Between July 2022 and August 2023, Valley Water participated in the Water Coordination Program, an initiative that leveraged Pacific Gas & Electric's (PG&E) Energy Savings Assistance (ESA) Program, to deliver water conservation services to income-qualified customers. Two pilot efforts—the Leak Assessment and Repair Pilot and the Toilet Assessment and Retrofit Pilot—provided equitable, cost-effective conservation services to low-income households. Through a coordinated approach, Valley Water and its partners successfully delivered 214 in-home leak assessments, 103 toilet retrofits to Ultra HETs, and replaced leaking fixtures including 66 bathroom faucets, 20 kitchen faucets, and 45 outdoor hose bibs among other measures alongside PG&E's energy efficiency services. These totals are not included in Table 9-1. Collectively, the measures installed through this program are estimated to achieve water savings of 12,123,560 gallons over the expected useful life of the installed devices.

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Residential Plumbing Retrofit

Implementation: This program was first implemented in 1992. It is an active program administered by Valley Water. The City also implements the program and shares the cost to support this program. The City plans to continue offering free showerheads and aerators both directly and through Valley Water's Water-Wise House Call Program.

Description: The City and Valley Water distribute high-quality, low-flow showerheads and faucet aerators to single-family and multi-family residents as the implementation of the residential plumbing retrofits program. The City makes low-flow showerheads and aerators available to residents free of charge and to date has directly distributed thousands of units to interested parties.

Large Landscape Conservation Programs and Incentives

Implementation and Description: Large landscape conservation programs are administered by Valley Water. All programs described below are currently active and are expected to continue to be implemented in the future.

- **Large Landscape Program:** The Large Landscape Program provides landscape surveys and site-specific landscape water budgets for qualifying sites since 2014 (https://www.valleywater.org/saving-water/rebates-surveys/commercial-landscape-surveys). Qualifying sites are automatically enrolled into the program through partnership agreements with participating retailers, including the cities of Gilroy, Milpitas, Morgan Hill, Mountain View, Palo Alto, Santa Clara, Sunnyvale, San José (San José Municipal Water), and San Jose Water. Site stakeholders for enrolled sites can access an online platform through https://www.waterfluence.com/ to access their site-specific landscape budgets, request a landscape survey, and utilize additional tools and resources to improve irrigation efficiency. During FY 2021-2025, Valley Water lowered the eligibility threshold resulting in the enrollment of 1,821 additional sites, for a total of 4,821 sites at the end of FY 2025. The program now covers 99% of dedicated irrigation meter (DIM) landscapes throughout incorporated areas of the county. Since program launch, Valley Water has distributed over 300,000 water-use reports and monthly budgets, conducted 309 surveys through FY 2025, and encourages sites to participate in the Landscape Rebate Program to improve water-use efficiency and aid Valley Water's long-term savings goals.

  This program is a key compliance tool for retailers in meeting the State's Making Conservation a California Way of Life regulatory framework. To further improve support for retailers' compliance with needing landscape area measurements for all DIM sites, small DIM sites that were previously not enrolled in the program due to their landscape size will be addressed during FY 2026.

  As of the end of 2025, the sites enrolled in Valley Water program were saving 31% on irrigation usage compared to 2013 usage. Valley Water will continue to offer and expand this program in the future to reach the region's long-term water conservation goals, particularly with regards to opportunities for this program to assist compliance with elements of AB 1668/SB 606.

- **Landscape Rebate Program:** Valley Water began to focus on water efficient landscapes by launching a version of the program in early 2005. In an effort to expedite program participation, Valley Water's Board supported doubling the maximum rebate from $1,000 to $2,000 for residents and from $10,000 to $20,000 for commercial sites in 2009. The rebate cap for commercial, institutional (CII), and multi-family (5 or more units) sites was then increased to

$50,000 in January 2020. In July 2021, the turf conversion rebate was increased to $2 per square foot and the residential site cap was increased to $3,000. In response to an emergency regulation that prohibits the watering of non-functional turf areas at commercial, industrial, and institutional sites, issued by the State Water Resources Control Board in June 2022, Valley Water introduced a Lawn to Mulch rebate in July 2022 for commercial properties. Valley Water then increased the lifetime cap for CII sites to $100,000. Cost sharing agreements increase the rate per square foot and rebate cap in some areas.

Currently, any qualified property in Santa Clara County with qualifying high-water using landscape can receive rebates for converting to qualifying low water using landscape with a minimum of 50% qualifying plant coverage; 2 to 3 inches of mulch; and a conversion from overhead irrigation to drip, micro spray, bubbler, or no irrigation.

In January of 2019, Valley Water added Rainwater Capture Rebates to the Landscape Rebate Program. Customers now have the opportunity to receive rebates for the installation of rain barrels, cisterns, and rain gardens. Since the start of the Rainwater Capture Rebates, rainwater has been diverted from nearly 80,500 square feet of roof area into qualifying rain gardens, 779 rain barrels have been installed, and cisterns with a total combined capacity of over 56,500 gallons have received a rebate.

Lawn Busters Program: Lawn Busters Program is designed to provide a low cost, expedient option for low-income, elderly, disabled or veteran homeowners and institutions within disadvantaged communities throughout Santa Clara County who wish to convert their lawns to low-water using landscape. In targeting these hard-to-reach sectors, the Lawn Busters Program is intended to help Valley Water meet its short-term drought response goals as well as its long-term water conservation goals. Since the start of the Lawn Busters Program, nearly 280,000 square feet of lawn were converted to low-water using landscape. The program concluded in June 2024 and Valley Water is in the process of developing an enhanced direct installation program to serve low-income customers within Santa Clara County.

- **Irrigation Equipment Rebates:** Over 26,000 pieces of irrigation equipment were rebated between FY 2021 and FY 2025, including high efficiency sprinkler nozzles and bodies, rain sensors, and flow sensors.

  Additionally, over 2,400 Weather-Based Irrigation Controllers (WBICs) have been installed during FY 2021 and FY 2025. Sometimes referred to as “smart controllers”, WBICs utilize the principles of evapotranspiration or “ET” to automatically calculate a site-specific irrigation schedule based on several factors, including plants and soil type. The controller then adjusts the irrigation schedule as local weather changes to regulate unnecessary irrigation, saving up to 20% of irrigation water use when used properly. Valley Water plans to continue to offer rebates for WBICs in the future in order to reach the region’s long-term water conservation goals.

- **Landscape Maintenance Consultation Program:** The Landscape Maintenance Consultation Program, started in May 2018, was developed as a way to help Landscape Rebate Program participants learn how to properly maintain their newly converted low water use gardens. To date, 1,441 residential rebate customers have participated in the program. During the free, one-hour consultation, the customer has an opportunity to walk through their garden with a landscape professional, reviewing site specific recommendations for plant maintenance and pruning, soil health, pest management, and irrigation scheduling and maintenance. The Landscape Maintenance Consultation Program will continue to be offered to new rebate program participants whose gardens are at least one year established.

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The City also issued Ordinance No. 19.37 regulating conservation in landscaping. This ordinance applies to all new and rehabilitated landscaping for public agency projects and private development projects that require a permit, as well as developer-installed landscaping in single-family and multi-family projects. A copy of this ordinance is included in **Appendix J**.

Graywater Landscape Irrigation Rebates and Incentives

Implementation: This program has been active since 2014 and is offered to residential customers interested in using graywater from laundry machines to irrigate landscape at their homes.

Description: In the last 5 years, Valley Water issued 36 graywater rebates and funded the direct installation of 71 graywater systems. To date, 160 total graywater systems have been installed.

Valley Water's Graywater Laundry to Landscape (L2L) Rebate Program offers $200 rebate, and cities of Milpitas, Morgan Hill, Palo Alto Utilities, and Santa Clara, and San José Municipal Water cost-share with this program to increase the rebate to $400 total. In addition to providing a rebate for properly connecting a clothes washer to a laundry-to-landscape system, the graywater program also provides information, resources, and workshops on graywater. Graywater use in irrigated landscapes decreases potable water use by approximately 17 gallons per person per day or 14,565 gallons per household (on average), depending on the site and system design.

Rain Barrel Rebate Program

Implementation: This program began in October 2014 in partnership with BAWSCA to offer rebates to users of rain barrels as part of encouraging using alternative water sources for landscaping water needs.

Description: Sunnyvale offers $50 rebates per rain barrel that is 50 gallons or larger for up to two barrels per household or four for commercial properties. Owners are responsible for installing the barrels according to program guidelines, including screening to prevent mosquito breeding.

Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts

Implementation and Description: Since 1992, Valley Water has implemented various programs targeting CII customers for water efficiency outreach and education. Both the City and Valley Water expect to continue the programs in the future, with the potential for minor changes based on technological advancements. The initiatives and programs implemented to increase water efficiency in the CII sectors are described below.

- **Commercial Toilet and Urinal Programs:** Valley Water has been replacing inefficient toilets in CII sites since 1994. The CII toilet rebate programs have frequently been offered in tandem with various iterations of high-efficiency urinal (HEU) programs, HET and HEU direct install programs, and retrofit programs for urinal valve installation. Since 2015, over 7,300 HETs were installed or rebated. Additionally, since 2005, Valley Water has had a program to replace urinal flush valves of old, inefficient 1.0 gpf or more urinals with a flush valve that uses only a 0.5 gallon per flush. Since the program was started, approximately 2,580 urinals had been retrofitted or rebated, with 464 installed in the last five years.

  In May 2021, Valley Water launched the Fixture Replacement Program (FixRP), a direct-install initiative focused on replacing inefficient indoor plumbing fixtures with high-efficiency, WaterSense-certified models in multi-family residential and commercial properties. Since FY

2021, the program supported 63 sites—48 multi-family properties and 15 schools—and completed the installation of 811-bathroom aerators, 410 kitchen aerators, 1,543 showerheads, 6,420 Ultra HET, and 61 HEUs. The program concluded in April 2025 and has since been replaced by the Direct Retrofit Indoor Plumbing (DRIP) Program, which expands eligibility to include single-family homes.

- **Commercial Indoor Water Survey Pilot Program:** Valley Water initiated the Commercial Indoor Water Use Survey Pilot Program (CIW Survey Pilot) in FY 2024 to support the State's conservation requirements under Making Conservation a California Way of Life (AB 1668/SB 606) and to engage with hard-to-reach commercial, industrial, and institutional (CII) customers. Developed in partnership with a subset of water retailers, the pilot sought to improve understanding of CII indoor water use, update water savings assumptions, and strengthen coordination among agencies and customers. While initial outreach yielded limited participation, revised efforts resulted in modest engagement and valuable insights, highlighting challenges related to customer contact data, data-sharing constraints, technology gaps, and outreach timing.

  In FY 2025, Valley Water strengthened and expanded the pilot, refining outreach strategies and partnering with new retail partners. Outreach to more than 700 CII customers resulted in 15 completed surveys county-wide, representing a more than 500% increase in engagement compared to FY 2024. Targeted follow-up proved essential to improving participation, and the pilot demonstrated strong potential as an engagement and data-gathering tool.

- **Water Efficient Technology Rebate Program:** The Water Efficient Technology Rebate (WET Rebate or WET Program) provides rebates for process, technology, and equipment retrofits that save water at CII and multi-family properties. Qualifying retrofit projects that meet program requirements are eligible for a rebate of either $4 per hundred cubic feet (CCF) of water saved annually or up to 100% of equipment costs excluding taxes and labor, whichever is less, up to $100,000. To qualify, projects must save at least 100 cubic feet of water annually. Examples of eligible projects include ozone laundry systems, cooling towers efficiency upgrades, onsite water reuse, water softeners, and any other equipment that results in measurable water savings, including customized equipment. Cost sharing agreements increase the rate and maximum rebate in some areas. In 2023, eligibility for WET was expanded to include multi-family properties, such as condominium, apartment, and townhome complexes.

  To date, Valley Water has funded 114 projects, saving approximately 691,727 CCF/year (1,588 AFY). Since 2020, the WET Rebate has helped save over 11,064 CCF per year from 4 completed projects. The WET Rebate continues to be one of Valley Water's most cost-effective programs in meeting the region's long-term water conservation goals.

Regional Water Conservation Program

BAWSCA manages a Regional Water Conservation Program comprised of several programs and initiatives that support and augment member agencies' and customers' efforts to use water more efficiently. These efforts extend limited water supplies that are available to meet both current and future water needs; increase drought reliability of the existing water system; and save money for both the member agencies and their customers.

The implementation of the Regional Water Conservation Program builds upon the BAWSCA Demand Study, completed in December of 2025. These efforts include both Core Programs (implemented regionally throughout the BAWSCA service area) and Subscription Programs

(funded by individual member agencies that elect to participate and implement them within their respective service areas).

BAWSCA's Core Conservation Programs include organizing classes focused on sustainable and water-efficient landscape design, assistance related to automated metering infrastructure, and other associated programs that work to promote smart water use and practices. BAWSCA's Subscription Programs include numerous rebate programs, educational programs that can be offered to area schools, technical assistance to member agencies in evaluating water loss, and programs that use data analytics to provide customized water-saving recommendations to customers. In total, BAWSCA offers 24 programs to its member agencies and that number continues to grow over time.

Each fiscal year, BAWSCA prepares an Annual Water Conservation Report that documents several conservation program metrics exemplifying the benefits of the Regional Water Conservation Program to all 26 BAWSCA member agencies. Additionally, the report highlights how all 26 member agencies participate in one or more of the Subscription Programs offered by BAWSCA, such as rebates, water loss management and large landscape audits. The Demand Study indicates that through a combination of active and passive conservation, 16.14 MGD will be conserved by BAWSCA's member agencies by 2050.

The Core Programs provided as a part of the Regional Water Conservation Program include conservation measures that benefit from regional implementation and provide overall regional benefit and are funded through the annual BAWSCA budget. The Subscription Programs are conservation measures that individual agencies must elect to participate in and whose benefits are primarily realized within individual water agency service areas. As such, the Subscription Programs are funded by individual member agencies, based on their participation level. The City is actively participating in the rain barrel rebates and water loss management Subscription Programs.

9.3 Reporting Implementation

9.3.1 Planned DMM Implementation

The City plans to continue to offer the current DMM suite of programs over the next five years to achieve and maintain water use targets. Every year the City evaluates programs for cost-effectiveness and may discontinue certain rebate or incentive programs to be replaced with new programs to target certain water savings. The City may promote programs based on popularity or demand, for example the rain barrel rebate program will likely be promoted until funds are exhausted.

9.3.2 Evaluation of Effectiveness

Evaluating the effectiveness of a single DMM is difficult and generally not cost-effective for the City, so each program is not necessarily monitored separately for effectiveness and water savings. Evaluating the effectiveness of all DMMs collectively provides a better representation and can be translated into overall water conservation savings. The City will use countywide water savings tracked by Valley Water to evaluate the effectiveness of overall implementation efforts by both the City and Valley Water.

SECTION 10 – PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

This 2025 UWMP and WSCP were prepared in 2025-2026 in accordance with the Guidebook. Both plans were adopted on June 16, 2026 by City Council. This section describes the steps taken by the City to meet the requirements of the Water Code pertaining to public availability, adoption, submittal, and implementation of the 2025 UWMP and WSCP.

10.1 Inclusion of All 2025 Data

The 2025 UWMP and WSCP include all data for water use and planning for the calendar year of 2025.

10.2 60-Day Notification

The Water Code states that cities and counties must be notified that the Supplier will be reviewing the UWMP and considering amendments to the Plan. This notice must be sent at least 60 days prior to the public hearing. The City provided notices to the agencies listed below in **Table 10-1**.

A copy of the notification is included in **Appendix A.**

10.3 Notice of Public Hearing

The public hearing notice for the 2025 UWMP and WSCP was sent to the cities and counties listed in **Table 10-1** and prior to the public hearing. Three notices were posted in the Sunnyvale Sun to inform the public of the upcoming public hearing. The notices include the time and place of the hearing, as well as locations where the plans were made available for public inspection. The first notice was published on May 15, 2026, the second on May 22, 2026, and the third on May 29, 2026. A copy of the notice is included in **Appendix A**.

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Table 10-1: Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
City of Hayward	☑	☑
City of Milpitas	☑	☑
City of Mountain View	☑	☑
City of Palo Alto	☑	☑
City of Santa Clara	☑	☑
City of Brisbane	☑	☑
City of Burlingame	☑	☑
City of Daly City	☑	☑
City of Menlo Park	☑	☑
City of Millbrae	☑	☑
City of Redwood City	☑	☑
City of San Bruno	☑	☑
City of East Palo Alto	☑	☑
City of San Jose	☑	☑
City of Foster City	☑	☑
County Name	**60 Day Notice**	**Notice of Public Hearing**
Alameda County	☑	☑
Santa Clara County	☑	☑

The draft plans were made available for the community and posted on the City's website (www.sunnyvale.ca.gov) on May 15, 2026. Copies of all public notices of the hearing are included in **Appendix A**.

10.4 Public Hearing and Adoption

The public hearing for consideration and adoption of the 2025 UWMP and WSCP by the City Council took place on June 16, 2026 during a normal City Council session. The session began with the public hearing to allow community input prior to the formal adoption of both plans by City Council. All public input received was considered before final adoption of both documents. The adopted resolution is included in **Appendix L**.

10.5 Plan Submittal

Upon adoption of the 2025 UWMP and WSCP by City Council, implementation took place as identified in this document. Submission of the adopted plans to DWR was done electronically within 30 days from the date of adoption, and no later than July 1, 2026.

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10.6 Public Availability

The adopted UWMP and WSCP were posted on the City's website (www.sunnyvale.ca.gov) within 30 days of submission to DWR and were submitted to the California State Library.

10.7 Amending an Adopted UWMP and WSCP

The City's 2025 UWMP and WSCP will only be modified following notification, public hearing, adoption, and submittal as prescribed in the Water Code.

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HydroScience is a civil engineering firm that plans, designs, and manages the construction of water, wastewater, and recycled water projects. With offices in San Jose, Berkeley, and Sacramento, we understand and address the complex water and wastewater needs of Northern California.







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APPENDIX A

City of Sunnyvale
2025 Urban Water Management Plan
Postings and Notifications for UWMP and WSCP Preparation

Outlook

Notice of Preparation of City of Sunnyvale's 2025 Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan (WSCP)

From Winola Cheong <WCheong@sunnyvale.ca.gov>

To Adriana Artola (Adriana.Artola@paloalto.gov) <Adriana.Artola@paloalto.gov>; Adrianne Carr (acarr@nccwd.com) <acarr@nccwd.com>; Alex Ameri (alex.ameri@hayward-ca.gov) <alex.ameri@hayward-ca.gov>; Azalea Mitch <aamitch@menlopark.gov>; Brian Manning (Bmanning@stanford.edu) <Bmanning@stanford.edu>; Cathleen Brennan (cbrennan@coastsidewater.org) <cbrennan@coastsidewater.org>; Cheryl Munoz <Cheryl.Munoz@hayward-ca.gov>; Cory Burkett (coryb@purissimawater.org) <coryb@purissimawater.org>; Craig Centis (CCentis@ci.millbrae.ca.us) <CCentis@ci.millbrae.ca.us>; karla.dailey@cityofpaloalto.org <karla.dailey@cityofpaloalto.org>; dbosch@sanbruno.ca.gov <dbosch@sanbruno.ca.gov>; ECooney@HILLSBOROUGH.NET <ECooney@HILLSBOROUGH.NET>; emarshall@milpitas.gov <emarshall@milpitas.gov>; Flegel, Elizabeth <Elizabeth.Flegel@mountainview.gov>; Greg Kraus (gkrauss@dalycity.org) <gkrauss@dalycity.org>; hruiz@ci.millbrae.ca.us <hruiz@ci.millbrae.ca.us>; Humza Javed <hjaved@cityofepa.org>; Jeff Provenzano (Jeffrey.provenzano@sanjoseca.gov) <Jeffrey.provenzano@sanjoseca.gov>; Jerry Flanagan <jflanagan@ci.brisbane.ca.us>; John Ramirez <JRamirez@SantaClaraca.gov>; Jonathan Wunderlich (Jonathan.Wunderlich@acwd.com) <Jonathan.Wunderlich@acwd.com>; Joshua Cosgrove <jcosgrove@dalycity.org>; Julia Nussbaum (JuliaNN@stanford.edu) <JuliaNN@stanford.edu>; Justin Chapel (jchapel@redwoodcity.org) <jchapel@redwoodcity.org>; Kat Wuelfing <kwuelfing@midpeninsulawater.org>; Laura Hidas <laura.hidas@acwd.com>; Lawrence Tam (ltam@santaclaraca.gov) <ltam@santaclaraca.gov>; Lisa Au (lisa.au@mountainview.gov) <lisa.au@mountainview.gov>; Mary Rogren (mrogren@coastsidewater.org) <mrogren@coastsidewater.org>; Matthew Vining <mvining@cityofepa.org>; mbozorginia@brisbaneca.org <mbozorginia@brisbaneca.org>; Michael Bolzowski - Cal Water (mbolzowski@calwater.com) <mbolzowski@calwater.com>; Nicole Harvie - San Jose <nicole.harvie@sanjoseca.gov>; Paul Willis <PWillis@HILLSBOROUGH.NET>; pmairena@westboroughwater.org <pmairena@westboroughwater.org>; PW/ENG-Kevin Okada <kokada@burlingame.org>; Ross Moilan (rmoilan@calwater.com) <rmoilan@calwater.com>; Scott Jaw <scjaw@menlopark.gov>; scott Wagner (swagner@calwater.com) <swagner@calwater.com>; Smithson, Dawn (dsmithson@calwater.com) <dsmithson@calwater.com>; SScheidt@midpeninsulawater.org <SScheidt@midpeninsulawater.org>; Stephanie Dalton (Stephaniedalton@nccwd.com) <Stephaniedalton@nccwd.com>; Steve Salazar <SSalazar@sanbruno.ca.gov>; Tammy Rudock <trudock@purissimawater.org>; Terrence Kyaw <watermanager@redwoodcity.org>; Tim McAuliffe (tmcauliffe@burlingame.org) <tmcauliffe@burlingame.org>; Yelena Capello <ycappello@fostercity.org>; 'Zaheed Danish' <zdanish@fostercity.org>; abaker@valleywater.org <abaker@valleywater.org>; Sam Bogale <sbogale@valleywater.org>; Tom Smegal <tsmegal@bawsca.org>; sritchie@sfwater.org <sritchie@sfwater.org>; Kastama, Alison A <AAKastama@sfwater.org>; Tang, Christina <ctang@bawsca.org>; Danielle McPherson <dmcpherson@bawsca.org>; Negin Ashoori <nashoori@bawsca.org>; Tom Francis <tfrancis@bawsca.org>

Cc Ramana Chinnakotla <RChinnakotla@sunnyvale.ca.gov>; Joseph DeLaCruz <JDeLaCruz@sunnyvale.ca.gov>

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Dear Stakeholders:

The Urban Water Management Plan Act (California Water Code §10608-10656) requires certain municipal water suppliers, including the City of Sunnyvale, to update and adopt an Urban Water Management Plan (UWMP) and a Water Shortage Contingency Plan (WSCP) every five years. The City of Sunnyvale is currently preparing its 2025 UWMP and WSCP and invite your agency to participate in this process.

Draft documents will be made available for public review on the City's website, and a public hearing will be scheduled before July 2026 to consider adoption of the plans.

For additional information about the 2025 UWMP or WSCP, the project schedule, or with questions, please contact me.

Sincerely,

Sunnyvale

Winola Cheong, P.E., PMP
Deputy Director of ESD – Water & Sewer
Environmental Services Department (ESD)
Phone: 408-730-7763
Sunnyvale.ca.gov

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CITY OF SUNNYVALE
NOTICE OF PUBLIC HEARING

The City of Sunnyvale is in the process of updating its 2025 Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan (WSCP). The City Council will conduct a public hearing and consider adoption of the 2025 UWMP and WSCP at its regularly scheduled meeting on:

Tuesday, June 16, 2026, at 7 P.M. or shortly thereafter.

The meeting will be held online and in-person at the Council Chamber, City Hall, 456 W. Olive Ave., Sunnyvale, CA 94086.

In-person public comments may be provided by completing a speaker card (optional) and submitting it to the City Clerk.

Public comments may also be provided remotely by attending the teleconference meeting online or by telephone. To request to speak, use the Raise Hand feature (*9 by telephone):

Online meeting link: https://sunnyvale-ca-gov.zoom.us/j/96111580540
Meeting call-in telephone number: 833-548-0276
Meeting ID: 961 1158 0540

Written comments may be submitted by email to Council@sunnyvale.ca.gov no later than four hours before the meeting. Comments may also be mailed or delivered to: City Clerk, 456 W. Olive Ave., Sunnyvale, CA 94086.

An electronic copy of the draft 2025 UWMP and WSCP is available for public review on the City's website at www.sunnyvale.ca.gov. City staff will be available at the public hearing to answer questions regarding the plan.

The final 2025 UWMP and WSCP will be posted on the City's website and submitted to the California State Library. To request a copy of the final plan upon completion, or to provide comments on the draft, please contact:

Winola Cheong, P.E.
Deputy Director of ESD – Water and Sewer
P. O. Box 3707
Sunnyvale, CA 94088-3707
(408) 730-7763
WCheong@sunnyvale.ca.gov

Please note that parties requesting paper copies of the plan may incur associated printing costs.

SVSU 6961263 May 15, 22, 29, 2026

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APPENDIX B

City of Sunnyvale
2025 Urban Water Management Plan
City of Sunnyvale Detailed Demographic Data

An official website of the United States government Here's how you know

2020—2024 ACS 5-Year Narrative Profile
Sunnyvale City, California

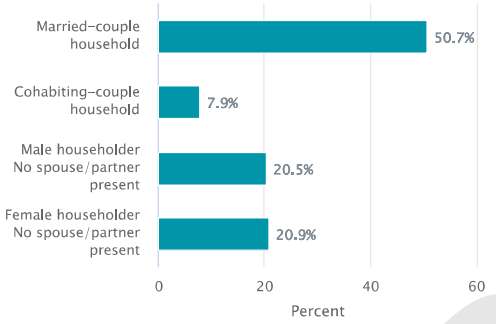
Households and Families

In 2020-2024, there were 60,293 households in Sunnyvale city, California. The average household size was 2.54 people.

Married-couple households made up 50.7 percent of the households in Sunnyvale city, California while cohabiting couple households made up 7.9 percent of households. Female householders with no spouse or partner present were 20.9 percent of a households, while 20.5 percent of households had male householders with no spouse or partner present. Some households had one person, as 13.7 percent of households were male householders living alone, and 12.3 percent were female householders livi alone, for a total of 26.0 percent of all households.

In Sunnyvale city, California, 29.0 percent of all households had one or more people under the age of 18; 22.7 percent of all households had one or more people 65 years and over.

Types of Households in Sunnyvale city, California in 2020-2024



Marital Status

Among persons 15 and older, 53.1 percent of males and 54.5 percent of females were currently married.

Population 15 years and over	Percent Males	Percent Females
Never married	39.7	30.4
Now married, except separated	53.1	54.5
Separated	0.9	1.2
Widowed	1.6	6.5
Divorced	4.7	7.3

Grandparents and Grandchildren

In Sunnyvale city, California, 2,727 grandparents lived with their grandchildren under 18 years old. Of those grandparents, 6.1 percent were responsible for the basic needs of their grandchildren.

Source:
DP02 | Selected Social Characteristics in the United States [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP02&g=1600000US0677000]

Nativity and Foreign-Born

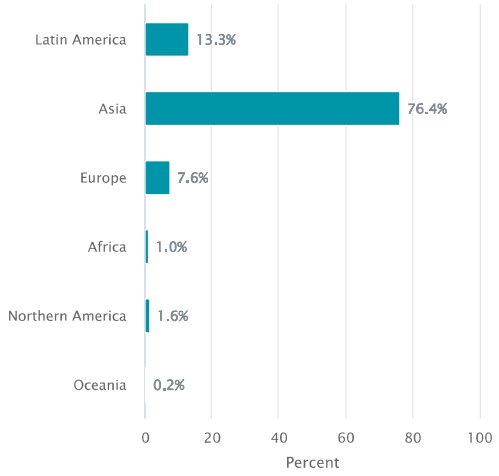
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In 2020-2024, an estimated 49.8 percent of the people living in Sunnyvale city, California were U.S. natives. 38.6 percent of the Sunnyvale city, California population were living in the state where they were born.

Approximately 50.2 percent of Sunnyvale city, California residents in 2020-2024 were foreign-born. 38.3 percent of foreign-born were naturalized U.S. citizens and an estimated 47.0 percent entered the country before the year 2010.

Foreign-born residents of Sunnyvale city, California come from different parts of the world. The bar graph below displays the percentage of foreign-born from each world region of birth in 2020-2024 for Sunnyvale city, California.

Region of Birth for the Foreign-Born Population in Sunnyvale city, California in 2020-2024

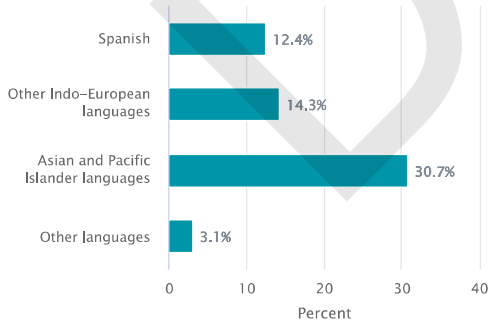


Source:
DP02 | Selected Social Characteristics in the United States [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP02&g=1600000US0677000]

Language

Among people at least five years old living in Sunnyvale city, California in 2020-2024, 60.5 percent spoke a language other than English at home. Spanish was spoken by 12.4 percent of people at least five years old; 19.6 percent reported that they did not speak English "very well."

Percent of the Population 5 years and over who Speak a Language other than English in Sunnyvale city, California in 2020-2024



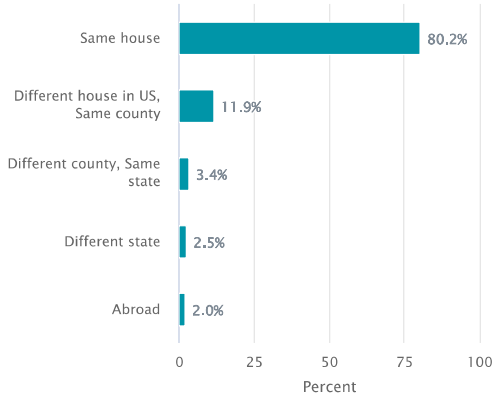
Source:
DP02 | Selected Social Characteristics in the United States [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP02&g=1600000US0677000]

Geographic Mobility

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In 2020-2024, 80.2 percent of people at least one year old living in Sunnyvale city, California were living in the same house one ye earlier.

Geographic Mobility of Residents of Sunnyvale city, California in 2020-2024



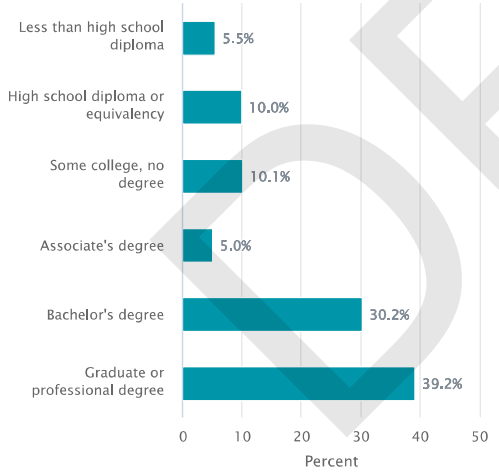
Source:
DP02 | Selected Social Characteristics in the United States [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP02&g=1600000US0677000]

Education

In 2020-2024, 94.4 percent of people 25 years and over had at least graduated from high school and 69.3 percent had a bachelo degree or higher. An estimated 5.5 percent did not complete high school.

The total school enrollment in Sunnyvale city, California was 32,396 in 2020-2024. Nursery school enrollment was 2,886 and kindergarten through 12th grade enrollment was 19,938. College or graduate school enrollment was 9,572.

Educational Attainment of People in Sunnyvale city, California in 2020-2024



Source:
DP02 | Selected Social Characteristics in the United States [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP02&g=1600000US0677000]

Disability

In Sunnyvale city, California, among the civilian noninstitutionalized population in 2020-2024, 7.1 percent reported a disability. Th likelihood of having a disability varied by age - from 2.3 percent of people under 18 years old, to 4.9 percent of people 18 to 64 years old, and to 25.9 percent of those 65 and over.

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Source:
DP02 | Selected Social Characteristics in the United States [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP02&g=1600000US0677000]

Employment Status and Type of Employer

In Sunnyvale city, California, 69.1 percent of the population 16 and over were employed; 27.5 percent were not currently in the lab force.

An estimated 89.6 percent of the people employed were private wage and salary workers; 6.6 percent were federal, state, or local government workers; and 3.7 percent were self-employed in their own (not incorporated) business.

Class of worker	Number	Percent
Private wage and salary workers	78,749	89.6
Federal, state, or local government workers	5,773	6.6
Self-employed workers in own not incorporated business	3,285	3.7

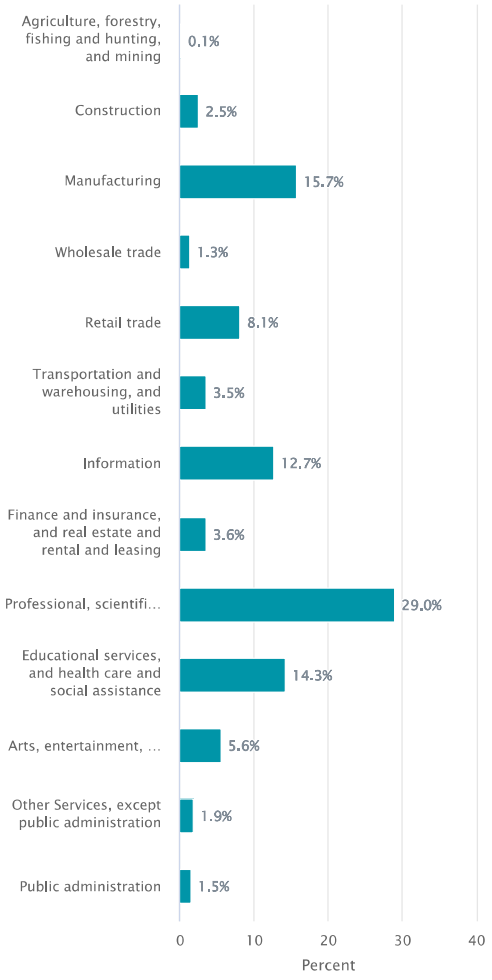
Source:
DP03 | Selected Economic Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP03&g=1600000US0677000]

Industries

In 2020-2024, the civilian employed population 16 years and older in Sunnyvale city, California worked in the following industries

Percent by Industry in Sunnyvale city, California in 2020-2024

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Source:
DP03 | Selected Economic Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP03&g=1600000US0677000]

Occupations

Occupations for the Civilian Employed Population 16 Years and over in Sunnyvale city, California in 2020-2024

Civilian employed population 16 years and over	Number	Percent
Management, business, sciences, and arts occupations	62,180	70.8
Service occupations	7,556	8.6
Sales and office occupations	10,182	11.6
Natural resources, construction, and maintenance occupations	2,795	3.2
Production, transportation, and material moving occupations	5,141	5.9

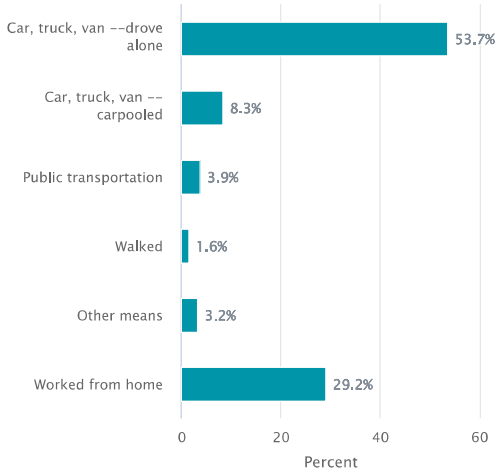
Source:
DP03 | Selected Economic Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP03&g=1600000US0677000]

Commuting

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An estimated 53.7 percent of Sunnyvale city, California workers drove to work alone in 2020-2024, and 29.2 percent worked from home. Among those workers who commuted, it took an average of 23.0 minutes to travel to work from home.

Means of Transportation to Work for Workers in Sunnyvale city, California in 2020-2024

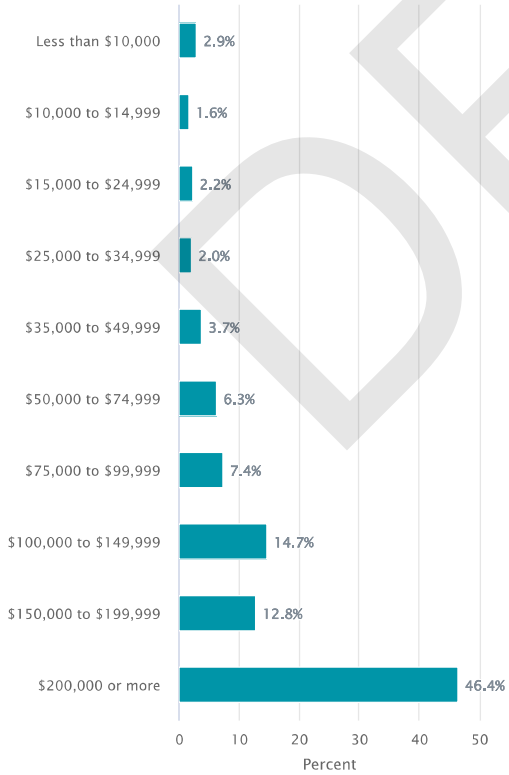


Source:
DP03 | Selected Economic Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP03&g=1600000US0677000]

Income

The median income of households in Sunnyvale city, California was $186,170. An estimated 2.9 percent of households had inco below $10,000 a year and 46.4 percent had income of $200,000 or more.

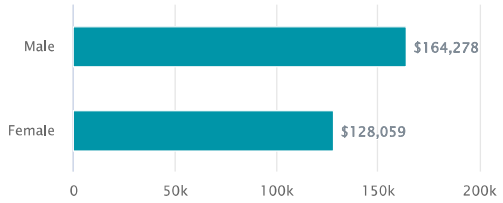
Household Income in Sunnyvale city, California in 2020-2024



Median earnings for full-time year-round workers was $148,143. Male full-time year-round workers had median earnings of $164,278. Female full-time year-round workers had median earnings of $128,059.

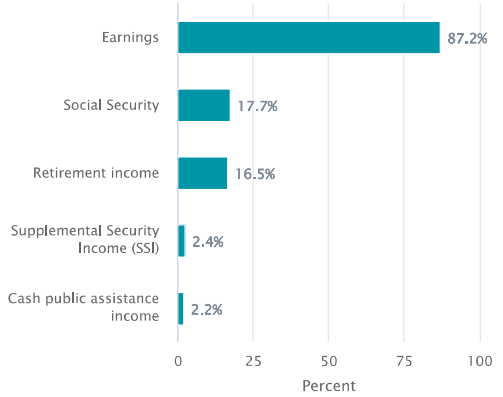
Median Earnings for Full-Time Year-Round Workers by Sex in Sunnyvale city, California in 2020-2024

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An estimated 87.2 percent of households received earnings. An estimated 17.7 percent of households received Social Security and an estimated 16.5 percent of households received retirement income other than Social Security. The average income from Social Security was $27,702. These income sources are not mutually exclusive; that is, some households received income from more than one source.

Percent of Households with Various Income Sources in Sunnyvale city, California in 2020-2024

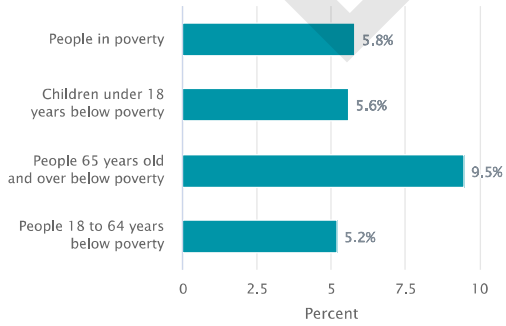


Source:
DP03 | Selected Economic Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP03&g=1600000US0677000]
B20018 | Median Earnings in the Past 12 Months (In 2021 Inflation-Adjusted Dollars) for the Population 16 Years and Over Who Worked Full-time, Year-Round with Earnings in the Past 12 Months [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Detailed%20Tables&tid=ACSDT5Y2024.B20018&g=1600000US0677000]

Poverty and Participation in Government Programs

In 2020-2024, 5.8 percent of people were in poverty. An estimated 5.6 percent of children under 18 were below the poverty level, compared with 9.5 percent of people 65 years old and over. An estimated 5.2 percent of people 18 to 64 years were below the poverty level.

Poverty Rates in Sunnyvale city, California in 2020-2024



In 2020-2024, 3.6 percent of households received SNAP (the Supplemental Nutrition Assistance Program). An estimated 38.8 percent of households that received SNAP had children under 18, and 60.3 percent of households that received SNAP had one o more people 60 years and over. An estimated 20.7 percent of all households receiving SNAP were families with a female householder and no spouse present. An estimated 48.0 percent of households receiving SNAP had two or more workers in the past 12 months.

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Source:
DP03 | Selected Economic Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP03&g=1600000US0677000]
S2201 | Food Stamps/Supplemental Nutrition Assisstance Program (SNAP) [https://data.census.gov/table?y=2024&d=ACS%20Year%20Estimates%20Subject%20Tables&tid=ACSST5Y2024.S2201&g=1600000US0677000]

Health Insurance

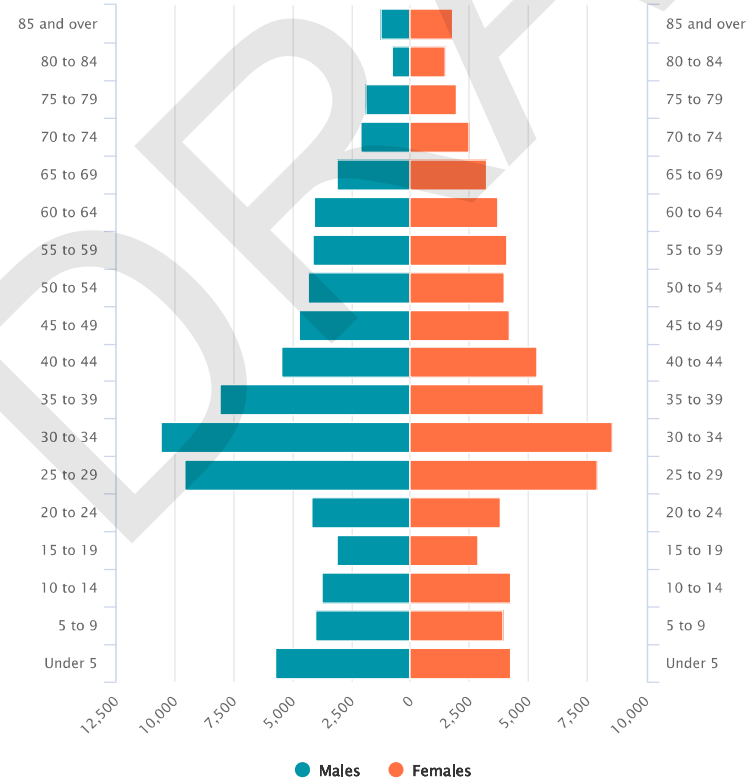
Among the civilian noninstitutionalized population in Sunnyvale city, California in 2020-2024, 97.1 percent had health insurance coverage and 2.9 percent did not have health insurance coverage. Private coverage was 83.3 percent and public coverage was 21.9 percent, respectively. The percentage of children under the age of 19 with no health insurance coverage was 1.9 percent.

Source:
DP03 | Selected Economic Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP03&g=1600000US0677000]

Population

In 2020-2024, Sunnyvale city, California had a total population of 154,236 — 73,383 (47.6 percent) females and 80,853 (52.4 percent) males. The median age was 35.2 years. An estimated 19.5 percent of the population was under 18 years, 46.0 percent was 18 to 44 years, 21.5 percent was 45 to 64 years, and 13.0 percent was 65 years and older.

Population by Age and Sex for Sunnyvale city, California in 2020-2024



Hispanic Origin and Race

For people reporting one race alone, 28.4 percent were White; 1.6 percent were Black or African American; 0.6 percent were American Indian and Alaska Native; 49.6 percent were Asian; 0.4 percent were Native Hawaiian and Other Pacific Islander, and 9 percent were Some Other Race. An estimated 9.9 percent reported Two or More Races. An estimated 17.0 percent of the people

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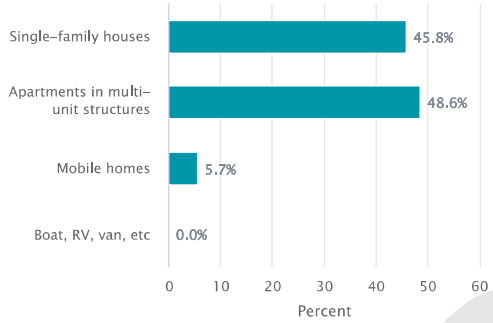
Sunnyvale city, California were Hispanic or Latino. An estimated 26.5 percent of the people in Sunnyvale city, California were Wh alone, non-Hispanic. People of Hispanic origin may be of any race.

Source:
DP05 | Selected Demographic Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP05&g=1600000US0677000]
S0101 | Age and Sex [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Subject%20Tables&tid=ACSST5Y2024.S0101&g=1600000US0677000]

Housing Inventory Characteristics

In 2020-2024, Sunnyvale city, California had a total of 63,239 housing units. Of these housing units, 45.8 percent were single-fam houses either detached from any other structure or attached to one or more structures (commonly referred to as "townhouses" "row houses"). 48.6 percent of the housing units were located in multi-unit structures, or those buildings that contained two or more apartments. 5.7 percent were mobile homes, while any remaining housing units were classified as "other," which included boats, recreational vehicles, vans, etc.

Types of Housing Units in Sunnyvale city, California in 2020-2024



11.8 percent of the housing inventory was comprised of houses built since 2010, while 1.5 percent of the houses were first built 1939 or earlier. The median number of rooms in all housing units in Sunnyvale city, California was 4.3 rooms, and of these housi units 46.0 percent had three or more bedrooms.

Source:
DP04 | Selected Housing Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP04&g=1600000US0677000]

Occupied Housing Characteristics

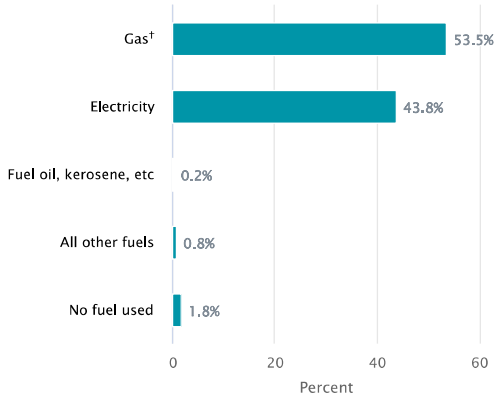
In 2020-2024, Sunnyvale city, California had 60,293 housing units that were occupied or had people living in them, while the remaining 2,946 were vacant. Of the occupied housing units, the percentage of these houses occupied by owners (also known a the homeownership rate) was 43.8 percent while renters occupied 56.2 percent. The average household size of owner-occupied houses was 2.74 and in renter-occupied houses it was 2.38.

7.8 percent of householders of these occupied houses had moved into their house since 2023, while 7.9 percent moved into the house in 1989 or earlier. Households without a vehicle available for personal use comprised 7.0 percent and another 15.8 percer had three or more vehicles available for use.

The following chart provides the primary fuel used to heat houses in Sunnyvale city, California:

House Heating Fuel Used in Sunnyvale city, California in 2020-2024

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†This category includes utility, bottled, tank, or LP gas.

Source:
DP04 | Selected Housing Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP04&g=1600000US0677000]

Financial Characteristics and Housing Costs

In 2020-2024, the median property value for owner-occupied houses in Sunnyvale city, California was $1,801,800.

Of the owner-occupied households, 62.0 percent had a mortgage. 38.0 percent owned their houses "free and clear," that is witho a primary mortgage or loan on the house. The median monthly housing costs for owners with a mortgage was $4,001 and for owners without a mortgage it was $1,063.

For renter-occupied households, the median gross rent for Sunnyvale city, California was $3,039. Gross rent includes the monthl contract rent and any monthly payments made for electricity, gas, water and sewer, and any other fuels to heat the house.

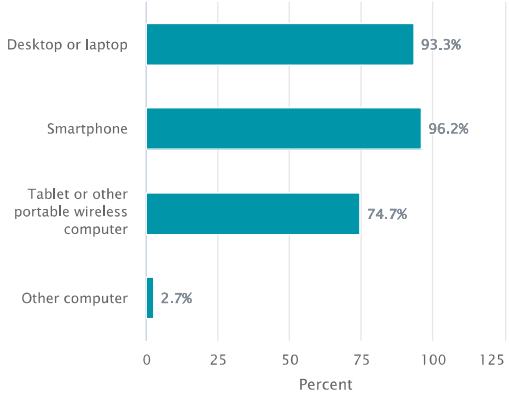
Source:
DP04 | Selected Housing Characteristics [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP04&g=1600000US0677000]

Computer and Internet Use

In 2020-2024, 99.0 percent of households in Sunnyvale city, California had a computer, and 96.5 percent had a broadband intern subscription.

An estimated 93.3 percent of households had a desktop or laptop, 96.2 percent had a smartphone, 74.7 percent had a tablet or other portable wireless computer, and 2.7 percent had some other type of computer.

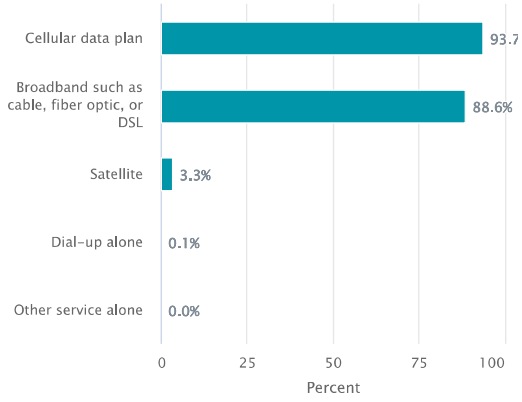
Types of Computers in Sunnyvale city, California in 2020-2024



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Among all households, 93.7 percent had a cellular data plan; 88.6 percent had a broadband subscription such as cable, fiber opt or DSL; 3.3 percent had a satellite internet subscription; 0.1 percent had dial-up alone; and 0.0 percent had some other service alone.

Types of Internet Subscriptions in Sunnyvale city, California in 2020-2024



Source:
DP02 | Selected Social Characteristics in the United States [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Data%20Profiles&tid=ACSDP5Y2024.DP02&g=1600000US0677000]
B28001 | Types of Computers in Household [https://data.census.gov/table?y=2024&d=ACS%205-Year%20Estimates%20Detailed%20Tables&tid=ACSDT5Y2024.B28001&g=1600000US0677000]

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APPENDIX C

City of Sunnyvale
2025 Urban Water Management Plan
BAWSCA's Regional Water Demand and Conservation Projections

Hazen



BAWSCA
Bay Area Water Supply & Conservation Agency

Regional Water Demand and Conservation Projections Study

Final Report
December 8, 2025

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List of Acronyms

Abbreviation	Definition
AB	Assembly Bill
ACS	American Community Survey (US Census)
AFY	Acre-Feet per Year
AMI	Advanced Metering Infrastructure
AWE	Alliance for Water Efficiency
AWE Tracking Tool	Alliance for Water Efficiency Tracking Tool
BAWSCA	Bay Area Water Supply and Conservation Agency
CALGreen	California Green Building Standards Code (Title 24, Part 11)
CEC	California Energy Commission
CII	Commercial, Industrial, and Institutional
CMIP5/CMIP6	Coupled Model Intercomparison Project Phase 5/6
COVID	Coronavirus Disease (context: pandemic indicator)
DIM	Dedicated Irrigation Meter
DOF	California Department of Finance
DWR	Department of Water Resources (California)
EPACT	Energy Policy Act (US federal law)
FRED	Federal Reserve Economic Data
GCM	Global Climate Model
GDP	Gross Domestic Product
GIS	Geographic Information System
HET	High-Efficiency Toilet
HOA	Homeowners' Association
INR	Indoor Residential (context: water use)
KAF	Thousand Acre-Feet
LAM	Landscape Area Measurement
LEF	Landscape Efficiency Factor
LEHD	Longitudinal Employer-Household Dynamics
LODES	Origin-Destination Employment Statistics
MF	Multifamily (housing units or residential sector)
MG	Million Gallons
MGD	Million Gallons per Day
NAICS	North American Industry Classification System
Net ETo	Net Reference Evapotranspiration
NRW	Non-Revenue Water
OUTR	Outdoor Residential (context: water use)
PG&E	Pacific Gas and Electric Company
PPH	Persons per Household
PRISM	Parameter-elevation Regressions on Independent Slopes Model
QWEL	Qualified Water Efficient Landscaper
RCP	Representative Concentration Pathway (climate scenario)
RLA	Residential Landscape Area
RSAT	Residential Self-Audit Tool

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Abbreviation	Definition
SB	Senate Bill
SB X7-7	Senate Bill X7-7 (California Water Conservation Act)
SF	Single Family (housing units or residential sector)
SLA	Special Landscape Area
SMUD	Sacramento Municipal Utility District
SSP	Shared Socioeconomic Pathway (climate scenario)
SVP	Silicon Valley Power
TAZ	Traffic Analysis Zone
Title 20	California Appliance Efficiency Regulations
UHET	Ultra-High-Efficiency Toilet
ULFT	Ultra-Low-Flush Toilet
UWMP	Urban Water Management Plan
UWUO	Urban Water Use Objective
WF	Water Factor (for appliances)
WUE	Water Usage Effectiveness

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Executive Summary

The Bay Area Water Supply and Conservation Agency (BAWSCA) and its 26 member agencies face a dynamic and challenging water future, shaped by population growth, climate change, regulatory requirements, and evolving patterns of water use. This report presents a comprehensive regional water demand and conservation analysis, providing a robust foundation for long-term planning and strategic decision-making through 2050.

The primary objective of the Regional Water Demand and Conservation Projections Study (2025 Demand Study or Project) was to deliver updated, agency-specific water demand forecasts and conservation assessments to support the 2025 Urban Water Management Plan (UWMP) cycle and align with BAWSCA's Long-Term Water Supply Reliability Strategy (Strategy 2050) initiative. The effort integrated socioeconomic and demographic data collection, econometric modeling, and conservation program evaluation to forecast water demand across major water use sectors and customer classifications.

The demand projections presented in this report were developed for the specific purpose of this Project, utilizing a single, standardized set of planning assumptions. These assumptions were collaboratively agreed upon by the member agencies solely for the uniform analysis conducted herein.

It is important to note that as individual member agencies develop their own unique, official planning documents for their own purposes, including regulatory compliance (e.g., UWMPs), their internal decision-making processes may necessitate the use of different assumptions, methodologies, or policy considerations, which may differ from the illustrative estimates unique to this specific project.

Furthermore, agencies often do not consider any demand projections finalized until they have been formally reviewed and adopted by their respective Council or Board. For the most current and officially adopted demand projections, please consult the corresponding member agency's planning documents.

Demand Projection Approach

The Project employed a hybrid water demand modeling framework (illustrated in Figure ES-1) that integrates econometric regression techniques with end-use conservation accounting. This approach allows for a clear separation between the structural factors influencing water demand – such as demographic changes, climate variability, and economic trends – and the impacts resulting from policy decisions and conservation programs.

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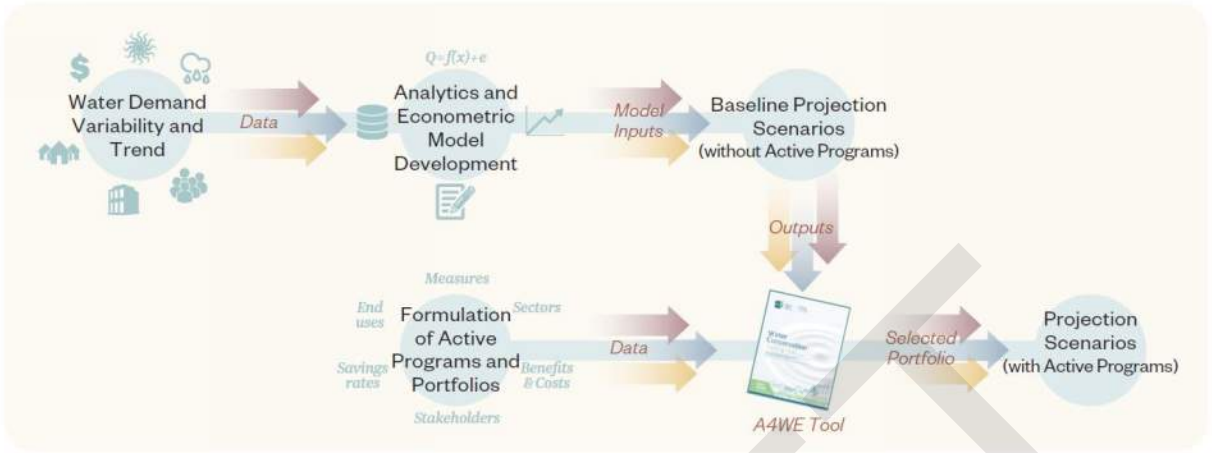


Figure ES-1: Overview of Water Demand Projection Framework

The econometric models describe the influence of key explanatory variables on historical water demand; these explanatory variables include weather conditions, the price of water, regional macroeconomic conditions, socioeconomic factors, long-term trends in passive conservation savings, and historical drought restrictions. The models forecast future water demand based on projected scenarios that define the values of the same explanatory variables. The baseline water demand scenario as well as additional scenarios that help bound future uncertainty are further described below.

Separate to econometric modeling, the Project explicitly quantified both passive conservation impacts, driven by codes and regulations, and future active conservation impacts, resulting from programmatic initiatives and behavioral changes. Passive and active conservation savings were estimated using an end use accounting framework via the Alliance for Water Efficiency Tracking Tool (AWE Tracking Tool).

The Project concluded with scenario analyses to address uncertainties inherent in long-term planning. The scenarios examined demographic shifts different from those presented in the baseline, unforeseen economic fluctuations, climate variability, and the prevalence of demand sectors with highly uncertain growth and water use rates (e.g., data centers). These scenario analyses provide valuable insights into the range of possible future outcomes and support informed decision-making for regional water supply planning. Five scenarios in addition to the baseline were considered, establishing both "high" and "low" bookends of projected water demand based on differences in underlying model assumptions.

Baseline Scenario Water Demand Projections

The baseline scenario was developed through close collaboration with BAWSCA member agencies and is grounded in the following key assumptions:

- **Demographics:** Future population, housing units, and jobs were based on Plan Bay Area 2050 growth rates, with adjustments from member agency planning departments to reflect local realities.
- **Climate:** Future temperatures were adjusted using annual average projections from CalAdapt CMIP5 RCP 8.5 modeling, while precipitation was held at historical averages.

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- **Economy:** The mix of industries, regional rates of change in GDP, and unemployment rates were assumed to remain constant at recent historical levels.
- **Conservation:** Passive conservation (fixture and appliance turnover, new construction standards) was assumed to continue steadily into the future, while active conservation programs were assumed to be implemented based on plans discussed and reviewed by member agencies.
- **Water Pricing:** Water rates are assumed to keep pace with inflation, resulting in no real change in price over the planning horizon, except for agencies that provided approved future rate increases.
- **Non-Revenue Water and Other Uses:** Held constant at recent observed levels.

Under these conditions, regional water demand is projected to increase gradually over the planning period, moderated by ongoing conservation efforts and efficiency improvements. The forecasted total demand (all sectors, including passive and active conservation) is presented in Table ES-1 below.

Table ES-1: Summary of Baseline Regional Water Demand Forecast

Assumption	2025	2030	2035	2040	2045	2050
Regional Demand without Additional Conservation (mgd)	190	203	212	220	228	237
Passive and Active Conservation (mgd)	1	6	10	12	14	16
Total Regional Demand	**189**	**197**	**202**	**208**	**213**	**220**

The projections reflect a modest but steady increase in demand, primarily driven by demographic growth, with conservation programs offsetting what would otherwise be higher increases.

Alignment with Expected Urban Water Use Objectives

The Project also evaluated each member agency's baseline projected water use, including passive and active conservation, against the State's Urban Water Use Objective (UWUO) regulatory standards through 2050. The results illustrate that the majority of BAWSCA member agencies are expected to remain in compliance with their UWUOs throughout the planning period. With both passive and active conservation in place, only 4 out of 23 agencies are projected to exceed their UWUO at any point between 2025 and 2050. This demonstrates that, under baseline assumptions, the region is generally well-positioned to meet regulatory efficiency requirements, though a small number of agencies may need to consider additional measures or targeted strategies in future years.

Addressing Uncertainty

The Project attempted to address future uncertainty in water demands through a scenario analysis informed through coordination with member agency representatives, external stakeholders, and the San Francisco Public Utilities Commission (SFPUC). The scenario analysis aimed to demonstrate how variations in demographic, economic, climate, pricing, and conservation assumptions influence regional

water demand trajectories through 2050. Five scenarios were developed that reflected a range of plausible regional narratives. Key findings from the analysis included the following:

- Demographics are the dominant factor shaping long-term demand.
- Pricing and conservation assumptions, particularly rate increases over inflation and additional conservation programming can exert off-setting (downward) pressures on demand.
- High-water-use customers (e.g., data centers) can introduce localized risk under high-growth futures.

By 2050, volumetric demand differences between High and Low scenarios exceed 30% (264 mgd on the high end and 155 mgd on the low end), underscoring the potential impact of uncertainties in planning assumptions.

Future Analyses and Next Steps

The report identifies several recommendations to improve monitoring, tracking, and understanding water demands as key drivers evolve in the future, including:

- **Monitor Emerging High-Use Sectors:** Establish ongoing tracking of data centers and other large water users and explore incorporating energy consumption as a driver in future econometric models.
- **Consider Future Droughts in Scenario Planning:** Expand scenario analysis to include severe drought conditions and test rebounds from future droughts, integrating lessons from recent events.
- **Consider Optimization of Conservation Measures:** Conservation modeling suggests that member agencies could further optimize their active conservation programming by prioritizing investment in lower cost-per-gallon-saved programs.
- **Continuous Model Improvements:** Maintain clear documentation, continue annual data collection from member agencies, and regularly refine model structure and assumptions to reflect new trends in development and other drivers.

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1. Introduction

Background and Context

The Bay Area Water Supply and Conservation Agency (BAWSCA) plays a critical role in ensuring reliable, high-quality water supply for 26 member agencies serving over 1.8 million residents, businesses, and communities throughout the San Francisco Bay Area. BAWSCA's represents the collective interests of its member agencies in regional water planning, supply reliability, and conservation, while supporting local agencies' efforts to meet both current and future water needs. As the region faces increasing pressures from population growth, climate change, regulatory requirements, and evolving water use patterns, proactive and data-driven planning has become increasingly essential.

Project Scope

This report presents the results of the Regional Water Demand and Conservation Projections Project (Project) conducted for BAWSCA and its member agencies. The Project encompasses the development of updated, agency-specific water demand forecasts through 2050, using a robust modeling framework that integrates socioeconomic and demographic data collection, econometric analysis, and conservation program evaluation. The analysis covers the major customer sectors that make up municipal water demands—single family, multifamily, commercial/industrial/institutional, irrigation, and recycled water—and explicitly quantifies both passive (code-driven) and active (programmatic) conservation impacts.

The demand projections presented herein are based on a single, standardized set of assumptions developed exclusively for the analytical scope of this Project. These figures are not the official planning forecasts for any individual member agency, which may differ from the illustrative estimates unique to this specific project.

Agencies maintain the authority to develop and adopt their own distinct projections (e.g., in their UWMPs) based on independent internal processes and assumptions. Final, official demand projections must be obtained directly from the corresponding member agency's adopted planning documents.

Project Objectives and Alignment with Regional Planning Efforts

The primary objectives of the Project were to:

- Provide scenario-ready forecasts of regional and agency-level water demand through 2050;
- Quantify the impacts of ongoing and planned conservation measures;
- Support member agencies in meeting the requirements of the 2025 Urban Water Management Plan (UWMP) cycle, including compliance with new regulatory standards such as the Urban Water Use Objective (UWUO); and

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- Align demand forecasting and conservation planning with BAWSCA's Long-Term Reliable Water Supply Strategy (Strategy 2050) initiative, which is conducting parallel scenario analyses to assess long-term water supply reliability and inform regional investment decisions.

By integrating demand-side analysis with the broader Strategy 2050 effort, the Project ensures that BAWSCA and its member agencies are equipped to evaluate a range of plausible futures, identify potential risks and opportunities, and make informed, adaptive decisions to secure the region's water future.

Structure of the Report

The report is organized in the following main sections:

- **Historical Data Collection and Review:** Overview of data sources, coordination with member agencies, and data processing methods.
- **Water Demand Forecasting Approach and Model Development:** Description of the modeling framework, particularly the econometric methods.
- **Water Conservation Analysis and Projection:** Overview of the Project's conservation modeling, analysis, and projections.
- **Baseline 2050 Water Demand Projection Scenario:** Presentation of baseline assumptions, forecast results, and sectoral/regional breakdowns.
- **Urban Water Use Objective (UWUO):** Description of the methodology for projecting member agencies' UWUO out to 2050 and summary of expected compliance under the baseline scenario.
- **Analysis of Alternative Forecast Scenarios:** Exploration of alternative futures, including demographic, economic, climate, and policy uncertainties.
- **Summary and Recommendations:** Summary of findings, recommendations for future analyses, and strategic linkages to ongoing initiatives.
- **Appendices:** Supporting data, technical details, and additional documentation.

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2. Historical Data Collection and Review

This section documents the historical data collection process for the Project, including coordination with the member agencies, and overview of the data collected, and a review of key data processing exercises. This section also documents historical demographic and water consumption trends for the region. Future demographic projections, which are key drivers of future water demand, are further documented in Section 5, which describes baseline assumptions of future conditions, and Section 7, which presents alternative scenario assumptions.

2.1 Data Sources and Collection Process

Development of econometric and end-use accounting models is a highly data intensive process that requires a robust historical dataset consisting of water consumption, demographic data, and explanatory variables used to explain variability in water use. This section summarizes the data sources collected in support of the Project's modeling effort.

2.1.1 Data Collected from Member Agencies, BAWCSA, and Santa Clara Valley Water District

Historical records of billed consumption and accounts are perhaps the most important data for developing water demand models. In support of this effort, member agency-specific billing and consumption records from 1980 to 2020 were made available from prior demand studies. This historical data was supplemented with an additional request from member agencies to collect updated data for the years 2020-2023. Additional data, including historical water rates, water shortage history, and conservation program information were also provided by member agencies and supplemented with additional context and data from BAWSCA and Santa Clara Valley Water District (Valley Water).

Following this initial data collection, the project team reviewed member agency data and identified inconsistencies (e.g., billing records agencies reported monthly that appeared to be bimonthly) and coordinated with agency staff through emails and phone calls regarding the data.

2.1.2 Collection of External Data Sets

Additional data gathered for the Project encompassed a comprehensive array of demographic, socioeconomic, and climatic information relevant to the region. Table 2-1 presents a summary of the primary external data sources, which are not directly produced by BAWSCA or its member agencies. These data mainly served as explanatory variables, either directly or through derivation, in the Project's econometric models.

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Table 2-1: Summary of Historical Data Collected for Model Development

Explanatory Variable	Years Collected	Data Sources
Population	2000-2023	California Department of Finance (DOF) annual jurisdictional dataset[1] and US Census American Community Survey (ACS)[2]
Single Family (SF) housing units[3]		DOF and member agency account data
Multifamily (MF) housing units[4]		
Employment by North American Industry Classification System (NAICS) Sector	2002-2022	U.S. Census Bureau Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) dataset[5]. The LODES dataset provides annual, geographically detailed estimates of where people work and live, including job counts by industry sector at the census block or tract level, enabling analysis of employment patterns and economic activity within specific service areas.
Observed weather (monthly precipitation, monthly maximum temperature)	2000-2023	Gridded historical climate data from the Parameter-elevation Regressions on Independent Slopes Model (PRISM)[6]
Regional real Gross Domestic Product (GDP)	2002-2021	Federal Reserve Economic Data (FRED) database[7]
Regional unemployment rate		
Median income	2000-2023	US Census ACS
Land use and zoned area measurements	2023	California Geoportal General Plan Landuse Dataset[8]

2.2 Data Processing and Standardization

Prior to utilizing demographic and water use data for modeling and analysis, the data were subjected to multiple processing and standardization procedures. This section outlines the reasons for these steps and describes the general methods applied.

[1] California Department of Finance (DOF). *Population and Housing Estimates for California Cities, Counties, and the State: E-8 Historical Estimates (1990–2000; 2000–2010; 2010–2020) and E-1 Annual Estimates (2021–2023).* Sacramento, CA: DOF, 2001, 2012, 2023, and May 2024.

[2] U.S. Census Bureau. "American Community Survey 5-Year Estimates 2009–2022." ACS 5-Year Summary File, December 2024 edition.

[3] SF housing units are generally equivalent in number to single-family accounts.

[4] Differences between member agency single-family account data and DOF single-family housing units were reallocated to multi-family housing units to preserve the total housing units.

[5] U.S. Census Bureau, Longitudinal-Employer Household Dynamics (LEHD) Program. (2024). *LEHD Origin-Destination Employment Statistics (LODES), 2002–2022* [Dataset]. Retrieved from https://lehd.ces.census.gov/data/#lodes

[6] PRISM Climate Group, Oregon State University. (2025). *PRISM climate data: maximum temperature (Tmax) and precipitation, 2000–2023* [Dataset]. https://prism.oregonstate.edu

[7] U.S. Bureau of Economic Analysis & U.S. Bureau of Labor Statistics. (2022). *Real gross domestic product (GDPC1) and civilian unemployment rate (UNRATE), 2000–2021* [Data sets]. FRED, Federal Reserve Bank of St. Louis. Retrieved from https://fred.stlouisfed.org

[8] California Office of Planning and Research (OPR). (2025). *California General Plan Land Use* [GIS dataset]. State of California Geoportal. Retrieved from https://gis.data.ca.gov/datasets/Gov-OPR::california-general-plan-land-use

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2.2.1 Geographical Processing of Demographic Data

Key demographic information necessary for water demand forecasting—such as population, employment figures, and housing units—must align with the boundaries of each member agency's service area. Historical and projected records for these data (via DOF and Plan Bay Area 2050) are available at jurisdictional, census tract, and/or Traffic Analysis Zone (TAZ) geographical boundaries, which often do not directly align with member agency service area boundaries. This concept is illustrated in Figure 2-1 below. All demographic data utilized in the Project was reprojected to member agency service area boundaries using a GIS-based allocation procedure, further documented in Appendix A.

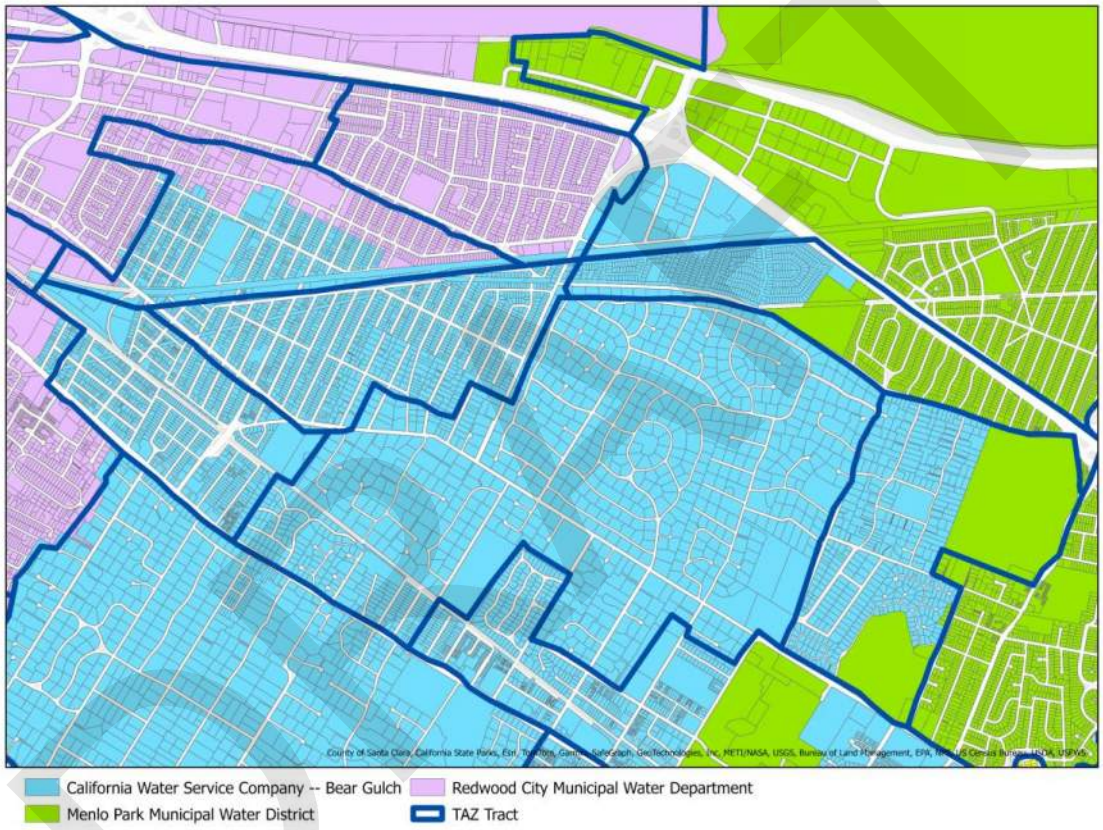


Figure 2-1: Example of TAZ Tract Overlapping an Adjacent Member Agency Service Areas

2.2.2 Characterization and Standardization of Water Demand Sectors

Member agencies provided billing and account data organized by their internal billing classifications. There were 93 unique billing classifications across all member agencies. Residential billing classifications (SF and MF) were generally consistent across member agencies. The City of East Palo Alto, City of San Bruno, and the Town of Hillsborough were the only agencies with a single residential billing classification. Non-residential billing classifications were less consistent across member agencies. While most agencies defined a commercial billing classification, the distinction and definition of industrial, institutional, and irrigation (i.e., landscape) classes were inconsistent across the member agencies.

In order to develop consistent water demand models across the region and to align with water conservation program categories defined in the AWE Tracking Tool (see Section 4), it was necessary to standardize member agency classifications to a consolidated set of water demand sectors. Table 2-2 summarizes the consolidated water use sectors used for model development and projection.

Table 2-2: Summary of Standardized Water Use Sectors Used for Demand Model Development

Model Sector	Description
SF	Water use associated with SF residential homes.
MF	Water use associated with MF residential properties.
Commercial, Industrial, and Institutional (CII)	Water use associated with all CII activity.
Dedicated irrigation (potable)	Water use associated with separately metered outdoor irrigation. Typically non-residential, but occasionally inclusive of common multifamily landscaped area and/or Homeowners' Associations (HOAs).
Recycled and raw water	Water use associated with current recycled and raw water use. Typically non-residential irrigation, but occasionally inclusive of some CII process water consumption, and common multifamily landscaped area and/or Homeowners' Associations (HOAs).
Other	Other water use, often categorized as "other" by retail agencies, but also inclusive of classifications not well represented by the standardized water use sectors above (e.g., construction, fire line, miscellaneous). Other water use does not include nonrevenue water (NRW).

In addition to standardizing water use sectors, member agency consumption data needed to be "smoothed" in order to standardize for consumption billed on monthly and bimonthly cycles. This exercise is necessary prior to statistical analysis and econometric model fitting to ensure that actual monthly consumption is accurately represented. Appendix B provides more detailed mathematical documentation of the smoothing approach applied.

2.2.3 Derived Demographic Variables

Several additional demographic explanatory variables were derived from the datasets identified in Table 2-2. These data are summarized in Table 2-3 below.

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Table 2-3: Summary of Derived Demographic Explanatory Variables

Derived Explanatory Variable	Description
Persons per household (PPH)	Calculated as the total population by housing type (SF or MF) divided by the total number of households. Unique PPH values were calculated for each member agency annually between 2000-2023.
Housing density	Derived from housing units (SF and MF) estimated for each member agency divided by zoned SF or MF residential area obtained from the California Geoportal General Plan Landuse Dataset.
Mix of industries / economic activity	Reflects the proportional number of jobs in each NACIS sector documented within the LODES dataset relative to overall employment. Calculated for each NACIS sector and member agency service area.
Housing units and jobs per account	• SF accounts reflect a 1-1 ratio with housing units. • MF housing units per account were calculated by dividing the number of housing units by recorded number of accounts. • CII jobs per account were calculated by dividing the number of jobs within a service area by the total number of CII accounts.

2.3 Summary of Historical Demographic and Water Use Trends

This section provides a summary of the historical demographic and water use trends within the overall BAWSCA region.

2.3.1 Historical Demographic Data

Figures 2-2 through 2-4 illustrate regional historical trends in population, housing unit development, and job growth from 2000-2023. These data reflect historical jurisdictional DOF data, reprojected to member agency service area boundaries using the approach defined in Section 2.2.1, and aggregated to the overall BAWSCA service area. Historical population, housing units, and job data were validated by comparing to prior BAWSCA water demand study estimates, member agencies 2020 UWMPs, and through discussions with member agency representatives.

Between 2000 and 2023, the BAWSCA service area experienced steady population growth, moderate housing expansion, and employment increases, reflecting broader regional economic and urbanization trends. Population rose from approximately 1.57 million in 2000 to about 1.80 million in 2023, an increase of roughly 14%, with most growth occurring after 2010 following a period of relative stability in the early 2000s. Housing units also expanded, with single-family units increasing from about 317,000 in 2000 to roughly 360,000 by 2023, though growth was uneven, with notable acceleration during the mid-2010s. The trend illustrates a gradual shift toward higher-density development, as multifamily housing grew at a faster rate than single-family units in recent years. Employment trends tend to mirror population growth, with job counts rising steadily across the period, driven by technology and service sectors, although the data indicate some volatility during economic downturns such as the 2008 recession and the COVID-19 pandemic.

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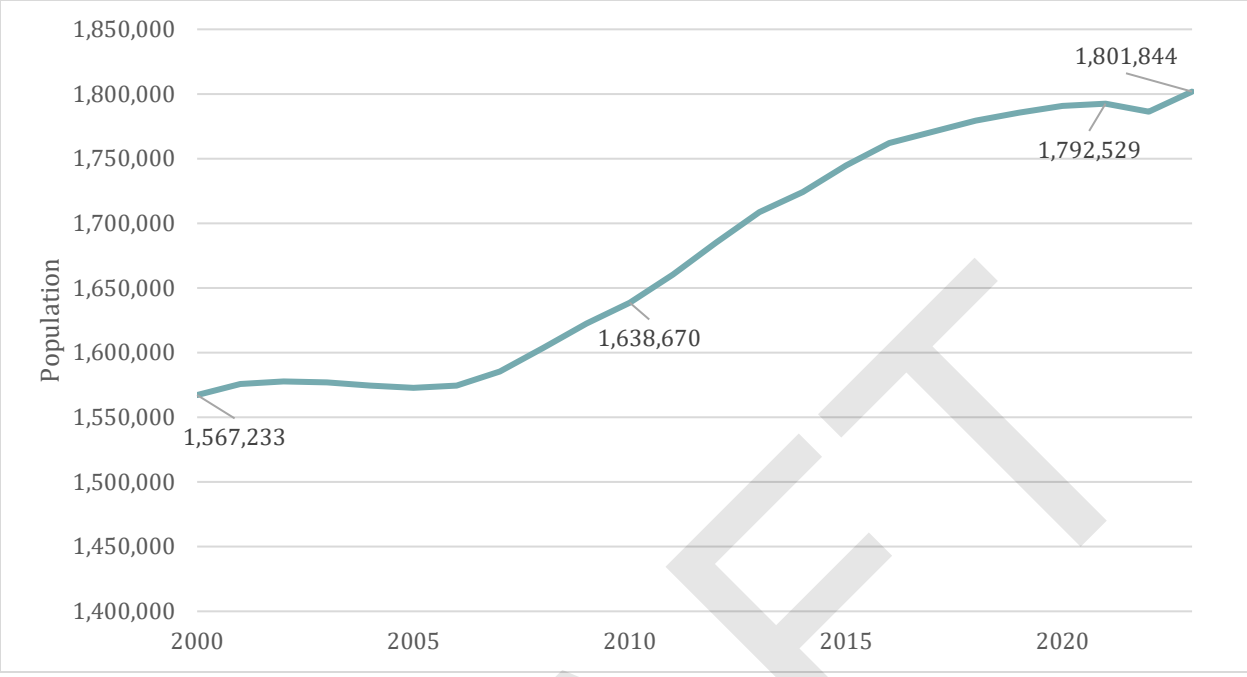


Figure 2-2: Historical Regional Population

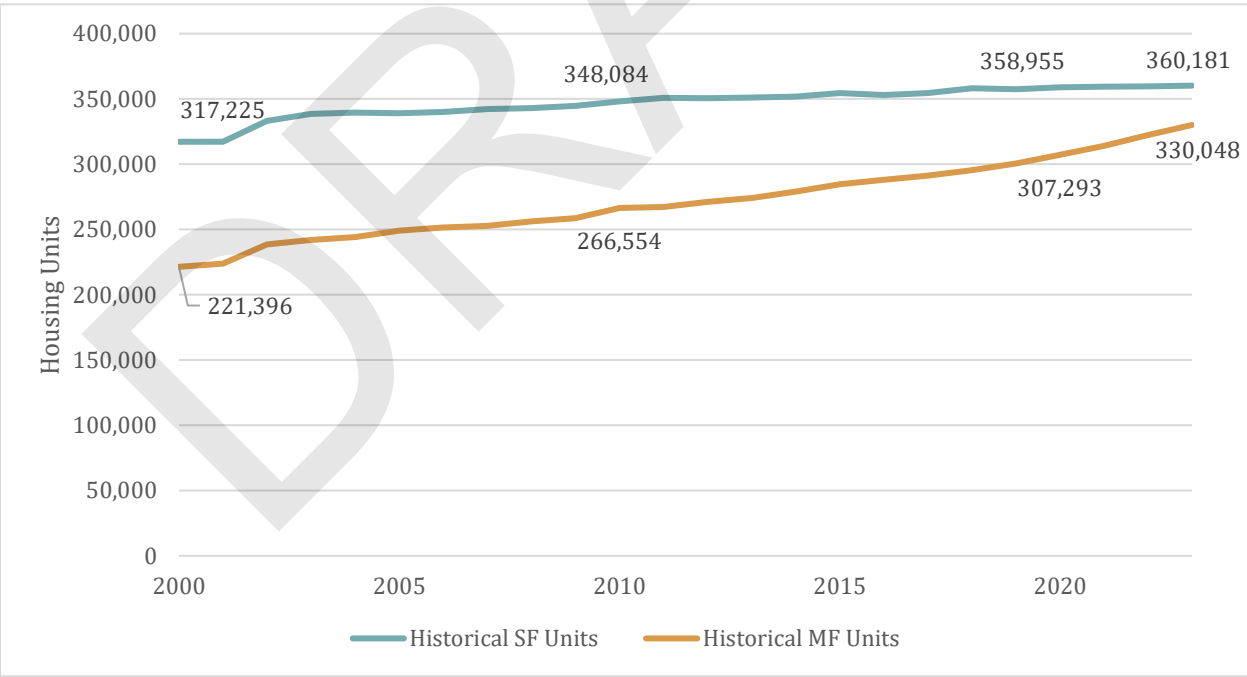


Figure 2-3: Historical Regional SF and MF Housing Units

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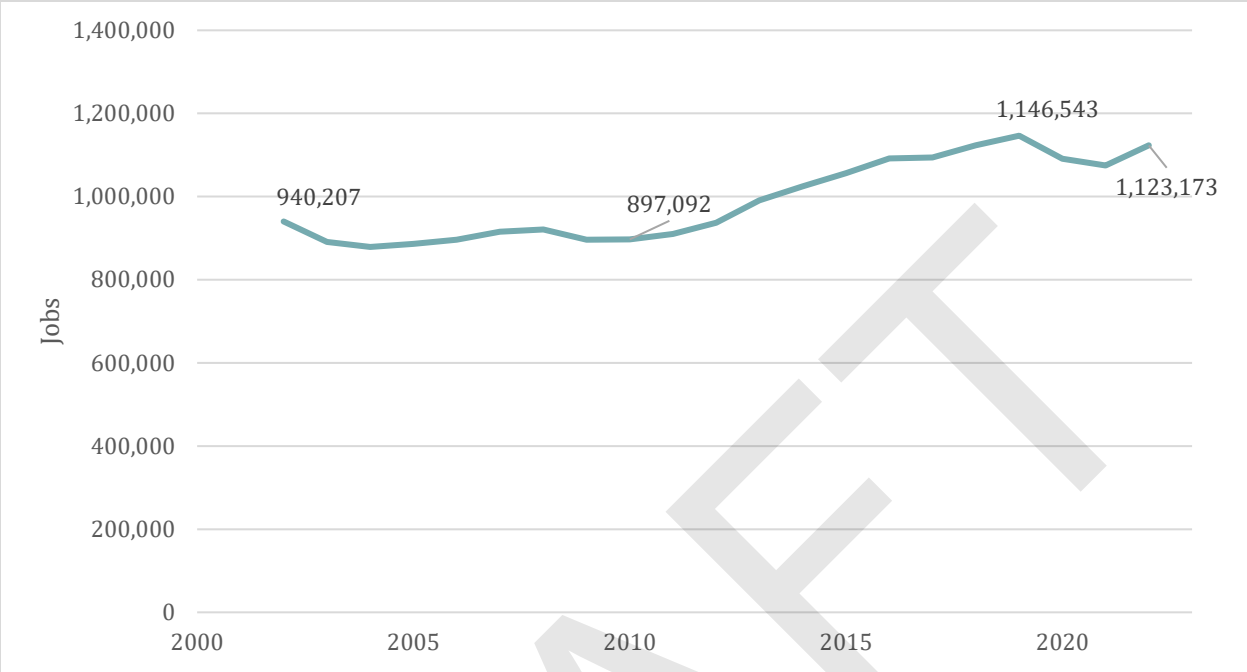


Figure 2-4: Historical Regional Job Totals

2.3.2 Historical Water Use Data

Historical water consumption[9] in the region for the primary water use sectors identified in Table 2-2 are presented in Figure 2-5 on the following page. Figure 2-5 illustrates that total water use across the BAWSCA service area has fluctuated significantly from 2000 through 2023, shaped by economic cycles, conservation programs, and climatic conditions. Demand peaked in the mid-2000s before declining during the 2008–2010 recession and again during the 2014–2016 drought, when mandatory restrictions and heightened conservation awareness drove sharp reductions in use. Following these events, water demand rebounded modestly but remained below early-2000s levels, signaling a structural shift toward lower per-capita consumption due to ongoing efficiency improvements and potential behavioral changes. The COVID-19 pandemic in 2020 introduced a temporary shift in water use patterns: residential demand increased as more people stayed home, while CII use declined due to widespread closures. Effects of the COVID-19 pandemic overlapped with the most recent drought and resulted in a net decrease in overall demand, reinforcing the sensitivity of water use to socio-economic disruptions and temporary water use restrictions.

