City of San José

Water Policy Framework

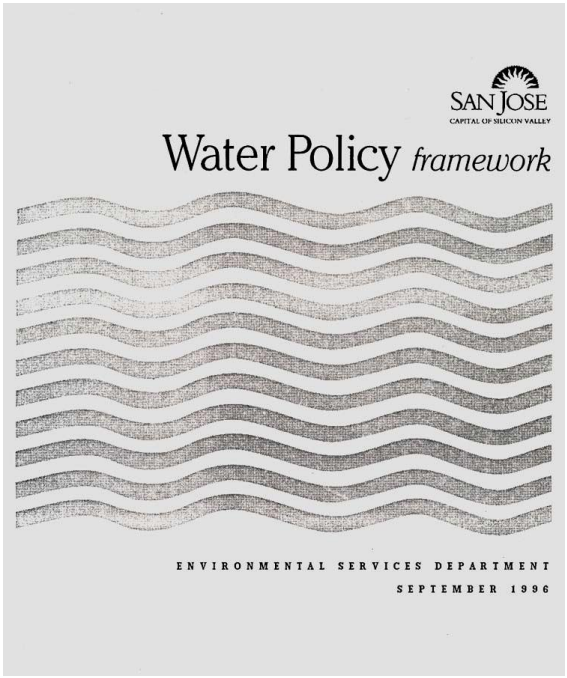
Fact Sheet #1
Slides 2-4

Water is the lifeblood of San José - a precious resource for our homes, businesses, and natural environment.

In recent years, the City has emerged as a national leader in environmental policies, program development and implementation. Annually it spends more than $50 million on water quality management and water supply programs through the Environmental Services Department alone.

The fundamental purpose of these programs is to ensure that neither environmental degradation nor water shortages will hamper the City's ability to achieve economic growth and to attain public health and safety.

To maintain its environmental leadership through the next century, the City must continue its efforts to seek and provide comprehensive responses to water-related issues as they arise.



In recognition of these concerns, and to ensure a comprehensive approach to water issues, the Water Policy Framework document serves as a guide for current and future environmental actions by the City. With the adoption of the Framework, the City has an integrated, comprehensive guide that decisionmakers can use to ensure that water policies and programs are mutually reinforcing and do not conflict with one another or with other City goals, objectives and programs. This guidance will enhance the City's ability to respond effectively to water-related challenges, identify priorities for those issues and areas that are most urgently in need of further attention and allocate limited resources in the most efficient manner.

Goals

The City's water-related goals are to work cooperatively with our community and other agencies to:

- Ensure an adequate and high-quality water supply to meet current and future needs;
- Achieve a balance between public health, a sound economy and environmental quality;
- Minimize pollution to the potable, nonpotable and storm drain water systems;
- Ensure the highest, best and most efficient use of water;
- Maintain and re-establish habitat and biological diversity of wetland areas, riparian corridors and water bodies in concert with flood control, recreation and public use policies.

The Water Policy Framework demonstrates the City's common-sense approach to managing water-related environmental problems. This approach will equitably balance the sometimes-conflicting needs of urban growth, economic activity, natural habitat and endangered species protection, cost containment, and the long-term environmental quality of San Jose. This show of good faith will increase San Jose's

credibility with both those it regulates and those who regulate the City, as well as environmentalists, business people and the general community.

The Water Policy Framework helps the City by providing the structure for developing and prioritizing work plans and programs that will maximize ecosystem protection. It assists the City and ESD in forming water-related recommendations on pending legislative and regulatory actions, development proposals, environmental impact reports, programs, and other related projects. In addition, the Framework guides departmental budget recommendations (operating and capital) as well as assists in the determination of staff and resource allocations for water programs.

The Framework is intended not only to protect the City's ability to meet its environmental goals and to implement its General Plan, but also to ensure that the City's water-related programs are implemented with the greatest efficiency.

Strategic Directions And Water Policies

In charting the City's course to achieve its water goals, several strategic directions and supporting policies were developed to provide the City with a basis for consistent decision-making and resource allocation. These strategies and policies are based on today's knowledge and needs. However, their adoption and implementation will be dynamic and ongoing. As a City, we will work to make the right choices now, and be prepared to revise our strategies and policies in an orderly and thoughtful manner in the future. As progress is made, and as the world around us changes, we will adjust our course if necessary to achieve our goals for water in San Jose. The strategic directions and policies to achieve the City's water goals are shown below.

- Ecosystem Protection
- Water Supply and Use
- Wastewater Treatment
- Pollution Prevention
- Education and Involvement
- Interagency Cooperation
- Advocacy

For more information or a complete copy of the Water Policy Framework, contact:
City of San Jose -Environmental Services Department – Policy and Planning
Ph: 408-975-2581

Santa Clara Valley Water District

Water Resources Management Plan

Fact Sheet #2
Slide - 4

The Santa Clara Valley Water District is developing a Comprehensive Water Resources Management Plan (Comp Plan) to provide the context for and content of District policies in a single document. To build community understanding of existing policies, to the extent appropriate, the form of the Comprehensive Plan will follow a generic "General Plan" structure used by cities and counties. Unlike the cities and counties, the Water Districts are not required to have single policy document, like the General Plan.

Currently, under the Policy Governance Model, the District Board of Directors establishes Ends Policies to articulate the expected outcomes or goals. Other policies and implementation strategies are contained in several documents and the structure of these documents is different from a generic General Plan. The Water Resources Protection Collaborative (WRPC) recommended preparation of a Comp Plan and the Water District Board of Directors agreed. The following outlines the goals, expected outcomes, contents, and point of contact for the Comp Plan effort.

Comp Plan Goals

- Build community understanding of existing policies
- Outline future challenges and emerging trends
- Recommend future management policies
- Identify partnership opportunities with land use agencies

Contents of the Comp Plan

Executive Summary

I. Introduction

This section includes organization of the plan, reader navigation aids, vision of the plan, relationships to other plans, and regulatory setting.

II. Description of the Natural and Built Environment

This section describes the location, geography/topography, climate/climate change, urbanization and land use changes, economy and quality of life, geology, biodiversity, hydrology, major water resources infrastructure and the sensitive water resources areas.

III. Interrelations Between Land and Water Resources Element

This section provides the overview, background, current conditions, future trends, challenges and issues, principles, goals and objectives, policies and implementation measures the subject element.

IV. Water Supply Element*

V. Natural Flood Protection Element*

VI. Environmental Stewardship Element*

** structured similar to Section III*

Expected Outcomes

- Balanced approach toward water resources management for sustainability
- Improved understanding of the context for and contents of Ends policies in water supply, natural flood protection, and environmental stewardship.
- Clearer expectations for potential partnerships with land use agencies

Point of Contact

Office of Watershed Planning, Watersheds Operations

Ann Draper, Assistant Operating Officer, (408) 265-2607 x2665

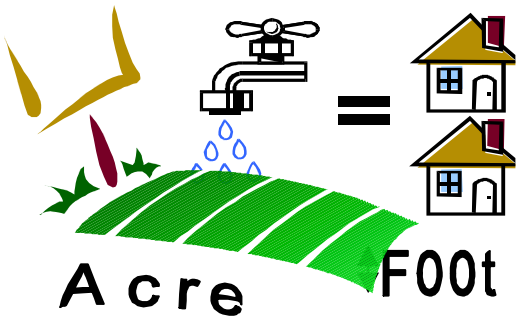
E-mail: adraper@valleywater.org

How We Measure Water

Fact Sheet #3
All Slides

What's an Acre-foot?

An acre-foot (AF) is a basic unit of volume commonly used in the to quantify large-scale volumes of water, including the amount delivered to households and the amount available in reservoirs, aquifers, aqueducts, canals, streams, and rivers. An acre-foot is defined as the volume of water necessary to cover one acre of surface area (e.g.; one football field) to a depth of one foot. An acre foot is equal to 43,560 cubic feet, or approximately 325,851 U.S. gallons (1,233 cubic meters).



Acre-foot per Year (AFY)

A related measurement is an acre-foot per year (AFY). This measurement is used in many water-management agreements and water planning reports. One AFY is generally enough water to serve the needs of two households of five residents per household, for one year.

To Convert		To Obtain	Multiply by
Volume	Acre-Foot (AF)	To gallons (gal)	**325,851**
		To Hundred Cubic Feet (CCF or HCF)	**435.6**
		To cubic meters (m^3)	**1,233.5**
		To liters (l)	**1,233,500**
Flow	Million Gallons Per Day (MGD)	Acre-Foot per Year (AFY)	**1,121**
	Gallons Per Min. (gpm)		**1.614**
	Cubic Feet Per Second (cfs)		**724.5**
	Liters (l)		**0.4264**

Gallons

The U.S. gallon unit of volume is used primarily in measuring at daily water operations and water treatment plants. There water flow over time is calculated in units of Million-Gallons per Day (MGD). One million gallons per day (MGD) is approximately 1,121 acre-feet per year (AFY). The District operates three water treatment plants with a design maximum water production of 42 MGD (Penitencia), 100 MGD (Santa Teresa Water) and 80 MGD (Rinconada). The San Jose /Santa Clara Water Pollution Control Plant (the Plant) is designed to treat up to 161 MGD.

