

Appendix K: Wholesale Customers Demand Projection/DSS Modeling

**SFPUC CAPITAL IMPROVEMENT PROJECT
WHOLESALE CUSTOMERS DEMAND PROJECTIONS/ DSS MODELING**

WHOLESALE CUSTOMER POPULATION PROJECTION SELECTION FORM

WHOLESALE CUSTOMER/AGENCY NAME:	California Water Service Company, Mid-Peninsula
PROJECT MAIN CONTACT:	Thomas A. Salzano
ADDRESS:	1720 North First Street, San Jose, California 95112-4598
PHONE:	(408) 367-8340
E-MAIL:	tsalzano@calwater.com

INDIVIDUAL PROJECTIONS EVALUATED:

Please select from one of the projection sources **X'd** below for use in the DSS Model.

	OPTION	SOURCE
X	1	Association of Bay Area Government, Projections 2002, Subregional Area Projections (ABAG Subregional)
X	2	Association of Bay Area Government, Projections 2002, Jurisdictional Area Projections (ABAG Jurisdictional)
X	3	Bay Area Water Users Association Survey 2002, Agency projections (BAWUA)
X	4	Agency Urban Water Management Plan, Agency projections (UWMP) , most recent version/updates
	5	Agency Water Master Plan, Agency projections (WMP) , most recent version
	6	Other

Note: All options contain plumbing code.

PROJECTION SELECTED BY CUSTOMER:

OPTION: 1

SOURCE: Association of Bay Area Government, Projections 2002, Subregional Area Projections **(ABAG Subregional)**

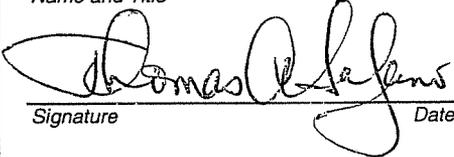
SELECTION JUSTIFICATION:

If you have chosen a source other than Option 1 or Option 2 (ABAG), please provide the source for your selection and the reason why this source is more appropriate to use than the ABAG projections.

After meeting with the Planning Departments for both the City of San Carlos and City of San Mateo, Cal Water has determined that the proposed City of San Mateo Corridor Plan & Bay Meadows II Specific Plan are not included in our Urban Water Management Plans. Combined these two redevelopment projects will add as many as 4,080 multi-family residential units during the next six to eight years. This additional housing will facilitate the projected population illustrated by the ABAG (Subregional) curve on Figure 2-1 of the September 8, 2003 URS Memorandum (Page 8). Cal Water will modify its Urban Water Management Plan accordingly.

FORM COMPLETED BY:

Thomas A. Salzano, Water Resource Planning Supervisor
Name and Title

 11/25/2003
Signature Date

Please complete form in full and return via mail or fax by **October 31, 2003** to:

Barry Pearl
SFPUC Planning Bureau
1155 Market Street, 9th Floor
Phone (415)551-4573
Fax (415)551-4555
bpearl@swater.org

Date: September 8, 2003

To: Tom Salzano, California Water Service Company (CSW), Mid-Peninsula

From: Steve Ritchie, URS Corporation

Subject: *September, 16 2003 Workshop Information
Wholesale Customer Water Demand Projections
Summary of Data Inputs, Assumptions and DRAFT Results*

LIST OF CONTENTS

The following four pieces of information are included in this packet:

1. Historical Water Use and Demographic Data Inputs to the Model (Attachment 1)
2. Key Assumptions for the Model (Attachment 2)
3. Future Population and Employment Projections (Attachment 3)
4. Alternative Water Demand Projections (Attachment 4)

Each of these will be discussed in individual sections below. As this information has not been reviewed by local agencies, all of the provided information is a preliminary draft and is subject to change.

1. WATER USE AND DEMOGRAPHIC DATA INPUTS TO MODEL

Description of “Water Use Data Input Sheet” (Attachment 1)

Attachment 1 is a one-page print out of an Excel spreadsheet. The purpose of this “Water Use Data Input Sheet” is to gather and document basic information about the individual service area. The data shown on the “Water Use Data Input Sheet” can be broken into two main categories, (a) current water use data and (b) demographic data. Each area is broken out below and helps to provide some basic definitions and assumptions.

(a) Water Use Data

- *Base Year* – This is the starting year for the analysis. For this project, 2001 was selected as the base year for two reasons:
 1. 2001 shows less of an effect of the recession.
(The year 2002 shows a dip in water demand in many areas due to reduction in economic activity)
 2. 2001 had relatively “normal” climate conditions – i.e. not a drought or excessively wet year
- *Average gal/day/acct*- This is the amount of water in gallons that is used per day, per account.
- *Indoor/outdoor water use* – This is the amount of water per account split into the percent that is used indoors. The corresponding remaining percent of water is used outdoors.