[9] Consumption excludes NRW.

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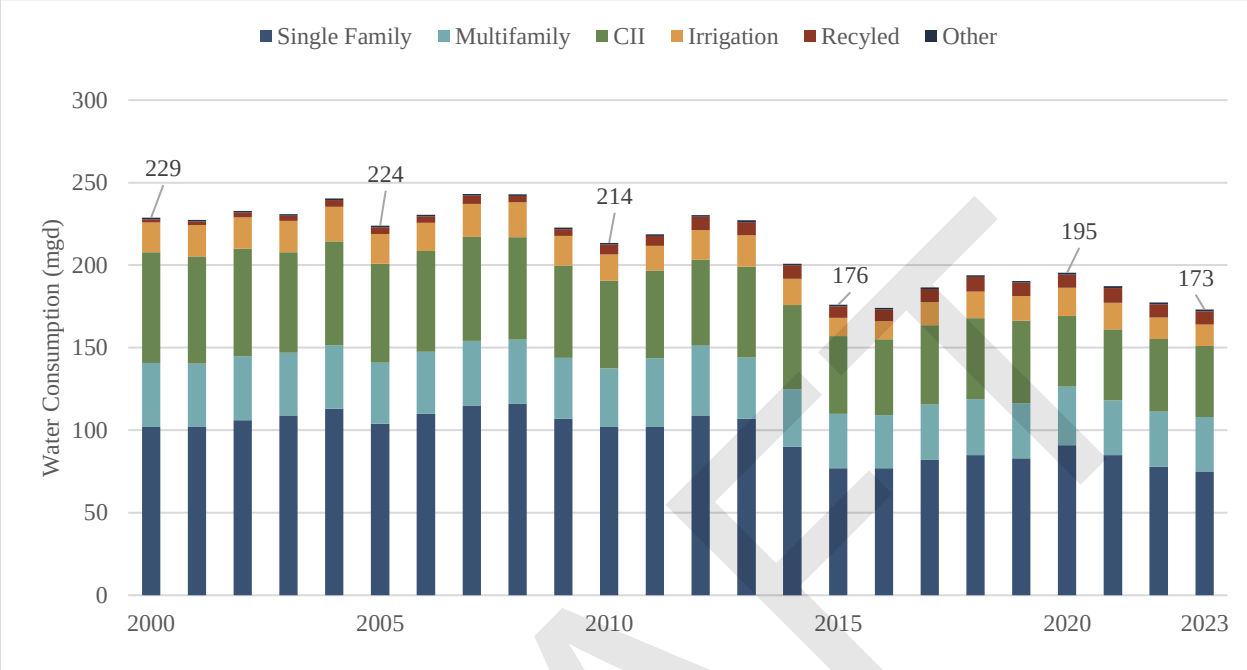


Figure 2-5: Historical Water Consumption (Excludes NRW)

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3. Water Demand Forecasting Approach and Model Development

BAWSCA's updated water demand forecasting framework produces agency-specific, monthly projections of water demand by explicitly linking drivers (households, accounts, jobs) and explanatory variables (weather, price, demographics, economy) to observed water use. The generalized approach (Figure 3-1) is a "hybrid" methodology that combines econometric regression for representing historical variability in water demand with an end-use conservation toolset to reflect passive code-driven efficiency and evaluate future active conservation programming. The approach was designed to be "scenario ready" as model inputs and assumptions are straightforward to change to reflect alternate future conditions. This section provides a brief overview of the econometric model approach. The end use accounting conservation module is further discussed in Section 4.

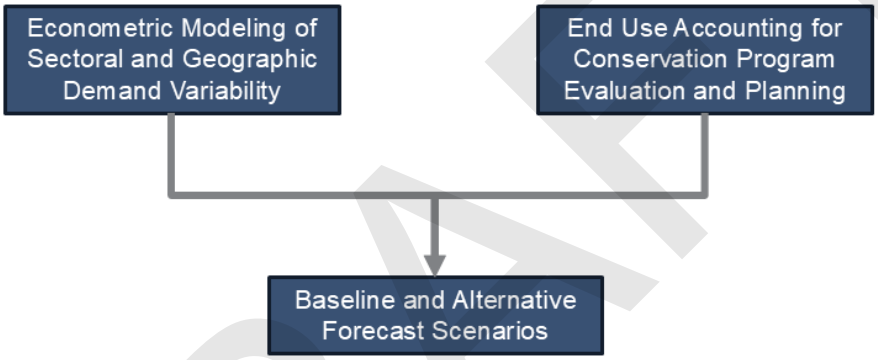


Figure 3-1: Overall Water Demand Modeling Approach

3.1 Econometric Model Design

Member agency demand for any sector is calculated as the product of "driver units" and a corresponding rate of use. Driver units reflect the scale of growth over time while the rate of use reflects the intensity of water use. The rate of use framework is an important concept in water demand forecasting because it decouples growth in customers from behavioral/technology effects on per-unit use. Equation 3-1 below provides a mathematical representation of this concept:

$$Q_{a,s,m} = N_{a,s,m} * q_{a,s,m} \quad \textbf{(3-1)}$$

Where Q is total consumption for agency a, water use sector s, and month m; N are the driver units (e.g., accounts); and q is the rate of use per account. For this analysis, an econometric approach is used to estimate the rate of use per account, q, using a set of linear regression equations that explain historical rates of water use as a function of several weather, socioeconomic, and other explanatory variables. Linear regression produces the coefficients applied to each explanatory variable to closely reproduce the historical rate of use per driver unit. Equation 3-2 shows an example linear regression for single family water use, where the price of water and temperatures are example, and only a subset of possible, explanatory variables.

$$\frac{Historical\ Single\ Family\ Use}{Single\ Family\ Account} = C_{Intercept} + C_R \times Historical\ Price\ of\ Water + C_T \times Historical\ Temperatures + \ldots \quad \textbf{(3-2)}$$

A key feature of the econometric approach applied to the Project was to implement a "panel" regression methodology to model the rate of water use. Panel regression is a statistical method for analyzing data that combines both cross-sectional data (e.g., geographical data specific to member agencies, such as weather or housing density) and time-series data (e.g., observations of water consumption over multiple time periods). Panel regression is generally preferred to fitting independent models for each agency in isolation, as the approach improves statistical power, supports agencies with shorter or noisier billing records, and allows inclusion of important explanatory variables that vary more across geography than time (e.g., persons-per-household, housing density).

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Econometric models of historical per account water use were developed using a set of explanatory variables that meet the following set of criteria and are further defined in Table 3-1:

- Logical causal relationship with historical changes in water consumption (note the relevance and relationships articulated in Table 3-1, Column 2):
- Available historical record consistent with the time series of observed water consumption and accounts; and
- Availability of future projections consistent with the Project forecast horizon (i.e., 2025-2050) or a reasonable basis for deriving or assuming future projected values.

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Table 3-1: Summary of Collected Explanatory Variables

Explanatory Variable	Relevance to Water Consumption
Monthly / Seasonal Pattern	Reflects average fluctuations of water consumption consistent with the seasons (e.g., water use tends to be larger in the summer than in the winter).
Temperature[10]	Higher temperatures are associated with higher demands.
Precipitation[11]	Higher precipitation is associated with lower demands.
Price of Water	Economic theory suggests that demand for water decreases as price increases.
Regional GDP	Water demand is positively correlated with regional economic output. An index reflecting departures in Regional GDP from long-term trend was considered in this study.
Average Unemployment Rate	Higher rates of unemployment are associated with lower rates of consumption independent of GDP, which includes the integration of labor, capital, and technology.
Housing Density	Housing density is negatively correlated with demand. Residences with smaller lot sizes tend to use less water for outdoor uses.
Persons per Household	Residences with more people tend to use larger amounts of water.
Mix of Industries / Economic Activity	CII sector water use is linked to the distribution of industries and economic activity in a region.
Jobs or Housing Units per Account[12]	Reflects the intensity of housing development and employment per account for each member agency. Generally positively correlated with water demand.
Historical Passive Efficiency	Reflects long-term historical implementation of plumbing code and fixture replacement. Negatively correlated with water demand. Historical estimates were derived from AWE Tracking Tool (see Section 4).
Drought Restrictions	Short term drought restrictions tend to decrease the amount of water consumed by customers.
COVID	Billing records indicate different water use patterns during the COVID pandemic (Assumed active from March 2020 – May 2023), conceptually related to stay-at-home orders and the increased prevalence of remote work.

3.2 Summary of Econometric Model Fitting Process

Development of econometric models was an iterative process, reflected in the following Figure 3-2 and summarized in more detail in Table 3-2. Models were fit using monthly records of the rate of water consumption, generally over the 2000-2023 time period, though this range varied based on individual member agency data availability. Data utilized for the dedicated irrigation and recycled/raw water models tended to be shorter in length, as the prevalence of these customer classes tended to be newer relative to more established classes such as single family residential.[13]

[10] The econometric model was developed using historical weather data specific to each member agency's service area boundaries. Future weather conditions used for projections are further discussed in Sections 5 and 7.

[11] Ibid.

[12] SF accounts reflect a 1-1 ratio with housing unit. MF housing units per account were calculated by dividing the number of housing units by recorded number of accounts. CII jobs per account were calculated by dividing the number of jobs within a service area by the total number of CII accounts.

[13] To ensure data quality and consistency in model calibration, all irrigation and recycled water use data were restricted to post-2005. Additional agency-specific restrictions were applied where historical patterns or anomalies warranted tighter controls. Specifically, irrigation data for North Coast CWD were limited to post-2020, and Purissima Hills WD irrigation data were

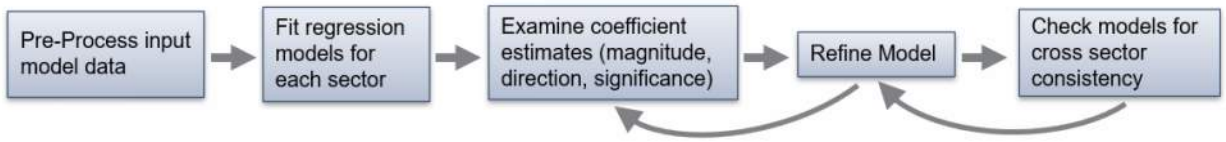


Figure 3-2: General Iterative Process for Developing Econometric Models

Table 3-2: Summary of Econometric Model Fitting Process

Model Fitting Procedure	Description
Collect and pre-process model input data	Conduct necessary pre-processing calculations prior to model fitting, e.g.: • Collaborative development of historical demographic data (e.g., housing units, jobs, and population) with member agencies. • Calculate rate of use (e.g., gallons per account per day). • Calculate natural logarithms of sectoral rate of use and appropriate predictors. • Calculate departures from normal conditions for appropriate predictors (i.e., economic trend and weather). • Calculate any index, "dummy," or interacted parameters (e.g., seasonal cycle, geography, drought severity). • Smoothing monthly and bimonthly data to adjust for irregular billing cycles.
Fit regression models for each sector	Use statistical estimation software (e.g., R, EViews) to fit linear regression equations to per unit use with the selected explanatory variables.
Examine coefficient estimates and measure of fit	Review measures of fit (e.g., R^2) and coefficient estimates for reasonable magnitude, direction/sign, and significance.
Refine model to improve measures of fit and coefficient estimates	If the model fit is poor or if coefficient estimates are illogical or insignificant, several actions can be taken, including but not limited to: • Identifying and removing outlier data points that have significant leverage on coefficient estimates. • Remove predictors with insignificant or illogical coefficient estimates from the regression equation. • Testing alternate specifications of explanatory variables.
Check models for cross-sector consistency	Model fits and predictors are compared across sectors to judge estimates relative to prior expectations; e.g., testing if the relative effects of price and socioeconomic variables vary by sector in a logical way based on past experience.

Consistent with the panel regression process, several model coefficients are unique to each member agency, while others are shared across all agencies. Model coefficient ranges for each of the econometric models are documented in Appendix C.

restricted to post-2011. For recycled water, City of Redwood City and City of Palo Alto data were limited to post-2020, City of Mountain View to post-2013, and San Jose Muni to post-2015.

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3.3 Historical Model Performance

Overall, the econometric models showed strong performance over the historical dataset and are of sufficient strength to be useful in forecasting future water demand. Figures 3-3 through 3-11 on the following pages illustrate timeseries plots overlaying regional average per-account water use compared to the econometric model fits as well as scatter plots illustrating all monthly observations and model predictions for all member agencies. Visual inspection indicates that on a regional scale the econometric models well represent both seasonal trends as well as the long-term historical trend in declining per-account use. Note that SF and MF models tend to show the strongest statistical performance. The CII model is less accurate on a monthly basis relative to the SF and MF models, but faithfully reflects long-term trends in per-account water consumption. Regionally, the irrigation and recycled water models show strong correlation with seasonal water use patterns, which is expected for sectors that are dominated by outdoor water use. Note that a regional timeseries plot for the recycled water model is not shown, as the differences in the available billed data between member agencies makes a regional average difficult to interpret.[14]

Appendix D provides additional statistics demonstrating the strength of the statistical model fits, including ranges of values across the member agencies models.

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[14] Ibid.

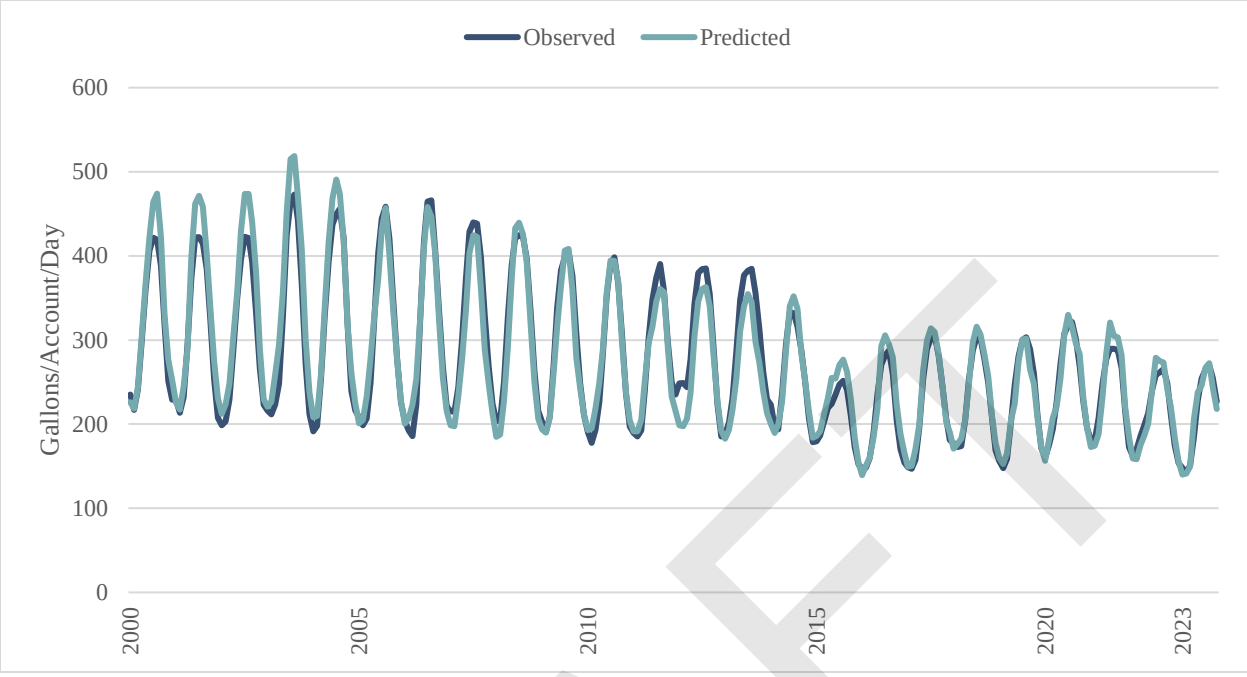


Figure 3-3: Regional Average SF Observed and Predicted Rate of Use

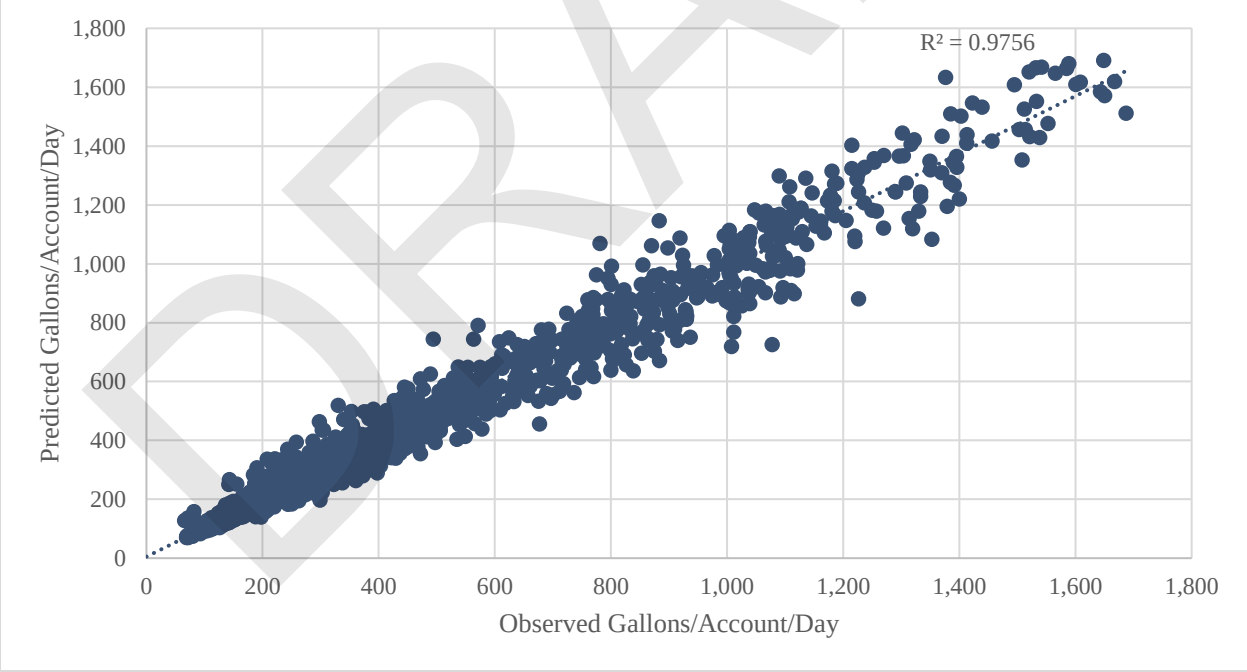


Figure 3-4: Scatterplot Illustrating Monthly Observed SF Water Use vs. Historical Model Predictions

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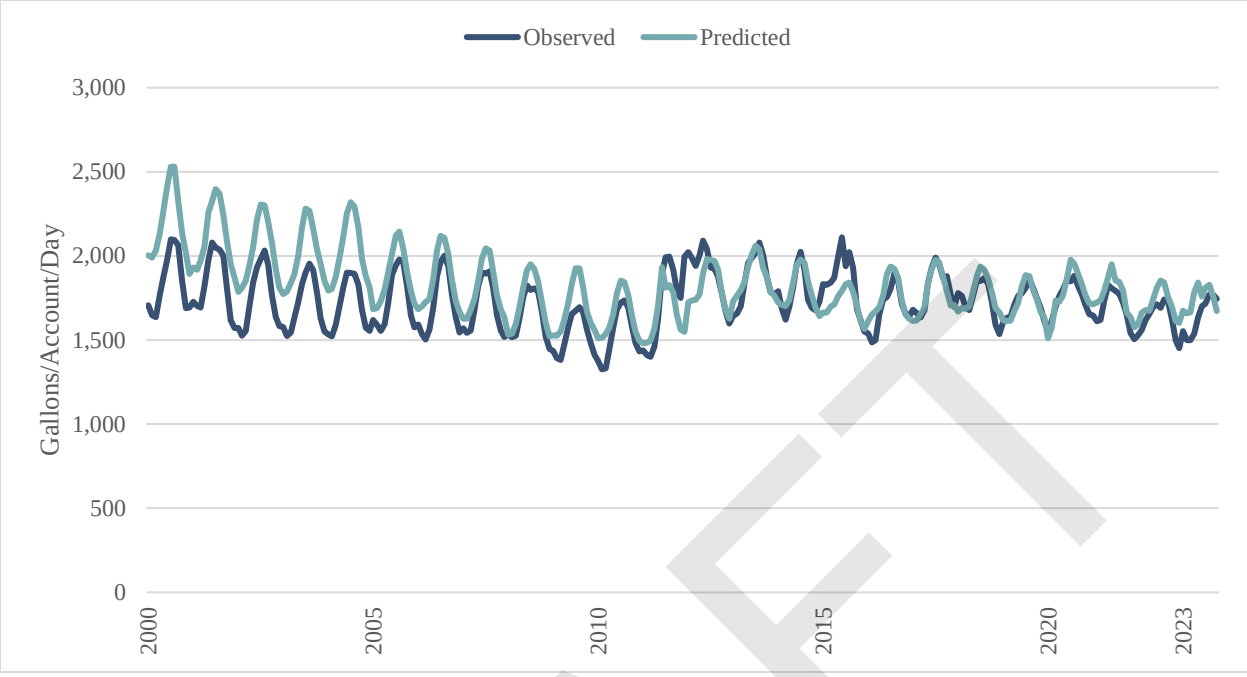


Figure 3-5: Regional Average MF Observed and Predicted Rate of Use

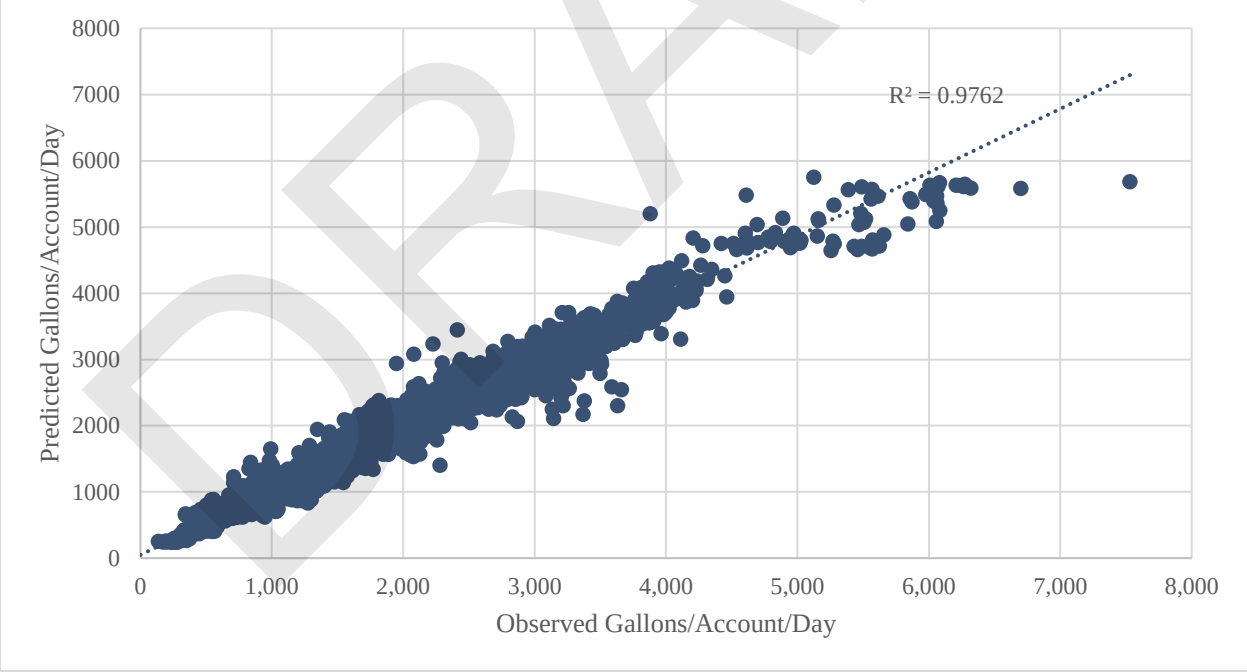


Figure 3-6: Scatterplot Illustrating Monthly Observed MF Water Use vs. Historical Model Predictions

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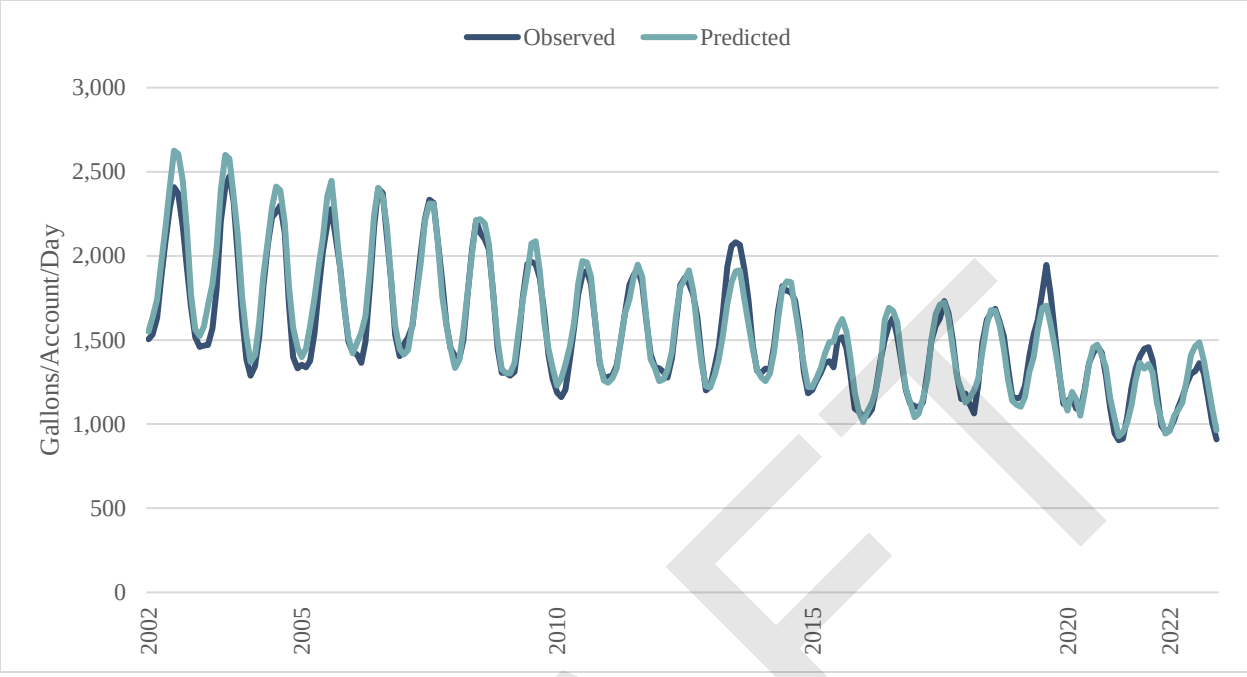


Figure 3-7: Regional Average CII Observed and Predicted Rate of Use

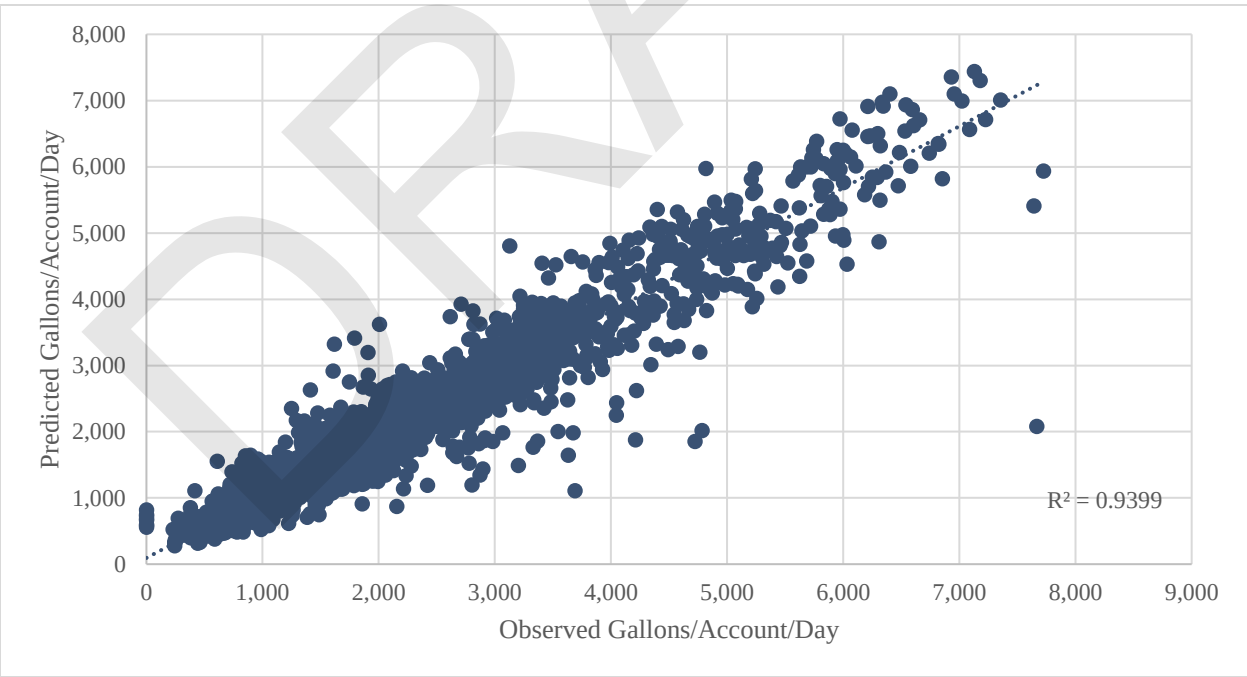


Figure 3-8: Scatterplot Illustrating Monthly Observed CII Water Use vs. Historical Model Predictions

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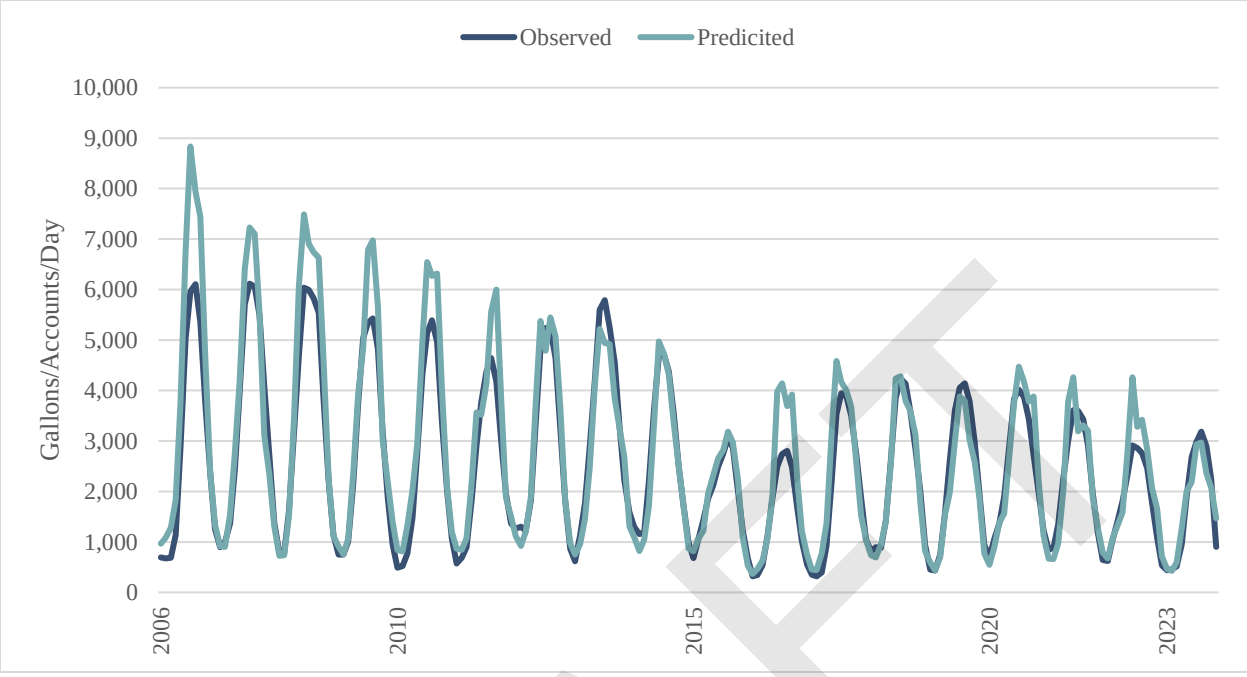


Figure 3-9: Regional Average Irrigation Observed and Predicted Rate of Use

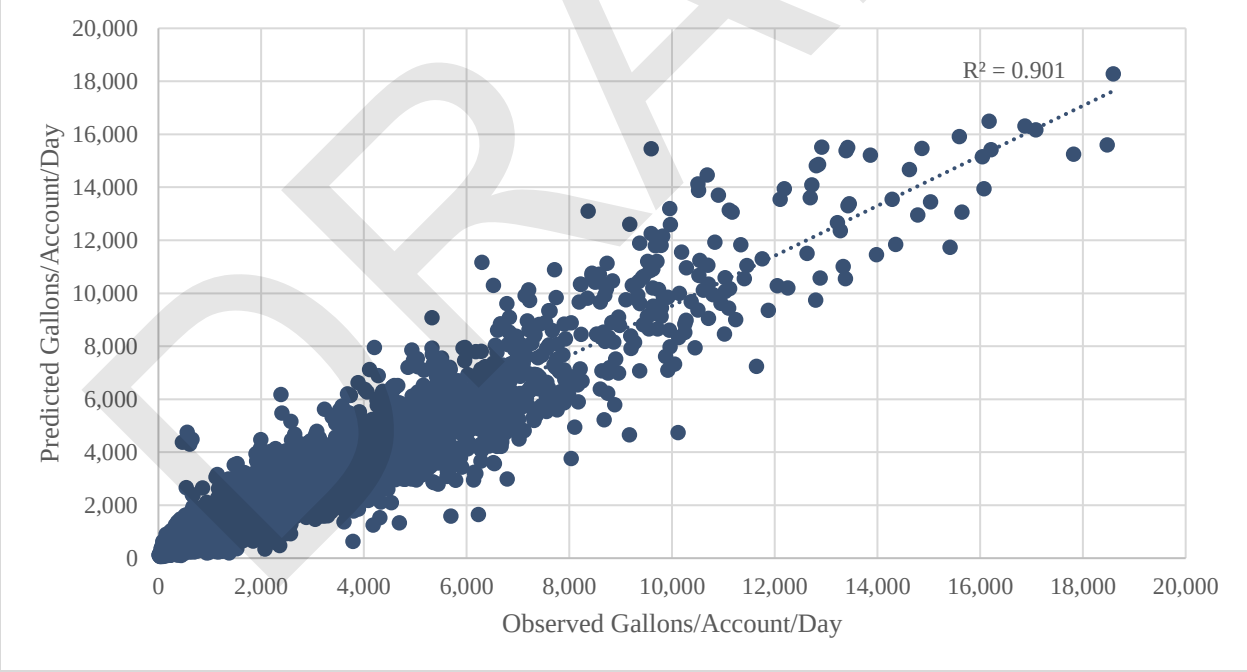


Figure 3-10: Scatterplot Illustrating Monthly Observed Irrigation Water Use vs. Historical Model Predictions

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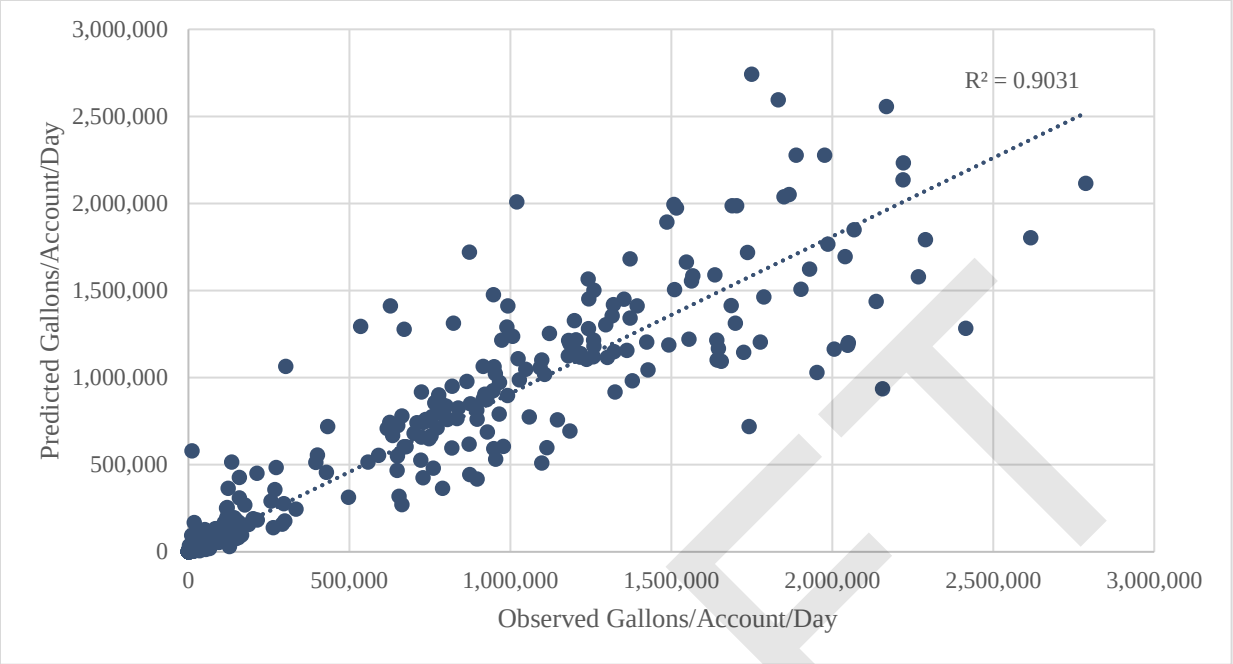


Figure 3-11: Scatterplot Illustrating Monthly Observed Recycled Water Use vs. Historical Model Predictions

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4. Water Conservation Analysis and Projection

BAWSCA's conservation analysis is anchored by the AWE Tracking Tool, a Microsoft Excel–based platform designed to help utilities assess technological efficiency, estimate water savings, and evaluate the cost-effectiveness of conservation measures. The tool supports long-term planning by modeling both passive and active efficiency improvements across the SF, MF, CII, and Irrigation sectors.

The analysis uses detailed inputs, including housing units, population, water demand, and historical program installations, to model current fixture stocks and project future efficiency gains. Savings are categorized as passive (code-driven, naturally occurring replacement) or active (utility-sponsored interventions). Together, these components define remaining conservation potential and inform the development of regional program portfolios.

4.1 Passive Water Savings Assessment

Passive water savings represent the efficiency gains expected to occur naturally as fixtures and appliances reach the end of their useful lives and are replaced with models that comply with the Energy Policy Act (EPACT), CALGreen, and Title 20 standards:[15]

- **EPACT:** A U.S. federal law establishing national water efficiency standards for plumbing fixtures and appliances (e.g., toilets, faucets, showerheads).
- **CALGreen**: California's mandatory green building code (Title 24, Part 11) requiring sustainable practices, including indoor and outdoor water efficiency measures.
- **Title 20**: California Appliance Efficiency Regulations setting minimum energy and water performance standards for appliances sold in the state.

The AWE stock model simulates these changes using expected useful lives, housing and population growth, and code-based installation requirements. This establishes both a long-term indoor efficiency trajectory and the baseline against which active program savings are evaluated.

Passive turnover defines remaining retrofit potential for active programs. Several high-efficiency technologies, most notably 0.8 gallons per flush (gpf) Ultra-High-Efficiency Toilets (UHETs), cannot be achieved through passive replacement alone, as codes plateau at higher flush volumes. Similarly, outdoor uses experience no passive turnover, making them a central focus of active conservation.

4.1.1 Baseline Fixture Stock and Efficiency Trends

Understanding the distribution of residential fixture stock, such as toilets, showerheads, faucets, clothes washers, and dishwashers, is critical for accurately estimating both passive and active water savings potential. This section analyzes the current and projected efficiency levels of these fixtures, categorized

[15] https://www.energy.ca.gov/rules-and-regulations/appliance-efficiency-regulations-title-20; https://www.dgs.ca.gov/bsc/calgreen; https://www.congress.gov/bill/102nd-congress/house-bill/776

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by regulatory standards (EPACT, Title 20) and market-driven ultra-high-efficiency technologies, to inform conservation planning and program targeting.

Baseline fixture stock distributions for SF, MF, and CII customers were developed using the AWE stock models. These distributions incorporate:

- Historical adoption of efficient technologies;
- Participation in BAWSCA, Valley Water, and Cal Water programs;
- Housing age, population and natural replacement rates;
- Federal and California efficiency standards; and
- Market adoption of WaterSense and ENERGY STAR technologies.

Tables 4-1 through 4-3 present the distribution of fixture and appliance stock by technology tier for 2025 and 2050. Detailed five-year incremental projections in Appendix E (Tables E-3 and E-4) show a continued decline in pre-EPACT fixtures, increasing penetration of ultra-efficient technologies, and remaining opportunities in multifamily shared laundry facilities and specific CII equipment categories not fully captured by passive modeling.

Single-Family Fixture Stock

In the SF sector, passive savings occur primarily through replacement of toilets, clothes washers, dishwashers, and showerheads as homes age, remodel, or change ownership. The model assumes a steady rate of stock turnover based on each fixture's expected useful life and the efficiency level required by current California standards.

Key Findings:

- Pre-EPACT toilets are projected to decline sharply by 2050, nearly disappearing from the stock.
- Ultra-high-efficiency toilets (UHET/WaterSense) are expected to become predominant, especially in new construction.
- The market for showerheads and aerators is expected to reach near-universal efficiency where most products in the market meet or exceed the highest efficiency standards.
- Clothes washers still present significant turnover potential, with many older models expected to remain in use.
- ENERGY STAR dishwashers are projected to dominate the market by 2050.

Multifamily Fixture Stock

The MF sector presents a more complex profile due to wide variation in building configurations, age, occupancy patterns, and management practices. Water use and conservation potential are influenced by factors such as whether units are individually sub-metered, whether landscape irrigation is tenant- or

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owner-managed, and the presence of shared laundry facilities. These factors create greater variability in passive efficiency trends compared to SF housing.

Key Findings:

- MF toilets are transitioning toward high-efficiency (HET) and UHET models by 2050.
- High-flow showerheads are expected to nearly disappear.
- Shared laundry facilities remain a significant opportunity for efficiency improvements, even in 2050.
- ENERGY STAR and ENERGY STAR Most Efficient clothes washers are gaining substantial market share.
- Overall, MF stock remains less efficient than SF stock across most end uses.

Additional characteristics of multifamily buildings further influence this trajectory. Multifamily properties often retain a higher proportion of inefficient fixtures and adopt efficient appliances more slowly, due to factors such as cost-sharing, building age, and limited incentives for property owners. Shared-laundry facilities commonly rely on older, high-water-use machines, underscoring significant remaining market potential for both passive and active savings.

CII Fixture Stock

CII fixture stock varies widely across business types. The baseline assessment focuses on commercial toilets and urinals, which are the only CII indoor end uses for which the AWE Tracking Tool provides stock-turnover-based passive savings modeling. Passive efficiency gains in this sector tend to occur more gradually due to longer equipment life spans, slower renovation cycles and diversity of facility types and uses.

Other CII equipment types, such as pre-rinse spray valves, commercial dishwashers, steamers, combination ovens, and laundry systems are not modeled through AWE's stock module. These technologies are incorporated only through active conservation measures where applicable and are not included in passive turnover estimates. Turnover occurs through renovations, tenant improvements, equipment failure, and business transitions.

Key Findings include:

- CII turnover is slower than residential turnover, but deep efficiency shifts occur by 2050.
- High-efficiency urinals (0.5 gpf) become the dominant urinal technology.
- Ultra-high-efficiency and waterless urinals grow steadily.
- Pre-EPACT toilets largely disappear but remain a retrofit opportunity in the near term.
- Shares of ULFT toilets shrink but remain substantial due to long commercial fixture lifespans.

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Understanding the existing fixture stock and its efficiency levels provides the foundation for estimating passive savings. As older, less efficient fixtures are naturally replaced over time with code-compliant models, these stock changes drive ongoing reductions in water use without additional program intervention. The following section quantifies these passive savings.

Table 4-1: SF Fixture Stock Distribution by Technology Tier (2025 and 2050)

Fixture Type	Technology Tier	Efficiency Level	Share (2025)	Share (2050)
Toilets	Pre-EPACT	3.5–5.0 gpf	10%	2%
	ULFT (EPACT Standard)	1.6 gpf	40%	18%
	HET	1.28 gpf	45%	55%
	UHET/WaterSense	≤1.1 gpf	5%	25%
Showerheads	Legacy	>2.5 gpm	5%	1%
	EPACT	2.5 gpm	10%	4%
	Title 20	2.0 gpm	50%	40%
	Market Trend	1.8 gpm	35%	55%
Faucet Aerators	Legacy	>2.2 gpm	<5%	0%
	EPACT	2.2 gpm	20%	8%
	Title 20 / WaterSense	1.5–1.2 gpm	75%	92%
Clothes Washers	Legacy Top-Loader	High WF	30%	8%
	Standard Efficiency	Medium WF	30%	17%
	ENERGY STAR	Low WF	30%	45%
	ENERGY STAR Most Efficient	Very Low WF	10%	30%
Dishwashers	Legacy	Non-rated	20%	5%
	Standard Efficiency	Mid-efficiency	40%	25%
	ENERGY STAR	High efficiency	40%	70%

Table 4-2: MF Fixture Stock Distribution by Technology Tier (2025 and 2050)

Fixture Type	Technology Tier	Efficiency Level	Share (2025)	Share (2050)
Toilets	Pre-EPACT	3.5–5.0 gpf	20%	5%
	ULFT (EPACT Standard)	1.6 gpf	45%	25%
	HET	1.28 gpf	30%	45%
	UHET/WaterSense	≤1.1 gpf	5%	25%
Showerheads	Legacy	>2.5 gpm	10%	2%
	EPACT	2.5 gpm	15%	6%
	Title 20	2.0 gpm	45%	38%
	Market Trend	1.8 gpm	30%	54%
Shared Laundry Washers	Legacy	High WF	55%	15%
	Standard	Medium WF	25%	20%
	ENERGY STAR	Low WF	15%	40%
	ENERGY STAR Most Efficient	Very Low WF	5%	25%
In-Unit Washers	Legacy	High WF	35%	10%
	Standard	Medium WF	30%	20%
	ENERGY STAR	Low WF	30%	45%
	ENERGY STAR Most Efficient	Very Low WF	5%	25%

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Table 4-3: CII Toilet & Urinal Efficiency Distribution by Technology Tier (2025 and 2050)

Fixture Type	Technology Tier	Efficiency Level	Share (2025)	Share (2050)
Toilets	Pre-EPACT	3.5 gpf	20%	5%
	ULFT (EPACT Standard)	1.6 gpf	47%	25%
	HET	1.28 gpf	28%	45%
	UHET/WaterSense	≤1.1 gpf	5%	25%
Urinals	Legacy	>1.5 gpf	15%	2%
	Standard Efficiency	1.0–1.5 gpf	40%	25%
	High-Efficiency (HEU)	0.5 gpf	35%	50%
	Ultra-High-Efficiency	≤0.125 gpf	10%	23%

4.1.2 Passive Water Savings Summary

The passive savings estimates presented in Table 4-4 illustrate projected water use reductions resulting from natural fixture turnover and compliance with plumbing codes over the planning horizon. Passive savings were evaluated in five-year increments using the AWE stock model. Results show regional passive indoor savings increasing from 3.97 mgd in 2030 to 12.15 mgd in 2050.

Key observations include:

- **Steady Growth in Savings:** Passive savings increase gradually each year as older fixtures are replaced, creating a compounding effect over time.
- **Residential Sector Dominance:** Single-family and multifamily accounts contribute the largest share of passive savings, driven primarily by toilet and clothes washer replacements.
- **CII Contribution:** While smaller in absolute terms, CII savings are significant for fixtures like urinals and commercial washers, reinforcing the importance of turnover in nonresidential settings.
- **Baseline Impact:** These savings occur without active program investment, forming a critical foundation for demand management and reducing the burden on active conservation programs.

Table 4-4: Additional Annual Passive Savings Estimates by Sector, MGD

Utility	2025	2030	2035	2040	2045	2050	Total (2025-2050)
Single-Family	0	2	3	4	5	5	89
Multi-Family	0	1	3	3	4	5	73
CII	0	1	1	1	2	2	28
Regional Total	**0**	**4**	**7**	**9**	**11**	**12**	**190**

The average rate of use for each end use technology was rebased to 2025 to ensure that only new or additional passive efficiency gains are captured in the projections. The econometric model is fit to historical water use data, which already reflects the effects of passive efficiency improvements that occurred prior to 2025, such as fixture and appliance turnover and code-driven efficiency gains. Rebasing to 2025 prevents double-counting of efficiency improvements that are already embedded in historical consumption rates. As a result, only incremental passive savings, those resulting from future fixture turnover and new code requirements not yet reflected in the historical data, are included in the

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projections. This approach provides a more accurate estimate of additional water savings over the planning horizon and ensures that demand forecasts are not artificially reduced by efficiency gains that have already occurred.

4.2 Active Water Conservation Program Development

BAWSCA's active conservation program portfolio was developed through a structured process ensuring that selected measures are technically applicable, cost-effective, and aligned with regional needs. The process included compiling historical program data, reviewing end uses and measure applicability, incorporating member agency input, and evaluating each program using consistent assumptions. The active conservation component reflects the implementation of utility-sponsored programs designed to accelerate or expand efficiency improvements beyond natural replacement trends. These measures address both indoor and outdoor end uses across the SF, MF, and CII sectors.

4.2.1 Compilation of Existing Program Information

BAWSCA manages a Regional Water Conservation Program consisting of multiple initiatives available to all member agencies. Ten agencies also participate in other regional programs—City of Milpitas, City of Mountain View, City of Palo Alto, City of San Jose Municipal Water, City of Santa Clara, Stanford University, and City of Sunnyvale participate in Valley Water programs, while California Water Service (Cal Water) administers programs within its districts, including Bear Gulch, Mid-Peninsula, and South San Francisco. Additionally, some agencies operate their own programs as advertised on their websites.

Historical program data were compiled from BAWSCA archives, Valley Water, Cal Water, and member agency documentation, including participation histories, budgets, and measure descriptions. Conservation measures and cost information published on agency websites were also incorporated into the regional database. These data were consolidated and used to pre-populate assumptions in the utility survey.

To validate and refine this information, an Excel-based survey was developed to present the regional program database and collect feedback on program status, costs, savings, and annual participation. Distributed in January 2025, the workbook included program lists, assumptions, and participation history. Member agencies reviewed and completed the survey in February 2025, confirming measure applicability, refining cost and savings assumptions, and providing planned participation from 2025–2050. This process ensured regional consistency while allowing flexibility to reflect local conditions.

With program data validated and future participation plans established, the next step was to identify the full set of technically applicable measures across all sectors. This analysis ensures that conservation planning considers both existing programs and emerging opportunities for efficiency improvements.

4.2.2 Identification of Technically Applicable Measures

A comprehensive review of indoor and outdoor end uses identified the full set of efficiency measures applicable to each sector. Reviewed technologies included plumbing fixtures, appliances, irrigation hardware, CII process equipment, leak detection tools, landscape transformation programs, and education and outreach initiatives. Potentially applicable measures considered for program development target indoor and outdoor use within single-family, multifamily, and CII sectors.

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As discussed in Section 4.1, the passive analysis established the baseline indoor efficiency trajectory. Subsequent integration of both passive and active components ensured that:

- Passive savings are not double counted;
- Active programs focus on meaningful remaining potential;
- High-efficiency technologies not achieved through passive turnover are prioritized through active programs; and
- Outdoor measures receive emphasis due to the absence of passive turnover.

This integration revealed that there are significant remaining opportunities on a regional-level, particularly UHET retrofits and substantial additional outdoor savings potential. To support effective implementation, maintaining up-to-date estimates of fixture and appliance stock by sector and efficiency level is essential. Participation assumptions for active programs should be revisited annually, incorporating observed uptake and feedback from member agencies. Targeted outreach and incentives, especially for multifamily properties and shared-laundry facilities, should be adjusted based on participation trends to accelerate adoption. Tailored communication strategies for property owners and managers can help overcome barriers to upgrading inefficient fixtures in multifamily buildings.

4.2.3 Addressing Uncertainty and Adaptive Management

Uncertainty in participation rates, technology adoption, and cost projections underscores the need for adaptive management. Programs should be periodically reassessed in light of new data, regulatory changes, or emerging technologies to ensure continued effectiveness.

Robust data collection and transparent resolution of gaps are critical for validating savings estimates and refining program assumptions over time. Member agencies should continue providing detailed program implementation data, costs, and savings, while documenting any assumptions or interpolations used in the analysis. This approach supports adaptive planning and ensures confidence in reported outcomes.

4.2.4 Program Water Savings

The AWE Tracking Tool was used to estimate per-unit savings, measure life, retrofit potential, program costs, and cumulative savings through 2050 for all active programs. This uniform framework enables transparent comparison across sectors and supports portfolio development.

Table 4-5 through Table 4-9 present program-level results, including:

- Lifetime units installed;
- Total and annual savings;
- Cumulative savings through 2050;
- Regional program costs;
- Cost-effectiveness ($/1,000 gallons saved); and

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- Share of sector savings (%).

Appendix E (Tables E-5 and E-6) present annual active savings and regional program costs by program.

For each measure, the total gallons saved reflect cumulative savings over the useful life of the technology, which varies by end use, implementation assumptions, and participation rates.[16] The tables illustrate how active programs complement passive savings by accelerating efficiency gains beyond natural fixture turnover.

Key observations include:

- **Active programs deliver incremental savings to passive conservation**, with irrigation measures providing the largest overall impact on outdoor water use.
- **Residential and multifamily retrofits contribute significant indoor savings**, particularly through high-efficiency toilets and clothes washers.
- **Commercial and institutional programs**, such as audits and direct-install kits, offer targeted opportunities for cost-effective savings in high-use facilities.
- **Savings projections,** reflect cumulative impacts through 2050, emphasizing the importance of sustained participation and adaptive management to achieve long-term goals.

The following section builds on these results by examining cost-effectiveness, enabling agencies to prioritize programs that deliver the greatest water savings per dollar invested.

4.2.5 Cost-Effectiveness and Key Drivers

Cost-effectiveness was evaluated using the AWE Tracking Tool, incorporating both utility and participant costs. For each measure, the total gallons saved reflect cumulative savings over the useful life of the technology, which varies by end use, implementation assumptions, and participation rates. This structure provides agencies with a consistent analytical foundation while allowing flexibility to select programs that best fit local priorities, customer demographics, and resource objectives.

Table 4-5 through Table 4-9 present the program water savings and unit costs used to estimate program cost-effectiveness, measured in cost per 1,000 gallons, for the single family, multi-family, non-residential (CII), and irrigation sectors, respectively.[17]

For context, programs with a unit cost below $3–$5 per 1,000 gallons saved are generally considered highly cost-effective based on regional and industry benchmarks. Measures exceeding $10 per 1,000 gallons may still warrant inclusion if they deliver significant total savings or support compliance objectives.

[16] Assumptions for unit savings rates, and useful life of the technology are default values associated with programs included in the AWE Tracking Tool.
[17] Cost-effectiveness values shown in this Tables 4-5 through Table 4-9 reflect regional costs and savings aggregated across all participating utilities over the full planning horizon. These results do not represent the cost-effectiveness of individual programs. Detailed program-level cost-effectiveness is provided separately in Appendix E. Higher cost-effectiveness values may reflect uncertainty in savings projections, participation rates, or program costs at the planning level.

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Cost-effectiveness varies significantly by sector and technology, reflecting differences in retrofit potential, measure life, and implementation costs:

- **Single-Family:** Indoor conservation kits (~$2 per 1,000 gallons) and smart irrigation controllers (~$3 per 1,000 gallons) rank among the most cost-effective measures. Inline drip conversions and AMI leak alerts also fall below the $5 benchmark, while turf replacement often exceeds $10 but delivers large total savings.
- **Multifamily:** Irrigation controllers (~$3–$4 per 1,000 gallons) and UHET retrofits (~$4–$5) offer strong returns. Efficient clothes washer rebates average $8–$9 per 1,000 gallons, above the benchmark but still valuable for high-density properties.
- **CII:** Spray valves and aerators typically cost less than $3 per 1,000 gallons, making them among the most cost-effective measures. Restroom fixture upgrades and commercial laundry technologies generally fall in the $4–$6 range.
- **Irrigation:** Large landscape controllers and inline drip conversions often achieve costs near $3–$4 per 1,000 gallons, while water budgets and audits remain under $5. Turf conversion programs exceed $10 but provide significant regional impact.
- **Education & Outreach:** While not quantified in cost-effectiveness terms, these efforts are essential for driving participation and supporting compliance with the UWUO.

These findings underscore the importance of prioritizing programs that maximize water savings per dollar invested while maintaining a balanced portfolio that addresses all sectors. Utilities should incorporate cost-effectiveness metrics into future planning cycles to ensure resources are directed toward measures with the greatest impact. Programs with high total savings but moderate unit costs, such as large-scale irrigation retrofits, may still warrant inclusion for their regional impact and compliance objectives.

4.2.6 Distribution of Program Savings by Sector

Understanding how savings are distributed across programs provides the foundation for strategic decision-making. The Share of Sector Savings (%) metric presented in Table 4-5 through Table 4-9 highlights some implications for prioritizing investments.

Key observations include:

- **Irrigation:** Controllers, audits, inline drip conversions, and turf replacement dominate outdoor savings.
- **Residential Indoor:** UHET retrofits, conservation kits, and AMI leak alerts provide significant indoor savings.
- **CII:** Spray valves, aerators, restroom upgrades, and ozone laundry systems deliver strong savings in high-use facilities.

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Strategic implications include:

- Focus resources on programs that represent the highest percentage of sector savings relative to program costs.
- Use distribution analysis to identify "high-leverage" measures that accelerate conservation savings.

Building on these patterns, the next section translates this analysis into actionable priorities, linking program selection to cost-effectiveness, sector-specific strategies, and long-term compliance objectives

4.2.7 Implications for Program Prioritization

The combined passive and active assessment supports several key planning decisions and provides a roadmap for cost-effective, strategically targeted conservation investments across the BAWSCA region.

Current Priorities

- Emphasize irrigation and AMI measures for long-term impact.
- Maintain strong indoor offerings, especially UHETs and fixture retrofits.
- Incorporate education programs to enable participation in high-impact measures.

While these priorities provide a solid foundation, the analysis also reveals opportunities to improve program selection. As agencies seek to maximize water savings and ensure long-term compliance with regulatory objectives, it becomes increasingly important to move beyond a "one-size-fits-all" approach. Enhanced prioritization, grounded in cost-effectiveness, a tiered implementation framework, and sector-specific strategies, enables agencies to focus resources where they will have the greatest impact.

Opportunities for Enhanced Prioritization

1. **Link to Cost-Effectiveness:** Programs with the lowest cost per 1,000 gallons saved and highest cumulative savings should form the core portfolio.
2. **Adopt a Tiered Framework for Program Implementation:**
    - **Tier 1:** High savings + high cost-effectiveness (e.g., irrigation controllers, UHET retrofits, AMI leak alerts).
    - **Tier 2:** Moderate savings or higher cost but strategic importance (e.g., turf replacement for drought resilience).
    - **Tier 3:** Supportive programs (education/outreach) that enable participation and compliance.
3. **Sector-Specific Strategies**
    - **Multifamily**: Target incentives for shared laundry facilities and tailored outreach for property managers.
    - **CII**: Focus on audits and high-use fixture upgrades in commercial kitchens and laundries.

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4. **Integrate Regulatory Compliance:** Align prioritization with need to meet UWUO targets and long-term reliability objectives.

5. **Dynamic Monitoring:** Review participation and savings annually; adjust priorities based on performance and emerging technologies.

Agencies exceeding or nearing the UWUO should prioritize regulatory compliance in their planning. Those close to the UWUO threshold should strongly consider implementing the outlined recommendations to ensure compliance and avoid potential penalties. This caveat ensures that resources are directed where regulatory risk is highest, while still encouraging proactive planning for others.

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Table 4-5: Portfolio of Single-Family Program Active Water Savings and Unit Costs (2050)

Program ID	Program Name	Units	Program Cost Parameters				
			Life of Savings (Years)	Cumulative Program Costs ($K)	Cumulative Program Savings (MG)	Share of Sector Savings	Cost Effectiveness ($/1000 gal)[a]
1	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	25	$212.05	392	2.7%	$0.54
4	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	25	$0.00	0	0.0%	-
7	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	25	$0.00	0	0.0%	-
11	SFR Washer Rebate (WF <=4)	Washer	15	$614.30	204	1.4%	$3.01
13	Water Conservation Kits - Indoor	Kit	10	$1,800.64	2,640	18.3%	$0.68
14	Water Conservation Kits - Outdoor	Kit	10	$404.05	427	3.0%	$0.95
15	Water Conservation Kits - LivingWise	Kit	10	$1,069.48	692	4.8%	$1.54
19	SFR Turf Replacement	Square-foot	10	$23,882.21	2,123	14.7%	$11.25
22	Rain Garden Addition	Square-foot	10	$640.36	75	0.5%	$8.56
23	SFR In-Line Drip Irrigation Conversion	Square-foot	10	$187.65	2,563	17.8%	$0.07
26	SFR Smart Irrigation Controller Rebate	Device	10	$1,530.24	1,189	8.3%	$1.29
29	SFR Irrigation Nozzle Replacement	Device	10	$203.90	167	1.2%	$1.22
32	Rainwater Capture - Rain Barrel <200	Barrel	5	$20,747.17	414	2.9%	$50.16
35	SFR Graywater Laundry to Landscape Rebate	Household	10	$106.54	30	0.2%	$3.50
38	SFR Water Use Audit	Household	5	$1,870.12	578	4.0%	$3.24
41	SFR Wireless Flow Monitor	Monitor	5	$42,668.36	1,947	13.5%	$21.91
42	SFR AMI Leak Alert	Household	1	$3,702.66	809	5.6%	$4.58
62	Showerhead Replacement (<= 1.8 gpm)	Showerhead	10	$99.00	79	0.5%	$1.26
64	Bathroom Direct Install	Toilet	25	$0.00	0	0.0%	-
66	Irrigation System Flow Sensor Rebate	Controller	10	$5.00	1	0.0%	$7.05
68	SFR Medium Cistern (501-999 gal) Rebate	Barrel	5	$150.00	40	0.3%	$3.75
69	SFR Large Cistern (1000+ gal) Rebate	Barrel	5	$132.00	43	0.3%	$3.10
	SINGLE-FAMILY TOTAL			**$100,027**	**14,413**	**100%**	**$6.94**

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Table 4-6: Portfolio of Multifamily Program Active Water Savings and Unit Costs (2050)

Program ID	Program Name	Units	Program Cost Parameters				
			Life of Savings (Years)	Cumulative Program Costs ($K)	Cumulative Program Savings (MG)	Share of Sector Savings	Cost Effectiveness ($/1000 gal)
2	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	25	$27.64	40	0.7%	$0.69
5	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	25	$131.67	229	3.9%	$0.58
8	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	25	$10.50	11	0.2%	$1.00
12	MFR In-Unit Washer Rebate (WF <=4)	Washer	15	$0.00	0	0.0%	-
20	MFR Turf Replacement	Square-foot	10	$4,949.58	545	9.3%	$9.08
24	MFR In-Line Drip Irrigation Conversion	Square-foot	10	$553.87	366	6.3%	$1.51
27	MFR Large Landscape Smart Irrigation Controller Rebate	Device	10	$724.31	2,212	37.8%	$0.33
30	MFR Irrigation Nozzle Replacement	Device	10	$758.86	287	4.9%	$2.65
33	Rainwater Capture - Cistern >=200	Barrel	5	$420.14	70	1.2%	$6.01
36	Submetering - Other	Meter	20	$119.20	29	0.5%	$4.07
37	SFR Unmetered to Metered	Meter	20	$25.19	38	0.6%	$0.67
39	MFR Water Use Audit	Property	5	$157.72	15	0.3%	$10.57
43	MFR (4 or fewer units) AMI Leak Alert	Property	1	$92.72	1,924	32.9%	$0.05
63	Showerhead Replacement (<= 1.8 gpm)	Showerhead	10	$62.48	48	0.8%	$1.31
65	Bathroom Direct Install	Toilet	25	$52.85	38	0.6%	$1.39
67	Irrigation System Flow Sensor Rebate	Controller	10	$4.94	2	0.0%	$2.33
	MULTIFAMILY TOTAL			**$8,092**	**5,853**	**100%**	**$1.38**

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Table 4-7: Portfolio of CII Program Active Water Savings and Unit Costs (2050)

Program ID	Program Name	Units	Program Cost Parameters				
			Life of Savings (Years)	Cumulative Program Costs ($K)	Cumulative Program Savings (MG)	Share of Sector Savings	Cost Effectiveness ($/1000 gal)
3	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	25	$27.29	49	3.8%	$0.56
6	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	25	$368.69	310	24.1%	$1.19
9	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	25	$10.50	13	1.0%	$0.80
10	CII Urinal (1/8 gpf) Replacement	Urinal	25	$68.69	40	3.1%	$1.70
16	Water Conservation Kits - Spray Valves	Kit	10	$83.04	568	44.1%	$0.15
17	Water Conservation Kits - Aerators/Showerheads	Kit	10	$309.47	167	13.0%	$1.85
34	Rainwater Capture - Cistern >=200	Barrel	5	$220.21	35	2.8%	$6.20
57	Certification - Green Business	Certification	0	$259.60	0	0.0%	-
61	Building Efficiency Program	CII Establishment	0	$0.00	0	0.0%	-
70	CII Ozone Laundry Washer Rebate	Washer	15	$54.60	73	5.7%	$0.75
71	CII Commercial Kitchen Dishwasher Rebate	Dishwasher	20	$0.00	0	0.0%	-
72	CII Commercial Kitchen Spray Rinse Valve Rebate	Spray Valve	10	$10.40	10	0.8%	$1.07
73	CII Commercial Kitchen Food Steamer Rebate	Food Steamer	10	$39.65	21	1.6%	$1.93
74	CII Restaurant Dipper Well Rebate	Dipper Well	10	$0.00	0	0.0%	-
76	Acoustic Hydrant Cap	Hydrant Cap	0	$0.00	0	0.0%	-
	CII TOTAL			**$1,452**	**1,286**	**100.0%**	**$1.13**

Table 4-8: Portfolio of Irrigation Program Active Water Savings and Unit Costs (2050)

Program ID	Program Name	Units	Program Cost Parameters				
			Life of Savings (Years)	Cumulative Program Costs ($K)	Cumulative Program Savings (MG)	Share of Sector Savings	Cost Effectiveness ($/1000 gal)
18	CII Technologies	CCF	10	$570.20	845	5.5%	$0.67
21	CII Large Landscape Turf Replacement	Square-foot	10	$13,536.34	1,128	7.3%	$12.00
25	CII In-Line Drip Irrigation Conversion	Square-foot	10	$1,570.07	1,100	7.1%	$1.43
28	CII Large Landscape Irrigation Controller	Station	10	$956.84	1,793	11.6%	$0.53
31	CII Large Landscape Irrigation Nozzle Replacement	Station	10	$208.72	143	0.9%	$1.46
40	CII Large Landscape Water Audit	Property	5	$2,760.57	2,947	19.0%	$0.94
75	CII Large Landscape Water Budget	Site	1	$1,079.39	7,548	48.7%	$0.08
	IRRIGATION TOTAL			**$20,682**	**15,504**	**100.0%**	**$1.33**

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Table 4-9: Portfolio of Education Program Water Savings and Unit Costs (2050)

Program ID	Program Name	Units	Program Cost Parameters				
			Life of Savings (Years)	Cumulative Program Costs ($K)	Cumulative Program Savings (MG)	Share of Sector Savings	Cost Effectiveness ($/1000 gal)
44	Water Use Monitoring - Water Calculator	Household	0	$0.00	0	0.0%	-
45	Water Use Monitoring - Footprint Calculator	Household	0	$0.00	0	0.0%	-
46	Water Use Monitoring - RSAT Kit/Home Survey Kit	Household	0	$61,779.00	0	0.0%	-
47	In-School Education - Poster Contest	Household	0	$693,500.00	0	0.0%	-
48	In-School Education - EarthCapades	Performance	0	$66,108,606.00	0	0.0%	-
49	In-School Education - Water-Wise	Kit	10	$9,685,010.00	0	0.0%	-
50	In-School Education - Classroom Visit	Household	0	$1,377,000.00	0	0.0%	-
51	In-School Education - Teacher Training	Household	0	$25,500.00	0	0.0%	-
52	Public Outreach	Household	0	$9,437,771.00	0	0.0%	-
53	Water Efficient Landscaping - Conservation Garden	Household	0	$0.00	0	0.0%	-
54	Water Efficient Landscaping - Education Classes	Household	0	$474,566.00	0	0.0%	-
55	Water Efficient Landscaping - Garden Tours	Household	0	$36,480.00	0	0.0%	-
56	Water Efficient Landscaping - Water-Wise Tool	Household	0	$0.00	0	0.0%	-
58	Certification - QWEL	Certification	0	$0.00	0	0.0%	-
59	Affordability/Equity - Grants	Grant	0	$0.00	0	0.0%	-
60	Affordability/Equity - Assistance Program	Grant	0	$2,812,840.00	0	0.0%	-
	EDUCATION TOTAL			**$90,713,052**	**$0**	**0.0%**	**-**

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4.3 Water Conservation Summary

Section 4 has provided a comprehensive evaluation of conservation program options for BAWSCA and its member agencies. The analysis quantifies both the ongoing impact of code-driven fixture turnover and the additional savings achievable through targeted utility programs. The use of the AWE Tracking Tool, combined with agency feedback and cost-effectiveness analysis, ensures that program selection is grounded in real-world data and tailored to local needs.

This approach also highlights the importance of adaptive management as regulatory requirements and water use patterns evolve. The findings underscore the need for ongoing monitoring, transparent documentation, and regular updates to program assumptions to maximize water savings and cost efficiency across the region.

With these insights as a foundation, the following recommendations are offered to help member agencies translate analysis into effective action, ensuring that conservation efforts remain responsive and aligned with both regional goals and state regulations.

Key findings include:

- **Passive conservation** will continue to deliver steady, compounding savings, especially in the residential sector.
- **High-impact indoor measures**, including spray valves, aerators, showerheads, and UHET toilets, remain essential contributors.
- **Active programs** generate the majority of long-term savings, particularly through irrigation measures, but they require sustained investment and adaptive management to remain effective.
- **Cost-effectiveness** varies widely across programs, with some measures delivering much greater savings per dollar.
- **Education and outreach** support awareness, enhance participation, and strengthen long-term efficiency behavior.

A balanced regional conservation strategy, combining high-impact irrigation with AMI measures, targeted indoor upgrades and strong education and engagement, ensures sustained long-term water savings and supports compliance with evolving state and local efficiency requirements.

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5. Baseline 2050 Water Demand Projection Scenario

The baseline scenario serves as the foundation for BAWSCA's regional water demand projections, providing a consistent set of assumptions for demographic growth, climate, economic conditions, and efficiency trends across all member agencies. BAWSCA worked closely with member agency representatives to adjust published regional assumptions for the baseline scenario, that are agency-approved forecasts for housing units, population, and jobs to 2050. This section provides a summary of the baseline scenario assumptions and reviews the resulting water demand and conservation forecast regionally and by member agency.

5.1 Selection of Base Period and Econometric Model Calibration

Calibration refers to adjustments for residual biases in the output of fitted econometric models to establish an historical point in time to anchor projections of the future to a recent, representative historical period for each agency and sector. The calibration approach implemented a simple scalar calibration at the per-account (rate-of-use) level for each agency and sector. The use of simple scalar (i.e., a constant multiplicative factor) preserves the econometric relationships (e.g., weather and price elasticities) while removing differences/errors in the statistical model predictions for the selected calibration period. The 2022–2023 time frame was selected as the base period for SF and MF sectors and 2021–2022 for CII. These windows align the model to the most recent billed records provided by each member agency for which model predictions were available and not subject to drought restrictions.

For each member agency and model sector a calibration factor was calculated as the ratio needed to make the model's average predicted per-unit use equal the observed per-unit use over the selected calibration period. Calculated factors were then applied multiplicatively to all forward-looking monthly rate-of-use predictions. The initial calibrated forecast point, 2025, was checked against FY23-24 volumetric data reflected in BAWSCA's most recent Annual Survey and member agency profiles. Across member agencies, the initial calibrated 2025 forecast point closely aligned with FY23-24 volumetric data. A handful of member agencies[18] were able to provide preliminary FY24-25 volumetric data to further refine the calibration factors. Table 5-1 provides a summary of the final calibration factors developed for the econometric models. Since each member agency and sector has a unique calibration factor, Table 5-1 illustrates the range for each model sector.

Table 5-1: Summary of Calibration Factors

Model Sector	Calibration Factor Range
SF	0.900 to 1.300
MF	0.920 to 2.000
CII	0.800 to 1.250
Dedicated Irrigation (potable)	0.400 to 1.400
Recycled & Raw Water	0.681 to 1.270

[18] ACWD, City of Palo Alto, City of Redwood City, City of Hayward, City of Sunnyvale, and the City of Milpitas.

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5.2 Scenario Definition and Assumptions

Over the course of two Water Management Representative (WMR) meetings[19] and individual comments from member agency representatives over a four-month period, BAWSCA reviewed and solicited feedback on the baseline forecast assumptions. Table 5-2 below provides a summary of key assumptions for the baseline future water demand scenario. Additional discussion of demographic, weather and climate, economic, conservation and pricing, and losses are included in the following subsections.

Table 5-2: Summary of Baseline Scenario Assumptions

Explanatory Variable	Future Assumption and Data Sources
Demographic Variables	
Housing Units	• Based on growth rates from Plan Bay Area 2050, reviewed and adjusted by member agencies' planning departments and cities (see Figure 5-1, Figure 5-2, Figure 5-3).
Population	
Total Jobs	
Persons Per Household (PPH)	• Derived from projected housing units and population identified above.
Housing Density	• Derived from projected housing units and residential land use processed from the California General Plan Land Use dataset published by the California State Geoportal.
Jobs per Account	• Assumed to be consistent with 2023 averages.
MF Housing Units per Account	
SF, MF, CII Accounts	• Grows proportionally to housing units and jobs projections using jobs and MF housing units per account factors.
Irrigation and Recycled Water Accounts	• Held constant into future unless specific account growth specified from member agency representatives.[20]
Weather and Climate Variables	
Monthly Maximum Temperature	• Climate change adjusted temperature from 2025-2050 from CalAdapt CMIP-5 downscaled projections.
Monthly Total Precipitation	• Consistent with historical normal values.
Economic Variables	
Mix of Industries / Economic Activity	• Consistent with 2022 sectoral jobs reports from LODES dataset. • Assumed to hold constant into the future.
Regional GDP and Unemployment Rate	• Consistent with long-term trend in historical data. • Assumed to hold constant into the future.
Conservation and Pricing	
Passive Savings	• Consistent with AWE Tracking Tool projections given projected demographic data (housing units, population, jobs).
Active Savings	• Consistent with projected savings from annual measures described in Section 3.
Price of Water	• Member agencies with known rate increases provided expected changes in prices. • Otherwise, prices held constant in real terms (i.e., assumed to keep pace with inflation).
Losses and Other Assumptions	
Non-Revenue Water	• Non-revenue water volumes consistent with 2023 AWWA water loss audits. • Assumed constant into the future.
Other Water Uses	• Held constant at average of billed consumption for years 2000-2023.

[19] May 29, 2025 and July 8, 2025.

[20] ACWD, City of Brisbane, City of Hayward, and the City of Redwood City provided specific account growth for irrigation and recycled water accounts.

5.3 Demographic Assumptions

Future demographic projections for housing units, population, and jobs are foundational inputs for both the econometric water demand model and a conservation planning tool (i.e., AWE Tracking Tool). These projections drive estimates of future water use, passive savings, and the capacity for conservation programs across BAWSCA member agencies.

Future demographic projections for population, SF housing units, MF housing units, and jobs were extrapolated from the historical values used to develop the econometric models as defined in Section 2.3.1.

Future projections of these explanatory variables were primarily based on the Plan Bay Area 2050 TAZ dataset,[21] which provides modeled demographic data for 2015, 2035, and 2050. TAZ geographies, which are similar in size and shape to census tracts, were aggregated and reprojected to align with member agency service areas using the procedure described in Section 2.2.1. Rather than using absolute values from Plan Bay Area (which may not align with historical estimates), the rate of change (slope) between projection years was applied to the most recent historical estimates for each agency. Application of the rate of change based on Plan Bay Area, as opposed to the actual Plan Bay Area values, avoids unrealistic jumps and ensures continuity between historical and projected data. The rate of change was applied to the most recent historical values in two steps, that reflect the two disparate growth rates in the Plan Bay Area forecasts:

- An initial "Slope A" reflecting 2015–2035 Plan Bay Area projections was calculated for population, SF/MF housing units, and jobs and imposed on 2023 historical data to generate annual projections.
- A second "Slope B" reflecting 2035–2050 Plan Bay Area projections was calculated for population, SF/MF housing units, and jobs and imposed on the 2035 projection.

As an additional validation step, the resulting demographic projections were compared to member agency Regional Housing Needs Assessment (RHNA) targets and were reviewed by member agency representatives. Adjustments to make the Plan Bay Area projections consistent with RHNA requirements were made as needed to reflect local planning realities as communicated by member agency representatives.

Demographic projections illustrated in Figures 5-1 through 5-3 on the following pages indicate steady growth across all key drivers—population, housing units, and employment—through 2050, consistent with regional planning assumptions from Plan Bay Area 2050 and local agency inputs. Regional population is expected to grow 37% over the planning horizon. Housing unit growth closely tracks population trends, with a notable shift toward higher-density multifamily development, reflecting urbanization and land-use constraints. This shift has implications for per-capita water use, as multifamily units typically exhibit lower indoor consumption but may increase outdoor irrigation demand in shared

[21] Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC). *Plan Bay Area 2050: Traffic Analysis Zone (TAZ) Dataset*. San Francisco, CA, 2021. Plan Bay Area, https://planbayarea.org/. Accessed 2024.

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landscapes. Regional employment projections show a similar growth rate to population, which is likely to influence growth in CII water use.

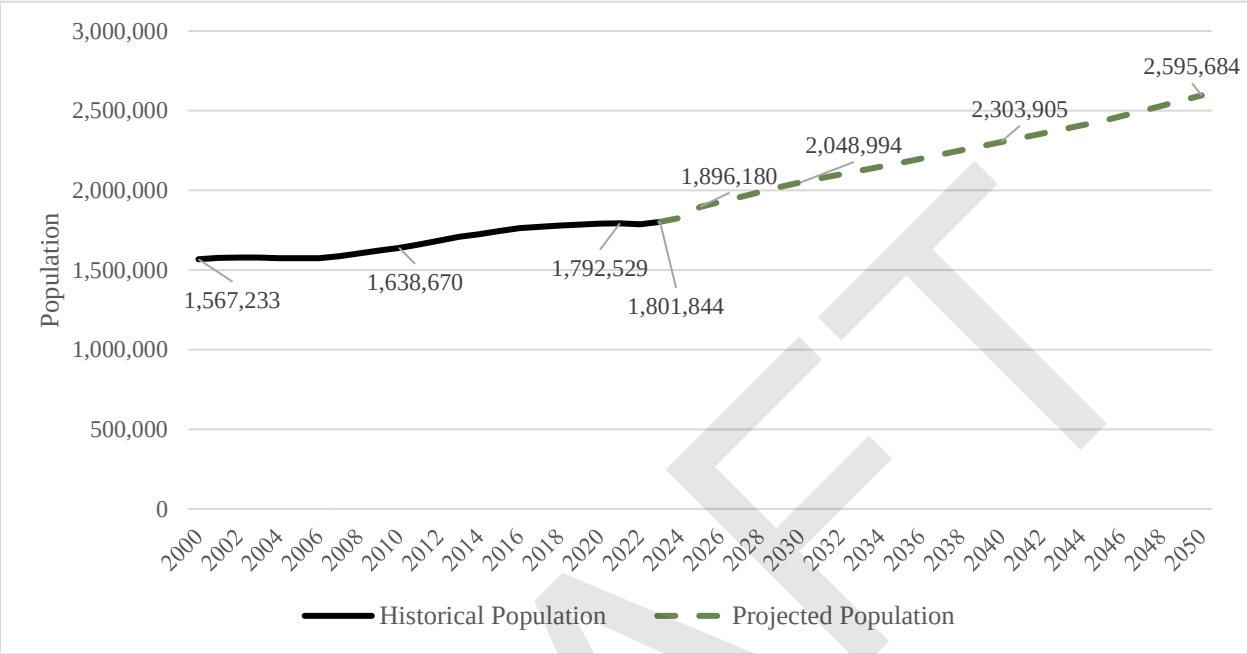


Figure 5-1: Historical and Projected Regional Population

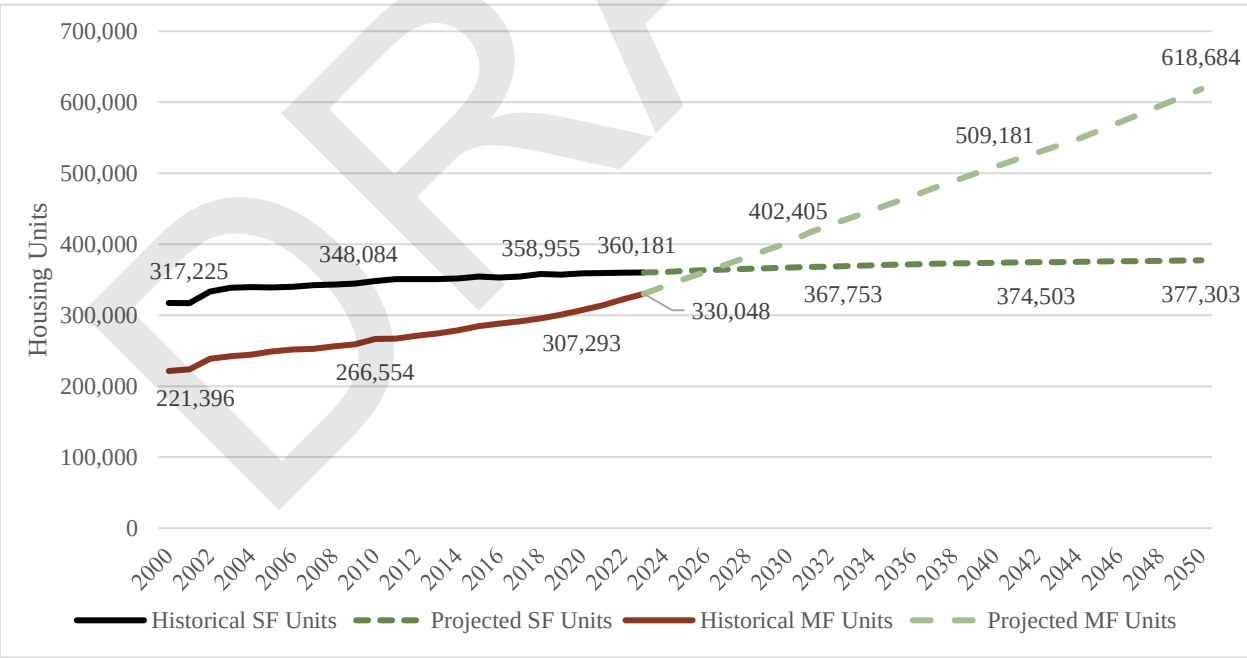


Figure 5-2: Historical and Projected Regional Housing Units

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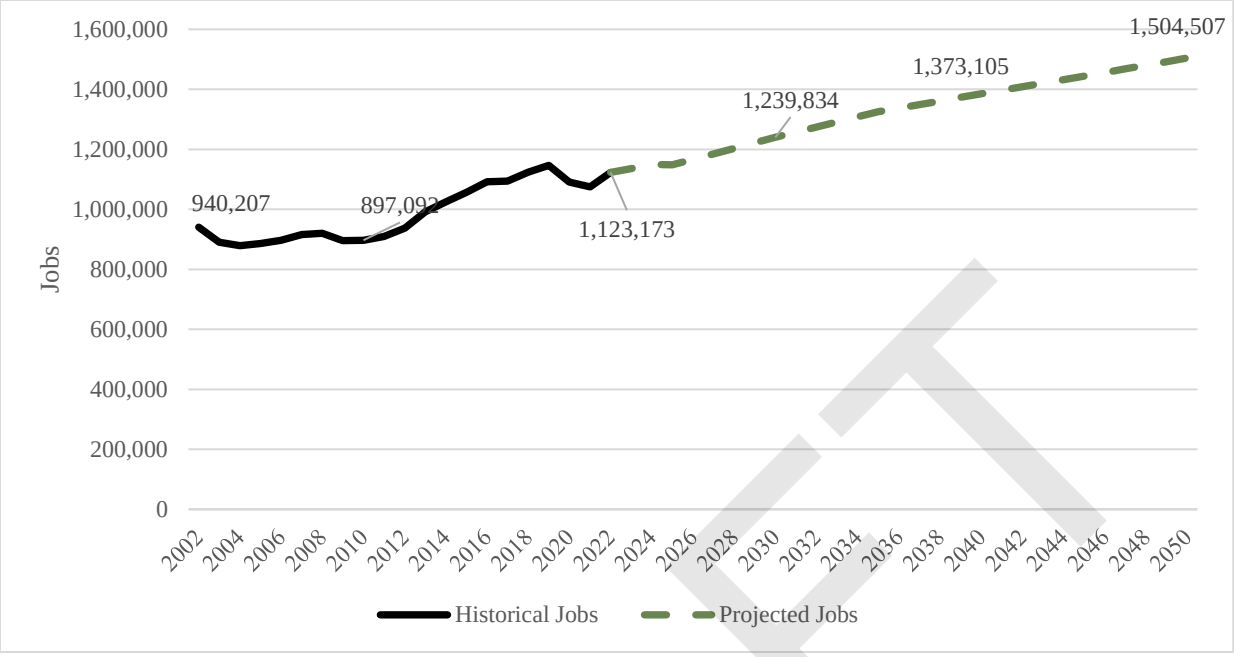


Figure 5-3: Historical and Projected Regional Jobs[22]

As discussed in Table 5-2, all additional future demographic variables, including future accounts, PPH, and housing density were derived from the projected population, housing units, and job projections illustrated in Figures 5-1 through 5-3.