Water Retailers Measure – CCF or HCF

Hundred Cubic Feet (either CCF or HCF) is the most common volume unit used by water retailers to meter a home's monthly water usage. A home water bill generally uses CCF or HCF units. The average monthly water usage per household in San José is 15 CCF (11,220 gals or .3 AF) at the current average cost of $43 per month.

Countywide Usage

In 2005, residents and businesses in San Jose used approximately 160,000 Acre Feet (142 MGD) of potable water. Countywide, residents and businesses used approximately 360,000 AF (320 MGD) of potable water.

Cubic Feet Per Second (cfs)

Water flow rates through streams are typically measured in cubic feet per second (cfs). Cubic feet per second represent the speed (fluid velocity) at which the water flows (approx. 7.48 gallons per second). Excessive water speeds can lead to pipe failures, stream bank erosion and flooding. Typical District pipelines are operated around 5 cfs, while stream flows are more variable. Real time local stream flow measurements are available on-line via the ALERT program which is linked to 70 stream flow meters on the various streams throughout the county.

Future Water Demand and Supplies in Santa Clara County

Fact Sheet #4
Slides 7-28

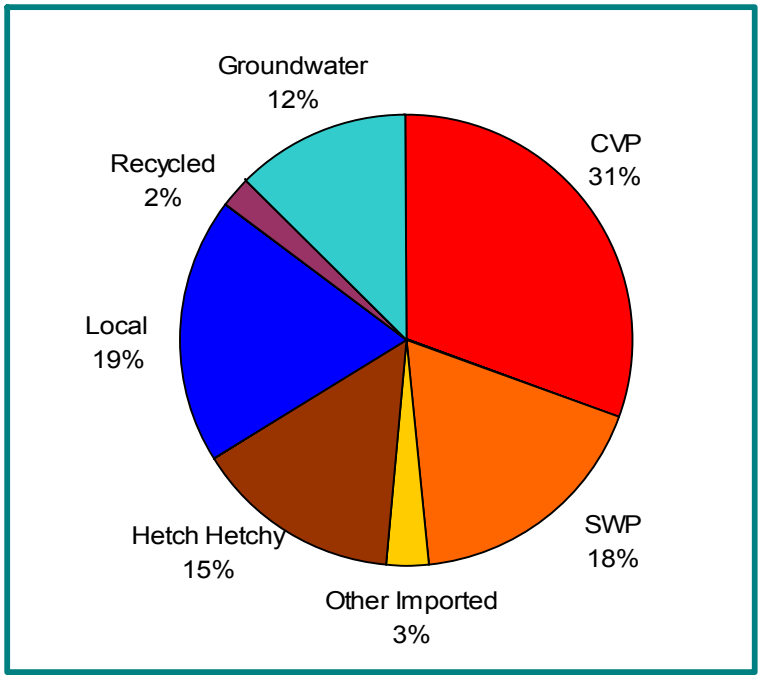
The Value of Water

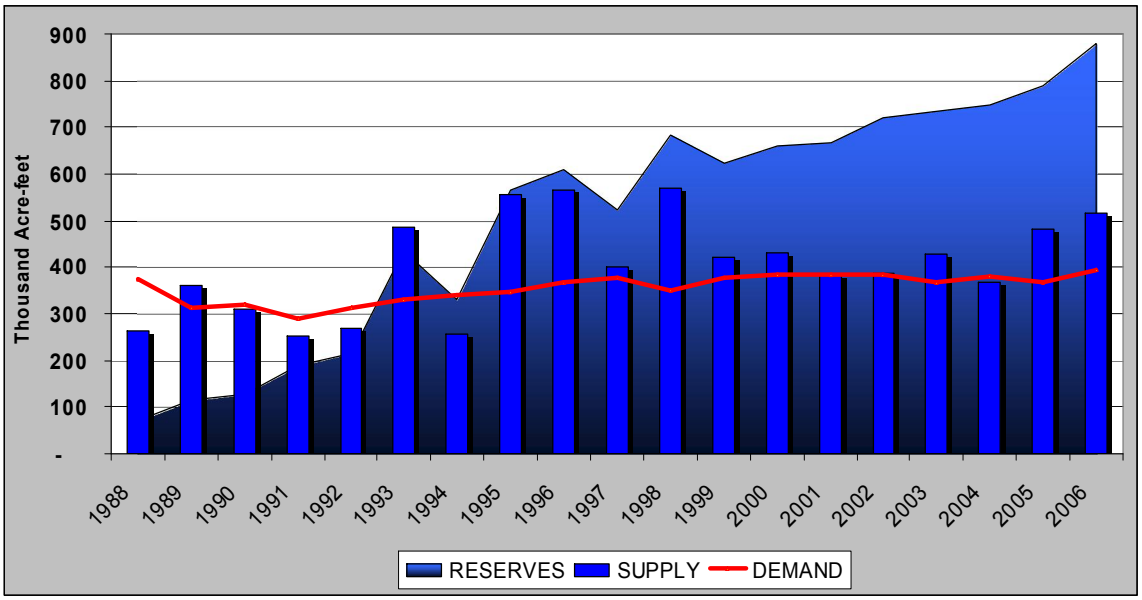
Water is a vital element of our everyday lives. We depend on it not only for our personal use, but also for our business, farm, and recreational needs, and for sustaining ecosystems that create the natural beauty of our creeks and rivers. The Santa Clara Valley Water District (District) acts as the steward for all of Santa Clara County's water resources by ensuring that creek ecosystems are healthy, safeguarding valley residents from devastating floods and ensuring that there is enough clean, safe water for homes and businesses. The District also works to preserve water quality by protecting groundwater subbasins and reservoir watersheds.

Sources of Water for Santa Clara County

The District is the primary wholesale water supplier in Santa Clara County. The San Francisco Public Utilities Commission also provides water (16%) to residents in cities in the northern part of the County through its Hetch Hetchy system. Currently, six sources comprise Santa Clara County's overall water supply, representing a variety of local and imported sources. Water supply from these sources varies year to year depending on local and regional rainfall and imported water availability. The chart below shows the average percentage of available water from each source between the years 2000 to 2005.

The District stores both local and imported (surface) water in the groundwater basins for later use by actively replenishing the basin when water is plentiful. This "conjunctive" water management program optimizes the use of groundwater and surface water, and prevents groundwater overdraft, land surface subsidence, and saltwater infiltration into groundwater aquifers. Local and imported water is purified for distribution (reducing direct demands on groundwater) to local water retailers. Conjunctive use is a critical part of meeting water needs in all years. Storing surplus water in local groundwater basins, groundwater-banking projects, and in surface water reservoirs enables part of the county's supply to be carried over from wet years to dry years. The following graph compares supply with demand since 1988. It also shows the total of local reservoir, groundwater, and water banking reserves. Since 1992, the District has significantly increased the amount of water stored in reserves.

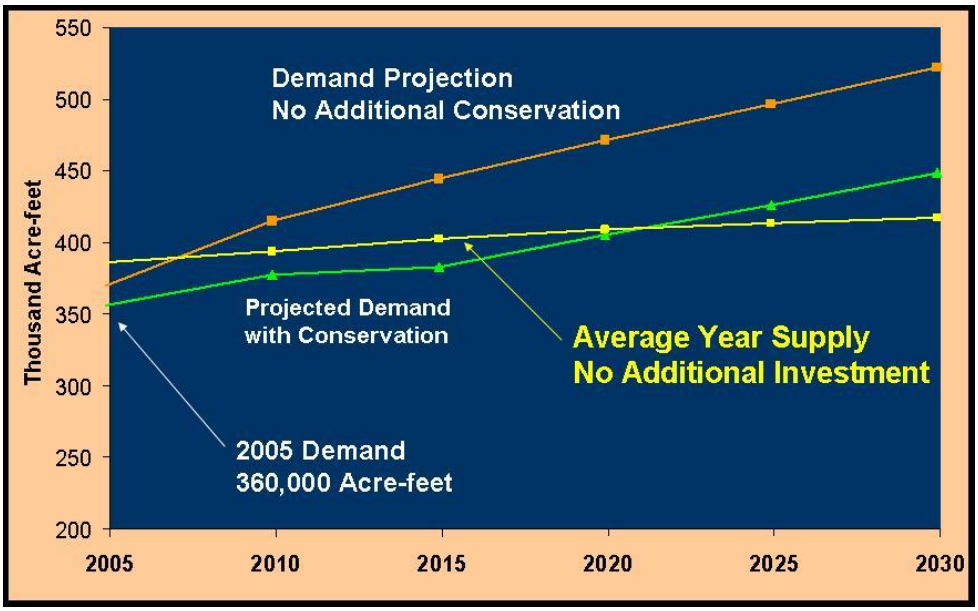




Comparison of Supply, Demand, and Reserves since 1988

Water Use and Future Demand Projections

The Association of Bay Area Governments projects that Santa Clara County's population will increase from 1,683,000 to 2,267,000 by the year 2030 (ABAG 2005). This 35 percent growth in population coupled with more jobs and an improving economy will increase demand for water by over 125,000 acre-feet per year if there is no additional conservation. This future demand cannot be met without increasing water conservation efforts, expanding recycled water use and investing in new water supplies. The illustration below shows an ever-widening gap between average year supply and demand if these investments are not undertaken. Our challenge is securing funding for these investments needed to secure a reliable future water supply.