- Consumption by customer class- This shows the annual amount of water used for an entire calendar year, broken down by customer class (Single Family, Multi Family, Commercial, Industrial, Other, etc)
- Unaccounted for water (UFW) - The difference between the amount of water purchased and the amount of water that was consumed. A five year average (from the BAWUA Survey data) was used unless UFW was less than 7 percent, in which case 7 percent was used.
- Water Production/Purchase- This is the amount of water purchased from SFPUC or otherwise produced (purchased from others or obtained from agency wells).
- Peak day factor – The ratio of water produced on the maximum day of the year to that produced on the average day. The value used in the recent SFPUC Water Master Plan for agencies was used where available; otherwise a value of 1.6 was used.

(b) Demographic Data

- Census 2000 – The 2000 Census data was used as a resource to obtain population and household sizes for each individual city (and/or unincorporated area) serviced by the water agencies.
- Bay Area Water Users Association (BAWUA) service area population estimates -- These estimates were taken from the published annual survey data. Data are included for both Fiscal Year (FY) 2000-2001 and FY 2001-2002.
- Department of Finance 2001 estimate- The State of California Department of Finance provides official estimates between censuses. These estimates are used to establish the growth from 2000 to the base year of 2001.
- Single and multi family dwelling units, household sizes, population estimates for 2001- The 2001 estimates were created by applying a growth factor to the 2000 data. The growth factors were based on population or account growth from 2000 to 2001.
- Special procedure for service areas not contiguous with city boundaries – When a service area serves outside a city boundary, estimates were generated either from census data when available for the unincorporated areas, or by the agency if known. If neither of the two above sources were available, then the modeling team made estimates.
- Employment data (ABAG) – The employment figures were gathered from the Association of Bay Area Governments (ABAG) report dated December 2002. These numbers were developed regionally, and are based on the 2000 Census.

In summary, the key features of this sheet include the existing 2001 (baseline) level of water use, 2001 baseline accounts in each customer category, and 2001 baseline forecasts for population.

2. FUTURE POPULATION AND EMPLOYMENT PROJECTIONS

Description of Population and Employment Forecasts (Attachment 2)

There are currently three main sources of population and employment projections that can be used in this model. More can be added in the future if desired. Below is a list of the three data sources that can be used to generate future water demands.

Available Demographic Projections

- *BAWUA (population)* – As mentioned above, the Bay Area Water Users Association conducts an annual survey that includes not only the historical population, but also provides a forecasted population for each decade out to the year 2030.
- *ABAG (population and employment)* - As mentioned above, ABAG recently published a report in December 2002 that includes population and employment estimates for each city in the Bay Area. This report also provides projections for 2005, 2010, 2015, 2020, and 2025.
- *Urban Water Management Plans* – By law, each service agency serving more than 3,000 accounts must provide an Urban Water Management Plan (UWMP) to the Department of Water Resources. These plans, most recently published in the year 2000, provide population projections.
- *Water Master Plan* – If a Water Master Plan was provided to the Project Team that was more recent than the UWMP, the Water Master Plan was used for the third projection.
- *Alternate projections are shown in Table 2-1 and Figure 2-1 on Attachment 2 for each customer.*

3. KEY ASSUMPTIONS FOR THE MODEL

Key Assumptions for the Model (Attachment 3)

The one page table shown in Attachment 3 shows some of the key assumptions used in the model. The assumptions having the most dramatic effect on the results are the natural replacement rate of fixtures, how residential or commercial future use is projected, and finally the percent of unaccounted for water.

4. DRAFT WATER DEMAND PROJECTIONS

Development of the DRAFT Water Demand Projections Table and Graph (Attachment 4)

DRAFT water demand projections were developed out to the year 2031 using the Demand Side Management Least Cost Planning Decision Support System (DSS) model. This model incorporates information from the:

- “Water Use Data Sheet” and the “Key Assumptions” shown in Attachments 1 and 2
- Urban Water Management Plans
- Questions asked of agencies
- 2000 Census data

Again, the detailed methodology for the model and the development of the water demand projections will be described in full detail at the upcoming workshop.

Attachment 4 shows the projected demands with and without plumbing codes and appliance standards. This page includes both a table and a graph. Each will be described below.

California law requires that for new construction after January 1, 1992 only fixtures meeting the following standards can be installed in new buildings:

- Toilet – 1.6 gal/flush maximum
- Urinals – 1 gal/flush maximum
- Showerhead and Faucets – 2.5 gal/min at 80 psi

Replacement of fixtures in existing buildings is governed by the Federal Energy Policy Act that requires only the above can be sold after January 1, 1994 for residential use and January 1, 1997 for commercial toilets. This law governs natural replacement.