5.4 Weather and Climate Assumptions

Based on discussions with member agency representatives, inclusion of climate change adjusted future weather conditions was considered appropriate to include as a part of the baseline scenario assumptions. Downscaled CMIP5 data[23] were obtained from CalAdapt's Local Climate Change Snapshot tool.[24] Climate projection data, including annual precipitation and maximum temperature, was collected for the three counties that overlay BAWSCA's member agencies, including Alameda, San Mateo, and Santa Clara counties. Data were collected for two Representative Concentration Pathways (RCP), RCP 4.5 and RCP 8.5[25] for the multi-ensemble means[26] of the CalAdapt CMIP5 projections.

[22] Note that historical jobs data from the LODES dataset start in 2002.

[23] Note that at the time climate change data were obtained for this study, only CMIP5 data were available in a post-processed form from CalAdapt. CMIP6 data have since been released.

[24] https://cmip5.cal-adapt.org/tools/local-climate-change-snapshot

[25] RCP 4.5 represents a moderate climate change scenario where greenhouse gas emissions peak around 2040 and then decline, assuming significant mitigation efforts. In contrast, RCP 8.5 assumes continued high emissions throughout the century, leading to more severe warming and climate impacts due to minimal mitigation.

[26] The multi-ensemble mean refers to the average output derived from multiple climate model simulations, often across different models and scenarios. This approach helps reduce individual model biases and internal variability, providing a more robust and representative projection of future climate conditions—such as temperature, precipitation, or water demand—by capturing the consensus across a range of plausible futures.

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Modeled temperatures from the CalAdapt CMIP5 RCP 4.5 and RCP 8.5 datasets were processed annually for 2025 – 2050 and included as potential inputs to the demand model. Table 5-3 summarizes the estimated increases in temperature between 2025 and 2050. Based on conversations with BAWSCA staff and member agency representatives, future changes from historical normal temperatures associated with RCP 8.5 were selected to include in the baseline scenario. Using RCP 8.5 captures the upper-end warming signal from CalAdapt's multi-model ensemble, supporting a conservative (i.e., non-understating) baseline for regional planning.

Table 5-3: Average Annual Maximum Temperature Increases in 2050 (Relative to 2025) Derived from CalAdapt CMIP5 RCP 4.5 and RCP 8.5

County	RCP 4.5	RCP 8.5
Alameda	1.20 °F	2.03 °F
Santa Clara	1.25 °F	2.05 °F
San Mateo	1.06 °F	1.77 °F

Climate change impacts for annual precipitation were also considered for inclusion in the baseline scenario assumptions. Based on the analysis, precipitation impacts were excluded from initial climate change considerations as modeled changes in precipitation in each county did not appear to have a significant change in mean between 2025 and 2050 for either RCP 4.5 or RCP 8.5. An example plot[27] illustrating this concept for Santa Clara County is presented below in Figure 5-4.

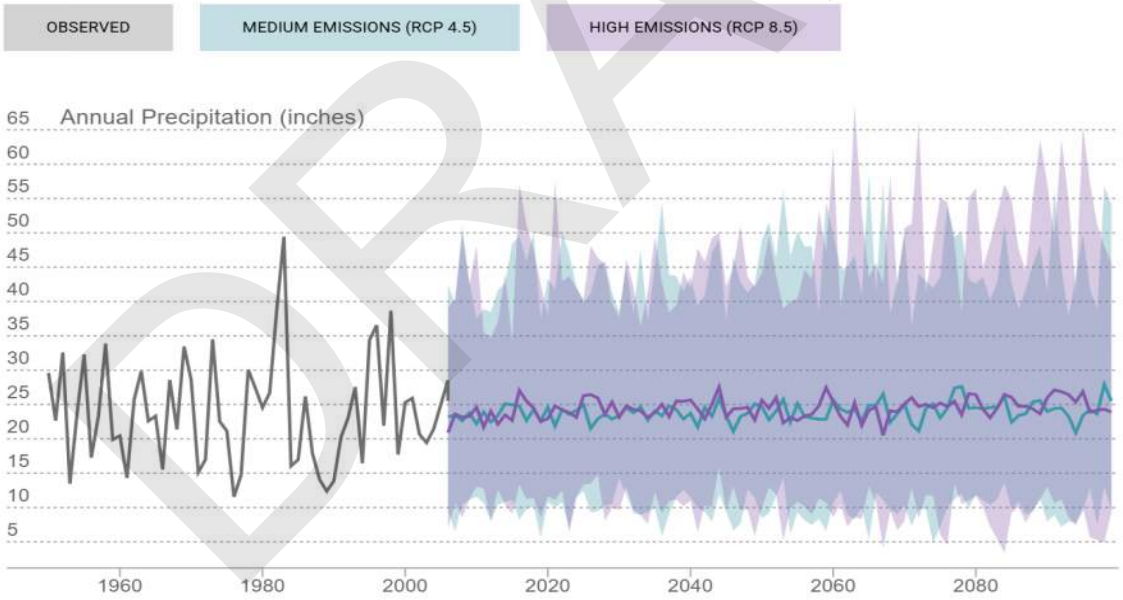


Figure 5-4: Example Modeled Annual Precipitation in Santa Clara County Under Future Climate Change Conditions

[27] Similar trends were observed for Alameda and San Mateo Counties.

5.5 Assumptions for Economic Variables

Three economic explanatory variables were considered as inputs to the CII econometric model including, the future mix of industries in each member agency service area, regional GDP, and county-wide unemployment rate. Future shifts in jobs between industries are highly uncertain (Plan Bay Area did not indicate a significant shift between 2035 and 2050) and therefore the relative percentages were assumed to be constant based on 2022 observations from the LODES dataset.[28] Future evolution of GDP and unemployment are similarly difficult to predict and were elected to remain constant at historical trends in the baseline scenario.

5.6 Conservation and Pricing Assumptions

Future conservation, both passive efficiency gains and active program implementation, moderates projected water demand growth. These savings are applied as annual deductions to sectoral consumption forecasts generated by the econometric models. Detailed methodologies and assumptions related to conservation are provided in Section 4; this section summarizes only the key elements relevant to demand projections.

Passive Savings reflect ongoing fixture and appliance turnover and code-compliant installations in new construction, consistent with California standards (Title 20 and CALGreen). These improvements occur independently of utility programs and are incorporated prospectively using the AWE Tracking Tool to ensure demand forecasts account for gradual efficiency gains.

Although new development contributes to total water demand growth, it also adds only high-efficiency fixtures to the system, thereby reducing average use per housing unit over time. These effects are considered passive because they occur independently of active utility programs and are not captured in the historical water-use data used to estimate average per-unit consumption in the econometric demand models. The AWE Tracking Tool therefore provides a mechanism to incorporate these incremental efficiency gains prospectively, ensuring that future demand projections reflect the ongoing impact of both fixture turnover and efficient new construction. Member agency estimates developed using the AWE Tracking Tool indicate that passive conservation will continue at a steady rate through 2050 driven by both ongoing MF housing growth and plumbing fixture turnover in existing SF homes.

Active Savings represent incremental reductions achieved through utility-sponsored programs beyond natural turnover. Program assumptions draw from the analysis in Section 4.3 and include measures targeting indoor and outdoor use across single-family, multifamily, and CII sectors.

[28] The City of Hayward provided alternate future distribution of jobs by industry based on a Lightcast dataset. These projections were incorporated into the baseline scenario for the City of Hayward but were not applied to other agencies given the geographical specificity of the dataset.

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5.6.1 Future Water Prices

In addition to conservation effects, the econometric models explicitly account for changes in the real price of water, allowing the impacts and of pricing and conservation to be evaluated independently. To keep the baseline focused on "business-as-usual conditions" and to avoid making assumptions associated with future policy choices, the baseline scenario generally assumes no real change in customer prices over time with the exception of a handful of agencies[29] that provided approved rate increases for inclusion. More specifically, nominal rates are assumed to change with general inflation so that the real (inflation-adjusted) marginal volumetric price is held constant throughout the forecast horizon. This treatment isolates the effects of demographics, weather/climate, efficiency, and the economy from unapproved or uncertain future pricing actions. This establishes a neutral, defensible baseline for comparing alternative conservation portfolios, without presuming future Board / Council actions on rates.

A review of SFPUC's 10-year financial plan[30] indicates that wholesale rates are expected to rise in *nominal terms* at an annual average of 2.2% over the next 10-years, which is slightly *below* the assumed rate of general inflation of 3% annually. This also suggests that holding prices constant in real terms is a reasonable baseline from which other pricing scenarios can be evaluated.

5.7 NRW and Other Water Use Assumptions

NRW and "Other" water use were handled outside the econometric rate-of-use equations to avoid introducing noise into the modeled sectors and to preserve a transparent link to member-reported data and AWWA water-loss practices.

For each agency, "Other" water use was projected using the latest five-year average, with no applied trend. Meanwhile, NRW was anchored to member agency-reported 2023 AWWA water loss reporting (and/or historical production-vs-consumption series), ensuring consistency with the State reporting framework. For each member agency, NRW was assumed to be constant in percentage terms with the aforementioned historical data. These percentages were multiplied by total projected water use for the total of each modeled sector plus other water uses. The baseline scenario holds NRW at a constant share of total consumption in the future, consistent with each agency's 2023 AWWA water loss reporting (or historically observed production-consumption relationship). As total demand grows or declines, the volumetric NRW moves proportionally, but the percentage remains constant.

5.8 Baseline Forecast Results

This section summarizes the baseline water demand projections for BAWSCA member agencies between 2025-2050. The forecast reflects the combined influence of assumptions articulated in Sections 2, 3, and 4, including demographic growth, passive efficiency improvements, planned active conservation implementation, and expected climate change, while holding general economic conditions and real water rates constant. It serves as the reference point for evaluating conservation strategies and UWUO

[29] Several agencies, including the City of Redwood City, City of Palo Alto, and Estero MID provided approved increases in water rates, which were incorporated into the baseline assumptions.

[30] https://www.sfpuc.gov/sites/default/files/about-us/policies-reports/FY-2026-10-Year-Plan-Report.pdf

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regulatory compliance as developed by the State Water Resources Control Board (see Section 6). Forecasted demand is summarized sectorally without additional conservation, regionally with passive and active conservation, and by member agency.

5.8.1 Sectoral Forecasts without Additional Conservation

Across the region, SF demand remains the largest share of total consumption, but its growth is modest due to near build-out conditions. MF demand shows a stronger upward trajectory, driven by regional housing policies and higher-density development patterns anticipated in Plan Bay Area 2050 projections. The CII sector reflects moderate growth aligned with employment forecasts. Dedicated Irrigation demand remains sensitive to climate assumptions and are generally expected to be stable into the future. Low growth in this sector is consistent with the baseline assumption that Dedicated Irrigation accounts are not expected to significantly increase in the region. Recycled and raw water projections reflect expected use of ***existing*** recycled and raw water accounts.[31] As discussed in Section 3, Other water use and non-revenue water are assumed to remain constant at existing (i.e., 2023) volumes and rates, respectively. The baseline forecast organized by modeled sector is presented in Figure 5-5.

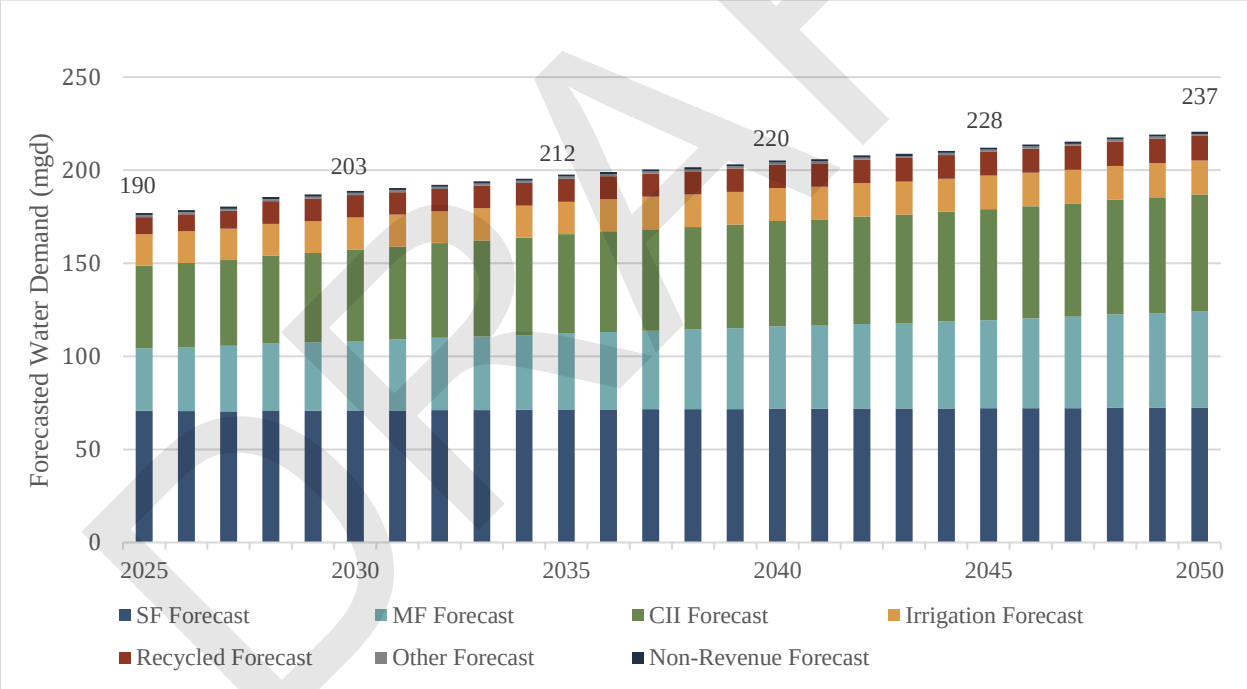


Figure 5-5: Baseline Sectoral Forecast Without Additional Conservation

[31] Several agencies indicated that several existing CII accounts and some MF accounts may switch supply sources to recycled water in the future. These changes in classification are not reflected in the baseline forecast, and should be evaluated as changes in source of supply.

5.8.2 Regional Forecasts Including Conservation

Between 2025 and 2050, passive conservation is expected to deliver a steady, compounding reduction in indoor water use as legacy fixtures and appliances are naturally replaced with code-compliant, higher-efficiency models. This effect is strongest in the SF and MF sectors driven by turnover of toilets, showerheads, faucets, clothes washers, and dishwashers) and remains meaningful for select CII end uses such as urinals). Passive savings trajectories are based on adopted California fixture standards and assumed replacement rates developed through the AWE Tracking Tool.

Building on the underlying passive glidepath, active conservation programs deliver incremental, implementation-dependent water savings. Measure options encompass both indoor and outdoor applications across SF, MF, CII, and irrigation sectors including direct-install and rebate programs, landscape conversions, smart controllers. Unit savings and measure costs taken from member submittals or Valley Water inputs supplemented by AWE Tracking Tool defaults where local data were unavailable.

Because the econometric baseline holds real prices constant and embeds only passive efficiency gains, the water savings attributed to active program portfolios are modeled as additive adjustments to the forecast. This approach supports transparent comparisons among alternative program mixes and budget levels.

In aggregate, the 2025–2050 period is characterized by monotonic increases in passive savings that steadily lower indoor use per unit, with discretionary active savings layered on where and when agencies choose to implement programs. Outdoor savings potential is especially sensitive to active measures such as turf conversion, irrigation system retrofits and smart control adoption), while indoor savings reflect a mix of passive fixture turnover and active program acceleration). Figure 5-6 and Table 5-4 summarize the baseline forecast incorporating estimates of future passive and active conservation effects across all sectors. Between 2025 and 2050, passive conservation is projected to reduce total regional demand by roughly 12 MGD, a 5 percent reduction relative to the baseline forecast. When active conservation measures are included, total demand declines by approximately 16 MGD, or about 7 percent below the baseline by 2050. These reductions equate to roughly 13,500 acre-feet per year (AFY) from passive efficiency improvements alone, and up to 19,000 AFY when active programs are implemented.

While passive savings accrue steadily across all sectors as fixtures turn over and new developments are built to California's stringent efficiency codes, active savings depend on continued program investment and customer participation. Together, these effects moderate long-term demand growth and improve the region's supply reliability, effectively offsetting the equivalent of a small new water supply source by 2050.

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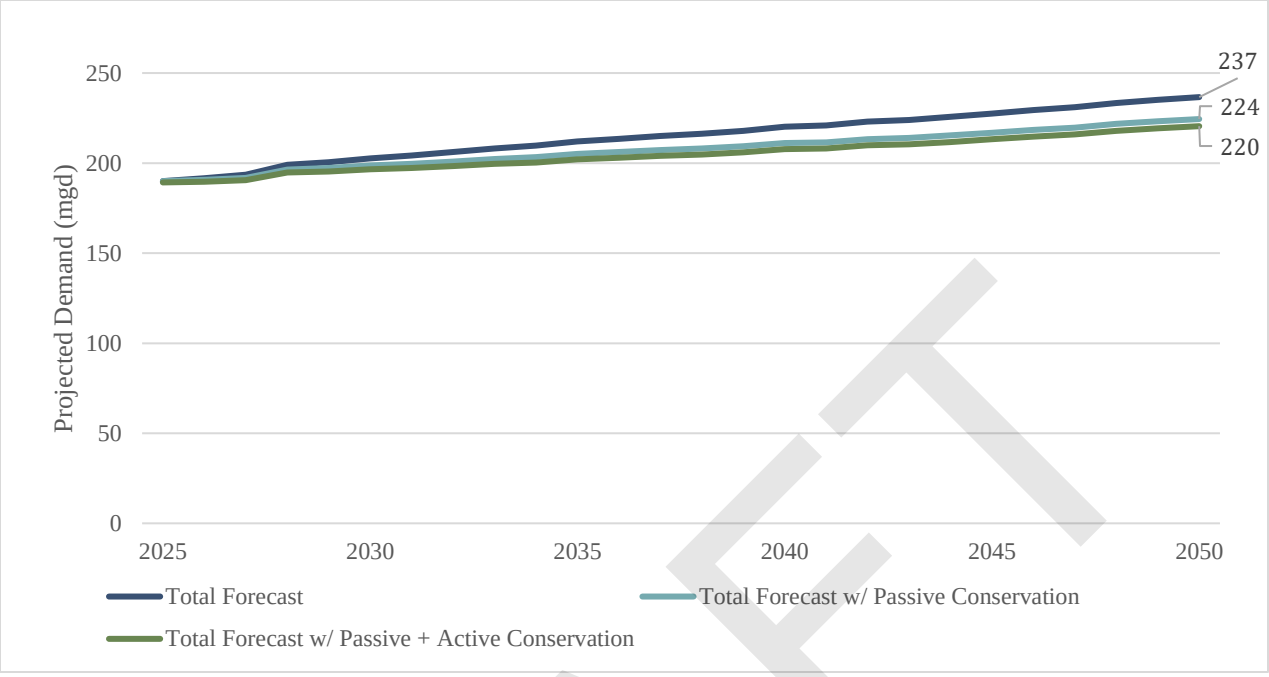


Figure 5-6: Baseline Forecast Including Passive and Active Conservation

Table 5-4: Baseline Forecast Including Passive and Active Conservation (MGD)

Forecast Assumption	2025	2030	2035	2040	2045	2050
Forecast without Additional Conservation	190	203	212	220	228	237
Total Forecast w/ Passive Conservation	190	199	205	211	217	224
Total Forecast w/ Passive + Active Conservation	189	197	202	208	213	220

5.9 Total Forecasts by Member Agency

The total baseline forecast scenario for each member agency with and without conservation is summarized in Tables 5-5 through 5-7 on the following pages. As previously stated, the demand projections presented in this report were developed exclusively for the analytical scope of this Project. Final, official demand projections must be obtained directly from the corresponding member agency's adopted planning documents. Separate to this report each member agency has been provided a water demand projection workbook containing detailed model inputs, econometric model equations, and sectoral summaries of water conservation projections.

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Table 5-5: Total Baseline Forecast Without Additional Conservation by Member Agency (MGD)

Member Agency	2025	2030	2035	2040	2045	2050
Alameda County Water District	34.35	35.38	36.49	37.52	38.50	40.86
California Water Service Company -- Bear Gulch	9.01	9.14	9.28	9.33	9.36	9.40
California Water Service Company -- Mid-Peninsula	11.59	11.80	12.02	12.13	12.19	12.27
California Water Service Company -- South San Francisco	5.54	5.89	6.24	6.41	6.54	6.69
City of Brisbane/Guadalupe Municipal Improvement District	0.68	0.95	0.97	1.00	1.01	1.01
City of Burlingame Municipal	3.89	4.01	4.13	4.36	4.56	4.75
City of Daly City	6.34	6.39	6.45	6.65	6.81	6.98
City of East Palo Alto	1.64	1.68	1.73	1.76	1.78	1.80
City of Hayward	13.67	15.73	17.01	18.46	20.06	21.93
City of Menlo Park	2.70	2.80	2.90	2.99	3.07	3.16
City of Millbrae	1.89	2.03	2.17	2.29	2.41	2.52
City of Milpitas	8.76	9.19	9.68	10.11	10.39	10.69
City of Mountain View	9.12	9.96	10.80	11.37	11.89	12.46
City of Palo Alto	10.30	10.23	10.45	10.55	10.62	10.72
City of Redwood City	8.31	8.23	8.42	8.75	9.05	9.36
City of San Bruno	2.90	2.94	2.99	3.08	3.15	3.22
City of San Jose Municipal Water System - North San José - Alviso	4.72	8.41	9.02	10.00	10.91	11.81
City of Santa Clara	19.76	21.28	22.82	23.74	24.58	25.48
City of Sunnyvale	17.52	18.59	19.66	20.28	20.83	21.41
Coastside County Water District	1.57	1.60	1.61	1.63	1.64	1.66
Estero Municipal Improvement District	3.94	4.01	4.12	4.18	4.21	4.25
Mid-Peninsula Water District	2.66	2.89	3.09	3.34	3.57	3.63
North Coast County Water District	2.25	2.37	2.49	2.61	2.62	2.65
Purissima Hills Water District	1.37	1.37	1.38	1.39	1.39	1.40
Stanford University	2.65	2.86	3.08	3.16	3.24	3.32
Town of Hillsborough	2.12	2.12	2.14	2.16	2.17	2.19
Westborough Water District	0.85	0.88	0.91	0.93	0.95	0.98
Regional Total	**190**	**203**	**212**	**220**	**228**	**237**

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Table 5-6: Total Baseline Forecast with Passive Conservation by Member Agency (MGD)

Member Agency	2025	2030	2035	2040	2045	2050
Alameda County Water District	34.35	34.70	35.36	36.07	36.80	38.79
California Water Service Company -- Bear Gulch	9.01	9.02	9.08	9.07	9.05	9.05
California Water Service Company -- Mid-Peninsula	11.59	11.51	11.51	11.45	11.38	11.35
California Water Service Company -- South San Francisco	5.54	5.74	5.97	6.05	6.12	6.22
City of Brisbane/Guadalupe Municipal Improvement District	0.68	0.94	0.95	0.97	0.97	0.97
City of Burlingame Municipal	3.89	3.94	4.00	4.17	4.31	4.46
City of Daly City	6.34	6.20	6.13	6.21	6.28	6.38
City of East Palo Alto	1.64	1.62	1.62	1.62	1.61	1.62
City of Hayward	13.67	15.36	16.38	17.65	19.11	20.85
City of Menlo Park	2.70	2.75	2.82	2.89	2.95	3.02
City of Millbrae	1.89	1.97	2.05	2.15	2.24	2.35
City of Milpitas	8.76	9.04	9.40	9.74	9.96	10.21
City of Mountain View	9.12	9.71	10.34	10.82	11.28	11.79
City of Palo Alto	10.30	10.05	10.12	10.15	10.17	10.23
City of Redwood City	8.31	8.05	8.12	8.34	8.55	8.79
City of San Bruno	2.90	2.82	2.79	2.81	2.83	2.86
City of San Jose Municipal Water System - North San José - Alviso	4.72	8.33	8.87	9.76	10.58	11.40
City of Santa Clara	19.76	20.99	22.30	23.07	23.78	24.57
City of Sunnyvale	17.52	18.27	19.11	19.54	19.93	20.39
Coastside County Water District	1.57	1.57	1.55	1.55	1.54	1.55
Estero Municipal Improvement District	3.94	3.93	3.99	4.01	4.02	4.03
Mid-Peninsula Water District	2.66	2.83	2.98	3.19	3.40	3.44
North Coast County Water District	2.25	2.31	2.39	2.46	2.46	2.47
Purissima Hills Water District	1.37	1.36	1.36	1.36	1.36	1.37
Stanford University	2.65	2.84	3.04	3.10	3.16	3.23
Town of Hillsborough	2.12	2.10	2.10	2.11	2.12	2.14
Westborough Water District	0.85	0.85	0.86	0.87	0.87	0.89
Regional Total	**190**	**199**	**205**	**211**	**217**	**224**

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Table 5-7: Total Baseline Forecast with Passive and Active Conservation by Member Agency (MGD)

Member Agency	2025	2030	2035	2040	2045	2050
Alameda County Water District	34.27	34.28	34.74	35.38	36.02	37.93
California Water Service Company -- Bear Gulch	9.00	8.99	9.03	9.02	9.00	9.00
California Water Service Company -- Mid-Peninsula	11.58	11.47	11.45	11.38	11.30	11.27
California Water Service Company -- South San Francisco	5.53	5.72	5.94	6.02	6.08	6.17
City of Brisbane/Guadalupe Municipal Improvement District	0.63	0.78	0.78	0.81	0.81	0.81
City of Burlingame Municipal	3.89	3.92	3.99	4.15	4.30	4.44
City of Daly City	6.33	6.18	6.08	6.15	6.21	6.29
City of East Palo Alto	1.64	1.62	1.62	1.62	1.61	1.62
City of Hayward	13.38	14.97	15.92	17.17	18.61	20.33
City of Menlo Park	2.69	2.73	2.79	2.86	2.91	2.98
City of Millbrae	1.88	1.91	1.99	2.09	2.18	2.29
City of Milpitas	8.73	8.92	9.22	9.51	9.69	9.89
City of Mountain View	9.11	9.67	10.28	10.75	11.20	11.71
City of Palo Alto	10.16	9.69	9.61	9.58	9.58	9.63
City of Redwood City	8.29	7.93	7.92	8.13	8.36	8.60
City of San Bruno	2.90	2.82	2.79	2.81	2.83	2.86
City of San Jose Municipal Water System - North San José - Alviso	4.71	8.29	8.79	9.68	10.51	11.33
City of Santa Clara	19.74	20.84	22.02	22.72	23.36	24.09
City of Sunnyvale	17.52	18.26	19.11	19.54	19.93	20.39
Coastside County Water District	1.57	1.56	1.55	1.55	1.54	1.54
Estero Municipal Improvement District	3.93	3.90	3.92	3.93	3.91	3.90
Mid-Peninsula Water District	2.66	2.82	2.97	3.18	3.39	3.43
North Coast County Water District	2.24	2.27	2.33	2.40	2.40	2.40
Purissima Hills Water District	1.37	1.36	1.35	1.36	1.36	1.37
Stanford University	2.65	2.84	3.04	3.10	3.16	3.23
Town of Hillsborough	2.11	2.09	2.08	2.09	2.11	2.12
Westborough Water District	0.85	0.84	0.84	0.84	0.85	0.86
Regional Total	**189**	**197**	**202**	**208**	**213**	**220**

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6. Urban Water Use Objective (UWUO)

This section evaluates BAWSCA member agencies' projected compliance with the State's UWUO through 2050. It summarizes the methodology, key assumptions, and high-level results, highlighting where agencies are expected to meet or exceed regulatory efficiency targets under baseline and conservation scenarios.

6.1 Regulatory Context

Passed in 2018, Senate Bill 606 (Hertzberg) and Assembly Bill 1668 (Friedman) established a long-term water use efficiency framework[32] that required the State Water Resources Control Board (SWRCB) to adopt new regulations for indoor and outdoor water use for urban retail water suppliers[33] (URWSs) across the state. A centerpiece of this legislation was the development of UWUOs that would regulate residential indoor and outdoor use, CII irrigation, and real water losses together as an aggregate water use efficiency standard. The SWRCB adopted this regulation mandating UWUO reporting and compliance on July 3rd, 2024.

The regulatory formulation of the UWUO[34] consists of an Indoor Residential Water Use Budget, an Outdoor Residential Water Use Budget, a CII Landscape with dedicated irrigation meters (DIMs) Water Use Budget, a Real Water Loss Budget, and any variance or provision volumes, as well as any allowable "Bonus Incentive Adjustments," as shown in Figure 6-1. Notably, no BAWSCA member agency qualifies for any "Bonus Incentive Adjustments" related to potable recycled water, so no calculations of the Bonus Incentive were required for this study. Although the UWUO is composed of four separate water use budgets, compliance with the UWUO only requires that total UWUO is not exceeded by the sum of the UWUO-regulated sectors of water use in aggregate. In other words, individual UWUO water use budgets can be exceeded as long as the overall UWUO is not.

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[32] Also known as the Making Conservation a California Way of Life framework

[33] As defined in the California Water Code section 10608.12, an urban retail water supplier (URWS) is "a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes."

[34] Final WCL Primer 2018

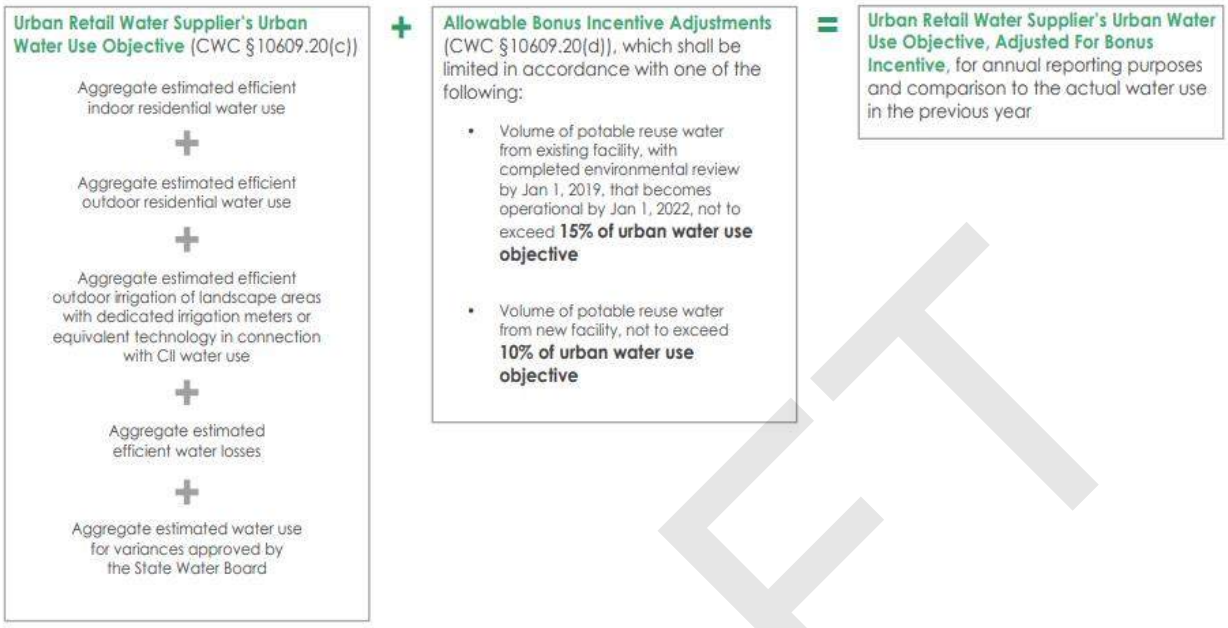


Figure 6-1: Regulatory Formulation of UWUO

As described in the final text of the *Making Conservation a California Way of Life* regulation, compliance with the UWUO regulation requires that *"no later than January 1, 2025, and by January 1 every year thereafter, each urban retail water supplier shall calculate its urban water use objective and, beginning January 1, 2027, annually demonstrate compliance with its objective."* Consequently, all UWRSs must calculate and report their UWUO to the state every year into the future and also demonstrate compliance with their new efficiency standards as soon as January 1, 2027.

Within the UWUO calculation methodology developed by the state, budgets for indoor residential water use, outdoor residential water use, and CII with DIMs water use are all required to become more stringent over time.[35] For indoor residential water use, this is the result of mandatory reductions in gallons per capita per day (gpcd) requirements over time, and for outdoor residential water use, and CII with DIMs water use, it is the result of reductions in landscape efficiency factors (LEFs)[36] over time, as shown in Tables 6-1 through 6-3. As result, UWUO compliance may become increasingly challenging for some agencies in the future.

[35]Water Code section 10609.4
[36]Final Text of Regulation Making Conservation a Way of Life

Table 6-1: Residential Indoor Water Use Standards and Compliance Timeline

Compliance Date	Residential Indoor Water Use Standard (gpcd)
Through December 31, 2024	55
January 1, 2025	47
January 1, 2030	42

Table 6-2: Residential Outdoor Landscape Efficiency Factors and Compliance Timeline

	Landscape Efficiency Factors (LEFs) for Residential Outdoor Budget		
Compliance Date	Existing Residential Outdoor Use	Special Landscape Area (SLA)	New Construction
Through June 30, 2035	0.8	1	0.55
July 1, 2035	0.63	1	0.55
July 1, 2040	0.55	1	0.55

Table 6-3: CII with DIMs Landscape Efficiency Factors and Compliance Timeline

	Landscape Efficiency Factors (LEFs) for CII DIMs Budget		
Compliance Date	Existing CII DIMs	Special Landscape Area (SLA)	New Construction
Through June 30, 2028	Actual deliveries associated with landscape irrigation reported to the State Board pursuant to Health and Safety Code section 116530	1	0.45
July 1, 2028	0.8	1	0.45
July 1, 2035	0.63	1	0.45
July 1, 2040	0.45	1	0.45

6.2 Methodology and Assumptions for Estimating UWUO

UWUO projections were developed for all BAWSCA member agencies that qualified as URWSs.[37] To create projections for each agency across the 2025 – 2050 time period, baseline inputs were taken from agencies' January 1, 2025 UWUO regulatory reporting submissions to the state. These regulatory submissions contained the following agency-specific information necessary for UWUO estimation:

[37] The City of Brisbane, Purissima Hills WD, and Stanford University are not URWSs and do not have UWUO estimates as part of this study.

- Landscape area measurements (LAMs) developed by the Department of Water Resources (DWR);
- CII dedicated irrigation meters' (DIMs) actual water use from FY 2023-24;
- Real water loss standards;
- Variance and provision calculation volumes, if any; and
- Senate Bill X7-7 (SB X7-7) water use efficiency targets.

In addition to this baseline data, development of long-term UWUO projections required the following external inputs:

- Annual population projections;[38]
- Net reference evapotranspiration (Net ETo) projections; and
- Existing CII DIMs landscape area measurement (LAM) projections.

6.2.1 Net Reference Evapotranspiration (Net ETo) Projections

Net ETo is defined as the difference between reference evapotranspiration and effective precipitation, in inches per year. As can be inferred from the definition, high Net ETo values occur during hot and dry years while low Net ETo values occur during cool and wet years. This Net ETo parameter acts as a scalar and significantly affects the annual calculation for the Outdoor Residential Water Use Budget as well as the CII DIMs Water Use Budget within the overall UWUO, as shown in the UWUO regulatory equations below:

$$R_{outdoor}\ Budget = S_{outdoor}\ \times RLA \times \boldsymbol{Net\ ETo} \times 0.62$$

$$CII_{DIM}\ Budget = S_{DIM}\ \times DIM\ LA \times \boldsymbol{Net\ ETo} \times 0.62$$

Due to overall UWUO sensitivity to this parameter, and because future climatological data is not yet known and the required inputs for reference evapotranspiration and effective precipitation derivations are difficult to estimate, BAWSCA opted to use a DWR-developed historical dataset for Net ETo (the 2017-2021 Provisional Dataset) that was released as part of the *Making Conservation a California Way of Life* proposed regulation. Key benefits of using this DWR dataset were concurrence with the reference evapotranspiration and effective precipitation derivations used in the UWUO Reporting Form, as well as a 5-year dataset that included both a wet and a critically dry hydrologic year. Furthermore, to address the future climatological uncertainty out to 2050, BAWSCA approved an "envelope" approach that calculated an "upper bound" and "lower bound" UWUO projection into the future for each agency, one based on the highest Net ETo value from the 2017-2021 Provisional Dataset, and the other based on the lowest Net ETo value. Figure 6-2 shows an example UWUO projection "envelope" for an anonymized agency.

[38] Annual population projections by agency were developed as part of the Baseline Forecast. Please refer to Section 5 for more information on this projection methodology.

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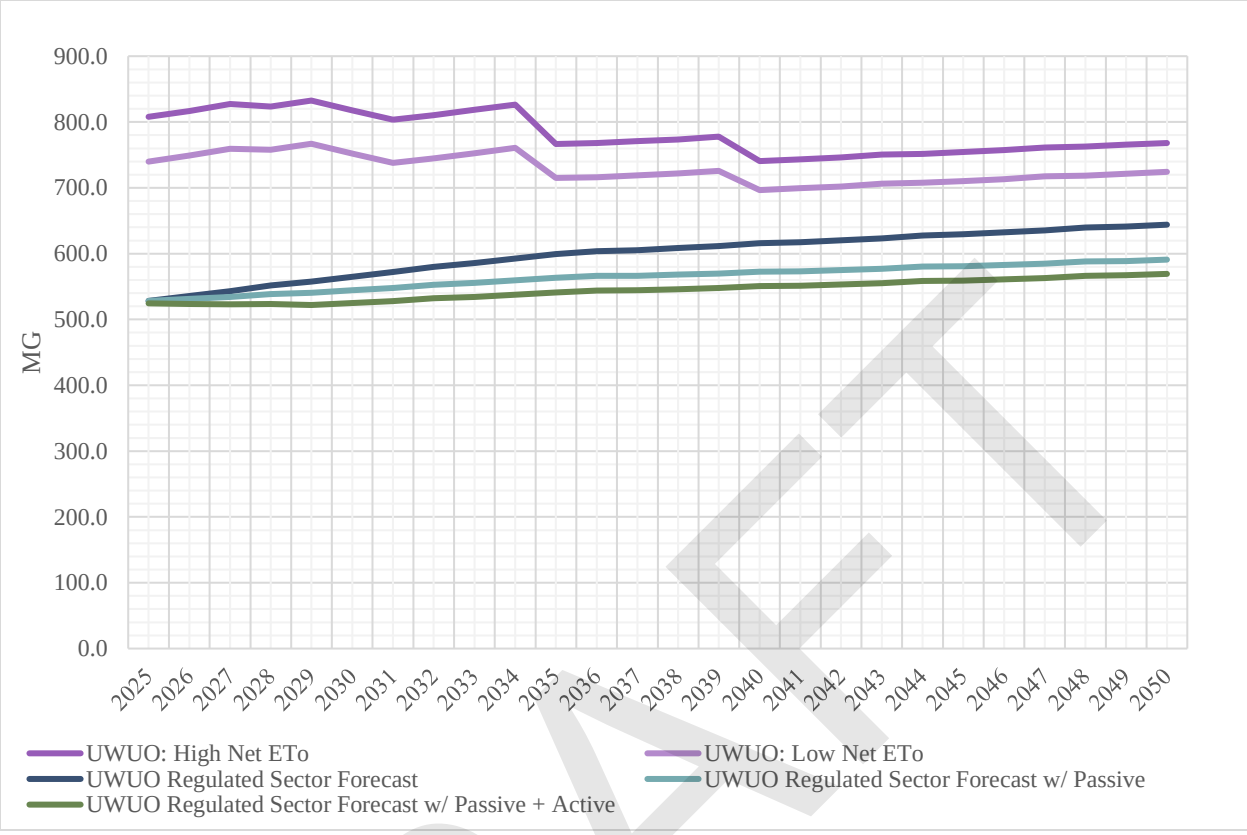


Figure 6-2: Example UWUO Projection Envelope based on High and Low Net ETo values

6.2.2 Existing CII DIMs LAM Projections

While the January 1, 2025 UWUO regulatory submissions included agencies' CII DIMs actual water use from FY 2023-24, long-term UWUO projections required an estimate of existing CII DIMs LAMs to appropriately adjust the CII DIMs Water Use Budget over time. Since DWR had not completed the CII DIMs LAMs dataset prior to this study's development, BAWSCA approved the following methodology for back-calculating CII DIMs LAMs using January 1, 2025 UWUO regulatory submission data as well as the *Making Conservation a California Way of Life* regulatory equation shown below:

$$CII_{DIM}\ Budget = S_{DIM} \times DIM\ LA \times Net\ ETo \times 0.62$$

Within this equation, values for $CII_{DIM}\ Budget$ (which DWR equated to the CII DIMs actual water use from fiscal year 2023-24 for this submission) and $Net\ ETo$ were taken from the January 1, 2025 UWUO regulatory submissions by agency. Assuming that S_{DIM} (i.e. the landscape efficiency factor [LEF] standard) equaled 1.0, since compliance with CII DIMs LEFs only begins July 1, 2028 and no efficiency reductions are required before that date, the equation above can be rewritten to solve for $DIM\ LA$:

$$DIM\ LA = \frac{CII_{DIM}\ Budget}{S_{DIM} \times Net\ ETo \times 0.62}$$

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Note that this equation also assumes that DIM LA is the sum of both CII DIM LA and CII DIM special landscape area (SLA), since any distinctions between LA and SLA are not captured within actual water use volumes.

Estimation of the existing CII DIMs LAMs by agency was important for the overall UWUO projections because it allowed the CII DIMs Water Use Budget to reduce over time due to changing Landscape Efficiency Factors (LEFs). This approach also allowed for the correct handling of different Net ETo values within the CII DIMs Wate Use Budget projections. Once derived, the back-calculated CII DIMs LAMs values were assumed to be constant across the 2025 – 2050 timeframe unless agency-specific changes were requested.

6.2.3 Other Assumptions and Considerations for UWUO Projections

Various other assumptions and considerations were also required as part of the UWUO estimation methodology, including:

- No changes to residential or CII DIMs LAMs over time[39] unless specifically requested by an agency.
- No inclusion of the 20% Irrigable Not Irrigated (INI) "buffer" component of the UWUO calculation,[40] as it is a temporary measure that will be discontinued once suppliers update/approve the landscape area values in the original dataset provided by DWR.
- As required under the final *Making Conservation a California Way of Life* regulation, and as developed in the UWUO Reporting Form, the UWUO projection methodology incorporates a SB X7-7 cap on the UWUO so that the governing water use efficiency objective will always be the minimum of either the calculated UWUO or the SB X7-7 individual target-based total use less any excluded demands.[41]

Agencies were also able to provide more granular data for incorporation into the UWUO projections if desired, including 1) changes to currently reported landscape areas, 2) future landscape areas for new development (residential outdoor, CII DIMs), and 3) any additional variance and provision volumes. Numerous BAWSCA agencies provided additional information on landscape areas, both existing and planned, but no agency provided any additional variance or provision volumes.

A summary of the UWUO budget components, required budget inputs, regulatory equations, and estimation methodologies used to develop the overall UWUO projections is provided in Table 6-4.

[39] As part of this task, Hazen conducted a sensitivity analysis and determined that updating residential LAM areas over time was unlikely to significantly impact UWUO projections. The sensitivity analysis developed a "typical square footage" per SFR unit and MFR unit, respectively, and then scaled the LAMs over time based on SFR and MFR housing growth projections. Numerically, the most likely scenario (i.e. "typical" based on empirical GIS analysis) in terms of residential LAM adjustments over time increased the UWUO projections of the evaluated agencies by less than 5% compared to the "no LAM adjusted" baseline.

[40] The 20% INI buffer only applies if Actual Water Use exceeds the UWUO.

[41] Excluded demands are defined as values provided by the supplier to the Board pursuant to Health and Safety Code section 116530, for the following delivery categories: other; commercial and institutional; and industrial.

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Table 6-4: UWUO Budget Components, Inputs, Regulatory Equations, and Estimation Methodologies

UWUO Budget Component	Regulatory or DWR-provided Inputs	Agency Inputs	Regulatory Equation[42]	Estimation Methodology for UWUO Budget Component
Indoor Residential Water Use Budget	• Indoor Water Use Standards • DWR LAMs • DWR Provisional Dataset for NET ETo	Agency population projections	$Indoor\ Residential\ Budget = S_{indoor} \times P \times days\ in\ year$	Multiplied the appropriate Indoor Residential Water Use standard (Water Code section 10609.4) in gallons per capita per day by the residential service area population projection and by 365 days, accounting for fiscal year reporting.
Outdoor Residential Water Use Budget	• LEFs • DWR LAMs • DWR Provisional Dataset for NET ETo		$Outdoor\ Residential\ Budget = S_{outdoor} \times RLAM \times Net\ ETo \times 0.62$	Multiplied the appropriate LEF standard by DWR's residential LAM in square feet, the Net ETo value as developed from DWR's Provisional Dataset, and the conversion factor of 0.62.
CII with DIMs (or Equivalent Technology) Water Use Budget	• LEFs • DWR LAMs • DWR Provisional Dataset for NET ETo	Back-calculated CII DIMs LAMs	$CII\ DIMs\ Budget = S_{DIM} \times DIM\ LAM \times Net\ ETo \times 0.62$	Multiplied the appropriate LEF standard by the back-calculated CII DIMs LAM in square feet, the Net ETo value as developed from DWR's Provisional Dataset, and the conversion factor of 0.62.
Water Loss Budget	• Agency-specific real water loss standard (gallons per connection per day)	Agency number of account projections	$Water\ Loss\ Budget = S_{water\ loss} \times C \times days\ in\ year$	Multiplied the agency-specific real water loss standard in gallons per connection per day by the total annual agency number of accounts projection and by 365 days.
Variances or Provisions	Variable	Any agency-specific inputs	Variable	None requested, although residential agricultural variance calculations were incorporated in the underlying DWR data populated in the January 1, 2025 UWUO Report submissions and were therefore carried forward for relevant agencies in the UWUO projections.
SB X7-7 Target-based Total Use	• Agency-specific SB X7-7 target		$SB\ X7x7\ Target\ based\ Total\ Use = Agency\ SB\ X7x7\ target \times P \times days\ in\ year$	Multiplied the agency-specific SB X7-7 target in gallons per capita per day by the residential service area population projection and by 365 days.

[42] Where, P = population, S = applicable standard, RLAM = residential landscape area measurement, Net ETo = net reference evapotranspiration, and C = total number of service connections.

6.3 Comparison of Projected Water Demands with the Estimated UWUO

A primary goal of this study was to assess if BAWSCA agencies are anticipated to exceed their UWUOs over the course of 2025 – 2050, given the baseline forecast, and if so, by how much and when. This information can help agencies understand how much time they might have to adopt additional conservation measures to meet their future water use efficiency regulatory requirements. To develop this analysis, agency UWUO projections were compared to the water demand projections of the UWUO-regulated sectors. Within the Demand Study, these UWUO-regulated sectors included the SF Forecast, the MF Forecast, the Irrigation Forecast, the Recycled Forecast (the portion used for residential and/or CII large landscapes), and the real water loss component of the Non-Revenue Forecast.

The results from this comparison demonstrate that the majority of BAWSCA agencies are anticipated to meet their UWUOs across the full time period 2025 – 2050. However, 7 of 23 agencies[43] are anticipated to exceed their UWUOs over the 25-year period with only passive conservation, and 5 of 23 agencies are anticipated to exceed their UWUOs over the 25-year period with both passive and active conservation. If only the High Net ETo UWUO projections (which result in higher objectives) are evaluated, 4 of 23 agencies are anticipated to exceed their UWUOs over the 25-year period with conservation included. The earliest anticipated UWUO exceedance occurs in 2031 with only passive conservation (if evaluating the Low Net ETo projection) and in 2035 with only passive or with both passive and active conservation (if evaluating the High Net ETo projection). Other anticipated exceedances begin between 2035 – 2040.

Due to the step-wise reductions in the indoor residential gpcd standards as well as step-wise reductions in the landscape efficiency factors (LEFs) within the UWUO calculation, some agencies only show a brief window of UWUO exceedance and then again show demand dropping below the UWUO into the future. This is the result of steady and more gradual conservation (passive only or both passive and active) catching up with the UWUOs over time. With conservation included in the forecast (passive only or both passive and active), only 5 of 23 agencies are anticipated to exceed their UWUOs in 2050 (if evaluating the Low Net ETo projection), and only 4 of 23 are anticipated to exceed their UWUOs in 2050 (if evaluating the High Net ETo projection).

[43] The City of San Jose was not included in this metric because its UWUO encompasses geographies that are outside of BAWSCA's service area.

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7. Analysis of Alternative Forecast Scenarios

Water demand forecasting is sensitive to uncertainties in assumptions around future conditions. Population growth and demographic shifts introduce variability, as migration patterns and urbanization trends are difficult to predict. Economic development and industrial activity add further complexity, as fluctuations in economic output and changes in water-intensive industries are driven (or derived) by the demand for various goods and services. Technological adoption—such as water-saving devices and reuse systems—depends on uncertain behavioral and policy factors. Finally, data quality and model structure themselves pose risks, as simplifying assumptions may propagate errors over time. Given these layers of uncertainty, scenario analysis offers a practical framework to explore a range of plausible futures, enabling water suppliers to test assumptions and assess the resilience of strategies under varying conditions.

BAWSCA worked with member agency representatives, external stakeholders, and SFPUC to develop five additional water demand scenarios to bracket the baseline forecast summarized in Section 5. This section provides a summary of the scenario development process, a description of the key scenario assumptions, and an overview of the alternative scenario projections on a regional basis.

7.1 Scenario Development Process

Alternative water demand scenarios were developed in concert with member agency representatives, stakeholders, and SFPUC staff with the intent to leverage additional expertise around key uncertainties that may impact future water demands. Aside from member agency representatives, organizations providing input to the scenario development process included:

- Association of Bay Area Governments (ABAG)
- Acterra (formerly Sustainable Silicon Valley)
- City/County Association of Governments of San Mateo County (C/CAG)
- County of San Mateo
- Tuolumne River Conservancy (formerly Friends of the Tuolumne River)
- Sierra Club
- Sustainable San Mateo

During a two-month period, BAWCSA engaged with member agency representatives, SFPUC, and stakeholders through direct discussions, online surveys, and two workshops. The process included determining key explanatory variables affecting water demand, evaluating baseline assumptions and data sources, and assessing uncertainty regarding future conditions—such as identifying alternative projection datasets. Throughout this engagement, assumptions for potential future scenarios for the Bay Area were collaboratively developed and systematically categorized into four general groups that align with water

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demand model inputs: (1) Demographics and development; (2) Socioeconomic conditions; (3) Conservation and pricing; and (4) Climate and other trends/concerns.

Using this organizational approach, plausible regional scenarios were developed to set reasonable bounds on future water demand predictions. During the workshops, conceptual scenarios were designed to align with both high and low regional water needs, relative to the baseline scenario. The main results from these workshop activities are summarized below according to "High" and "Low" demand scenarios.

Higher Demand Scenarios

Demographic and Development: There was interest in considering alternative data sources for population, housing units, and job projections, with the application of raw Plan Bay Area 2050 projections as the preferred upper bound.[44] Workshop participants noted that while some commercial, industrial, and institutional (CII) land uses could be converted to residential, a less dense future housing scenario was unlikely and there was a preference to keep density constant at 2025 levels to reflect the high scenario.

Socioeconomic Conditions: Workshop participants were interested in scenarios incorporating greater economic growth, anticipating a potential increase in demands associated with the technology industry in the region.

Conservation and Pricing: Workshop participants generally agreed that a decrease in active conservation savings could potentially occur in the future, dependent on societal norms and availability of water. Workshop participants discussed water rates and pricing and concluded that a decrease in real price was not likely given regional trends and infrastructure needs. Workshop participants also discussed the potential for rate structures to change from tiered volumetric rates to uniform volumetric rates. It is unclear what effect this transition may have on price levels and how this may influence price elasticity regionally. Given these observations, it was recommended to keep future pricing constant in real terms for the high scenario.

Climate and Other Trends: Workshop participants wanted to consider hotter and dryer global climate models (GCMs). Workshop participants also expressed strong interest in scenarios with an increase in high water use industries, particularly data centers and biotech applying water for cooling.

Lower Demand Scenarios

Demographic and Development: There was interest in considering alternative data sources for population, housing units, and job projections, with the application of the California Department of Finance (CA DOF) projections as the preferred lower bound.

Socioeconomic Conditions: Workshop participants were interested in scenarios incorporating lower economic growth, with discussion including the potential negative impacts of federal tariff and immigration policies, and how this may influence the job market/economic output in the region.

[44] Baseline water demand model demographic assumptions are based on Plan Bay Area 2050 projections but included revisions from member agencies' planning departments that in aggregate moderated future demographic growth on a regional level and to align with RHNA numbers as appropriate.

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Conservation and Pricing: Workshop participants noted that rate increases may be likely due to future infrastructure investments and showed interest in further water conservation. To prevent overlapping savings from both price hikes and new conservation programs, per capita use was reviewed before adding volumetric conservation in the low scenario. Participants also want to assess how non-functional turf (NFT) bans affect outdoor water consumption.

Climate and Other Trends: Workshop participants wanted to consider GCMs projecting less warming and wetter conditions, or climate models that consider a shift in weather patterns throughout the year.

7.2 Alternate Scenario Assumptions

This section documents the key assumptions and data sources forming the scenario inputs.

7.2.1 Demographic and Development

Three scenarios articulating alternate future demographic and development conditions were developed in response to feedback from member agency representatives, SFPUC, and stakeholders. Key assumptions and data sources are summarized in Table 7-1 on the following page.[45]

Table 7-1: Alternate Scenario Demographic and Development Data Sources and Assumptions

Scenario Name	Data Sources	Assumptions
Adjusted ABAG	• Plan Bay Area 2050 • Member agency approved future demographics	Reflects the maximum of member agency-approved projections and Plan Bay Area 2050.
Historical Trend	• Member agency approved historical demographics	Reflects the continuation (extrapolation) of the long-term trends (2000-2023) in population, housing units, and jobs. This scenario aligns with assumptions articulated in SFPUC's "Scenario B" in their concurrent demand projection update.
DOF	• DOF Population projections[46] • DOF Housing Unit Projections[47]	• Reflects DOF projections for population and housing units. • DOF projects total population, and historical single family/multifamily persons-per-household ratios were used to develop the population split. • Housing units are projected by DOF through 2030; beyond 2030, housing unit growth was projected to 2050 by applying the average annual growth rate from 2020–2030. • Because CA DOF reports only total housing units, the future single family and multifamily split was estimated by applying the historical multifamily share to total units, with single family units calculated as the remainder. • Note that DOF does not project jobs, so jobs were assumed to increase at the same rate as population.

[45] For all Scenarios, Stanford University demographic assumptions were kept consistent with the baseline.

[46] California Department of Finance, Demographic Research Unit. (2025). *State and County Population Projections, 2020–2070* $Microsoft Excel file$. Sacramento, CA: California Department of Finance. Retrieved September 2025.

[47] California Department of Finance, Demographic Research Unit. (2025). *Household Projections for California Counties: 2020–2030 (P-4)* $Microsoft Excel file$. Sacramento, CA: California Department of Finance. Retrieved September 2025.

Plots illustrating the regional projection scenarios relative to the baseline are summarized in Figures 7-1 through 7-3 below.

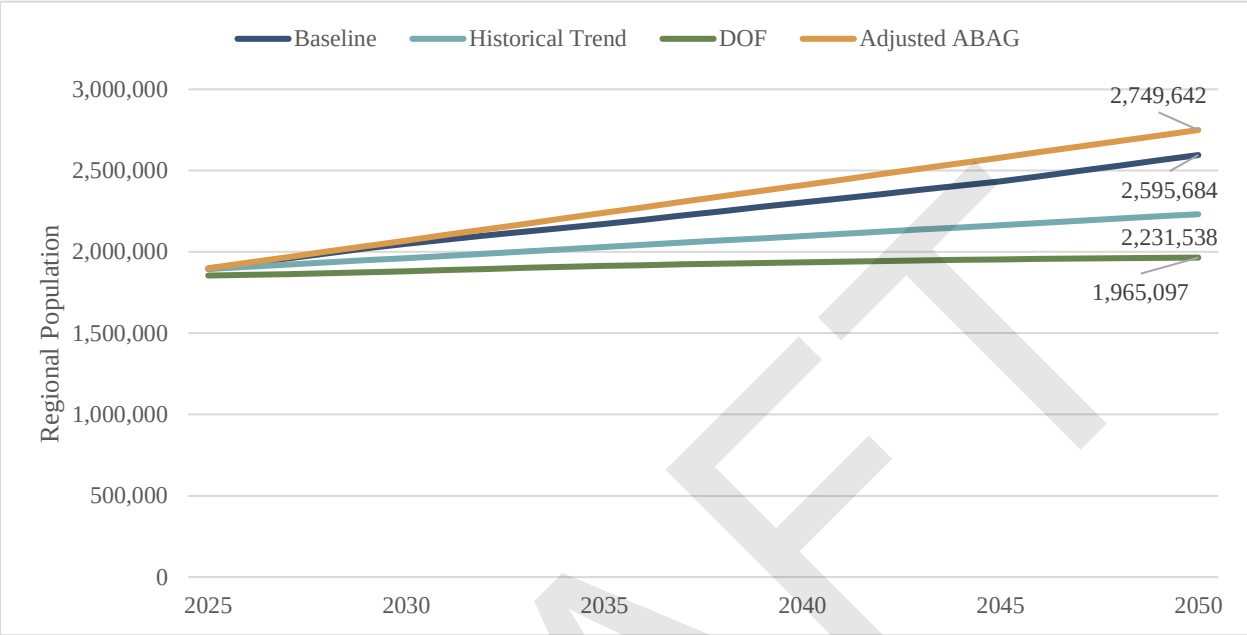


Figure 7-1: Comparison of Regional Population Scenarios

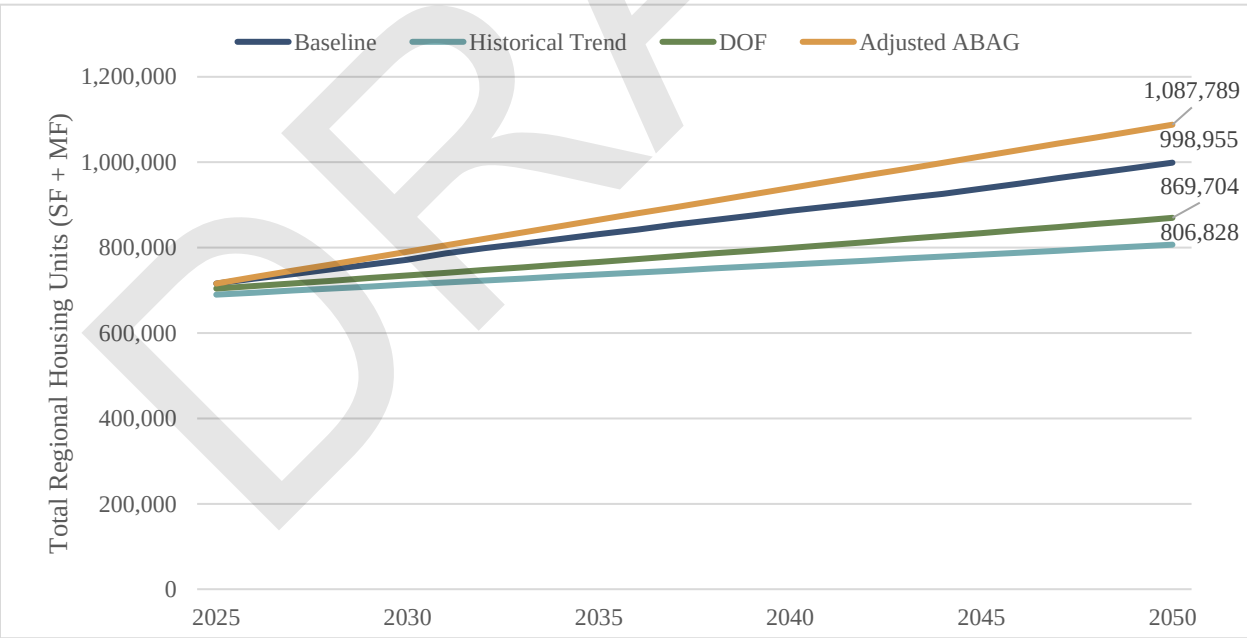


Figure 7-2: Comparison of Regional Housing Units Scenarios

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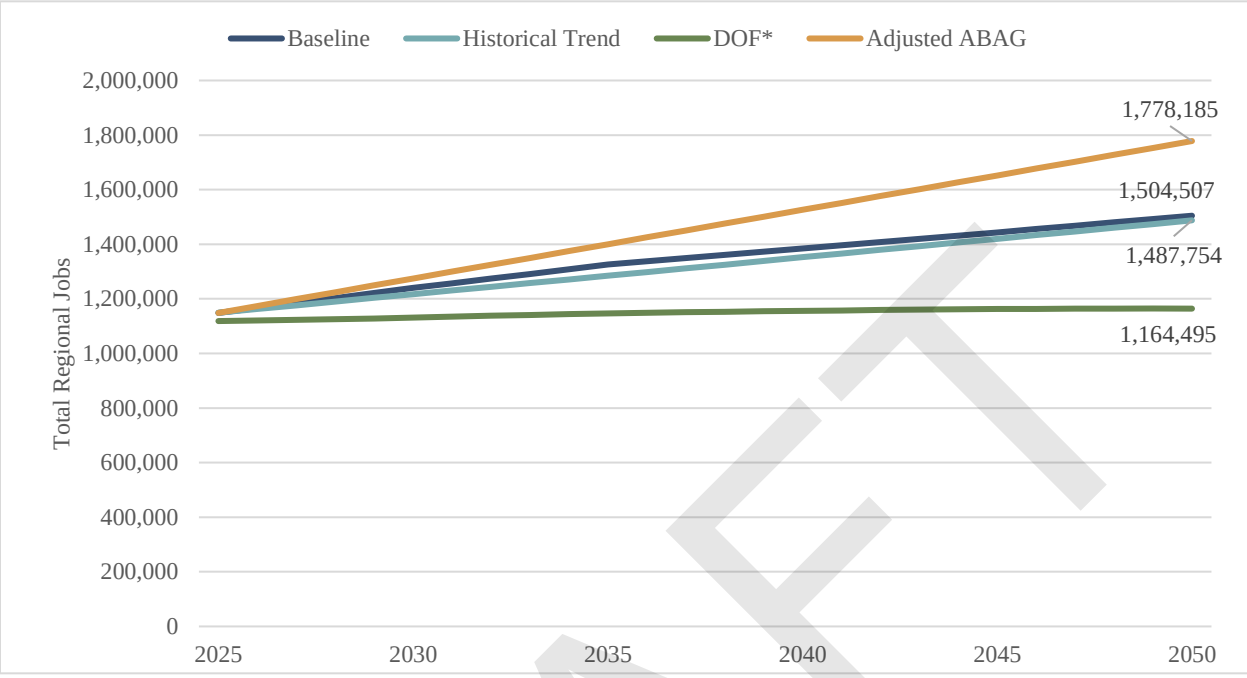


Figure 7-3: Comparison of Regional Job Scenarios

7.2.2 Socioeconomic Conditions

Alternate future socioeconomic conditions were represented by considering different assumptions in future regional real GDP growth and the unemployment rate. Recall that the baseline scenario considers regional real GDP growth and unemployment rate to remain constant at long-term trends. Future scenarios deviating from the long-term trend were selected from the distribution of available historical data. Per discussions in Section 3, higher GDP is associated with higher water demand and higher unemployment rate is associated with lower water demand. Table 7-2 summarizes the regional GDP and unemployment assumptions by scenario.

Table 7-2: Summary of Regional GDP and Unemployment Scenario Assumptions

Scenario Name	Percentile of Historical GDP	Percentile of Historical Unemployment
High	90th	10th
Moderated-High	75th	25th
Moderated-Low	25th	75th
Low	10th	90th

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7.2.3 Conservation and Pricing

Conservation and pricing scenarios examine how variations in water rates and efficiency measures influence future demand.

Conservation Assumptions

Passive and active conservation assumptions reflect how demographic trends and policy measures shape long-term efficiency gains. Volumetric passive savings are tied to development, as higher efficiency fixtures are expected to be installed as new development proceeds. This results in higher volumetric savings projected under scenarios using the Adjusted ABAG demographics and lower savings under DOF projections. Figure 7-4 illustrates modeled 2050 passive savings by sector comparing the different demographic scenarios. For example, single-family sectors show modest differences, while multifamily and CII sectors exhibit up to 54% variation in passive savings between high-growth and low-growth demographic cases. Active conservation programs—such as rebates and outreach—were held constant across lower demand scenarios, consistent with member agency plans, meaning no additional active measures are introduced in alternative futures. In response to feedback from workshop participants, additional outdoor conservation reflecting regulatory actions like AB 1572 nonfunctional turf restrictions were considered in the lowest demand scenario. This scenario incorporated additional reductions for combined CII and irrigation seasonal use by an estimated 15% region-wide starting in 2028. Collectively, these assumptions ensure that conservation effects are realistically represented without overstating behavioral change beyond what agencies have committed to implement.

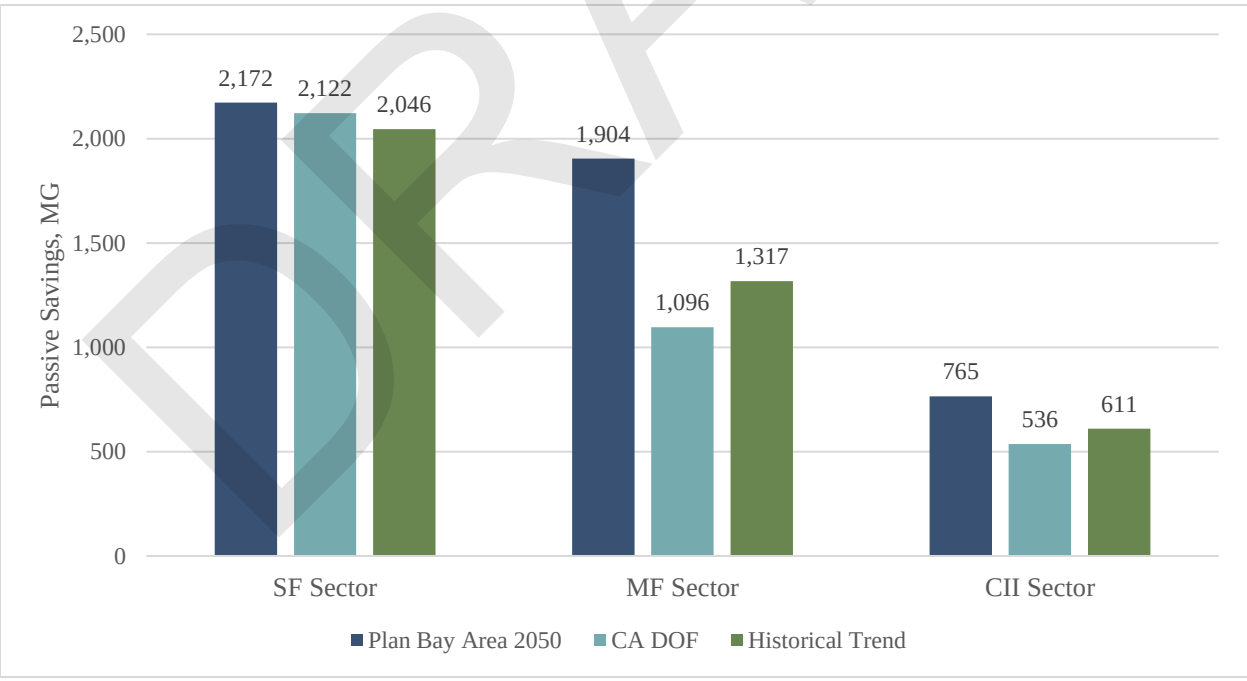


Figure 7-4: 2050 Passive Savings by Sector

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Water Pricing

Water pricing assumptions vary across scenarios to reflect different regional pricing conditions. The Baseline, High, and Moderated-High scenarios assume rates remain constant in real terms, meaning nominal increases only offset inflation without altering consumption behavior further. In contrast, the Moderated-Low scenario applies a sustained real price increase of approximately 2.5% annually over the planning horizon, while the Low scenario introduces a steeper adjustment—5% per year for the first decade, followed by 2.5% annually thereafter—to simulate more aggressive long-term real rate increases. The Historical Trend scenario aligns with SFPUC's 10-year financial plan, incorporating planned wholesale rate changes adjusted for inflation. Note that rate increases from the 2025 SFPUC 10-year financial plan reflect *nominal* rates. The SFPUC wholesale rate changes have been reduced by an assumed 3% annual rate of inflation to calculate the implied change in real rates each year. These differentiated water rate paths (plotted together in Figure 7-5) allow the analysis to capture how pricing signals influence demand elasticity.

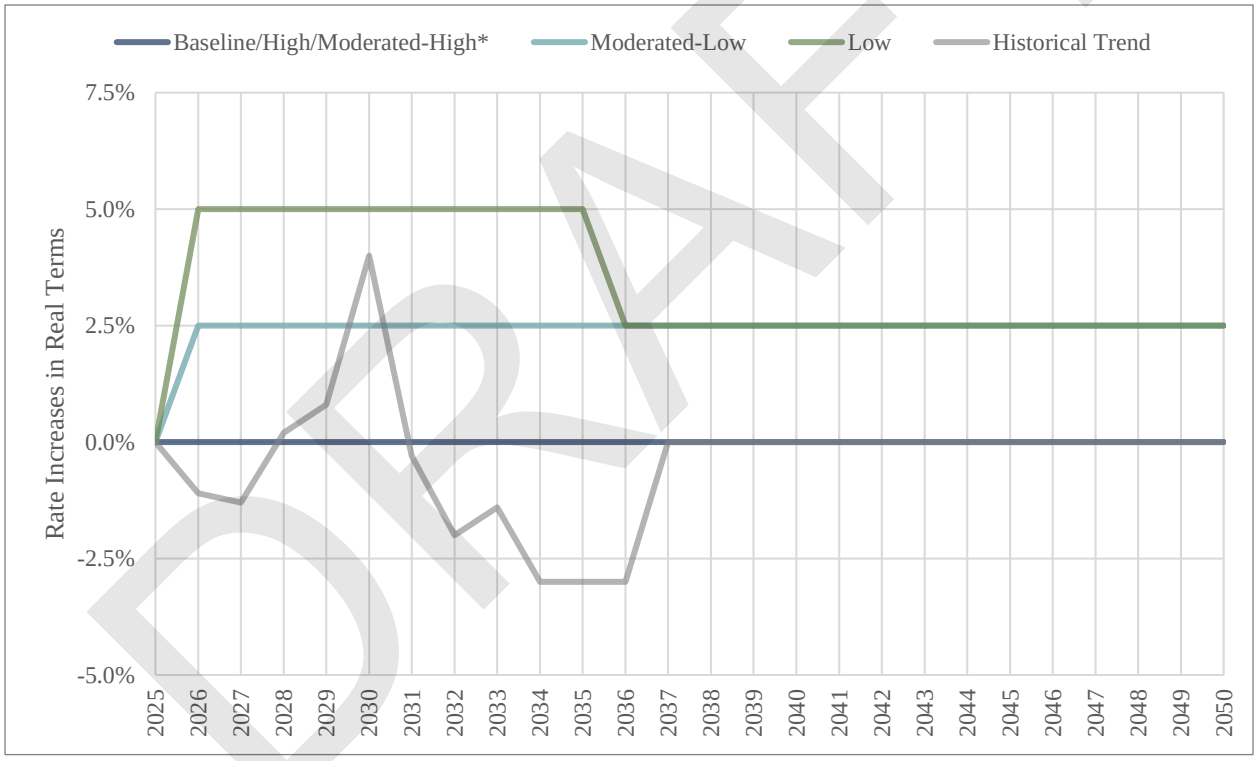


Figure 7-5: Annual Change in Water Rates in Real Terms

7.2.4 Climate Change

Climate change assumptions were incorporated to capture the potential variability in temperature and precipitation patterns that influence outdoor water use and seasonal demand. Each scenario applies a distinct climate projection drawn from widely recognized global climate models (GCMs) and representative concentration pathways (RCPs). At the time scenario analysis was conducted, CMIP6

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modeling was released and available for consideration. CMIP6 data was utilized for alternative scenarios although CMIP5 was maintained for the baseline (see Section 5.4).

An analysis was performed for each county in the BAWSCA service area to assess the individual CMIP6 models to select individual models that resulted in both higher and lower temperature and precipitation changes relative to the baseline.

High-demand scenarios adopt the hottest and driest conditions from CMIP6 SSP5-8.5 (KACE-1-0-G), while low-demand scenarios assume cooler and wetter futures using CMIP6 SSP2-4.5 (CNRM-ESM2-1). Moderated scenarios apply intermediate assumptions, such as CMIP5 RCP4.5 for temperature combined with historical precipitation norms. These climate inputs were selected to bracket plausible extremes and mid-range conditions, ensuring that the scenario analysis reflects both the risks of intensified drought and the potential for milder future climates.

7.2.5 New High Water Users – Data Centers

In the scenario analysis workshops and surveys, participants identified a handful of industries that have the potential to significantly expand and increase water use regionally. Data centers received a high degree of interest / concern and were selected to further evaluate.

Data centers represent a unique challenge in water demand forecasting because their consumption patterns are not well captured by traditional employment or account-based model drivers. Instead, water use in these facilities is closely tied to energy consumption and cooling technology choices. With rapid and uncertain growth in cloud computing and AI workloads, the potential for large-scale data center development introduces significant uncertainty into long-term demand projections.

The data center analysis relied on 2024 energy demand projections from the California Energy Commission (CEC), which forecasted peak power demand and annual energy use for data center growth through 2040.[48] Figure 7-6 depicts data center power projections provided by CEC for major power utilities in CA.[49] The analysis selected projections from power utilities within BAWSCA's service area, including Silicon Valley Power (SVP), City of San José, City of Palo Alto, and PG&E. 90% of PG&E's projected data center power demand was included, as the majority of data center growth in the state is expected to occur within the Bay Area.

[48] California Energy Commission. Data Center Forecast. Final Report. March 2025. Available at: https://www.energy.ca.gov/sites/default/files/2025-03/Data_Center_Forecast_Final_ada.pdf.
[49] Ibid.

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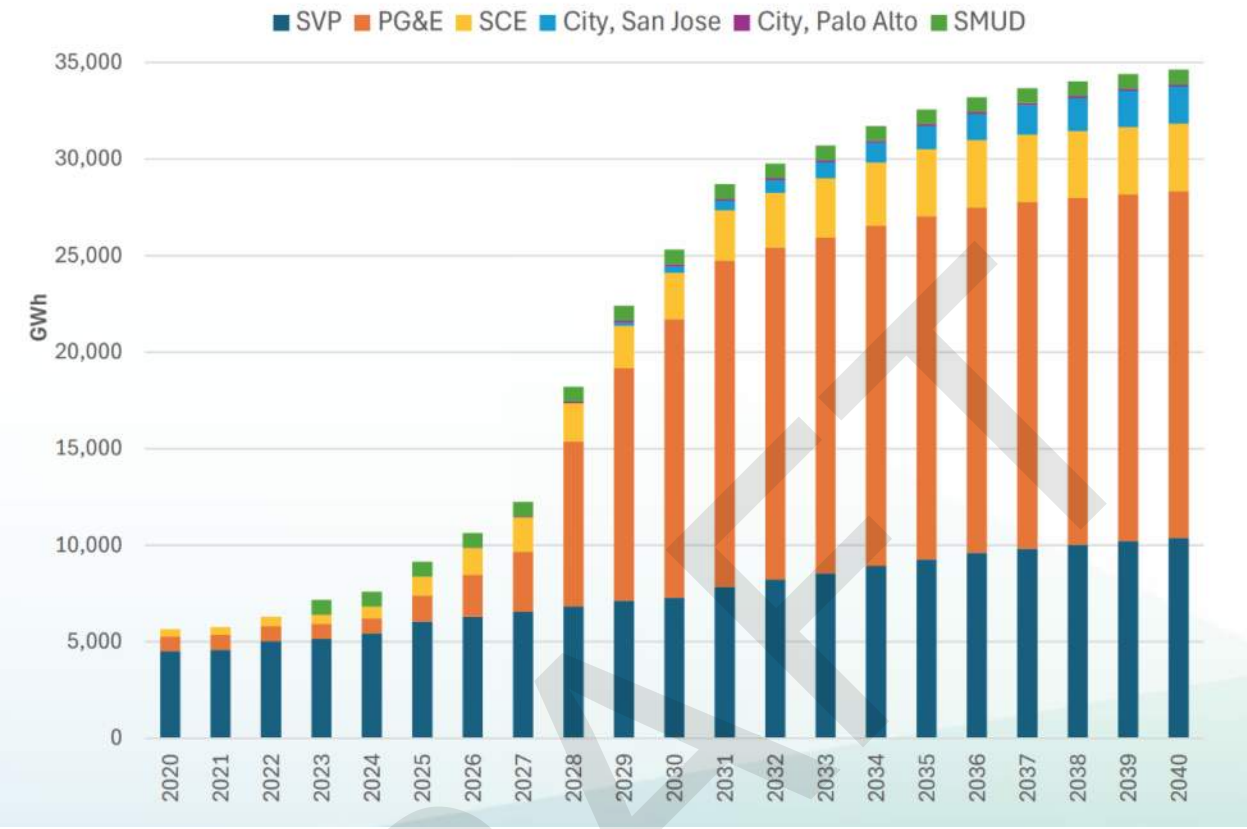


Figure 7-6: CEC Annual Energy Use Projections for Data Centers, Organized by Power Utility

Figure 7-7 illustrates the total annual data center energy demand in BAWSCA's service area consistent with these assumptions. Note that localized ("behind the meter") power production was not included in these projections.

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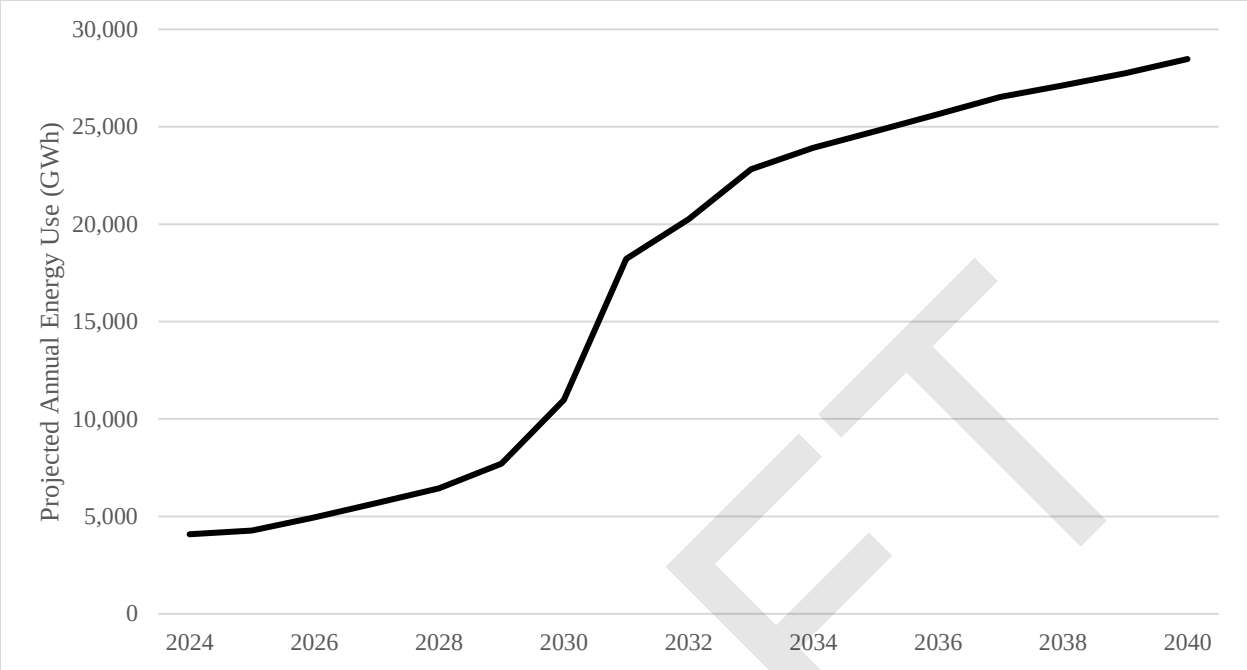


Figure 7-7: Estimated Total Annual Data Center Energy Use in BAWSCA Service Area Inferred from CEC Projections

To translate projected electricity use into water demand, Water Usage Effectiveness (WUE) factors were obtained from Lawrence Berkeley National Laboratory (LBNL) that reflect a range of existing cooling technologies currently used by data centers to cool IT equipment, and, specifically, water used for humidification and water evaporated cooling of the data center and its support systems.[50] Three WUE values were considered from the LBNL study including:

- 0.2 L/kWh for liquid cooling technology using dry coolers with adiabatic assist (air-cooled chillers);[51]
- 1.9 L/kWh for liquid cooling technology using waterside economizers (water-cooled chillers); and
- 1.05 L/kWh reflecting the average of the air-cooled and water-cooled chillers identified above.

Figure 7-8 illustrates projected water use for data centers obtained by multiplying the regional annual energy use (in GWh) by the WUE factors identified above. It is unlikely that liquid cooling technology using waterside economizers (1.9 L/kWh) will be adopted at scale in the Bay Area given broader water supply constraints in the region. In general, data centers being developed in water stressed regions tend to select more water efficient cooling technologies, such as air-cooled chillers. Based on these observations, the 0.2 L/kWh WUE was selected to inform projected data center water use for the scenario analysis.

[50] Shehabi, Arman, et al. *2024 United States Data Center Energy Usage Report.* Lawrence Berkeley National Laboratory, Dec. 2024. https://eta-publications.lbl.gov/sites/default/files/2024-12/lbnl-2024-united-states-data-center-energy-usage-report_1.pdf.

[51] 0.2 L/kWh reflects annual demands. Note that peak monthly uses for this technology can be significantly higher.

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Additional demands for data centers were only considered for the "High" scenario and are tabulated in Table 7-3.

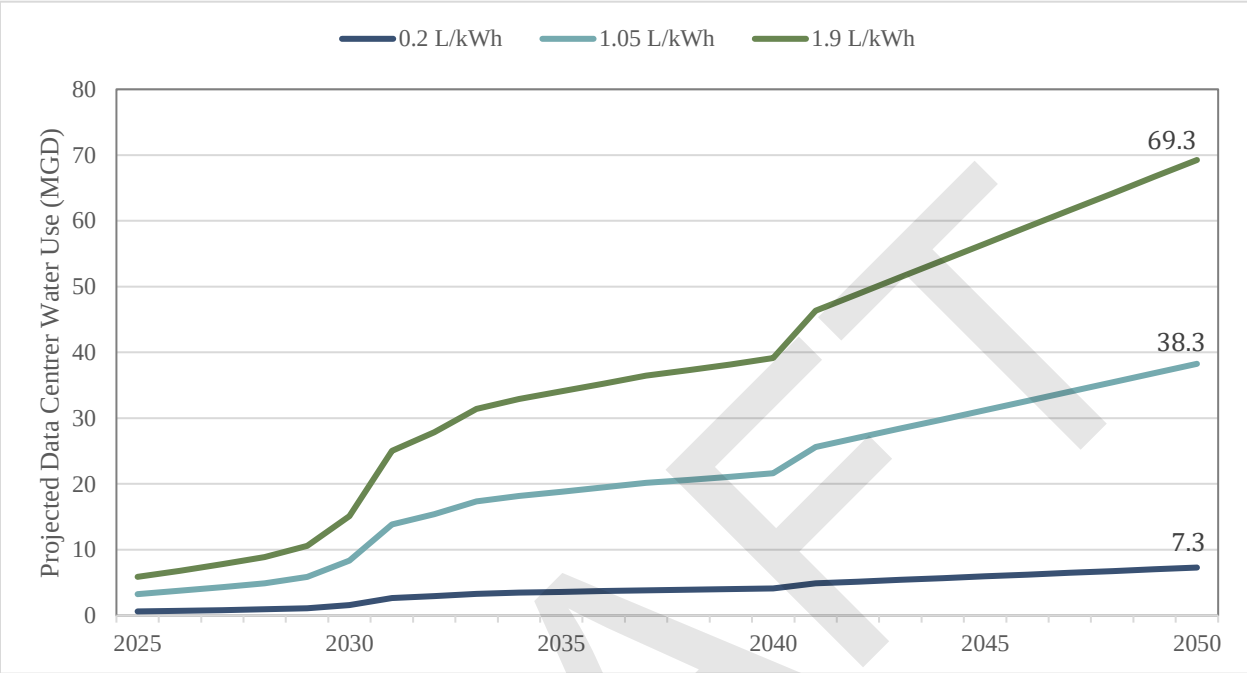


Figure 7-8: Projected Data Center Water Use Organized by Assumed WUE

Table 7-3: Projected Data Center Water Use (MGD) for "High" Scenario Reflecting 0.2 L/kWh WUE

Scenario	2025	2030	2035	2040	2045	2050
"High"	0.6	1.6	3.6	4.1	5.9	7.3

7.2.6 Consolidated Scenario Assumptions

A consolidated summary of scenario assumptions consistent with Sections 7.2.1 through 7.2.5 is presented in Table 7-4 on the following page.