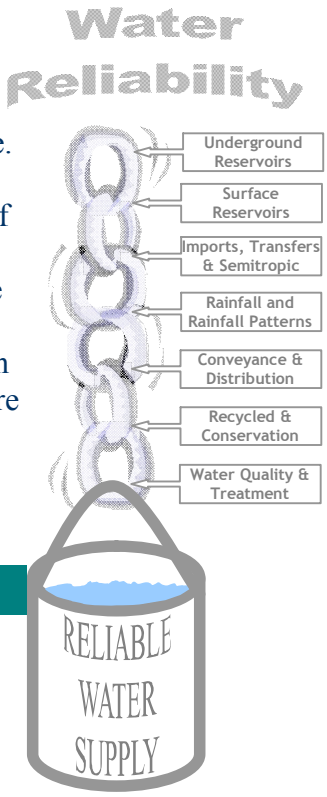
Santa Clara Valley Water District

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Water Supply Reliability

Fact Sheet #5
Slides 10-28

Reliable water supply for Santa Clara County



Although water seems limitless and is for the most part taken for granted, it is not an absolute certainty that water will always be available at the tap. The Water District works with local retailers and planning agencies to ensure that there is a reliable supply of healthy, clean drinking water now and into the future.

The District's water utility enterprise operates 10 surface reservoirs, 142 miles of large diameter pipelines, 17 miles of canals, and three pump stations. The District also manages the groundwater basins. Retail water suppliers and private well owners pumped approximately 140,000 acre-feet of groundwater in 2005. The District conserves local runoff for either recharge into the groundwater basin or treatment at one of the District's three water treatment plants. The pipelines are used to transport imported raw water and locally-conserved raw water to three District water treatment plants and to groundwater recharge facilities and to transport treated water to the retailers.

Water Supply Reliability Defined

Water supply reliability is defined as meeting demand for water under all hydrologic conditions. This includes satisfying contractual obligations for deliveries to retailers and managing the groundwater basins so that water can be pumped from wells. The District also exercises influence on water supply sources and all aspects of water demand to ensure reliability. Catastrophic events such as earthquakes and long-term effects such as climate change also affect reliability.

The overall goal is to reduce the frequency and magnitude of unmet demand. This requires the District to secure adequate supplies and to ensure that the storage, conveyance, treatment, and distribution system can deliver the water to local retailers. It also requires that high quality groundwater is available for pumping by well users and that water use efficiency programs offset demand as planned. All of these aspects form a linked chain and all parts of this chain must function so that reliability can be assured.

Reliability and Long-term Planning

As the region continues toward a future of continued population growth, the demand for water will increase. A number of factors have to be considered so that future water supply is reliable. In addition to the growth itself, other factors such as climate change, environmental issues, and aging infrastructure, and the pricing of the other water suppliers affect the future reliability of our water supplies. The District considers reliability as key element in its approach to long-term planning and water supply sustainability. (Also see Water Supply fact sheet #4)

Summary of Retailer System Evaluation Results – All of Santa Clara County			
No.	**Issue**	**Median Response**	**Range of Responses**
1	Length of time retailers can serve customers without District Supply	1-2 days	2 to 4 hours to indefinitely
2	Time to repair largest pipe	2 to 24 hours	2 hours to 2 days or more, depending on contractor availability
3	Available treated water shortage	1 day	50% of average day demand to 2 days
4	Available alternative water supply	Yes	Wells only, to well plus surface supplies plus interties with other systems.
5	Standby power on well pumps (including any combination of permanent and/or portable generator connections).	30% of average day demand	No standby power to 100% of average day demand in standby power.

The District's Infrastructure Reliability

In 2005, the District completed a "Water Infrastructure Reliability Report to determine both the current reliability of the District water supply infrastructure with regard to major and minor hazard events and to enable the District to appropriately balance reliability (level of service) with cost. The project first looked at the baseline performance of all critical District water supply facilities.

The District performed a probabilistic analysis of maintaining a **"Level Of [water supply] Service (LOS)"** defined as "Potable water service at average winter flow rates available to a minimum of one turnout per retailer within 7 days, with periodic 1 day interruptions for repairs." (With service on both the unconnected East and West Side systems, San Jose Water Company gets two turnouts). The probabilistic analysis used detailed hazard models, facility vulnerability models, pipeline vulnerability models, hydraulic model of system water sources, pressures and flows, system reliability simulation model, and system restoration models. It produced an estimate of the number of water outage days needed to restore LOS for each of the six likely hazard scenarios as follows:

1. **M7.9 San Andreas Earthquake** - 45 – 60 water outage days
2. **M6.7 Southern Hayward Earthquake** - 30 – 45 water outage days
3. **M6.2 Central Calaveras Earthquake** - 7-10 water outage days
4. **100 Year (1%) Flood** - 7-14 water outage days
5. **500 Year (0.2%) Flood** – 7-14 water outage days
6. **Regional Electric Power Outage** - <1 water outage days

Note: The following hazards were not included in the analysis:

1. A massive water quality event due to algae originating from San Luis Low Point;
2. A levee failure in the delta; and
3. Specific component/infrastructure failures, such as equipment malfunction and pipeline corrosion.

The District is currently working with retailers to reduce the outage periods by obtaining spare pipe to stockpile in case of an emergency. This is also being discussed as part of the development phase of the Infrastructure Reliability Project.

Conservation

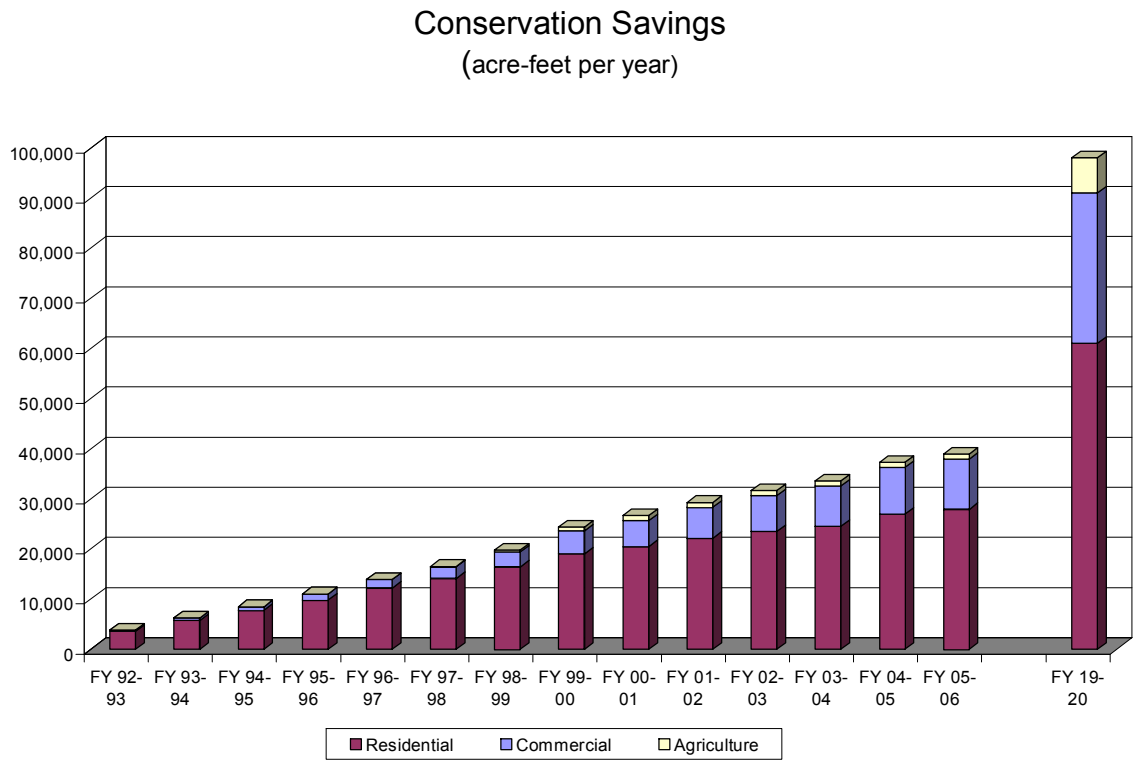
Fact Sheet #6
Slides 18-21

Water conservation, a program widely supported by the public, offers a variety of benefits countywide. Besides meeting long-term water reliability goals, water conservation programs help meet short-term demands placed on the water supply system during critical dry periods. They reduce wastewater flows to Bay Area treatment plants, avoiding or deferring facility expansions while protecting the Bay's salt marsh habitat. Water conservation saves energy, reduces greenhouse gas emissions, and helps reduce the occurrence of demand reduction requirements placed on water retailers.

How do we compare?

Since FY 92-93, City programs, most funded in cooperation with the District, have achieved over 8,000 acre feet total of indoor water conservation throughout the Treatment Plant service area. Countywide, the District sponsored programs have achieved approximately 39,000 acre-feet per year of indoor and outdoor water conservation countywide (see chart below). As with other jurisdictions, countywide per capita water use has been decreasing over time.

The District's adopted goal for water conservation is 100,000 acre-feet by 2030. By comparison, annual conservation goals for other Bay Area water agencies range from 10,000 acre feet savings by 2050 (Contra Costa Water District) to 45,000 acre feet by 2020 (East Bay Municipal Utility District, which serves Alameda and Contra Costa counties).