New clothes washers are required to meet increased energy efficiency standards in 2004 and 2007. It is expected that this will lead to water efficiency improvements (efficient washers use 33% less water) by no later than 2007. We have assumed that by 2004, 25 percent of washers purchased will be efficient, by 2007, 50 percent purchased will be efficient, and by 2020, 100 percent of those purchased will be efficient.

Tables of DRAFT alternative water demand projections (Table 4-1)

- The table of alternative water demands shows 6 different projections. This includes:
 - The water demand projections are based on the future population and employment projections shown and described above in Attachment 2. Sources were the following:
 1. BAWUA population projection
 2. ABAG population projection
 3. Urban Water Management Plan or Water Master Plan projection
 - Table 3 shows the population and employment projection combinations used to prepare the projections. Combinations are subject to change.

- Projections were made *with and without* the plumbing codes

Graph of projected demands (Figure 4-1)

Table 3 shows 6 projections at five-year increments. The graph shows projections through 2031.

Selecting the baseline projection

- To make a selection of the final accepted water demand projection, the wholesale agency may consider the following factors:
 - A defensible choice will have to be made regarding which population projection to use.
 - It is reasonable to assume that the plumbing code implementation will continue. Therefore, the accepted projection should be one of the 3 projections *with the plumbing code*.
 - There is a need for region-wide consistency in assumptions and methodology. For example should we assume different natural replacement rates in different areas or make them the same? Agency should have data to back up a change in the assumed default value.
 - There are special situations that will need to be addressed such as: will a rebound in commercial and industrial water use occur at the end of the recession? If so, submit back-up justification and the projection will be changed by the Project Team.
 - Projections should be consistent with adopted General Plans.

After selection has been made, it will need to be documented how the selection was made and how it relates to the appropriate governing General Plan.

NEXT STEPS

After the upcoming workshop, the following eight steps remain to finalize the demand projections.

1. Modify assumptions and projections per customer comments
2. Select baseline projection
3. Select conservation measures to be evaluated
4. Evaluate conservation measures
5. Develop projections with alternative levels of conservation
6. Provide information on the cost-effectiveness of water conservation
7. Hold next workshop to discuss conservation results
8. Identify individual agency projections with planned conservation
9. Identify a region-wide projection with planned conservation

ATTACHMENTS

Attachment 1	Water Use Data Input Sheet
Attachment 2	Future Population and Employment Projections (Figure 2-1 and Table 2-1)
Attachment 3	Key Model Assumptions (Table 3-1)
Attachment 4	Alternative Water Demand Projections (Figure 4-1, Table 4-1)