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Table 7-4: Consolidated Summary of Scenario Assumptions

Scenario	Temperature and Precipitation	High Water Users	Conservation Assumptions	Water Rates	Demographics	Socioeconomics
Baseline	• CMIP5 RCP8.5 multi-model mean temperature • Historical mean precipitation	• No additional high water users	• Passive savings consistent with demographic growth • Active savings consistent with member agency planned annual measures	• Keeps pace with inflation (constant in real terms) • Planned 5–10-year rate increases for select agencies	• Member agency approved adjustments to Plan Bay Area 2050 • Housing density increases with housing units (as approved by member agencies)	• Historical trend GDP and unemployment rate
Low	*CMIP6 SSP2 4.5 CNRM-ESM2-1* • Lowest temperature GCM • Highest precipitation scenario GCM	• No additional high water users	• Passive savings consistent with demographic growth • Active savings consistent with member agency planned annual measures • Considers lower outdoor use (i.e., approximated NFT ban)	• Initial 10-year real price increase at 5% annually • Annual 2.5% real price increase over remainder of 25-year period	• Reflects DOF projections • Housing density consistent with baseline calculations	• Lower than trend GDP (10th percentile) • Higher than trend unemployment rate (90th percentile)
Moderated-Low	• CMIP5 RCP 4.5 multi-model mean temperature (lower temperature impact from baseline) • Historical mean precipitation	• No additional high water users	• Passive savings consistent with demographic growth • Active savings consistent with member agency planned annual measures	• Annual 2.5% real price increase over entire 25-year period	• Reflects DOF projections • Housing density consistent with baseline calculations	• Lower than trend GDP (25th percentile) • Higher than trend unemployment rate (75th percentile)
High	*CMIP6 SSP5 8.5 KACE-1-0-G* • Highest temperature GCM • Lowest precipitation scenario GCM	• Data center projections consistent with Section 7.2.5	• Passive savings consistent with demographic growth • No implementation of active programs	• Keeps pace with inflation (constant in real terms) • Planned 5–10-year rate increases for select agencies	• Maximum of agency approved demographics and “raw” Plan Bay Area 2050 projections • Housing density remains constant at 2025 levels	• Higher than trend GDP (90th percentile) • Lower than trend unemployment rate (10th percentile)
Moderated-High	• Hottest GCM from CMIP6 (*SSP5 8.5 KACE-1-0-G*) • Historical mean precipitation	• No additional high water users	• Passive savings consistent with demographic growth • No implementation of active programs	• Keeps pace with inflation (constant in real terms) • Planned 5–10-year rate increases for select agencies	• Maximum of agency approved demographics and “raw” Plan Bay Area 2050 projections • Housing density remains constant at 2025 levels	• Higher than trend GDP (75th percentile) • Lower than trend unemployment rate (25th percentile)
Historical Trend	• CMIP5 RCP8.5 multi-model mean temperature • Historical mean precipitation	• No additional high water users	• Passive savings consistent with demographic growth • Active savings consistent with member agency planned annual measures	• Aligns with real rate increases presented in SFPUC 10-year plan (wholesale)	• Historical growth consistent with trend extrapolation from agency-approved historical demographics • Housing density increases with housing units (as approved by member agencies)	• Historical trend GDP and unemployment rate

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7.3 Alternate Scenario Results

The scenario analysis demonstrates how variations in demographic, economic, climate, pricing, and conservation assumptions influence regional water demand trajectories through 2050. Figure 7-9 and Table 7-5 provide a comparison of the volumetric demands for each scenario identified in Table 7-4.

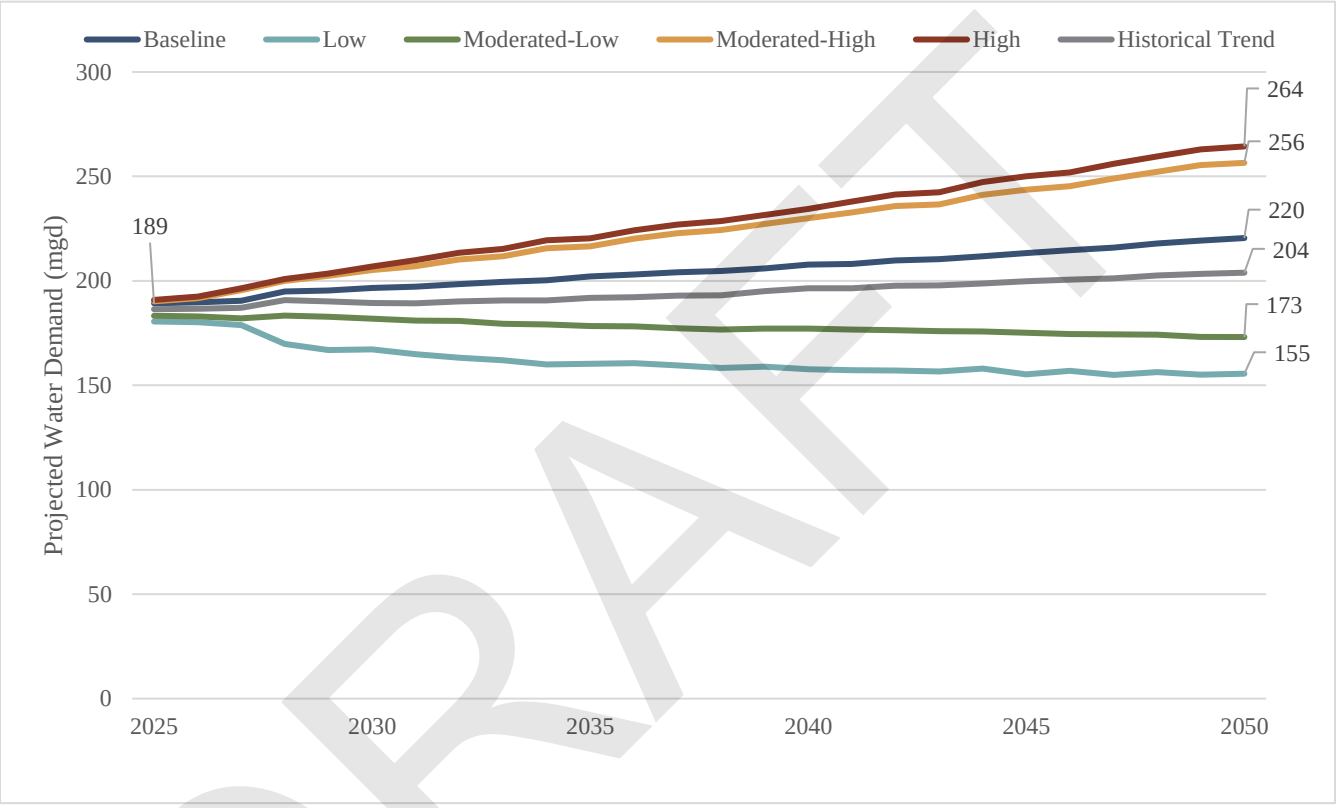


Figure 7-9: Graphical Comparison of Water Demand Scenarios

Table 7-5: Tabular Comparison of Water Demand Scenarios (MGD)

Scenario	2025	2030	2035	2040	2045	2050
Baseline	189	197	202	208	213	220
Low	181	167	160	158	155	155
Moderated-Low	183	182	178	177	175	173
High	191	207	220	234	250	264
Moderated-High	190	205	216	230	244	256
Historical Trend	186	189	191	196	200	204

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By the early 2030s, the alternative demand projections begin to separate significantly, with continued widening toward 2050. High and Moderated-High Scenarios show the steepest growth, driven by high demographic projections, hotter/drier climate assumptions, and stable real water rates. The inclusion of potential data center loads in the High Scenario amplifies this effect. Low and Moderated-Low Scenarios exhibit substantial reductions in demand, reflecting CA DOF demographics, cooler/wetter climate conditions, and more aggressive real price increases combined with nonfunctional turf restrictions. Baseline and Historical Trend Scenarios remain near the center of the range, with the Historical Trend Scenario tracking slightly below Baseline due to moderated growth and rate adjustments.

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8. Summary and Recommendations

The baseline water demand and conservation projections presented in this report provide a robust foundation for long-term planning across BAWSCA member agencies. Developed through a rigorous process of data collection, econometric modeling, and conservation analysis, these projections are designed to support the 2025 UWMP cycle and inform long-term planning for the region's water future.

Key elements of the study's analysis included:

- **Integrated Modeling Approach.** The Project coupled econometric modeling of sectoral water consumption with detailed end-use conservation accounting. This hybrid framework enables the separation of structural drivers—such as demographic growth, economic trends, and climate impacts—from the effects of conservation programs and pricing policies. The scenario-ready design allows for flexible adaptation as new data, policies, and/or priorities emerge.
- **Transparent and Consensus-Based Assumptions.** The baseline scenario assumptions are grounded in member agency-approved demographic projections, climate-adjusted temperature scenarios, and best-practice efficiency standards. The process incorporated extensive feedback from member agencies, ensuring that the assumptions reflect both regional trends and local planning realities.
- **Explicit Quantification of Conservation:** Both passive (code-driven) and active (programmatic) conservation measures were explicitly modeled. Passive savings, driven by ongoing fixture turnover and new construction standards, are projected to steadily reduce water use across all sectors. Active conservation programs, developed in collaboration with member agencies, offer additional potential for demand reduction, but must be invested in to be fully realized.
- **Sensitivity to Demographic and Economic Uncertainty:** The scenario analysis demonstrates that future water demand is highly sensitive to changes in population, housing, and employment. Scenario analysis highlights the importance of monitoring demographic and development trends and maintaining flexibility in planning to accommodate a range of plausible futures.
- **Alignment with Regulatory and Planning Needs:** The baseline forecast provides a neutral, transparent point of comparison for evaluating future compliance with regulatory requirements. The results from this comparison demonstrate that the majority of BAWSCA agencies are anticipated to meet their UWUOs across the full period from 2025 – 2050. The baseline forecast also provides insights into future water supply reliability needs and the anticipated effectiveness of current regional conservation strategies and investment.

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8.1 Recommendations for Future Analyses and Studies

Water demand projections are a critical component on long-range water resource planning for the region. Water managers should consider the following recommendations, to help better monitor, track, and understand water demands as key drivers evolve in the future:

Enhanced Monitoring of High-Uncertainty Sectors (e.g., Data Centers):

- Establish a regular monitoring program for new and existing data centers, including tracking permitting, operational cooling technologies, and actual water use.
- Consider establishment of new customer classifications that encompass data centers and/or other large industrial users.
- Collaborate with local planning departments and utilities to obtain early warning of large-scale developments.
- Update demand models annually to reflect observed trends and incorporate new data center loads as they materialize.
- Consider introducing an additional model that explicitly considers energy consumption as an independent driver unit for data centers and related industries.

Scenario Analysis of Future Drought Impacts:

- Develop and periodically update drought scenarios that simulate the effects of severe and prolonged droughts on both demand and supply.
- Assess the resilience of current and planned conservation programs under drought conditions.
- Integrate lessons learned from recent drought events to refine assumptions and response strategies.
- Revisit participation assumptions for active programs annually, incorporating observed participation rates and, for BAWSCA specifically, feedback from member agencies.

Prioritize High Cost-Effectiveness Water Conservation Programs

- Focus on programs with the lowest cost per 1,000 gallons saved (e.g., high-efficiency toilet and urinal retrofits, smart irrigation controllers, and direct-install kits), as identified in the cost-effectiveness analysis tables.
- Regularly review and update the program portfolio to ensure that investments are directed toward measures with the greatest water savings per dollar spent.

Monitor Water Conservation Program Participation and Adjust Outreach

- Track participation rates and program uptake annually to identify underperforming programs or sectors.

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- Adjust outreach and incentive levels as needed to increase participation in priority programs, especially in sectors or agencies lagging behind regional targets.
- Focus active conservation programs on targeted incentives for MF properties, particularly shared laundry facilities, to accelerate the adoption of efficient appliances.
- Develop tailored outreach for property owners and managers to address barriers to upgrading inefficient fixtures in MF buildings.

Coordinate Water Conservation Planning with Regulatory Compliance

- Use conservation program analysis to support compliance with the UWUO and other regulatory requirements.
- Identify regulated sectors at risk of exceeding the established UWUO budget and prioritize additional or targeted conservation measures for those sectors.

Continuous Improvement of Data and Models:

- Continue to maintain clear documentation of all data sources, model parameters, and calibration methods.
- Maintain consistent and comprehensive data collection regarding core indicators such as population, housing, and employment, in addition to conservation-related metrics including program implementation, associated costs, and achieved savings.
- Periodically review and refine model structure and parameters (for both the econometric models and AWE Tracking Tool) to incorporate new data, research, emerging technologies, and regulatory requirements.
- Maintain up-to-date estimates of fixture and appliance stock by sector and efficiency level, using the latest available data and the AWE Tracking Tool.

Lastly, as BAWSCA's Strategy 2050 effort proceeds, there are several areas for which the new water demand projections and models can directly support. These include:

- Coordination of scenario definitions, assumptions, and timelines between the demand forecasting team and the Strategy 2050 Project to ensure consistency and comparability.
- Assessment of the interplay between demand-side uncertainties (e.g., demographics, conservation, high water users) and supply-side uncertainties (e.g., climate change, regulatory shifts) and concomitant risks.
- Use integrated scenario results to identify potential gaps in supply reliability, inform adaptive management strategies, and prioritize investments in both demand management and new supply options.

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Appendix A: Procedure for Reprojecting Demographic Data

Introduction / Purpose

Key demographic information necessary for water demand forecasting—such as population, employment figures, and housing units—must align with the boundaries of each member agency's service area. Historical and projected records for these data (e.g., DOF and Plan Bay Area 2050) are available at jurisdictional, census tract, and/or Traffic Analysis Zone (TAZ) geographical boundaries, which often do not directly align with member agency service area boundaries (see Figure A-1 as an example). These data must be reprojected from their native geographies to member agency service area boundaries in order to be used for statistical modeling and water demand projection. This Appendix documents the data sources and reprojection approach applied in the Project.



Figure A-1: Example of TAZ Tracts Overlapping an Adjacent Member Agency Service Areas

Data Sources

Demographic data sources used for econometric modeling and demand projection as well as their native geographies are summarized in Table A-1.

Table A-1: Summary of Demographic Data Sources and Native Geographies

Data Source	Use	Native Geography
DOF	Primary data source for determining historical housing units and population	City and county jurisdictional boundaries
ACS	Supplemental data source for housing units, population distribution between SF and MF residences	Census tract
LODES	Primary data source for determining historical jobs and job sectors	Census tract
Plan Bay Area 2050	Primary data source for understanding future growth in housing units, population, and jobs	TAZ

In addition to demographic datasets, several geospatial data sources were obtained including:

- Member agency service area boundaries;
- Census tract boundary dataset from the US Census Bureau;
- Parcel boundaries obtained from the Alameda County, Santa Clara County, and San Mateo County assessor's office;
- Land use classification obtained from California Geoportal, General Plan Land Use dataset; and
- TAZ boundary dataset from Metropolitan Transportation Commission.

General Reprojection Approach

The general reprojection approach applies the following steps:

Step 1: Define Target Geographies

- Identify the boundaries for the member agencies service areas using GIS datasets approved by member agency representatives.
- Ensure all member agency service area boundaries are spatially aligned and compatible (e.g., same projection, no gaps/overlaps).

Step 2: Source Population Forecasts

- Obtain regional population forecasts and historical datasets (e.g., Plan Bay Area 2050) at the finest available granularity (TAZ, census tract, etc.).

Step 3: Reproject Forecasts to Target Boundaries

- **Spatial Overlay:**
  Overlay forecast units (e.g., TAZs) with target member agency service area boundaries.

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- **Weighting Factor:**
  Use parcel counts (residential parcel counts for population data, non-residential parcel counts for jobs) within the intersection of each forecast unit and target boundary as the primary weighting factor.
  - For each forecast unit, calculate the proportion of residential parcels within each target boundary.
  - Allocate forecasted population, housing units, or jobs to each target boundary based on these proportions.
- **Fallback:**
  If parcel count data is unavailable, use area-weighting (proportion of land area within the target boundary).

Step 4: Interpolate to Desired Time Increments (If Necessary)

- For projection datasets (i.e., Plan Bay Area 2050) interpolate the demographic estimates for intermediate years using trends from forecasted years.
- Step 4 is not necessary for DOF, LODES, and ACS datasets.

A simple example of the reprojection procedure is illustrated below:

TAZ #2 has 100 residential parcels within its boundary and a projected population of 2,000 people. 10 of the 100 residential parcels fall within Agency A's service area. 90 of the 100 residential parcels fall within Agency B's service area.

- The weighting factor for allocating TAZ #2 population to Agency A equals 10/100 (0.1).
- The projected number of people residing in TAZ #2 allocated to Agency A equals 0.1 x 2,000 (200 people).
- The weighting factor for allocating TAZ #2 population to Agency B equals 90/100 (0.9).
- The projected number of people residing in TAZ #2 allocated to Agency B equals 0.9 x 2,000 (1,800 people).

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Appendix B: Monthly and Bimonthly Smoothing Procedure

Member agencies have different billing and meter reading frequencies. Additionally, within each agency, meter reading cycles can vary by customer. Many agencies universally adopt either monthly or bimonthly billing; however, some utilize a combination of the two billing cycles depending on customer class and date. Water use rates for the different agency billing cycles were standardized to a calendar-month to better reflect the actual seasonal timing of water use for each of the four modeled sectors (other uses are applied as a percentage of total use across the SF, MF, CII, and irrigation sectors).

Water use billed at monthly intervals can generally overlap with two consecutive calendar months. A smoothing equation extracts a single calendar-month use from the two monthly billing periods. For example, April water use is equal to the fraction of the April consumption billed in April plus the fraction of the April consumption billed in May, as demonstrated in the equation below.

$$April\ Use = \left(Billed\ April\ Consumption \times \frac{April\ Accounts}{April\ Accounts + May\ Accounts}\right) + \left(Billed\ May\ Consumption \times \frac{May\ Accounts}{April\ Accounts + May\ Accounts}\right)$$

Customers billed at bimonthly intervals are divided into two groups, and each group is billed every second month. Bimonthly meter readings contain water use that occurs over a span of three calendar months. For example, April use equals the fraction of April consumption billed in April and June (billing group 1) plus the fraction of April consumption billed in May (billing group 2), per the equation below:

$$April\ Use = \left(\left(\frac{1}{4} Billed\ April\ Consumption + \frac{1}{4}\ Billed\ June\ Consumption\right) \times \frac{\frac{1}{2}April\ Accounts + \frac{1}{2}June\ Accounts}{\frac{1}{2}April\ Accounts + May\ Accounts + \frac{1}{2}June\ Accounts}\right) + \left(\frac{1}{2} Billed\ May\ Consumption \times \frac{May\ Accounts}{\frac{1}{2}April\ Accounts + May\ Accounts + \frac{1}{2}June\ Accounts}\right)$$

Figure B-1 depicts smoothed water use for an agency whose billing structure changes from bimonthly to monthly in late 2022.

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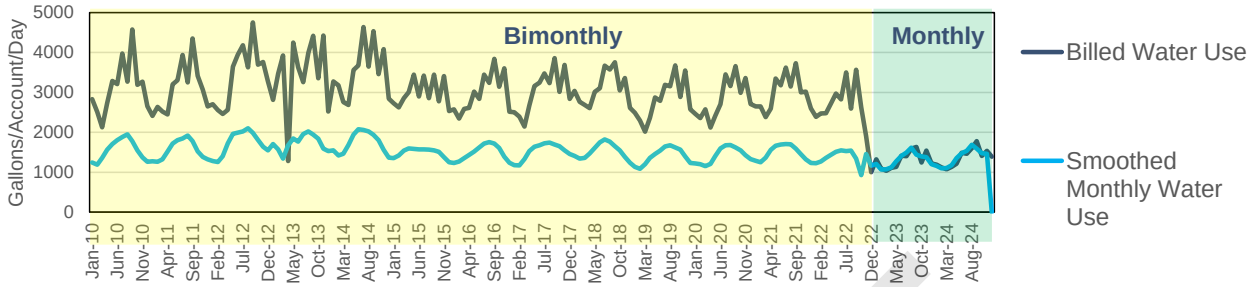


Figure B-1: Example smoothing of consumption for an Agency with a Billing Structure that Changes Over Time

If an agency employs both monthly and bimonthly billing cycles for billing sectors that fall into a single model demand sector, a weighting of smoothed monthly (m) and bimonthly (b) water use (q) is employed to average use ($q_{M,avg}$) over the two cycles, per the equation below:

$$q_{M,avg} = w_m \times q_m + w_b \times q_b$$

The weighting factors (w) are defined in the equations below:

$$w_m = \frac{A_{M,m} + A_{M+1,m}}{\left(A_M + 2A_{M+1,b} + A_{M+2,b}\right) + \left(A_{M,m} + A_{M+1,m}\right)}$$

$$w_b = \frac{A_{M,b} + 2A_{M+1,b} + A_{M+2,b}}{\left(A_M + 2A_{M+1,b} + A_{M+2,b}\right) + \left(A_{M,m} + A_{M+1,m}\right)}$$

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Appendix C: Estimated Model Coefficient Ranges

This section provides a summary of the econometric model coefficient values for each of the five common water use sectors modeled in the Project. Each model is summarized in tabular form identifying the predictors used, the expected directional influence (i.e., increasing or decreasing effect on water use) the predictor should have on water use, and the range of fitted coefficient values. Consistent with the panel regression approach, certain model coefficients are shared between agencies while others are unique. Unique coefficients are indicated in the tables below using a range. Note that not all potential model predictors discussed in Section 3 were used in all models.

Table C-1: Single-Family Regression Predictors and Coefficients

Predictor	Expected Directional Influence	Model Coefficient Range
PPH	+	0.200
Housing Density	-	-0.454
Water Rate (per 10 CCF)	-	-0.132 (annual average)
Tmax	+	-0.120 to 1.026
Tmax (lag 1 month)	+	-0.247 to 0.514
Precip	-	-0.060 to 0.001
Precip (lag 1 months)	-	-0.045 to 0.004
Passive Efficiency Index	-	-0.325 to -0.107
COVID Indicator	+	0.023 to 0.174
Tier 2 Percentage	-	-1.213 to -0.022
SFPUC Systemwide Voluntary Rationing	-	-0.997 to 0.389
State Requested Percent Restriction	-	-0.154

Table C-2: Multifamily Regression Predictors and Coefficients

Predictor	Expected Directional Influence	Model Coefficient Range
Units Per Account Mean	+	0.606
Units Per Account 2023	+	0.068
PPH	+	0.407
Housing Density	-	-0.243
Water Rate (per 20 CCF)	-	-0.083 (annual average)
Tmax	+	-0.281 to 0.407
Precip	-	-0.018 to 0.005
Precip (lag 1 month)	-	-0.015 to 0.01
Precip (lag 2 months)	-	-0.009 to 0.011
Passive Efficiency Index	-	-0.358 to 0.131
COVID Indicator	+	-0.157 to 0.537
SFPUC Systemwide Voluntary Rationing	-	-1.528 to 0.255
State Requested Percent Restriction	-	-1.902 to 1.793

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Table C-3: CII Regression Predictors and Coefficients

Predictor	Expected Directional Influence	Model Coefficient Range
Total Jobs per Account	+	0.416
GDP	+	0.422
Average Unemployment Rate	-	-0.059
Water Rate (per 20 CCF)	-	-0.212
Tmax	+	-1.135 to 1.113
Tmax (lag 1 month)	+	-0.451 to 0.897
Precip	-	-0.048 to 0.018
Precip (lag 1 month)	-	-0.037 to 0.013
Passive Efficiency Index	-	-1.423 to 0.381
SFPUC Systemwide Voluntary Rationing	-	-2.64 to 0.796
State Requested Percent Restriction	-	-0.624 to 0.386
COVID	-	-0.453 to 0.392

Table C-4: Dedicated Irrigation Regression Predictors and Coefficients

Predictor	Expected Directional Influence	Model Coefficient Range
Precip	-	-0.187 to -0.016
Precip (lag 1 month)	-	-0.129 to -0.043
SFPUC Systemwide Voluntary Rationing	-	-7.265 to 1.783
State Requested Percent Reduction	-	-8.633 to 8.381
Tmax	+	1.617
Water Rate (per 20 CCF)	-	-0.272
COVID	n/a	-0.325 to 0.41

Table C-5: Recycled and Raw Water Regression Predictors and Coefficients

Predictor	Expected Directional Influence	Model Coefficient Range
Precip	-	-0.276 to -0.005
Precip (lag 1 month)	-	-0.58 to -0.006
SFPUC Systemwide Voluntary Rationing	-	-6.037 to 25.271
State Requested Percent Reduction	-	-2.129 to 1.225
Tmax	+	1.617 to 1.621
Water Rate (per 20 CCF)	-	-0.272
COVID	n/a	-2.29 to 0.349

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Appendix D: Summary of Econometric Model Fits

Fitted econometric models were evaluated against historical rates of water consumption using both visual inspection of plotted data and evaluation of several statistical measures of goodness-of-fit. Statistical measures examined in the study are summarized in Table D-1 below.

Table D-1: Summary of Statistical Measures of Fit

Statistical Measure	Definition	Example
R^2	Measures how well a model explains the variability of the outcome variable (rate of water use).	A R^2 of 0.5 means that the model explains 50% of the variability in the historical rate of billed water consumption.
Mean Absolute Percent Error	Measures the average absolute percent error of the model prediction across all historical observations.	A mean absolute percent error of 5% indicates that the model's prediction is on average 5% different than the historical rate of water consumption across all monthly billings.
Mean Bias	Measures the average difference between predicted values and observed values. Helps assess whether a model tends to overpredict or underpredict on average.	A mean bias of -2% indicates that on average, the model predicts a 2% lower rate of water consumption than billed records.

Goodness of fit is a holistic exercise requiring simultaneous judgement of several indicators, including the measures of fit summarized in Table D-1, visual inspection of time series plots and scatter plots comparing model predictions to observed data, and as assessment of the reasonableness of model coefficients.

Table D-2 provides a summary of the model historical model performance for each of the statistical measures of fit identified in Table D-1. Overall, the econometric models illustrate strong measures of overall fit, with R^2 values averaging exceeding 0.9 on a regional basis, low percent error, and bias relatively close to 0. The SF models tended to have the strongest measures of fit amongst the sectors, which is typical (and important) given that single family sectors tend to be the highest historical proportional use and most stable. Fit statistics tended to be lower for member agencies and sectors that had less variability on a seasonal basis, however these same agencies also expressed low percent error and bias statistics, indicating acceptable model fits. Error statistics for the irrigation and recycled/raw water models are generally higher than SF, MF, and CII given the smaller sample size, record of historical data, and relatively low number of accounts.

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Table D-2: Summary of Historical Model Performance

Model	Statistical Measures of Fit		
	R^2	Mean Absolute Percent Error	Mean Bias
Regional Pooled Statistics Across All Member Agency Monthly Predictions			
Single Family	.971	6.24%	0.36%
Multi Family	.983	6.35%	0.43%
CII	.973	9.60%	0.98%
Dedicated Irrigation	.901	29.80%	8.18%
Recycled and Raw Water	.903	26.96%	7.40%
Member Agency Range			
Single Family	.526 to .958	3.37% to 11.20%	0.11% to 1.05%
Multi Family	.512 to .961	3.01% to 11.98%	0.07% to 1.19%
CII	.421 to .951	4.47% to 27.20%	0.16% to 6.03%
Dedicated Irrigation	.635 to .917	13.23% to 50.72%	1.83% to 21.20%
Recycled and Raw Water[52]	.593 to .956	7.08% to 93.52%	0.39% to 48.81%

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[52] Maximum recycled water percent error and mean bias reflects a single month for a single agency where the historical prediction significantly differs from the observed value. Mean errors are amplified by the relatively small sample size for this sector.

Appendix E: Supplementary Conservation Tables

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Table E-1: Conservation Measure Descriptions

Program ID	Program Name	Program Category	Program Class	Units	Program Description
1	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	HET	Single-Family	Toilet	Replacement of existing conventional, low-efficiency toilets (>=3.5 gpf) with high-efficiency toilets (<=1.28 gpf).
2	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	HET	Multi-Family	Toilet	
3	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	HET	CII Common Meter	Toilet	
4	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	HET	Single-Family	Toilet	Replacement of existing low flush toilets (>= 1.6 gpf) with high-efficiency toilets (<=1.28 gpf).
5	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	HET	Multi-Family	Toilet	
6	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	HET	CII Common Meter	Toilet	
7	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	HET	Single-Family	Toilet	Replacement of existing high-efficiency toilets (1.28 gpf) with high-efficiency plus toilets (<=1.0 gpf).
8	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	HET	Multi-Family	Toilet	
9	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	HET	CII Common Meter	Toilet	
10	CII Urinal (1/8 gpf) Replacement	Urinal (0.125 gpf)	CII Common Meter	Urinal	Replacement of existing low-efficiency urinals with high-efficiency urinals (0.125 gpf).
11	SF Washer Rebate (WF <=4)	Clothes Washers (residential in-unit)	Single-Family	Washer	Replacement of traditional clothes washers with high-efficiency clothes washers (< 15 gal/load)
12	MF In-Unit Washer Rebate (WF <=4)	Clothes Washers (residential in-unit)	Multi-Family	Washer	
13	Water Conservation Kits - Indoor	Kits & Giveaways	Single-Family	Kit	The Indoor kit includes a high-efficiency showerhead (1.75 gpm), kitchen aerator (1.5 gpm), bathroom aerator (1.0 gpm), digital thermometer, toilet leak detector tablets, Teflon tape, miniature tape measure, rain/drip gauge, shower timer, natural resources facts slide chart, flow rate test bag, and information material.
14	Water Conservation Kits - Outdoor	Kits & Giveaways	Single-Family	Kit	The outdoor kit includes a garden hose spray nozzle, male and female end garden hose replacement, soil moisture meter, TORO male and female precision 180° nozzle, TORO male and female precision 90° nozzle, rain/drip gauge, natural resources facts slide chart, flow rate test bag, and information material.
15	Water Conservation Kits - LivingWise	Kits & Giveaways	Single-Family	Kit	The LivingWise kit includes a high-efficiency showerhead (1.75 gpm), kitchen aerator (1.5 gpm), bathroom aerator (1.0 gpm), 9 watt LED, LED nightlight, filter tone alarm, digital thermometer, toilet leak detector tablets, miniature tape measure, rain/drip gauge, shower timer, resources fact slide chart, flow rate test bag, Teflon tape, and information material.
16	Water Conservation Kits - Spray Valves	Kits & Giveaways	CII Common Meter	Kit	CII water conservation kits include one pre-rinse spray valve.
17	Water Conservation Kits - Aerators/Showerheads	Kits & Giveaways	CII Common Meter	Kit	CII water conservation kits include the direct installation of one faucet aerator and one showerhead.
18	CII Technologies	Cooling & Heating Systems	CII Irrigation Meter	CCF	Customizable rebate incentive for CII customers to implement projects that result in a reduction of water use per year.
19	SF Turf Replacement	Turf Replacement	Single-Family	Square-foot	Replacement of high-water use lawns with low-water use, water-efficient landscape. Includes Lawn Be Gone!, Large Landscape Lawn to Mulch and Lawn Bust Programs.
20	MF Turf Replacement	Turf Replacement	Multi-Family	Square-foot	
21	CII Large Landscape Turf Replacement	Turf Replacement	CII Irrigation Meter	Square-foot	
22	Rain Garden Addition	Rainwater Harvesting	Single-Family	Square-foot	Optional rain garden addition to Lawn Be Gone! Program for water customers under participating agencies.
23	SF In-Line Drip Irrigation Conversion	Irrigation System & Devices	Single-Family	Square-foot	Convert overhead sprinklers to in-line drip tubing in existing shrubs, perennial, or annual planting beds.
24	MF In-Line Drip Irrigation Conversion	Irrigation System & Devices	Multi-Family	Square-foot	
25	CII In-Line Drip Irrigation Conversion	Irrigation System & Devices	CII Irrigation Meter	Square-foot	
26	SF Smart Irrigation Controller Rebate	Irrigation System & Devices	Single-Family	Device	Replacement of existing conventional irrigation controller with a "smart" irrigation controller. Program includes WaterSense certified weather-based irrigation controllers and Rachio 3 Smart Controller.
27	MF Large Landscape Smart Irrigation Controller Rebate	Irrigation System & Devices	Multi-Family	Device	

Program ID	Program Name	Program Category	Program Class	Units	Program Description
28	CII Large Landscape Irrigation Controller	Irrigation System & Devices	CII Irrigation Meter	Station	
29	SF Irrigation Nozzle Replacement	Irrigation System & Devices	Single-Family	Device	Purchase and installation of new technology sprinkler heads that save water by allowing slower water application rates, by improving distribution uniformity, and by reducing the effects of wind-blow overspray. Includes high sprinkler nozzles, spray bodies with integrated pressure regulation and large rotary nozzles.
30	MF Irrigation Nozzle Replacement	Irrigation System & Devices	Multi-Family	Device	
31	CII Large Landscape Irrigation Nozzle Replacement	Irrigation System & Devices	CII Irrigation Meter	Station	
32	Rainwater Capture - Rain Barrel <200	Rainwater Harvesting	Single-Family	Barrel	Purchase of a rain barrel (less than 200 gallons) or a small rain cistern (200 to 500 gallons).
33	Rainwater Capture - Cistern >=200	Rainwater Harvesting	Multi-Family	Barrel	
34	Rainwater Capture - Cistern >=200	Rainwater Harvesting	CII Common Meter	Barrel	
35	SF Graywater Laundry to Landscape Rebate	Graywater	Single-Family	Household	Purchase and installation of graywater systems to recycle laundry rise water from clothes washers directly to landscape areas without filters, tanks or pumps.
36	Submetering - Other	Metering & Submetering	Multi-Family	Meter	Separation of domestic and irrigation meters for HOA or multi-family residential units with combined domestic and irrigation meters.
37	SF Unmetered to Metered	Metering & Submetering	Multi-Family	Meter	New submeter installation at existing water customer sites where they do not currently exist at mobile home parks, apartments, HOA's and condominium complexes.
38	SF Water Use Audit	Audits & Rpts	Single-Family	Household	Residential home surveys include a site visit by a trained personnel who assesses current water use practices and make recommendations for efficiency improvements. The outdoor portion of the survey can range from a brochure on outdoor savings to an intensive outdoor water efficiency study (turf audit, catch can test, and written recommendations for irrigation scheduling or landscape changes). Conservation devices could be directly installed.
39	MF Water Use Audit	Audits & Rpts	Multi-Family	Property	Residential home surveys include a site visit by a trained personnel who assesses current water use practices and makes recommendations for efficiency improvements. For the multi-family sector, these surveys cover indoor use, outdoor landscape, pools, and washing machines. Conservation devices could be directly installed.
40	CII Large Landscape Water Audit	Audits & Rpts	CII Irrigation Meter	Property	A large landscape water audit includes a site visit by a trained personnel who assesses current irrigation practices, measures and inspects landscape areas, inspects and tests irrigation system performance, and makes recommendations for improvements in plant material, irrigation equipment, and irrigation schedule. Conservation devices could be directly installed.
41	SF Wireless Flow Monitor	Audits & Rpts	Single-Family	Monitor	Wireless devices that continuously measure the flow of water volume and provide alerts in the case of detected leaks. These devices can attach to the meter, incoming water pipes, fitted under the sink or be in-line installed directly on the water main. Examples include Flume and WaterSmart (VertexOne). Note devices that sense water on the floor or humidity to indicate a leak are not included.
42	SF AMI Leak Alert	Audits & Rpts	Single-Family	Household	Leak detection alert systems of various sorts that identify leaks on the customer side of the meter, where the metering is Advanced Metering Infrastructure (AMI). Since AMI technology connects customer meters to the utility through a network, it allows storage and analysis of water use patterns, in addition to billing. An AMI Leak Alert Program, thus, is one that uses the data infrastructure to identify customers with leaks, and to send alerts. This activity assumes AMI is utilized with the ability to both identify a leak at a customer site and to alert the customer in a way that allows subsequent repair or resolution (mail, email, text, and/or call). Not included are devices installed on the customer side of the meter.
43	MF (4 or fewer units) AMI Leak Alert	Audits & Rpts	Multi-Family	Property	
44	Water Use Monitoring - Water Calculator	Education	Single-Family	Household	Website available to water customers with advice on how to set irrigation controllers properly and how to manage it thereafter.
45	Water Use Monitoring - Footprint Calculator	Education	Single-Family	Household	An interactive website quiz that calculates a persons water footprint. The website also includes information on what a water footprint is, ways to save water and educational resources.
46	Water Use Monitoring - RSAT Kit/Home Survey Kit	Kits & Giveaways	Single-Family	Household	An at-home self-audit survey that includes a step-by-step guide to check for flow rates, leaks, and general inefficiencies.
47	In-School Education - Poster Contest	Education	Single-Family	Household	Annual contest part of the school education program designed to promote water conservation awareness among students in kindergarten through 5th grade.
48	In-School Education - EarthCapades	Education	Single-Family	Performance	School assemblies designed to increase student awareness of water conservation by combining age-appropriate state science standards with circus skills, juggling, music, storytelling, comedy, and audience participation to teach environmental awareness, water science and conservation.
49	In-School Education - Water-Wise	Kits & Giveaways	Single-Family	Kit	Through the Water-wise School Education Kits Program, kits are distributed to 5th grade students that enable them to install water saving devices and perform a water audit in their home. After the student performs the audit and installs the water and energy savings devices, affidavits signed by the parents are returned to the school, collected by the teacher, and forwarded to Water Wise for program documentation of implementation and resulting savings. The kit includes energy and water savings high-efficiency showerhead, kitchen aerator, flip control bathroom aerator, energy cost calculator, mini-tape measure, flow rate test bag, multi-function drop/rain gauge, water temperature check card, toilet leak detector tablets.
50	In-School Education - Classroom Visit	Education	Single-Family	Household	

Program ID	Program Name	Program Category	Program Class	Units	Program Description
51	In-School Education - Teacher Training	Education	Single-Family	Household	A collection of classroom resources on conservation for teachers.
52	Public Outreach	Education	Single-Family	Household	BAWSCA participates in the Water Conservation Showcase event every year and helped form the Silicon Valley Water Conservation Award Coalition to recognize programs and leadership that has contributed to the advancement of water conservation in Silicon Valley. Other measures taken include collaborations with member agencies for public outreach and community events.
53	Water Efficient Landscaping - Conservation Garden	Education	Single-Family	Household	Water Conservation Garden that demonstrates low water landscaping concepts. Visit the garden to learn how you can incorporate these water conservation concepts into your landscaping project.
54	Water Efficient Landscaping - Education Classes	Education	Single-Family	Household	BAWSCA's Landscape Education Classes are designed to introduce homeowners, commercial property managers, landscape service providers, and others to the concepts of water-efficient and sustainable landscaping.
55	Water Efficient Landscaping - Garden Tours	Education	Single-Family	Household	Garden tours which showcase homes around the Bay Area that have beautiful water conserving gardens comprised primarily of California native plants. These tours are regional throughout the Bay Area and provide homeowners, landscape professionals, and others with ideas for design and implementation of water-efficient landscapes.
56	Water Efficient Landscaping - Water-Wise Tool	Education	Single-Family	Household	A website full of information on how to garden beautifully while saving water.
57	Certification - Green Business	Education	CII Common Meter	Certification	Program designed to encourage businesses follow best practices for energy and water conservation, waste management, and more.
58	Certification - QWEL	Education	Single-Family	Certification	Free or low cost 20-hour training and certification on irrigation and water management to receive an EPA WaterSense labeled professional certification in irrigation system audits.
59	Affordability/Equity - Grants	Grants	Single-Family	Grant	Grants for non-profit, government agencies and schools/universities to test new and innovative water conservation technologies and programs.
60	Affordability/Equity - Assistance Program	Grants	Single-Family	Grant	Qualified water customers receive a free water and energy conservation assessments to residents. Services include indoor and outdoor leak assessments, and if needed, installation of new fixtures such as high-efficiency toilets, bathroom faucets, outdoor hose bibs, and sprinkler heads.
61	Building Efficiency Program	Cooling & Heating Systems	CII Common Meter	CII Establishment	Program designed to address energy and water use in existing buildings to help make them more efficient, thereby saving owners money, improving the safety and comfort of the building stock, and reducing emissions that are driving climate change.
62	Showerhead Replacement (<= 1.8 gpm)	Low Flow Showerhead (<= 1.8 gpm)	Single-Family	Showerhead	Replacement of existing low efficiency showerheads with low-flow showerheads rated 1.8 gpm or less.
63	Showerhead Replacement (<= 1.8 gpm)	Low Flow Showerhead (<= 1.8 gpm)	Multi-Family	Showerhead	
64	Bathroom Direct Install	HET	Single-Family	Toilet	Direct installation of high efficiency toilets, inefficient showerheads and bathroom faucets by a contractor.
65	Bathroom Direct Install	HET	Multi-Family	Toilet	
66	Irrigation System Flow Sensor Rebate	Irrigation System & Devices	Single-Family	Controller	Installation of irrigation flow sensors that measure the flow rate from which the volume of water being delivered to an irrigation system can be inferred.
67	Irrigation System Flow Sensor Rebate	Irrigation System & Devices	Multi-Family	Controller	
68	SFR Medium Cistern (501-999 gal) Rebate	Rainwater Harvesting	Single-Family	Barrel	Purchase of a medium cistern (501 to 999 gallons) or a large cistern (1,000+ gallons) for the purpose of rainwater harvesting.
69	SFR Large Cistern (1000+ gal) Rebate	Rainwater Harvesting	Single-Family	Barrel	
70	CII Ozone Laundry Washer Rebate	Laundries & Laundromats	CII Common Meter	Washer	Ozone laundry systems utilize cold-water, lower amounts of detergent and fewer rinse cycles to conserve water and energy. Applicable to hospitals, nursing homes, hotels/motels, universities and prisons.
71	CII Commercial Kitchen Dishwasher Rebate	Commercial Kitchens & Restaurants	CII Common Meter	Dishwasher	Installation of high efficiency dishwashers in commercial and industrial kitchens.
72	CII Commercial Kitchen Spray Rinse Valve Rebate	Commercial Kitchens & Restaurants	CII Common Meter	Spray Valve	Installation of pre-rinse spray valves that control the water flow in sprayers for rinsing food waste from pots, pans, utensils, and dishware before entering a dishwasher.
73	CII Commercial Kitchen Food Steamer Rebate	Commercial Kitchens & Restaurants	CII Common Meter	Food Steamer	Installation of water efficient food steamers in commercial and industrial kitchens.
74	CII Restaurant Dipper Well Rebate	Commercial Kitchens & Restaurants	CII Common Meter	Dipper Well	Installation of high efficiency dipper wells that utilize automatic shutoffs and other features to reduce water use. Can include replacement of low efficiency dripper wells.
75	CII Large Landscape Water Budget	Audits & Rpts	CII Irrigation Meter	Site	Large landscape, irrigated area greater than 1 acre, where water budgets tied to water rates.
76	Acoustic Hydrant Cap	Leaks and Water Loss	CII Common Meter	Hydrant Cap	Leak detection technology. System water loss is calculated by determining the total water inputs into the system against the total measurable outputs of the system. Inputs are measured at the point of entry into the water network through a meter. Outputs are then calculated at residential or commercial meters where customers purchase the water.

Table E-2: Conservation Cost and Savings Assumptions

Program ID	Program Name	Units	BAWSCA Defined Programs				Valley Water Defined Programs				Other Utility Defined Programs			
			Utility Cost ($/unit)	Utility Unit Cost ($/1000 gal)	Expected Savings (gpd/unit)	Life of Savings (Years)	Utility Cost ($/unit)	Utility Unit Cost ($/1000 gal)	Expected Savings (gpd/unit)	Life of Savings (Years)	Utility Cost ($/unit)	Utility Unit Cost ($/1000 gal)	Expected Savings (gpd/unit)	Life of Savings (Years)
1	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	NA	NA	NA	NA	NA	NA	NA	NA	50 - 70	0.2 - 0.28	28	25
2	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	NA	NA	NA	NA	$150	$0.43	39	25	50 - 150	0.14 - 0.43	39	25
3	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	NA	NA	NA	NA	$150	$0.43	39	25	50 - 150	0.14 - 0.43	39	25
4	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	NA	NA	NA	NA	NA	NA	NA	NA	50	0.26	28	25
5	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	NA	NA	NA	NA	$150	$0.43	39	25	50 - 150	0.19 - 0.57	39	25
6	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	NA	NA	NA	NA	$150	$0.43	39	25	50 - 150	0.19 - 0.57	15	25
7	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	NA	NA	NA	NA	NA	NA	NA	NA	50	0.3	28	25
8	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	NA	NA	NA	NA	NA	NA	NA	NA	50 - 150	0.22 - 0.65	39	25
9	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	NA	NA	NA	NA	NA	NA	NA	NA	50 - 150	0.22 - 0.65	16	25
10	CII Urinal (1/8 gpf) Replacement	Urinal	NA	NA	NA	NA	$150	$0.78	21	25	150 - 150	0.83	20	25
11	SF Washer Rebate (WF <=4)	Washer	NA	NA	NA	NA	NA	NA	NA	NA	100 - 150	1.65 - 2.48	11	15
12	MF In-Unit Washer Rebate (WF <=4)	Washer	NA	NA	NA	NA	NA	NA	NA	NA	100 - 150	2.23 - 3.34	8	15
13	Water Conservation Kits - Indoor	Kit	$40	$1.48	7	10	$40	$1.48	7	10	15	0.56	7	10
14	Water Conservation Kits - Outdoor	Kit	$38	$1.61	6	10	$38	$1.61	6	10	NA	NA	NA	NA
15	Water Conservation Kits - LivingWise	Kit	$55	$2.04	7	10	$55	$2.04	7	10	NA	NA	NA	NA
16	Water Conservation Kits - Spray Valves	Kit	NA	NA	NA	NA	$50	$0.18	77	10	35	0.5	19	10
17	Water Conservation Kits - Aerators/Showerheads	Kit	NA	NA	NA	NA	$60	$3.74	4	10	3.68 - 60	0.23 - 3.74	4	10
18	CII Technologies	CCF	$4	$0.55	2	10	$4	$0.55	2	10	4	0.55	2	10
19	SF Turf Replacement	Square-foot	$2	$5.56	0	10	$5	$13.70	0	10	0.71 - 3	1.97 - 8.34	NA	10
20	MF Turf Replacement	Square-foot	$2	$5.56	0	10	$5	$13.70	0	10	0.71 - 3	1.97 - 8.34	NA	10
21	CII Large Landscape Turf Replacement	Square-foot	$2	$5.56	0	10	$5	$13.70	0	10	0.77 - 1	2.14 - 2.78	NA	10
22	Rain Garden Addition	Square-foot	$1	$3.61	0	10	$3	$8.22	0	10	NA	NA	NA	NA
23	SF In-Line Drip Irrigation Conversion	Square-foot	NA	NA	NA	NA	$0	$1.10	0	10	0.25	1.1	NA	10
24	MF In-Line Drip Irrigation Conversion	Square-foot	NA	NA	NA	NA	$0	$1.10	0	10	0.25	1.1	NA	10

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Program ID	Program Name	Units	BAWSCA Defined Programs				Valley Water Defined Programs				Other Utility Defined Programs			
			Utility Cost ($/unit)	Utility Unit Cost ($/1000 gal)	Expected Savings (gpd/unit)	Life of Savings (Years)	Utility Cost ($/unit)	Utility Unit Cost ($/1000 gal)	Expected Savings (gpd/unit)	Life of Savings (Years)	Utility Cost ($/unit)	Utility Unit Cost ($/1000 gal)	Expected Savings (gpd/unit)	Life of Savings (Years)
25	CII In-Line Drip Irrigation Conversion	Square-foot	NA	NA	NA	NA	$0	$1.10	0	10	0.25	1.1	NA	10
26	SF Smart Irrigation Controller Rebate	Device	$82	$0.86	26	10	$82	$0.86	26	10	125	1.31	26	10
27	MF Large Landscape Smart Irrigation Controller Rebate	Device	$125	$0.05	727	10	$1,461	$0.55	727	10	125 - 960	0.05 - 0.36	727	10
28	CII Large Landscape Irrigation Controller	Station	$25	$0.01	727	10	$3,295	$1.24	727	10	25 - 960	0.01 - 0.36	727	10
29	SF Irrigation Nozzle Replacement	Device	$5	$0.86	2	10	$9	$1.48	2	10	4.51 - 5	0.77 - 0.86	2	10
30	MF Irrigation Nozzle Replacement	Device	$5	$0.86	2	10	$11	$1.86	2	10	4.51 - 18	0.77 - 3.08	2	10
31	CII Large Landscape Irrigation Nozzle Replacement	Station	$5	$0.86	2	10	$7	$1.12	2	10	37	6.34	2	10
32	Rainwater Capture - Rain Barrel <200	Barrel	$50	$16.15	2	5	$150	$48.46	2	5	50	16.15	2	5
33	Rainwater Capture - Cistern >=200	Barrel	$200	$16.15	7	5	$200	$16.15	7	5	NA	NA	NA	NA
34	Rainwater Capture - Cistern >=200	Barrel	$200	$16.15	7	5	$200	$16.15	7	5	NA	NA	NA	NA
35	SF Graywater Laundry to Landscape Rebate	Household	NA	NA	NA	NA	$200	$3.04	18	10	200	5.03	11	10
36	Submetering - Other	Meter	NA	NA	NA	NA	$300	$0.68	60	20	302 - 1,950	0.69 - 4.45	60	20
37	SF Unmetered to Metered	Meter	NA	NA	NA	NA	$150	$0.40	51	20	NA	NA	NA	NA
38	SF Water Use Audit	Household	$125	$2.02	34	5	$125	$2.02	34	5	125	2.02	34	5
39	MF Water Use Audit	Property	NA	NA	NA	NA	$75	$3.74	11	5	75	3.74	11	5
40	CII Large Landscape Water Audit	Property	$1,700	$1.04	893	5	$1,400	$0.66	1,160	5	725	0.44	893	5
41	SF Wireless Flow Monitor	Monitor	$200	$4.57	24	5	$200	$4.57	24	5	0 - 200	22.83	24	1
42	SF AMI Leak Alert	Household	NA	NA	NA	NA	NA	NA	NA	NA	0.003 - 301	0.01 - 1,178	1	1
43	MF (4 or fewer units) AMI Leak Alert	Property	NA	NA	NA	NA	NA	NA	NA	NA	0.003 - 20	0 - 27.40	2	1
44	Water Use Monitoring - Water Calculator	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
45	Water Use Monitoring - Footprint Calculator	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
46	Water Use Monitoring - RSAT Kit/Home Survey Kit	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
47	In-School Education - Poster Contest	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
48	In-School Education - EarthCapades	Performance	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
49	In-School Education - Water-Wise	Kit	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
50	In-School Education - Classroom Visit	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Program ID	Program Name	Units	BAWSCA Defined Programs				Valley Water Defined Programs				Other Utility Defined Programs			
			Utility Cost ($/unit)	Utility Unit Cost ($/1000 gal)	Expected Savings (gpd/unit)	Life of Savings (Years)	Utility Cost ($/unit)	Utility Unit Cost ($/1000 gal)	Expected Savings (gpd/unit)	Life of Savings (Years)	Utility Cost ($/unit)	Utility Unit Cost ($/1000 gal)	Expected Savings (gpd/unit)	Life of Savings (Years)
51	In-School Education - Teacher Training	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
52	Public Outreach	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
53	Water Efficient Landscaping - Conservation Garden	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
54	Water Efficient Landscaping - Education Classes	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
55	Water Efficient Landscaping - Garden Tours	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
56	Water Efficient Landscaping - Water-Wise Tool	Household	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
57	Certification - Green Business	Certification	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
58	Certification - QWEL	Certification	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
59	Affordability/Equity - Grants	Grant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
60	Affordability/Equity - Assistance Program	Grant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
61	Building Efficiency Program	CII Establishment	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
62	Showerhead Replacement (<= 1.8 gpm)	Showerhead	$4	$0.50	2	10	$10	$1.14	2	10	4.26 - 10	0.49 - 1.14	2	10
63	Showerhead Replacement (<= 1.8 gpm)	Showerhead	$4	$0.50	2	10	$10	$1.14	2	10	4.26 - 10	0.49 - 1.14	2	10
64	Bathroom Direct Install	Toilet	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
65	Bathroom Direct Install	Toilet	NA	NA	NA	NA	NA	NA	NA	NA	350	0.73	53	25
66	Irrigation System Flow Sensor Rebate	Controller	NA	NA	NA	NA	$190	$5.78	9	10	190	5.78	9	10
67	Irrigation System Flow Sensor Rebate	Controller	NA	NA	NA	NA	$190	$1.93	27	10	190	1.93	27	10
68	SF Medium Cistern (501-999 gal) Rebate	Barrel	$50	$3.26	8	5	$300	$19.57	8	5	350	22.85	8	5
69	SF Large Cistern (1000+ gal) Rebate	Barrel	$50	$2.84	10	5	$300	$17.12	10	5	400	22.73	10	5
70	CII Ozone Laundry Washer Rebate	Washer	NA	NA	NA	NA	NA	NA	NA	NA	2,100	0.54	704	15
71	CII Commercial Kitchen Dishwasher Rebate	Dishwasher	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
72	CII Commercial Kitchen Spray Rinse Valve Rebate	Spray Valve	NA	NA	NA	NA	$50	$0.71	19	10	50	0.71	19	10
73	CII Commercial Kitchen Food Steamer Rebate	Food Steamer	NA	NA	NA	NA	NA	NA	NA	NA	1,250 - 1,400	1.54 - 1.72	223	10
74	CII Restaurant Dipper Well Rebate	Dipper Well	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
75	CII Large Landscape Water Budget	Site	$44	$0.10	1,160	1	$0	$0.00	1,160	1	NA	NA	NA	NA
76	Acoustic Hydrant Cap	Hydrant Cap	NA	NA	NA	NA	NA	NA	NA	NA	1,189	NA	165	NA

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Table E-3: Residential End Uses by Technological Efficiency Level

Class	End Use Technology	Mechanical Efficiency	Projections						2025-2050	
			2025	2030	2035	2040	2045	2050	Change	% Change
SF	Toilets	Pre-ULFT	151,442	113,341	84,668	63,085	46,838	34,611	-116,831	-77.15%
		ULFT	350,144	276,937	219,042	173,255	137,043	108,403	-241,741	-69.04%
		HET	437,464	566,933	670,738	747,887	808,391	857,304	419,840	95.97%
		% Pre-ULFT	16.13%	11.84%	8.69%	6.41%	4.72%	3.46%	-	-
SF	Showerheads	>2.5 gpm	15,998	8,085	3,643	2,046	1,149	645	-15,353	-95.97%
		(1.8, 2.5)	293,958	172,598	101,596	59,886	35,328	20,849	-273,108	-92.91%
		<=1.8 gpm	441,284	585,085	674,318	725,450	757,342	778,760	337,476	-247,609
		% >2.5 gpm	2.13%	1.06%	0.47%	0.26%	0.14%	0.08%	-	-
SF	Clothes Washers	Conventional	195,946	193,675	193,394	193,228	193,565	194,423	-1,523	-0.78%
		High-Efficiency	169,031	178,204	185,034	189,295	192,395	194,972	25,942	15.35%
		% Conventional	53.69%	52.08%	51.10%	50.51%	50.15%	49.93%	-	-
SF	Dishwashers	Conventional	84,968	64,128	51,356	43,669	39,227	36,777	-48,191	-56.72%
		High-Efficiency	260,799	288,178	307,155	318,722	326,419	332,124	71,325	27.35%
		% Conventional	24.57%	18.20%	14.32%	12.05%	10.73%	9.97%	-	-
MF	Toilets	Pre-ULFT	78,569	60,818	47,959	37,796	29,776	23,450	-55,119	-70.15%
		ULFT	195,636	154,654	122,259	96,650	76,407	60,404	-135,231	-69.12%
		HET	339,297	487,333	628,848	745,917	854,434	973,556	634,259	186.93%
		% Pre-ULFT	12.81%	8.65%	6.00%	4.29%	3.10%	2.22%	-	-
MF	Showerheads	>2.5 gpm	9,555	5,502	3,168	1,824	1,051	605	-8,950	-93.67%
		(1.8, 2.5)	214,334	126,295	74,488	43,956	25,946	15,318	-199,016	-92.85%
		<=1.8 gpm	372,572	551,486	699,212	810,128	906,936	1,012,115	639,544	171.66%
		% >2.5 gpm	1.60%	0.81%	0.41%	0.21%	0.11%	0.06%	-	-
MF	In-Unit Clothes Washers	Conventional	96,044	106,513	118,683	129,230	139,915	153,072	57,028	59.38%
		High-Efficiency	85,854	100,190	114,759	126,795	138,403	152,133	66,280	77.20%
		% Conventional	52.80%	51.53%	50.84%	50.48%	50.27%	50.15%	-	-
MF	Shared Clothes Washers	Conventional	23,117	26,033	29,280	32,054	34,816	38,164	15,047	65.09%
		High-Efficiency	22,357	25,643	29,080	31,952	34,763	38,137	15,780	70.58%
		% Conventional	50.84%	50.38%	50.17%	50.08%	50.04%	50.02%	-	-
MF	Dishwashers	Conventional	57,447	48,091	43,180	40,664	40,120	41,465	-15,982	-27.82%
		High-Efficiency	197,209	241,293	283,640	317,771	349,525	385,822	188,613	95.64%
		% Conventional	22.56%	16.62%	13.21%	11.34%	10.30%	9.70%	-	-

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Table E-4: CII End Uses by Technological Efficiency Level

Class	End Use Technology	Mechanical Efficiency	Projections						2025-2050	
			2025	2030	2035	2040	2045	2050	Change	% Change
CII	Toilets	Pre- ULFT	51,923	40,352	31,727	24,873	19,438	15,132	-36,790	-70.86%
		ULFT	102,789	83,811	68,337	55,720	45,433	37,045	-65,744	-63.96%
		% Pre-ULFT	33.56%	32.50%	31.71%	30.86%	29.96%	29.00%	-	-
CII	Urinals	>=1 gpf	23,376	18,985	15,398	12,472	10,090	8,151	-15,226	-65.13%
		0.5 gpf	2,420	1,973	1,609	1,312	1,070	872	-1,548	-63.96%
		0.25 gpf	0	0	0	0	0	0	0	0
		0.125 gpf	14,977	22,401	28,390	33,661	38,286	42,927	27,951	186.63%
		0 gpf	1,347	1,744	2,063	2,348	2,601	2,863	1,517	112.62%
		% >=1 gpf	55.50%	42.09%	32.45%	25.05%	19.39%	14.87%	-	-

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Table E-5: Annual Active Savings by Program[(a)], MG

ID	Program Name	Units	Class	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	Total
1	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	SF	1	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	23	24	25	26	27	392
2	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	MF	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	40
3	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	CII	0	0	0	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	49
4	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	MF	2	5	7	9	11	13	12	12	12	11	11	10	10	10	9	9	9	8	8	8	8	7	7	7	7	6	229
6	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	CII	2	4	6	8	10	11	12	12	12	12	13	13	13	13	13	14	14	14	14	14	14	14	15	15	15	15	310
7	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	MF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	11
9	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	CII	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13
10	CII Urinal (1/8 gpf) Replacement	Urinal	CII	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	3	3	3	3	40
11	SFR Washer Rebate (WF <=4)	Washer	SF	1	1	2	3	3	4	5	6	6	7	8	8	9	10	11	11	11	11	11	11	11	11	11	11	11	11	204
12	MFR In-Unit Washer Rebate (WF <=4)	Washer	MF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Water Conservation Kits - Indoor	Kit	SF	8	17	25	33	41	49	56	64	72	79	87	94	100	107	114	121	127	134	141	147	154	161	167	174	181	187	2,640
14	Water Conservation Kits - Outdoor	Kit	SF	1	3	4	5	7	8	9	10	11	13	14	15	16	17	18	20	21	22	23	24	25	26	27	28	29	31	427
15	Water Conservation Kits - LivingWise	Kit	SF	3	5	7	10	12	14	16	18	20	22	24	26	27	29	31	32	33	35	36	38	39	40	42	43	44	46	692
16	Water Conservation Kits - Spray Valves	Kit	CII	2	4	5	7	8	10	12	13	15	16	18	19	21	23	24	26	27	29	30	32	34	35	37	38	40	42	568
17	Water Conservation Kits - Aerators/Showerheads	Kit	CII	1	1	2	2	3	3	4	5	5	6	6	6	7	7	7	8	8	8	9	9	9	10	10	10	10	11	167
18	CII Technologies	CCF	Irr.	4	8	12	16	20	24	27	31	35	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	845
19	SFR Turf Replacement	Square-foot	SF	9	18	27	36	46	55	64	74	84	93	94	95	96	97	97	98	99	100	101	103	104	105	106	107	107	108	2,123
20	MFR Turf Replacement	Square-foot	MF	2	4	7	9	11	14	16	19	21	24	24	24	25	25	25	25	26	26	26	27	27	27	28	28	28	28	545
21	CII Large Landscape Turf Replacement	Square-foot	Irr.	3	6	9	12	16	21	27	32	38	43	46	49	52	54	56	57	58	58	59	60	60	61	62	62	63	63	1,128
22	Rain Garden Addition	Square-foot	SF	0	1	1	1	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	75
23	SFR In-Line Drip Irrigation Conversion	Square-foot	SF	12	23	35	47	59	71	83	95	106	118	119	119	120	120	120	120	120	120	120	120	120	120	120	120	120	120	2,563
24	MFR In-Line Drip Irrigation Conversion	Square-foot	MF	1	2	3	5	6	8	10	12	14	15	16	17	18	18	18	18	18	18	18	18	18	18	18	18	19	19	366
25	CII In-Line Drip Irrigation Conversion	Square-foot	Irr.	3	6	10	14	19	24	28	33	38	43	45	47	49	50	51	52	53	55	56	57	58	59	60	61	62	63	1,100
26	SFR Smart Irrigation Controller Rebate	Device	SF	6	12	19	25	31	38	45	52	59	66	64	62	61	59	57	55	53	50	48	46	46	47	47	47	47	47	1,189
27	MFR Large Landscape Smart Irrigation Controller Rebate	Device	MF	8	17	25	35	45	55	65	75	85	95	97	99	102	102	103	104	105	106	107	108	110	111	112	112	113	114	2,212

ID	Program Name	Units	Class	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	Total
28	CII Large Landscape Irrigation Controller	Station	Irr.	8	14	21	29	37	46	54	62	70	78	80	82	83	84	84	85	85	86	86	87	87	88	88	89	89	90	1,793
29	SFR Irrigation Nozzle Replacement	Device	SF	1	1	2	3	3	4	5	6	6	7	7	7	7	8	8	8	8	8	8	8	8	8	9	9	9	9	167
30	MFR Irrigation Nozzle Replacement	Device	MF	1	3	4	5	6	8	9	10	12	13	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14	287
31	CII Large Landscape Irrigation Nozzle Replacement	Station	Irr.	1	1	2	2	3	4	4	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	8	8	8	143
32	Rainwater Capture - Rain Barrel <200	Barrel	SF	3	7	10	14	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	414
33	Rainwater Capture - Cistern >=200	Barrel	MF	0	1	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	70
34	Rainwater Capture - Cistern >=200	Barrel	CII	0	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	35
35	SFR Graywater Laundry to Landscape Rebate	Household	SF	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
36	Submetering - Other	Meter	MF	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	29
37	SFR Unmetered to Metered	Meter	MF	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	38
38	SFR Water Use Audit	Household	SF	7	12	17	20	23	23	23	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	578
39	MFR Water Use Audit	Property	MF	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
40	CII Large Landscape Water Audit	Property	Irr.	32	57	78	96	112	113	116	117	118	119	120	120	121	122	122	123	123	124	125	126	127	127	127	127	127	127	2,947
41	SFR Wireless Flow Monitor	Monitor	SF	49	54	59	65	70	74	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	1,947
42	SFR AMI Leak Alert	Household	SF	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	809
43	MFR (4 or fewer units) AMI Leak Alert	Property	MF	73	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	1,924
44	Water Use Monitoring - Water Calculator	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	Water Use Monitoring - Footprint Calculator	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	Water Use Monitoring - RSAT Kit/Home Survey Kit	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	In-School Education - Poster Contest	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	In-School Education - EarthCapades	Performance	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	In-School Education - Water-Wise	Kit	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	In-School Education - Classroom Visit	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	In-School Education - Teacher Training	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	Public Outreach	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	Water Efficient Landscaping - Conservation Garden	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	Water Efficient Landscaping - Education Classes	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	Water Efficient Landscaping - Garden Tours	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	Water Efficient Landscaping - Water-Wise Tool	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Certification - Green Business	Certification	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	Certification - QWEL	Certification	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	Program Name	Units	Class	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	Total
59	Affordability/Equity - Grants	Grant	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Affordability/Equity - Assistance Program	Grant	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61	Building Efficiency Program	CII Establishment	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62	Showerhead Replacement (<= 1.8 gpm)	Showerhead	SF	0	1	1	1	2	2	2	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	79
63	Showerhead Replacement (<= 1.8 gpm)	Showerhead	MF	0	0	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	48
64	Bathroom Direct Install	Toilet	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	Bathroom Direct Install	Toilet	MF	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	3	3	3	3	38
66	Irrigation System Flow Sensor Rebate	Controller	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
67	Irrigation System Flow Sensor Rebate	Controller	MF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
68	SFR Medium Cistern (501-999 gal) Rebate	Barrel	SF	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	40
69	SFR Large Cistern (1000+ gal) Rebate	Barrel	SF	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	43
70	CII Ozone Laundry Washer Rebate	Washer	CII	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	73
71	CII Commercial Kitchen Dishwasher Rebate	Dishwasher	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
72	CII Commercial Kitchen Spray Rinse Valve Rebate	Spray Valve	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	10
73	CII Commercial Kitchen Food Steamer Rebate	Food Steamer	CII	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
74	CII Restaurant Dipper Well Rebate	Dipper Well	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	CII Large Landscape Water Budget	Site	Irr.	442	446	450	453	457	461	465	469	473	476	480	483	486	490	85	85	85	85	85	85	85	85	85	85	85	85	7,548
76	Acoustic Hydrant Cap	Hydrant Cap	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regional Total				721	848	968	1,090	1,208	1,308	1,403	1,493	1,582	1,672	1,701	1,728	1,756	1,778	1,392	1,408	1,424	1,440	1,457	1,474	1,492	1,510	1,527	1,544	1,559	1,575	37,055
Regional Total, Single-Family				134	192	248	304	358	406	453	495	538	581	591	602	614	624	635	644	653	662	672	681	693	704	716	727	738	749	14,413
Regional Total, Multi-Family				90	107	123	142	161	179	195	211	227	243	246	250	253	255	256	257	259	260	262	264	265	267	268	269	270	271	5,853
Regional Total, CII Common Meter				6	11	16	21	26	31	34	37	40	43	46	48	51	54	56	59	61	63	66	68	70	72	74	76	78	81	1,286
Regional Total, Irrigation				492	538	580	623	663	692	721	750	778	806	817	827	838	846	445	448	451	454	457	461	464	467	469	471	473	474	15,504

(a) San Jose Municipal Water System - North San José – Alviso active savings cannot be broken out at the program level as the annual measures are applied to the whole San Jose service area. Total active savings for San Jose Municipal Water System - North San José – Alviso is estimated to be 0.08 MGD in 2050 based on the projected water demand relative to the entire San Jose agency demand.

Table E-6: Annual Program Budgets per $K

ID	Program Name	Units	Class	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	Total
1	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	SF	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	212
2	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	MF	2	1	1	2	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	28
3	Toilets - Conventional (>=3.5 gpf) to HET (1.28 gpf)	Toilet	CII	1	1	1	2	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27
4	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	MF	20	19	19	21	19	20	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	0	0	0	0	0	132
6	Toilets - ULFT (>=1.6 gpf) to HET (1.28 gpf)	Toilet	CII	26	29	29	31	30	30	11	9	9	11	9	9	11	9	9	11	9	9	11	9	9	9	9	9	9	9	369
7	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	MF	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	0	0	0	0	0	11
9	Toilets - HET (1.28 gpf) to HET+ (<=1.0 gpf)	Toilet	CII	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	0	0	0	0	0	11
10	CII Urinal (1/8 gpf) Replacement	Urinal	CII	2	2	2	3	2	2	3	2	2	3	2	2	3	2	3	3	3	3	3	3	3	3	3	3	3	3	69
11	SFR Washer Rebate (WF <=4)	Washer	SF	23	23	23	23	23	23	23	23	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	614
12	MFR In-Unit Washer Rebate (WF <=4)	Washer	MF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Water Conservation Kits - Indoor	Kit	SF	75	75	75	75	75	75	75	75	75	75	75	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	1,801
14	Water Conservation Kits - Outdoor	Kit	SF	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	404
15	Water Conservation Kits - LivingWise	Kit	SF	51	51	51	51	51	46	46	46	46	46	40	40	40	40	40	35	35	35	35	35	35	35	35	35	35	35	1,069
16	Water Conservation Kits - Spray Valves	Kit	CII	6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	83
17	Water Conservation Kits - Aerators/Showerheads	Kit	CII	21	15	15	15	15	15	15	15	15	15	11	11	11	10	10	10	10	10	10	10	8	8	8	8	8	8	309
18	CII Technologies	CCF	Irr.	21	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	570
19	SFR Turf Replacement	Square-foot	SF	800	808	816	824	832	840	849	858	868	878	888	899	910	921	933	946	959	972	986	1,001	1,016	1,016	1,016	1,016	1,016	1,016	23,882
20	MFR Turf Replacement	Square-foot	MF	160	165	166	168	174	175	177	179	180	182	184	186	188	190	192	194	201	204	206	209	211	211	211	211	211	211	4,950
21	CII Large Landscape Turf Replacement	Square-foot	Irr.	250	257	272	308	367	491	535	539	544	548	553	557	562	567	573	578	584	590	597	603	610	610	610	610	610	610	13,536
22	Rain Garden Addition	Square-foot	SF	20	27	27	28	28	21	22	22	22	22	23	23	23	24	24	24	25	25	25	26	26	26	26	26	26	26	640
23	SFR In-Line Drip Irrigation Conversion	Square-foot	SF	3	3	3	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	188
24	MFR In-Line Drip Irrigation Conversion	Square-foot	MF	10	12	12	22	22	22	22	22	22	22	22	22	23	23	23	23	23	23	23	23	23	23	23	23	23	23	554

ID	Program Name	Units	Class	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	Total
25	CII In-Line Drip Irrigation Conversion	Square-foot	Irr.	35	37	38	52	53	54	54	55	56	58	59	60	61	62	64	65	66	68	69	71	72	72	72	72	72	72	1,570
26	SFR Smart Irrigation Controller Rebate	Device	SF	66	66	66	67	67	71	71	71	72	72	51	52	52	52	52	52	52	53	53	53	53	53	53	53	53	53	1,530
27	MFR Large Landscape Smart Irrigation Controller Rebate	Device	MF	21	21	21	28	28	29	28	28	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	724
28	CII Large Landscape Irrigation Controller	Station	Irr.	33	26	27	34	34	41	34	35	35	35	42	36	36	36	36	44	37	37	38	38	45	38	38	38	38	45	957
29	SFR Irrigation Nozzle Replacement	Device	SF	7	7	7	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	204
30	MFR Irrigation Nozzle Replacement	Device	MF	28	28	29	29	29	29	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	759
31	CII Large Landscape Irrigation Nozzle Replacement	Station	Irr.	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	209
32	Rainwater Capture - Rain Barrel <200	Barrel	SF	798	796	796	801	796	796	802	796	796	802	796	797	802	797	797	802	797	797	803	797	797	797	797	797	797	797	20,747
33	Rainwater Capture - Cistern >=200	Barrel	MF	13	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	17	17	17	17	17	17	17	17	17	420
34	Rainwater Capture - Cistern >=200	Barrel	CII	10	8	8	8	8	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	220
35	SFR Graywater Laundry to Landscape Rebate	Household	SF	42	2	2	2	2	2	2	2	2	2	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	107
36	Submetering - Other	Meter	MF	7	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	119
37	SFR Unmetered to Metered	Meter	MF	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25
38	SFR Water Use Audit	Household	SF	70	70	71	71	71	71	72	72	72	72	72	72	72	72	72	72	72	72	73	73	73	73	73	73	73	73	1,870
39	MFR Water Use Audit	Property	MF	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	158
40	CII Large Landscape Water Audit	Property	Irr.	77	92	93	100	101	102	104	104	105	106	107	107	107	108	109	109	110	110	113	114	114	114	114	114	114	114	2,761
41	SFR Wireless Flow Monitor	Monitor	SF	1,118	1,222	1,322	1,422	1,522	1,622	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	1,722	42,668
42	SFR AMI Leak Alert	Household	SF	772	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	3,703
43	MFR (4 or fewer units) AMI Leak Alert	Property	MF	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	93
44	Water Use Monitoring - Water Calculator	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	Water Use Monitoring - Footprint Calculator	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	Water Use Monitoring - RSAT Kit/Home Survey Kit	Household	SF	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	62
47	In-School Education - Poster Contest	Household	SF	25	25	25	25	25	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	694
48	In-School Education - EarthCapades	Performance	SF	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	2,543	66,109
49	In-School Education - Water-Wise	Kit	SF	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	373	9,685

ID	Program Name	Units	Class	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	Total
50	In-School Education - Classroom Visit	Household	SF	49	49	49	49	49	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	1,377
51	In-School Education - Teacher Training	Household	SF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
52	Public Outreach	Household	SF	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	311	1,656	311	311	311	311	311	311	311	311	9,438
53	Water Efficient Landscaping - Conservation Garden	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	Water Efficient Landscaping - Education Classes	Household	SF	17	17	17	18	18	18	18	18	18	18	18	18	18	18	18	19	19	19	19	19	19	19	19	19	19	19	475
55	Water Efficient Landscaping - Garden Tours	Household	SF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	36
56	Water Efficient Landscaping - Water-Wise Tool	Household	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	Certification - Green Business	Certification	CII	9	9	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10	11	11	11	11	11	11	11	11	11	260
58	Certification - QWEL	Certification	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	Affordability/Equity - Grants	Grant	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	Affordability/Equity - Assistance Program	Grant	SF	52	152	152	152	152	152	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	2,813
61	Building Efficiency Program	CII Establishment	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62	Showerhead Replacement (<= 1.8 gpm)	Showerhead	SF	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	99
63	Showerhead Replacement (<= 1.8 gpm)	Showerhead	MF	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	3	2	62
64	Bathroom Direct Install	Toilet	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	Bathroom Direct Install	Toilet	MF	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	53
66	Irrigation System Flow Sensor Rebate	Controller	SF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
67	Irrigation System Flow Sensor Rebate	Controller	MF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
68	SFR Medium Cistern (501-999 gal) Rebate	Barrel	SF	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	150
69	SFR Large Cistern (1000+ gal) Rebate	Barrel	SF	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	132
70	CII Ozone Laundry Washer Rebate	Washer	CII	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	55
71	CII Commercial Kitchen Dishwasher Rebate	Dishwasher	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
72	CII Commercial Kitchen Spray Rinse Valve Rebate	Spray Valve	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10

ID	Program Name	Units	Class	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	Total
73	CII Commercial Kitchen Food Steamer Rebate	Food Steamer	CII	1	1	1	1	1	3	1	1	1	1	3	1	1	1	1	3	1	1	1	1	3	1	1	1	1	3	40
74	CII Restaurant Dipper Well Rebate	Dipper Well	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	CII Large Landscape Water Budget	Site	Irr.	57	58	58	58	59	59	60	60	60	61	61	62	62	62	20	20	20	20	20	20	20	20	20	20	20	20	1,079
76	Acoustic Hydrant Cap	Hydrant Cap	CII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regional Total				8,090	7,630	7,758	7,970	8,136	8,381	8,453	8,458	8,478	8,512	8,498	8,499	8,534	8,543	8,525	8,566	8,573	9,945	8,642	8,657	8,693	8,683	8,683	8,683	8,683	8,693	220,966
Regional Total, Single-Family				7,258	6,779	6,887	7,007	7,111	7,220	7,283	7,288	7,298	7,315	7,296	7,297	7,314	7,321	7,334	7,349	7,357	8,716	7,392	7,402	7,420	7,419	7,419	7,419	7,419	7,420	190,740
Regional Total, Multi-Family				272	281	283	306	309	311	297	295	297	303	301	303	309	308	310	316	320	323	329	329	332	332	332	332	332	332	8,092
Regional Total, CII Common Meter				80	71	71	76	72	74	56	52	53	57	50	49	52	48	48	54	49	50	54	50	49	47	47	47	47	49	1,452
Regional Total, Irrigation				480	499	517	581	644	776	817	823	830	838	851	851	858	866	832	847	848	856	868	876	892	885	885	885	885	892	20,682

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BAWSCA

Bay Area Water Supply & Conservation Agency

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Hazen

Hazen and Sawyer
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APPENDIX D

City of Sunnyvale
2025 Urban Water Management Plan
Projected Demands Provided to Wholesale Agencies

Anticipated Supplies (AF) or % of Demand	2025	2030	2035	2040	2045	2050
Groundwater Pumping	141	7,997	7,997	7,997	7,997	7,997
Valley Water Treated Water	7,835	9,341	11,222	11,928	12,163	12,410
SFPUC Purchased Water	11,775	12,006	12,488	13,350	14,090	14,090
Local Surface Water	-	-	-	-	-	-
Recycled Water Deliveries	896	1,008	1,120	1,232	1,809	2,385
Other Water - Describe	-	-	-	-	-	-
Total - Calculated	20,646	30,352	32,827	34,507	36,058	36,881

NOTE: Supplies shown in AF. These values represent demands after passive conservation savings.

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APPENDIX E

City of Sunnyvale
2025 Urban Water Management Plan
SBX7-7 Compliance

SECTION 5 – BASELINES AND TARGETS

The Water Conservation Bill of 2009 (SBX7-7) required a statewide reduction in urban per capita water use by 20% by the year 2020. To achieve this statewide objective, the California Legislature required each water retail supplier to develop a 2020 water use target based on population to help the state collectively achieve a 20% reduction. Reporting for SBX7-7 began in the 2010 UWMP with the calculation of the Baseline, the 2015 Interim Target, and the 2020 Target, each in units of gpcd. In the 2015 UWMP, each retail agency was required to demonstrate compliance with its 2015 Interim Target to ensure they were on track to meet the goal of 20% reduction by 2020. In the 2020 UWMP, each retail agency is required to demonstrate compliance with its 2020 Target. The Baseline, 2015 Interim and 2020 Targets, and 2020 Compliance are calculated through completion of the SBX7-7 Verification Form prepared by DWR, submitted as **Appendix E** of the 2020 UWMP, and summarized in **Table 5-1** and **Table 5-2**.

5.1 Service Area Population

Accurate service area population estimates are necessary to calculate representative daily per capita water use. The 2020 population for the City's service area is based on DOF estimates for the City of Sunnyvale, as described in **Section 3.4**. Historical populations from 1995-2007 using DWR methodology and DOF data were used to calculate baseline water use. Population estimates used for SBX7-7 calculations are included in **SBX7-7 Table 3** (**Appendix E**).

5.2 Gross Water Use

Gross Water Use is defined in Water Code Section 10608.12 (h) as the total volume of water entering the distribution system of a retail water supplier with four possible deductions:

- Recycled water,
- Water placed in long term storage,
- Water exported for use by another urban water supplier, and/or
- Agricultural water use.

The City did not make any deductions to their reported total volume of water entering the distribution system. Gross water use is categorized by supply source and presented in **SBX7-7 Table 4** and **SBX7-7 Table 4-A** in **Appendix E**.

5.3 Baselines and Targets Summary

Baselines and targets were established as part of the 2010 UWMP. For recycled water retailers, there was the option, if eligible, to use a base period of up to 15 years for calculating the Base Daily Water Use. The City was not eligible for the 15-year base period, so the baseline water use was calculated using a 10-year base period. The City selected the period of 1995-2004 as the 10-year base period. The five-year period 2003-2007 was used to calculate the minimum water use reduction requirement. Baseline periods are included in **SBX7-7 Table 1** (**Appendix E).**

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The baseline per capita water use for each period was calculated using gross water use totals for each year and the historical service area population estimates. Calculations are described and presented in **SBX7-7 Table 5** in **Appendix E**. Because the 5-year baseline per capita water use was greater than 100 gpcd, the minimum water use reduction requirement was also calculated. This calculation was used to determine whether the City's 2020 water use target meets the minimum water use reduction requirement (per section 10608.22 of the California Water Code).

Four methods are allowed by Water Conservation Bill of 2009 for calculating the 2020 water use targets. Method 1 states that the target per capita daily water use in 2020 is 80% of the 10-year baseline per capita daily water use. This method was used because it was the most applicable to the available data. The 2020 per capita water use target cannot exceed 95% of the five-year compliance baseline water use. The calculated Method 1 2020 target of 139 gpcd is below the minimum water use target of 158 gpcd (95% of the City's 5-year average baseline), therefore no adjustment to the 2020 target is necessary. **Table 5-1** presents a summary of the baselines, targets, and Method 1 2020 minimum water use reduction target.

Table 5-1: Baselines and Targets Summary

Baseline Period	Start Year	End Year	Average Baseline Water Use[1]	Confirmed 2020 Target[1,2]
10-year	1995	2004	174	139
5-year	2003	2007	167	

Notes:
1. All values are in gpcd.
2. Method 1 2020 minimum water use reduction based on 80% of the 10-year baseline.

5.4 2020 Compliance Daily per Capita Water Use

The City's 2020 per capita water use is 115 gpcd using the 2020 gross water use (potable and recycled water) detailed in **Section 4** and the DOF population estimates for 2020. This is well below the 2020 target of 139 gpcd; thus, achieving compliance with SBX7-7.

As mentioned in **Section 4**, water use for 2020 was affected by the COVID-19 pandemic. Although 2020 water use by sector showed a slight decline in commercial water compared to 2015, that decrease was offset by the increase in residential water use. Since the total gross water use is assumed to be representative of a non-pandemic year, no adjustments were made to the 2020 gpcd.

Table 5-2 presents the final 2020 water use and confirmed compliance with SBX7-7.

Table 5-2: 2020 Compliance

Actual 2020 GPCD	2020 Total Adjustments	Adjusted 2020 GPCD	2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020? Y/N
115	0	115	139	Y

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SB X7-7 Table 0: Units of Measure Used in 2020 UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*
NOTES:

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SB X7-7 Table 2: Method for 2020 Population Estimate	
Method Used to Determine 2020 Population (may check more than one)	
☑	**1. Department of Finance** (DOF) or **American Community Survey** (ACS)
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

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SB X7-7 Table 3: 2020 Service Area Population	
2020 Compliance Year Population	
2020	156,503
NOTES:	

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SB X7-7 Table 4: 2020 Gross Water Use							
Compliance Year 2020	**2020 Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**2020 Deductions**					**2020 Gross Water Use**
		Exported Water *	**Change in Dist. System Storage*** (+/-)	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use***	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	
	20,187			-		-	**20,187**
*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.							
NOTES:							

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SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Well
This water source is *(check one)* **:**	
☑	The supplier's own water source
☐	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	87	-	87

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s) Meter Error Adjustment

Complete one table for each source.