Water Conservation Drivers

As signatories to the California Urban Water Conservation Council's Memorandum of Understanding, the District and the City's Municipal Water System are obligated to implement a variety of urban water conservation programs. Additionally, under the Central Valley Project Improvement Act, the District is also required to implement various agricultural water conservation programs. Finally, due to the overall cost-effectiveness of water conservation, both the District's 2005 Urban Water Management Plan (UWMP) and its 2003 Integrated Water Resources Planning document call for significant conservation savings – 70,000 acre-feet of savings in the year 2030 from "baseline" programs and an additional 28,000 acre-feet of savings identified in the "No-Regrets" package. Achieving these goals will require considerable collaboration with local cities and state-wide initiatives.

How is Water Conservation Funded?

The City funds conservation solely with Fund 513 (Treatment Plant Operating Fund), due to the flow reduction needs of the San Jose/Santa Clara Water Pollution Control Plant. Since the goal is to reduce flow to the Plant, the City only funds indoor water conservation programs throughout the tributary area. It does not fund any outdoor conservation. District conservation funding comes from wholesale water revenue and grants such as Prop 50 and Prop 13 funds and cost-sharing. Annually, the District secures from $1 to $2 million in grant funding and approximately $500,000 to $1 million in cost-sharing for conservation activities countywide. Cost-sharing reduces the amount each agency has to spend on its programs, making them more cost-effective for each.

The tremendous volume of water savings cited above is due to our joint successes in securing grant funding and cost sharing. The two agencies have engaged in a cost-sharing agreement since FY 1998. For instance, in FY 05-06, the City helped finance District programs with $200,000 in cost sharing and the District helped finance the City with $43,000 in cost sharing. The District portion is larger because it takes a take a bigger role in program administration at this point.

How is water conservation achieved?

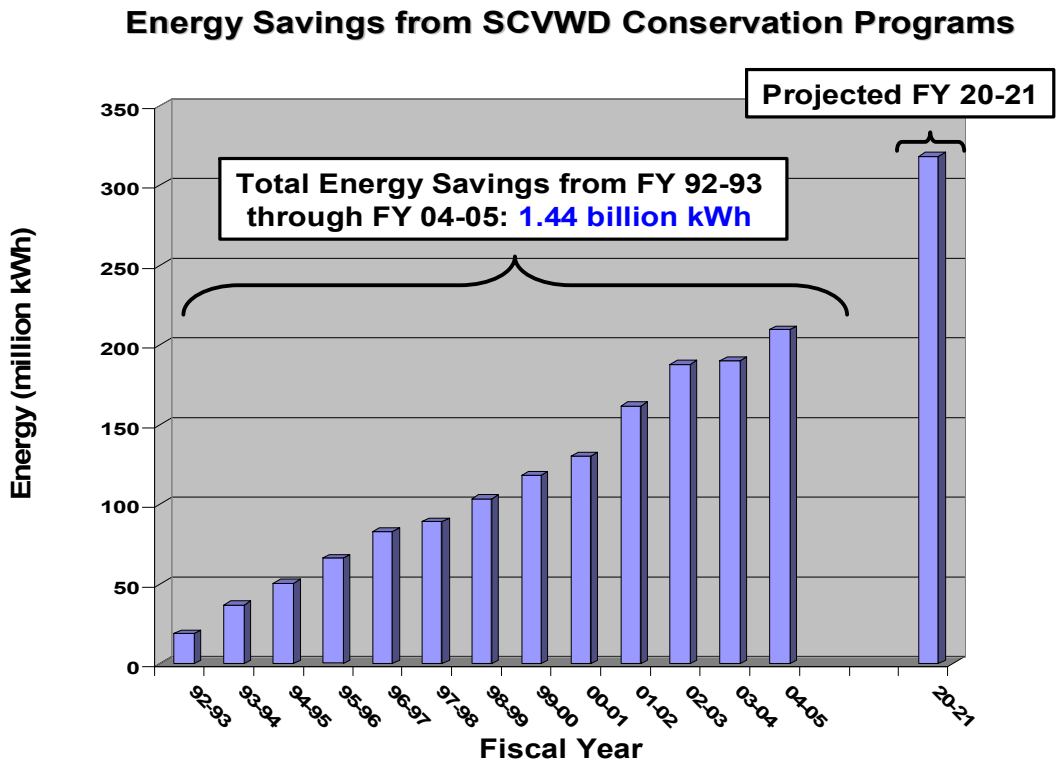
Equipment retrofits and replacements in residential and business settings are the primary means of achieving water conservation. Equipment replacements can include replacing pre-1992 toilets with High Efficiency Toilets that flush one gallon, replacing washing machines with high efficiency machines, replacing "pre-rinse sprayers" used in food service settings with water-conserving sprayers, and changes to cooling tower equipment. Considerable conservation potential lies in outdoor conservation as well (landscape irrigation, etc.).

The District and City currently implement nearly 20 different water conservation programs that use a mix of incentives and rebates, free device installation, one-on-one home visits, site surveys, and educational outreach to reduce water consumption in homes, businesses and agriculture. Further opportunities exist in the development of ordinances.

While the City has several ordinances prohibiting wasting water, there are further opportunities to save water with ordinances that apply to new development, to landscape standards for new and existing development, and toilet retrofit upon resale. Morgan Hill, for example, has recently enacted such ordinances (e.g.; Ordinance 18.73 was added to the Municipal Code to require water conserving landscapes).

Cost Efficiencies in Water Conservation

The amount of conservation achieved by each technology and program strategy varies. It also varies by the setting in which it occurs. For instance, a toilet replacement in a restaurant (~48 gallons per day, or gpd) achieves more conservation than a toilet replacement in a hotel (~16 gpd). A pre-rinse sprayer valve replacement in a restaurant may achieve 150 gpd in conservation. Other factors influence the cost-effectiveness of conservation activities. For instance, the types of programs used to install a water-conserving fixture vary in cost. A toilet rebate may cost $100 while a full-service toilet retrofit program may cost $250 per fixture. Grant funding and cost sharing may make the difference between a cost-effective program and one that is not. To make a program cost-effective, the recipient of the technology (for instance, a private residence) may have to help fund a conservation strategy, such as a toilet retrofit. All these factors are considered in conservation program development to ensure that the most cost-effective and equitable conservation strategies are employed.

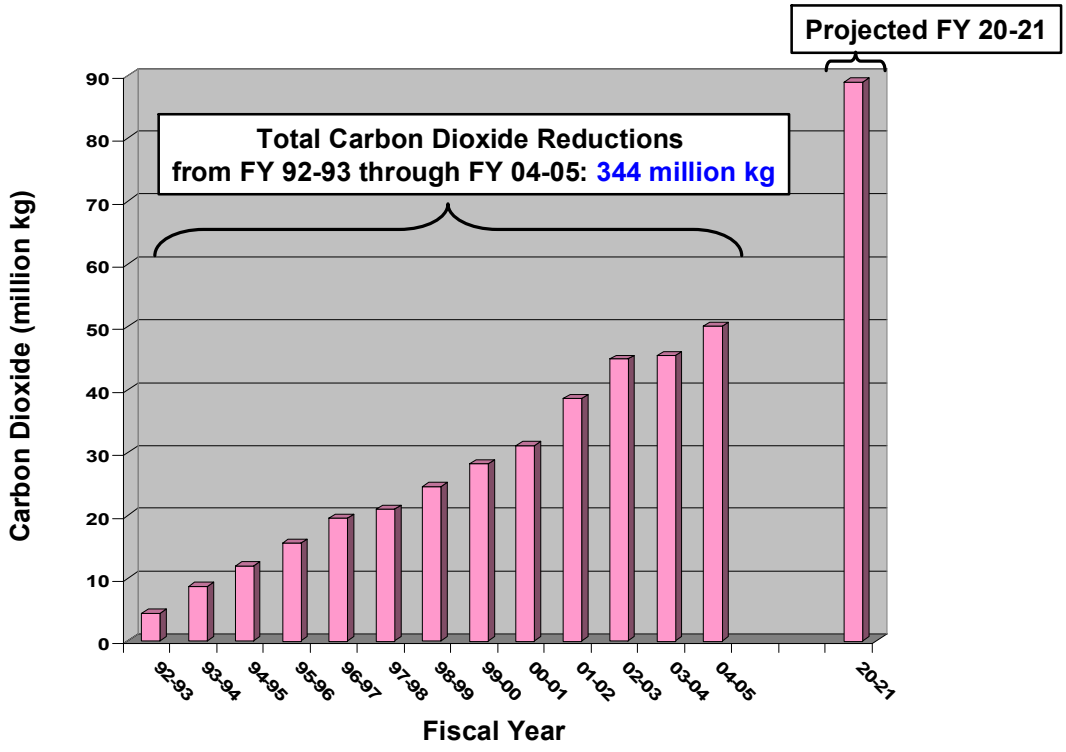


Water, Energy Use, and Climate Change

In California, water is the single largest use of energy (pumping water from its source, conveyance, water treatment, end use, and wastewater treatment). Therefore, water conservation (and water recycling) saves energy and reduces air emissions (and air pollutants generated by energy production). Using the Water to Air Model developed by the Pacific Institute, the District estimates that, from FY 92-93 through FY 04-05, its water use efficiency program (conservation and water recycling) has saved approximately 1.44 billion kilowatt-hours (kWh) of energy (see chart below). This represents a financial savings of approximately $189 million and is equivalent to the annual electricity required for 213,000 households. Through saving energy, the District also eliminated approximately 344 million kg of carbon dioxide (FY 92/93 through 04/05 time span, see chart below), the equivalent of removing 75,000 passenger cars from the road for one year.