Name of Source	Recycled Water
This water source is *(check one)* **:**	
☑	The supplier's own water source
☐	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	383		383

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES: Although 383 AF of recycled water was produced at the WPCP, approximately 611 AF of purchased potable water from SFPUC was added to the recycled water distribution system, making the total recycled water demand 994 AF. Approximately 713 AF was distributed within City limits, with the remaining 281 AF distributed to services outside City limits (Moffett Field and the Apple® Campus 2)

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SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	SFPUC
This water source is *(check one)* **:**	
☐	The supplier's own water source
☑	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	11,052		11,052

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

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SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Valley Water
This water source is *(check one)* **:**	
☐	The supplier's own water source
☑	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	8,665		8,665

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

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SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)		
2020 Gross Water *Fm SB X7-7 Table 4*	**2020 Population** *Fm SB X7-7 Table 3*	**2020 GPCD**
20,187	156,503	**115**
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SB X7-7 Table 9: 2020 Compliance

Actual 2020 GPCD[1]	Optional Adjustments to 2020 GPCD (Enter "0" if Adjustment Not Used)			TOTAL Adjustments[1]	Adjusted 2020 GPCD [1] *(Adjusted if applicable)*	2020 Confirmed Target GPCD [1, 2]	**Did Supplier Achieve Targeted Reduction for 2020?**
	Extraordinary Events[1]	Weather Normalization[1]	Economic Adjustment[1]				
115	-	-	-	-	115	156	**YES**

[1] *All values are reported in GPCD*

[2] ***2020 Confirmed Target GPCD*** *is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.*

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APPENDIX F

City of Sunnyvale
2025 Urban Water Management Plan
2021 Santa Clara Valley Water District Groundwater Management Plan

The 2021 Santa Clara Valley Water District Groundwater Management Plan can be downloaded at:

https://assets.valleywater.org/files/2021_GWMP.pdf

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APPENDIX G

City of Sunnyvale
2025 Urban Water Management Plan
Water Conservation Plan

CHAPTER 7

ENVIRONMENTAL MANAGEMENT

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The Environmental Management chapter contains information on the following topics:

- **Water Supply** — information on various sources of potable and nonpotable water, and policies to ensure adequate supplies, water conservation efforts and water quality.
- **Wastewater Collection and Treatment** — information on the wastewater collection system and the Water Pollution Control Plant and policies for future treatment issues.
- **Urban Runoff** — Information on sources of urban runoff and treatment methods, as well as policies to minimize quantity of urban runoff and improve quality.
- **Air Quality** — information on sources air pollution and policies for addressing this pollution through transportation and land use.
- **Solid Waste** — information on collection, recycling programs and disposal and policies to reduce future waste and increase recycling efforts.



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WATER SUPPLY

GOAL EM-1
ADEQUATE WATER SUPPLIES

ACQUIRE AND MANAGE WATER SUPPLIES SO THAT EXISTING AND FUTURE REASONABLE DEMANDS FOR WATER, AS PROJECTED IN THE 20-YEAR FORECAST, ARE RELIABLY MET. *(Previously Water Resources Goal A / Adopted in 2008)*

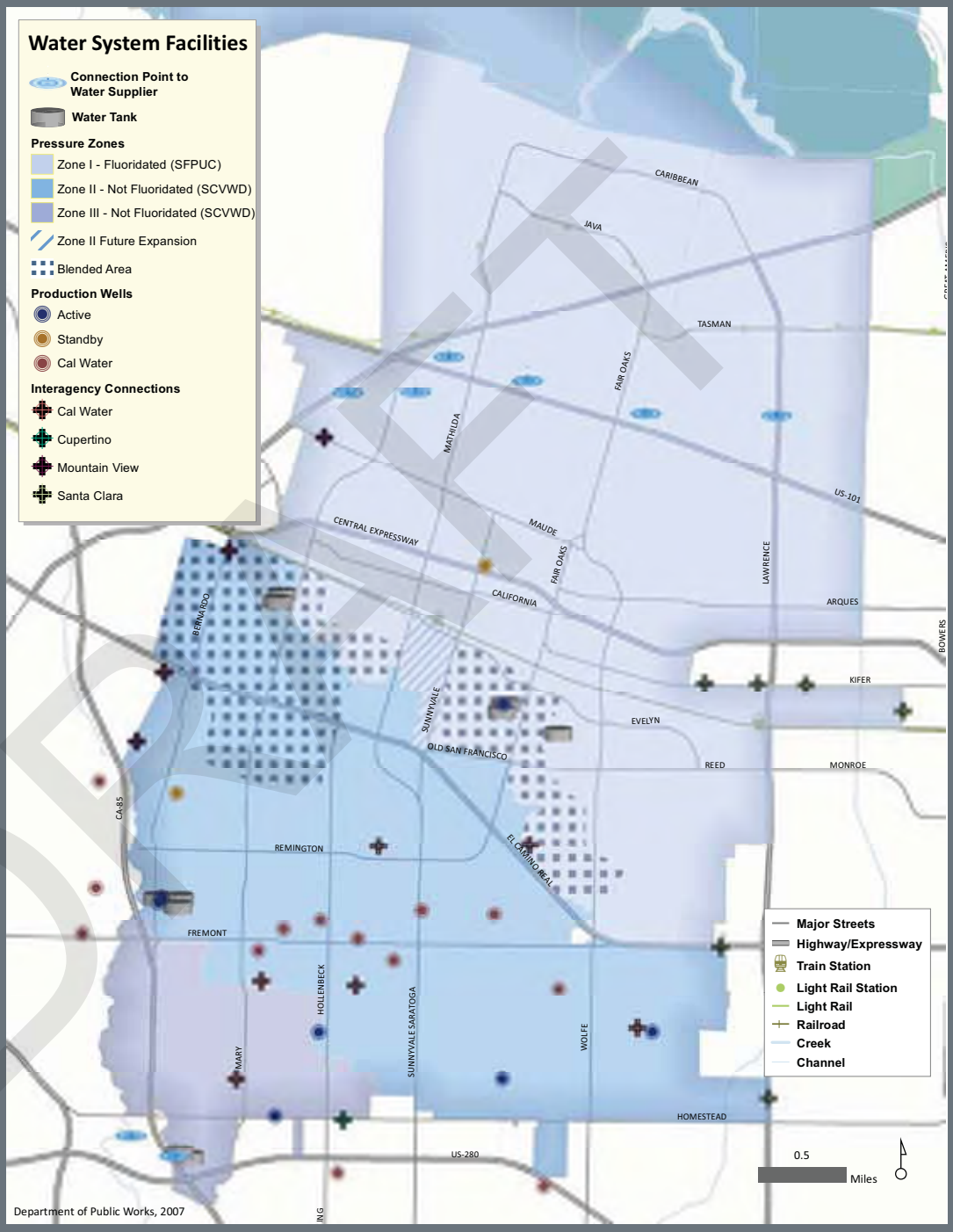
The City has several sources of potable water to meet expected water demand. These include local groundwater wells, imported supplies from the San Francisco Public Utilities Commission (SFPUC) and Santa Clara Valley Water District (SCVWD), plus interagency connections with other local water suppliers for emergencies. Temporary interruptions of water supply from one source can be readily offset by increasing supply from the other available sources.

In order to further manage supplies, the City uses recycled water for nonpotable use and water conservation efforts. Future challenges will include the possible expansion of the recycled water system and new capital projects to address the aging water infrastructure.

During the last 10 years, on average, SFPUC and SCVWD have together supplied approximately 90 percent of the total potable water used in the City. Of the remaining 10 percent, about six percent of the potable water demand has been supplied by seven City-owned and operated wells. To offset potable water demand for landscape irrigation and other non-potable uses, the remaining four percent has been supplied by recycled water produced by the Sunnyvale Water Pollution Control Plant (WPCP).

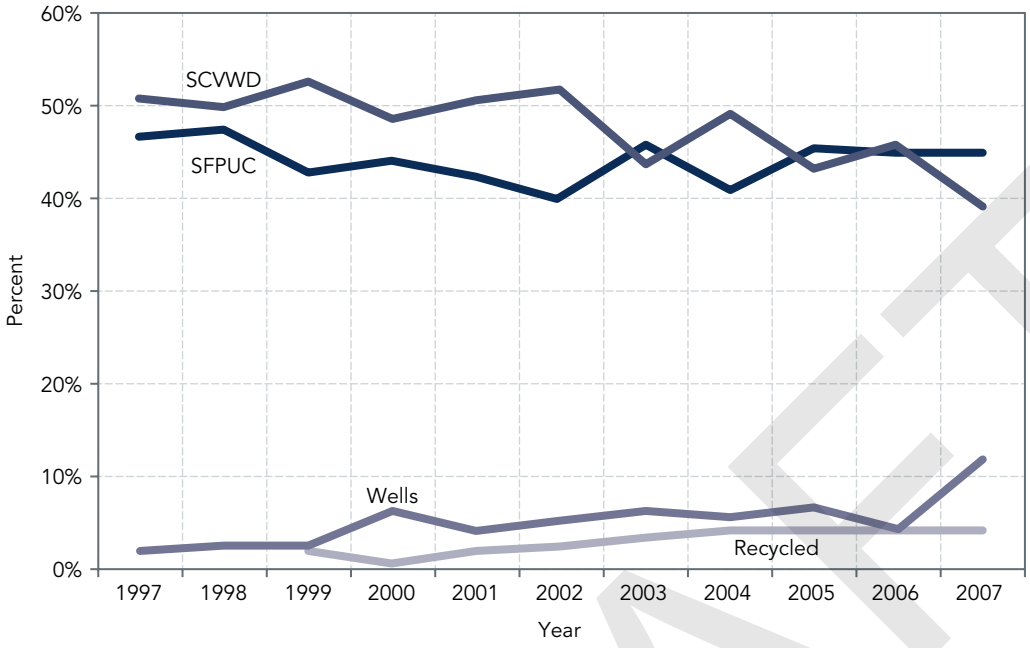
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Figure 7-1:
Water System
Facilities Map



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Figure 7-2: Historical Percentage of Annual Water Deliveries by Source



Source: Department of Public Works, 2007

San Francisco Public Utilities Commission (SFPUC)

SFPUC uses the Hetch-Hetchy Reservoir outside of Yosemite Valley as its primary water source. Maximum and minimum usages of water are stipulated in the City's current individual contract with SFPUC. If the overall usage by all suburban retail customers exceeds the maximum available level, the maximum amount of water available to Sunnyvale would be reduced based on the master agreement that covers both the City and other SFPUC wholesale customers. The City would then rely on one of its other water supply sources (Santa Clara Valley Water, City Wells, Recycled Water) to meet the demand.

Under the current contract and barring catastrophic events, the SFPUC believes it can meet the demands of its retail and wholesale customers in years of average and above-average precipitation.

Santa Clara Valley Water District (SCVWD)

The current contract calls for Sunnyvale to submit proposed water delivery schedules to SCVWD for three-year periods, indicating amounts of treated water desired by the City during each of the three years. SCVWD can make reductions to the water requested by Sunnyvale consistent with its ability to deliver water to all its customers.

To maintain water supply reliability and flexibility, SCVWD's water supply is from a variety of sources including local groundwater, imported water, local surface water, and recycled water. The District has a program to optimize the use of groundwater and surface water and prevent groundwater overdraft and land subsidence.

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City Wells

Sunnyvale has seven operating wells that are kept in full production capacity and one well maintained in stand-by mode for emergencies. The seven operating wells are used as a supplemental source to the imported SFPUC and SCVWD water supplies. Well water is an important component of the City's water shortage contingency plan, as indicated in the Urban Water Management Plan (UWMP).

SCVWD, charged with alleviating land surface subsidence and monitoring of groundwater levels and withdrawal rates, has authority over the amount of water that can be extracted from local wells. The allowable withdrawal of groundwater by Sunnyvale depends on a number of factors, including withdrawals by other water agencies, quantity of water recharged and carryover storage from the previous year.

Cal Water provides service from its own wells and facilities to about a dozen service area pockets in Sunnyvale many of which are connected with the City's system.

Subsidence: Subsidence is the motion of a surface (usually, the Earth's surface) as it shifts downward relative to a fixed point such as sea-level. The opposite of subsidence is uplift, which results in an increase in elevation. Subsidence can occur when too much groundwater is pumped out, causing the land above to sink.

Recycled Water

The Water Pollution Control Plant (WPCP) produces approximately 13 million gallons per day (mgd) of high-quality advanced secondary-treated wastewater. A portion of this water is further treated to "disinfected tertiary" recycled water standards, and can be used for approved non-potable purposes, such as landscape irrigation, industrial cooling towers and construction. Recycled water is a reliable, drought-resistant, City-controlled supply that helps conserve and augment the potable water supply *(See Figure 7-3, Existing Recycled Water Facilities)*.

See **GOAL EM-7 (Effective Wastewater Treatment)** for discussion and policies relating to the Water Pollution Control Plant and its production of recycled water.

Recycled water is currently delivered to primarily irrigation customers. Most recycled water usage occurs between April and October, with usage demand peaking during the months of July and August.

The WPCP can normally meet all recycled water demand, although seasonal changes in the WPCP's oxidation ponds occasionally make it difficult to meet the more stringent water quality requirements for disinfected tertiary recycled water versus discharge to the Bay. Modest increases in demand can be accommodated by the existing production and delivery systems.

Future Water Supply Issues

According to the annually-updated 20-year water forecast, the City has adequate supply commitments and facilities to reliably meet the projected water needs of its residents and businesses for the foreseeable future.

Innovative demand-side influence programs can help balance future supply versus demand. Techniques such as water banking, water transfers, plumbing retrofits, landscaping with low-water using plants, rate structures encouraging conservation, and other more restrictive demand side management options could be put into effect if needed. These measures, together with increased use of recycled water for non-potable purposes, appear adequate to ensure sufficient water supply to meet the foreseeable needs of the future.

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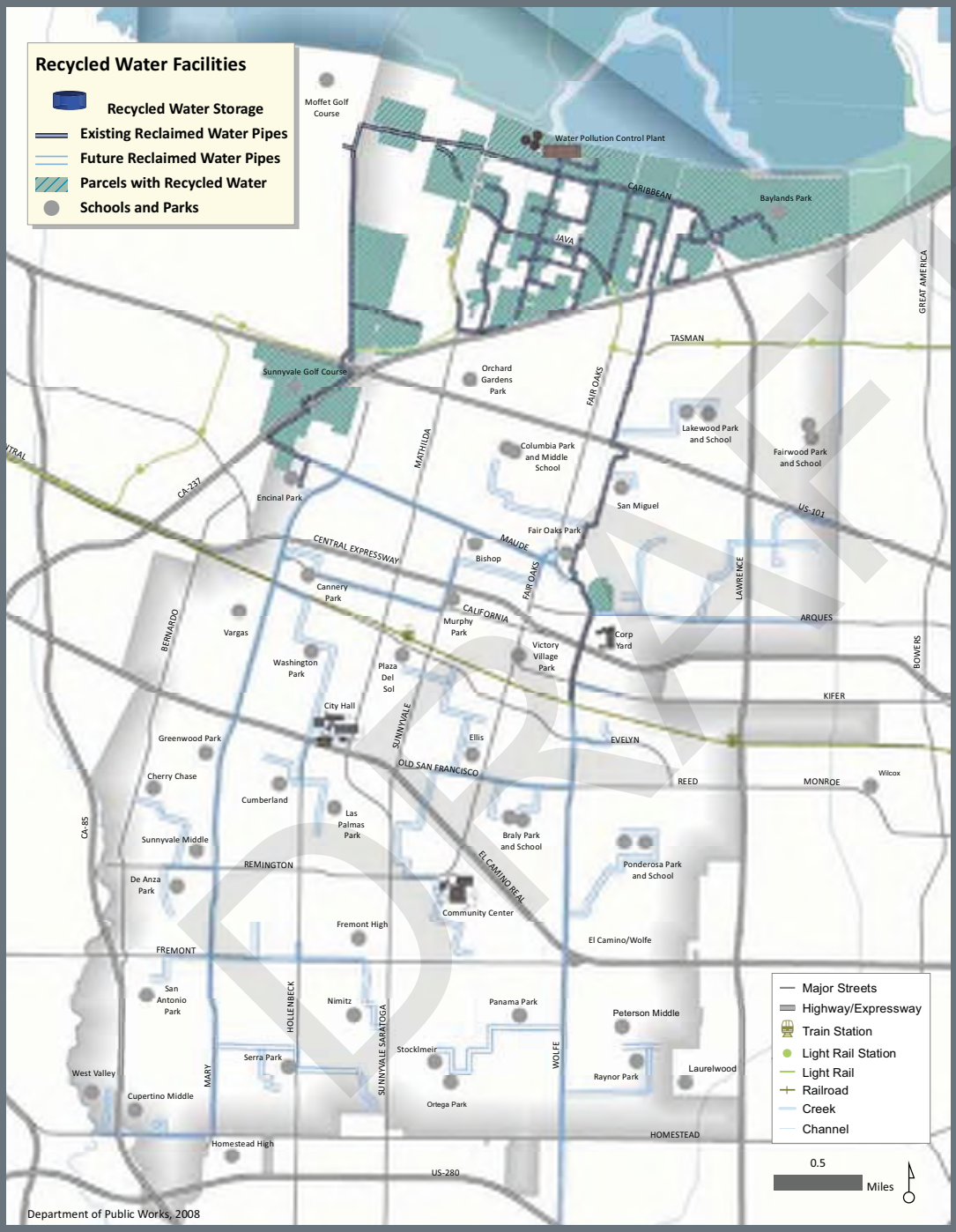


Figure 7-3:
Recycled Water
System Map

The City will also continue to address the following:

- Replacement and repair of City water supply infrastructure and City wells.
- Coordination with SFPUC and SCVWD to ensure their infrastructure is repaired and maintained adequately.
- Planning for the possibility of an earthquake and its effect on the levees and the water system.
- Temporary loss of water supplies from SCVWD, which could be replaced in the short term by a combination of increased production from City wells and an increase in SFPUC supply.
- Increased storage and system capacity for recycled water supply to facilitate significant increases in recycled water production. The WPCP's Strategic Implementation Plan (SIP) will include an evaluation of recycled water production in the context of the overall future needs of the plant.

See **GOAL SN-1 (Acceptable Levels of Risk for Natural and Human-Caused Hazards)** for discussion and policies relating to earthquake hazards and mitigation.

POLICY EM-1.1 MANAGE WATER SUPPLY TO MEET DEMANDS FOR POTABLE WATER THROUGH THE EFFECTIVE USE OF WATER SUPPLY AGREEMENTS. *(Previously Water Resources Policy A.1.)*

- EM-1.1a Investigate possibilities to increase well water sources within the City. (Previously Water Resources Action Statement A.1c)

POLICY EM-1.2 MAXIMIZE RECYCLED WATER USE FOR ALL APPROVED PURPOSES BOTH WITHIN AND IN AREAS ADJACENT TO THE CITY, WHERE FEASIBLE. *(Previously Water Resources Policy A.2.)*

See **GOAL EM-7 (Effective Wastewater Treatment)** for policies relating to the production of recycled water.

- EM-1.2a Update the 2000 Recycled Water Master Plan to provide a current roadmap for potential expansions to the City's recycled water system. *(Previously Water Resources Action Statement A.2f)*
- EM-1.2b Pursue opportunities for external funding for existing and future recycled water projects by supporting the efforts of regional water quality and recycling organizations such as BARWRP as they seek and apply for funding for expansion and continued support of recycled water and water quality in the region. *(Previously Water Resources Action Statement A.2h)*

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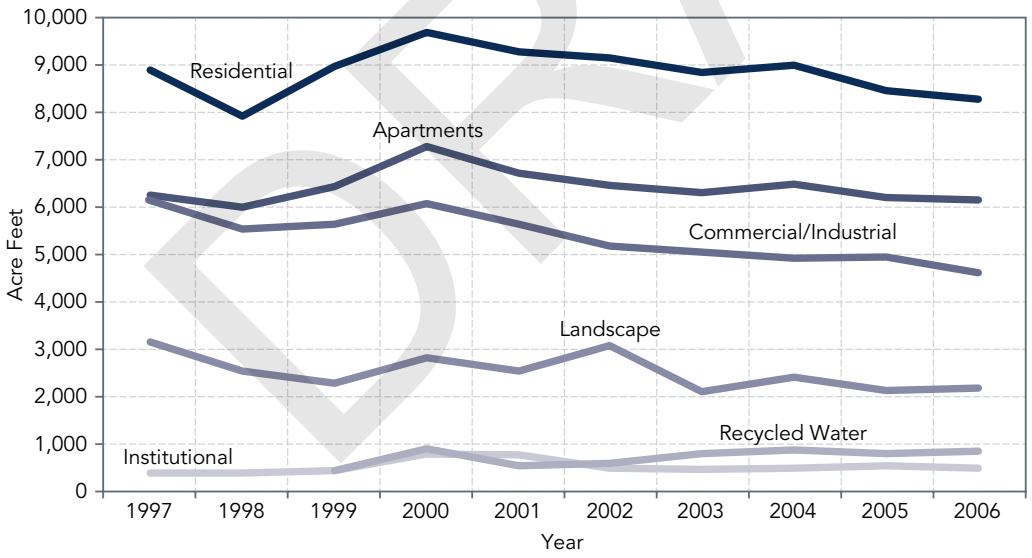
POLICY EM-1.3 PROVIDE ENOUGH REDUNDANCY IN THE WATER SUPPLY SYSTEM SO THAT MINIMUM POTABLE WATER DEMAND AND FIRE SUPPRESSION REQUIREMENTS CAN BE MET UNDER BOTH NORMAL AND EMERGENCY CIRCUMSTANCES. *(Previously Water Resources Policy A.3)*

GOAL EM-2
WATER CONSERVATION

PROMOTE MORE EFFICIENT USE OF THE CITY'S WATER RESOURCES TO REDUCE THE DEMANDS PLACED ON THE CITY'S WATER SUPPLIES. *(Previously Water Resources Goal B / Adopted in 2008)*

The City currently provides water in six broad categories: multi-family residential, single-family residential, institutional, landscape, commercial/industrial (incorporating all non-residential accounts not classified as landscape) and users of recycled water (Figure 7-3).

Figure 7-4: Annual Water Consumption by Use Category



Source: Department of Public Works, 2007

From 1987 to 1992, California experienced a prolonged drought, with severe water shortages and water rationing in Santa Clara County. Through the cooperative efforts of water retailers and their customers, Santa Clara County endured the drought with minimal economic and aesthetic impacts. Between 1984 and 1993, the City experienced a decrease in water consumption, primarily due to water conservation in the residential, commercial, and industrial sectors. Some of the demand management practices that were used to maximize the availability of water supply during the drought, such as

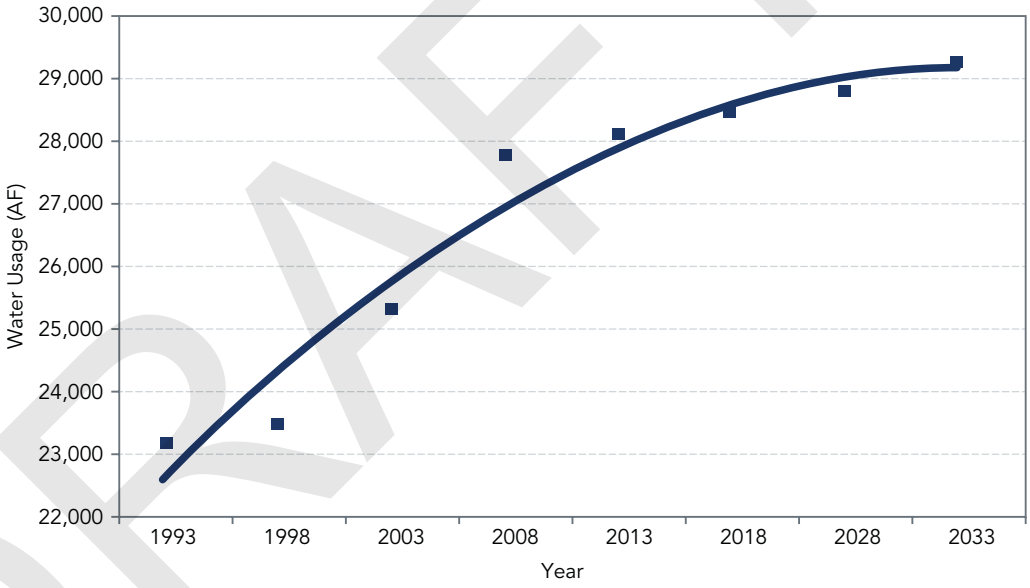
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inverted rates and water Best Management Practices, continue to this day. On-going water conservation efforts were able to reduce potable water consumption from 161 gallons per capita per day in 2000 to 139 gallons per capita per day in 2006, a 13.6 percent reduction for residential customers. Demand in the commercial/industrial sector remained flat with a slight decline in 2006.

The Sunnyvale 2005 Urban Water Management Plan is available at *GeneralPlan.inSunnyvale.com*

Water use varies depending on weather, seasonal climatic patterns, business conditions and the economy. Long-term trends in water requirements are valuable in projecting future supply needs. Figure 7-5 illustrates past, current and projected total water usage through 2030. Additional details on the current and planned water supplies to meet these demands are provided in the Sunnyvale Urban Water Management Plan.

Figure 7-5: Historic and Projected Water Demand



Source: Department of Public Works, 2007

The City uses a variety of demand management measures to assist in meeting this projected demand. Many of the Demand Management Measures (DMMs) offered by Sunnyvale are actually programs run by or coordinated through Santa Clara Valley Water District (SCVWD). The programs have been either funded through the wholesale water rates paid by Sunnyvale, or directly reimbursed by the City. The DMMs implemented by the City, water usage restrictions during normal and drought years and other details can be found in the Urban Water Management Plan.

See **Goal EM-1 (Adequate Water Supplies)** and Goal EM-7 (Effective Wastewater Treatment) for more information about the City's recycled water system.

Conservation measures include the following:

- Inclining block tier rate structure that penalizes excessive water consumption
- Conservation efforts consistent with industry Best Management Practices (BMPs)
- Recycled water program to replace the use of potable water for non-potable uses where possible.

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The City also has a drought response based on the Sunnyvale Water Conservation Plan. This plan, adopted in 1977 and updated in 1989, includes mandatory and voluntary water use restrictions associated with different levels of reduction, rate block adjustments for each level, and approaches for enforcement.

The City will continue to plan and coordinate its water needs with regional and local wholesalers and retailers for best management of available water supplies. By 2030 the City expects to save almost 800 acre feet of water per year through conservation measures.

Additional information on water conservation measures and programs can be found in on the SCVWD website. The SFPUC also has corresponding plans for the City and County of San Francisco.

POLICY EM-2.1 LOWER OVERALL WATER DEMAND THROUGH THE EFFECTIVE USE OF WATER CONSERVATION PROGRAMS IN THE RESIDENTIAL, COMMERCIAL, INDUSTRIAL AND LANDSCAPING ARENAS. *(Previously Water Resources Policy B.1)*

One acre foot of water = 325,851 gallons. 800 acre feet of water = approximately 260 million gallons of water.

GOAL EM-3
RELIABLE AND SAFE WATER DISTRIBUTION

PROACTIVELY MAINTAIN THE WATER DISTRIBUTION SYSTEM INFRASTRUCTURE TO ENSURE THE RELIABLE AND SAFE DELIVERY OF WATER UNDER NORMAL AND EMERGENCY CONDITIONS TO BOTH CURRENT AND FUTURE CUSTOMERS. *(Previously Water Resources Goal C / Adopted in 2008)*

The City owns, operates, and maintains a water supply and distribution system that includes connections with City suppliers and neighboring water utilities. Although not obvious, ground elevations in Sunnyvale vary from sea level at the north end of the City to 300 feet above sea level at the southwest corner. Because of this elevation difference, the water system is broken up into a series of three pressure zones (Figure 7-1, Water System Facilities).

Within the City's service area, some pocketed areas adjacent to Fremont Avenue and Sunnyvale-Saratoga Road receive water from Cal Water. These areas were formerly part of the county, but have been annexed by Sunnyvale. Cal Water produces water from its own wells, which meets all federal and state quality requirements. The City has provided six emergency connections to Cal Water service areas to improve fire flows and reliability, and all fire hydrants have been replaced to conform to City standards.

Perhaps the largest water system issue for the City is the need for significant and on-going investment in improvements to the water system infrastructure. A significant portion of the City's investment in water system infrastructure is represented by the transmission and distribution pipelines. Approximately 80 percent of the 330 miles of transmission and distribution pipelines and related facilities were constructed in the 1960s and are

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potentially approaching the end of their estimated 50 year service life. While actual service life varies depending on site specific factors, utility services provided today are "using up" infrastructure resources which must be replaced to serve future customers.

POLICY EM-3.1 MAINTAIN A PREVENTIVE MAINTENANCE PROGRAM THAT PROVIDES FOR RELIABILITY OF POTABLE AND RECYCLED WATER SYSTEMS. *(Previously Water Resources Policy C.1)*

POLICY EM-3.2 MAINTAIN A PROACTIVE LONG RANGE INFRASTRUCTURE PLAN THAT IDENTIFIES SCHEDULES AND FUNDS AND IMPLEMENTS NEEDED SYSTEM UPGRADES AND REPLACEMENTS BEFORE FACILITIES EXCEED THEIR EFFECTIVE USEFUL LIVES. *(Previously Water Resources Policy C.2)*

POLICY EM-3.3 MAINTAIN AN UP-TO-DATE EMERGENCY WATER OPERATIONS PLAN. *(Previously Water Resources Policy C.3)*

GOAL EM-4
ADEQUATE WATER QUALITY

ENSURE THAT ALL WATER MEETS STATE AND FEDERAL STANDARDS FOR AESTHETICS, QUALITY AND HEALTH. *(Previously Water Resources Goal D/ Adopted In 2008)*

The principal law governing drinking water safety in the United Stated is the Safe Drinking Water Act (SDWA). Enacted in 1974, the SDWA requires the Environmental Protection Agency (EPA) to establish comprehensive national drinking water regulations and to set enforceable standards for health-related drinking water contaminants.

Water delivered in the City originates from different sources and is therefore subject to different water quality conditions. Waters from different sources blend within the distribution system, depending on the daily demand, seasonal quality and relative quantity fluctuations, and temporary interruptions due to maintenance activities, resulting in water quality variances. In all cases the City's water quality meets or exceeds all federal and state requirements.

The City conducts an extensive water quality monitoring program in compliance with all applicable state and federal requirements. Over 2,000 samples are collected each year from the distribution system, imported sources, wells in operation, storage tanks, and/or household taps, depending on the constituent of interest. Samples are analyzed by either the City's state-certified laboratory or an outside state-certified laboratory. The City has been in consistent compliance with the requirements of its water quality monitoring program since it was instituted in 1988.

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The California Department of Public Health (CDPH) requires the City to distribute to all customers an Annual Water Quality Report. This report provides information on contaminants that may be present in the three source waters and in the distribution system. Testing has consistently shown that the water provided by the City meets established water quality standards.

The SFPUC completed construction of its new, system-wide fluoridation facility in 2005. Beginning in November 2005, all water delivered from the SFPUC was fluoridated. SCVWD does not currently fluoridate its water, though it is currently studying the feasibility of doing so. The City does not fluoridate its well water. As a result, some areas of Sunnyvale receive fluoridated water (the northern part of the City approximately north of El Camino Real), other areas receive non-fluoridated water (southern portion), and some areas receive a mixture. City staff manages the water system to provide consistent concentrations of fluoride by keeping the SFPUC and SCVWD service areas separated as much a possible.

The SDWA regulations have continued to evolve as more monitoring data have been collected by water systems, monitoring and detection capabilities have improved, and new constituents of concern have been identified. City staff continues to closely track new and proposed regulations and update monitoring and analyses accordingly.

POLICY EM-4.1 MAINTAIN AND UPDATE A COMPREHENSIVE WATER QUALITY-MONITORING PROGRAM THAT MEETS OR EXCEEDS ALL STATE AND FEDERAL REQUIREMENTS, WHILE ALSO MEETING SPECIFIC CITY AND RESIDENTS' NEEDS. *(Previously Water Resources Policy D.1)*

POLICY EM-4.2 MAINTAIN AN AGGRESSIVE INSPECTION AND PREVENTIVE MAINTENANCE PROGRAM THAT ENSURES THAT BACKFLOW FROM POTENTIALLY CONTAMINATED WATER SERVICES IS PREVENTED. *(Previously Water Resources Policy D.2)*

- EM-4.2a Investigate the potential for the City owning all backflow devices, thereby ensuring their proper function and maintenance. *(Previously Water Resources Action Statement D.2d)*

POLICY EM-4.3 PROVIDE APPROPRIATE SECURITY AND PROTECTION OF WATER FACILITIES. *(Previously Water Resources Policy D.3)*

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POLICY EM-4.4 MAINTAIN AND UPDATE AN ACTION PLAN THAT RESPONDS TO AND PROTECTS WATER SUPPLIES FROM CONTAMINATION. *(Previously Water Resources Policy D.4)*

WASTEWATER COLLECTION AND TREATMENT

GOAL EM-5
MINIMAL POLLUTION AND QUANTITY OF WASTEWATER

ENSURE THAT THE QUANTITY AND COMPOSITION OF WASTEWATER GENERATED IN THE CITY DOES NOT EXCEED THE CAPABILITIES OF THE WASTEWATER COLLECTION SYSTEM OR AND THE WATER POLLUTION CONTROL PLANT. *(Previously Wastewater Goal 3.3.A / Adopted in 2001)*

GOAL EM-6
EFFECTIVE WASTEWATER COLLECTION SYSTEM

CONTINUE TO OPERATE AND MAINTAIN THE WASTEWATER COLLECTION SYSTEM SO THAT ALL SEWAGE AND INDUSTRIAL WASTES GENERATED WITHIN THE CITY ARE COLLECTED AND CONVEYED UNDER SAFE AND SANITARY CONDITIONS TO THE WATER POLLUTION CONTROL PLANT. *(Previously Wastewater Goal 3.3B / Adopted in 2001)*

GOAL EM-7
EFFECTIVE WASTEWATER TREATMENT

CONTINUE TO OPERATE AND MAINTAIN THE WATER POLLUTION CONTROL PLANT, USING COST EFFECTIVE METHODS, SO THAT ALL SEWAGE AND INDUSTRIAL WASTES GENERATED WITHIN THE CITY RECEIVE SUFFICIENT TREATMENT TO MEET THE EFFLUENT DISCHARGE AND RECEIVING WATER STANDARDS OF REGULATORY AGENCIES. *(Previously Wastewater Goal 3.3C / Adopted in 2001)*

The wastewater from homes and businesses (toilet, shower, kitchen sink, etc.) is carried by sanitary sewer lines to the Sunnyvale Water Pollution Control Plant (WPCP), where it is treated before being discharged to local waterways which flow into the San Francisco Bay. The amount and quality of this effluent is regulated by the San Francisco Bay Water

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Quality Control Board. The Board's purpose is to protect beneficial uses of the San Francisco Bay in compliance with the California Water Code and federal Clean Water Act.

WATER COLLECTION SYSTEM

Sunnyvale's wastewater collection system has the capacity to convey all sewage and industrial wastes generated when the City is fully developed in accordance with the land use projections (approximately 55.7 million gallons per day). Five major trunk networks terminate at the Water Pollution Control Plant (WPCP), referred to as the Lawrence, Borregas, Lockheed, Moffett and Cannery trunks. Figure 7-7 is a map showing drainage area boundaries for the areas served by the five collection networks. Capacities of individual networks are:

Figure 7-6: Capacities of Individual Sewer Collection Areas

Collection Area	Capacity in Million Gallons per Day (MGD)
Lawrence	22.0
Borregas	17.0
Cannery	5.5
Lockheed	4.9
Moffett Field	6.3
TOTAL	55.7

Based on growth projections in 2001, it is not anticipated that flows will exceed the capacity of the overall collection system. Specific locations within the collection system may require additional capacity in the future.

As sanitary sewers become older, gaps from cracks, joints, aging gaskets and leaking services tend to allow some groundwater or rainwater to enter the system. This process is called infiltration. A certain amount of rainwater may also find its way into the wastewater system as inflow. Inflow can result from direct connections of storm drains or downspouts to the wastewater system, either in the right-of-way or on private property. Components of the system itself, such as piping, manholes, pumps, etc., will also require replacement as they exhaust their life expectancy.

Infiltration and inflow can interfere with the needed capacity of sanitary sewers and the WPCP. Though virtually impossible to eliminate altogether, maintenance crews use closed circuit video inspection to monitor for bad joints and/or broken pipes which allow infiltration. Private industry is also inspected for illegal storm drain cross-connections to ensure that the quantity of rainfall that flows to the WPCP is kept under control. If infiltration and inflow are allowed to continue unmitigated, additional wastewater flows could overwhelm treatment plant capacity and result in increased treatment costs.

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City crews maintain the operation of the sewer main lines by regular flushing and performing repairs to the system. Areas of known-grease or dirt accumulation are flushed on an enhanced cleaning schedule. Depending upon the degree of build-up, the frequency may vary from several weeks to several months.

WATER POLLUTION CONTROL PLANT

The WPCP provides treatment of wastewater from residential, commercial, and industrial sources from the City of Sunnyvale, the Rancho Rinconada portion of Cupertino, and Moffett Federal Airfield. The WPCP is designed to treat an average of 29.5 million gallons of wastewater per day and a peak flow of 40 million gallons per day. From 2004 to 2007, the average dry weather effluent flow was 14.2 MGD, well within the plant capacity.

See *wpcp.insunnyvale.com* for more information on the NPDES Permit and related programs and regulations.

The WPCP is designed to combine physical, chemical, and natural biological processes to treat wastewater This unique combination allows the WPCP to consistently produce a high-quality effluent from which more than 85 percent of the pollutants have been removed from the influent. This wastewater treatment process provides both secondary and advanced treatment to produces a high quality effluent, suitable for discharge into San Francisco Bay under a National Pollutant Discharge Elimination System (NPDES) permit and for recycling for irrigation and other uses.

Wastewater is treated at three distinct levels: primary, secondary, and tertiary.

- **Primary Treatment** — The first stage in the treatment process to remove solids.
- **Secondary Treatment** — The second stage in the treatment process where oxygen is added to help remove remaining solids and bionutrients.
- **Tertiary Treatment** — The third stage in the treatment process to remove ammonia, algae, and bacteria.

Potable water is fit for consumption by humans and other animals. Non-potable water is all other water.

Recycled water is tertiary treated wastewater diverted from discharge and treated for reuse in industrial processes, landscape irrigation, and other non-potable uses. It is used by businesses and the City of Sunnyvale for landscape and golf course irrigation, and decorative ponds. By reusing water in this way, valuable potable (drinking) water is conserved. The rest of the tertiary effluent is discharged into the Guadalupe Slough, which flows to the Bay.

In 2011, about 10 percent of the daily flow is diverted for reuse. The City of Sunnyvale water recycling program provides a sustainable and drought-resistant supply of water to portions of the City for non-potable uses.

See **Goal EM-1 (Adequate Water Supplies)** for discussion, policies, and a map of the recycled water system.

Wastewater Pre-Treatment Program

The Pretreatment Program includes Industrial Waste Inspectors, Laboratory Chemists and Field Technicians, whose primary goal is the protection of the treatment plant and sanitary sewer collection system from industrial waste. By regulating the disposal of industrial wastewater into the sanitary sewer, the Pretreatment Program seeks to prevent the introduction of pollutants that could interfere with the operation of the

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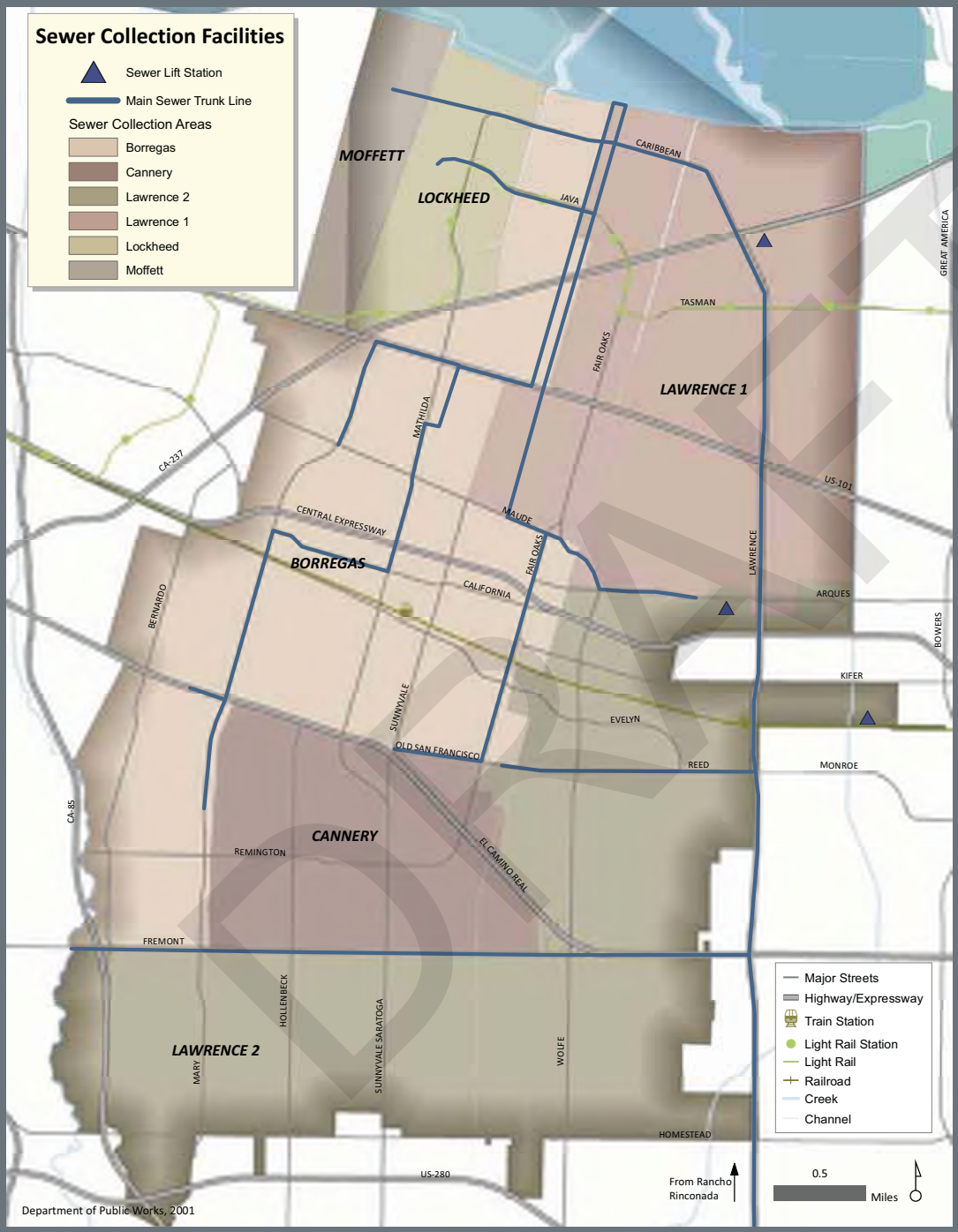


Figure 7-7: Sewer Collection Area Maps

Plant, cause damage to the sewer system, compromise public health or worker safety, or pass through the Plant to the Bay.

Industrial and commercial facilities are regulated through discharge permits, Best Management Practices (BMPs), and routine inspection and monitoring. Discharge Permits contain specific requirements and limits for the concentration of pollutants in wastewater discharges. On average, the Pretreatment Program has 70 active industrial wastewater discharge permits issued to Significant Industrial Users (SIUs). Additionally, hundreds of commercial facilities are regulated through the application of BMPs tailored to specific activities commonly found in commercial businesses. When implemented, the BMPs reduce or eliminate the introduction of pollutants into the sanitary sewer.

See *wpcp.inSunnyvale.com* for annual water quality reports and information.

Regulatory Compliance Activities

The WPCP operates under the requirements set for by the Global Warming Solutions Act of 2006, Assembly Bill 32 or AB 32. AB 32 is a California State Law that fights climate change by establishing a comprehensive program to reduce greenhouse gas emissions from all sources throughout the state. AB 32 requires the California Air Resources Board (CARB) to develop regulations and market mechanisms to reduce California's greenhouse gas emissions to 1990 levels by 2020, representing a 25 percent reduction statewide, with mandatory caps beginning in 2012 for significant emissions sources. For the Plant, it sets in motion a series of mandatory reporting, and equipment maintenance requirements that are additional to the "normal" function of maintaining plant effluent compliance.

Future Water Pollution Control Plant Improvements

Plant capacity appears sufficient based on use in 2001 and the updated projections. The Environmental Protection Agency requires that when flows reach 75 percent of design capacity, agencies begin to evaluate future needs and develop plans for expansion, if appropriate. Based on 2001 figures, it is not anticipated that this milestone will be reached in Sunnyvale and it will not be necessary to evaluate ways to provide additional capacity at the WPCP during the next five to ten years. Projections indicate that flows may not continue to increase significantly between 2001 and 2020. This overall projection is attributed to changes in land use, changes in water consumption patterns, and the overall reduced rate of growth.

Portions of the WPCP were first constructed in 1954 and are now nearly 50 years old. In addition, the nature of wastewater treatment itself presents an adverse environment for facilities and equipment. In order to maintain this infrastructure and ensure the ongoing ability to meet effluent and recycled water quality requirements, it is necessary to have in place a strategy for the ongoing refurbishment and replacement of components of the plant.

An asset condition assessment conducted in 2005 identified several critical plant structures as at-risk, and in need of rehabilitation soon. In 2007, a Capital Project Strategic Infrastructure Plan (SIP) was put in place to set future direction of plant process enhancements and physical improvements. Following completion of this effort, SIP implementation is expected to continue for ten to fifteen years for construction of new and/or rehabilitated plant facilities.

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Policies supporting Goal EM-5 (Minimal Pollution and Quantity of Wastewater):

POLICY EM-5.1 WATER POLLUTION CONTROL PLANT IMPROVEMENTS SHOULD BE DESIGNED, CONSTRUCTED AND MAINTAINED AND THE QUANTITY OF INDUSTRIAL WASTES SHOULD BE CONTROLLED SO THAT THE PLANT DOES NOT HAVE TO BE EXPANDED IN EXCESS OF ITS CAPACITY OF 29.5 MGD. *(Previously Wastewater Policy 3.3A.1)*

POLICY EM-5.2 ENSURE THAT WASTES DISCHARGED TO THE WASTEWATER COLLECTION SYSTEM CAN BE TREATED BY EXISTING TREATMENT PROCESSES OF THE WATER POLLUTION CONTROL PLANT. *(Previously Wastewater Policy 3.3A.2)*

Policy supporting Goal EM-6 (Effective Wastewater Collection System):

POLICY EM-6.1 INSPECT CRITICAL POINTS IN THE WASTEWATER MANAGEMENT SYSTEM ANNUALLY TO ENSURE THAT THE PROPER LEVEL OF MAINTENANCE IS BEING PROVIDED AND THAT THE FLOW IN SEWERS DOES NOT EXCEED DESIGN CAPACITY. *(Previously Wastewater Management Policy 3.3B.1)*

Policy supporting Goal EM-7 (Effective Wastewater Treatment):

POLICY EM-7.1 MONITOR WATER POLLUTION CONTROL PLANT OPERATIONS AND MAINTENANCE TO MEET REGULATORY STANDARDS. *(Previously Wastewater Management Policy 3.3C.1)*

POLICY EM-7.2 COORDINATE OPERATING PROCEDURES WITH THE CITY ENERGY POLICY TO OPTIMIZE AN ALTERNATIVE ENERGY PROGRAM SO THAT MINIMUM USE AND RELIANCE ARE PLACED ON OUTSIDE ENERGY SOURCES. *(Previously Wastewater Management Policy 3.3C.2)*

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POLICY EM-7.3 ACTIVELY PARTICIPATE IN THE WATERSHED MANAGEMENT APPROACH TO SOLVING WATER QUALITY ISSUES OF THE SANTA CLARA BASIN WATERSHED AND THE SOUTH BAY. *(Previously Wastewater Management Policy 3.3C.3)*

POLICY EM-7.4 PRODUCE QUALITY RECYCLED WATER AND SEEK TO MAXIMIZE THE USE OF THIS RESOURCE. *(Previously Wastewater Management Policy 3.3C.4)*

- EM-7.4a Study feasibility of recycled water for restoration and/or enhancement of marshlands.

URBAN RUNOFF

GOAL EM-8
PROTECTION OF CREEKS AND BAY

ASSURE THE REASONABLE PROTECTION OF BENEFICIAL USES OF CREEKS AND SAN FRANCISCO BAY, ESTABLISHED IN THE REGIONAL BOARD'S BASIN PLAN, AND PROTECT ENVIRONMENTALLY SENSITIVE AREAS. *(Previously Surface Runoff Goal A / Adopted in1993)*

GOAL EM-9
ADEQUATE STORM DRAIN SYSTEM

MAINTAIN STORM DRAIN SYSTEM TO PREVENT FLOODING. *(Previously Surface Runoff Goal B / Adopted in 1993)*

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GOAL EM-10
REDUCED RUNOFF AND POLLUTANT DISCHARGE

MINIMIZE THE QUANTITY OF RUNOFF AND DISCHARGE OF POLLUTANTS TO THE MAXIMUM EXTENT PRACTICABLE BY INTEGRATING SURFACE RUNOFF CONTROLS INTO NEW DEVELOPMENT AND REDEVELOPMENT LAND USE DECISIONS. *(Previously Surface Runoff Goal D / Adopted in 1993)*

Urban runoff consists of stormwater runoff from rainfall as well as non-stormwater runoff from human activities (e.g. over-irrigation of landscapes, vehicle washing, discharges from pools, spas, or water features, etc.). Urban runoff is collected and transported through the city's storm drain system and ultimately discharged to local waterways. Managing urban runoff minimizes the discharge of pollutants to creeks, waterways, and San Francisco Bay, and prevents or minimizes flooding. The protection of local waterways preserves water quality and maintains the structural integrity of creeks, channels, and shoreline to prevent both potential flooding and the degradation of their natural form and function.

Urbanization increases impervious surfaces associated with development, which increases the amount of urban runoff. Runoff typically collects impurities while passing over rooftops, streets, parking lots, landscaping and gutters. Often this runoff is untreated and deposits impurities in the creeks and the San Francisco Bay after being conveyed through a storm drain system. This increased runoff results in increased erosion and sedimentation in creeks. Conveying runoff through a storm drain system also makes less water available to creeks and groundwater during dry weather.

There are two approaches to managing urban runoff. The first is the conveyance approach, which seeks to "get rid of the water." A conveyance stormwater system collects and concentrates runoff through a network of impervious gutters, drainage structures and underground pipes. Because the system collects water from impermeable surfaces and carries it through impervious pipes, suspended pollutants are concentrated in the rapidly flowing runoff. When the system reaches its outfall, large volumes of polluted water can be emptied, untreated, into a natural water body and the large volume can further erode our natural waterways.

The City, as part of the region, is transitioning from the conveyance approach to a newer infiltration approach often referred to as Low Impact Development (LID). This system seeks to "preserve and restore the hydrologic cycle." An infiltration stormwater system seeks to infiltrate runoff into the soil by allowing its to flow slowly over permeable surfaces. These permeable surfaces can double as recreational and landscape areas during dry weather. Because the infiltration network allows much of the runoff to return to the soil, overall runoff volume is reduced, and more water is available to replenish groundwater and maintain stream base flows. Storm drain systems are designed to transport urban runoff to the San Francisco Bay or nearby creeks or channels. Adequate storm drain systems help prevent or minimize property damage due to flooding. The

Impervious Surfaces: Constructed or modified surfaces that do not effectively allow infiltration of rainfall into the soil below. Impervious surfaces include, but are not limited to building rooftops, asphalt or concrete pavement, sidewalks, and driveways where such surfaces are not constructed with pervious materials. Pervious Surfaces: May include natural or designed landscapes or specially constructed paving materials (e.g. pervious paving) that allow stormwater to infiltrate into sub-surface soils.

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City of Sunnyvale owns and operates approximately 150 miles of storm drains, with two pump stations that collect runoff from low-lying urban areas and discharge to creeks and sloughs which are at a higher elevation (see Figure 7-8: Storm Drain System).

To address both the quantity and quality of urban runoff, the City has undertaken a series of programs to both reduce and treat runoff. These programs and actions are collectively described as Urban Runoff Best Management Practices (BMPs). Urban Runoff BMPs are continually changing based on recent studies, practical experience and advancements in construction materials. These new practices include Low Impact Development, source control and pollution prevention. Low Impact Development includes methods to retain and treat runoff onsite through detention and landscape features. Source control measures typically include reducing the amount of impervious surface for new development or large remodeling/additions. Pollution prevention includes installing non-mechanical filters to lessen the volume of runoff, minimizing pesticides, covering areas such trash enclosures or loading docks and requiring drainage of dirty areas to sanitary sewer lines rather than storm drains. Public outreach and information is also an important part of reducing urban runoff.

See *dpw.inSunnyvale.com* for more information about Urban Runoff BMPs and City programs.

Regulations and Permit Requirements

There are a variety of laws and permit requirements regulating the quantity and quality of urban runoff regionally. These agencies include:

- **Federal** — The Federal Clean Water Act, as amended in 1987, requires the City to obtain NPDES permits for discharge of stormwater and develop stormwater management plans and "to reduce the discharge of pollutants to the maximum extent practicable." The San Francisco Bay Regional Water Quality Control Board (Regional Board or RWQCB) issues permits to meet requirements of the Federal Clean Water Act.
- **State** — The Clean Water Act and State of California legislation requires that the beneficial uses of water bodies be protected, and must meet standards set for water quality and to control sources of pollution.
- **City** — The City has an ordinance that addresses stormwater pollution prevention and provides appropriate adequate legal authority to implement provisions of its NPDES Stormwater Discharge Permit, which effectively implement controls on pollutants in urban runoff and meet permit requirements.

Maximum Extent Practicable: A standard for implementation of stormwater management programs under the Clean Water Act to reduce the level of the pollutants in stormwater runoff to the maximum extent possible, taking into account equitable considerations and competing facts including, but not limited to the seriousness of the problem, public health risks, environmental benefits, pollutant removal effectiveness, regulatory compliance, cost, and technical feasibility.

Collaboration with Regional Agencies

Water resource protection at the local and regional level is becoming more complex. A wide variety of regulatory agencies, diverse sources of nonpoint source pollution, and a multitude of stakeholders make it difficult to achieve a consistent, easily understandable strategy for watershed protection. The City continually works with a variety of agencies and stakeholders to facilitate watershed protection and urban runoff management.

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The City is a member of the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), an association of 13 south bay cities, the SCVWD, and Santa Clara Country. All members of SCVURPPP have shared a common NPDES stormwater permit for their discharge into local creeks and South San Francisco Bay since 1990 and leverage resources to better facilitate each agency's compliance with the permit.

Through SCVURPPP, the City also participates in the Bay Area Stormwater Management Agencies Association (BASMAA), which was started by local governments to promote regional consistency and to facilitate the efficient use of public resources by sharing information. In addition, BASMAA provides a forum for representing and advocating the common interests of member programs at the regional and state level.

The City also participates in the California Stormwater Quality Association (CASQA), a quasi-governmental organization, which advises the State Water Resources Control Board on matters related to developing stormwater regulations. It assists municipalities and others in compliance with the municipal, construction and industrial NPDES stormwater mandates of the federal Clean Water Act.

Beneficial Uses: The uses of water of the State of California that are protected against degradation. Examples of beneficial uses include, but are not limited to: domestic, municipal, agricultural and industrial water supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation of fish and wildlife and other aquatic resources or preserves.

Future Trends

Regulatory requirements from both state and federal agencies will continue and likely become more restrictive as each NPDES Permit is re-issued. The City will need to perform periodic updating of the goals and policies associated with urban runoff, the Urban Runoff Management Plan, and sections of the Sunnyvale Municipal Code to address these changes, update data and emerging trends, as well as measure success toward completing urban runoff goals. Annual reports will continue to be made to the Regional Board to demonstrate compliance with NPDES permit provisions and document the City's progress toward meeting the establish goals and policies through the implementation of action statements.

In addition, the storm drain systems will continue to be monitored and maintained to ensure the adequate collection and transfer of urban runoff.

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Figure 7-8: Storm Drain System

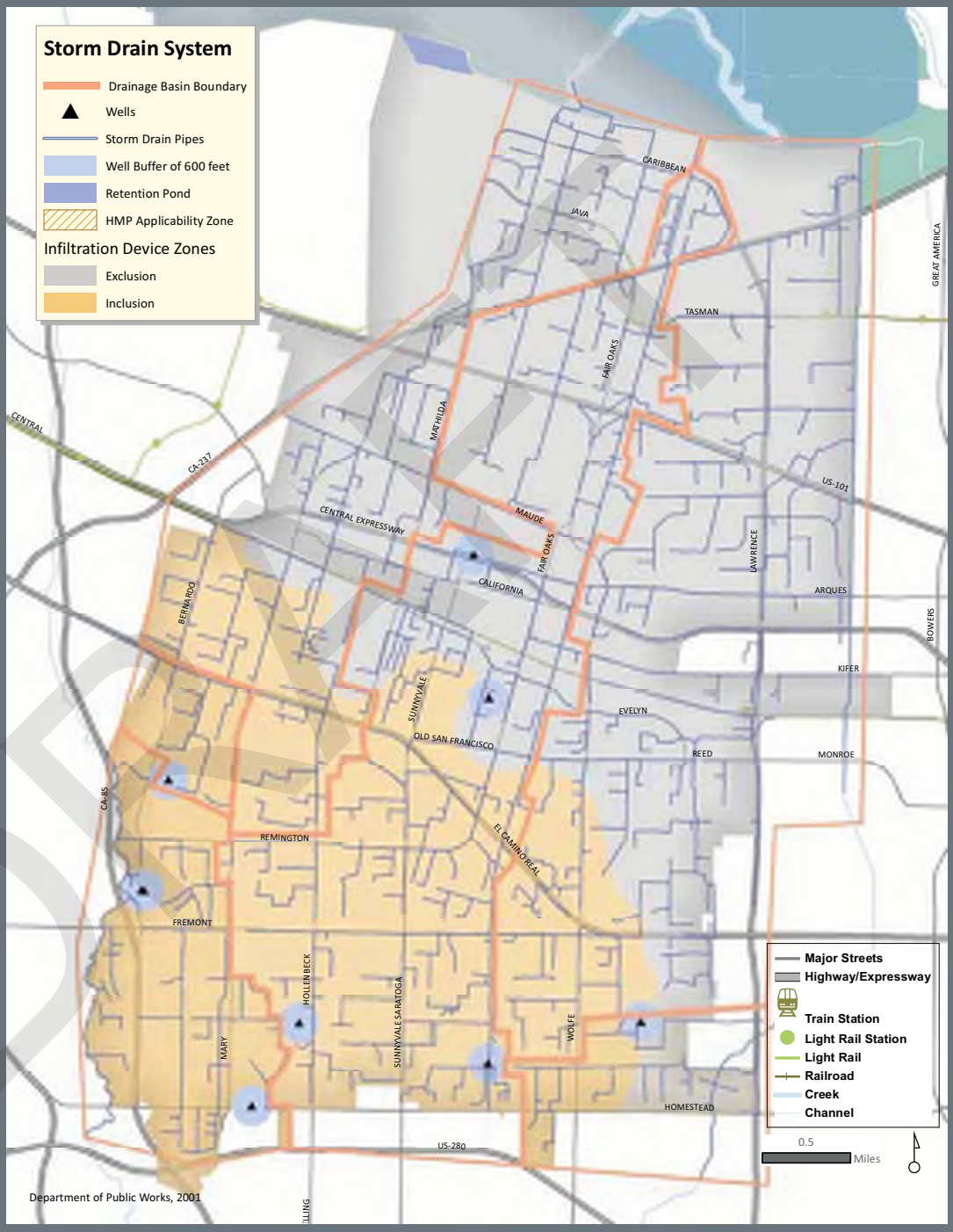


Figure 7-9: Where does it go?



Policies that support Goal EM-8 (Protection of Creeks and Bay):

POLICY EM-8.1 COMPLY WITH REGULATORY REQUIREMENTS AND PARTICIPATE IN PROCESSES WHICH MAY RESULT IN MODIFICATIONS TO REGULATORY REQUIREMENTS. *(Previously Surface Runoff Policy A.1)*

POLICY EM-8.2 CONTINUE TO SUPPORT THE IDENTIFICATION AND DEVELOPMENT OF APPROACHES TO STORMWATER TREATMENT AND BEST MANAGEMENT PRACTICES TO CONTROL SOURCES OF POLLUTANTS THROUGH PARTICIPATION IN LOCAL, REGIONAL, STATEWIDE AND NATIONAL ASSOCIATIONS AND AGENCIES (E.G. SANTA CLARA VALLEY URBAN RUNOFF POLLUTION PREVENTION PROGRAM (SCVRRP), BAY AREA STORMWATER MANAGEMENT AGENCIES ASSOCIATION, STORMWATER QUALITY ASSOCIATION, AND AMERICAN PUBLIC WORKS ASSOCIATION AND SIMILAR ORGANIZATIONS). *(Previously Surface Runoff Policy A.2)*

POLICY EM-8.3 ENSURE THAT STORMWATER CONTROL MEASURES AND BEST MANAGEMENT PRACTICES (BMPS) ARE IMPLEMENTED TO REDUCE THE DISCHARGE OF POLLUTANTS IN STORM WATER TO THE MAXIMUM EXTENT PRACTICABLE. *(Previously Surface Runoff Policy A.3)*

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- EM-8.3a Modify Industrial Pretreatment permits to also require BMPs to control the discharge of pollutants to city-owned storm drains. *(Previously Surface Runoff Action Statement A.3b)*
- EM-8.3b Label approximately 1060 municipal storm drainage inlets a year until all inlets are labeled and maintain labels as necessary to educate the public on the fate of material discharged to storm drains. *(Previously Surface Runoff Action Statement A.3e)*

POLICY EM-8.4 EFFECTIVELY PROHIBIT ILLICIT DISCHARGES AND IMPROPER DISPOSAL OF WASTES INTO THE STORM DRAIN SYSTEM. *(Previously Surface Runoff Policy A.4)*

POLICY EM-8.5 PREVENT ACCELERATED SOIL EROSION. CONTINUE IMPLEMENTATION OF A CONSTRUCTION SITE INSPECTION AND CONTROL PROGRAM TO PREVENT DISCHARGES OF SEDIMENT FROM EROSION AND DISCHARGES OF OTHER POLLUTANTS FROM NEW AND REDEVELOPMENT PROJECTS. (PREVIOUSLY SURFACE RUNOFF POLICY A.5)

POLICY EM-8.6 (NEW) MINIMIZE THE IMPACTS FROM STORMWATER AND URBAN RUNOFF ON THE BIOLOGICAL INTEGRITY OF NATURAL DRAINAGE SYSTEMS AND WATER BODIES.

Policies that support Goal EM-9 (Adequate Storm Drain System):

POLICY EM-9.1 MAINTAIN AND OPERATE THE STORM DRAIN SYSTEM SO THAT STORM WATERS ARE DRAINED FROM 95 PERCENT OF THE STREETS WITHIN ONE HOUR AFTER A STORM STOPS. *(Previously Surface Runoff Policy B.1.)*

POLICY EM-9.2 RESPOND TO STORM DRAIN EMERGENCIES. *(Previously Surface Runoff Policy B.2)*

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Policies that support Goal EM-10 (Reduced Runoff and Pollutant Discharge):

POLICY EM-10.1 CONSIDER THE IMPACTS OF SURFACE RUNOFF AS PART OF LAND USE AND DEVELOPMENT DECISIONS AND IMPLEMENT BMPS TO MINIMIZE THE TOTAL VOLUME AND RATE OF RUNOFF OF WASTE QUALITY AND QUANTITY (HYDRO MODIFICATION) OF SURFACE RUNOFF AS PART OF LAND USE AND DEVELOPMENT DECISIONS. *(Previously Surface Runoff Policy D.1)*

POLICY EM-10.2 CONSIDER THE ABILITY OF A LAND PARCEL TO DETAIN EXCESS STORM WATER RUNOFF IN FLOOD PRONE AREAS AND REQUIRE INCORPORATION OF APPROPRIATE CONTROLS. REQUIRE THE INCORPORATION OF APPROPRIATE STORMWATER TREATMENT AND CONTROL MEASURES FOR NEW AND REDEVELOPMENT REGULATED PROJECTS AND/OR ANY SITES THAT MAY REASONABLY BE CONSIDERED TO CAUSE OR CONTRIBUTE TO THE POLLUTION OF STORMWATER AND URBAN RUNOFF AS DEFINED IN THE CURRENT VERSION OF THE STORMWATER MUNICIPAL REGIONAL PERMIT. *(Previously Surface Runoff Policy D.2)*

POLICY EM-10.3 REQUIRE THE INCORPORATION OF APPROPRIATE STORMWATER TREATMENT AND CONTROL MEASURES FOR INDUSTRIAL AND COMMERCIAL FACILITIES AS IDENTIFIED IN THE STORMWATER MUNICIPAL REGIONAL PERMIT. *(New)*

POLICY EM-10.4 SUPPORT LEGISLATION AND REGULATIONS THAT WILL REDUCE OR ELIMINATE POLLUTANTS OF CONCERN AT THE SOURCE. *(New)*

POLICY EM-10.5 PROMOTE EDUCATION AND OUTREACH EFFORTS TO SCHOOLS, YOUTH, RESIDENTS, AND BUSINESSES REGARDING URBAN RUNOFF AND STORMWATER POLLUTION PREVENTION ACTIONS. *(New)*

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AIR QUALITY

GOAL EM-11
IMPROVED AIR QUALITY

IMPROVE SUNNYVALE'S AIR QUALITY AND REDUCE THE EXPOSURE OF ITS CITIZENS TO AIR POLLUTANTS. *(Previously Air Quality Goal A / Adopted in 1993)*

All major urban areas in California, including Sunnyvale, experience some degree of reduced air quality. The combination of climatic conditions and a multitude of air pollutant sources (particularly the automobile) results in reduced air quality, which can be considered as reducing the quality of life by adversely affecting human health, causing damage to plants or crops, and other effects such as soiling, visibility reduction and accelerated corrosion of materials.

One of the major reasons that air quality continues to be a problem in the Bay Area specifically and California in general, is a relatively high rate of population and economic growth. The major obstacle to improved air quality in the future is increasing population and vehicle use and deteriorating operating conditions on highways and roads.

The major air quality problems in the Bay Area are ozone, carbon monoxide, and PM-10. Ozone and carbon monoxide are primarily released in the air from combustion sources such as automobiles and factories. PM-10 (otherwise known as suspended particulate matter) is a collection of particles of dust, soot, aerosols and other matter which are small enough to remain suspended in the air for a long period of time. Man-made sources of PM-10 include automobile exhausts and road travel, smoke, and factory emissions.

To combat this, the most efficient and cost-effective technological or "hardware" controls have already been implemented. Remaining technological controls, which are increasingly expensive, have been found to be unable to reduce emissions to the point where all air quality standards (glossary in the margin) would be met. Therefore, attention has been focused in recent years on the relationship of land use, community design and transportation as a means of reducing air pollutant generation. For further information on air quality measurements and modeling, see Appendix H, Air Quality Technical Report.

Cooperation with Regional Agencies

Past efforts by federal, state and local governments have resulted in steady, gradual improvement in air quality in Sunnyvale and the greater Bay Area. Sunnyvale is within the Bay Area Air Quality Management District (BAAQMD). The City of Sunnyvale has implemented a number of programs and projects that directly or indirectly reduce air pollutant emissions. Most of these programs are part of a larger regional effort to improve air quality. These projects include:

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- Adding high occupancy vehicle (HOV) lanes to U.S. 101, S.R. 85, and S.R. 237. These improvements have expanded their capacity.
- Facilitating regional transportation such as the Tasman Light Rail extension, increases in Caltrain service, and a "Super Express" commuter bus service.
- Constructing high occupancy vehicle (HOV) lanes on Lawrence Expressway.

POLICY EM-11.1 THE CITY SHOULD ACTIVELY PARTICIPATE IN REGIONAL AIR QUALITY PLANNING. *(Previously Air Quality Policy C.1 also Air Quality Goal C)*

Land Use and Air Quality

Future development within Sunnyvale impacts regional air quality. Direct impacts are those related to emissions released on-site from stationary sources. Indirect impacts are related to vehicle trips attracted to or generated by residential, commercial or employment-generating land uses.

Stationary Sources — Industries are required to provide information to the public about emissions of toxic air contaminants (quick description in the margin) and their impact on public health. There are 71 sources of TACs within Sunnyvale. The majority of these sources are microelectronic industries, dry cleaners and auto repair businesses.

Future growth in Sunnyvale may include new stationary sources of pollutants. However, any new stationary sources would be subject to the "no net increase" requirements of the California Clean Air Act, which requires BAAQMD to develop a permitting system that provides new sources, can only be approved if there is an offsetting decrease in emissions elsewhere in the air basin. For any new businesses or facilities that could emit air pollutants, it is important to consider sensitive receptors. The siting of any new sensitive receptors also needs to consider any existing air pollutant sources nearby.

Indirect Sources— Indirect automobile emissions estimated with future buildout are shown to increase slightly in the next 10 years. Reducing emissions from these indirect sources is likely to be an important strategy in regional efforts to attain the state and federal ambient air quality standards in the Bay Area.

There are several methods in which land use regulations can be used to both reduce emissions and alleviate the impact on residents. By locating employment and retail service areas closer to residential areas, vehicle use can be reduced.

In 1993, the Sunnyvale Futures Study examined the effects of revising the General Plan to provide for an improved jobs/housing balance. The study considered potential residential designations of several sites previously designated with commercial and industrial uses and was approved by Council and created a series of Industrial-to-Residential (ITR sites.) Preliminary findings indicated that increased carbon monoxide concentrations will occur at certain intersections. However, predicted air quality would

The Bay Area Air Quality Management District (BAAQMD) is required to prepare and adopt a list of actions, improvements and programs that improve system-wide transportation level of service (LOS) and improve air quality. **See Goal LT-5 (Effective, Safe, Pleasant and Convenient Transportation)** for further discussion and policies on transportation improvements.

California Clean Air Act — A law setting forth a comprehensive program to ensure that all areas within the State of California will attain federal and state ambient air quality standards by the earliest practicable date. The law mandates comprehensive planning and implementation efforts, and empowers local air pollution control districts to adopt transportation control measures and indirect source control measures to achieve and maintain the ambient air quality standards.

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fall within the standards. Improvements in the job/housing balance would provide more local housing options, reducing commute lengths and vehicle miles traveled.

Major progress has been made in the 1980's and 1990's in reducing emissions from stationary sources and mobile sources in the Bay Area, with the result that steady improvement in air quality has been documented despite population growth. Under the California Clean Air Act and Amendments, the state Air Resources Board and BAAQMD will be adopting new and more stringent regulations on existing and future industrial sources, implementing more stringent emission standards for vehicles, developing and implementing transportation control measures (TCMs) to reduce vehicular emissions, and adding new sources to the list of controlled process (e.g. consumer products, fireplaces and wood stoves, etc.). These measures, if implemented expeditiously, should continue the overall improvement in air quality evident over the past 20 years.

Sensitive Receptors — Sensitive populations such as children, athletes, elderly and the sick that are more susceptible to the effects of air pollution than the population at large.

See Goal LT-1 (Coordinated Regional Planning) and **LT-6 (Supportive Economic Development Environment)** for policies on mixed uses and locating housing closer to employment centers

POLICY EM-11.2 UTILIZE LAND USE STRATEGIES TO REDUCE AIR QUALITY IMPACT, INCLUDING OPPORTUNITIES FOR CITIZENS TO LIVE AND WORK IN CLOSE PROXIMITY. *(Previously Air Quality Policies B.1 and C.2)*

POLICY EM-11.3 REQUIRE ALL NEW DEVELOPMENT TO UTILIZE SITE PLANNING TO PROTECT CITIZENS FROM UNNECESSARY EXPOSURE TO AIR POLLUTANTS. *(Previously Air Quality Policy A.1)*

POLICY EM-11.4 APPLY THE INDIRECT SOURCE RULE TO NEW DEVELOPMENT WITH SIGNIFICANT AIR QUALITY IMPACTS. INDIRECT SOURCE REVIEW WOULD COVER COMMERCIAL AND RESIDENTIAL PROJECTS AS WELL AS OTHER LAND USES THAT PRODUCE OR ATTRACT MOTOR VEHICLE TRAFFIC. *(Previously Air Quality Policy B.3)*

Transportation Improvements and Air Quality

There are two main ways that transportation improvements can positively impact air quality. The first is to reduce congestion that causes increased vehicle emissions (stop-and-go). The second is to enhance and encourage alternative modes of transportation to reduce the total number of car trips. Sunnyvale has undertaken a variety of programs to improve air quality with regards to transportation.

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Reduce Congestion

- Traffic signal improvement and synchronization
- Ten-year capital improvements plan
- Preferential parking for carpool vehicles
- Transportation demand management (TDM)

Alternative Transportation Modes

- Continue to require City sidewalks
- Develop requirements for bicycle facilities
- Bicycle and Pedestrian Advisory Committee (BPAC) to review and advise City Council on capital improvement projects involving bicycle and pedestrian facilities as well as educational programs.
- Electric City vehicles

See **Goal LT-5 (Effective, Safe, Pleasant and Convenient Transportation)** for policies on transportation improvements.

Transportation Demand Management (TDM) — Strategies that reduce travel demand such as telecommuting, teleshopping, flextime, carpooling, increased use of public transit, and other strategies to reduce the number of trips made in single-occupant vehicles.

POLICY EM-11.5 REDUCE AUTOMOBILE EMISSIONS THROUGH TRAFFIC AND TRANSPORTATION IMPROVEMENTS. *(Previously Air Quality Policy A.2)*

POLICY EM-11.6 CONTRIBUTE TO A REDUCTION IN REGIONAL VEHICLE MILES TRAVELED. *(Previously Air Quality Policy C.3)*

POLICY EM-11.7 REDUCE EMISSIONS FROM CITY OF SUNNYVALE FLEET VEHICLES. *(Previously Air Quality Policy C.4)*

POLICY EM-11.8 ASSIST EMPLOYERS IN MEETING REQUIREMENTS OF TRANSPORTATION DEMAND MANAGEMENT (TDM) PLANS FOR EXISTING AND FUTURE LARGE EMPLOYERS AND PARTICIPATE IN THE DEVELOPMENT OF TDM PLANS FOR EMPLOYMENT CENTERS IN SUNNYVALE. *(Previously Air Quality Policy B.2)*

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SOLID WASTE

Collection Programs

GOAL EM-12
SAFE AND HEALTHY SOLID WASTE COLLECTION

ENSURE THAT MUNICIPAL SOLID WASTE IS COLLECTED AND TRANSPORTED IN A SAFE AND HEALTHY MANNER. *(Previously Solid Waste Goal 3.2A / Adopted in 1993)*

GOAL EM-13
CLEAN NEIGHBORHOODS

ENCOURAGE RESIDENTS TO MAINTAIN CLEAN NEIGHBORHOODS BY PREVENTING UNSIGHTLY ACCUMULATIONS OF DISCARDED MATERIALS AND ILLEGAL DUMPING OF MUNICIPAL SOLID WASTE. *(Previously Solid Waste Goal 3.2B / Adopted in 1996)*

Solid waste consists of virtually all of the materials discarded by residents and businesses in the course of daily life, business activities and manufacturing. It does not include hazardous wastes, radioactive wastes, medical waste, sewage or liquids. Because accumulations of solid waste can present public health problems, the Sunnyvale Municipal Code requires all occupied residence and business premises to subscribe to regular collection services. According to a 2010 study performed for the City by Cascadia Consulting Group, single-family residents generate approximately 34 percent of the solid waste collected, multi-family residents account for 22 percent, and the remaining 44 percent comes from businesses, government agencies, schools and other institutions and construction and demolition projects.

Collection of solid waste in Sunnyvale is performed by a private company under contract with the City. The contract takes the form of a franchise agreement that is "exclusive," that is, no other company is allowed to collect solid waste. Exclusivity minimizes the community and environmental impacts of refuse collection by limiting the number of trucks used for collection. It reduces pavement damage, noise and air pollution from heavy collection trucks compared to an open market approach where multiple companies may serve homes and businesses located near each other. The Sunnyvale franchise agreement also gives the City the ability to enforce community standards for service quality, collection hours, truck and container colors and cleanliness, graffiti removal, use of clean air fuels, etc.

The City periodically provides special disposal programs at discounted or no cost. These programs are designed to discourage illegal dumping of solid waste and to minimize accumulations of discarded material in the community. These programs include:

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- **Spring/Fall Extra Dump Weekends** —On four weekends per year (two each for spring and fall), Sunnyvale residents can dispose of extra solid waste at the City-owned Sunnyvale Materials Recovery and Transfer (SMaRT Station®), 301 Carl Road, at no charge. "Extra Dump" Weekends are for residents only, and not for businesses, contractors, non-resident property owners or other commercial establishments. The SMaRT Station permit allows over 1,000 vehicle trips per day on Extra Dump event days.
- **On-Call Collection** — Service to residents of single-family homes includes as many as two on-call collections per calendar year. Residents may schedule these pickups on any of their regular collection days and may set out two cubic yards of extra solid waste and two "bulky" items, such as a couch, refrigerator, or other appliance.
- **Neighborhood Cleanups** — Working with recognized neighborhood associations, the City offers a number of neighborhood cleanup events. During these events, typically held on a weekend, the City arranges for delivery of "roll-off" debris boxes to pre-selected locations. The boxes are emptied and returned throughout the event. These events provide a convenient disposal option for residents who cannot or do not utilize other special disposal options.

POLICY EM-12.1 PROVIDE CONVENIENT AND COMPETITIVELY PRICED SOLID WASTE COLLECTIONS SERVICES. *(Previously Solid Waste Policy 3.2A.1)*

POLICY EM-13.1 PROVIDE PERIODIC OPPORTUNITIES FOR RESIDENTS TO DISPOSE OF REFUSE AT DISCOUNTED OR NO CHARGE. *(Previously Solid waste Policy 3.2C.1)*

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Recycling and Source Reduction

GOAL EM-14
RECYCLING AND SOURCE REDUCTION PROGRAMS

REDUCE SOLID WASTE THROUGH RECYCLING, SOURCE REDUCTION, EDUCATION AND SPECIAL PROGRAMS. *(Previously Solid Waste Goal 3.2B/Adopted in 1996)*

Sunnyvale has long been a leader in recycling and in 1982 was one of the first cities in the Bay Area to begin collecting residential recyclables at curbside. In 1990, Sunnyvale became the first city in the state to adopt the Source Reduction and Recycling Element required by the Integrated Waste Management Act of 1989 (AB 939). In 1994 the SMaRT Station materials recovery facility (MRF) began sorting recyclables from solid waste and remains one of the most sophisticated municipal MRFs in the nation.

These and other programs and facilities are reflected in Sunnyvale's state-calculated diversion rate, which has increased from 18 percent in 1990 to 65 percent in 2009. In 2009 the state Disposal Reporting System coordinated by CalRecycle documented disposal of 88,442 tons originating in Sunnyvale. This marks a 60 percent disposal reduction since 1982, when the City disposed of 222,000 tons, even though the City has seen substantial growth in population and business activity over that 27-year period. Milestone dates of major components of the City's diversion effort include:

- Curbside recycling for single-family residences (1982)
- Concrete Recycling lease at Sunnyvale Landfill (1985)
- Household Hazardous Waste drop-off events (1985)
- Cardboard collection for businesses (1991)
- City Facility Recycling (1991)
- Materials Recovery Facility operations at SMaRT Station (1994)
- Yard trimmings collection for single-family residences (1994)
- Recycling collection for multi-family residences (1996)
- New Materials Recovery Facility at SMaRT Station (2009)

Zero Waste Strategic Plan

In 2009, the City Council adopted a Zero Waste Policy that broadly describes a vision for even greater diversion efforts. The first step in implementing the Zero Waste Policy was a 2010 study detailing the composition of Sunnyvale's generated and disposed waste (the latter consisting of the unrecycled residue following materials recovery at the SMaRT Station).

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As of 2011, the City had contracted with a consultant to create a Zero Waste Strategic Plan that will define just what "Zero Waste" is and will identify program and facility options for achieving Zero Waste. Potential actions will be both "upstream," as in placing controls on problematic materials that become waste and "downstream," as in technologies such as composting and anaerobic digestion with the potential to extract additional value from SMaRT Station residues that are currently disposed.

Many components of solid waste have economic value when they are separated, handled, packaged or offered for collection in a manner different from solid waste. Other components have been designated by state or federal regulations as hazardous waste that may not be disposed in a landfill. Over the past 30 years, this trend has led to an increasingly fragmented waste stream, with equally fragmented systems for collecting, handling and disposing or recycling individual waste stream components.

This increased regulation and special handling has provided benefits to the environment by minimizing damaging discharges to air, water and land. It has also increased the efficiency of the economy as a whole, by extracting value from products previously disposed. But, while those who manufacture, distribute and retail products profit from their sale, the "end of life" costs associated with achieving these environmental and societal benefits are borne primarily by local agencies, such as the City, and ultimately paid for by local rate payers and taxpayers. This imbalanced approach provides a misleading message to consumers by understating the true cost of their individual purchases, while increasing the refuse disposal bills of the community, regardless of the individual rate payer's level of consumption.

Product Stewardship

One way to restore an appropriate balance of responsibility is the concept of Product Stewardship, an approach that holds producers liable for the costs of responsibly managing their products at end of life. Extending producer responsibility for products from "cradle to cradle" acknowledges that producers have the greatest control over product design and therefore have the greatest ability and responsibility to reduce toxicity and waste. The City of Sunnyvale has a history of supporting product stewardship – on April 16, 2002, Council directed that the City become a member of the national Product Stewardship Institute and passed a product stewardship resolution.

Product Stewardship is more effective at the state and national levels than it is locally, given the flows of people and products throughout the region. Successful examples in California include 2010 legislation that will put the paint industry in charge of collecting waste paint and the carpet industry in charge of recovering and recycling used carpeting. The cost of the stewardship system will be built into the cost paid by consumers of paint and carpet.

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Household Hazardous Wastes

By law, hazardous wastes are not to be collected or disposed along with municipal solid waste. Disposal of hazardous wastes generated by businesses is regulated by state and federal laws that require documentation of shipments, including their receipt at the hazardous waste disposal site.

Hazardous waste generated by residential use is termed, "Household Hazardous Waste," or HHW. Common HHW items include paint, pesticides, lawn care products, home maintenance and cleaning products and automotive products. It is illegal to dispose of HHW with ordinary garbage.

One way to reduce the amount of HHW that is improperly disposed is to provide residents with legal opportunities for disposal of HHW. To this end, the City provides HHW drop off events by way of the Countywide HHW Program, with a portion of the program funding coming from a per-ton fee charged by Santa Clara County on disposed solid waste. The remaining cost is paid by the Solid Waste Program from garbage collection rate revenues.

The City leases to the Countywide HHW Program an event site at 164 Carl Road. As of 2011, this is one of three fixed locations at which the Program holds regular events, eleven a year at the Sunnyvale site. The other locations are in San Martin and in San Jose. Sunnyvale residents are eligible to use events at the three fixed sites or any of the temporary locations used by the Program. Sunnyvale resident participation, measured by the number of vehicles dropping off HHW, equals 7-8 percent of the number of single-family homes in Sunnyvale.

Encouraging resident use of HHW events is not necessarily the best or most cost-effective way to decrease improper disposal of HHW. HHW disposal is costly (about $60 per vehicle on average, in 2010) and unbridled use of HHW events could cause serious cost increases for the Solid Waste Fund and higher rates for Sunnyvale residents and businesses.

As a result, the City encourages reduced generation of HHW and an Extended Producer Responsibility (EPR) approach to handling discarded HHW. Residents are encouraged to reduce generation by:

- Using non-toxic alternatives
- Using up products that would become HHW if discarded
- Sharing products with neighbors and friends

As described above, an EPR approach to items that will become HHW when discarded places more responsibility for end-of-life management with the businesses that manufacture, distribute and sell hazardous materials to consumers. EPR has the potential to reduce the City's cost of managing HHW material. Materials that adversely affect public health and the environment if improperly disposed and that could be better managed with an EPR approach include pharmaceuticals, sharps (needles and lancets) and household batteries.

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POLICY EM-14.1 REDUCE GENERATION OF SOLID WASTE BY PROVIDING SOURCE REDUCTION PROGRAMS AND PROMOTING REDUCTION BEHAVIOR. *(Previously Solid Waste Policy 3.2B.1)*

POLICY EM-14.2 MAXIMIZE DIVERSION OF SOLID WASTE FROM DISPOSAL BY USE OF DEMAND MANAGEMENT TECHNIQUES, PROVIDING AND PROMOTING RECYCLING PROGRAMS AND ENCOURAGING PRIVATE SECTOR RECYCLING. *(Previously Solid Waste Policy 3.2B.2)*

POLICY EM-14.3 MEET OR EXCEED ALL FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS CONCERNING SOLID WASTE DIVERSION AND IMPLEMENTATION OF RECYCLING AND SOURCE REDUCTION PROGRAMS. *(Previously Solid Waste Policy 3.2B.3)*

POLICY EM-14.4 INCREASE DEMAND FOR RECYCLED MATERIALS BY ADVOCATING LOCAL, STATE AND FEDERAL LEGISLATION THAT WILL INCREASE USE OF RECYCLED CONTENT PRODUCTS. *(Previously Solid Waste Policy 3.2B.4)*

Disposal Programs

GOAL EM-15
ENVIRONMENTALLY-SOUND DISPOSAL

DISPOSE OF SOLID WASTE IN AN ENVIRONMENTALLY SOUND, DEPENDABLE AND COST-EFFECTIVE MANNER. *(Previously Solid Waste Goal 3.2D / Adopted in 1996)*

From the City's perspective, the environmental impacts, costs and legal liabilities of solid waste disposal link together the past, the future and the present. The past is important because the City and individual waste generators located in Sunnyvale retain liability for environmental issues related to waste previously disposed, regardless of the

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location. This calls for responsible management of the closed Sunnyvale Landfill, which served the community's waste disposal needs from the 1920s to 1993. The future is important because it will someday become the past. That is to say, the City's choices of disposal method and location for the waste of the future will someday create liability for actions taken or not taken with regard to that waste. In the present, the City expends money based on past waste disposal decisions and plans its future disposal methods and locations.

The City's choice of disposal method and site is of great importance to the City itself and to waste generators located in Sunnyvale due to the liability associated with disposal. Waste placed in a landfill doesn't go "away" and, under certain circumstances, future environmental cleanup costs at a disposal site may create financial liability for the City. In decades past the City has, in fact, been assessed liability for small percentages of the cleanup cost at two hazardous waste landfills and a waste oil recycling facility. Although the dollar amounts in these cases were relatively small, the experience is instructive.

Closed Sunnyvale Landfill

The Sunnyvale Landfill stopped accepting refuse on September 30, 1993. Final cover placement in compliance with state regulations was completed in 1994. Approximately 93 of the landfill's 100 acres contain waste. An area of about 7 acres is developed for post-closure use as a biosolids monofill disposal site. It is designed to accept biosolids from the WPCP when market conditions or the characteristics of the biosolids make it difficult or expensive to take them elsewhere.