Climate change will affect water availability, offering further imperatives for conservation.

Reduction of Carbon Dioxide by SCVWD Water Use Efficiency Programs



Global warming – Climate Change

Fact Sheet #7
Slide - 26

What is Global Warming?

Global Warming is a term used to describe the heating of the Earth's surface from a buildup of specific "greenhouse" gases in the atmosphere. Like a greenhouse window, greenhouse gases allow sunlight to pass through the atmosphere, but then prevent heat from escaping. The greenhouse effect is a natural phenomenon that is essential to keeping the Earth's surface warm. Without it, there would not be life as we know it. It is the increases in specific greenhouse gases, such as carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), halocarbons, and ozone (O3)—mostly from burning fossil fuels—that are trapping excess heat in the atmosphere and are warming Earth's surface faster than at any other time in recorded history.

It is a commonly accepted fact among reputable scientific institutions worldwide that the Earth's surface is warming. These institutions include the U.S. Environmental Protection Agency; University of Oxford; United Nations Environment Program (UNEP) and World Meteorological Organization (WMO); US Climate Change Science Program; Okanagan University College, Canada, etc. The predicted increases in the Earth's surface temperature will significantly affect climate, public health, agriculture, snow accumulation and storage, water resources, sea levels, forests and landscapes, and glaciers.

The Santa Clara Valley Water District and the City of San José are at the forefront of addressing global warming and climate change issues at both the state and national level. Each of these agencies have partnered with Sustainable Silicon Valley's CO2 Initiative--a key strategy to respond to climate change resulting from the accumulation of human-generated greenhouse gases like CO2 in Santa Clara County. We are taking action right now by changing the way we manage energy usage and optimizing our operations so that they are energy efficient. In addition, our water conservation programs have resulted in some of the biggest energy savings of any programs in the County.

Is it "global warming" or "climate change"?

The terms Global Warming and Climate Change are often used interchangeably. However, there is a distinction. Climate Change is a broader term that covers all the anticipated effects of climatic changes rather than just rising temperatures implied by the term Global Warming.

What Are the Predicted Effects of Climate Change on Water Resources?

- Rising global temperatures are melting off the world's glaciers and the polar ice caps at an alarming rate. The resultant rise in sea levels will have global consequences. Of particular concern to Santa Clara County is potential for a catastrophic failure of the San Francisco-San Joaquin Bay Delta levee system, through which about half of our annual water supply passes. Failure of these levees would not only decrease the quantity of imported water available to the county, but it would also increase the salinity of Delta water, adversely impacting water quality

and Bay-Delta ecosystems. In addition, rising sea levels will also result in coastal flooding and increased saltwater intrusion into our groundwater basins.

- Increases in average air temperature are already decreasing the Sierra Nevada snow pack, which is by far the largest water "storage" facility in the state. California is expected to lose 70 percent to 90 percent of the Sierra snowpack by 2100 as a result of the increase in average temperature. Precipitation patterns are also expected to change as a result of rising temperatures. The exact patterns are unknown, but it is predicted that we will see more extremes and a potentially shorter, more intense rainy season. Earlier snowmelts and increased springtime precipitation caused by climate change are predicted to produce unseasonable runoff that is less available for exports to, among other places, Santa Clara County. This will reduce the amount of water available to meet peak demands in late spring and summer.
- Unprecedented long lasting droughts that leave our largest reservoirs dry are also anticipated. Locally, as temperatures increase and precipitation patterns change, endangered natural habitats and fisheries, together with plant and animal species may suffer further decline or disappear.
- The effects of climate change extend beyond water supply concerns. Our flood control structures may not be able to handle future flows as rising tides overwhelm levees in the South Bay.

These scenarios represent the reality of climate change over the next several decades. This is a significant challenge that will be very difficult and potentially very expensive to overcome and manage.

How is the Water District adapting to climate change effects?

There are two levels of response necessary to address challenges posed by climate change. One is to take action to mitigate the actual physical effects caused by rising global temperatures. The other is to adapt the way we do business to take climate changes into account when planning our flood protection projects and water supply strategies.

The District's long-term water supply planning processes now incorporate the uncertainties associated with a changing climate. However, the initial understanding of the climate change was very uncertain. Over the past two years, District planning processes have evolved to address climate change as well as other risks and uncertainties to our water supply system. As more information becomes known, we refine our projections and update our analyses. Based upon our most recent analyses, it is becoming increasingly clear that climate change seriously jeopardizes our future ability to provide a reliable water supply.

The reality of global warming and climate change is now viewed as the most significant long-term threat to water resources management in Silicon Valley. Prudence requires that we evaluate a range of scenarios to evaluate potential local and regional effects on water resources. This allows us to consider solutions that are adaptable to these scenarios. The mix of options available to respond to climate change, population growth, and other challenges is also likely to increase in the future with development of water supply and demand management technologies, such as improved wastewater and desalination treatment methods and water use efficiency improvements. The lack of precise predictions of climate change effects, however, should not be reason to avoid consideration or delay action.

City of San José - Addressing Climate Change

In May of 1995, the San Jose City Council adopted a resolution to participate in the Cities for Climate Protection Campaign sponsored by the International Council for Local Environmental Initiatives (ICLEI). The array of actions and activities that have followed are described below, and have contributed to a reduction in greenhouse gases in addition to the City's energy programs. The emission reductions achieved as a result of the energy reductions within City facilities equate to reducing over 89,000 metric tons of carbon dioxide. Another way of saying this is that more than 19,000 cars were not driven for one year -- or 30,000 tons of solid waste was recycled instead of being landfilled.

The goals of the 1995 campaign were to:

- Strengthen local commitment to reduce greenhouse gases;
- Utilize management and planning tools developed by ICLEI to determine local energy use and develop strategies for conservation;
- Promote best practices to reduce energy use in buildings and transportation; and
- Enhance national and international ties through a collective voice for municipalities.

Within that adopted resolution, San Jose pledged to:

- Incorporate the goal of greenhouse gas reduction in the policies and programs being pursued under the Sustainable City Major Strategy and sustainable city energy strategy; and
- Review the variety of energy conservation and efficiency measures that the City is currently pursuing and assess the greenhouse gas reduction that will be achieved by each measure; and
- Identify for implementation those measures that achieve significant greenhouse gas reductions; and
- Continue to advocate for energy efficiency and climate protection at the Regional, State and National levels.

San José has fulfilled that pledge through our Sustainable City Program activities that occur throughout the city departments. In particular, the City's adopted Sustainable Energy Policy and Action Plan contribute to that effort. The purpose of that Policy is to create a Community where energy is generated and used in the most sustainable manner possible. One of the goals within the Sustainable Energy Policy is to "Promote and achieve a cleaner and healthier environment, including improving air quality and reducing greenhouse gas emissions."

The City achieves this goal through policies and programs that:

- Reduce petroleum consumption in municipal fleets through improvements in fleet fuel efficiency, the use of alternative fuel vehicles and alternative fuels
- Reduce petroleum consumption in the private sector through improvements in fleet fuel efficiency, the use of alternative fuel vehicles and alternative fuels
- Support and expand the City's Smart Growth policies which lead directly to improved air quality through reduced vehicle miles traveled
- Reduce the urban heat island effect through the adoption of cool communities' actions

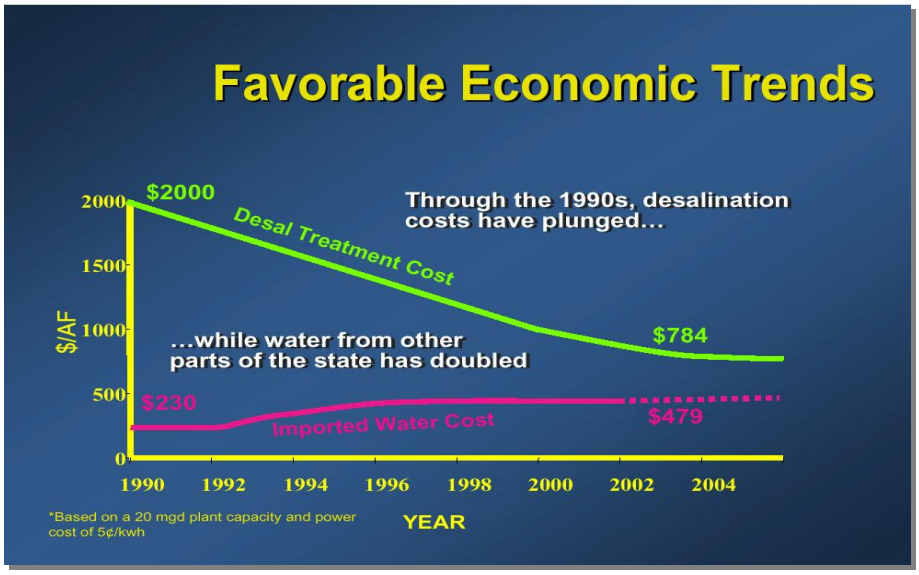
Desalination Overview
(Ocean/Bay/Brackish)

Fact Sheet #8
Slide - 28

Why is the District evaluating the feasibility of Desalination?

Historically, Santa Clara County has been susceptible to long periods of drought. And the District is vulnerable to long periods of water supply disruption in the event of a major catastrophe or unplanned facility outage. The District has identified steps to secure a reliable water supply in the future. Desalination is a potentially advantageous additional source of water during emergencies such as earthquakes as well as providing a supplemental supply source during extended drought periods. It allows some of our major facilities such as treatment plants, transmission mains and pump stations to be taken out of service for an extended period of time for maintenance or repairs. It does not require a separate distribution system as it can utilize potable water lines. As a full time supplemental water supply it increases the diversity of the our water supplies and is publicly accepted as a drinking water source.

Is Desalination Cost Effective?



The cost of desalination have reduced dramatically over the past two decades. Over the past decade the cost has reduced over 50%. The energy efficiency has also increased. The current cost of desalination is comparable to other sources of water particularly when considering the availability of state and federal funding.

There are over 15,000 desalination plants operating worldwide processing in excess of 8.6 billions gallons of water per day. Over 60% of these facilities process seawater. In the United States, there are approximately 1,500 facilities operating and they mostly process brackish groundwater.

Current Desalination Projects

The District is participating in two regional efforts that are described in additional fact sheets:

- Bay Area Regional Desalination Project (Separate Project Fact Sheet)
- Pajaro Watershed Groundwater Desalination Project (Separate Project Fact Sheet)

Bay Area Regional Desalination

Fact Sheet #9
Slides 27-28

Purpose:

The Bay Area's four largest water agencies, the East Bay Municipal Utility District, the San Francisco Public Utilities Commission, the Contra Costa Water District and the Santa Clara Valley Water District, are jointly exploring the development of regional desalination facilities that would benefit over 5.4 million Bay Area residents and businesses served by these agencies. The Bay Area Regional Desalination Project could consist of one or more desalination facilities, with an ultimate total capacity of up to 65 million gallons per day.

Project Goal And Benefits

- Provide additional sources 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.
- Increase supply reliability by providing a full-time supplemental water supply from a regional facility.

Project Status

The Phase 1 Pre-Feasibility Study concluded that there are at least three locations in the Bay Area where a regional desalination facility could be located without any fatal flaws: East Contra Costa site; Near Bay Bridge site in Oakland; and Oceanside site in San Francisco. A Phase 2 Pre-Feasibility Study was conducted to further analyze the three sites and to better define the desalination project facilities, conveyance options, and institutional issues. A Feasibility Study, partially (50%) funded under the Proposition 50 Chapter 6a program, is currently underway to develop more information on potential benefits, appropriate technologies, environmental impacts, and costs of the various options. The next phase of the project is a pilot test which will be conducted at Contra Costa's Mallard Slough Intake site to collect data on technical feasibility (pretreatment options, membrane performance, design parameters) and the environmental impacts (brine disposal, marine life screening systems). The pilot test will also be partially (50%) funded under the Proposition 50 Chapter 6a program.

Collaborative Partners

- Contra Costa Water District
- East Bay Municipal Utility District
- Santa Clara Valley Water District
- San Francisco Public Utilities Commission

Other agencies have also expressed an interest in joining the partnership. The potential for other partners are being evaluated as a part of the Feasibility Study.

Project Timeline And Cost

The partnership was notified in June 2006 that it would receive one-half ($950,000) of the pilot testing costs from the State under the Proposition 50 Chapter 6 a Phase 2 Program. The remaining costs ($950,000) will be shared equally among the four participating agencies. The Feasibility Study is being funded 50% ($250,000) by the State and 50% by the partner agencies. Other sources of State and Federal funding will be pursued in future. The project timeline is:

- Pre-Feasibility Studies — Completed 2003 and 2005
- Feasibility Study — 2006
- Pilot Testing — 2007
- Environmental Study — 2008
- Design — 2009
- Construction Completed — 2011

The preliminary project cost for a 65 million gallon per day facility was estimated in the feasibility study to range between $500 to $1200 per acre-foot, depending on the utilization of the facility.

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Purpose & Partners

The San Benito County Water District (SBCWD) and the Santa Clara Valley Water District (SCVWD) have recently entered into a memorandum of understanding to jointly study opportunities to improve water supply efficiencies and reliability within the Pajaro River watershed. These agencies are also interested in conducting a feasibility study to investigate a brackish groundwater desalination facility in the region to complement their existing supplies with an all-weather, reliable local source.

Project Setting

The Pajaro River watershed joins the northern portion of San Benito County and the southern portion of Santa Clara County. In addition to this common watershed, the agencies share an imported water supply via the Central Valley Project's (CVP) San Felipe System. SBCWD is a CVP contractor, receiving an imported supply from the Bureau of Reclamation via the San Felipe System. The Santa Clara Valley Water District (SCVWD), is a State Water Project (SWP) and a CVP contractor, and receives imported CVP supplies via the same San Felipe System. This linkage was the basis that brought these two agencies together for this project. Although the upper Pajaro River Watershed already offers each of the agencies a local groundwater supply to complement their CVP imported supply, there are several pockets of unusable, historically poor quality, groundwater within the watershed. Therefore, considering the value of supply reliability that it brings to the area, as well as other benefits that it would provide, it was determined that groundwater desalination in this region of the San Juan Basin within the Pajaro watershed may be feasible and is worth pursuing. Two municipalities, the City of Hollister and the City of San Juan Bautista, are proximate to this brackish (salty) groundwater basin and could use desalinated brackish groundwater from this basin to supplement their existing municipal and industrial supplies.

Project Goals

The Study has these main goals:

- Evaluate the feasibility and cost-effectiveness of treating brackish groundwater for potable use.
- Assess different treatment technologies and brine management methods to provide the highest level of benefits possible to the Project partners.
- Identify benefits and mechanisms to transfer and assure equitable benefits to both project partners (SBCWD and SCVWD) as well as the State and the Bay-Delta system.
- Quantify the offset of SBCWD's Central Valley Project (CVP) water due to the use of local groundwater as a new, alternative potable water source that can then be exchanged with SCVWD.
- Provide the basis for future demonstration and full-scale project implementation in the Pajaro/San Juan Basin.

Project Benefits

1. Managing groundwater level,
2. Improving water supply
3. Reducing the need for water softeners in the service area,
4. Improving M&I effluent wastewater quality so it can be used as an alternative agricultural irrigation supply, thereby offsetting additional CVP demand, and, in turn,
5. Providing an effluent management option for local agencies that relieves further salt loading on the basin.

Project Status And Cost

The Project partners submitted a proposal package for the State Proposition 50 grant program. The final funding list was announced in May 2005 with this study being ranked the highest desalination feasibility study submitted for consideration. The Project partners were awarded a $245,000 grant to fund this feasibility study, while contributing an additional $245,000 in monetary and "in-kind" services to fulfill the financial match requirements of the grant program. Project work began in late 2005. This project will be completed in 2007 and its findings published thereafter.

Groundwater Recharge

Fact Sheet #11
Slides 27-43

Groundwater recharge occurs when surface water percolates through soil and/or rock to replenish underground aquifers. The area on the surface, where water infiltrates, is called a recharge zone or recharge area.

Groundwater recharge occurs naturally through:

- Deep percolation of rainfall
- Seepage through streambeds
- Seepage from surrounding hills
- Subsurface flow from adjacent groundwater basins
- Leakage from pipelines

All the sources listed above contribute to recharge in Santa Clara County. However, natural recharge is not sufficient to replenish the amount of groundwater pumped each year. To ensure a reliable supply, the District manages an active artificial recharge program.

Artificial recharge

Artificial recharge is the process where excess surface water is intentionally directed into the ground to increase infiltration and replenish groundwater. The District conducts extensive artificial recharge operations along approximately 70 miles of stream channels and 300 acres of recharge ponds (spreading basins). The District uses local reservoir water and imported water from the Delta, releasing it into streams and percolation ponds, to replenish deep drinking water aquifers. The average annual recharge capacity of these systems is approximately 138,000 acre-feet.

The District's artificial recharge program is critical to ensuring a reliable water supply both now and in the future by:

- Storing water for use during droughts and shortages; and
- Preventing saltwater intrusion and land surface subsidence, both of which are very costly to the community.

In-lieu recharge

In-lieu recharge occurs when surface water is provided for use in areas that would otherwise use groundwater. The District directs imported water through three water treatment plants to provide drinking water, thus reducing demands on the groundwater basin, and leaving more groundwater in storage for later use. This "conjunctive" use of groundwater and surface water supplies and integrated water supply management approach improves overall water supply reliability and flexibility.

Groundwater recharge reuse

Groundwater recharge reuse refers to artificially recharging groundwater basins with recycled water.

As the demand for water has increased, so has the need to maximize the efficient use of available water supplies. Many agencies, including the District, recognize recycled water as an important component of their long-term water supply strategy. Within Santa Clara County, recycled water is currently used only for non-potable uses including landscaping, irrigation, and industrial uses. Some agencies in southern California and elsewhere around the country and world, have implemented groundwater recharge reuse projects, where recycled water is used to augment groundwater supplies or prevent saltwater intrusion. These types of projects have stringent regulatory requirements with lengthy approval processes but have supplied critically needed water to maintain local economic development.