The closed landfill represents one of the largest areas of open space in Sunnyvale. It is especially valued for recreation because portions are adjacent to the Bay Trail. The walking trails and landfill maintenance roads on the South and West Hills are heavily used for lunch time recreation by employees of companies located in the nearby Moffett Park industrial area. Walking, biking, bird watching and the scenic views from the top of the West Hill are especially popular with the public.

Since closure, the landfill has developed increasing biological diversity. Many mammal, reptile and bird species are observed. Most notable is the Western Burrowing Owl (Athene cunicularia hypugaea), a "species of special concern." Burrowing owls nest in old ground squirrel burrows on the landfill surface and are observed seasonally, often at up to four sites. The City manages the landfill surface around these owl sites so as to enhance its value as habitat for the owls (for example, grass is mowed short to enhance visibility of prey and predators). Landfill maintenance activities are scheduled to avoid active burrows and to avoid choice nesting sites in the breeding season. Additionally, leash laws are actively enforced as the presence of loose dogs discourages use of the landfill as owl habitat.

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Asphalt and Concrete Recycling Facility

Since 1985, the City has leased space at or near the landfill to a private company that recycles concrete and asphalt. The source of the raw material is typically pavement material generated by roadway and sidewalk repairs or demolition of concrete structures. Because the facility accepts material that would be otherwise disposed of in a landfill, it is an important component of the City's compliance with the 50 percent diversion mandate contained in the California Integrated Waste Management Act of 1989 (AB 939). The City's lease requires the operator to report the jurisdiction of origin of the raw materials, and that information is available to the City and other jurisdictions for preparing AB 939 compliance reports.

Household Hazardous Waste

Another post-closure activity is the Household Hazardous Waste (HHW) event site at 164 Carl Road, which is leased by the City to the Countywide HHW Program. This location is also used as an operations base and storage location for the City's landfill post-closure maintenance staff.

See Goal EM-13 (Recycling and Source Reduction Programs) for discussion of Household Hazardous Waste collection.

Kirby Canyon Landfill

Waste is disposed at Kirby Canyon under a 1991 disposal agreement between the City and Waste Management of California, a private company that operates Kirby Canyon, leasing the site from Castle & Cook. The term of the disposal agreement ends in 2021. The agreement requires that the City deliver to the SMaRT Station all municipal solid waste collected by its franchised hauler. It then requires that all municipal solid waste that is not segregated at the SMaRT Station for recycling be delivered to Kirby Canyon for disposal. Although the agreement was drawn up contemplating disposal at Kirby Canyon, it does contain provisions for Waste Management to direct the City's waste elsewhere under specified conditions.

In 1991 Sunnyvale, Mountain View and Palo Alto selected the Kirby Canyon Landfill, operated by Waste Management of California and located in south San Jose, as their site for long term garbage disposal. These three "SMaRT Station" cities, combined, are the largest single customer at Kirby Canyon. Identifiable contributors of the waste, such as large industrial generators located in Sunnyvale, can also be named directly in cleanup actions. As a result, these generators tend to share the City's concern about the integrity of disposal sites. The cities cooperated in the construction and now the operation of the SMaRT Station pursuant to the 1992 Second Memorandum of Understanding (MOU). The MOU spells out each city's operational and financial obligations and benefits with regard to the facility. It places Sunnyvale at the center of the relationship as owner and operator of the SMaRT Station.

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The agreement with Waste Management allows the landfill operator to increase City costs due to regulatory changes. Depending on the type of regulation, these cost increases could apply to incoming solid waste as well as "in place" solid waste disposed in prior years. Reducing the amount of solid waste for which the City is responsible in landfills in the future may be the most cost-effective way to manage the cost of complying with future environmental regulations.

The City's decision to enter into a long-term disposal contract with Waste Management was driven in part by the technical qualifications of that company, its proactive approach to regulatory compliance and its practice of keeping up with rapidly changing requirements and standards for landfill construction, operation and monitoring. City staff conducts an annual review and assessment of regulatory documents for Kirby Canyon to verify that the site continues to be operated in a way that minimizes future City liabilities. Future city decisions and policies that affect where Sunnyvale wastes (hazardous and non-hazardous alike) are disposed should likewise consider not just the immediate cost of disposal, but also the potential for long-term environmental cleanup liabilities.

Planning For Future Disposal

The fact that Sunnyvale has landfill disposal capacity under contract until 2021 should not lead to complacency. There were 16 years between the designation of the SMaRT Station site as suitable for a transfer station and the date the facility was ready for operation. It should be assumed that acquiring new disposal capacity will take a minimum of five years—possibly longer if coordination with other cities is required. Thus, the City should begin the process of arranging for post-2021 disposal no later than 2016. The time prior to 2016 should be used to determine a Zero Waste Strategic Plan and investigate potential technologies, partnerships and funding issues, all of which will affect the amount and type of disposal capacity required post-2021.

As 2021 approaches, the City should begin developing its strategy for future transfer and disposal methods, locations and partnerships. This process must be well under way no later than 2016, five years prior to the expiration of the current disposal agreement in order to assure an orderly transition to post-2021 disposal options consistent with the Zero Waste Strategic Plan.

POLICY EM-15.1 ASSURE THAT THE CITY POSSESSES A MINIMUM OF FIVE YEARS OF REFUSE DISPOSAL CAPACITY AT ALL TIMES. *(Previously Solid Waste Policy 3.2D.1)*

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- EM-15.1a When available disposal capacity equals 10 years or less, initiate actions to arrange for sufficient capacity to accommodate present and projected City needs. *(Previously Solid Waste Action Statement 3.2D.1b)*

POLICY EM-15.2 REDUCE THE AMOUNT OF REFUSE BEING DISPOSED, GENERATE RECYCLING REVENUES, AND MINIMIZE TRUCK TRAVEL TO THE DISPOSAL SITE THROUGH USE OF THE SUNNYVALE MATERIALS RECOVERY AND TRANSFER (SMART) STATION. *(Previously Solid Waste Policy 3.2D.2)*

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APPENDIX H

City of Sunnyvale
2025 Urban Water Management Plan
SFPUC and Valley Water Drought Analyses Documents

San Francisco Water Power Sewer
Operator of the Hetch Hetchy Regional Water System

525 Golden Gate Ave
San Francisco, CA 94102
(415) 554-3155
sfpuc.gov

March 11, 2026

Danielle McPherson
Senior Water Resources Specialist
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 650
San Mateo, CA 94402

Dear Ms. McPherson,

This letter contains the supply reliability of the San Francisco Public Utilities Commission (SFPUC) Regional Water System (RWS) that the SFPUC has prepared for the 2025 Urban Water Management Plan (UWMP), which the Wholesale Customers may also use in their respective 2025 UWMPs. The SFPUC has assessed the RWS's supply reliability under the following planning scenarios:

1. Projected supply reliability for years 2030 through 2050, assuming total demand is equivalent to the sum of the projected retail and wholesale demands on the RWS, which includes Wholesale Customer purchase projections provided to the SFPUC by BAWSCA on March 4, 2026 (refer to Table 1 below).
2. Projected supply reliability for 2050, assuming total demand is equivalent to the sum of the projected retail demands on the RWS and the Wholesale Customers' Supply Assurance of 184 MGD.
3. Under each of the above demand conditions, projected supply reliability for the following scenarios: (a) with implementation of the 2018 amendments to the Bay-Delta Water Quality Control Plan (Bay-Delta Plan Amendment) and (b) without implementation of the Bay-Delta Plan Amendment.

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Daniel Lurie
Mayor

Joshua Arce
President

Stephen E. Leveroni
Vice President

Avni Jamdar
Commissioner

Kate H. Stacy
Commissioner

Meghan Thurlow
Commissioner

Dennis J. Herrera
General Manager

Table 1. Retail and Wholesale RWS Demand Assumptions Used for Supply Reliability Modeling (MGD)

	2025[1]	2030	2035	2040	2045	2050
Retail	61.1	62.7	61.2	61.9	64.0	66.7
Wholesale[2]	130.1	133.9	136.3	140.6	144.1	148.4
Total	**191.2**	**196.6**	**197.5**	**202.5**	**208.1**	**215.1**

[1] 2025 demands are from the FY 2024-25 Table J-1 water use calculations, prepared pursuant to the Water Supply Agreement between the SFPUC and the Wholesale Customers.

[2] 2030 through 2050 Wholesale Customer purchase projections were provided to the SFPUC by BAWSCA on March 4, 2026, and include demands for the cities of San Jose and Santa Clara.

The total amount of water the SFPUC can deliver to the Retail and Wholesale Customers from the RWS depends on several factors, including (1) the amount of water that is available to the SFPUC from natural runoff, (2) the amount of water in reservoir storage, and (3) the amount of water that the SFPUC releases from the RWS for purposes other than customer deliveries (e.g., instream flow releases below RWS reservoirs). For planning purposes, the SFPUC "average year" or "normal year" is based on historical hydrology under conditions that allow the RWS reservoirs to be filled over the course of the snowmelt season, allowing full deliveries to customers. For "dry-year" supply scenarios, the SFPUC plans its water deliveries using a water-supply planning methodology with reference to a simulated 8.5-year design drought.

In each demand scenario for 2030 through 2050, the SFPUC estimated RWS deliveries using the standard SFPUC procedure, which includes adding increased levels of rationing as needed in dry years to balance the demands on the RWS with available water supply. The five consecutive dry-year sequence shown in the tables below represent years 2 through 6 of the design drought. The SFPUC chose this sequence because year 2 is the first year in which system-wide water use reductions could take effect, as the design drought sequence generally begins year 1 with full reservoirs. All simulations that the SFPUC has prepared for its 2025 UWMP have increased levels of rationing in the final years of the design drought sequence. The SFPUC has presented the results in the standardized format prescribed by DWR.

Assumptions about the status of the dry-year water supply projects included in the SFPUC's Water System Improvement Program (WSIP) are provided below in Table 2 titled "WSIP Project Assumptions for RWS Supply Modeling." The table reflects instream flow requirements at San Mateo and Alameda Creeks,

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as described in the UWMP "common language" that the SFPUC provided to BAWSCA and the Wholesale Customers separately from this letter.

The SFPUC utilized the Water Shortage Allocation Plan (WSAP) that is incorporated in the Water Supply Agreement between the SFPUC and the Wholesale Customers to allocate the RWS supply available during dry years between the Retail Customers and the Wholesale Customers in the 2025 UWMP supply reliability analysis. The WSAP, also known as the Tier 1 Plan, defines the method for allocating between the Retail Customers collectively and Wholesale Customers collectively the available RWS supplies during system-wide shortages. The SFPUC and the Wholesale Customers most recently amended the WSAP in 2025. Also in 2025, the Wholesale Customers adopted an updated Tier 2 Plan, which allocates the collective Wholesale Customers' share of available RWS supplies from the Tier 1 Plan among each of the 26 Wholesale Customers. The WSAP addresses shortages that require a system-wide reduction in water use of 20% or less, consistent with the SFPUC's Level of Service Goal. For any shortage scenario requiring a system-wide reduction in water use above 20% in the supply reliability analysis, the SFPUC applied the Tier 1 Plan's allocation of supplies between the Retail Customers and Wholesale Customers for a shortage requiring a system-wide reduction in water use of 16-20%.

Because of the uncertainty surrounding implementation of the Bay-Delta Plan Amendment, the RWS supply reliability assessment evaluates two future supply scenarios: (1) with implementation of the Bay-Delta Plan Amendment, and (2) without implementation of the Bay-Delta Plan Amendment. It is unknown when implementation may begin on the Bay-Delta Plan Amendment; for the purposes of the 2025 UWMP analysis, the SFPUC included it beginning in the 2030 modeling scenarios (see Tables 4a-4g and 6).

The SFPUC incorporated additional modeling assumptions in the 2025 UWMP analysis regarding the State Water Resources Control Board curtailments and assumptions regarding agreements with Turlock and Modesto Irrigation Districts pertaining to instream flow obligations.

1. During the last two drought periods, 2013-2016 and 2021-2023, the State Water Resources Control Board implemented curtailments through emergency regulations and curtailment orders that attempted to limit diversions from Central Valley watersheds including the Tuolumne River at certain times. Due to the uncertain legality of the State Water Resources Control Board's curtailment actions as well as the

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uncertainties regarding any potential future curtailment actions against San Francisco, the SFPUC's RWS supply reliability analyses do not assume curtailments are in effect.

2. Through a 1966 agreement with the Modesto and Turlock Irrigation Districts (Districts), who are more senior downstream appropriative water rights holders on the Tuolumne River, San Francisco may become responsible for up to approximately 51.7% of any flow releases the Federal Energy Regulatory Commission (FERC) may require through issuance of a new license for the Districts' Don Pedro Hydropower Project. The exact flow contribution for which San Francisco may become responsible is highly uncertain and may depend on multiple currently unknown factors, including an anticipated Endangered Species Act biological opinion from the National Marine Fisheries Service and a Clean Water Act section 401 water quality certification from the State Water Resources Control Board. San Francisco's potential responsibility for FERC-ordered flows may further depend on San Francisco's ability to enter into a new or extended agreement with the Districts to offset a portion of San Francisco's flow contributions in exchange for payment. Due to the high levels of uncertainty surrounding the Districts' FERC-relicensing process, as well as the unknown timing for license issuance, the SFPUC's RWS water supply reliability analyses do not assume additional water supply losses from any potential new FERC-ordered flow releases.
3. The simulation of the Bay-Delta Plan Amendment scenario assumes that a 1996 agreement between San Francisco and the Districts (the Side Agreement), which allows San Francisco to pay the Districts in lieu of contributing a portion of current FERC-ordered flow releases, remains in effect, and that the San Francisco share of flows in excess of and not covered by the Side Agreement is approximately 51.7%. These assumptions were made for the purpose of completing the modeling for the UWMP update, and they do not represent a commitment by San Francisco or the Districts to any future agreement or of San Francisco accepting responsibility for any future FERC-ordered flow releases.

Based on current projected demands, supply modeling for the two future supply scenarios shows significantly different supply reliability projections for the RWS:

- With implementation of the Bay-Delta Plan Amendment: Under this scenario, using the demand assumptions shown in Table 1, RWS supplies are expected to range from full availability in an average year

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(100%) to as low as 57% in multiple dry years when compared to water supplies in an average year. In other words, RWS supplies could be reduced by up to 43% in a multi-year drought. See Tables 4a-4g and 6.

- Without implementation of the Bay-Delta Plan Amendment: Under this scenario, using demand assumptions shown in Table 1, there are no anticipated shortages of RWS supplies. See Tables 5a-5g and 7.

Table 8 below provides the Wholesale Customer purchase projections and Wholesale Customer allocation of RWS supply for the five-year drought risk assessment from 2026 to 2030. The supply projections for 2026 to 2030 are based on a linear growth from 2025 to 2030 levels of demand as calculated by BAWSCA. This table does not assume implementation of the Bay-Delta Plan Amendment because the start of implementation remains uncertain.

In the forthcoming 2025 UWMP, the SFPUC acknowledges that it has a Level of Service objective to meet an average annual water demand of 265 MGD from the SFPUC watersheds for Retail and Wholesale Customers during non-drought years, as well as a contractual obligation to supply 184 MGD to the Wholesale Customers, subject to reduction under certain conditions. The SFPUC will, accordingly, include the results of modeling based on a Wholesale Customer demand of 184 MGD to facilitate planning that supports meeting this Level of Service objective and its contractual obligations. The results of this modeling will be in an appendix to the 2025 UWMP prepared by the SFPUC. The RWS supply projections shown in the tables below are more accurately characterized as supplies that will be used to meet projected Retail and Wholesale Customer demands.

It is our understanding that you will pass this information on to the Wholesale Customers. If you have any questions or need additional information, please do not hesitate to contact Jennifer Lee at jenlee@sfwater.org or (415) 551-4563.

Sincerely,

Steven R. Ritchie

Steven R. Ritchie
Assistant General Manager, Water Enterprise

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Table 2: WSIP Project Assumptions for RWS Supply Modeling

Projects	Base Year 2025	Base Year 2030 and Beyond	Base Year 2040 and Beyond
Lower Crystal Springs Dam Improvements	Crystal Springs storage not fully restored	Crystal Springs storage not fully restored	Crystal Springs storage not fully restored
Regional Groundwater Storage and Recovery (GSR) Project	GSR account partially filled at spring 2020 level of 43,000 AF; GSR recovery rate of 5.2 MGD[a]	GSR account fully filled; GSR recovery rate of 5.2 MGD[a]	GSR account fully filled; GSR recovery rate of 6.2 MGD[a]
Alameda Creek Recapture Project	Project not built	Project built and operating	Project built and operating
Dry-Year Transfers	Not in effect	Not in effect	Not in effect

a. The GSR Project was intended to provide 7.2 MGD over 7.5 years, however current limitations on the number of wells available will result in deliveries less than 7.2 MGD over 7.5 years.

Table 3: Projected Total Regional Water System Supply Utilized and Portion of Regional Water System Supply Utilized by Wholesale Customers in Normal Years [For Table 6-9]:

RWS Supply	2030	2035	2040	2045	2050
RWS Supply Utilized (MGD)	196.6	197.5	202.5	208.1	215.1
RWS Supply Utilized by Wholesale Customers[a] (MGD)	133.9	136.3	140.6	144.1	148.4

a. RWS supply utilized by Wholesale Customers from 2030 through 2050 is equivalent to Wholesale Customer purchase projections provided to the SFPUC by BAWSCA on March 4, 2026, and includes demands for the cities of San Jose and Santa Clara.

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Basis of Water Supply Data: With Implementation of the Bay-Delta Plan Amendment

Table 4a: Basis of Water Supply Data [For Table 7-1], Base Year 2030, With Bay-Delta Plan Amendment

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2030	196.6	100%	133.9	
Single dry year	2030	147.5	75%	92.2	At shortages 20% or greater, wholesale allocation is assumed to be 62.5% and retail allocation is 37.5%.
Consecutive 1st dry year	2030	147.5	75%	92.2	Same as above.
Consecutive 2nd dry year	2030	123.9	63%	77.4	Same as above.
Consecutive 3rd dry year	2030	123.9	63%	77.4	Same as above.
Consecutive 4th dry year	2030	123.9	63%	77.4	Same as above.
Consecutive 5th dry year	2030	123.9	63%	77.4	Same as above.

Table 4b: Basis of Water Supply Data [For Table 7-1], Base Year 2035, With Bay-Delta Plan Amendment

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2035	197.5	100%	136.3	
Single dry year	2035	146.2	74%	91.3	At shortages 20% or greater, wholesale allocation is assumed to be 62.5% and retail allocation is 37.5%.
Consecutive 1st dry year	2035	146.2	74%	91.3	Same as above.
Consecutive 2nd dry year	2035	124.4	63%	77.8	Same as above.
Consecutive 3rd dry year	2035	124.4	63%	77.8	Same as above.
Consecutive 4th dry year	2035	124.4	63%	77.8	Same as above.
Consecutive 5th dry year	2035	124.4	63%	77.8	Same as above.

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Table 4c: Basis of Water Supply Data [For Table 7-1], Base Year 2040, With Bay-Delta Plan Amendment

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2040	202.5	100%	140.6	
Single dry year	2040	145.8	72%	91.1	At shortages 20% or greater, wholesale allocation is assumed to be 62.5% and retail allocation is 37.5%.
Consecutive 1st dry year	2040	145.8	72%	91.1	Same as above.
Consecutive 2nd dry year	2040	123.5	61%	77.2	Same as above.
Consecutive 3rd dry year	2040	123.5	61%	77.2	Same as above.
Consecutive 4th dry year	2040	123.5	61%	77.2	Same as above.
Consecutive 5th dry year	2040	123.5	61%	77.2	Same as above.

Table 4d: Basis of Water Supply Data [For Table 7-1], Base Year 2045, With Bay-Delta Plan Amendment

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2045	208.1	100%	144.1	
Single dry year	2045	145.7	70%	91.0	At shortages 20% or greater, wholesale allocation is assumed to be 62.5% and retail allocation is 37.5%.
Consecutive 1st dry year	2045	145.7	70%	91.0	Same as above.
Consecutive 2nd dry year	2045	122.8	59%	76.7	Same as above.
Consecutive 3rd dry year	2045	122.8	59%	76.7	Same as above.
Consecutive 4th dry year	2045	122.8	59%	76.7	Same as above.
Consecutive 5th dry year	2045	122.8	59%	76.7	Same as above.

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Table 4e: Basis of Water Supply Data [For Table 7-1], Base Year 2050, With Bay-Delta Plan Amendment

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2050	215.1	100%	148.4	
Single dry year	2050	146.2	68%	91.4	At shortages 20% or greater, wholesale allocation is assumed to be 62.5% and retail allocation is 37.5%.
Consecutive 1st dry year	2050	146.2	68%	91.4	Same as above.
Consecutive 2nd dry year	2050	122.6	57%	76.6	Same as above.
Consecutive 3rd dry year	2050	122.6	57%	76.6	Same as above.
Consecutive 4th dry year	2050	122.6	57%	76.6	Same as above.
Consecutive 5th dry year	2050	122.6	57%	76.6	Same as above.

Table 4f: Basis of Water Supply Data [For Table 7-1], Base Year 2050, With Bay-Delta Plan Amendment and Wholesale Demands at 184 MGD Supply Assurance

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2050	250.7	100%	184.0	
Single dry year	2050	145.4	58%	90.9	At shortages 20% or greater, wholesale allocation is assumed to be 62.5% and retail allocation is 37.5%.
Consecutive 1st dry year	2050	145.4	58%	90.9	Same as above.
Consecutive 2nd dry year	2050	120.3	48%	75.2	Same as above.
Consecutive 3rd dry year	2050	120.3	48%	75.2	Same as above.
Consecutive 4th dry year	2050	120.3	48%	75.2	Same as above.
Consecutive 5th dry year	2050	120.3	48%	75.2	Same as above.

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Table 4g: Projected RWS Supply Availability [Alternative to Table 7-1], Years 2030-2050, With Bay-Delta Plan Amendment

Year Type	2030	2035	2040	2045	2050	2050 (with 184 MGD Supply Assurance)
Average year	100%	100%	100%	100%	100%	100%
Single dry year	75%	74%	72%	70%	68%	58%
Consecutive 1st dry year	75%	74%	72%	70%	68%	58%
Consecutive 2nd dry year	63%	63%	61%	59%	57%	48%
Consecutive 3rd dry year	63%	63%	61%	59%	57%	48%
Consecutive 4th dry year	63%	63%	61%	59%	57%	48%
Consecutive 5th dry year	63%	63%	61%	59%	57%	48%

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Basis of Water Supply Data: Without Implementation of the Bay-Delta Plan Amendment

Table 5a: Basis of Water Supply Data [For Table 7-1], Base Year 2030, Without Bay-Delta Plan Amendment

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2030	196.6	100%	133.9	
Single dry year	2030	196.6	100%	133.9	
Consecutive 1st dry year	2030	196.6	100%	133.9	
Consecutive 2nd dry year	2030	196.6	100%	133.9	
Consecutive 3rd dry year	2030	196.6	100%	133.9	
Consecutive 4th dry year	2030	196.6	100%	133.9	
Consecutive 5th dry year	2030	196.6	100%	133.9	

Table 5b: Basis of Water Supply Data [For Table 7-1], Base Year 2035, Without Bay-Delta Plan Amendment

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2035	197.5	100%	136.3	
Single dry year	2035	197.5	100%	136.3	
Consecutive 1st dry year	2035	197.5	100%	136.3	
Consecutive 2nd dry year	2035	197.5	100%	136.3	
Consecutive 3rd dry year	2035	197.5	100%	136.3	
Consecutive 4th dry year	2035	197.5	100%	136.3	
Consecutive 5th dry year	2035	197.5	100%	136.3	

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Table 5c: Basis of Water Supply Data [For Table 7-1], Base Year 2040, Without Bay-Delta Plan Amendment

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2040	202.5	100%	140.6	
Single dry year	2040	202.5	100%	140.6	
Consecutive 1st dry year	2040	202.5	100%	140.6	
Consecutive 2nd dry year	2040	202.5	100%	140.6	
Consecutive 3rd dry year	2040	202.5	100%	140.6	
Consecutive 4th dry year	2040	202.5	100%	140.6	
Consecutive 5th dry year	2040	202.5	100%	140.6	

Table 5d: Basis of Water Supply Data [For Table 7-1], Base Year 2045, Without Bay-Delta Plan Amendment

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2045	208.1	100%	144.1	
Single dry year	2045	208.1	100%	144.1	
Consecutive 1st dry year	2045	208.1	100%	144.1	
Consecutive 2nd dry year	2045	208.1	100%	144.1	
Consecutive 3rd dry year	2045	208.1	100%	144.1	
Consecutive 4th dry year	2045	208.1	100%	144.1	
Consecutive 5th dry year	2045	208.1	100%	144.1	

Table 5e: Basis of Water Supply Data [For Table 7-1], Base Year 2050, Without Bay-Delta Plan Amendment

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2050	215.1	100%	148.4	
Single dry year	2050	215.1	100%	148.4	
Consecutive 1st dry year	2050	215.1	100%	148.4	
Consecutive 2nd dry year	2050	215.1	100%	148.4	
Consecutive 3rd dry year	2050	215.1	100%	148.4	
Consecutive 4th dry year	2050	215.1	100%	148.4	
Consecutive 5th dry year	2050	215.1	100%	148.4	

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Table 5f: Basis of Water Supply Data [For Table 7-1], Base Year 2050, Without Bay-Delta Plan Amendment and Wholesale Demands at 184 MGD Supply Assurance

Year Type	Base Year	RWS Volume Available (MGD)	% of Average Supply	Wholesale Volume Available (MGD)	Notes on Calculation of Wholesale Allocation of RWS
Average year	2050	250.7	100%	184.0	
Single dry year	2050	225.6	90%	158.9	At 10% shortage, wholesale allocation is 64% (144.4 MGD) and retail allocation is 36% (81.2 MGD). Retail allocations above 66.7 MGD are re-allocated to Wholesale Customers, per the Water Supply Agreement. Therefore, 14.5 MGD is added to wholesale allocation, bringing it to 158.9 MGD.
Consecutive 1st dry year	2050	225.6	90%	158.9	Same as above.
Consecutive 2nd dry year	2050	225.6	90%	158.9	Same as above.
Consecutive 3rd dry year	2050	225.6	90%	158.9	Same as above.
Consecutive 4th dry year	2050	225.6	90%	158.9	Same as above.
Consecutive 5th dry year	2050	225.6	90%	158.9	Same as above.

Table 5g: Projected RWS Supply [Alternative to Table 7-1], Years 2030-2050, Without Bay-Delta Plan Amendment

Year Type	2030	2035	2040	2045	2050	2050 (with 184 MGD Supply Assurance)
Average year	100%	100%	100%	100%	100%	100%
Single dry year	100%	100%	100%	100%	100%	90%
Consecutive 1st dry year	100%	100%	100%	100%	100%	90%
Consecutive 2nd dry year	100%	100%	100%	100%	100%	90%
Consecutive 3rd dry year	100%	100%	100%	100%	100%	90%
Consecutive 4th dry year	100%	100%	100%	100%	100%	90%
Consecutive 5th dry year	100%	100%	100%	100%	100%	90%

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Supply Projections for Consecutive Five Dry Year Sequences

Table 6: Projected Multiple Dry Years RWS Wholesale Allocation [For Table 7-4], With Bay-Delta Plan Amendment

	2030	2035	2040	2045	2050	2050 (with 184 MGD Supply Assurance)
First year	92.2	91.3	91.1	91.0	91.4	90.9
Second year	77.4	77.8	77.2	76.7	76.6	75.2
Third year	77.4	77.8	77.2	76.7	76.6	75.2
Fourth year	77.4	77.8	77.2	76.7	76.6	75.2
Fifth year	77.4	77.8	77.2	76.7	76.6	75.2

Table 7: Projected Multiple Dry Years RWS Wholesale Allocation [For Table 7-4], Without Bay-Delta Plan Amendment

	2030	2035	2040	2045	2050	2050 (with 184 MGD Supply Assurance)
First year	133.9	136.3	140.6	144.1	148.4	158.9
Second year	133.9	136.3	140.6	144.1	148.4	158.9
Third year	133.9	136.3	140.6	144.1	148.4	158.9
Fourth year	133.9	136.3	140.6	144.1	148.4	158.9
Fifth year	133.9	136.3	140.6	144.1	148.4	158.9

Table 8: Projected RWS Supply for 5-Year Drought Risk Assessment [For Table 7-5]

Year	2026	2027	2028	2029	2030
Wholesale Purchase Projections[a] (MGD)	130.9	131.6	132.4	133.2	133.9
RWS Supply Utilized by Wholesale Customers[b] (MGD)	130.9	131.6	132.4	133.2	133.9

a. Wholesale Purchase Projections for 2026-2030 assume a linear growth between 2025 actual demands and 2030 projections, as calculated by BAWSCA.
b. This table does not assume implementation of the Bay-Delta Plan Amendment because the start of implementation remains uncertain.

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Notes	
General	Values are rounded to the nearest 1,000 AF.
Imported Water	Based on CalSim 3 model runs for Delivery Capability Report 2025.
SFPUC Supplies	SFPUC deliveries are based on modeled supply reliability results and estimates provided by BAWSCA; values reflect scenarios that assume implementation of the Bay-Delta Plan Amendment.
Recycled Water	Non-potable recycled water supplies are based on projections provided by retailers and reflect anticipated future recycled water use. Potable recycled water supplies assumes implementation of the Pure Water Silicon Valley.
Demand	All model demands are based on the WSMP countywide demand of 330 TAF.
Supply Portfolio	Assumes Valley Water's Water Supply Master Plan 2050 low-cost portfolio: Semitropic storage (350 TAF) through 2035; groundwater banking (250 TAF) starting 2040; Sisk Reservoir expansion in 2035; DCP in 2045; Pure Water Silicon Valley in 2035.
Operations	Under normal year conditions, sustainable storage is maintained and no withdrawals from long-term storage are assumed; demands are met by incoming supplies. During droughts, stored water accumulated during normal and wet years is used to bridge gaps between reduced incoming supplies and
Hydrology	Model period is 1922–2021; single dry year is 1977; multi-year drought is 1988–1992; this remains the most severe extended drought in the record.
Infrastructure	Anderson Reservoir is dewatered in 2030 and operational by 2035. Seismic upgrades to Calero, Guadalupe, Almaden, and Anderson are complete in the 2035 model runs and later.
Supply Definition	Reasonably available supply is water in storage above thresholds for emergency needs, subsidence protection, and operational withdrawal limits for each storage facility.
Shortage Response	In the 5-year drought, WSCP actions are required in years 4 and 5 for some future scenarios; these shortages are addressed through demand reduction and supply augmentation.

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Average Year Supplies and Demands (Acre-feet rounded to nearlest 1,000)

Water Supply	2030	2035	2040	2045	2050
Surface water	56,000	76,000	77,000	76,000	76,000
Imported water	177,000	163,000	163,000	164,000	164,000
SFPUC Supply	50,000	51,000	52,000	53,000	54,000
Natural Groundwater Recharge	61,000	61,000	60,000	60,000	60,000
Recycled water (potable)	0	24,000	24,000	24,000	24,000
Recycled water (non-potable)	20,000	22,000	24,000	26,000	28,000
Supply Total	365,000	397,000	400,000	403,000	406,000
Demand Total	330,000	330,000	330,000	330,000	330,000
Difference (Surplus)	35,000	67,000	70,000	73,000	76,000

Single Dry Year Supplies and Demands (Acre-feet rounded to nearest 1,000)

Water Supply	2030	2035	2040	2045	2050
Surface water	11,000	10,000	10,000	10,000	10,000
Imported water	42,000	37,000	37,000	37,000	37,000
SFPUC Supply	30,000	31,000	32,000	33,000	32,000
Natural Groundwater Recharge	47,000	48,000	47,000	47,000	47,000
Recycled water (potable)	0	24,000	24,000	24,000	24,000
Recycled water (non-potable)	20,000	22,000	24,000	26,000	28,000
Supply from Storage	181,000	250,000	246,000	245,000	246,000
Supply Total	331,000	422,000	420,000	422,000	424,000
Demand Total	330,000	330,000	330,000	330,000	330,000
Difference	1,000	92,000	90,000	92,000	94,000

Multiple Dry Years Supplies and Demands (Acre-feet rounded to nearest 1,000)

		2030	2035	2040	2045	2050
First Year	Supply	232,000	242,000	243,000	225,000	223,000
	Supply from Storage	175,000	245,000	239,000	242,000	242,000
	Demand Totals	330,000	330,000	330,000	330,000	330,000
	Surplus/(Shortfall)	77,000	157,000	152,000	137,000	135,000
	WSCP Actions					
	Revised Difference					
Second Year	Supply	322,000	287,000	287,000	267,000	268,000
	Supply from Storage	136,000	212,000	196,000	188,000	186,000
	Demand Totals	330,000	330,000	330,000	330,000	330,000
	Surplus/(Shortfall)	128,000	169,000	153,000	125,000	124,000
	WSCP Actions					
	Revised Difference					
Third Year	Supply	262,000	231,000	232,000	203,000	204,000
	Supply from Storage	121,000	186,000	174,000	160,000	159,000
	Demand Totals	330,000	330,000	330,000	330,000	330,000
	Surplus/(Shortfall)	53,000	87,000	76,000	33,000	33,000
	WSCP Actions					
	Revised Difference					
Fourth Year	Supply	266,000	241,000	240,000	241,000	241,000
	Supply from Storage	35,000	121,000	106,000	63,000	63,000
	Demand Totals	330,000	330,000	330,000	330,000	330,000
	Surplus/(Shortfall)	(29,000)	32,000	16,000	(26,000)	(26,000)
	WSCP Actions	29,000			26,000	26,000
	Revised Difference	0			0	0
Fifth Year	Supply	277,000	304,000	309,000	282,000	282,000
	Supply from Storage	32,000	54,000	30,000	30,000	30,000
	Demand Totals	330,000	330,000	330,000	330,000	330,000
	Surplus/(Shortfall)	(21,000)	28,000	9,000	(18,000)	(18,000)
	WSCP Actions	21,000			18,000	18,000
	Revised Difference	0			0	0

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APPENDIX I

City of Sunnyvale
2025 Urban Water Management Plan
Sunnyvale Annex Within Volume II of the 2023 Santa Clara County Multijurisdictional Hazard Mitigation Plan



Sunnyvale

Santa Clara County Multijurisdictional Hazard Mitigation Plan 2023 Update

City of Sunnyvale Annex

February 21, 2024

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1. City of Sunnyvale

1.1. Hazard Mitigation Plan Points of Contact

The point of contact during the Santa Clara County Multijurisdictional Hazard Mitigation Plan (MJHMP) planning process for the City of Sunnyvale was the Office of Emergency Services Coordinator in the Public Safety Department. This annex within the MJHMP was developed using information provided by the City of Sunnyvale's Local Planning Team.

Table 1: City of Sunnyvale Local Planning Team Members for the 2023 Santa Clara County MJHMP

Name	Position	Organization	Role on Team and in Planning Process
Trudi Ryan	Director, Community Development	City of Sunnyvale	General oversight, hazard identification, and plan development
Ramana Chinnakotla	Director, Environmental Services	City of Sunnyvale	Hazard identification and plan development
Sean Smith	Street Operations Manager	City of Sunnyvale	Hazard identification and plan development
Mary Jeyaprakash	Senior Planner	City of Sunnyvale	Hazard identification and plan development
Suzanne Park	Chief Building Official	City of Sunnyvale	Hazard identification and plan development

The City's Local Planning Team Members participated in the MJHMP by attending meetings on the Plan Kick-Off, Risk Assessment, Capabilities Assessment, Mitigation Strategy, Wrap-up, and three one-on-one meetings with the planning consultant. In addition, the city filled out the requested forms on each section or provided the requested information verbally to the planning consultant, which were used to draft this annex. The city also shared information regarding public opportunities to participate in the draft plan update utilizing the digital survey and seven in-person and virtual public outreach meetings. Further, the City team was provided the opportunity to review the draft plan prior to submittal to Cal OES and FEMA.

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Table 2: External Stakeholders Invited to Be Involved in Planning Process

Agency or Organization	Stakeholder Type	Description
American Red Cross	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations, among others.	A nonprofit humanitarian organization that provides emergency assistance, disaster relief, and disaster preparedness education in the United States.
Amateur Radio Emergency Service (ARES)	Representatives of businesses, academia, and other private organizations.	A corps of trained amateur radio operator volunteers organized to assist in public service and emergency communications.
California Office of Emergency Services (Cal OES)	Local and regional agencies involved in hazard mitigation activities.	Office responsible for overseeing and coordinating emergency preparedness, response, recovery, and homeland security activities within the state.
California Department of Forestry and Fire Protection	Local and regional agencies involved in hazard mitigation activities.	The fire department of the California Natural Resources Agency.
California Department of Transportation	Agencies that have the authority to regulate development.	An executive department of the U.S. state of California.
Cattlemen's Association	Representatives of businesses, academia, and other private organizations.	A nonprofit trade association that represents California's ranchers and beef producers in political affairs.
City of East Palo Alto	Neighboring communities.	A city in San Mateo County, California, United States.
City of Menlo Park	Neighboring communities.	Menlo Park is a city at the eastern edge of San Mateo County.
Cooper-Garrod Estate Vineyards	Representatives of businesses, academia, and other private organizations.	Garrod Farms is a family-owned and operated estate winery and stables.
Department of Homeland Security	Agencies that have the authority to regulate development.	The U.S. federal executive department responsible for public security, roughly comparable to the interior or home ministries of other countries.
Department of Toxic Substances	Agencies that have the authority to regulate development.	An agency of the government of the state of California that protects public health and the environment from hazardous waste.

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Agency or Organization	Stakeholder Type	Description
Downtown Streets Team	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Teams that restore dignity, inspire hope, and provide a pathway to recover from homelessness.
Emergency Medical Services	Agencies that have the authority to regulate development.	Provides statewide coordination and leadership for the planning, development, and implementation of local EMS systems.
Emergency Services Volunteer Representative	Local and regional agencies involved in hazard mitigation activities.	Organization that ensures public safety, security, and health by addressing and resolving different emergencies.
Federal Aviation Administration	Agencies that have the authority to regulate development.	Offers civil aviation safety enforcement services.
Google	Representatives of businesses, academia, and other private organizations.	American multinational technology company focusing on artificial intelligence, online advertising, search engine technology, cloud computing, computer software, quantum computing, e-commerce, and consumer electronics.
Hidden Villa Farm	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations, among others.	Nonprofit educational organization teaching programs on environmental and multicultural awareness.
Intel Corporation	Representatives of businesses, academia, and other private organizations.	An American multinational corporation and technology company headquartered in Santa Clara, California.
Kaiser Permanente—Santa Clara	Representatives of businesses, academia, and other private organizations.	An American integrated managed care consortium.
Life Moves	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations, among others.	Provides interim housing and supportive services for homeless families and individuals to rapidly return to stable housing.

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Agency or Organization	Stakeholder Type	Description
Moffett Field Ames Research Center, National Aeronautics and Space Administration (NASA)	Representatives of businesses, academia, and other private organizations.	Major NASA research center at Moffett Federal Airfield in California's Silicon Valley.
National Weather Service, National Oceanic and Atmospheric Administration (NOAA)	Local and regional agencies involved in hazard mitigation activities.	Scientific and regulatory agency within the U.S. Department of Commerce.
Pacific Gas and Electric (PG&E)	Representatives of businesses, academia, and other private organizations, and neighboring communities.	One of the largest combination natural gas and electric utilities in the United States.
Regional Water Quality Control Board	Agencies that have the authority to regulate development.	Provides government regulatory services related to water pollution and control.
Rotating Safe Car Park	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Allows for temporary overnight parking for homeless individuals or families living out of their cars as a safe alternative to sleeping on the streets or in a homeless shelter.
Santa Clara County CERT	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Trains residents to prepare for and respond to life-threatening events in their community.
Santa Clara County FireSafe Council	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	A nonprofit, grassroots organization that provides education and project assistance for homeowners.
Santa Clara County Local Oversight Program	Local and regional agencies involved in hazard mitigation activities.	Program to oversee assessment and mitigation of contaminated sites to protect groundwater resources, human health, safety, and the environment.
Santa Clara County Parks	Agencies that have the authority to regulate development, and neighboring communities.	Provide, protect, and preserve regional parklands for the enjoyment and education.
Santa Clara County Planning & Development	Agencies that have the authority to regulate development, and neighboring communities.	Plays a key role in supporting economic development and ensuring opportunities for the public to participate in land development.

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Agency or Organization	Stakeholder Type	Description
Santa Clara County Sheriff's Office	Agencies that have the authority to regulate development, and neighboring communities.	A local law enforcement agency that serves Santa Clara County, California.
Santa Clara University	Representatives of businesses, academia, and other private organizations.	A private Jesuit university in Santa Clara, California.
Santa Clara Valley Open Space Authority	Neighboring communities	An independent special district in Santa Clara County.
St. Louise Hospital (Santa Clara County Hospital System)	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Community hospital.
Stanford Healthcare	Representatives of businesses, academia, and other private organizations, and neighboring communities.	Multispecialty clinic that provides convenient access to advanced, specialty care in the South Bay.
Vista Center for the Blind and Visually Impaired	Representatives of businesses, academia, and other private organizations.	Empowers individuals who are blind or visually impaired to embrace life to the fullest through evaluation, counseling, education, and training.
County of Santa Clara	Neighboring jurisdiction, local agency involved in hazard mitigation.	Response for engaging the whole community in assessing needs and developing strategies to achieve stronger mitigation capabilities within the Santa Clara County Operational Area.
City of Campbell	Neighboring communities.	A city in Santa Clara County.
City of Cupertino	Neighboring communities.	Located in Silicon Valley.
City of Gilroy	Neighboring communities.	A city in Santa Clara County.
City of Los Altos	Neighboring communities.	A city in Santa Clara County.
Town of Los Altos Hills	Neighboring communities.	A city in Santa Clara County.
Town of Los Gatos	Neighboring communities.	A city in Santa Clara County.
City of Milpitas	Neighboring communities.	A city in Santa Clara County.
City of Morgan Hill	Neighboring communities.	A city in Santa Clara County.
City of Mountain View	Neighboring communities.	A city in Santa Clara County.
City of Palo Alto	Neighboring communities.	Located in Silicon Valley.
City of San José	Neighboring communities.	Located in Silicon Valley.
City of Santa Clara	Neighboring communities.	A city near San Jose, in California's Silicon Valley.
City of Saratoga	Neighboring communities.	Located in Silicon Valley.

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Agency or Organization	Stakeholder Type	Description
Santa Clara County Fire Department	Local and regional agencies involved in hazard mitigation activities, and neighboring communities.	A California Fire Protection District serving Santa Clara County.
Santa Clara Valley Water District	Representatives of businesses, academia, and other private organizations, and neighboring communities.	Provides stream stewardship, wholesale water supply, and flood protection for Santa Clara County, California.

The City of Sunnyvale met with and solicited input on the draft plan from a broad range of stakeholders including local and regional agencies involved in hazard mitigation activities (including the Chief Building Official and Environmental Services Director), agencies that have the authority to regulate development (including the town's Community Development Director, Senior Planner, and NOAA), neighboring communities (such as the City of Santa Clara and City of Mountain View), representatives of business, academia, and other private organizations (like the utility company PG&E and major employer Intel), as well as representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations (including the American Red Cross and Downtown Street Teams which helps the unhoused in Sunnyvale).

In addition to inviting a wide range of stakeholders, the City supported public outreach and engagement through distributing a digital survey utilizing social media. This survey reached members of underserved populations, including primarily non-English speaking households.

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Figure 1: Sunnyvale Social Media Outreach for Community Meeting

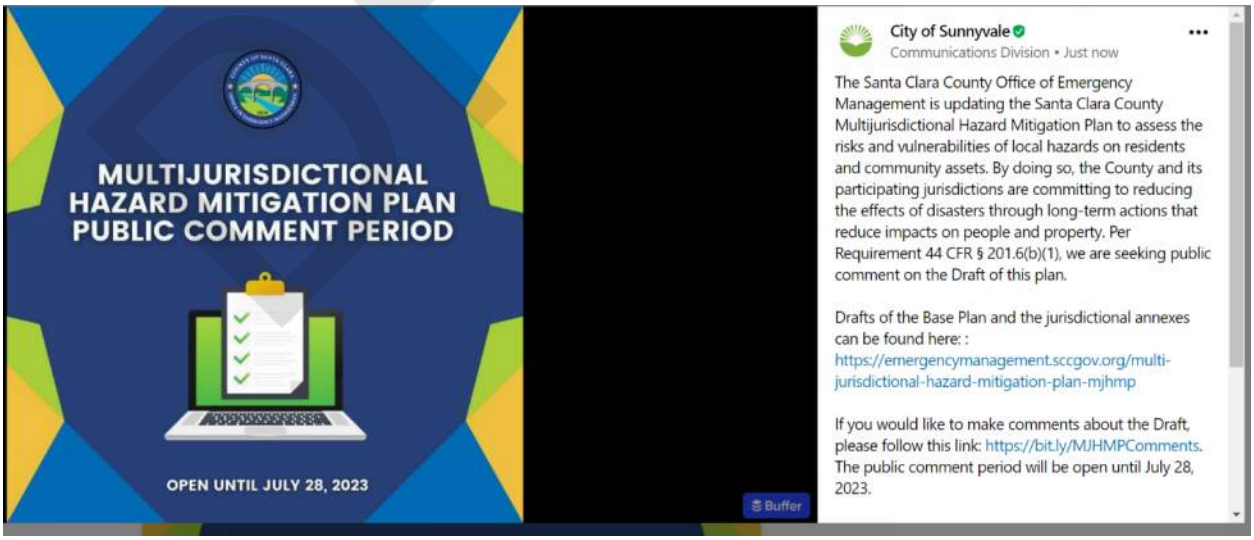


Figure 2: Sunnyvale Social Media Outreach for Public Survey

In addition, the MJHMP was discussed at two virtual and five in-person public meetings across Santa Clara County. These in-person meetings were targeted towards areas with socially vulnerably populations. In this case, the plan focused on those who are socially vulnerable as they belong to an access and functional needs (AFN) population. This plan update utilized the legal definition of AFN for this approach. The California Government Code Section 8593.3 defines Access and Functional Needs as "Individuals who have: Developmental, intellectual, or physical disabilities; Chronic conditions or injuries; Limited English proficiency or non-English speaking; Or individuals who are: older adults, children, or pregnant; living in institutional settings; or Low-income, homeless, and/or transportation disadvantaged." In Saratoga, according to the U.S. Census an estimated 46.1% of the population speaks a language other than English, a key factor to consider while developing any kind of emergency management and mitigation approach to public outreach. The C-MIST framework is used to integrate AFN populations in the operational area into emergency management through communications, maintain health, independence, support, safetyand self-determination, and transportation. These meetings were also designed to be accessible for AFN (access and functional needs) populations. The public was also provided the opportunity to comment on the draft plan.

Comments from the public survey were reviewed, evaluated for alignment with planning priorities, and incorporated as appropriate. The top hazards of concern included wildfire (including wildfire smoke), flooding, and extreme heat. Specifically,, the public highlighted the risk of flooding in Sunnyvale all the way to El Camino. Overall, the public emphasized the need for public education and outreach and partnership building, including with utility and water districts. These suggestions are incorporated into the mitigation actions Sunnyvale has selected.

The participation of the City of Sunnyvale and its stakeholders helped inform the development of the MJHMP and this annex in accordance with current priorities. The new plan continues to expand upon the work of the prior plan including emphasizing partnerships both within jurisdictions and special districts as well as with external stakeholders. Further, there is an increased emphasis on climate change, reflecting the increased understanding of the risk this hazard poses to the OA. The City did not identify additional changes in priorities to be highlighted in their annex.

1.2. Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1912
- **Current Population:** 153,091 as of July 1, 2022
- **Population Growth:** Based on data tracked by the California Department of Finance and the U.S. Census Bureau, Sunnyvale has experienced a population increase since the last plan update. The overall population has increased from an estimated 55,811 people in January 2017 to 153,091 on July 1, 2022.
- **Location and Description:** The City of Sunnyvale is located in Santa Clara County, California. It encompasses 24 square miles. Santa Clara County makes up the southern portion of the San Francisco Bay Area. Sunnyvale is bordered by the San Francisco Bay and portions of San José to the north, Moffett Federal Airfield to the northwest, Mountain View to the west, Los Altos to the southwest, Cupertino to the south, and Santa Clara to the east. U.S. Highway 101 and the historic El Camino Real traverse the City.
- **Brief History:** Sunnyvale's history has always revolved around its economy. Initially, the area's vast open space and fertile soil were ideal for the fruit orchards that supported the settlement's first residents. With the arrival of the railroad in 1864, the economic base of the community was able to expand, as canneries to process the fruit from the surrounding orchards were built near

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the rail lines. In 1906, the Hendy Iron Works relocated from San Francisco to Sunnyvale, continuing the area's industrial development. By 1940, the population had grown to about 4,400, and the Hendy Iron Works was taken over by Westinghouse to support the war effort. After the war, the defense-related industry arrived, capitalizing on the pleasant climate and Moffett Naval Air Station. Lockheed Missiles & Space Company moved to Sunnyvale in 1956, and soon became Sunnyvale's largest employer. The 1950s and 1960s became the periods of greatest growth for the community, resulting in a population of 96,000 in 1970. The defense era gave way to the high-tech era when the microprocessor was introduced in 1971. During the years that followed, companies with foresight saw the potential of computers and the power of semiconductors. The city became the nexus of research, development, and manufacturing that created Silicon Valley, and that legacy continues today in the era of the Internet.

- **Climate:** Sunnyvale's weather is typical of the Northern California coast, which can be categorized as a Mediterranean climate. It has mild, moist winters and comfortably warm, very dry summers. The average precipitation in inches per year is approximately 15.71. The average temperature ranges from 71 to 53 degrees Fahrenheit (°F). Average daytime summer temperatures are in the high 70s, and during the winter, average daytime high temperatures rarely stay below 50 °F.
- **Governing Body Format:** The City of Sunnyvale is a charter City. The charter authorizes the creation of the City and outlines its powers, functions, and organization. The original Charter of the City of Sunnyvale was established by vote of the people of the City of Sunnyvale as the organic law of the City under the authority of the Constitution of the State of California and became effective on May 18, 1949. The municipal government provided by the Charter is known as the "Council-Manager" form of government. The elective officers of the City consist of a City Council composed of seven members selected from geographic districts within the City. The Mayor and Vice Mayor are directly elected serving two-year and one-year terms, respectively. The City of Sunnyvale consists of 11 departments: City Attorney, City Manager, Community Development, Environmental Services, Finance, Human Resources, Information Technology, Library and Recreational Services, NOVA Workforce Services, Public Safety, and Public Works. The City of Sunnyvale has a strong tradition of community participation, one of which is through service on a board or commission. There are 11 boards and commissions that report to the City Council. The City Council assumes responsibility for the adoption of this plan, while the City Manager will oversee its implementation.

1.3. Development Trends

Development for the City of Sunnyvale can be categorized from moderate to high within the last few years, consisting of residential as well as commercial development. The City of Sunnyvale adopted its general plan in 2011 and is the City's blueprint for long-term growth. The Land Use element of this plan, which was updated in 2022, describes a significant level of future growth. The city can be expected to change based on an increase in population, changing demographics, the need for newer infrastructure, and other forces like climate change. New areas where noticeable change may occur under new Land Use and Transportation goals and policies include designated parcels on El Camino Real, within the newly identified Village Centers, the Lawrence Station area, and the Peery Park industrial and office area.

The City of Sunnyvale is surrounded by other cities and the Bay of San Francisco. All new development will be infill and density. Building higher density projects, will bring more people who will be vulnerable to the current hazards. New development replacing current buildings will strengthen the cities resilience as older buildings are taken out of the building stock and new buildings are built to new codes.

The City of Sunnyvale has not experienced a significant amount of development in previously undeveloped areas, but has had re-development.. New buildings are constructed under current structural standards. Population growth has been in decline in recent years, so new population exposure is expected to be minimal in the coming years. Climate change may increase heat, drought, and weather-related risks in the future. Recent and new development may be susceptible to impacts from hazards with

a possibly large geographic extent, such as heavy rain, high winds, extreme heat, and drought. It is not anticipated that there is an increased risk for wildfire and landslide, which have limited risk in Sunnyvale. Rigorous implementation of current building codes is expected to limit increased vulnerability to flood and earthquake. Overall, vulnerability is likely to increase.

Table 3: Recent and Expected Future Development Trends

<table>
<tr><th>Criterion</th><th colspan="7">Response</th></tr>
<tr><td>Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan?
• If yes, give the estimated area annexed and estimated number of parcels or structures.</td><td colspan="7">No</td></tr>
<tr><td>Is your jurisdiction expected to annex any areas during the performance period of this plan?
• If yes, please describe land areas and dominant uses.
• If yes, who currently has permitting authority over these areas?</td><td colspan="7">No</td></tr>
<tr><td>Are any areas targeted for development or major redevelopment in the next five years?
• If yes, please briefly describe, including whether any of the areas are in known hazard risk areas.</td><td colspan="7">Yes, all development in the City is considered redevelopment because the current city is essentially built-upon, and new development requires redevelopment of existing properties.

Hazard risk areas:
• Moffett Park is in the floodplain.
• Numerous industries in the city are hazardous occupancies.</td></tr>
<tr><td rowspan="2">How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?</td><td></td><td>2017</td><td>2018</td><td>2019</td><td>2020</td><td>2021</td><td>2022</td></tr>
<tr><td>Total Number of Permits</td><td>No response (NR)</td><td>NR</td><td>NR</td><td>NR</td><td>NR</td><td>NR</td></tr>
<tr><td>Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.</td><td colspan="7">No response</td></tr>
<tr><td>Please describe the level of buildout in the jurisdiction, based on your jurisdiction’s buildable lands inventory. If no such inventory exists, provide a qualitative description.</td><td colspan="7">No response</td></tr>
</table>

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1.4. Capability Assessment

1.4.1. Resources for the 2023 Planning Initiative

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for inclusion into the 2023 Multijurisdictional Hazard Mitigation Plan for both Volume 1 and Volume 2 (City of Sunnyvale Annex). All the below items were additionally reviewed as part of the full capability assessment for the City of Sunnyvale.

- **Sunnyvale General Plan**: The General Plan was reviewed to incorporate relevant information, such as development trends.
- **Building and Zoning Codes:** Current building codes were reviewed to assess capabilities and identify any potential gaps to incorporate in the mitigation strategy.
- **Sunnyvale Economic Development Plan:** This plan was reviewed to identify any potential mitigation gaps and cross planning initiatives.

1.4.2. Full Capability Assessment

An assessment of legal and regulatory capabilities is presented in Table 200 and Table 201. An assessment of fiscal capabilities is presented in Table 202. An assessment of staffing capabilities is presented in Table 203. An assessment of administrative and technical capabilities is presented in Table 204. Information on National Flood Insurance Program (NFIP) compliance is presented in Table 205. An assessment of education and outreach capabilities is presented in Table 206. Classifications under various community mitigation programs are presented in

Table 207. Development and permitting capabilities are presented in Table 208, and the community's adaptive capacity for the impacts of climate change is presented in Table 209.

Table 4: Legal and Regulatory Capabilities: Codes, Ordinances, and Requirements

Legal and Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Building Code	Yes	No	Yes	Yes
Comment: *2022 California Building Code*				
Zoning Ordinance	Yes	No	Yes	Yes
Comment: *Sunnyvale Municipal Code, Title 19*				
Subdivision Ordinance	Yes	Yes	Yes	Yes
Comment: *Sunnyvale Municipal Code Title 18*				
Stormwater Management Ordinance	No	No	No	No
Comment: *SMC 12.60*				
Other Natural Hazard-Specific Ordinances	No	No	No	No
Comment: *None Identified.*				
Post-Disaster Recovery	No	No	No	No
Comment: *None Identified.*				

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Legal and Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Real Estate Disclosure	No	No	Yes	No
Comment: *None Identified.*				
Growth Management	Yes	No	Yes	No
Comment: *Sunnyvale Municipal Code, Title 9*				
Site Plan Review	No	No	No	No
Comment: *None Identified.*				
Environmental Protection	No	No	No	No
Comment: *None Identified.*				
Flood Damage Prevention	No	No	No	No
Comment: *Sunnyvale Municipal Code, Title 16, Chapter 62*				
Emergency Management	Yes	No	No	No
Comment: *Sunnyvale Municipal Code, Title 2*				
Climate Change	No	No	No	No
Comment: *None Identified.*				
Acquisition of land for open space and public recreation uses	No	No	No	No
Comment: *None Identified.*				

Table 5: Planning, Legal, and Regulatory Capabilities

Planning, Legal, or Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
General Plan	Yes	No	Yes	Yes
Is the plan compliant with Assembly Bill 2140?				
Comment: *Plan was adopted 7/26/2011*				
Capital Improvement Plan	Yes	No	No	Yes
How often is the plan updated? Every two years				
Comment: *The City has adopted a Capital Improvement Plan and the Sunnyvale website lists project and infrastructure project summaries.*				
Floodplain or Watershed Plan	No	No	No	No
Comment: *None Identified. City relies on FEMA floodplain maps.*				
Stormwater Management Plan	No	No	No	No
Comment: *None identified.*				
Urban Water Management Plan	Yes	Yes	Yes	Yes
Comment: *The City updates the Urban Water Management Plan every 5 years.*				
Habitat Conservation Plan	No	No	No	No
Comment: *None identified.*				

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Planning, Legal, or Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Green Infrastructure Plan	No	No	No	No
Comment: *None identified.*				
Parks or Open Space Plan	No	No	No	No
Comment: *None identified, but there is a 'Parks of the Future' document.*				
Economic Development Plan	No	No	No	No
Comment: *Economy is addressed in the General Plan Land Use and Transportation chapter.*				
Transportation Plan	Yes	No	No	Yes
Comment: *The General Plan's Chapter 3 - Land Use and Transportation was updated 6/2022.*				
Shoreline Management Plan	No	No	No	No
Comment: *None identified.*				
Community Wildfire Protection Plan	No	No	No	No
Comment: *None identified.*				
Forest Management Plan	No	No	No	No
Comment: *None identified.*				
Climate Action Plan	Yes	No	No	Yes
Comment: *Sunnyvale has adopted the Climate Action Playbook.*				
Comprehensive Emergency Management Plan	Yes	No	No	Yes
Comment: *The General Plan Safety Element and the City EOP address emergency management goals, issues, and contingencies.*				
Local Emergency Operations Plan	Yes	No	No	Yes
Comment: *The City has adopted an EOP in 2017.*				
Threat and Hazard Identification and Risk Assessment (THIRA)	No	No	No	No
Comment: *None identified.*				
Post-Disaster Recovery Plan	No	No	No	No
Comment: *None identified.*				
Continuity of Operations Plan	No	No	No	No
Comment: None Identified.				
Public Health Plan	No	Yes	No	No
Comment: *Santa Clara County Strategic Public Health Plan*				

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Table 6: Financial Capabilities

Financial Capability	Could the resource be used to fund future mitigation activities?	Has the funding resource been used in the past for mitigation activities? If yes, for what type of mitigation activities?
Community Development Block Grants	Not unless the funds are specifically dedicated to Disaster Response: CDBG-DR funds.	No
Other Federal Funding Programs	Only for public facility buildings that serve the whole community.	No
Capital Improvements Project Funding	Yes	Road Maintenance and Rehabilitation, Streetlight Conduit Replacement, Upgrading Fuel Stations, Emergency Generator Installation projects and Widening and Retrofitting Bridges and Overpasses to meet current seismic requirements receive CIP funding.
Authority to Levy Taxes for Specific Purposes	Yes	Unknown
User Fees for Water, Sewer, Gas or Electric Services	Yes	Unknown
Stormwater Utility Fee	There is no current stormwater utility fee	
Incur Debt through General Obligation Bonds	Yes	Unknown
Incur Debt through Special Tax Bonds	Yes	Unknown
Incur Debt through Private Activity Bonds	No	N/A
Withhold Public Expenditures in Hazard-Prone Areas	Unknown	Unknown
State Funding Programs	Yes	Road Maintenance and Rehabilitation, Streetlight Conduit Replacement, Intelligent Transportation Systems, Traffic Signal Controller Maintenance Replacement and Upgrades, Future Traffic Calming projects and preventative maintenance on various bridges received funding from SB1 and Gas Tax funding sources.
Development Impact Fees for Homebuyers or Developers	No	N/A
Public or Private Partnership Funding Sources	Yes, State and Federal	Yes - Mary Carson water tank seismic retrofitting
Other Funding Sources	No	N/A

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Table 7: Staffing Capabilities

Staffing Capability	Have Capability?	Is staffing adequate to enforce regulations?	Is staff trained on natural hazards and mitigation?
Chief Building Official	• Yes • Full Time • Community Development	Yes	Yes
Parks and Recreation Director	• No	N/A	N/A
Emergency Manager	• Yes • Full Time • Office of Emergency Services	Yes	Yes
Community Planner	• Yes • Full Time • Community Development Department	Yes	Yes
Civil Engineer	• Yes • Full Time • Public Works	Yes	Yes
Engineers or professionals trained in building or infrastructure construction practices	Yes – CDD covers private building structures only.	Yes-CDD	Flood and Earthquake hazards-CDD
Planners or engineers with knowledge of land development and land management practices	• Yes • Full Time • Community Development and Public Works	Yes, as appropriate	Yes
Planners or engineers with an understanding of natural hazards	• Yes • Full Time • Community Development and Public Works	Yes	Yes
Surveyors	• No	N/A	N/A
GIS Coordinator or personnel skilled or trained in GIS applications	• Yes • Full Time • ITD	No	No

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Staffing Capability	Have Capability?	Is staffing adequate to enforce regulations?	Is staff trained on natural hazards and mitigation?
Public Works Director	• Yes • Full Time • Public Works and Parks	Yes	Yes
Fire Chief	• Yes • Full Time • Public Safety	Yes	Yes
Environmental Director	• Yes	Yes	Yes
Staff with training in benefit/cost analysis	• Unknown	Unknown	Unknown
Scientist familiar with natural hazards in local area	• No	-N/A	-N/A

Table 8: Administrative and Technical Capabilities

Administrative or Technical Capability	Have Capability?	Has the capability been used to assess or mitigate risk in the past? If yes, what type of hazard event?
Maintenance programs to reduce risk	Yes	
Mutual aid agreements	Yes	DPS has the ability to deploy as a single resource or as a crew when requests for mutual aid are received.
Hazard data and information	Yes	The Office of Emergency Services keeps records of extreme weather, pandemics, and other emergencies on the City's share drive.
Hazus analysis or GIS software	Yes	Yes, during emergency notifications, mapping software has helped dispatch and OES send out alerts (weather, dangerous animals on the loose, active threats).
Grant writing	Yes	Yes, the City received FEMA funds for the 2017 President's Day storm damage and for COVID-19 emergency response costs.

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Administrative or Technical Capability	Have Capability?	Has the capability been used to assess or mitigate risk in the past? If yes, what type of hazard event?
Does your jurisdiction have any established warning systems or services for hazard events?	Yes	AlertSCC alerts are sent directly to your mobile device, landline, and or email. Alerts for fire, earthquake, Heavy rain, heavy winds, extreme temperatures, crime, and instructions during a disaster. Also, Sunnyvale uses Nixle, which is a zip code-based, opt-in service messaging platform. Rave Mobile Safety is a mass notification platform to communicate internal/work-related emergency conditions to all City staff (e.g., building closure, power outages, criminal activity, Heavy rain, heavy winds, extreme temperatures-related issues). For creek and dam related water emergencies, Valley Water utilizes Blackboard, a mass notification system for jurisdictions.

Table 9: National Flood Insurance Program (NFIP) Compliance

Topic	Response
What department in your jurisdiction is responsible for floodplain management?	Department of Community Development
Who acts as your jurisdiction's floodplain administrator?	Community Development Director delegated to Building Official
Is the floodplain administrator or NFIP Coordinator certified?	Yes
Is floodplain management an auxiliary function in your jurisdiction?	No
What is the date of adoption of your flood damage prevention ordinance?	Adopted November 1, 1994: Ordinance 2486-94. Update will be adopted in October 2023.
Do floodplain development regulations meet or exceed FEMA or state minimum requirements? If regulations exceed requirements, in what ways?	Yes

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Topic	Response
How are the substantial improvement/substantial damage provisions implemented?	Both the Floodplain Administrator and Building Official are authorized to make substantial improvement and substantial damage determinations in accordance with subsection 16.62.120(e) of Sunnyvale's Municipal Code. The Floodplain Administrator and Building Official are responsible for coordinating together to determine market value, compare cost of improvements or repair to market value, making SD/SI determinations, and notifying permit applicants when their work constitutes SD/SI. The Floodplain Administrator is responsible for reviewing all permits. The Floodplain Administrator is responsible for permanently keeping and making available for public inspection all permits as it relates to the administration of these regulations and flood provisions of the building codes.
Provide an explanation of the permitting process for development within the floodplain.	Flood Insurance Manual: https://www.fema.gov/flood-insurance-manual. CRS Manual: https://www.fema.gov/media-library/assets/documents/8768?id=2434
Does your floodplain management program meet or exceed minimum requirements?	Yes
When did your jurisdiction enter the NFIP?	May 15, 1978 Current Effective FIRM: May 18, 2009
Is your jurisdiction in good standing with the NFIP?	Yes
Are the jurisdiction's Flood Insurance Rate Maps (FIRMs) digital, paper, or both?	Digital
Explanation of NFIP administration services within your jurisdiction.	Provide permits, site reviews, and mapping services
Barriers to running an effective NFIP program in your jurisdiction.	None
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	March 12, 2015
Is a CAV or CAC scheduled or needed?	Scheduled
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	Yes
Does your jurisdiction participate in the Community Rating System (CRS)?	Yes, Class 7

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Topic	Response
How many structures are exposed to flood risk within your jurisdiction?	• In 10% annual chance flood hazard area: 1,020 • In 1% annual chance flood hazard area: 1,475 • In 0.2% annual chance flood hazard area: 23,666
How many flood insurance policies are in force in your jurisdiction? • **What is the insurance in force?** • **What is the premium in force?**	• 1,057 policies in force • $275,627,200 insurance in force • $996,831 premium in force
Areas of flood risk with limited NFIP policy coverage.	No
How many total loss claims have been filed in your jurisdiction? • **How many claims were closed without payment or are still open?** • **What is the total amount of paid claims?** • **How many claims were for substantial damage?**	• 10 total loss claims have been filed • 5 claims closed without payment • $68,655.19 total payments for losses
How NFIP compliance will be continued during the next 5 years.	Provide permits, site reviews, and mapping services; public education and outreach

Table 10: Education and Outreach Capabilities

Education or Outreach Capability	Response	How does the personnel, program, or organization relate to disaster resilience and mitigation?	Could the personnel, program, or organization help implement future mitigation activities?
Does your jurisdiction have a Public Information Officer or Communications Office?	Yes	The Public Information Officer can directly communicate hazard or disaster related information.	Yes
Does your jurisdiction have personnel skilled or trained in website development?	Yes	OCM houses the Communications Office which manages the city's website.	Yes
Does your jurisdiction have hazard mitigation information available on your website?	Yes	The City website includes disaster preparedness and emergency services information.	Yes
Does your jurisdiction utilize social media for hazard mitigation education and outreach?	Yes	The City utilizes the Facebook and Instagram platforms.	Yes

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Education or Outreach Capability	Response	How does the personnel, program, or organization relate to disaster resilience and mitigation?	Could the personnel, program, or organization help implement future mitigation activities?
Does your jurisdiction have any citizen boards or commissions that address issues related to hazard mitigation?	Yes	The City has various boards and commissions that address hazard mitigation related issues; Boards and Commissions | Sunnyvale, CA.	Yes
Does your jurisdiction have any ongoing public education or information programs that could be used to communicate hazard-related information?	Yes	The Department of Public Safety's Office of Emergency Services provides training, support, and services to ensure the City is prepared to respond to and recover from the effects of major emergencies.	Yes
Does your jurisdiction have local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, and/or underserved populations?	Yes	The Sunnyvale Office of Emergency Services offers a Community Emergency Response Team (CERT) Basic Training class.	Yes
Does your jurisdiction have natural disaster or safety related school programs?	Yes	Every school, private or public, has their own preplanned natural disaster operational plan. This plan often involves the ICS system. These plans can be found in their "safety plan" that is signed off by a Neighborhood Resource Officer (NRO) each year.	Yes
Does your jurisdiction have public/private partnership initiatives addressing disaster-related issues	No	N/A	N/A

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Table 11: Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	7	
Building Code Effectiveness Grading Schedule	Yes	3	
Insurance Services Office (ISO) Fire Rating	Unknown	-	-
National Weather Service StormReady Program®	No	N/A	N/A
Firewise USA® Program	No	N/A	N/A

Table 12: Development and Permitting Capabilities

Development or Permitting Capability	Response
Does your jurisdiction issue development permits? • **If no, who does? If yes, which department?**	Yes, Community Development
Does your jurisdiction have the ability to track permits by hazard area?	Yes. The City tracks flood zones.
Does your jurisdiction have a buildable lands inventory?	No. With few exceptions, all private lands are buildable.

Table 13: Adaptive Capacity for Climate Change

Adaptive Capacity Assessment Question	Jurisdiction Rating
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	Medium
Comment: *Most staff is aware of issues, but more could be done to provide information on specific impacts and how to address.*	
Jurisdiction-level monitoring of climate change impacts	Low
Comment: *Project specific impacts including greenhouse gas emissions as well as compliance with the City's Climate Action Plan are evaluated on project-by-project basis during California Environmental Quality Act (CEQA) review. If project does not meet the State allowances, mitigation measures are required but the City Council can still approve the project with "overriding considerations" if the project will result in significant Green House Gas (GHG) emissions beyond what can be mitigated. Sunnyvale does not currently have the resources/tools to conduct jurisdiction-level monitoring of climate change impacts.*	
Technical resources to assess proposed strategies for feasibility and externalities	Low
Comment: *Do not have this capacity.*	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	High

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Adaptive Capacity Assessment Question	Jurisdiction Rating
Comment: *Sunnyvale has conducted GHG emissions inventories and plans to conduct them biennially per City's Climate Action Plan.*	
Capital planning and land use decisions informed by potential climate impacts	Medium
Comment: *Project specific impacts including greenhouse gas emissions as well as compliance with the City's Climate Action Plan are evaluated on project-by-project basis during California Environmental Quality Act (CEQA) review. If project does not meet the State allowances mitigation measure are required but the City Council can still approve the project with "overriding considerations" if the project will result in significant GHG emissions beyond what can be mitigated.*	
Participation in regional groups addressing climate risks	Medium
Comment: *City staff participate in several regional groups addressing climate risks including but not limited to Joint Venture Silicon Valley Public Sector Climate Protection Task Force, Santa Clara Valley Water District South Bay Shoreline Study, and County of Santa Clara Silicon Valley 2.0 Risk Assessment Tool. However, each of these forums tends to be more information sharing. South Bay lacks unified approach to adaptation planning and response. It seems there are multiple entities involved but not a single lead agency.*	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	Low
Comment: *Sunnyvale's adopted Climate Action Plan and Adaptation Chapter. Action A.3.1 calls for City to "analyze and disclose possible impacts of climate change on the project or plan area with an emphasis on sea level rise." Project specific impacts including greenhouse gas emissions as well as compliance with the City's Climate Action Plan are evaluated on project-by-project basis during California Environmental Quality Act (CEQA) review. If project does not meet the State allowances mitigation measure are required but the City Council can still approve the project with "overriding considerations" if the project will result in significant GHG emissions beyond what can be mitigated.*	
Identified strategies for greenhouse gas mitigation efforts	Medium
Comment: *City Council adopted Sunnyvale's Climate Action Plan in May 2014. City is currently implementing; however, while plan will meet the State's near-term 2020 target, CAP does not meet 2030 or 2050 GHG reduction targets. City Council considering actions to update CAP to meeting long-term targets and formally adopt State targets as local goal.*	
Identified strategies for adaptation to impacts	Low
Comment: *Sunnyvale's CAP includes a chapter on Adaptation; however, the identified actions are general and emphasize participation on regional groups. The City could benefit through the development of a City specific adaption plan; however, resources and capacity are limited.*	
Champions for climate action in local government departments	Medium
Comment: *Most staff are generally aware of Climate Change issues, especially CDD, DPW, ESD involved in CAP and development projects. Staff could benefit from more information about specific climate impacts to Sunnyvale and by having more tools and resources on how to address adaption as a part of their work.*	
Political support for implementing climate change adaptation strategies	High
Comment: *Elected officials, Sustainability Commission, and community groups (SunnyvaleCool, Livable Sunnyvale, etc.) are actively engaged on climate issues and supportive of City action.*	
Financial resources devoted to climate change adaptation	Low
Comment: *City currently has no funding dedicated to climate change adaptation; any funding would have to come from the General Fund.*	

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Adaptive Capacity Assessment Question	Jurisdiction Rating
Local authority over sectors likely to be negative impacted	Low
Comment:	
Public Capacity	
Local residents' knowledge of and understanding of climate risk	Medium
Comment: *Small group of Sunnyvale resident community is aware and actively engaged; broader community is aware but not engaged***.**	
Local residents' support of adaptation efforts	Low
Comment: *Small group of Sunnyvale resident community is aware and actively engaged; broader community is aware but not engaged or interested in changing their behaviors or taking actions on climate issues.*	
Local residents' capacity to adapt to climate impacts	Medium
Comment: *Not a lot of information on specific adaptation actions a resident can take; broader community may be aware but not engaged or interested in changing their behaviors or taking actions on climate issues.*	
Local economy current capacity to adapt to climate impacts	Medium
Comment: *Most large companies in area are engaged and take precautions to adapt/mitigate their own effects on climate. Mid-size and small companies may not have the resources to address or engage on the issue.*	
Local ecosystems capacity to adapt to climate impacts	Low
Comment: *North Sunnyvale borders the South San Francisco Bay and its wetland and marsh habitats. This area is included in the South San Francisco Shoreline Study. The goal of the Shoreline Study is to protect the parts of Santa Clara County's shoreline with the highest potential damages and threats to human health and safety from flooding, using a combination of flood protection levees and wetlands. This approach using natural infrastructure would provide increased flood protection and restored Bay habitats, as well as a flood protection system that can evolve in the future. The Shoreline Study is coordinated with another project in the area, the South Bay Salt Pond Restoration Project, which seeks to restore historic wetlands on 15,100 acres of former salt ponds in the South Bay. This study is moving forward in phases and the first phase selected is the Alviso Reach which does not include Sunnyvale.*	

1.4.3. Opportunities to Expand Upon and Improve Existing Capabilities

The hazard mitigation planning process presented the opportunity for the community to discuss and evaluate their current capabilities however, building mitigation capabilities is an ongoing process. New capabilities can be added which will support mitigation. Current capabilities can also be enhanced to actively support mitigation and reduce risk. Significant efforts have been made to increase the capabilities of jurisdictions across the OA. By participating in this plan update, each community is reinforcing their support for mitigation and understanding of the capabilities they need to successfully implement mitigation measures. Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include:

- Developing a Climate Action Plan which incorporates hazard data and actions to adapt to a changing climate.
- Budgeting and passing policies and procedures for mitigation actions.
- Adopting and implementing stricter mitigation regulations.
- Approving the training of staff for mitigation activities.

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- Approving mitigation updates to existing plans as new needs are recognized.
- Continuing to update plans as necessary to ensure they are current and reflect the needs of the community or special district.
- Further developing warning systems and messaging.
- Creating and implementing additional public education and outreach offerings and increasing the volume of translated materials.
- Ensuring grant opportunities are capitalized upon to meet mitigation goals.

Each type of the four FEMA-identified capabilities were evaluated, in addition to OA-priority capabilities like adaptive capacity. Gaps and limitations, if any, are discussed in the tables above. Additional jurisdiction-specific opportunities to expand on and improve capabilities for reducing risk include:

- Continue to participate in the Community Rating System and identify additional actions to both reduce flood risk and reduce flood insurance premiums.
- Support public outreach and engagement on hazard mitigation, climate risks, and climate adaptation.
- Expand engineering capabilities to support public infrastructure mitigation measures.
- Update the city's Climate Action Plan including hazard data and actions to adapt to a changing climate.
- Support staff in increasing their familiarity with anticipated natural hazard and climate impacts, particularly local impacts and risk reduction related tools and resources.
- Identify and utilize additional federal or local funding sources for hazard mitigation. Since the last update, multiple new grant programs that support mitigation measures have been established. FEMA's annual BRIC grant program funds a variety of mitigation actions, including infrastructure projects, nature-based solutions, climate adaptation, hazard resistant building codes, and projects benefitting disadvantaged communities.
-

1.5. Integration with Other Planning Initiatives

This section describes the process for integrating the hazard mitigation plan into local planning mechanisms.

1.5.1. Existing Integration

The following plans and programs currently integrate the goals, risk assessment and/or recommendations of the 2017 hazard mitigation plan:

- **Sunnyvale General Plan**: The General Plan is aligned with and includes references to the HMP and will be amended with the new plan update.
- **Building and Zoning Codes:** Current building codes are and will be incorporated to reflect mitigation priorities per city process.
- **Public Outreach Programs:** Programs include direct outreach to property owners of earthquake vulnerable buildings and general public education through the City website and utility mailers.
- **Government Functions:** Day-to-day government functions ensure building permit applicants comply with the hazard mitigation requirements.

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- **Stormwater Management Plans and Procedures:** Planning applications require a preliminary review of stormwater management plans.

These plans and programs will continue to integrate the 2023 hazard mitigation plans and goals and will be updated to match new information as each of these plans and programs are updated.

1.5.2. Opportunities for Future Integration

The following plans and programs do not currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan, but provide an opportunity for future integration:

- **Capital Improvement Plan:** There is an opportunity to include mitigation actions, projects, and priorities in the next Capital Improvement Plan. The plan is updated every 2 years and is expected to be completed in 2024.
- **Climate Action Plan:** The city is considering updating the CAP, or actions within the CAP. Adaptation actions that relate to the impacts of climate change and associated hazards as described in this plan's risk assessment could be incorporated if and when this update occurs. The Draft Game Plan 2028 will go before city council in March 2024.
- **Urban Water Management Plan:** This plan is updated every 5 years. There will be the opportunity to incorporate additional hazard data, GIS products, goals, and actions into this plan next update. This plan was last published in 2020 and anticipated to be renewed in 2025.

The Department of Community Development houses the Planning responsibilities for the City of Sunnyvale. The Director of Community Development, as well as the city's Senior Planner, participated in this plan update. They, along with the city's other team members, will be responsible for disseminating information on this plan and ensuring it's integration into other planning mechanisms moving forward.

1.6. Jurisdiction-Specific Natural Hazard Event History

Table 210 lists all past occurrences of natural hazards within the jurisdiction.

Table 14: Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
COVID-19 Pandemic	DR-4482	3/22/2020	Unknown

1.7. Jurisdiction-Specific Vulnerabilities

- Hazus earthquake models show potential structural losses of $2.2 billion for a 100-year probabilistic earthquake and $8 billion for a 500-year probabilistic earthquake. Of the fault-based scenarios, the highest loss-estimates for Sunnyvale were from the San Andreas fault, with an estimated $2 billion in damage, which is 6.17% of the total replacement value. Although specific population impact counts are not available, it can be anticipated that numerous human impacts from injuries, disruption to basic services, and people seeking shelter from being displace from homes will occur. Sunnyvale has mostly moderate liquefaction potential, which contributes to the effects of ground shaking.
- Sunnyvale is less at risk to wildfire than many cities in the OA. 366 structures and 1,037 people are located in wildfire hazard areas. These structures are valued at $15 million, or 0.53% of the total replacement value. Sunnyvale is primarily urban, so wildfire risk is primarily concentrated in

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undeveloped open space near the bay. Wildfire is expected to increase as climate change contributes to increasingly dry and hot conditions. Vegetation management in open space can reduce wildfire risk.

- Sunnyvale has the 4th highest number of people within potential dam inundation areas. 30,143 people are at risk. $6.3 billion in structures are exposed to inundation from dam failure of the Stevens Creek Dam. Because dam ownership and maintenance are the dam owner's responsibility, public education of dam risk and ability to evacuate safely are important methods for risk reduction in the city.

- Hazus was used to generate loss estimates from riverine flooding. 13.969 people (9% of total) are within the 1% annual flood hazard zone, and 21,284 (13.75%) are within the 0.2% annual flood hazard zone. Both are the 4th highest population percentage exposed to flood in the OA. Damage estimates for a 1% flood hazard are $833 million, or 9.02% of the total replacement value. $1.36 billion in losses are estimated for a 0.2% flood, which is 4.64% of the total value. Levees help reduce flood risk to a significant portion of Sunnyvale. Proper maintenance and monitoring of levees is needed to maintain these benefits. Areas of high social vulnerability do overlap with potential flooding areas.

- Landslide potential is of less concern for Sunnyvale than many cities in the OA. 611 people (0.39% of the total population) are in potential landslide areas. Structures potentially at risk to landslide have a total value of $200 million. Landslide potential in Sunnyvale is most common along highway interchanges, which will likely be smaller slope failures possibly related to heavy rain events or earthquake. Slopes along creeks may also experience erosion and failure.

- It is anticipated that the impacts of drought will be consistent across the OA. Drought impacts make vegetation more vulnerable to disease and wildfire. Extended drought may necessitate limits on landscape irrigation or higher costs for irrigation, which can have economic impacts. Although agriculture is not a primary economic sector in the OA, drought can have severe negative impacts on growth of crops and gardens. Droughts are expected to become more common and possibly of greater intensity or longevity due to ongoing climate change. Conservation and other water management efforts are needed to help maintain an adequate water supply. Water use restrictions will likely have greater negative impact on low-income households and other disadvantaged communities.

- Impacts from inclement weather such as heavy rain, hail, and wind are likely to be very similar across the OA. Individual events may impact only limited areas, but the entire OA is at risk to similar conditions. Heavy rain may cause localized flooding on roadways and low-lying areas which may disrupt transportation for the general public and can also delay emergency response. Heavy rain can also have cascading impacts on landslide potential or strain the capacity of dams. High winds can disrupt power, communication and other services and cause damage to structures. Trees and branches may fall during high winds and damage aboveground power lines. High winds can also contribute to wildfire risk. Extreme heat or cold can be harmful to health, particularly for those with inadequate housing with adequate warming and cooling systems, which may be a greater risk for those in older housing or multi-unit housing or those with less income for higher energy costs associated with cooling. Climate change will likely increase the number of extreme heat events in the future, and events may extend over a longer number of days. This can contribute to increased health risks for older populations, outdoor workers, and unhoused populations. Extended extreme heat events can also strain power systems and contribute to rolling blackouts. Climate change may also change precipitation patterns and heavy rain or wind events.

- Extreme cold events are infrequent and expected to occur less in the future due to warming trends associated with climate change. Impacts to critical facilities, infrastructure, and other assets are minimal. Primary concerns associated with extreme cold are potential health impacts to vulnerable populations such as unhoused individuals, outdoor workers, or individuals without adequate heat in their homes. The very young and very old have more difficulty maintaining body temperature and may be more likely to be adversely affected by extremes in cold and heat.

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- Sunnyvale has no assets directly at risk to tsunami. Tsunami risk is not profiled in this annex.

Repetitive loss records are as follows:

- Number of Federal Emergency Management Agency (FEMA)-identified Repetitive-Loss Properties (RL): 0
- Number of FEMA-identified Severe-Repetitive-Loss (SRL) Properties: 0
- Number of RL Properties or SRL Properties that have been mitigated: 0

Other noted vulnerabilities include:

- Ten URM buildings remain in Sunnyvale, all of which are located in the South Murphy Avenue historical area, which is exempt from the State URM legislation; none of these URMs are residential structures.
- A major industrial zone in the City is in an area considered to be more vulnerable to damage resulting from an earthquake. This land is at or below sea level and is protected by a system of dikes and levees.
- The San Francisco Public Utilities Commission system needs to be upgraded and designed to current seismic standards so that it is able to deliver water even in the event of a major earthquake.
- Minor roadway and pedestrian crossing flooding during heavy rain events occurs at Fair Oaks/Tasman, Evelyn/Hendy, and Fair Oaks/California. Flooding may cause unsafe conditions for vehicle and pedestrian access and cause damage to cars. Flooding may also restrict access to nearby Valley Transportation Authority (VTA) and Caltrain stations. Some residents in these areas may not have access to private transportation and, therefore, likely use public transit to commute to work or reach essential services.
- Private property, utility easements, and public infrastructure along the east areas of Stevens Creek. Areas along Robin Way, Mockingbird Lane, W. Cardinal Drive, and W. Knickerbocker Drive with steep slopes have an increased risk of damage from landslides. Extra maintenance efforts or capital improvement projects may need to occur to ensure drainage systems remain adequate and function properly.

1.7.1. Social Vulnerability

As seen in Figure 136, Sunnyvale has a complex mix of low to moderately high social vulnerability. This indicates a variety of social characteristics that may make recovery from a disaster more difficult for some residents. More resources may be needed to address the specific needs of individuals in these areas. The Social Vulnerability Index shows that some census tracts in the city have as high as 21% of the population below the 150% poverty estimate and 32% in cost-burdened occupied housing units with an income of less than $75,000 (more than 30% of income spent on housing). In the central portion of the city, as much as 46 % of housing is in multi-unit structures of 10 or more units. Those in multi-unit housing are often more likely to be displaced following a disaster but may also have fewer financial resources to seek alternate housing.

U.S. Census Bureau Quick Facts indicate that 59% of Sunnyvale’s population speaks a language other than English at home, 49.6% of the population is of Asian origin, and 49.4% of the population is foreign born. These are important considerations in public education outreach efforts to inform residents of hazard risks.

Heavy rain, wind, extreme heat or cold, and drought can occur throughout the city, so all vulnerable populations could potentially experience greater impacts from those hazards. Earthquake, liquefaction,

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and flood risk are also high throughout the city and could potentially impact all vulnerable populations. In particular, cultural or language barriers may limit their access to information regarding hazard risks and post-disaster relief. Landslide susceptibility is minimal in Sunnyvale and not a high concern for vulnerable populations. Wildfire hazard is also limited, but poor air quality from wildfires in nearby jurisdictions could contribute to health consequences for vulnerable populations such as children or people over age 65, outdoor workers, or those with respiratory or other chronic health conditions.

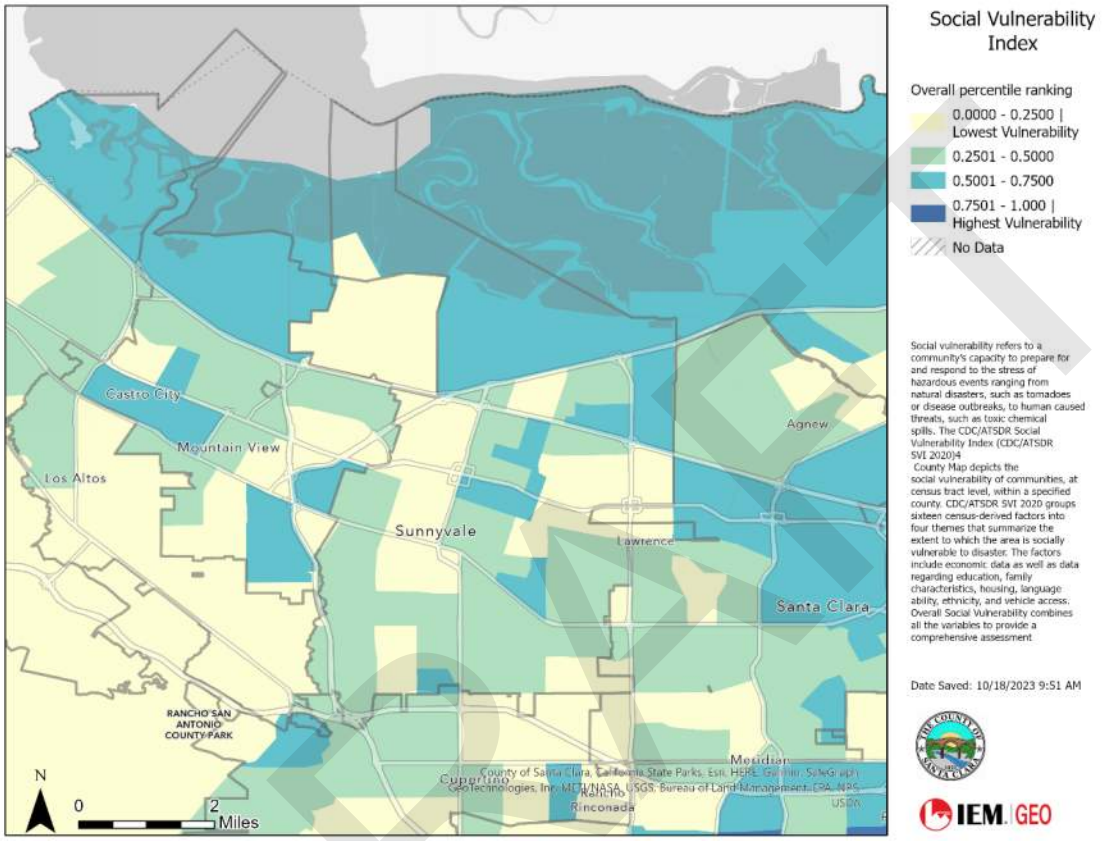


Figure 3: Sunnyvale Social Vulnerability

The Climate and Economic Justice Screening Tool (CEJST) in Figure 137 identifies census tracts that are overburdened and underserved. Two tracts in Sunnyvale meet the thresholds for disadvantaged communities. Linguistic isolation, percentage of individuals with less than a high school diploma, exposure to air pollutants, traffic proximity and volume, and proximity to superfund and hazardous waste sites are among the factors contributing to Sunnyvale's disadvantaged status.

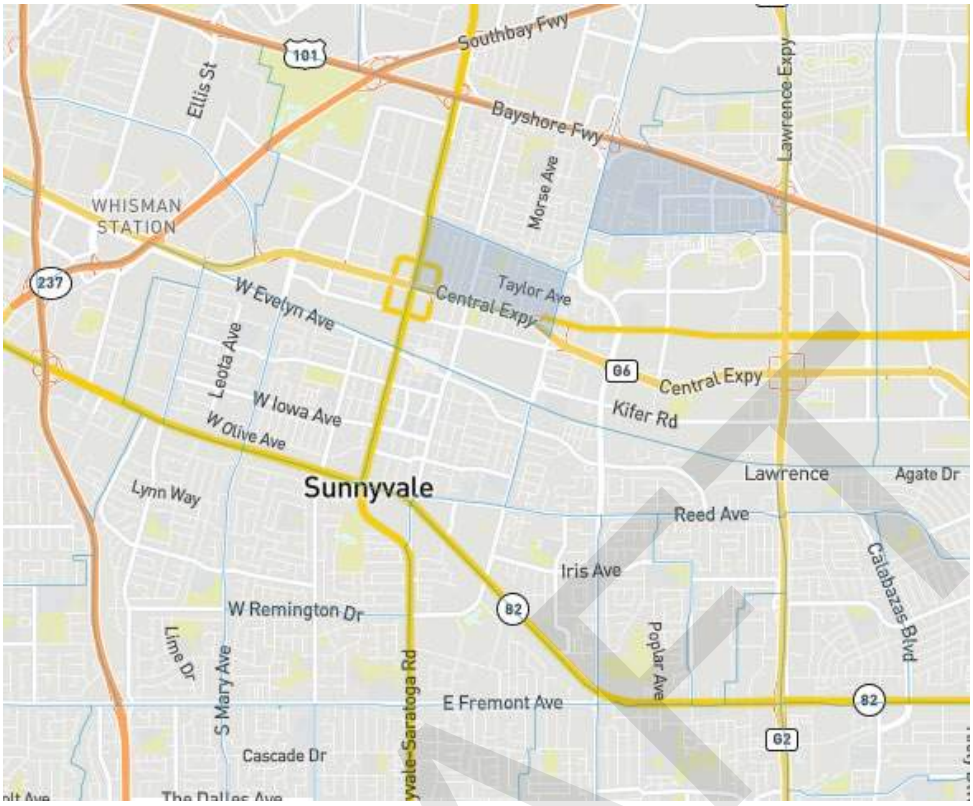


Figure 4: CEJST Disadvantaged Communities in Sunnyvale

1.8. Hazard Risk Index

Table 211 presents the hazards of concern from highest risk index number to lowest, as assigned by the City of Sunnyvale.

Table 15: Hazard Risk Index

Hazard	Probability	Life Impact	Property Impact	Percentage of Area Impacted	Maximum Probable Extent
Earthquake	Highly Likely	Catastrophic	Catastrophic	Significant	Major
Dam/Levee Failure	Unlikely	Catastrophic	Catastrophic	Significant	Major
Heavy Rain	Highly Likely	Minor	Limited	Minimal	Moderate
High Wind	Likely	Minor	Limited	Minimal	Moderate
Extreme Heat	Likely	Minor	Limited	Minimal	Moderate
Extreme Cold	Likely	Minor	Limited	Minimal	Moderate
Wildfire	Likely	Limited	Minor	Minimal	Moderate
Drought	Likely	Minor	Minor	Extensive	Weak
Flood	Occasional	Minor	Minor	Minimal	Moderate
Climate Change	Occasional	Minor	Minor	Negligible	Weak

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Hazard	Probability	Life Impact	Property Impact	Percentage of Area Impacted	Maximum Probable Extent
Landslide/Mass Movement	Unlikely	Minor	Minor	Negligible	Weak

Table 16: Comparison of Sunnyvale Risk Scores to Operational Area (OA)

Risk Score	Earth-quake	Dam/ Levee Failure	Heavy Rain	High Wind	Extreme Heat	Wildfire	Drought	Flood	Landslide	Climate Change
Sunnyvale	2.9	2	1.25	1.15	1.15	1.05	0.9	0.3	0.85	0.3
OA	2.24	1.19	1.44	1.44	1.44	1.68	1.21	0.90	0.36	1.13

1.9. Future Needs to Understand Risk and Vulnerability

A better understanding of the City's vulnerable population, especially those needing assistance in evacuation, are needed. An evaluation of public properties would be helpful in assessing the level of seismic retrofits needed. Additionally, timely inspections and assessment of bridges, culverts, and other critical infrastructure would be beneficial in proactively identifying potential vulnerabilities.

1.10. Status of Previous Plan Actions

Participants were asked to report the status of their mitigation actions listed in the previous plan as a part of this plan update. Where further information isn't provided, the answers are defined as follows:

- *Completed* – work on this action is totally complete.
- *Completed and ongoing* – work on this action is complete; however, it is an ongoing project that will continue to be implemented. An example is a public outreach campaign that was created and will continue to be implemented.
- *In progress* – work on this action has begun and is in progress, but the action is not yet complete.
- *Retain* – work on this action has not begun yet, the action is still relevant, and it should be in the 2023 MJHMP.
- *No longer relevant* – Action item is no longer relevant due to reduce or eliminated risk, it no longer being feasible, there has been a change in jurisdictional or organizational priorities, or another reason as stated.

Unless specifically requested otherwise, only those actions listed as "retain" are incorporated into the 2023 action plan.

Table 17: Status of Action Items from the 2017 MJHMP

Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
SNY-1	Flex couplings being added to the Mary Carson Water Tank #1. This is a water storage tank owned by the City.	Earthquake	Complete

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Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
SNY-2	Flex coupling will be added to the Mary Carson Water Tank #2.	Earthquake	Complete
SNY-3	Widening and retrofitting to meet current seismic requirements of the Fair Oaks Overpass Bridge.	Earthquake	Complete
SNY-4	Widening and retrofitting to meet current seismic requirements of the Old Mountain View-Alvsio Overpass Bridge.	Earthquake	Complete
SNY-5	Flood related improvement project on the East Channel. This project is in the permitting stage.	Flood	In progress
SNY-6	Flood related improvement project on the West Channel. This project is in the permitting stage.	Flood	In progress
SNY-7	Develop a disaster recovery plan.	All Hazards	No longer relevant. No longer a priority for the City.
SNY-8	Review/update the debris management plan.	All Hazards	Complete
SNY-9	Enhance emergency preparedness page on City website by cross-referencing different City department mitigation efforts like flood control projects and climate change initiatives.	All Hazards	Complete
SNY-10	Where appropriate, support retrofitting, purchase or relocation of structures located in high hazard areas and prioritize those structures that have experienced repetitive losses.	All Hazards	On going
SNY-11	Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions within the community.	All Hazards	On going
SNY-12	Actively participate in the plan maintenance protocols outlined in Volume 1 of the hazard mitigation plan.	All Hazards	Complete
SNY-13	Continue to maintain good standing and compliance under the National Flood Insurance Program (NFIP). This will be accomplished through the implementation of floodplain management programs that will, at a minimum, meet the requirements of the NFIP: • Enforcement of the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts.	Flood	Ongoing

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1.11. Hazard Mitigation Action Plan and Evaluation of Recommended Actions

Table 214 lists the actions that make up the City of Sunnyvale hazard mitigation action plan. The maps in Figure 138 through Figure 145 present the City's critical infrastructure, facilities, and identified hazard areas.

Descriptions of the expected time frames for actions are provided below:

- Short term: 1–5 years
- Medium term: 5–10 years
- Long term: Over 10 years
- Ongoing: Currently being funded and implemented under existing programs

The planning partners utilized the following criteria to prioritize action items into the categories of high, medium, or low.

- High Priority— A project that:
  - Meets multiple goals and objectives (i.e., multiple hazards);
  - Addresses multiple hazards;
  - Has benefits that exceed cost;
  - Has funding secured or is an ongoing project;
  - Meets eligibility requirements for Hazard Mitigation Assistance grants;
  - Can be completed in the short term (1 to 5 years);
  - Addresses immediate short-term impacts of climate change;
  - Benefits underserved and/or socially vulnerable populations; AND
  - Considers the Multi-Benefit Criteria utilized by the Santa Clara County Climate Collaborative, including equity, long-term value, ecosystem benefit, community benefit, and cross-jurisdictional alignment.
- Medium Priority— A project that:
  - Meets multiple goals and objectives;
  - Addresses multiple hazards;
  - Has benefits that exceed costs;
  - Has funding has not been secured, but that is grant eligible under Hazard Mitigation Assistance grants or other grant programs;
  - Project can be completed in the short term (1-5 years), once funding is secured. Medium priority projects will become high priority projects once funding is secured;
  - Addresses immediate short-term impacts of climate change;
  - Benefits underserved and/or socially vulnerable populations; AND
  - Considers the Multi-Benefit Criteria utilized by the Santa Clara County Climate Collaborative, including equity, long-term value, ecosystem benefit, community benefit, and cross-jurisdictional alignment.

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- Low Priority— A project that:
  - Will mitigate the risk of at least one hazard;
  - Has benefits that do not exceed the costs or are difficult to quantify:
  - Does not have secured funding;
  - Is not eligible for Hazard Mitigation Assistance grant funding;
  - Has a timeline for completion that is long term (greater than 5 years). Low priority projects may be eligible for other sources of grant funding from other programs;
  - May address impacts of climate change;
  - May benefit underserved and/or socially vulnerable populations; AND
  - Considers the Multi-Benefit Criteria utilized by the Santa Clara County Climate Collaborative, including equity, long-term value, ecosystem benefit, community benefit, and cross-jurisdictional alignment.

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Table 18: City of Sunnyvale 2023 Action Items

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
1.	Include the Safety Element as part of the General Plan references to Climate Action Playbook and the MJHMP.	Climate Change, Drought, Flood	Environmental Services Department (ESD)/ Department of Public Safety (DPS)/ Department of Public Works (DPW)/ Community Development Department (CDD)	General fund	Short term	High
2.	Create and enforce environmental justice policies.	Climate Change, Drought, Flood	ESD/DPS/DPW/CDD (Depending on issue)	General fund	Short term	High
3.	Install solar panels at existing and future city-owned facilities.	Climate Change, Heavy Precipitation/Atmospheric River, Extreme Heat, High Wind, Wildfires	ESD/DPW	General fund, DOE SETO Grants	Long term	Medium
4.	Upgrade pedestrian and bicyclist infrastructure with green infrastructure and additional mitigation methods to protect non-motorists during evacuations and from Heavy rain, heavy winds, extreme temperatures.	Climate Change, Heavy Precipitation/Atmospheric River, Extreme Heat, High Wind, Wildfires	DPW	General fund, DOT Grants, IIJA Funding, RAISE Grants, FHAA Transportation Funding	Long term	Medium

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Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
5.	Install charging stations for electric vehicles at all existing and future facilities, especially along evacuation routes.	Climate Change, Wildfires	DPW	General fund, DOT Grants, DOE Grants, BIL Funding, FHWA Funding	Short term	Medium
6.	Retrofit earthquake-vulnerable structures, including URMs.	Earthquake	CDD	General fund, FEMA HMA Grants	Long term	Medium
7.	Install emergency generators in all existing and future critical facilities.	All Hazards, including Earthquake, Flood, Dam Failure, Heavy Rain, High Wind	DPW	General fund, FEMA HMA Grants	Short term	Medium
8.	Replace the Public Safety Emergency Generator with one with more capacity.	Hazardous Materials, Power Outages, Earthquake, Flood, Heavy Rain, High wind	DPW	General fund, FEMA HMA Grants	Short term	Medium
9.	Upgrade Fuel Stations to be more resilient to hazards.	All Hazards	DPW	General fund, USDA Grants, DOE Grants	Short term	Medium
10.	Address gaps in data and missing information within this Annex for the next plan update.	All Hazards, including Earthquake, Flood, Dam/Levee Failure, Wildfire, Drought, Heavy Rain, High Wind, Landslide	All Departments	General fund, FEMA HMA Grants	Short term	Medium

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Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
11.	Partner with Valley Water to complete levee restoration and upgrade projects to protect high-risk areas, including Moffett Park. Partner with ongoing feasibility study with USACE to identify preferred alignment and develop cost estimate.	Climate Change: Sea Level Rise, Earthquake, Dam/Levee Failure	Environmental Services Department (ESD)/ Santa Clara Valley Water District, U.S. Army Corps of Engineers.	USACE, Valley Water	Short-term	Medium
12.	Continue to collaborate with San Francisco Public Utilities Commission in upgrading water transmission systems to current seismic standards to ensure reliable water supply following a major earthquake. Sierra Mountain tunnel system continuing thru 2024.	Earthquake	SFPUC	General fund, San Francisco Public Utilities Commission	Short-term	High

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Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
13.	To maintain access to public transportation, install measures to manage flooding or improve flow remediation, particularly in pedestrian areas noted in jurisdictional vulnerabilities where flood control is impractical. Procure and deploy signage, road closures, sandbags, or other flood management strategies when outflow backs into streets.	Flooding, Heavy Rain	Sunnyvale Environmental Services Department/Department of Public Works	General fund, FMA	Short-term	Medium
14.	Inspect steep slopes along the creek and execute capital projects to rehabilitate outfalls and surrounding failing creek embankments.	Landslide, Heavy Rain, Flood	Sunnyvale Environmental Services Department/Department of Public Works	General fund	Short-term	Medium

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Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
15.	Coordinate with Santa Clara Valley Water District and City of Mountain View to improve and enhance creek slope infrastructure to make slope more reliable.	Landslide, Heavy Rain	Sunnyvale Environmental Services Department/ Department of Public Works, SCVWD	General Fund, City of Mountain View, Santa Clara Valley Water District, PA Mitigation	Short-term	Medium
16.	Conduct vegetation management, wildfire fuels reduction projects in public areas such as the closed Sunnyvale landfill and Baylands park, including use of goats to consume fuel, to reduce wildfire risk.	Wildfire	Sunnyvale Environmental Services Department	General fund	Short-term	Medium
17.	Partner with SCVWD to implement rebate program for drought-tolerant landscaping and replacing water fixture.	Drought, Climate Change	Sunnyvale Environmental Services Department	General fund, SCVWD	Short-term	Medium

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Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
18.	Create canopy cover and open space across Moffett Park to reduce stormwater runoff, address heat island effects, and increase resilience to climate change.	Climate Change, Drought, Heavy Rain, Extreme Heat	Sunnyvale Environmental Services Department	General fund, BRIC	Short-term	Medium
19.	Provide education through classes or other materials on reducing water use in landscaping, recycled water programs, and other methods to reduce demand on potable water.	Drought, Climate Change	Sunnyvale Environmental Services Department	General fund	Short-term	Medium
20.	Actively pursue funding for undergrounding of utilities in accordance with the guidelines of Public Utilities Commission and PG&E Tariff Rule 20-A.	Heavy Rain, High Wind, Earthquake, Landslide, Flood	Sunnyvale Environmental Services Department	General fund, PG&E, private/public partnerships	Long-term	Medium

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Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
21.	Develop and maintain public education materials and outreach in multiple languages to ensure the public is knowledgeable regarding hazard disaster preparedness.	All hazards, including Drought, Dam Failure, Climate Change, Earthquake, Flood, Landslide, Heavy Rain, High Wind, Extreme Temperature, Wildfire	Environmental Services Department	General Fund	Short-term	Medium

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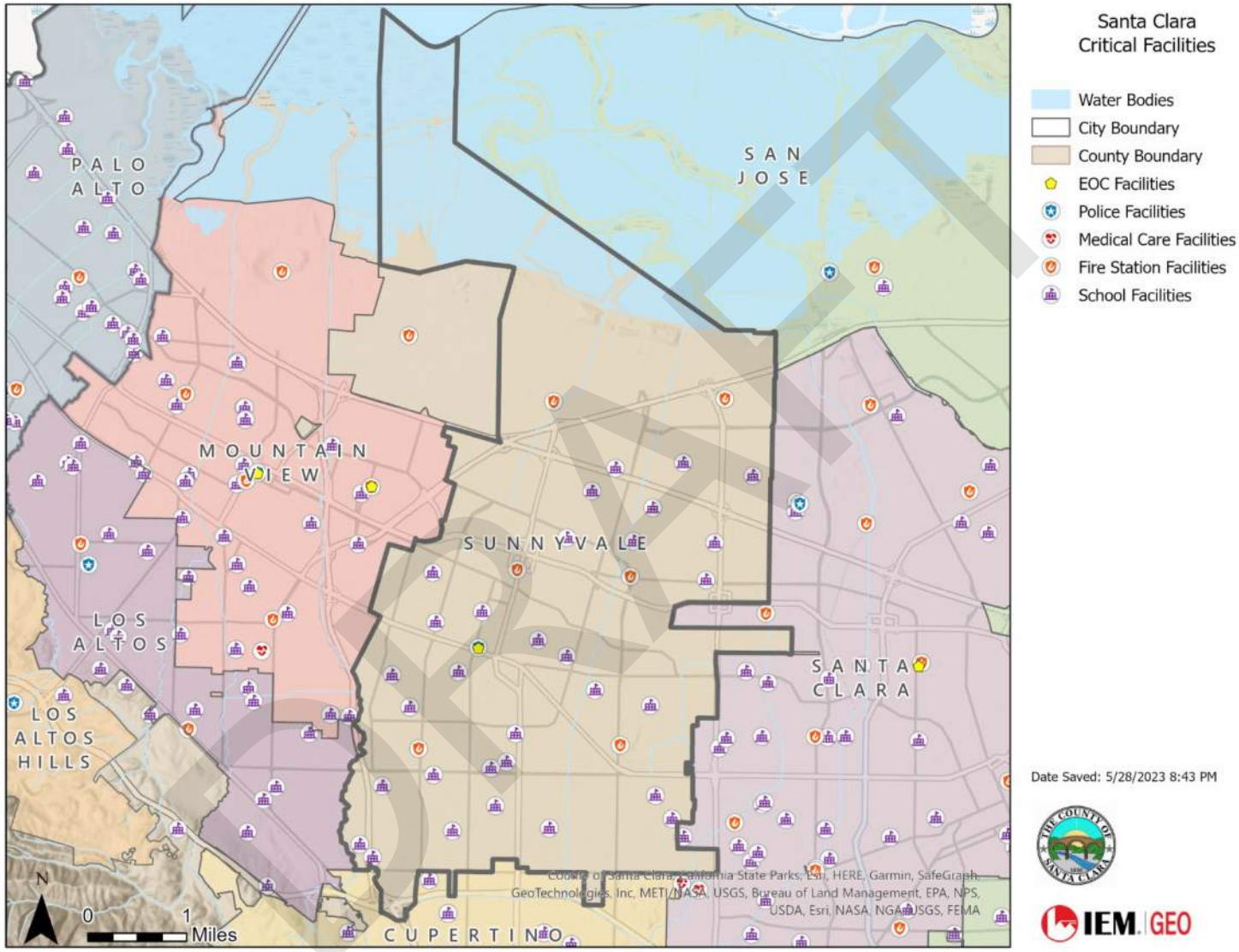


Figure 5: City of Sunnyvale Critical Facilities

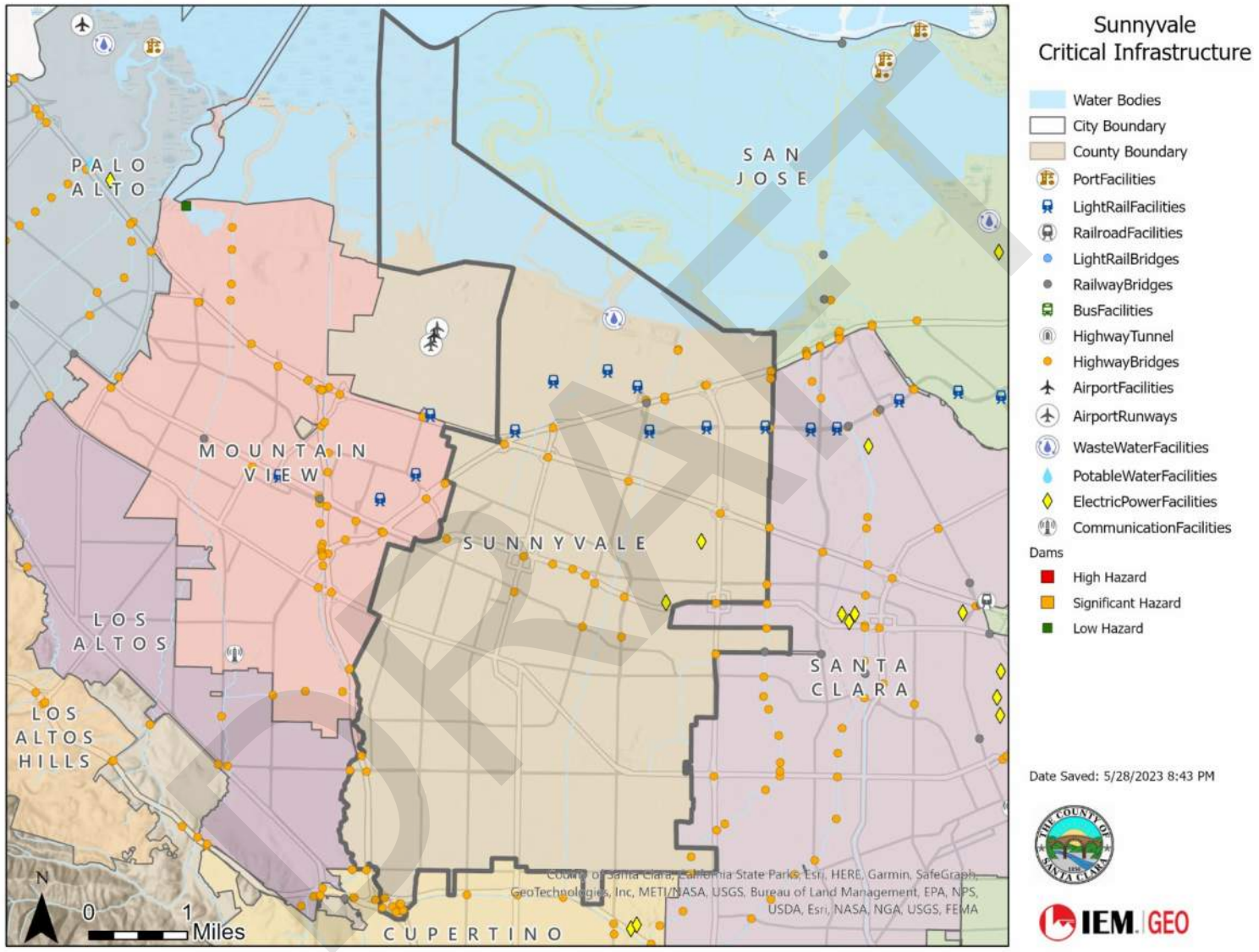


Figure 6: City of Sunnyvale Critical Infrastructure

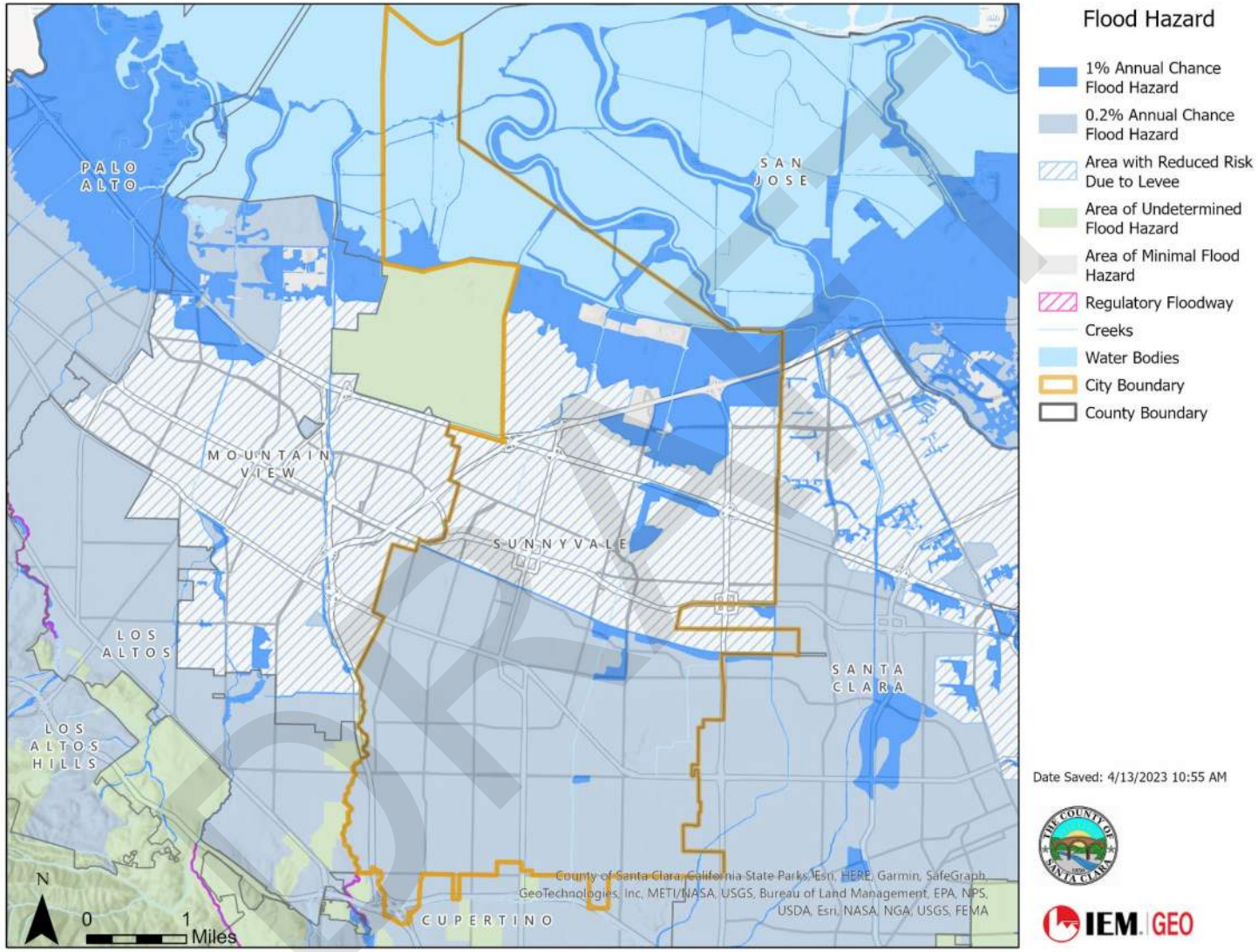


Figure 7: City of Sunnyvale Flood Hazard Area Map

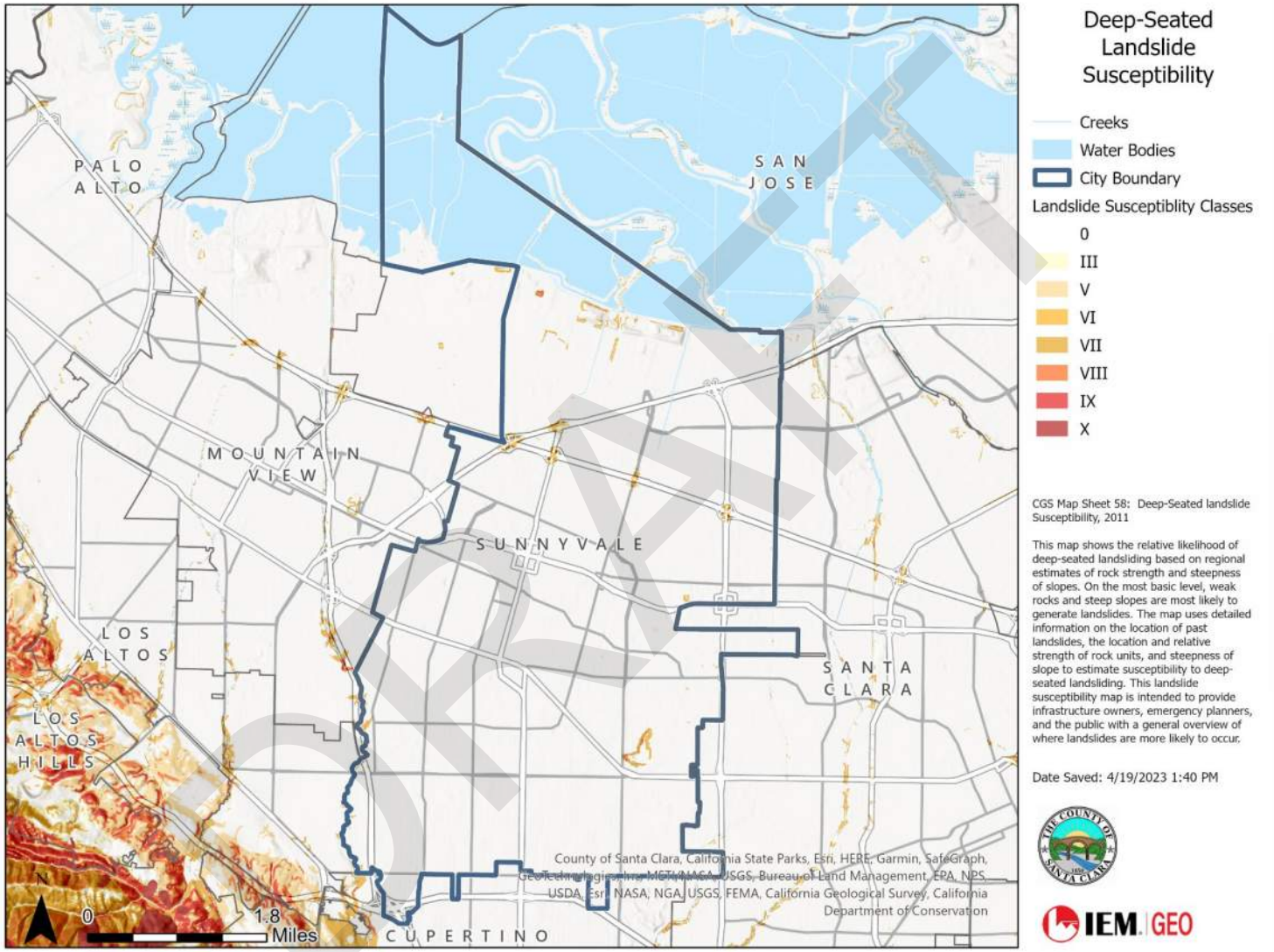


Figure 8: City of Sunnyvale Deep-Seated Landslide Susceptibility

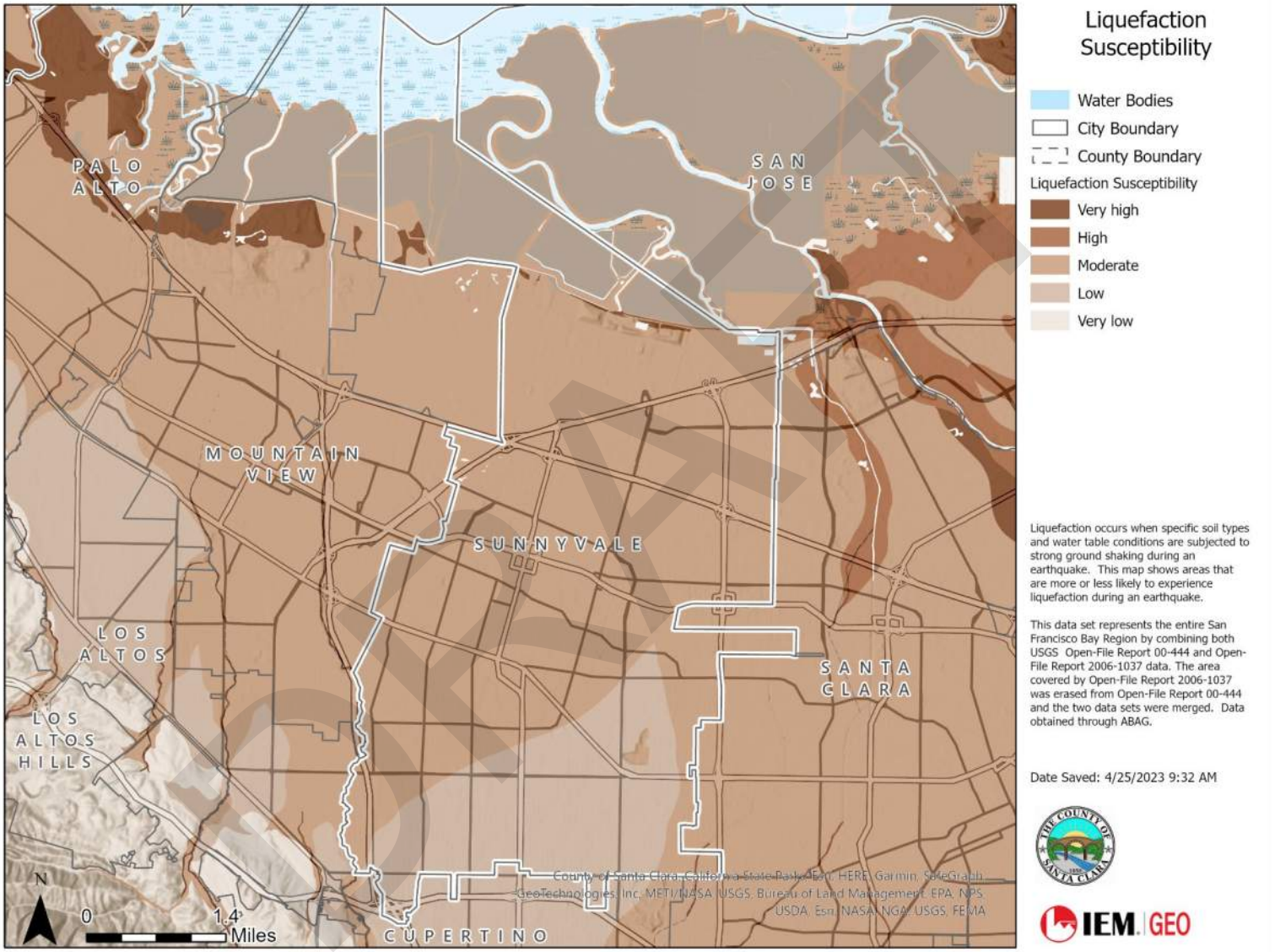


Figure 9: City of Sunnyvale Liquefaction Susceptibility

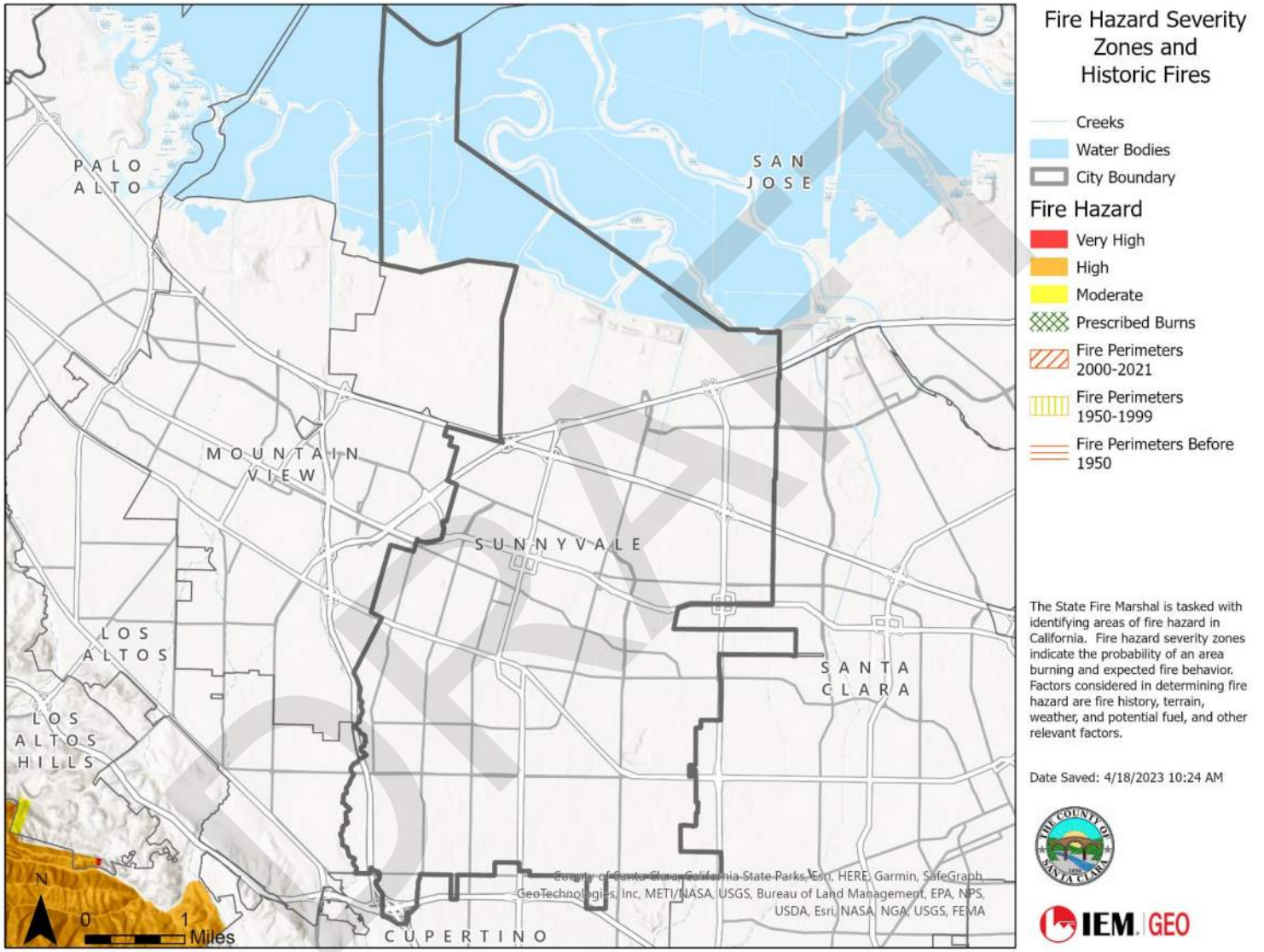


Figure 10: City of Sunnyvale Fire Hazard Severity Zones

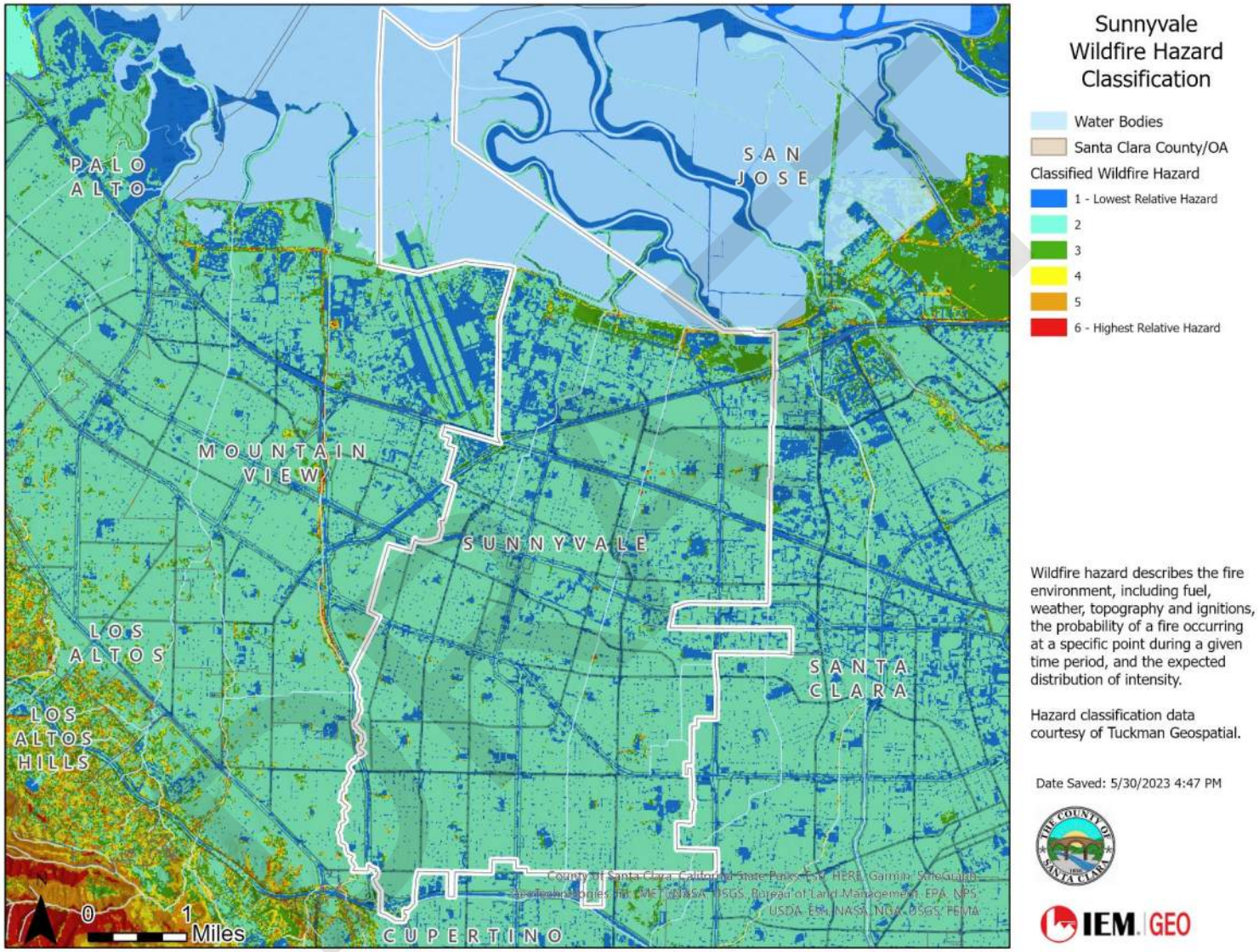


Figure 11: City of Sunnyvale Wildfire Hazard Classification

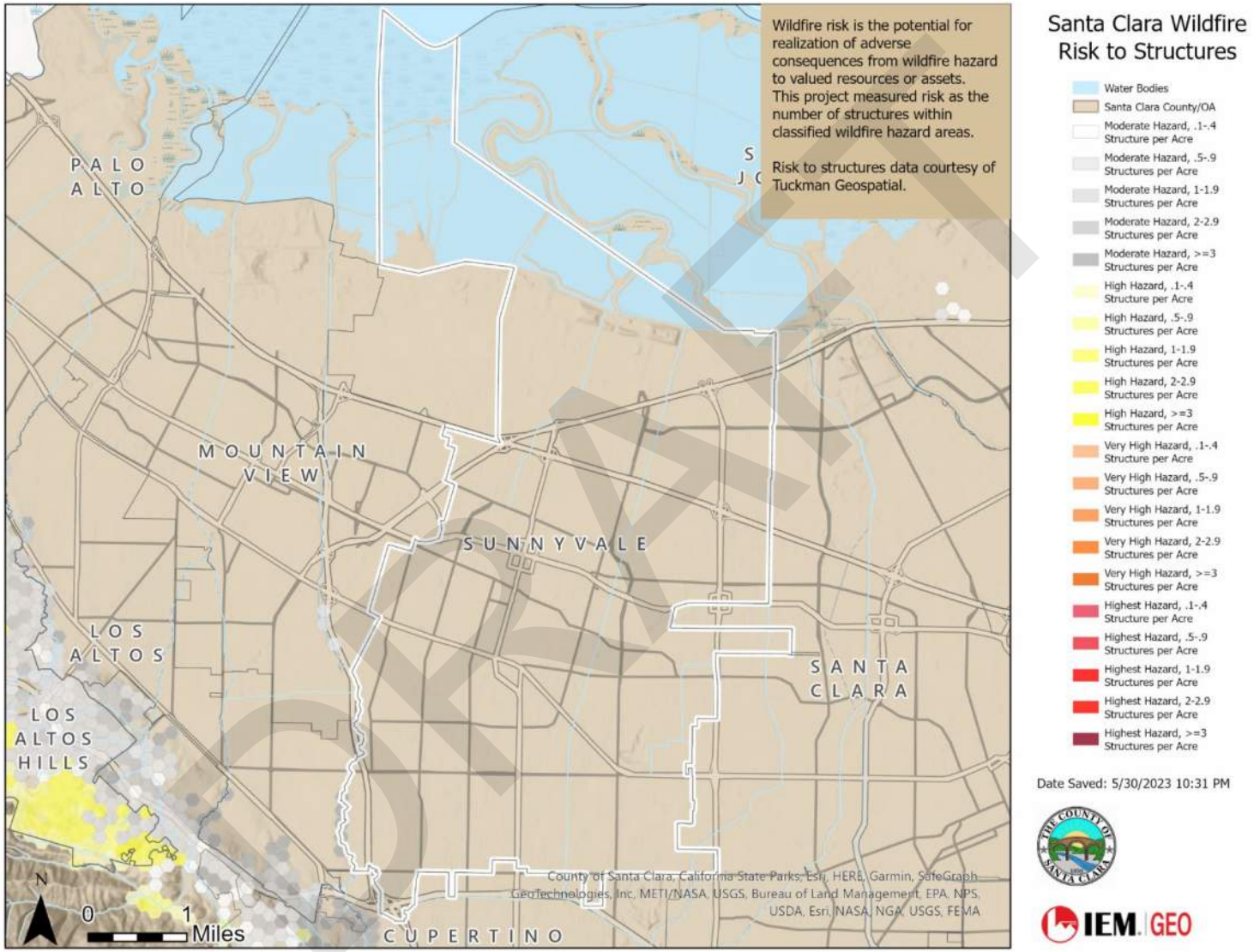


Figure 12: City of Sunnyvale Wildfire Risk to Structures

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APPENDIX J

City of Sunnyvale
2025 Urban Water Management Plan
Sunnyvale Municipal Code

Title 12. Water and Sewers

Chapter 12.24. WATER SYSTEM REGULATIONS

§ 12.24.010. Rates fixed by resolution.

The city council of Sunnyvale may from time to time hereafter in its discretion, fix the rates for water sold to consumers within or without the corporate limits of the city of Sunnyvale, by resolution of the council.
(Prior code § 11-1.06)

§ 12.24.020. Meter reading—Payment of bills—Service discontinuance—Special service charges.

All meters shall be read as nearly as possible once every other month, with the exception of meters with commercial or industrial rating, which shall be read monthly. Billing periods shall as nearly as possible be bimonthly for nonindustrial meters, and monthly for industrially rated meters. Billing periods shall be staggered among the customers rather than on a uniform calendar monthly or bimonthly system for all customers. All bills for service are due and payable upon presentation. All bills must be paid to the Finance Department, 650 West Olive Avenue, Sunnyvale, on or before the twenty-fifth day after presentation. The procedure set forth in Chapter **12.50** of this code shall govern any discontinuation of service for failure to pay bills. A special services charge, at the rates hereafter fixed from time to time by resolution of the city council, shall be made for restoring said service.
(Prior code § 11-1.07; Ord. 955 § 1, 1961; Ord. 2192-86 § 2; Ord. 2211-87 § 1; 3062-15 § 6)

§ 12.24.030. Reading of meters—Computation of bills.

(a) All meters with an industrial rating shall be read as nearly as possible at monthly intervals. Opening and closing bills on meters with industrial ratings for water service for periods of less than thirty days shall be computed in accordance with the rate applicable to that service, but charges for the amount of water consumed shall be measured from the initial reading to the next regular reading or from the previous reading to the final reading, and other charges shall be prorated on the basis of the number of days of service in the billing period in question to the total number of days in that billing period.

(b) All meters not having an industrial rating shall be read as nearly as possible at bimonthly intervals. Opening and closing bills for water service on meters not having an industrial rating for periods of less than sixty days shall be computed in accordance with the rate applicable to that service, but charges for the amount of water consumed shall be measured from the initial reading to the next regular reading or from the previous reading to the final reading, and other charges shall be prorated on the basis of the number of days of service in the billing period in question to the total number of days in that billing period.

(Prior code 11-1.08; Ord. 2211-87 § 1)

§ 12.24.040. Discontinuance for nonpayment at prior location.

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A consumer's water service may be discontinued for nonpayment of a bill for water service rendered him or her at a previous location, provided said bill is not paid within thirty days after presentation at the new location.
(Prior code § 11-1.09)

§ 12.24.050. Rule violation—Service discontinuance.

Every person taking water shall be considered as having expressed his or her consent to be bound hereby, and whenever any one of the rules and regulations is violated, the right is reserved to shut off the water without notice.
(Prior code § 11-1.10)

§ 12.24.060. Dispute over bill.

In case a dispute should arise over the correctness of any bill rendered for water, the matter shall be presented to the city for adjustment pursuant to Chapter **12.50** of this code.
(Prior code § 11-1.11; Ord. 2192-86 § 3)

§ 12.24.070. Consumer responsible for appliances—Right to refuse service.

(a) The city shall have the right of refusing to, or ceasing to deliver water to a consumer, if any part of the consumer's service appliances or apparatus shall at any time be unsafe, or if the utilization of water by means thereof shall be prohibited or forbidden under the authority of any law or municipal ordinance or regulation, and may refuse to serve until the consumer shall put such part in good and safe condition and comply with all the laws, ordinances and regulations applicable thereto.

(b) The city does not assume the duty of inspecting the consumer's service appliances or apparatus or any part thereof and assumes no liability therefor. The owners of premises taking water must keep their service pipe, stopcocks and all apparatus connected therewith on said premises in good repair at their own expense; and no claim shall be made against the city of Sunnyvale by reason of bursting or any other disarrangement of any service pipe or any apparatus or any appliance connected therewith.

(c) The consumer shall at his or her own risk and expense, furnish, install and keep in good safe condition, all apparatus and appliances which may be required for receiving, controlling, applying and utilizing such water and the city of Sunnyvale shall not be responsible for loss or damage caused by the improper installation of such apparatus or appliances, negligence, want of proper care, or wrongful act of the consumer or any of his or her agents, employees, or licensees on the part of the consumer in installing, maintaining, using, operating or interfering with any such apparatus or appliances.

(Prior code § 11-1.12; Ord. 3062-15 § 7)

§ 12.24.080. Meters and appliances—Installation—Liability for damages.

(a) All meters shall be installed by or under the supervision of the city. Such meters, wherever practicable, shall be placed in suitable meter boxes, located in the sidewalk. When it is not practicable to place meters in the sidewalk, or in other words between the curb and property line, the meters shall be installed in some convenient place approved by the water department upon the consumer's premises, and so placed as to be at all times accessible for inspection, reading and testing.

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(b) The city shall, at its own expense, furnish and install service pipe of suitable capacity, from its mains to the meter for service of premises abutting upon a public street, along which it has a water main. The necessity and convenience of constructing new mains and service therefrom shall be determined by the city council.

(c) All meters and appliances installed by the city at its expense, whether in a public street or upon the consumer's premises, for the purpose of delivering water to the consumer, shall continue to be the property of the city, and may be repaired, replaced or removed by the city at any time. The consumer shall exercise reasonable care to prevent the meters and appliances installed upon the premises, from being injured or destroyed, and shall refrain from interfering with same, and in case any defect therein shall be discovered, shall notify the water department thereof.

(d) Any damage occurring to a meter or other appliances or pipes owned by the city, caused by the carelessness or neglect of the consumer, including any damage which may result from hot water or steam from any boiler, or heater on consumer's premises, shall be paid for by the consumer on presentation of a bill therefor.

(e) The consumer shall install that portion of the service from the meter to his or her premises, the expense of same to be paid by the consumer, and said service shall be provided with a shut-off valve. The materials furnished by the consumer in the construction of such service extension, will, at all times, be and remain the property of the consumer, and when necessary, will be maintained and repaired by the consumer.

(Prior code § 11-1.13; Ord. 3062-15 § 8)

§ 12.24.090. Separate meters required.

(a) In all cases in which water is served to a building occupied by different and independent consumers of water, independent services must be provided for each such independent consumer, unless the owner or other responsible representative of the occupants prefers to have all such independent consumers under one meter, in which case he or she shall assume the entire account and pay not less than the sum of the minimum rates for all such independent consumers.

(b) All separate premises, even though owned by the same consumer, shall have a separate meter.

(c) When separate houses or buildings are located upon the same premises and occupied by different and independent consumers, a separate meter must be provided for each house or building.

(Prior code § 11-1.14)

§ 12.24.100. Employees to connect or disconnect service—Acceptance of gratuities prohibited.

(a) Only duly authorized employees of the city are allowed to connect the consumer's service to, or disconnect the same from the city water mains, or supply pipes.

(b) All employees of the city are strictly forbidden to demand or accept any personal compensation or gratuity for services rendered any consumer.

(Prior code § 11-1.15; Ord. 3062-15 § 9)

§ 12.24.110. Tampering with equipment prohibited.

No person or persons shall, without a written permit from the city, open or in any way tamper with or make any addition or alteration whatever to any street main, service connection, meter, stopcock, valve or aircock connected with the water mains.

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(Prior code § 11-1.16; Ord. 3062-15 § 10)

§ 12.24.115. Water theft prohibited.

(a) It is unlawful for any person to use, divert, receive or take water from the city water system from any public fire hydrant, blow-off valve, water main, water service lateral or other city facility or connection to a city facility, to which an authorized city metering device has not been installed or has been removed.

(b) It is unlawful for any person to use, divert, receive, or take water from the city water system without paying the full city charges for such water, such as by tampering with city property or facilities, removing a lock or plug that has been placed on consumer's service or meter, or by making an unauthorized connection to any city facilities or public fire hydrant.

(c) In addition to any other civil or criminal remedies authorized by law, any person who takes water in violation of this section shall be subject to a penalty that shall be set forth in a schedule of penalties established by resolution of the city council. If the person is a consumer of city water, the penalty may be added to his or her bill for water service and collected under the same rules and regulations.

(d) Any penalty imposed under this section may be appealed by filing a written notice of appeal with the city manager no later than ten days after receipt of the notice imposing the penalty. The city manager shall designate the hearing officer for the appeal hearing. The hearing shall be scheduled not less than fifteen calendar days and not more than sixty calendar days from the date that the appeal is filed. At the hearing, the party contesting the penalty shall be given the opportunity to testify and to present witnesses and evidence. After considering all of the testimony and evidence submitted at the hearing, the hearing officer shall issue a written decision to uphold or cancel the penalty and shall state in the decision the reasons for that decision. The decision of the hearing officer shall be final.

(Ord. 3093-16 § 1)

§ 12.24.120. Vacation of premises—Notice to discontinue service.

Each consumer about to vacate any premises supplied with service shall give notice of his or her intended removal in writing or as determined by the city at least two days prior thereto, specifying the date desired for service to be discontinued; otherwise he or she will be held responsible for all water furnished to such premises until the city has notice of such removal.

(Prior code § 11-1.17; Ord. 3062-15 § 11)

§ 12.24.130. Meter tests.

(a) Any consumer may, upon not less than five days' notice, require the city to test his or her water meter. A deposit to cover the reasonable cost of the test may be required as established from time to time by resolution of the city council. The amount of the deposit will be returned to the consumer if the meter is found to register outside of acceptable accuracy standards as established by American Water Works Association (AWWA) under conditions of normal operation, otherwise the amount of deposit will be retained by the city. A consumer shall have the right to require that the meter be tested in his or her presence, or if he or she so desires, in the presence of an expert or other representative appointed by the consumer. The consumer will be notified in advance of the time and place the test will be made.

(b) A report giving the name of the consumer, date of request, location of premises, the type, make, size and number of the meter, the date of removal, the date tested and the result of the test, will be supplied to the consumer within a reasonable time after the completion of the test.

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(c) All meters will be tested at the time of installation, and no meter will be placed in service or allowed to remain in service which has an error in registration outside of acceptable accuracy standards established by American Water Works Association (AWWA) under conditions of normal operation.

(Prior code 11-1.18; Ord. 1822-76 § 1; Ord. 2490-94 § 2; Ord. 3062-15 § 12)

§ 12.24.140. Meter test—Refund or rebilling.

(a) When a meter is found to be more than two percent fast, the city shall refund to the consumer the overcharge, based on the corrected meter readings for the period in which the meter was in use, not exceeding six months, unless it can be shown that the error was due to some cause, the date of which can be fixed, in this case, the overcharge shall be computed back to, but not beyond, such date.

(b) If, in the case of domestic or residential use, the meter upon test is found not to register, or to register less than seventyfive percent of the actual consumption, an average bill, or a bill for the water consumed, but not covered by the bill previously rendered for a period not to exceed three billing periods, may be rendered by the city to the consumer.

(c) If a meter for commercial service, upon test as herein provided, is found to register more than two percent slow, the water department may render a bill for water consumed, but not covered by bills previously rendered for a period not exceeding three billing periods.

(Prior code § 11-1.19; Ord. 3062-15 § 13)

§ 12.24.150. Service failures or shortages—Nonliability of city—Notice of service interruption.

(a) The city will exercise reasonable care and diligence to furnish and deliver a continuous and sufficient supply of water to the consumer, and to avoid any shortage or interruption of delivery. The city will not be liable for the failure, interruption, shortage or insufficiency of supply, or any loss or damage occasioned thereby, during a fire or at any other time.

(b) The city, whenever it finds it necessary for the purpose of making repairs or improvements to its system, will have the right to suspend temporarily the delivery of water, but in all cases as reasonable notice thereof as circumstances will permit will be given to the consumers.

(Prior code § 11-1.20; Ord. 3062-15 § 14)

§ 12.24.160. Temporary service.

(a) Water may be sold and supplied on a temporary service basis to consumers. As used in this chapter, temporary service refers to water service for crop irrigation or other agricultural uses, circuses, bazaars, fairs, temporary restaurants, construction works, and similar activities of a temporary nature.

(b) The applicant for such temporary service shall be required to pay to the city of Sunnyvale the actual costs of installing, maintaining, and removing any facilities necessary in connection with the furnishing of such service. The applicant for such temporary service shall not be required to pay the water frontage fees established by resolution of the city council and required to be paid by the owner or developer of property prior to the original connection of the property to the water system of the city of Sunnyvale, or if the uses of the property presently connected to the water system are enlarged, added to, or if further structures are constructed thereon.

(Prior code § 11-1.21; Ord. 1456 § 1, 1968)

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§ 12.24.170. Fire—Water shut-off—Use of hydrants—Right of ingress and egress.

(a) In case of fire or an alarm of fire, the city shall have the right to shut off water from any consumer or any number of consumers, without notice and to keep it shut off as long as it may be necessary.

(b) In case of fire or an alarm of fire, the use of fountains or yard or street sprinklers or house faucets is prohibited.

(c) No person shall, except in case of fire, use water from or tamper with any city hydrant without a permit from the city.

(d) Any duly authorized agent or employee of the city shall at all times have the right of ingress to and egress from the consumer's premises at all reasonable hours for any purpose reasonably connected with the furnishing of water and the exercise of any and all rights secured to the city by law.

(Prior code § 11-1.22; Ord. 3062-15 § 15)

§ 12.24.180. Turning on water officially shut off deemed misdemeanor.

Only duly authorized employees of the city are allowed to turn on water to any consumer's premises. It shall constitute a misdemeanor for any person, other than an employee of the city, to turn on any water service that has been officially shut off for the violation of any of the rules and regulations of the city.

(Prior code § 11-1.23; Ord. 3062-15 § 16)

§ 12.24.190. Right to limit amount of water.

The city shall have the right to limit the amount of water furnished to any consumer should circumstances seem to warrant such action, although no limit may be stated in the application or permit for such use.

(Prior code § 11-1.25; Ord. 3062-15 § 18)

§ 12.24.200. Attaching wires to plumbing prohibited—Liability for damages.

All persons, firms or corporations are strictly forbidden to attach any ground wire or wires to any plumbing which is or may be connected to any service connection or main, and the city council may hold the owner of the premises liable for any damage to the property of the city occasioned by any such ground wire which is now or may hereafter be attached.

(Prior code § 11-1.26)

§ 12.24.210. Fire service connections—Detector meter required.

An applicant for a service larger than two inch in size for fire protection purposes will be required to furnish and install at his or her own expense a detector meter of a type approved by the National Board of Fire Underwriters, which meter shall be and remain the property of the applicant. Should the detector meter show any consumption of water except that used in time of fire, and for reasonable fire drill and tests of apparatus, the consumer shall pay for such water used at regular meter rates.

(Prior code § 11-1.27)

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§ 12.24.220. Fire service pipe rules.

In all cases the city shall decide the size of the fire service pipe required, which shall be determined by the size of the street main, the available pressure on the main and the nature and capacity of the fire protection equipment within the building. In all cases where underwriter's pumps are to be installed, a suction pipe of sufficient internal area to deliver a quantity of water equal to the full rated capacity of the service pipe will be allowed, and no enlargement of said suction pipe inside the premises will be permitted.
(Prior code § 11-1.28; Ord. 3062-15 § 19)

§ 12.24.230. Meter removal for non-use—Resetting charge.

Where a service has not been used for a period of six months the meter may be removed and a fee may be required for resetting the meter as established by resolution of the city council.
(Prior code § 11-1.29; Ord. 3062-15 § 19)

§ 12.24.240. Special water contracts.

If any sale of water should be made under conditions such that the rates herein set forth are not applicable, the city may, with the approval of the city council, enter into a special contract with the consumer.
(Prior code § 11-1.30; Ord. 3062-15 § 20)

§ 12.24.250. Damage to city property.

If any person destroys or damages any fire hydrant, water main or any other property owned by the city which is part of the city's system for water use and delivery, he or she shall be held responsible for the entire cost of replacing or repairing the same and the bill shall be due and payable on presentation. If said person is a consumer of city water, the bill for such costs may be added to his or her bill for water service and collected under the same rules and regulations.
(Prior code § 11-1.31; Ord. 3062-15 § 21)

§ 12.24.260. Right to test privately owned meter.

If the director of environmental services has any reason to believe that any privately owned meter is not registering correctly, the city shall have the right to test such meter or require the owner to test the meter in the presence of city staff, as may be determined by the owner.
(Prior code § 11-1.32; Ord. 3062-15 § 22)

§ 12.24.270. Meter service charges fixed by resolution.

The city council of the city of Sunnyvale, may, by resolution, from time to time hereafter, in its discretion, fix the rates for meter service charges to be paid by each applicant for water service, within or without the corporate limits of the city of Sunnyvale.
(Prior code § 11-1.33)

§ 12.24.280. Water, sewer and utility service—Refusal—Grounds.

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The city may, in its discretion, refuse to supply water and sewage service to any applicant therefor, or may refuse to certify any applicant to the Pacific Gas and Electric Company for gas and/or electric service, who has not first obtained any permit, license or other clearance required to be obtained, in connection with the improvement for which service is sought by any ordinance of this city, the county of Santa Clara, or the laws of the state of California.
(Prior code § 11-3.01; Ord. 3062-15 § 23)

§ 12.24.285. Construction hydrant meters.

(a) Permit Required. It is unlawful for any person to take water from a public fire hydrant without having first obtained a permit issued by the department of environmental services.

(b) Fee. At the time the application is filed with the director of environmental services, the applicant shall pay a fee sufficient to cover the cost of processing the application. The amount of the fee shall be set by resolution of the city council.

(c) Hydrant Meter. Any person taking water from a public hydrant shall utilize a hydrant meter rented from the department of environmental services. It is unlawful to tamper with or damage any portion of the construction hydrant meter device, the backflow unit, or any portion of the fire hydrant. Tampering with any portion of the hydrant meter backflow device is a violation of Section **12.28.290** of this code. If the hydrant meter or other city facilities are damaged, the applicant shall pay the full cost of repairs and/or replacement. If the hydrant meter is lost or stolen, the applicant shall pay the replacement cost of the hydrant meter as determined by the city. Service of water from the hydrant shall be immediately discontinued by the city if the backflow prevention device is removed or tampered with in any manner, if unprotected cross-connections exist on the premises, or if the customer fails to timely pay any fees or charges due hereunder. Service will not be restored until such conditions are corrected.

(d) Hydrant Meter Unreported Consumption. The city council may establish a monthly late fee or penalty that will be imposed on any person taking water through a hydrant meter who fails to report their water consumption by the tenth day of the month in accordance with the terms and conditions of the permit.

(e) Collection of Fees and Charges. If the customer is a consumer of city water, any fees or charges imposed under this section may be added to his or her bill for water service and collected under the same rules and regulations. Any person owing unpaid fees or charges under this section shall not be entitled to rent a hydrant meter until all such fees and charges are paid in full.
(Ord. 3093-16 § 2)

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Title 12. Water and Sewers

Chapter 12.34. WATER CONSERVATION RESTRICTIONS

§ 12.34.010. Purpose and application.

The purpose of this chapter is to identify and restrict nonessential water uses which, if allowed, would constitute wastage of the water supply of the city. The provisions of this chapter shall apply to all persons or entities using water obtained from the city of Sunnyvale both in and outside the city of Sunnyvale and within the city's water service area, and regardless of whether any person or entity using water has a contract for water service with the city. Use of water by the city itself shall be in conformance with a water conservation plan to be presented by the city manager to the city council for approval, and which shall essentially conform to the provisions of this chapter. This chapter is adopted pursuant to the provisions of Water Code Section **350**, et seq., the city charter and the common law.
(Ord. 2433-93 § 1)

§ 12.34.020. Nonessential uses prohibited.

(a) To prevent the waste and unreasonable use of water and to promote water conservation, the following actions are hereby prohibited, except where necessary to address an immediate health or safety need or to comply with a term or condition in a permit issued by a state or federal agency:

(1) The use of broken or defective plumbing, sprinklers, watering or irrigation systems that permit the escape or leakage of potable water.

(2) The application of potable water to outdoor landscaping in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.

(3) The use of potable water to irrigate outdoor landscaping between the hours of nine a.m. and six p.m. during daylight savings time except with a bucket or a hose that is fitted with a shut-off nozzle or device that causes it to cease dispensing water immediately when not in use.

(4) The use of potable water to irrigate outdoor landscaping more than fifteen minutes per day per station when using a landscape irrigation system or a watering device that is not continuously attended, except for landscape irrigation systems that exclusively use very low-flow drip-type irrigation systems when no emitter produces more than two gallons of water per hour, weather-based controllers, or stream rotor sprinklers that meet a seventy-one percent efficiency standard.

(5) The use of a hose that dispenses potable water to wash any motor vehicle, watercraft, mobilehome, or other vehicles or machinery unless the hose is fitted with a shut-off nozzle or device that causes it to cease dispensing water immediately when not in use.

(6) The use of potable water to wash sidewalks, driveways, filling station aprons, patios, parking lots, porches or other paved or hard surfaced areas.

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(7) The use of potable water in a fountain or other decorative water feature unless the water is part of a recirculating system.

(8) The application of potable water to outdoor landscapes while it is raining or within forty-eight hours after measurable rainfall (0.20 inches).

(9) The serving of drinking water other than upon request in eating or drinking establishments, including, but not limited to, restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased.

(10) The use of potable water to irrigate ornamental turf on public street medians.

(11) The use of potable water to irrigate landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.

(12) The installation of any single pass cooling process in new construction.

(b) To promote water conservation, operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.

(Ord. 2433-93 § 1; Ord. 3041-14 § 1; Ord. 3086-16 § 1)

§ 12.34.030. Exceptions.

(a) The director of environmental services is hereby authorized to grant to any user an exception to the prohibitions set forth in Section **12.34.020**, upon a finding by the director that such exception is necessary to prevent an emergency condition affecting the health, sanitation or fire protection of such user, and that the user to whom such adjustment or exception pertains has adopted or used all practicable water conservation measures.

(b) Exceptions permitted hereunder shall be made only upon written application submitted to the director setting forth a statement of justification for such exception. The director may attach conditions, specifications or other qualifying provisions to any exception granted.

(Ord. 2433-93 § 1; Ord. 3041-14 § 2)

§ 12.34.040. Penalty—Flow restricting devices.

(a) Upon a determination by the director of environmental services that a user has continuously or repeatedly violated or failed to comply with one or more provisions of Section **12.34.020**, or of any conditions of any exception granted pursuant to the provisions of Section **12.34.030**, the director may issue an order to cease and desist from continued or repeated violation, and further order such user to comply forthwith with such provisions or terms of exception, or otherwise to take appropriate remedial or preventive action. If after the issuance of such cease and desist order, such user continues to consume or use, or again consumes or uses water in violation of any such provision or condition of exception, the director may order the installation of a flow restricting device upon the water service line to the premises of such user. Such flow restricting device shall be installed and maintained for a period of not less than three days nor more than ten days for a first violation, and shall be installed and maintained for not less than ten days for each succeeding violation, and may be ordered to remain installed and maintained for a period of up to three months upon a finding by the director that any user is habitually in violation of any of the provisions of this chapter, or the provisions of any exception granted pursuant to Section **12.34.030**.

(b) Prior to installation of any such flow restricting device, the director shall give written notice of intent to install such device, including the reasons for the proposed installation. The notice shall specify

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the date, time and place at which the user or other interested party may appear before the director to present any evidence or reasons why such installation should not occur. Instead of appearing, the user or other interested party may present written material to the director at or before the time specified. The installation of a flow restricting device shall not occur less than twenty-four hours after the time specified in the notice. The written notice shall be delivered personally, or by posting with the United States mail service, first class postage prepaid, certified mail, and addressed to the last known address of the user to whom given. Copies of the notice shall also be delivered personally or by mail as specified above, to the owner of the property on which the flow restrictor is proposed to be installed as shown on the last equalized assessment roll of the county assessor, county of Santa Clara, and to the person or entity shown on the latest city records as being responsible for payment of utility charges on such property, if either or both is different from the user to whom the notice is sent.

(c) There are hereby established, and there shall be imposed and levied charges in the amount of fifty dollars for each installation and fifty dollars for each removal of flow restricting devices under this section.

(Ord. 2433-93 § 1; Ord. 3041-14 § 3)

§ 12.34.050. Implementation.

The director of environmental services is authorized to delegate authority granted under this chapter to such deputies, officers, employees or agents of the city as the director shall designate, and to establish such rules, regulations and procedures, and to prepare or furnish such forms as the director deems necessary or appropriate to carry out the provisions of this chapter.

(Ord. 2433-93 § 1; Ord. 3041-14 § 4)

§ 12.34.060. Notices.

Except as otherwise provided, notices required to be given pursuant to the provisions of this chapter shall be in writing, may be combined with water service bills or other written communication, and shall be delivered personally, or by posting with the United States mail service, first class postage prepaid, and addressed to the last known address of the user to whom given, or to the owner of the premises to which the water service of such user pertains, shown on the last equalized assessment roll of the county assessor, county of Santa Clara.

(Ord. 2433-93 § 1)

§ 12.34.070. Violations.

It is unlawful for any person, firm, partnership, association, corporation or political entity to use water obtained from the water system of the city of Sunnyvale in violation of any provision of this chapter or in violation of the conditions of any exception granted pursuant to Section **12.34.040** of this chapter. Use of water by any user in accordance with the provisions of any exception granted by the director shall not be deemed in violation of this chapter. Violations of this chapter shall be punishable as infractions.

(Ord. 2433-93 § 1)

§ 12.34.080. Remedies cumulative.

The remedies and penalties provided for in this chapter shall be cumulative and not exclusive, and shall be in addition to any or all other remedies available to the city.

(Ord. 2433-93 § 1)

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Title 19. Zoning

Article 4. GENERAL DEVELOPMENT STANDARDS

Chapter 19.37. LANDSCAPING, IRRIGATION AND USEABLE OPEN SPACE

§ 19.37.010. Purpose.

The purpose of this chapter is to ensure that adequate landscaped areas and usable open space are provided where applicable for all zoning districts; to promote the conservation and efficient use of water and to prevent the waste of this valuable resource; and to promote water conservation as one component of sustainable building practices. This chapter shall be construed to assure consistency with the requirements of the Water Conservation in Landscaping Act of the **California Government Code**, or any successor statute, and any applicable implementing regulations, as they exist at the time of enactment or as later amended. In addition to compliance with the provisions in this chapter, projects shall comply with stormwater management requirements set forth in Chapter **12.60**.
(Ord. 2918-10 § 3; Ord. 3082-16 § 1)

§ 19.37.020. Applicability.

(a) Unless otherwise provided by this section, all lots in all zoning districts are subject to Section **19.37.040** (Minimum landscaped areas and usable open space) and 19.37.120 (Landscaping and irrigation approval). The following types of projects are subject to certain provisions of this chapter as specified:

(1) Single-Family and Two-Family Dwelling New Construction. New landscaping installations of five hundred square feet or more in connection with the construction of a new single-family or two-family dwelling unit shall meet all requirements of this chapter. Such projects with less than five hundred square feet of landscaped area are subject only to Section **19.37.040** (Minimum landscaped area and usable open space).

(2) New Landscaping Installations. New landscaping installations of five hundred square feet or more for any use except for existing single-family and two-family dwellings shall meet all requirements of this chapter. Such projects with less than five hundred square feet of landscaped area are subject only to Section **19.37.040** (Minimum landscaped area and usable open space) and Section **19.37.120** (Landscaping and irrigation approval).

(3) Rehabilitated Landscapes. Projects to rehabilitate existing landscaped areas between one thousand square feet and two thousand five hundred square feet are subject to all requirements of this chapter, except that an irrigation audit is not required. Rehabilitated landscape projects on existing landscaped areas over two thousand five hundred square feet shall meet all requirements of this chapter. Rehabilitated landscape projects less than one thousand square feet are subject only to Section **19.37.040** (Minimum landscaped area and usable open space) and Section **19.37.120** (Landscaping and irrigation approval).

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(4) Graywater for Landscapes. Landscape projects of two thousand five hundred square feet or less using a graywater system that conforms to Title **16** and the California Plumbing Code or rainwater captured on site to meet all of its planting water needs are subject only to Section **19.37.110** (Irrigation system design requirements).

(b) Specific Plans, Precise Plans and other Specialized Plan Areas. Properties within a specific plan, precise plan or other specialized plan area are subject to the minimum landscaped area, usable open space, or modified frontage strip and buffer design requirements prescribed in those individual plans. All other requirements in this chapter apply to such projects.

(c) Exemptions. The following projects are exempt from this chapter:

(1) Individual single-family or two-family dwelling landscape projects that are not in connection with construction of a new dwelling unit, except that Section **19.37.040(e)(2)** applies;

(2) Registered local, state or federal historical sites where landscaping establishes a historical landscaping style, as determined by the Heritage Preservation Commission, planning commission, or by any applicable public board or commission responsible for architectural review or historic preservation;

(3) Ecological restoration or mined-land reclamation projects that do not require a permanent irrigation system; or

(4) Community gardens, plant collections (as part of botanical gardens and arboretums open to the public), non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation), agricultural uses, commercial nurseries and sod farms.

(d) Objective Design Standards. Unless otherwise provided by this section, multi-family residential or mixed-use projects are subject to landscaping standards in Chapter 7 of Citywide Objective Design Standards for Multi-Family Residential and Mixed-Use Development.

(Ord. 2918-10 § 3; Ord. 3082-16 § 1; Ord. 3216-23 § 1)

§ 19.37.030. Definitions.

The following terms and definitions pertain to the water efficiency sections of this chapter:

"Applied water" means the portion of water supplied by the irrigation system to the landscaped area.

"Automatic irrigation controller" means an automatic timing device used to remotely control valves that operate an irrigation system using either evapotranspiration (weather-based) or soil moisture data.

"Certified professional" means a licensed landscape architect, a licensed landscape contractor, a licensed professional engineer, certified irrigation designer, or any other person authorized by the state to design a landscape or irrigation system, or a certified landscape irrigation auditor.

"Conversion factor (0.62)" means the number that converts acre-inches per acre per year to gallons per square foot per year.

"Drip irrigation" means any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

"Estimated total water use (ETWU)" means the total water used for the landscaped area as described in Section **19.37.050**.

"ET adjustment factor (ETAF)" means a factor that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscaped area.

"Evapotranspiration rate" means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

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"Flow sensor" means an inline device installed at the supply point of the irrigation system that produces a repeatable signal proportional to flow rate, and connected to an automatic irrigation controller, or flow monitor capable of receiving flow signals and operating master valves and detecting high flow conditions created by system damage or malfunction.

"Friable" means a soil condition that is easily crumbled or loosely compacted down to a minimum depth per planting material requirements, so that the root structure of newly planted material is allowed to spread unimpeded.

"Graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

"Hardscape" means any durable material (pervious and non-pervious) in a landscaped area, such as decks, patios or pedestrian walkways, and other non-irrigated elements which may include art work, benches, and bicycle parking.

"Hydrozone" means a portion of the landscaped area having plants with similar water needs and rooting depth. A hydrozone may be irrigated or non-irrigated.

"Irrigation audit" means an in depth evaluation of the performance of an irrigation system. An irrigation audit includes: inspection, system tune up, system test with distribution uniformity or emission uniformity, correction of any overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

"Irrigation efficiency (IE)" means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices.

"Low water use plant" means a plant species whose water needs are compatible with local climate and soil conditions, and have a regionally adjusted plant factor of 0.0 through 0.3, per WUCOLS.

"Master shut-off valve" means an automatic valve installed at the irrigation supply point which controls water flow into the irrigation system.

"Maximum applied water allowance (MAWA)" means the upper limit of annual applied water for the established landscaped area, expressed in gallons per year.

"Mulch" means any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

"Native plant" means a plant indigenous to the coastal ranges of central and northern California, and more specifically, such plants that are suited to the ecology of the present or historic natural environment within the project's vicinity.

"No-water using plant" means a plant species with water needs that are compatible with local climate and soil conditions such that regular supplemental irrigation is not required to sustain the plant after it has become established.

"Plant factor" or "plant water use factor" is a factor, when multiplied by ETo (reference evapotranspiration), estimates the amount of water needed by plants.

"Precipitation rate" means the rate of application of water measured in inches per hour.

"Recreational area" means areas designated for active play, recreation or public assembly in parks, sports fields, picnic grounds, amphitheaters or golf courses course tees, fairways, roughs, surrounds and greens on any private property, excluding private single-family and two-family dwelling properties.

"Reference evapotranspiration" or "ETo" means a standard measurement of environmental parameters specific to the local climate which affect the water use of plants, expressed in inches per year, and used as the basis of calculating the maximum applied water allowance for local landscapes.

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"Runoff" means water which is not absorbed by the soil or landscaping to which it is applied and flows from the landscaped area.

"Soil moisture sensing device" or "soil moisture sensor" means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

"Special landscaped area (SLA)" means an area of the landscaping dedicated solely to edible plants, recreational areas, areas irrigated with recycled water, water features using recycled water, and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

"Turf" means a ground cover surface of mowed grass.

"Water feature" means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied).

"WUCOLS" means the Water Use Classification of Landscape Species published by the University of California Cooperative Extension and the Department of Water Resources 2014.
(Ord. 2918-10 § 3; Ord. 3082-16 § 1)

§ 19.37.040. Minimum landscaped area and usable open space.

(a) Minimum Landscaped Area. Table 19.37.040 describes the minimum landscaped area and usable open space required by zoning district. In addition to the minimum landscaped area, areas not used for buildings, parking lot areas, driveways or pedestrian walkways shall be landscaped unless the review authority determines that landscaping is not necessary to achieve the purposes of this chapter. For projects not involving redevelopment of the entire site, the director of community development may allow less landscaped area than required by Table 19.37.040 if existing physical constraints on the site (such as structures, parking or circulation) limit the amount of landscaping that can be provided.

(b) Landscaped Buffer Required. A landscaped buffer is required for any property with a nonresidential use in a residential zoning district that abuts a residential use and for any use in a nonresidential zoning district which abuts a residential zoning district. Landscaped buffers must be designed to meet the following:

(1) Width. The buffer shall maintain a width of at least ten feet.

(2) Landscaping. The buffer shall include a planted screen of approved trees and shrubs which shall be placed along the length of the buffer at intervals not to exceed twenty feet; provided, however, that the approving body may grant exceptions as part of any discretionary permit when warranted by conditions on the property.

(3) Wall Design. The buffer shall include a decorative masonry wall six feet in height measured from the highest adjoining grade. When the adjacent nonresidential building is two stories or more in height, the decorative masonry wall shall be eight feet measured from the highest adjoining grade. Where a residential use is permitted in a nonresidential zoning district, the wall shall be required on the residential property, unless a wall already exists.

(c) Landscaped Frontage Strip Required. A fifteen-foot wide landscaped frontage strip is required for all properties except for single-family properties which have a frontage on a public street. The frontage strip is measured from the inside edge of the public sidewalk, or if no sidewalk exists, from the curb. Frontage strip landscaping may be crossed by walkways and access drives.

(d) Usable Open Space Required. Usable open space is required for all duplex and multifamily residential properties as described in Table 19.37.040. Usable open space areas that meet the definition of landscaping may contribute towards the minimum landscaped area of the site. Required usable open space shall meet the requirements of Section **19.37.100** (Usable open space design requirements).

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(e) Allowances and Limitations for Single-Family Uses and Single-Family Zoning Districts.

(1) Allowances for Single-Family Zoning Districts. Yards are not required to be landscaped in single-family zoning districts; however, the provisions of this chapter apply if landscaping is provided and meets the criteria in Section **19.37.020** (Applicability).

(2) Limitation on Paved Areas in the R-0 and R-1 Zoning Districts. Not more than fifty percent of the required front yard of any lot within an R-0 or R-1 zoning district shall be paved with asphalt, concrete cement, or any other impervious surface, except as may be required to meet off-street parking and access requirements of Chapter **19.46**.

Table 19.37.040

Minimum Landscaped Area and Usable Open Space by Zoning District

Zoning District	Usable Open Space	Other Landscaped Area	Parking Lot Landscaped Area	Total Landscaped Area
R-0	N/A	N/A	N/A	N/A
R-1	N/A	N/A	N/A	N/A
R-1.5	N/A	N/A	N/A	N/A
R-1.7/PD	N/A	N/A	N/A	N/A
R-2	500 sq. ft./unit	850 sq. ft./unit	20% of the parking lot area	Total minimum landscaped area is the combination of the minimum parking lot landscaped area and other landscaped area. In no case shall this total be less than 20% of the lot area.
R-3	400 sq. ft./unit	425 sq. ft./unit		
R-4	380 sq. ft./unit	375 sq. ft./unit		
R-5	380 sq. ft./unit	375 sq. ft./unit		
C-1	N/A	12.5% of floor area		
C-2	N/A	12.5% of floor area		
C-3	N/A	12.5% of floor area		
C-4	N/A	12.5% of floor area		
O	N/A	10% of lot area		
P-F	N/A	10% of lot area		
M-S	N/A	10% of floor area		
M-3	N/A	10% of floor area		

(Ord. 2918-10 § 3; Ord. 3082-16 § 1; Ord. 3105-16 § 6; Ord. 3240-25, 4/8/2025)

§ 19.37.050. Water efficiency design requirements.