Before the District can implement reuse through groundwater recharge, there are regulatory, institutional, and public perception issues that must be addressed. District staff prepared a budget proposal for a project to investigate the following issues related to groundwater recharge reuse:

- Protection of the groundwater basins from potential contamination – High quality groundwater and aquifers could be irreparably degraded by recharge with poorer quality waters.
- Regulatory issues – getting appropriate permits from the Department of Health Services and the Regional Water Quality Control Boards.
- Institutional issues – identifying and resolving water rights issues and the necessary changes in the operation of existing facilities and/or the development of new facilities.

The budget proposal was not funded for fiscal year 2007 due to budget constraints; however the project may be funded in future years. The District will continue to investigate ways to expand the use of recycled water while ensuring its use does not adversely affect groundwater supplies or existing water resources operations and assets.

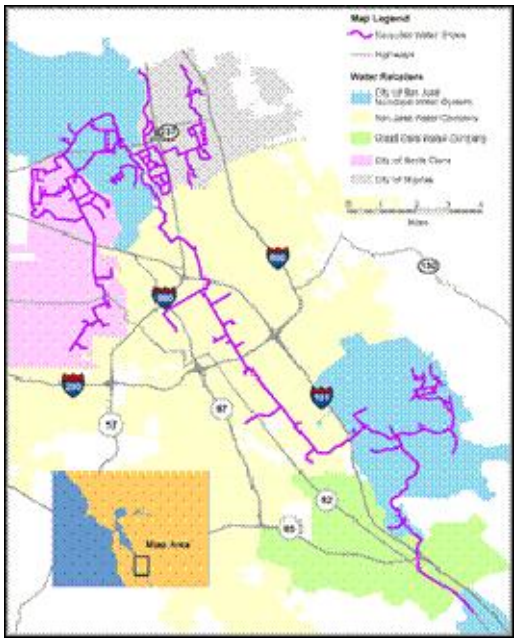
South Bay Water Recycling
Expansion Options

Fact Sheet #12
Slides 29-43

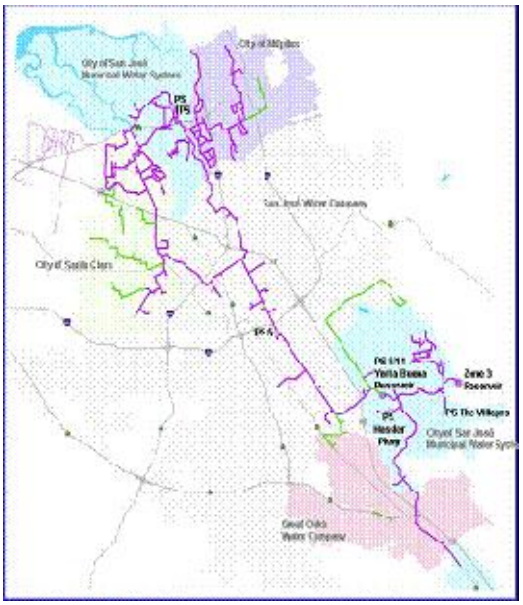
I. SBWR Existing System—8600 AFY

SBWR System Data (2005-2006)

- FY 05/06 Use: 8600 AFY
- Average dry-weather flow (ADWF): 12.6 mgd
- Total connections: 538
- Infrastructure
  - 105 miles of pipeline (6-108 in.)
  - Three reservoirs (9.5 MG)
- Capital cost: $220 million
  - Capital debt service: $13.1 million/year
  - Federal funding (Title XVI): $26.6 million
  - State funding (SWRCB): $3.4 million
  - Cash funding by Santa Clara & tributary agencies
- O&M and Program Costs: $3.2 M/year
- Recycled Water as % of Total Water Used:
  - Santa Clara 2740 AF (12%)
  - Milpitas 850 AF (8%)
  - San Jose:
    - SJ Muni 3280 AF (13%)
    - San Jose Water 1220 AF (0.2%)
    - Great Oaks Water 0 AF (0.0%)

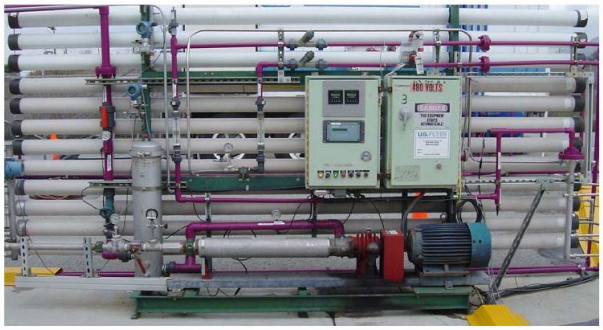


II. SBWR Extensions (2006-2030)—14,100 AFY



Laterals and Extensions		1,500 AFY
Connect and retrofit adjacent sites (170)	Funded	$1.5M
Pipeline segments to new landscape and industrial customers (7)	Funded	$3.5 M
	Unfunded	$15 M
System Growth		2,000 AFY
Connect new adjacent properties for industrial, irrigation use	Unfunded*	$2.5 M
Major Developments		10,600 AFY
Connect major developments (North San Jose, Evergreen and Coyote)	Unfunded*	$52.5 M
SBWR Extension Totals	**14,100 AFY**	**$75M**

III. SBWR System Upgrade—Advanced Water Treatment Facility



Proposed AWT Facility Data

- 5.5 mgd microfiltration/reverse osmosis treatment facility
- 10 MG storage reservoir
- $45 million capital cost (including storage)
- Operating cost $2-3 million/year

Advanced Water Treatment Facility Comments:

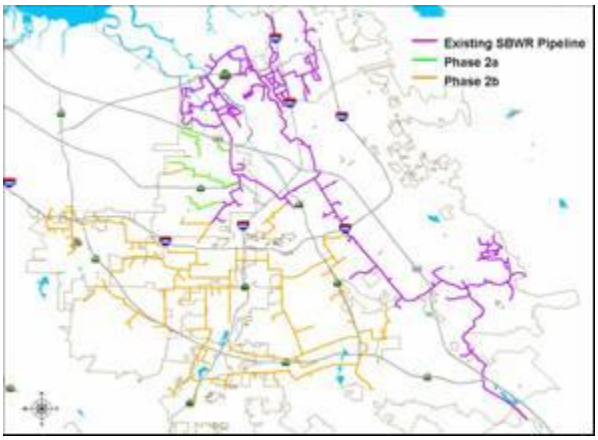
Proposed project will reduce recycled water salinity to less than 500 mg/L dissolved solids to improve water quality and facilitate irrigation over some unconfined aquifers.

Proposed partnership between City and SCVWD provides up to 25% of cost from SJ/SC WPCP (including land and in-kind services) and up to $6 million in state grant funds.

IV. Expansion Options to meet goal of 45,000 AFY by 2030

Project		Yield (AFY)	ADWF (mgd)	Capital ($M)	O&M ($M/Yr)	Total Cost ($M)
Option #1	Expanded Urban Reuse	11,200	18.5	$753.0	$3.0 M	**$788 M**
Option #2	Expanded South County Reuse	20,200	30.6	$607.7	$3.9 M	**$654 M**
Option #3	Groundwater Recharge Reuse	13,700	12.2	$197.0	$8.9 M	**$304 M**

Option #1 – Expanded Urban Reuse



Option #1 Data

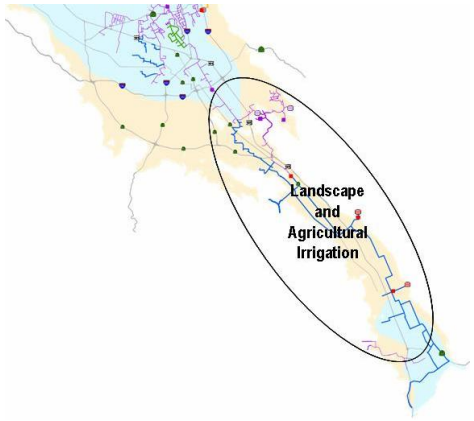
- Estimated Yield: 11,200 AFY
- ADWF diversion: 14.5 mgd
- 520 customers
- Infrastructure
  - 145 miles of pipe (8 in.-54 in.)
  - Two 5-MG reservoirs
- Capital cost: $753.0 million
- O&M cost (20 yr): $3.0 M/yr
- Total cost: $788 million

Option #1 Summary

Advantages—Easier public acceptance; all expansion lies within SBWR's service area.

Challenges—2500 AFY short of 2030 goal; high capital cost; construction disruptive in urban areas; includes some irrigation over Los Gatos recharge area without advanced treatment. Cost estimate does not include advance treatment.

Option #2 – Expanded South County Reuse



Option #2 Data

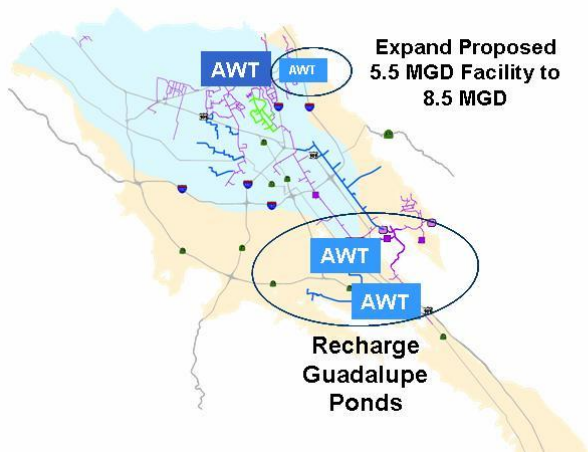
- Estimated Yield: 20,200 AFY
- ADWF diversion: 30.6 mgd
- Infrastructure
  - 148 miles of pipe (8-42 in.)
  - Four 4-MG reservoirs
- Capital cost: $607.7 million
- O&M (20 yr): $3.89 M/yr
- Total cost: $654 million

Option #2 Summary:

Advantages—highest estimated yield; easier construction in non-urban areas.

Challenges— high capital cost; some agricultural uses may require additional management to allow for salinity; includes irrigation over Llagas recharge area; some south county residents may oppose exchanging potable water for recycled water without advance treatment. Cost estimates do not include advance treatment. Reuse outside area of water need may require additional public outreach and education.

Option #3 – Groundwater Recharge Reuse



Option #3 Data

- Estimated Yield: 13,700 AFY
- ADWF diversion: 12.2 mgd
- 18 miles of pipe (8-42 in.)
- Two reservoirs (11 MG total)
- Capital cost: $153 million
- O&M (20 yr): $5.0 million/year
- Total cost: $223 million

Option #3 Summary:

Advantages—lower capital cost; water can be used for all purposes including drinking (after groundwater recharge); treated water has lower concentration of organic pollutants; reduced peak demands and allows for more stable operations; high potential for project expansion.

Challenges— Higher operating cost with microfiltration and reverse osmosis treatment; requires significant public education and outreach; product water and recharge procedures are highly regulated.

Wholesale Water Rates

Fact Sheet #13
Slide - 46

Wholesale water rates provide a source of funding for Santa Clara Valley Water District (District) activities to protect and augment water supplies in Santa Clara County. These activities include investing in water supply system infrastructure.

North and South County Zones of Benefit

The District divides the county into two zones of benefit, which have separate water rates. The North County zone (Zone W-2) is defined as the portion of the county north of Metcalf Road and accounts for approximately 80 percent of District water consumption. The north county has much more infrastructure than the south county including 3 water treatment plants and a complex treated water distribution system, which drives higher wholesale water rates relative to the south county. North county water demand is supplied by groundwater and treated water, plus non-District sources including the Hetch Hetchy reservoir and South Bay Water Recycling. Roughly 55 percent of District managed potable water served to the North County is treated surface water while 45 percent is groundwater. The vast majority of the City of San Jose falls within the North County zone.

The South County zone (Zone W-5) is generally defined as the portion of the county south of Metcalf Road, including Coyote Valley, Morgan Hill, San Martin and Gilroy. Water demand in the South County is about half municipal and industrial, and half agricultural. The demand is supplied by groundwater and a small amount of recycled water.

Wholesale Water rate Comparison

As of July 2006, The District's wholesale contract rate for treated was $535 per acre-foot (AF). The table below compares the District's current rate with two local wholesale agencies, the San Francisco Public Utilities Commission (SFPUC) and Alameda County Flood Control and Water Conservation District (Zone 7).

Wholesale Water Rates – July 2006

District North Contract Treated Water	$535/ AF
SFPUC Treated Water	$531/ AF
Zone 7 Treated Water	$591/ AF

How do Wholesale Rates relate to Retail Rates?

Wholesale water costs typically represent from 40 to 60 percent of the total costs of a retail water agency in Santa Clara County. Five gallons of tap water in San Jose retails for roughly $.02 while five gallons of bottled water delivered to a residence costs roughly $7.

What is the Wholesale Rate Projection for the Future?

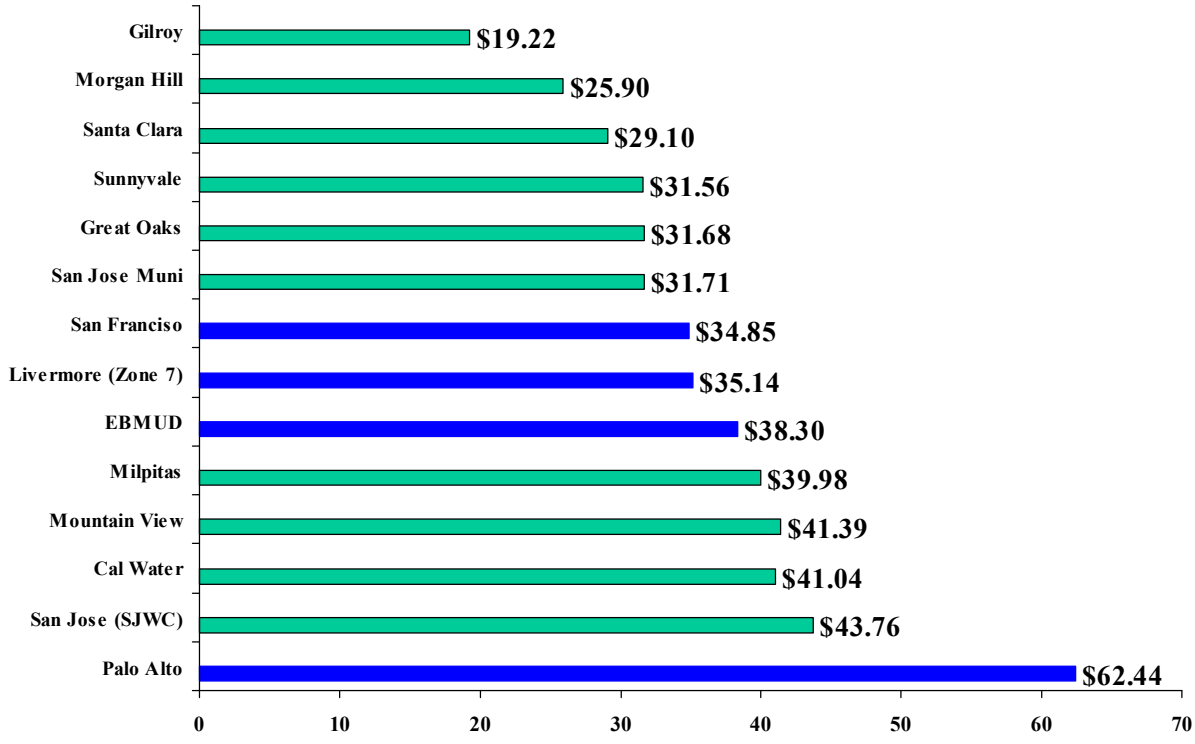
For the North County zone, the District's wholesale water rates are projected to increase anywhere from 4% to 9% per year, depending on the level of service provided. However, there are several initiatives and studies in progress as well as unknown impacts due to regulation and climate change that may result in future capital projects that are not considered in the current wholesale rate projection. Two examples of investments that are currently undefined and not included in the rate projection are potential investments in advanced treated water facilities and dam seismic stability retrofits.

Retail Water Rates

Fact Sheet #14
Slide 48

There are several major retail water utilities serving Santa Clara County. Three of them are investor owned utilities including San Jose Water Company, Great Oaks Water Company and California Water Services. The rest are municipal utilities and include the City of San Jose, the City of Sunnyvale, the City of Santa Clara, the City of Milpitas, the City of Mountain View, the City of Gilroy, the City of Morgan Hill, and the City of Palo Alto.

The chart below shows the monthly meter and volumetric charges for a 5/8" meter and 1,500 cubic feet (which is average usage) as of September 2006 for retail agencies within Santa Clara County and several local retail agencies external to Santa Clara County. The green bars represent the retailers served by the District. The blue bar represents those served by other wholesale agencies.



Santa Clara Valley Water District

CITY OF SAN JOSE CAPITAL OF SILICON VALLEY

Potential Revenue Sources

Fact Sheet #15
Slides 44-51

There are a variety of potential revenue sources to fund current and future infrastructure needs. The appropriateness of each depends on the proposed project and lead funding agency. The chart below describes the likely revenue sources for various project types, the feasibility issues associated with each one, and the expected revenue and rate impact that might be expected from each.

	Revenue Source	Funding Agency	Feasibility Issues	Impact on Payer (s)/ Potential Revenue Generated	Primarily used to Fund
County-wide Water Supply:	District Water Rates	District	Can be raised without voter approval; bonds can be issued to raise capital fund for construction	A $10.00 per Acre Foot increase in the wholesale municipal and industrial rate, would generate roughly $2.5M a year from North County and $250,000 a year from South County, based on current water sales. If uniformly passed through by the retailers, the impact on the monthly water bill for a typical household would be $.34 per month.	Projects authorized under the District Act
City-Area Specific Supply:	Community Facilities District Tax (collected on Property Tax Bill)	City	Can only be imposed with 2/3-landowner approval (2/3 voter approval required if more than 12 registered voters in district); if approved by voters, bonds can be issued to	Would depend on number of payers in district as well as special tax rate approved.	New Infrastructure Development

	Revenue Source	Funding Agency	Feasibility Issues	Impact on Payer (s)/ Potential Revenue Generated	Primarily used to Fund
			raise capital fund for construction.		
City-Area Specific Supply:	Water Capacity / Major Facilities Fee	City - in Municipal Water Service Area	Does not require voter approval but would require adoption of ordinance(s) by Council; funds would need to be accumulated over time to fund major capital project.	The City has a major facilities fee that funds potable water infrastructure in Evergreen, Edenvale and North San Jose. Using a similar methodology the cost per AF of demand based on the estimated project costs would be: Option #1- $67,232 Option #2- $30,084 Option #3 - $11,167	Capital and New Infrastructure Development