Water Efficiency in Design. Landscaped areas shall be designed to achieve water efficiency and shall be based on one of two options:

(a) Option 1—No Turf and Eighty Percent Water Conserving Plants. There shall be no turf or high water use plants in the landscaped areas, and at least eighty percent of the plants installed shall be native, low water use or no water use plants.

(b) Option 2—Water Budget Calculations. If the turf limitation option is not selected, a water budget calculation shall be prepared and shall adhere to the following requirements:

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(1) Plant Factors. The plant factors shall be obtained from WUCOLS or an equivalent reference approved by the California Department of Water Resources. For areas that mix plants with different water uses, the plant factor calculation shall be based on the proportion of the respective plant factors, or based on the plant factor of the higher water using plant. Mixing high and low water use plants in the same hydrozone is prohibited. The plant factor ranges from 0.0 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.

(2) Water Features. All water features not using recycled water shall be included in the high water use hydrozone and temporarily irrigated areas shall be included in the low water use hydrozone.

(3) Special Landscaped Areas. All special landscaped areas (SLAs) shall be identified and their water use included in the water budget calculations. The reference evapotranspiration adjustment factor for SLAs shall not exceed 1.0.

(4) Reference Evapotranspiration Adjustment Factor. The reference evapotranspiration adjustment factor shall not exceed 0.55 for landscaped areas on residential properties and shall not exceed 0.45 for landscaped areas on nonresidential properties.

(5) Water Budget Calculation. The maximum applied water allowance (MAWA) for a landscape shall be calculated using the following equations:

For residential projects:

MAWA = (ETo) (0.62) [(0.55 x LA) + (0.45 x SLA)]

For nonresidential projects:

MAWA = (ETo) (0.62) [(0.45 x LA) + (0.55 x SLA)]

Where:

MAWA = Maximum applied water allowance (gallons per year)

ETo = Reference evapotranspiration (inches per year)

0.62 = Conversion factor (to gallons)

0.7 = Reference evapotranspiration adjustment factor (ETAF)

LA = Planted landscaped area including SLA and not including hardscapes (square feet)

0.45 = Additional water allowance for SLA in residential projects

0.55 = Additional water allowance for SLA in nonresidential projects

SLA = Special landscaped area (square feet)

(6) Estimated Total Water Use. Estimated total water use (ETWU) shall be calculated using the equation below. The sum of the ETWU calculated for all hydrozones shall not exceed the MAWA.

$$ETWU = (ETo)(0.62)\left(\frac{PF \times HA}{IE} + SLA\right)$$

Where:

ETWU = Estimated total water use per year (gallons)

ETo = Reference evapotranspiration (inches)

PF = Plant factor from WUCOLS

HA = Hydrozone area [high, medium, and low water use areas] (square feet)

SLA = Special landscaped area (square feet)

0.62 = Conversion factor

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IE = Irrigation efficiency of 0.75 for overhead spray systems and 0.81 for drip irrigation systems

(Ord. 2918-10 § 3; Ord. 3082-16 § 1)

§ 19.37.060. General planting, soil management and water feature design requirements.

(a) Plant Material. In addition to the requirements below, plant selection and installation shall be done in accordance with accepted horticultural industry practices.

(1) Variety. Landscaping shall include trees, shrubs, vines, flowers, ground covers or a combination thereof.

(2) Size at Time of Planting. Plant materials shall be sized and spaced to achieve immediate effect, in accordance with horticultural industry practices and at the discretion of the director of community development. Trees shall be of minimum fifteen gallon size. Twenty-four or thirty-six inch box trees may be required at the discretion of the director of community development.

(3) Number of Trees. There shall be one tree per one thousand square feet of required landscaped area in addition to required street trees and parking lot trees.

(4) Turf. Any allowable turf area shall be planted with tall fescue or similar turf requiring less water. Turf shall not be planted on slopes greater than ten percent where the toe of the slope is adjacent to an impermeable hardscape.

(b) Grouping of Plants. Plants with similar water needs shall be grouped (also described as a hydrozone). Areas that mix plants with different water uses may be allowed if a water budget is performed per Section **19.37.050** (Water Efficiency Design Requirements).

(c) Soil Management.

(1) Mulch. A minimum three-inch layer of mulch shall be applied on all exposed soil areas, except that up to five percent of the area may be left exposed if designed to provide a habitat for beneficial insects and other wildlife. Designated insect habitat, if any, must be included in the landscape design plan as such. Organic mulch materials made from recycled or post-consumer materials shall take precedence over inorganic materials or virgin forest products unless the recycled post-consumer organic products are not locally available.

(2) Soil Amendments. Soil amendments shall be incorporated according to the soil conditions at the project site and based on what is appropriate for selected plants. Compacted soils shall be transformed to a friable condition. Compost shall be incorporated at a minimum rate of four cubic yards per one thousand square feet of planting area to a depth of six inches, unless the soil contains more than six percent of organic matter.

(3) Grading. If the project includes grading, the grading shall be designed to minimize soil erosion, runoff and water waste. The grading shall avoid soil compaction in planted landscaped areas.

(d) Water Features. Recirculating water systems shall be used for water features. Where available, recycled water shall be used for water features.

(Ord. 2918-10 § 3; Ord. 3082-16 § 1; Ord. 3184-21 § 4)

§ 19.37.070. (Reserved)

§ 19.37.080. (Reserved)

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§ 19.37.090. (Reserved)

§ 19.37.100. Usable open space design requirements.

(a) Function. Useable open space must be designed to be accessible to, and usable for outdoor living, recreation or utility use.

(b) Applicability. The provisions of this section shall apply to all new multi-family residential development in R-3, R-4, and R-5 zoning districts.

(c) Location. Useable open space may not be located in any required front yard area for projects with a front yard setback variance or deviation. Otherwise, up to fifty percent of the required front yard area may be counted toward the useable open space requirement.

(d) Minimum Useable Open Space Dimensions and Area. Each useable open space area shall have at least a twelve foot dimension in any direction and a minimum area of two hundred square feet except for:

(1) Private balconies must have a minimum of seven feet in any direction and a minimum area of eighty square feet.

(2) Roofs, decks or porches must have a minimum of ten feet in any direction and a total of one hundred twenty square feet.

(e) Private Useable Open Space Required. In the R-4 and R-5 zoning districts, a minimum of eighty square feet per unit shall be designed as private useable open space.

(Ord. 2918-10 § 3; Ord. 3082-16 § 1; Ord. 3142-19 § 2)

§ 19.37.110. Irrigation system design requirements.

(a) Irrigation System Required. All landscaped areas shall have a permanent irrigation system, except for single-family detached and two-family dwellings.

(b) Irrigation Efficiency and Design. Irrigation systems shall be designed and maintained to meet the water needs of each hydrozone and the following requirements:

(1) Efficiency. Irrigation systems must meet or exceed an average landscaping irrigation efficiency of seventy-five percent for overhead spray systems and eighty-one percent for drip irrigation systems.

(2) Drip Irrigation. Bubbler or other low-flow, non-spray irrigation system shall be provided for trees and shrubs, mulched areas, areas with slope greater than ten percent (unless it can be demonstrated that no runoff or erosion will occur if other types of irrigation is used) and areas that are less than ten feet wide in any direction.

(3) Overhead Spray Irrigation. Overhead spray irrigation may be used for clustered shrub plantings and turf areas at least ten feet wide in any direction; however, it cannot be used for areas within two feet of a non-permeable surface unless it can be demonstrated that no runoff would occur, or the adjacent non-permeable surface is designed and constructed to drain entirely to landscaping.

(4) Valves. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions and plant water needs. Valves and control circuits shall be separated based on the required rate and quantity of water used. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers and turf. Manual shut-off valves are required. Master shut-off valves are required unless the irrigation system includes low pressure shut down features.

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(5) Irrigation Controllers and Sensors. All irrigation controllers must utilize either evapotranspiration or soil moisture sensor data, and be capable of dual or multiple programming and capable of maintaining programming data in the event the primary power source is interrupted. Irrigation systems shall also incorporate sensors (rain, freeze, wind, etc.) that suspend or alter irrigation operation during unfavorable weather conditions.

(6) Pressure Regulators. Pressure regulators shall be installed if the water pressure is below or exceeds the recommended pressure of the irrigation devices.

(7) Spray Heads. Spray heads and other emission devices shall be selected based on what is appropriate for the plant type within the hydrozone. Spray heads must have matched precipitation rates within each circuit. All irrigation emission devices must meet the ANSI standard, ASABE/ICC 802-2014 "Landscape Irrigation Sprinkler and Emitter Standard."

(8) Flow Sensors. Flow sensors are required for any landscaped areas of five thousand square feet or larger.

(c) Water Waste Prohibited. Water waste resulting from an inefficient irrigation system leading to runoff, low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas such as walkways, roadways or structures is prohibited.

(d) Screening of Devices. Irrigation controllers and backflow devices shall be screened from public view.

(e) Scheduling. Irrigation must be scheduled between eight p.m. and ten a.m.

(Ord. 2918-10 § 3; Ord. 3082-16 § 1)

§ 19.37.120. Landscaping and irrigation approval.

(a) Permit Required. Except as otherwise provided in this chapter, no person shall install or modify any landscaped area without first obtaining approval of a miscellaneous plan permit, in accordance with the procedure described in Chapter **19.82**, or as part of any discretionary permit the project is subject to pursuant to this title.

(b) Landscaping and Irrigation Plans Required. Landscaping and irrigation plans shall be required for any modification or installation of new landscaping that falls within the thresholds stated in this chapter. The plans shall provide the information necessary as determined by the director of community development to comply with the provisions of this chapter.

(c) Plan Preparation by Certified Professional. Landscaping and irrigation plans shall be prepared by, and bear the signature of, a certified professional, except for new landscaping installations or landscaping rehabilitation projects with less than two thousand five hundred square feet of landscaped area.

(Ord. 2918-10 § 3; Ord. 3082-16 § 1)

§ 19.37.130. Landscaping irrigation audit and maintenance.

(a) Irrigation Audit Required. Prior to approval of occupancy by a building official, a landscaping irrigation audit shall be conducted and an irrigation audit report shall be submitted for applicable projects described in Section **19.37.020** (Applicability).

(1) Audit by Third-Party Certified Professional. The landscaping irrigation audit shall be conducted and the report shall be prepared by a third party certified professional, and not by the entity who designed or installed the landscaping.

(2) Audit Report Content. The irrigation audit report shall include, but not be limited to: inspection, system tune-up, system test with distribution uniformity, correction of any overspray or runoff

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that causes overland flow, and preparation of an irrigation schedule.

(b) Submittal of Landscaping Maintenance Schedule. Prior to the final inspection by the building official, a regular maintenance schedule shall be submitted to the director of community development for review and approval. The maintenance schedule shall include, but not be limited to, routine inspection; adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; topdressing with compost; replenishing mulch; fertilizing; pruning; weeding in all landscaped areas; and removing obstructions to irrigation spray heads or other emission devices. Landscaping shall be maintained in accordance with the approved maintenance schedule.

(c) General Maintenance. Landscaping shall be maintained in compliance with the approved landscaping plan, and shall be maintained in a neat, clean and healthful condition. Removed landscaping shall be replaced with specimen plants to match the approved landscaping plan.

(Ord. 2918-10 § 3; Ord. 3082-16 § 1)

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APPENDIX K

City of Sunnyvale
2025 Urban Water Management Plan
Sunnyvale's Fiscal Year 2024/2025 Utility Fee Schedule

	FY 24/25 Fee	Unit	Notes
C. Upon completion and acceptance of improvements installed in conjunction with a Subdivision Agreement or Development Permit, a construction credit, as shown in the following schedule, shall be allowed to the owner or developer of property, who at no expense to the City of Sunnyvale has installed, as required by the City, a storm drainage line of 12 inches or larger in diameter in public right-of-way or public easement and which serves property not owned by the developer.			
Credits:			
12" Reinforced Concrete Pipe	$58.00	Per Lineal Foot	
15" Reinforced Concrete Pipe	$70.00	Per Lineal Foot	
18" Reinforced Concrete Pipe	$80.00	Per Lineal Foot	
21" Reinforced Concrete Pipe	$92.00	Per Lineal Foot	
24" Reinforced Concrete Pipe	$112.00	Per Lineal Foot	
27" Reinforced Concrete Pipe	$125.00	Per Lineal Foot	
30" Reinforced Concrete Pipe	$140.00	Per Lineal Foot	
33" Reinforced Concrete Pipe	$149.00	Per Lineal Foot	
36" Reinforced Concrete Pipe	$161.00	Per Lineal Foot	
Inlets (24")	$2,268.00	Credit Each	
Inlets (36")	$2,934.00	Credit Each	
Manholes	$3,678.00	Credit Each	
Special Drainage Facilities	Amount Approved by City		

SECTION 9.02 WATER AND SEWER CONNECTION FEES

Pursuant to Section 66001 of the Government Code, the City Council hereby determines:

The purpose of the water and sewer connection charges is to assure payment by developers of their pro rata share of the escalated cost of the City's water and sanitary sewer system.

The charge will be used to reimburse the City for the owner or developer's fair share of the use of the water system and sanitary sewer systems.

There is a reasonable relationship between the use of the fees, the need for a water system, a wastewater treatment plant, and the types of development projects upon which the fee is imposed. All development projects create varying needs for the consumption of water which cannot be fulfilled unless the project is connected to the municipal water system to assure an adequate supply of water to each project. Plus, each project creates a need for sewage conveyance, disposal and treatment. The degree to which each project is charged is based upon factors related to the degree of potential usage, such as: type and size of projects, number of units, and calculations of the escalated cost of the City's sanitary sewer system; the current system capacity; the cost of conveyance, treatment and disposal per equivalent single-family dwelling unit; and the estimated daily discharge for each facility to be connected to the sanitary sewer system, taking into account proportionate average daily discharge of sewage, total organic carbon, sewage, suspended solids, and ammonia nitrogen. The fees or charges shall be collected from the owner or developer of property either (1) prior to approval of the original connection of the property to the water or sanitary sewer system, or a redevelopment with incremental impact, or (2) in the event the uses being made of the property presently connected to the system are enlarged, added to, or further structures are constructed on the property.

A. Water Connection Fees

The following definitions shall be used for the purpose of determining the connection fee in this section: (a) A residential "unit" shall mean one or more rooms used for living purposes by one family. (b) A commercial, industrial, or institutional "unit" shall mean each one hundred (100) gallons of expected daily water demand. (c) "Institutional property" shall mean property used only for the erection and maintenance of church, school, hospital, or public buildings. (d) A hotel "unit" shall mean a room in a hotel that is intended or designed for dwelling, lodging or sleeping purposes by transient occupants. Units in a hotel that contain facilities for cooking and washing dishes shall be classified as low occupancy residential units.
The connection fee to be paid for each parcel or property served through the same water lateral by the owner or developer of residential, commercial, industrial, or industrial property shall be computed as follows:

		FY 24/25 Fee	Unit	Notes
Residential Units				
	Standard Occupancy Unit (with 3 or more bedrooms)	$8,126.00	Per Unit	
	Low Occupancy Unit (with 1 or 2 bedrooms)	$4,603.00	Per Unit	
	Hotel Occupancy Unit	$2,629.00	Per Unit	
Commercial, Industrial and Institutional Units:				
	Per Unit	$2,710.00	Per Unit	

B. Water Service Lateral Fee

	FY 24/25 Fee	Unit	Notes
The water service lateral fee to be paid by the owner or developer of property whenever it is necessary for the City to install a water service lateral from the water main to the water meter location shall be the costs of installation including the cost of labor, material, equipment, and overhead costs as determined by the City.	Actual Cost	Per Installation	

C. Water Service Abandonment Fee

The water service abandonment fee to be paid by the owner or developer whenever it is necessary for the City to abandon a water service lateral.

		FY 24/25 Fee	Unit	Notes
	2" Lateral or smaller	$3,926.00		
	4" to 8" Lateral	$5,892.00		
	Larger than 8" Lateral	$7,262.00		
	12" Lateral	$7,539.00		

D. Water Meters

		FY 24/25 Fee	Unit	Notes
Installation Fee. The connection fee to be paid for each parcel or property served through the same water lateral by the owner or developer of residential, commercial, industrial, or industrial property shall be computed as follows:				
Radio Read Meters				
	3/4" Meter	$999.00		
	1" Meter	$1,092.00		
	1 1/2" Meter	$1,377.00		
	2" Meter	$1,487.00		
	All other meters not listed	Per Current Actual Cost List		
Fire Service		$1,121.00	5/8" Meter for DCDA	DCDA - Double Check Detector Assembly/Reduced Pressure Detector Assembly
Large Meters and Vaults - the costs of installation including labor, materials, equipment and overhead as determined by the City shall be paid by the owner or developer.				

E. Water Main Tapping Fee

Water Main Tapping Fee. The water main tapping fee to be paid by the owner or developer of property prior to the tapping into a main by the City shall be computed as follows:

		FY 24/25 Fee	Unit	Notes
Tap Size				
	1" and 2"	$1,780.00	Per Tap	
	4", 6", 8", and 10"	$2,580.00	Per Tap	
	Over 10" size	Actual Cost	Per Tap	The costs of installation including labor, materials, equipment and overhead as determined by the City shall be paid by owner or developer.

F. Cut-In Tee Fee

		FY 24/25 Fee	Unit	Notes
F1. Cut-In Tee Fee. The cut in tee fee to be paid by the owner or developer of a property when a cut-in tee is necessary to install water services.				
	4" Main	$7,344.00	Each	
	4" Main plus one valve	$8,028.00	Each	
	4" Main plus two valves	$8,713.00	Each	
	6" Main	$7,890.00	Each	
	6" Main plus one valve	$8,779.00	Each	
	6" Main plus two valves	$9,667.00	Each	
	8" Main	$9,401.00	Each	
	8" Main plus one valve	$10,899.00	Each	
	8" Main plus two valves	$12,397.00	Each	
	10" Main	$10,546.00	Each	
	10" Main plus one valve	$12,653.00	Each	
	10" Main plus two valves	$14,760.00	Each	
	12" Main	$12,351.00	Each	
	12" Main plus one valve	$15,223.00	Each	
	12" Main plus two valves	$18,093.00	Each	

		FY 24/25 Fee	Unit	Notes
F2. Tie-In Fee. The tie-in fee is to be paid by the owner or developer of a property when a tie-in is necessary to install or connect water services.				
	6" Main	$14,310.00	Each	
	8" Main	$16,075.00	Each	
	10" & Larger Mains	Actual Cost	Each	

		FY 24/25 Fee	Unit	Notes
F3. Water Service Inspection Fee. The fee is to be paid by the owner or developer of a property when they request an inspection of a water service.				
		$261.00	Each	

		FY 24/25 Fee	Unit	Notes
F4. Water Main Offset Fee. The water offset fee is to be paid by the owner or developer when the offset of a water main is required in order to provide water service.				
		Actual Cost	Per Offset	

G. Water Main Construction Credits

		FY 24/25 Fee	Unit	Notes
G1.	Upon completion and acceptance of improvements installed in conjunction with a Subdivision Agreement or Development Permit, a construction credit per lineal foot of frontage shall be allowed to the owner or developer of property, who at no expense to the City has installed a sewer main in a subdivision boundary line street or in a street on the periphery of a subdivision which (a) will serve only one side of the street, namely, the side being developed by the installing owner or developer, or (b) will serve the property on the other side of the street which is owned by a different person.			
		$70.00	Per Lineal Foot	
G2.	A construction credit equal to the difference in the cost of water main pipe eight (8) inches in nominal diameter and the size of the pipe required to be installed shall be allowed to the owner or developer when such oversizing is required by the City to serve contiguous areas developed, or to be developed, by other developers.			

H. Sewer Lateral Fee

		FY 24/25 Fee	Unit	Notes
H1.	The sewer lateral fee to be paid by the owner or developer of property whenever it is necessary for the City to install a sewer lateral from main sewer to the property line shall be the costs of installation including labor, materials, equipment, and overhead as determined by the City.			
		Actual Cost	Per Installation	

I. Sewer Connection Charges

The charges, payable in advance, for sewer connections shall be as follows:

		FY 24/25 Fee	Unit	Notes
I1.	Residential			
	Standard Occupancy Unit (with 3 bedrooms and up)	$10,942.00	Per Unit	
	Low Occupancy Unit (with 1 or 2 bedrooms)	$7,114.00	Per Unit	
	Hotel Occupancy Unit	$5,565.00	Per Unit	Section 9.02A(d)
Commercial users shall pay a fee per connection calculated as follows:				
I2.	Commercial			
	Standard Strength	$5,436.00	Per Public Works estimated discharge (gpd) / 100	
	Low Strength	$5,028.00	Per Public Works estimated discharge (gpd) / 100	
	High Strength	$7,914.00	Per Public Works estimated discharge (gpd) / 100	
	Minimum Charge	$7,114.00	Per Unit	

		FY 24/25 Fee	Unit	Notes
All significant industrial users pay based on the following characteristics of the waste collected:				
I3.	For each gallon of average daily discharge of sewage plus:	$39.00	Per Gallon	
	For each thousand pounds per year of discharge of "total organic carbon," plus	$20,374.00	Per 1,000 lbs.	
	For each thousand pounds per year of discharge of "suspended solids," plus	$5,789.00	Per 1,000 lbs.	
	For each thousand pounds per year of discharge of "ammonia nitrogen."	$47,661.00	Per 1,000 lbs.	

J. Sewer Main Construction Credits

		FY 24/25 Fee	Unit	Notes
J1.	Upon completion and acceptance of improvements installed in conjunction with a Subdivision Agreement or Development Permit, a construction credit per lineal foot of frontage shall be allowed to the owner or developer of property, who at no expense to the City has installed a sewer main in a subdivision boundary line street or in a street on the periphery of a subdivision which (a) will serve only one side of the street, namely, the side being developed by the installing owner or developer, or (b) will serve the property on the other side of the street which is owned by a different person.			
		$56.00	Per Lineal Foot	
	A construction credit equal to the difference in the cost of water main pipe eight (8) inches in nominal diameter and the size of the pipe required to be installed shall be allowed to the owner or developer when such oversizing is required by the City to serve contiguous areas developed, or to be developed, by other developers.			

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SECTION 9.03 CROSS CONNECTION CONTROL

		FY 24/25 Fee	Unit	Notes
A.	Backflow Installation, Removal, and Relocation Testing Company Fee.	$264.00	Per Company	This is an annual fee assessed to qualified contractors who wish to conduct backflow testing in the City.
B.	Backflow Tag	$23.00	Each	To be attached to a backflow upon passing inspection.
C.	Backflow Installation Permit. Installation, Removal, and Relocation Permit.	$536.00	Each	This fee is assessed when a field inspection is required by City staff in accordance with the Cross Connection Control Program Policies and Regulations. The Permit expires after 180-days from issuance.
D.	Backflow Compliance Test Fee	Actual Cost	Per Test	This fee is assessed when the City tests non-compliant backflow devices to recover City testing costs.

SECTION 9.04 FIRE HYDRANTS

The following definitions shall apply to this section:

1. Hydrant service area shall be defined as the area that a hydrant will serve the normal fire protection needs as determined by the City, taking into account the street pattern, type of development, size of water service mains, and all other factors bearing on plans for fire prevention and suppression.
2. Frontage shall be defined as (a) that side of the lot on which the water service is installed to serve the lot for one-family or two-family residential corner lots, (b) the frontage measured along all public rights-of-way of the parcel being developed or improved for commercial, institutional, industrial, or multiple family property.
3. Development or "Improvement" shall be deemed to occur when a Building Permit, Development Permit or Subdivision Agreement is required, except when the additional floor space is less than one additional residential unit or less than 1,000 square feet of additional gross floor area. In the case of developments other than residential, "development" or "improvement" shall also be deemed to occur whenever a parcel of property is redeveloped under a different zoning classification.

A. Fire Hydrant Service

The following fees shall be collected from the owner or developer of property at the time of the development or improvement of original property or additional development or improvement of the property; provided, however, such fees will be payable only for the hydrant service area of a hydrant previously installed or to be installed at no other direct expense to the owner or developer.

		FY 24/25 Fee	Unit	Notes
A.	Type of Property			
	Industrial, Commercial Institutional, Multiple Family and all others except 1-2 family	$16.07	Per front foot for each side of the street	
	1-2 Family Properties	$10.50	Per front foot for each side of the street	

B. Construction Credit

The following construction credits shall be allowed to the owner or developer of property for fire hydrant(s) installed at owner/developer's expense within a public right-of-way in conformity with City standards, and who has relinquished the fire hydrant(s) to the City, provided that such credits shall apply only for that frontage distance in the hydrant service area where the hydrant(s) serve undeveloped properties, or properties under a separate ownership:

		FY 24/25 Fee	Unit	Notes
B.	Credits			
	Industrial, Commercial Institutional, Multiple Family and all others except 1-2 family	$14.00	Per front foot for each side of the street	
	1-2 Family Properties	$9.00	Per front foot for each side of the street	

C. Fire Flow Testing Fee

		FY 24/25 Fee	Unit	Notes
C.	This fee will be assessed when a private party requests a fire flow test.	$1,206.00	Each	

SECTION 9.05 CONSTRUCTION HYDRANT METERS

A. Withdrawal Permit Fee

An annual nonrefundable permit fee is established as as the charge for a permit to withdraw water from any fire hydrant in the City when a a permit is issued. The permit fee covers a 12-month period, and after that period the hydrant meter device shall be recertified. After the new withdrawal permit fee, water usage fees, and service charges are paid in full a new device will be issued for use. Failure to recertify and pay all fees shall result in the termination of water service per the Municipal Code Chapter 12.50.

		FY 24/25 Fee	Unit	Notes
A.	Withdrawal Permit Fee	$408.00	Each	

B. Hydrant Meter Deposit

The amount of the deposit for the hydrant meter is required to cover the costs of damages or loss of the device.

		FY 24/25 Fee	Unit	Notes
B.	Hydrant Meter Deposit	$3,784.06	Each Hydrant	The cost for any consumption as measured by the meter shall be charged using the commercial rate block per the Utility Fee Schedule.

C. Water Use Deposit

This deposit amount is for water consumption use.

		FY 24/25 Fee	Unit	Notes
C.	Water Use Deposit	$1,560.00	Each Hydrant	

D. Water Meter Service Charge

This is based on the commercial rate for a 3" meter.

		FY 24/25 Fee	Unit	Notes
D.	Water Meter Service Charge	$316.96	Each Month	This fee is set to align with the FY25 proposed utility fee schedule. SMC 12.28.290 Tampering with the hydrant meter backflow device is strictly prohibited.

E. Hydrant Meter Unreported Consumption Late Fee

RTC 16-0662

The monthly fee shall be imposed on any person taking water through a hydrant meter who fails to report their water consumption by the tenth day of the month.

		FY 24/25 Fee	Unit	Notes
E.	Hydrant Meter Unreported Consumption Late Fee	$250.00	Monthly	RTC 16-0662

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SECTION 9.06 GROUNDWATER TO SEWER DISCHARGE

		FY 24/25 Fee	Unit	Notes
A.	Annual Discharge Permit			
	Up to 10,000 gallons	$1,515.00	Per Gallon Discharged	
	Up to 50,000 gallons	$1,865.00	Per Gallon Discharged	
	Up to 100,000 gallons	$2,302.00	Per Gallon Discharged	
	Up to 200,000 gallons	$3,177.00	Per Gallon Discharged	
	Up to 300,000 gallons	$4,051.00	Per Gallon Discharged	
	Up to 400,000 gallons	$4,925.00	Per Gallon Discharged	
	Up to 500,000 gallons	$5,800.00	Per Gallon Discharged	
	More than 500,000 gallons	Calculated to Actual Volume	Per Gallon Discharged	
B.	One-Time Discharge Permit			
	Up to 10,000 gallons	$979.00	Per Gallon Discharged	
	Up to 50,000 gallons	$1,329.00	Per Gallon Discharged	
	Up to 100,000 gallons	$1,766.00	Per Gallon Discharged	
	Up to 200,000 gallons	$2,640.00	Per Gallon Discharged	
	Up to 300,000 gallons	$3,514.00	Per Gallon Discharged	
	Up to 400,000 gallons	$4,389.00	Per Gallon Discharged	
	Up to 500,000 gallons	$5,263.00	Per Gallon Discharged	
	More than 500,000 gallons	Calculated to Actual Volume	Per Gallon Discharged	

SECTION 9.07 SOLID WASTE ENFORCEMENT FEES

		FY 24/25 Fee	Unit	Notes
A.	Collection and Disposal Fee for Impounded Receptacles	$1,184.00	Each	
B.	Third-party costs		Each Incident	
C.	Administrative Fee	15% of Total Enforcement Cost	Each Incident	No change
D.	Regulatory Compliance	Actual Cost	Each Incident	Costs and/or fines incurred by the City for regulatory requirements, violations or special disposal costs incurred due to quantity or characteristics of receptacle contents.
E.	Administrative Citation Schedule for Solid Waste Violations			SMC Ch. 8.16
	(1) First violation	$50-$100	Each	No change
	(2) Second violation occuring within 12 months of the most recent citation date	$100-$200	Each	No change
	(3) Third violation occurring within 12 months of the most recent citation date	$250-$500	Each	No change
F.	Civil penalities for Construction and Demolition (C&D)	Project Square Footage x Diversion Shortfall Percent x $1 per Square Foot	Each Violation	
	Diversion Violations (SMC 16.74)		Each Violation	
	Failure to meet diversion mandate		Each Violation	SMC 16.74.020

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		FY 24/25 Fee	Unit	Notes
G.	Administrative Citation Schedule for Violations Related to Food Containers, Service Ware and Accessories			SMC 8.16.280
	(1) First Violation	$100.00	Each	
	(2) Second Violation	$200.00	Each	
	(3) Third Violation	$500.00	Each	

SECTION 9.08 DELINQUENCY PROCESSING FEES AND TURNING ON AND RESTORING WATER SERVICE FEES

		FY 24/25 Fee	Unit	Notes
A.	Initializing water service for new accounts between 8:00 a.m. and 4:00 p.m., Monday through Friday, one day notice required.	No Charge	Each	
B.	Administrative fee for processing delinquent accounts which qualify for shut-off.	$55.00	Each	
C.	Restoring water service once all unpaid amounts of delinquent accounts have been paid, between 8:00 a.m. and 4:00 p.m., Monday through Friday, if necessary.	$55.00	Each	
D.	Restoring water service once all unpaid amounts of delinquent accounts have been paid, between 4:00 p.m. and 8:00 a.m., Monday through Friday, Saturdays, Sundays, and holidays.	$145.00	Each	
E.	Turning on water service for new accounts between 8:00 a.m. and 4:00 p.m., Monday through Friday (same day service).	$55.00	Each	
F.	Turning on water service for new accounts between 4:00 p.m. and 8:00 a.m., Monday through Friday, Saturdays, Sundays, and holidays.	$145.00	Each	

SECTION 9.09 ADMINISTRATIVE CITATION FINE SCHEDULE FOR SEWER USE VIOLATIONS

		FY 24/25 Fee	Unit	Notes
A.	Wastewater Discharge without Wastewater Discharge Permit			
	IU unaware of requirement; harm to POTW/environment	$100.00	Each	SMC 12.12.180
	IU aware of requirement; no harm to POTW/environment	$500.00	Each	SMC 12.12.180
	IU aware of requirement; harm to POTW/environment	$1,000.00	Each	SMC 12.12.180

		FY 24/25 Fee	Unit	Notes
B.	Wastewater Discharge Permit Application Required			
	Continued failure to submit wastewater discharge permit application 45 days after notice	$500.00	Each	SMC 12.12.160

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		FY 24/25 Fee	Unit	Notes
C.	Effluent Limitations or General Discharge Prohibitions			
	Severe Violation of Limitations or Prohibitions	$250.00	Each	SMC 12.12.120
	Recurring Violation of Limitations or Prohibitions	$500.00	Each	SMC 12.12.014
	Discharge causes damage to the collection system or city property, or causes pass through or interference at the wastewater treatment plant, or causes the plant to violate its NPDES Permit discharge limits.	$1,000.00 or actual cost recovery	Each	SMC 12.12.020; SMC 12.12.025; SMC 12.12.050; SMC 12.18.060; SMC 12.12.200

		FY 24/25 Fee	Unit	Notes
D.	Notification of Noncompliance			
	Failure to provide a written response as required by an enforcement action.	$200.00	Each	SMC 12.18.030
	Failure to notify of changed conditions for discharge, impact to POTW present	$500.00	Each	SMC 12.12.190
	Failure to immediately report any slug load, spill, or discharge that could cause interference or pass-through.	$250.00	Each	SMC 12.12.300

		FY 24/25 Fee	Unit	Notes
E.	Reporting Requirements			
	Failure to submit any required report (more than 45 days)	$500.00	Each	SMC 12.12.150
	Falsification of required report in lieu of compliance	$500.00	Each	SMC 12.12.310

		FY 24/25 Fee	Unit	Notes
F.	Monitoring			
	Failure to conduct self-monitoring as required in permit.	$200.00	Each	SMC 12.12.200; SMC 12.12.240 or SMC 12.12.254

		FY 24/25 Fee	Unit	Notes
G.	Best Management Practices			
	Failure to implement required Best Management Practices	$200.00	Each	SMC 12.12.278

		FY 24/25 Fee	Unit	Notes
H.	Pre-Treatment Facilities and Monitoring Equipment			
	Failure to install required pretreatment equipment	$500.00	Each	SMC 12.12.012; SMC 12.12.026
	Failure to maintain required pretreatment equipment	$250.00	Each	SMC 12.12.012; SMC 12.12.026
	Failure to install monitoring equipment	$250.00	Each	SMC 12.12.250
	Failure to maintain monitoring equipment	$500.00	Each	SMC 12.12.250
	Failure to meet, within ninety days of the scheduled date, a compliance schedule milestone contained in an individual wastewater discharge permit or enforcement order for starting construction, completing construction, or attaining final compliance.	$500.00	Each	SMC 12.12.150

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		FY 24/25 Fee	Unit	Notes
I.	Protection from Accidental and Slug Discharges			
	Failure to provide protection from accidental discharge of prohibited materials or other wastes.	$500.00	Each	SMC 12.12.290
	Failure to provide protection from accidental discharge of prohibited materials or other wastes, harm to POTW or environment.	$1,000.00	Each	SMC 12.12.290

		FY 24/25 Fee	Unit	Notes
J.	Denial of Access			
	Entry denied or consent withdrawn, copies of records denied	$250.00	Each	SMC 12.12.260

		FY 24/25 Fee	Unit	Notes
K.	Prohibition of use of Dilution Waters			
	Use of diluting waters as a partial or complete substitute for adequate treatment.	$500.00	Each	SMC 12.12.060
	Late Payments for Administrative Citations assessed under Section 9.09 of Fee Schedule	1% per month	Per Month	SMC 1.05.100

SECTION 9.10 ADMINISTRATIVE CITATION FINE SCHEDULE FOR STORMWATER MANAGEMENT

		FY 24/25 Fee	Unit	Notes
A.	Discharge Prohibited			
	Failure to prohibit discharge to the storm drain, resulting in discharge to the storm drain system.	$500 or actual cost recovery	Per Incident	SMC 12.60.070 (a) and (b)

		FY 24/25 Fee	Unit	Notes
B.	Best Management Practices			
	Failure to implement minimum best management practices	$250.00	Each	SMC 12.60.310
	Negligent gross failure to implement BMPs	$500.00	Each	SMC 12.60.310

		FY 24/25 Fee	Unit	Notes
C.	Maintenance of Stormwater Treatment Facilities			
	Failure to maintain installed stormwater treatment facilities, hydromodification management facilities and/or source control best management practices on the owner's property.	$250.00	Each	SMC 12.60.280
	Late Payments for Administrative Citations assessed under Section 9.09 of Fee Schedule	1% per month	Per Month	SMC 1.05.100

		FY 24/25 Fee	Unit	Notes
D.	Denial of Access			
	Entry denied for inspection, sampling, or data collection	$250.00	Each	SMC 12.60.320

SECTION 9.11 ADMINISTRATIVE CITATION FINE SCHEDULE FOR WATER

		FY 24/25 Fee	Unit	Notes
A.	Cross-Connection Control & Backflow Code Violations			
	First Violation	$100.00	Each	SMC 12.28.290
	Second Violation within 12 months of most recent citation date.	$200.00	Each	
	Third Violation within 12 months of most recent citation date.	$500.00	Each	
	Late Payments for Administrative Citations assessed under Section 9.09 of Fee Schedule	1% per month	Per Month	SMC 1.05.100

SECTION 9.12 ADMINISTRATIVE FINES FOR VIOLATION OF DROUGHT RESTRICTIONS (Expired April 30, 2016)

SECTION 9.13 SMaRT STATION PUBLIC HAUL GATE RATES

The Director of Environmental Services is authorized to administratively establish SMaRT Station Public Haul Gate Rates for materials not otherwise specified in this document. Schedules shall be established based upon market conditions and City Council adopted policies to ensure fairness and accessibility while attaining fiscal self-sufficiency. Schedules shall be published and available to the public.

		FY 24/25 Fee	Unit	Notes
A.	New: Hauling Fee - Uncovered Load			
	Fee assessed to any operator of an uncovered, open bed truck hauling waste and recyclables for disposal at the SMaRT Station.	$15.00	Each	SMC 8.16.160

SECTION 9.14 WATER THEFT PENALTY

		FY 24/25 Fee	Unit	Notes
A.	Water Theft Fine (RTC 16-0662)			
	Theft of potable or recycled water from the City This penalty shall be imposed for any unlawful use of City potable or recycled water per municipal code.	$1,000.00	Each	SMC 12.24.115

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UTILITY FEE SCHEDULE

SECTION 1.01 - WATER SERVICE FEES

Service Charges: The service charges for each customer class who are billed monthly and bi-monthly shall be based on meter size. In mobile home developments where dwelling units are served by individual meters, and not by a master meter, the single family residential water service rate shall apply. **Please see Section 9.08 for Delinquency Processing Fees and Turning On and Restoring Water Service Fees.**

Meter Size	Single Family		Multi Family/Commercial		Mobile Home Park	
	Monthly	Bi-monthly	Monthly	Bi-monthly	Monthly	Bi-monthly
5/8" x 3/4"	$16.87	$33.74	$23.13	$46.26		
3/4"	$23.56	$47.12	$32.92	$65.84		
1"	$36.93	$73.86	$52.51	$105.02		
1-1/2"	$70.34	$140.68	$101.48	$202.96		
2"	$110.44	$220.88	$160.25	$320.50		
3"			$316.96	$633.92	$316.96	$633.92
4"			$493.27	$986.54	$493.27	$986.54
6"			$983.01	$1,966.02	$983.01	$1,966.02
8"			$1,570.70	$3,141.40	$1,570.70	$3,141.40
10"			$4,117.35	$8,234.70	$4,117.35	$8,234.70

Meter Size	Landscape		Recycled Water		Fire Line	
	Monthly	Bi-monthly	Monthly	Bi-monthly	Monthly	Bi-monthly
5/8" x 3/4"	$38.95	$77.90				
3/4"	$56.68	$113.36				
1"	$92.12	$184.24	$79.06	$158.12	$6.28	$12.56
1-1/2"	$180.73	$361.46	$158.13	$316.26	$9.08	$18.16
2"	$287.07	$574.14	$253.01	$506.02	$12.41	$24.82
3"	$570.62	$1,141.24	$506.01	$1,012.02	$22.97	$45.94
4"	$889.62	$1,779.24	$790.64	$1,581.28	$42.44	$84.88
6"	$1,775.73	$3,551.46	$1,581.29	$3,162.58	$92.49	$184.98
8"	$2,839.04	$5,678.08	$2,530.06	$5,060.12	$159.22	$318.44
10"			$6,641.40	$13,282.80	$248.21	$496.42

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SECTION 1.02 - WATER WITHIN CITY LIMITS

Water sold to consumers within the corporate limits of the City of Sunnyvale shall be sold at the rates specified. All users shall pay a water charge for each one-hundred cubic feet (equal to 748 gallons), or part thereof, of water as follows. In residential developments where two (2) or more dwelling units are served by a common meter, the upper limit (in cubic feet) of each rate block shall be multiplied by the dwelling units served by the common meter in calculating the rates to be applied to water usage monitored by the common meter. In such case, the lower limit of each rate block shall be one (1) cubic foot over the upper limit of the next lower rate block.

Single Family Residential/Mobile Home	Tiered Rate Thresholds (CCF)		Volume Rates by Tier	
	Tier 1	Tier 2	Tier 1	Tier 2
Monthly	0-5	6 +	$5.29	$6.17
Bi-Monthly	0-10	11 +	$5.29	$6.17

All Other Customer Classes	Rate/CCF
Multi- Family Residential	$5.73
Commercial	$5.73
Landscape	$5.73
Institutional	$5.73
Recycled Water Landscape	$5.16
Recycled Water Institutional	$5.16
Leak Adjustment*	$5.11

*Water lost due to leaks will be charged at this reduced rate upon approved application for leak adjustment, including proof of repair. Limit one adjustment for one billing cycle per year.

SECTION 1.03 - WATER OUTSIDE CITY LIMITS

The charges for all water, except reclaimed water, delivered through water meters to consumers outside the corporate limits of the City shall be equal to the charges set forth in Sections 1.01 and 1.02.

SECTION 1.04 - TAMPERING WITH EQUIPMENT PROHIBITED

No person or persons shall, without a written permit from the city, open or in any way tamper with or make any addition or alteration whatever to any street main, service connection, meter, stopcock, valve or aircock connected with the water mains. A charge for associated costs of labor, materials for repair or replacement, as the case may be, plus a 15% administrative charge may be included with the water service bill and collected under the same rules and regulations.

SECTION 1.05 - RESIDENTIAL WASTEWATER FEES

The monthly rate for wastewater service for residential users shall be the following charge for each dwelling unit.

Customer Class	Monthly	Bi-monthly
Single Family	$67.95	$135.90
All other residential	$47.03	$94.06

SECTION 1.06 - COMMERCIAL WASTEWATER FEES

The monthly rate for wastewater service for each commercial user shall be the following charge for each one hundred (100) cubic feet or fraction thereof of sanitary sewage and waste discharge from the premises.

Customer Class	Per 100 Cubic Feet
Low Strength	$6.54
Standard Strength	$7.23
High Strength	$12.48

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APPENDIX L

City of Sunnyvale
2025 Urban Water Management Plan
Resolution for Adoption of the UWMP and WSCP

Will be updated after adoption.

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APPENDIX M

City of Sunnyvale
2025 Urban Water Management Plan
Required 2025 UWMP Tables

Submittal Table 2-1 Retail: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025 (AF)
Add additional rows as needed			
CA4310014	City of Sunnyvale	28,514	18,806
	Total	28,514	18,806

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

NOTES:
1.Volume of water supplied within City limits.

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Submittal Table 2-2: Plan Identification		
Select One	**Type of Plan**	**Name of Regional Alliance or RUWMP** (Drop Down List)
☑	**Individual UWMP**	
	If Water Supplier is also a member of a SB X7-7 Regional Alliance, select name from the drop-down.	
☐	**Regional Urban Water Management Plan (RUWMP)**	
	If Supplier selected RUWMP, select name from the drop-down.	
NOTES:		

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Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesale supplier
☒	Supplier is a retail supplier
Fiscal or Calendar Year (select one)	
☒	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP (Select from the drop down list).	
Unit	AF
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3.	
NOTES:	

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Submittal Table 2-4 Retail: Water Supplier Information Exchange **Water Code Section 10631(h)**
The retail Supplier has informed the following wholesale supplier(s) of projected water use.
Wholesale Water Supplier Name
Add additional rows as needed
San Francisco Public Utilities Commission (SFPUC)
Santa Clara Valley Water District (Valley Water)
NOTES:

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Submittal Table 3-1 Retail: Population - Current and Projected Water Code Section 10631(a)						
Population Served	2025	2030	2035	2040	2045	2050(opt)
	159,673	166,813	174,272	182,065	190,206	

NOTES:

1. Department of Finance 2025 estimate and 2030-2045 projections based on the 2010-2025 historical annual growth rate of 0.88%.

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Submittal Table 4-1 Retail: Total Uses for Potable and Non-Potable Water — Actual
Water Code Section 10631(d)(1)

Use Type	Additional Description (as needed)	2025 Actual Water Use	
Drop down list May select each use multiple times These are the only use types that will be recognized by the WUEdata online submittal tool		**Potable or Non-Potable** (OPTIONAL) Drop down list	Volume (AF)
Add additional rows as needed			
Single Family		Potable	5,282
Multi-Family		Potable	5,348
Commercial	Commercial and industrial use are combined.	Potable	3,939
Commercial	Commercial and industrial use are combined. Recycled water used for dual plumbing and industrial cooling.	Non-Potable	90
Institutional/Governmental		Potable	152
Landscape	Potable	Potable	2,132
Landscape	Recycled Water	Non-Potable	551
Other (optional)	Firelines	Potable	8
Distribution System Water Loss		Potable	1,304
		Subtotal Potable	18165
		Subtotal Non-Potable	641
		Total	18,806

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

NOTES:

1.Non-potable use includes recycled water and any potable water added to the recycled water system.
2.Water loss is estimated as the difference between actual water sales and water supplied.
3.Recycled water used for commercial dual plumbing and industrial cooling.

DRAFT

Submittal Table 4-2 Retail: Total Uses for Potable, and Non-Potable Water — Projected Water Code Section 10631(d)(1)						
Use Type	Additional Description (as needed)	**Projected Water Use** (Report To the Extent that Records are Available)				
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		**Potable or Non-Potable** (OPTIONAL) Drop down list	**2030 (AF)**	**2035 (AF)**	**2040 (AF)**	**2045 (AF)**
Add additional rows as needed.						
Single Family		Potable	5,323	5,254	5,231	5,209
Multi-Family		Potable	6,106	7,232	8,408	9,568
Commercial	Commercial/Industrial combined	Potable	4,933	6,241	7,086	7,910
Institutional		Potable	315	398	452	505
Landscape		Potable	2,144	2,164	2,180	2,198
Other (optional)	Firelines	Potable	133	133	133	133
Distribution System Water Loss		Potable	1,648	1,863	2,043	2,219
Commercial	Commercial/Industrial combined, recycled water	Non-Potable	95	119	142	165
Landscape	Recycled water	Non-Potable	637	794	950	1,107
		Subtotal Potable	20,602	23,285	25,533	27,742
		Subtotal Non-Potable	732	913	1,092	1,272
		Total	21,334	24,198	26,625	29,014

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

NOTES:

1.Non-potable use includes recycled water and any potable water added to the recycled water system.
2.Projected system losses are 8% of projected potable demand.
3.Projected potable water from the BAWSCA 2025 Demand Study with passive conservation categorized by customer use type and projected additional demand from planned new development and redevelopment within the City's service area.
4.Projected non-potable use is described in Section 6.
5.Water use within the City's service area.

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Submittal Table 4-3 Retail: Inclusion in Water Use Projections Water Code Section 10631 (a), 10631 (d)(4)(A), and 10631 (d)(4)(B)	
Are Future Water Savings Included in Projections? **Drop down list (y/n)**	Yes
If "Yes" to above, **state the section or page number**, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found. ***Optional*** Suppliers may complete Optional Submittal Table 4-4 R to quantify the expected savings.	Section 4.4
Are Lower Income Residential Demands Included In Projections? **Drop down list (y/n)**	Yes
Optional If the method for accounting Lower Income Residential Demands has been included, provide page number where this accounting can be found.	
DWR NOTES: Additional guidance is provided in Appendix K.	
NOTES:	

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Optional **Submittal Table 4-4 Retail: Passive Water Savings Projections** **Water Code Section 10631(d)(4)(A)**					
Description (Codes, Standards, Ordinances, or Plans)	Passive savings				
	2030 (AF)	**2035 (AF)**	**2040 (AF)**	**2045 (AF)**	**2050 opt (AF)**
Add additional rows as needed					
Passive Conservation Savings	358	616	831	1008	
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.					
NOTES: 1.Data from the 2025 BAWSCA Demand Study.					

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Submittal Table 4-5 Retail: Water Loss Audit Reporting Water Code Section 10631(d)(3)(A)		
Public Water System ID # Reported in Table 2-1 R	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
Report submittal status for all five years for each Public Water System as available. Add rows as needed		
CA4310014	**2020**	Yes
	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
DWR NOTES: Suppliers will provide a link to the WUEdata submittals of their Water Loss Audit Reports.		

NOTES:

2020:
https://wuedata.water.ca.gov/public/awwa_uploads/9644971549/CY2020%20Sunnyvale%20Validated%20Water%20Audit%2Exlsx

2021:
https://wuedata.water.ca.gov/public/awwa_uploads/1947263419/2021%2DSunnyvale%2DWater%2DAudit%2DReporting%2DWorksheet%5FValidated%2Exlsx

2022:
https://wuedata.water.ca.gov/public/awwa_uploads/9949979484/2022%2DSunnyvale%2DWater%2DAudit%2DReporting%2DWorksheet%2DV6%5FValidated%2Exlsx

2023:
https://wuedata.water.ca.gov/public/awwa_uploads/1433789908/2023%2DSunnyvale%2DWater%2DAudit%2DReporting%2DV6%2DValidated%2Exlsx

2024:
https://wuedata.water.ca.gov/public/awwa_uploads/3448545157/2024%2DSunnyvale%2DValidated%2DWater%2DAudit%2DWorksheet%2DV6%5F2975%2Exlsx

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Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard
Water Code Section 10631(d)(3)(C)

Public Water System ID # Reported in Submittal Table 2-1 R	Did the Water Board Calculate a Water Loss Standard for this Public Water System? (y/n) If no, Supplier will not complete this row.	Real Water Loss					Apparent Water Loss				
		State Water Board Standard		Most Recent AWWA Water Loss Audit			State Water Board Standard		Most Recent AWWA Water Loss Audit		
		2028 Real Water Loss Standard per Unit per day	Units for Real Water Loss Drop down list	Number of Units (Connections or Miles corresponding with units selected)	Volume of Total Real Loss (from AWWA Water Loss Audit) (AF)	Real Water Loss Per Unit per Day	2028 Apparent Water Loss Standard per Unit per Day	Units for Apparent Water Loss	Number of Connections	Volume of Total Apparent Loss (from AWWA Water Loss Audit) (AF)	Apparent Water Loss Per Unit per Day
Add additional rows as needed.											
CA4310014	Yes	29.4	Gallons per Service Connection per Day (GPSCD)	29717	1509	45.3	7.9	Gallons per Service Connection per Day (GPSCD)	29717	255	7.7

Water Board's Calculated Water Loss Standards

DWR NOTES: Units of measure (AF, CCF, MG) for Water Loss **MUST** remain consistent with units reported in Submittal Table 2-3. The units reported in Submittal Table 2-3 are used in this table's calculations.

NOTES:

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Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress Water Code Section 10608.40						
☐	Check the box if the Supplier was not an Urban Water Supplier during or before the 2020 UWMP reporting cycle. Proceed to the next table.					
Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target? Drop down list	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?	Only for suppliers that did not meet the Target in 2020 See DWR NOTES below.	
					Actual 2025 GPCD (From SB X7-7 Compliance Form)	Did Supplier meet the 2020 Target in 2025?
No	Individual Target	139	115	Yes		NA

DWR NOTES:
Suppliers calculating a 2025 GPCD will need to complete and submit SB X 7-7 Compliance Tables to verify the use of SB X7-7 Methodologies.
Suppliers that were part of a merger or consolidation since 2020 see Chapter 5 and Appendix P for guidance.
NA=Not Applicable

NOTES:

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Submittal Table 6-1 Retail: Groundwater Volume Pumped Water Code Section 10631(4) and 10631(4)(c)							
☐	Check the box if the Supplier does not pump groundwater. Proceed to the next table.						
☐	Check the box if all or part of the groundwater described below is desalinated. (OPTIONAL)						
Groundwater Type **Drop Down List** May use each category multiple times	Potable or Non-Potable (OPTIONAL) **Drop down list**	Location or Basin Name	2021 (AF)	2022 (AF)	2023 (AF)	2024 (AF)	2025 (AF)
Add additional rows as needed							
Alluvial Basin		Santa Clara Plain Subarea	126	113	138	158	157
		Total	126	113	138	158	157
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.							
NOTES							

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Submittal Table 6-2 Retail: Wastewater Collected Within Service Area Water Code Section 10633(a)				
☐	Check the box if there is no wastewater collection system. Proceed to the next table.			
	Percentage of 2025 service area served by wastewater collection system (OPTIONAL)			
	Percentage of 2025 service area population served by wastewater collection system (OPTIONAL)			
Wastewater Collection			**Recipient of Collected Wastewater**	
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? OPTIONAL **Drop Down List**	Volume of Wastewater Collected from UWMP Service Area 2025 (AF)	Name of Wastewater Treatment Plant (WWTP) and Place ID Number **Drop down list**	Is WWTP Located Within UWMP Area? **Drop Down List**
Add additional rows as needed				
City of Sunnyvale	Metered	15,817	Sunnyvale WPCP, Place ID 259507	Yes
Total Wastewater Received from UWMP Service Area in 2025:		15,817		
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. **Additional Guidance**: See Appendix M, Section M.21 for detailed guidance on this table.				
NOTES:				

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Submittal Table 6-3 Retail: Wastewater Treatment and Outcomes Within UWMP Service Area
Water Code Section 10633(b)

☐ **Check the box if no wastewater is treated or disposed of within the UWMP service area.**
Proceed to the next table.

Wastewater Treatment Plant Name and Place ID Number **Drop down list**	Does This Plant Treat Wastewater Generated Outside the UWMP Service Area? (OPTIONAL) **Drop down list**	2025 Volume of Wastewater Received from UWMP Service Area (As Reported in Submittal Table 6-2 R) (AF)	Total 2025 Volume of Water Treated (AF)	2025 Outcomes of Treated Wastewater										
				Water Recycled Within UWMP Service Area (enter data as applicable)		**Water Recycled Outside of UWMP Service Area** (enter data as applicable)		**Effluent Discharge that is not a Permitted Recycled Water Use** (enter data as applicable)		**Required Discharge for Instream Flow** (enter data as applicable)		**Delivered to Another Entity for Additional Treatment** (enter data as applicable)		
				Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Treatment Level **Drop down list**	Volume (AF)	Name of other entity
Add additional rows as needed														
Sunnyvale WPCP, Place ID 259507	Yes	15817	15,817	Tertiary	641	Tertiary	494	Tertiary	13663					
Total		15,817	15,817		641		494		13,663		0		0	

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
IPR: Indirect Potable Reuse would have the treatment level of its end use requirement in the Level of Treatment drop-down.
Additional Guidance: See Appendix M, Section M.21 for detailed guidance on this table.

NOTES:
1.The City treats wastewater for the small pockets of Cal Water customers within City limits as well as a pocket of customers in Cupertino.
2.Total usage includes recycled water and potable water delivered through the recycled water system. Recycled water produced at the WPCP accounts for approximately 8% of total usage. Usage does not include disinfected secondary recycled water diverted for WPCP process prior to recycled water distribution system, which is not counted towards Statewide Recycled Water volume.
3.Services outside City limits include Moffett Field and the Apple® Campus 2.
4.Effluent flows do not include No. 3 water (non-potable Plant service water used internally for operations) or backwash water. No. 3 water is used in several plant processes, including polymer dilution, washdown water, Synagro dewatering, and other miscellaneous purposes.
5.The City does not currently have instream flow requirements.

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Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area
Water Code Section 10633 (c),(d),(e)

▫	Check box if recycled water is not used and is not planned for use within the service area of the supplier. The supplier will only complete the column on "Potential Recycled Water Use" and submit an accompanying narrative on the feasibility of that potential recycled water use.
Name(s) of Facility/ies Producing (Treating) the Recycled Water (OPTIONAL) :	
Name of Supplier Operating the Recycled Water Distribution System (OPTIONAL) :	
Volume of Supplemental Water Added in 2025 (OPTIONAL) :	
Source of 2025 Supplemental Water (OPTIONAL) :	

Use Type **Drop down list**	**Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop down list	Additional Information (as needed)	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	**Potential Recycled Water Use**	
								Volume	Narrative page number (OPTIONAL)
Add additional rows as needed									
Landscape irrigation (exc golf courses)	Non-Potable	Parks, Green Belts, Schools, etc.	480	522	678	835	992	90	
Golf course irrigation	Non-Potable	Fairway Irrigation	71	115	115	115	115	0	
Commercial use	Non-Potable	Dual Plumbing	76	73	91	109	127	0	
Industrial use	Non-Potable	Cooling	14	22	27	33	38	0	
		Subtotal Potable	0	0	0	0	0	0	
		Subtotal Non-Potable	641	732	912	1,092	1,272	90	
		Total	641	732	912	1092	1272	90	0

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
Additional Guidance: See Appendix M, Section M.21 for detailed guidance on this table.
Potential recycled water use: a description of the feasibility of these uses must be included in the narrative.
Multiple Producers: If you have multiple recycled water producers, submit a separate table for each.

NOTES:
1.Although 90 AF of recycled water was produced at the WPCP, approximately 1,045 AF of purchased potable water from SFPUC was added to the recycled water distribution system, making the total recycled water demand 1,135 AF. Approximately 641 AF was distributed within City limits, with the remaining 494 AF distributed to services outside City limits (Moffett Field and the Apple® Campus 2).
2.The City has historically produced significantly more than 90 AF of recycled water; however, production was limited in 2025 due to challenges in meeting Title 22 turbidity requirements. The City is currently constructing a new secondary treatment system at the WPCP that is expected to produce effluent with significantly lower turbidity compared to the existing treatment process.
3.Units in AFY.

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Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual
Water Code Section 10633(e)

☐ Check the box if recycled water was not used in 2025 nor previously projected for use in 2020.
Proceed to the next table.

Use Type Drop Down list	2020 Projection for 2025 (AF)	2025 Actual Use (AF)
Add additional rows as needed		
Landscape irrigation (exc golf courses)	486	480
Golf course irrigation	293	71
Commercial use	90	76
Industrial use	27	14
Total	896	641

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure reported in Submittal Table 2-3
Additional Guidance: See Appendix M, Section M.21 for detailed guidance on this table.

NOTES:
1. Recycled water use within service area.
2. The greatest difference in projected vs actual use occurred in projected golf course irrigation demand, which is 222 AF lower than the amount projected in 2020. One potential reason for this difference is that the 2025 value reflects recycled water use within City limits and excludes Moffett Field, which had a total recycled water use of 214 AF in 2025. Additionally, the City has an upcoming recycled water project, described further in Section 6.4.5, that will connect Sunken Gardens Golf Course to the recycled water system, potentially increasing recycled water use for golf course irrigation within City limits in the near future.

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Submittal Table 6-6 Retail: Methods to Encourage Future Recycled Water Use Water Code Section 10633(f)			
☐	Check the box if the Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in the UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (AF)
Add additional rows as needed			
Recycled Water Pipeline Expansion	Installation of approximately 970 lineal feet of 6" RW pipeline will allow for the irrigation of the existing Sunken Gardens Golf Course	2027/2028	44
		Total (AF)	44
		Unit Conversion to AF	44

DWR NOTES:
Units of measure (AF, CCF, MG) MUST remain consistent with units reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
The unit conversion to Acre Feet addresses the Water Code's requirement that this value be provided in acre-feet.

NOTES:
As part of the FY 2025-26 Adopted Budget, the City has approved the construction of approximately 2,370 feet of recycled water pipeline as part of CIP Project #837450. This project serves to expand the distribution system in two areas: 1) 1,400 feet to connect existing pipelines and remove dead ends in the existing system to increase reliability, and 2) 970 feet extending from the existing system to serve the Sunken Gardens Golf Course.

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Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs **Water Code Section 10631(f)**							
▪	Check the box if there are no expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Proceed to the next table.						
▪	Check the box if some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.						
Page 6-15 Section 6.7	Provide page location of narrative in the UWMP						
Name of Future Projects or Programs	Joint Project with other suppliers?		Additional Description (as needed)	**Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop Down list	Planned Implementation Year	Planned for Use in Year Type **Drop Down List**	Expected Increase in Water Supply to Supplier (This may be a range) (AF)
	Drop Down List (yes/no)	If Yes, Supplier Name					
Add additional rows as needed							
DWR NOTES: **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure reported in Submittal Table 2-3.							
NOTES:							

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Submittal Table 6-8 Retail: Water Supplies — Actual
Water Code Section 10631(b)

Water Supply	Additional Description (as needed)	2025		
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		**Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop Down list	Actual Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)
Add additional rows as needed				
Purchased or Imported Water	SFPUC	Potable	11,786	14,100
Purchased or Imported Water	Valley Water	Potable	7,267	9,700
Groundwater (not desalinated)	Wells	Potable	157	8,000
Recycled Water	Produced recycled water	Non-Potable	90	
		Subtotal Potable	19,210	31,800
		Subtotal Non-Potable	90	0
		Total	19,300	31,800

DWR NOTES:
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
Total Entitlement: e.g. Water Right, Groundwater Allocation, Contracted Amount.

NOTES:
1.Approximately 1,045 AF of purchased potable water was added to the recycled water distribution system.
2.Contractual volumes from Valley Water vary from year to year. Valley Water temporarily suspended deliveries to the City in November 2025 due to the West Pipeline Phase 1 Project. The project includes inspection and repair of segments of the West Pipeline, which carries treated water from the Rinconada WTP to the City.
3.Although 90 AF of recycled water was produced at the WPCP, approximately 1,045 AF of purchased potable water from SFPUC was added to the recycled water distribution system, making the total recycled water demand 1,135 AF. Approximately 641 AF was distributed within City limits, with the remaining 494 AF distributed to services outside City limits (Moffett Field and the Apple® Campus 2).

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Submittal Table 6-9 Retail: Water Supplies — Projected
Water Code Section 10631 (b)

Water Supply			Projected Water Supply (Report to the Extent Practicable)							
			2030		2035		2040		2045	
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Detail on Water Supply	**Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop Down list	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)	Reasonably Available Volume (AF)	Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF)
Add additional rows as needed										
Purchased or Imported Water	SFPUC	Potable	12,008		12,490		13,389		14,091	
Purchased or Imported Water	Valley Water	Potable	9,341		11,222		11,928		12,163	
Groundwater (not	Wells	Potable	8,000		8,000		8,000		8,000	
Recycled Water	Recycled Water	Non-Potable	732		912		1,092		1,272	
Subtotal Potable			29,349	0	31,712	0	33,317	0	34,254	0
Subtotal Non-Potable			732	0	912	0	1,092	0	1,272	0
Total			30,081	0	32,624	0	34,409	0	35,526	0

DWR NOTES:

Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

Total Entitlement: e.g. Water Right, Groundwater Allocation, Contracted Amount.

NOTES:

1.Total available supply from SFPUC is equal to the City's ISG of approximately 14,100 AF; however, for planning purposes, the reasonably available volume presented herein reflects the projections provided to SFPUC based on the City's projected demand and the availability of other supplies.

2.The projections provided herein reflect projections provided to Valley Water based on the City's projected demand and availability of other supplies. The City can purchase additional available water from Valley Water during non-dry years when water is available.

3.Although the City has on average pumped about 138 AF annually, the total safe yield of groundwater is 8,000 AFY.

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Optional Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type	**Base Year** If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	**Available Supplies if Year Type Repeats** ☐ Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location: Section 7.3** Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available (AF)	**% of Average Supply**
Average Year	1922-2021		100%
Single-Dry Year	1977		
Consecutive Dry Years 1st Year	1988		
Consecutive Dry Years 2nd Year	1989		
Consecutive Dry Years 3rd Year	1990		
Consecutive Dry Years 4th Year	1991		
Consecutive Dry Years 5th Year	1992		

DWR NOTES: Supplier may use multiple versions of Submittal Table 7-1 R if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Submittal Table 7-1 R, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 R are being used and identify the particular water source that is being reported in each submittal table.
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the units of measure reported in Submittal Table 2-3.

NOTES:
1. All base years are consistent with Valley Water.

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Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison Water Code Section 10635 (a)					
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Supply totals (autofill from Submittal Table 6-9 R)	30,081	32,624	34,409	35,526	0
Use totals (autofill from Submittal Table 4-2 R)	21,334	24,198	26,625	29,014	0
Surplus/(shortfall)	8,747	8,426	7,784	6,512	0
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES: 1.Includes total groundwater well capacity. 2.Projected demands include passive conservation. 3.Includes potable and recycled water.					

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Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison Water Code Section 10635(a)					
	2030 (AF)	**2035 (AF)**	**2040 (AF)**	**2045 (AF)**	**2050 (AF)**
Supply totals	26,340	28,499	29,697	30,333	
Use totals	21,334	24,198	26,625	29,014	
Surplus/(shortfall)	5,006	4,301	3,072	1,319	
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit					
WSCP - use reduction savings benefit					
Revised Surplus/(shortfall)					
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES: 1.Includes interruption from SFPUC due to Bay-Delta Plan in 2030 and Tier 2 reduction plan. 2.Includes total groundwater well capacity. 3.Projected demands include passive conservation. 4.Includes potable and recycled water.					

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Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison Water Code Section 10635(a)						
		2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
First year	Supply totals	26,340	28,499	29,697	30,333	
	Use totals	21,334	24,198	26,625	29,014	
	Surplus/(shortfall)	5,006	4,301	3,072	1,319	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Second year	Supply totals	25,013	27,262	28,373	28,935	
	Use totals	21,334	24,198	26,625	29,014	
	Surplus/(shortfall)	3,679	3,064	1,748	(79)	0
	OPTIONAL WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Third year	Supply totals	25,013	27,262	28,373	28,935	
	Use totals	21,334	24,198	26,625	29,014	
	Surplus/(shortfall)	3,679	3,064	1,748	(79)	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fourth year	Supply totals	24,192	27,262	28,373	27,977	
	Use totals	21,334	24,198	26,625	29,014	
	Surplus/(shortfall)	2,858	3,064	1,748	(1,037)	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					
Fifth year	Supply totals	24,419	27,262	28,373	28,272	
	Use totals	21,334	24,198	26,625	29,014	
	Surplus/(shortfall)	3,085	3,064	1,748	(742)	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit					
	WSCP - use reduction savings benefit					
	Revised Surplus/(shortfall)					

DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

NOTES:

1.Includes interruption from SFPUC due to Bay-Delta Plan in 2030 and Tier 2 reduction plan.

2.Projected demands include passive conservation.

3.Includes total groundwater well capacity.

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Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment Water Code Section 10635(b)(3)	
2026	**Total**
Total Water Use (AF)	19,228
Total Supplies (AF)	27,512
Surplus/Shortfall w/o WSCP Action	8,284
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2027	**Total**
Total Water Use (AF)	19,649
Total Supplies (AF)	27,971
Surplus/Shortfall w/o WSCP Action	8,322
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2028	**Total**
Total Water Use (AF)	20,070
Total Supplies (AF)	28,431
Surplus/Shortfall w/o WSCP Action	8,361
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2029	**Total**
Total Water Use (AF)	20,491
Total Supplies (AF)	28,105
Surplus/Shortfall w/o WSCP Action	7,614
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
2030	**Total**
Total Water Use (AF)	21,334
Total Supplies (AF)	28,754
Surplus/Shortfall w/o WSCP Action	7,420
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (AF)	
WSCP - use reduction savings benefit (AF)	
Revised Surplus/(shortfall)	
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.	
NOTES:	

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Submittal Table 8-1: Cross-reference for Standard vs Supplier Shortage Levels Water Code Section 10632(a)(3)(B)			
☑	Check the box if the Supplier uses the Standard six levels of water shortage. Proceed to the next table.		
Standard Shortage Levels	**Percent Shortage Range**	**Suppliers Shortage Levels**	**Percent Shortage Range**
1	Up to 10%		
2	Up to 20%		
3	Up to 30%		
4	Up to 40%		
5	Up to 50%		
6	>50%		
NOTES:			

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Submittal Table 8-2 Retail: Supply Augmentation and Other Actions Water Code Section 10632(a)(4)(A),(C) and (E)				
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)	
Add additional rows as needed				
All	Other Actions (describe)	Percentage	10% – >50%	Augment supply with increased groundwater pumping.
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.				
NOTES:				

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Submittal Table 8-3 Retail: Demand Reduction Actions Water Code Section 10632(a)(4)(B),(D), and (E)					
Yes	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions **Drop down list** These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? **For Retail Suppliers Only** Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)		
Add additional rows as needed					
All	CII - Restaurants may only serve water upon request	Percentage	≤ 10%		No
All	Landscape - Limit landscape irrigation to specific times	Percentage	≤ 10%	Prohibit sprinkler irrigation between the hours of 9AM - 6PM when daylight savings is in effect	No
All	Landscape - Limit landscape irrigation to specific times	Percentage	≤ 10%	Prohibit irrigating for more than 15 minutes per day per station	No
All	Other	Percentage	≤ 10%	Prohibit allowing plumbing fixtures to leak	No
All	Other	Percentage	≤ 10%	Prohibit using potable water in a manner where it floods premises and runs off into the street	No
All	Other	Percentage	≤ 10%	Prohibit using a hose to wash vehicles without a shut off valve	No
All	Other	Percentage	≤ 10%	Prohibit using a hose to wash driveways, sidewalks (except for health and safety)	No
All	Landscape - Limit landscape irrigation to specific times	Percentage	≤ 10%	Prohibit irrigation with potable water during and within 48 hours after measurable rainfall	No
All	Landscape - Other landscape restriction or prohibition	Percentage	≤ 10%	Prohibit irrigation with potable water of ornamental turf on public street medians	No
All	CII - Lodging establishment must offer opt out of linen service	Percentage	≤ 10%		No
All	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	≤ 10%	Prohibit use of decorative fountains without recirculation	No
All	Other	Percentage	≤ 10%	Prohibit installation of single pass cooling process in new construction	No
1-6	Expand Public Information Campaign	Percentage	10-50%	Expand public information campaign which includes water use surveys and promoting available rebate programs such as turf replacement, water use efficiency devices, or conversion to recycled water if available	No
1-6	Other	Percentage	10-50%	Enforce permanent water use restriction Ordinance (Muni Code 12.34.020)	No
1-6	Decrease Line Flushing	Percentage	10-50%	Decrease hydrant/line flushing (unless for public health or safety)	No
2-6	Increase Water Waste Patrols	Percentage	20-50%	Increase water waste patrols and enforcement of permanent water use restriction Ordinance (Muni Code 12.34.020)	Yes
2-6	Landscape - Limit landscape irrigation to specific days	Percentage	20-50%	Set maximum weekly three-day irrigation schedule	Yes
2-6	Reduce System Water Loss	Percentage	20-50%		Yes
3-6	Landscape - Limit landscape irrigation to specific days	Percentage	30-50%	Prohibit irrigation of ornamental landscapes with potable water more than two days per week	Yes
3-6	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Percentage	30-50%		Yes
3-6	Implement or Modify Drought Rate Structure or Surcharge	Percentage	30-50%		Yes
3-6	Increase Frequency of Meter Reading	Percentage	30-50%		Yes
4-6	Other	Percentage	40-50%	Water allocation may be imposed	Yes
4-6	Other	Percentage	40-50%	Prohibit new installations of lawns	Yes
4-6	Other	Percentage	40-50%	Prohibit irrigating with potable water of golf courses except for tees and greens	Yes
4-6	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	40-50%	Prohibit use of decorative fountains	Yes
4-6	Other water feature or swimming pool restriction	Percentage	40-50%	Prohibit new swimming pool or pond construction	Yes
4-6	Other water feature or swimming pool restriction	Percentage	≥ 50%	Prohibit filling or refilling swimming pools	Yes
5-6	Other	Percentage	≥ 50%	Moratorium or net zero demand increase on new connections	Yes
5-6	Other water feature or swimming pool restriction	Percentage	≥ 50%	Prohibit new swimming pool or pond construction	Yes
5-6	Other water feature or swimming pool restriction	Percentage	≥ 50%	Prohibit filling or refilling swimming pools	Yes
5-6	Landscape - Limit landscape irrigation to specific days	Percentage	≥ 50%	Prohibit outdoor watering December through March	Yes
5-6	Landscape - Prohibit certain types of landscape irrigation	Percentage	≥ 50%	Prohibit watering turf, grass or dichondra lawns (can provide minimal water for sports playing fields)	Yes
6	Landscape - Prohibit certain types of landscape irrigation	Percentage	> 50%	Prohibit landscape irrigation with potable water of any City-owned premises or businesses where recycled water is available for connection	Yes
6	Landscape - Other landscape restriction or prohibition	Percentage	> 50%	Prohibit irrigation of ornamental landscapes with potable water	Yes
6	Landscape - Other landscape restriction or prohibition	Percentage	> 50%	Prohibit watering turf, grass or dichondra lawns with potable water including sports and playing fields and tees and greens for golf courses	Yes
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES: 1."Decorative fountains" are considered ornamental water features that are artificially supplied with water and include ponds, lakes, waterfalls, and fountains. These facilities are considered ornamental and not for recreation.					

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Submittal Table 10-1 Retail: Notification to Cities and Counties Water Code Section 10621(b) and 10642		
City Name	60 Day Notice **Drop Down (yes/no)**	Notice of Public Hearing **Drop Down (yes/no)**
Add additional rows as needed		
City of Hayward	Yes	Yes
City of Milpitas	Yes	Yes
City of Mountain View	Yes	Yes
City of Palo Alto	Yes	Yes
City of Santa Clara	Yes	Yes
City of Brisbane	Yes	Yes
City of Burlingame	Yes	Yes
City of Daly City	Yes	Yes
City of Menlo Park	Yes	Yes
City of Millbrae	Yes	Yes
City of Redwood City	Yes	Yes
City of San Bruno	Yes	Yes
City of East Palo Alto	Yes	Yes
City of San Jose	Yes	Yes
City of Foster City	Yes	Yes
County Name **Drop Down List**	60 Day Notice **Drop Down (yes/no)**	Notice of Public Hearing **Drop Down (yes/no)**
Add additional rows as needed		
Alameda County	Yes	Yes
Santa Clara County	Yes	Yes
NOTES:		

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APPENDIX N

City of Sunnyvale
2025 Urban Water Management Plan
2025 UWMP Checklist

Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	1	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and overview	n/a	Section 1
x	1	Chapter 1	10630.5	Each plan shall include a simple description of the Supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a Supplier may also choose to include a simple description at the beginning of each chapter.	Plan preparation	n/a	Section 1.1
x	2.1	Section 2.1	10620(b)	Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier.	Plan preparation	n/a	Section 1 and Section 10
x	2.5	Section 2.5	10644	Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP.	Plan preparation	2-1	Section 2
x	2.5	Section 2.5	10644	Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	Plan preparation	2-2	Section 2.2 and Section 2.3
x	2.5	Section 2.5	10644	Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes.	Plan preparation	2-3	Section 2.2
x	2.4	Section 2.4	10642	Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan preparation	n/a	Section 10.3, Section 10.4, and Appendix L
x	2.4	Section 2.4.2	10620(d)(3)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan preparation	n/a	Section 2.3 and Appendix A
x	2.4	Section 2.4.1	10631(h)	Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source.	Plan preparation	2-4 R	Section 4.3.4 and Appendix D
n/a	2.4	Section 2.4.1	10631(h)	Wholesale Suppliers will provide their Suppliers with identification and quantification of the existing and planned sources of water available from the Wholesale Supplier to the Supplier during various water year types.	Plan preparation	2-4 W	n/a
x	3	Chapter 3.0	10631(a)	Describe the Supplier service area.	System description	n/a	Section 3.4
x	3.3	Section 3.3	10631(a)	Describe the climate of the Supplier's service area.	System description	n/a	Section 3.3
x	3.4	Section 3.4.1	10631(a)	Provide the current and projected service area populations for 2030, 2035, 2040, 2045 and optionally 2050.	System description	3-1	Section 3.4
x	3.4	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the Supplier's water management planning.	System description	n/a	Section 3.5
x	3.5	Section 3.5	10631(a)	Describe the land uses within the service area… include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	System description and baselines	n/a	Section 3.6
x	4.2	Sections 4.2.3 and 4.2.4	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System water use	4-1 and 4-2	Section 4.3
x	4.3	Section 4.3.1	10631(d)(3)(A)	Report the distribution system water loss for each of the five years preceding the plan update.	System water use	4-5	Section 4.3.2
x	4.3	Section 4.3.2	10631(d)(3)(C)	Retail Suppliers shall provide data to show the distribution loss standards were met.	System water use	4-6	Section 4.3.2
x	4.2	Section 4.2.5.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the Supplier.	System water use	4-3	Seection 4.5
x	4.2	Section 4.2.5.3	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System water use	4-3	Section 4.4
x	4.2	Section 4.2.5.3	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System water use	4-3	Section 4.3.4, Section 4.4, and Appendix C
x	4.2	Section 4.2.5.3	10631(d)(4)(B)(ii)	To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall… Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.	System water use	4-3	Section 4.4
x	4.2	Section 4.2.5.6	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System water use	n/a	Section 4.6, Section 7.4.1, and Appendix C
n/a	5.1	Section 5.1	10608.36	Wholesale Suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their Retail Suppliers achieve targeted water use reductions.	Baselines and targets	n/a	n/a
x	5.2	Section 5.2	10608.4	Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: - Was considered an urban retail water supplier in 2020, - Met its 2020 target in 2020, or - Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.	Baselines and targets	5-1	Section 5 and Appendix E
x	6.1	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System supplies	n/a	Section 6.8
x	6.1	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	System supplies	n/a	Section 7, Section 6.8, and Section 6.10

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Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	6.2	Section 6.2.2	10631(b)(4)(C)	Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	Water supplies and recycled water	6-1	Section 6.2 and Figure 6-1
x	6.2	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System supplies	n/a	Section 6.2.2 and Appendix F
x	6.2	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System supplies	n/a	Section 6.2.1
x	6.2	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the Supplier has the legal right to pump.	System supplies	n/a	Section 6.2.1 and 6.2.2
x	6.2	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… (include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin…	Water supplies and recycled water	n/a	Section 6.2.1
x	6.2	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	Water supplies and recycled water	n/a	Section 6.2.1
x	6.2	Section 6.2.2.	10631(b)(4)(C)	If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	System supplies	n/a	Section 6.2 and Figure 6-1
x	6.2	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System supplies	6-9	Section 6.2.2 and Figure 6-1
x	6.1	Section 6.1	10631(b)	Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045 and optionally 2050.	System supplies	6-8 and 6-9	Section 6.8
x	6.2	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System supplies	n/a	Section 6.6
x	6.2	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the Supplier's service area with quantified amount of collection and treatment and the disposal methods.	System supplies (recycled water)	6-2	Section 6.4.1
x	6.2	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System supplies (recycled water)	6-3	Section 6.4.1 and Section 6.4.2
x	6.2	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the Supplier's service area.	System supplies (recycled water)	6-4	Section 6.4.3 and Section 6.4.4
x	6.2	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System supplies (recycled water)	6-4	Section 6.4.4 and Section 6.4.5
x	6.2	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the Supplier's service area at the end of 5, 10, 15, and 20 years, and describe the actual use of recycled water in comparison to uses previously projected.	System supplies (recycled water)	6-4 and 6-5	Section 6.4.4
x	6.2	Section 6.2.5	10633(f)	Describe the actions that may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System supplies (recycled water)	6-6	Section 6.4.5 and Section 6.4.6
x	6.2	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the Supplier's service area.	System supplies (recycled water)	n/a	Section 6.4.5 and Section 6.4.6
x	6.2	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System supplies	6-7	Section 6.5
x	6.2	Section 6.2.10	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water Supplier to address water supply reliability in average, single-dry, and for a period of drought lasting five consecutive water years.	System supplies	6-7	Section 6.7, Section 7.3, and Section 7.4
x	6.3	Section 6.3 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a Supplier can readily obtain.	System suppliers, energy intensity	O-1A, O-1B, O-1C, and O-2	Section 6.9
x	7.1	Section 7.1	10634	Provide information on the quality of existing sources of water available to the Supplier and the manner in which water quality affects water management strategies and supply reliability.	Water supply reliability assessment	n/a	Section 7.1.1
x	7.2	Section 7.2	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the Supplier with the total projected water use over the next 20 years.	Water supply reliability assessment	7-2, 7-3, and 7-4	Section 7.2 and 7.3
x	7.2	Section 7.2.3	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water supply reliability assessment	n/a	Section 7.1 and 7.2
x	7.3	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water supply reliability assessment	n/a	Section 7.5
x	7.3	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive years.	Water supply reliability assessment	n/a	Section 7.4.1
x	7.3	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water supply reliability assessment	n/a	Section 7.4.2
x	7.3	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period.	Water supply reliability assessment	7-5	Section 7.4.3
x	7.3	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water supply reliability assessment	n/a	Section 7.1, Section 7.2, and Section 7.4

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Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	8	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water shortage contingency planning	n/a	Section 8
x	8	Chapter 8	10632(a)(1)	Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP.	Water shortage contingency planning	n/a	Section 8.1
x	8.2	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the Supplier will use each year to determine its water reliability.	Water shortage contingency planning	n/a	Section 8.2.1
x	8.2	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the Supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water shortage contingency planning	n/a	Section 8.2.2
x	8.3	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water shortage contingency planning	n/a	Section 8.3.3, Section 8.8
x	8.3	Section 8.3	10632(a)(3)(B)	Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories.	Water shortage contingency planning	8-1	Section 8.3.3, Section 8.8
x	8.4	Section 8.4	10632(a)(4)(A)	Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water shortage contingency planning	8-2	Section 8.4
x	8.4	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water shortage contingency planning	8-3	Section 8.4
x	8.4	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water shortage contingency planning	8-2	Section 8.4
x	8.4	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to State-mandated prohibitions are appropriate to local conditions.	Water shortage contingency planning	Table 8-3	Section 8.4
x	8.4	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water shortage contingency planning	8-2 and 8-3	Section 8.4
x	8.4	Section 8.4.6	10632.5	The UWMP shall include a seismic risk assessment and mitigation plan.	Water shortage contingency plan	n/a	Section 8.9 and Appendix I
x	8.5	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water shortage contingency planning	n/a	Section 8.4
x	8.5	Section 8.5	10632(a)(5)(B), 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water shortage contingency planning	n/a	Section 8.4
x	8.6	Section 8.6	10632(a)(6)	Retail Supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water shortage contingency planning	n/a	Section 8.4, Section 8.5, and Section 8.10
x	8.7	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the Supplier to enforce shortage response actions.	Water shortage contingency planning	n/a	Section 8.10
x	8.7	Section 8.7	10632(a)(7)(B)	Provide a statement that the Supplier will declare a water shortage emergency per Water Code Chapter 3. *Water Shortage Emergencies*.	Water shortage contingency planning	n/a	Section 8.10
x	8.7	Section 8.7	10632(a)(7)(C)	Provide a statement that the Supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water shortage contingency planning	n/a	Section 8.10
x	8.8	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	n/a	Section 8.7
x	8.8	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	n/a	Section 8.7
x	8.8	Section 8.8	10632(a)(8)(C)	Retail Suppliers must describe the cost of compliance with Water Code Chapter 3.3, *Excessive Residential Water Use During Drought*.	Water shortage contingency planning	n/a	Section 8.5.2, Section 8.5.3, and Section 8.6
x	8.9	Section 8.9	10632(a)(9)	Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water shortage contingency planning	n/a	Section 8.6
x	8.10	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water shortage contingency planning	n/a	Section 8.6, Section 8.10, and Section 8.11
x	8.11	Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water shortage contingency planning	n/a	Section 8.4
x	8.12	Section 8.12	10632(c)	Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	Water shortage contingency planning	n/a	Section 8.11
x	9.1	Sections 9.1	10631(e)(1)	Retail Suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand management measures	n/a	Section 9
n/a	9.2	Sections 9.2	10631(e)(2)	Wholesale Suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and Supplier assistance program.	Demand management measures	n/a	n/a
x	10	Chapter 10	10608.26(a)	Retail Suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan adoption, submittal, and implementation	n/a	Section 10.4
x	10.2	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the Supplier provides water that the Supplier will be reviewing the UWMP and considering amendments or changes to the plan.	Plan adoption, submittal, and implementation	10-1	Section 10.2

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Retail (x = required)	Order	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	10.4	Section 10.4	10621(f)	Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 2026.	Plan adoption, submittal, and implementation	n/a	Section 10.5
x	10.2	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP.	Plan adoption, submittal, and implementation	n/a	Section 10.3, Section 10.4, and Appendix L
x	10.2	Section 10.2.2	10642	The Supplier is to provide the time and place of the hearing to any city or county within which the Supplier provides water.	Plan adoption, submittal, and implementation	10-1	Section 10.3 and Appendix L
x	10.3	Section 10.3.2	10642	Provide supporting documentation that the UWMP and WSCP has been adopted as prepared or modified.	Plan adoption, submittal, and implementation	n/a	Section 8.11, Section 10.3 and Appendix L
x	10.4	Section 10.4	10644(a)	Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library.	Plan adoption, submittal, and implementation	n/a	Section 10.6
x	10.4	Section 10.4	10644(a)(1)	Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption.	Plan adoption, submittal, and implementation	n/a	Section 10.6
x	10.4	Sections 10.4.1 and 10.4.2	10644(a)(2)	The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically.	Plan adoption, submittal, and implementation	n/a	Section 10.5
x	10.7	Section 10.7.2	10644(b)	If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	Plan adoption, submittal, and implementation	n/a	Section 8.11.4
x	10.5	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Section 10.6
x	10.5	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Section 8.11.5 and Section 10.6
x	10.6	Section 10.6	10621(c)	If Supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan adoption, submittal, and implementation	n/a	n/a

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