Attachment 2 – Future Population Projections

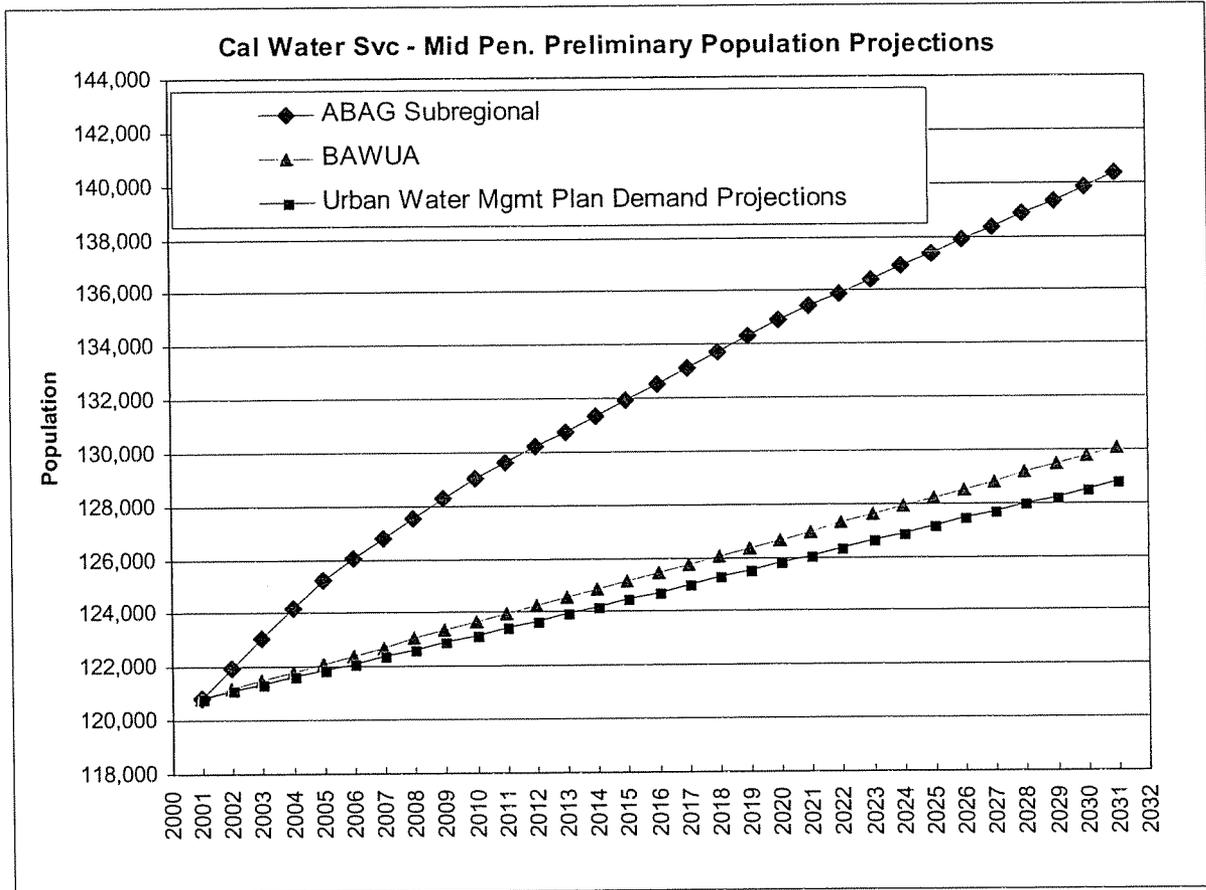


FIGURE 2-1. Population Projections for CWS, Mid-Peninsula

**TABLE 2-1
Population Results for CWS, Mid-Peninsula**

Projection Source	Population						
	2001	2005	2010	2015	2020	2025	2030
ABAG ¹ (Subregional)	120,856	126,018	129,049	131,898	134,926	137,381	139,834
BAWUA	120,856	122,411	123,655	125,161	126,667	128,218	129,770
Urban Water Mgmt Plan Demand Projections ²	120,856	122,124	123,155	124,471	125,814	127,157	128,500
ABAG ¹ EMP (Subregional)	79,493	82,998	86,017	89,911	93,266	96,918	100,568

¹Population growth rate extrapolated beyond year 2025.

²Population growth rate extrapolated beyond year 2020.

Attachment 3 – Key Model Assumptions

**TABLE 3-1
List of SFPUC Baseline Demand Projection Assumptions for DSS Model**

Parameter	Value Selected
Base Year	2001
Peak Day Factor	1.6 or data from Water Master Plan Survey
Unaccounted for Water, % of Water Production	Calculated from purchase and sales data or 7%, whichever is greater; constant over time
Population Projection, 2002 to 2030	BAWUA 2001-2002 Survey, ABAG Projections 2002, Urban Water Management Plans, Water Master Plans
Employment (Jobs) Projection 2002-2030	ABAG Projections 2002
Number of Water Accounts for Base Year	Data submitted by customers for 2001 (month of June or average of all months in 2001 or other if 2001 data not provided)
Distribution of Water Use Among Categories	Data submitted by customers for most recent year
Indoor/Outdoor Water Use Split by Category, % of Total	Monthly data submitted by customers for 2001
Residential End Uses, %	AWWARF Report “Residential End Uses of Water”
Non-Residential End Uses, %	Professional judgment and AWWARF Report “Commercial and Institutional End Uses of Water”
Residential Fixture Efficiency Current Installation Rates	Census 2000, Housing age by type of dwelling plus natural replacement
Water Savings for Fixtures, gal/capita/day	AWWARF Report “Residential End Uses of Water”
Non-Residential Fixture Efficiency Current Installation Rates	Census 2000, assume commercial establishments built at same rate as housing, plus natural replacement
Residential Frequency of Use Data, Toilets, Showers, Washers, Uses/user/day	Falls within ranges in AWWARF Report “Residential End Uses of Water”
Non-Residential Frequency of Use Data, Toilets and Urinals, Uses/user/day	Estimated based using AWWARF Report “Commercial and Institutional End Uses of Water”
Natural Replacement Rate of Fixtures	Toilets – 3% per year Showers – 5% per year Clothes Washers - 6% per year
Project Future Residential Use	Based on Projected Population
Project Future Commercial/Industrial Use	Based on Projected Employment or Population
Project Future Pubic and Other Use	Based on Projected Population

Attachment 4 – Alternative Projected Water Demands

**BASELINE PROJECTIONS
PRELIMINARY DRAFT SUBJECT TO CHANGE**

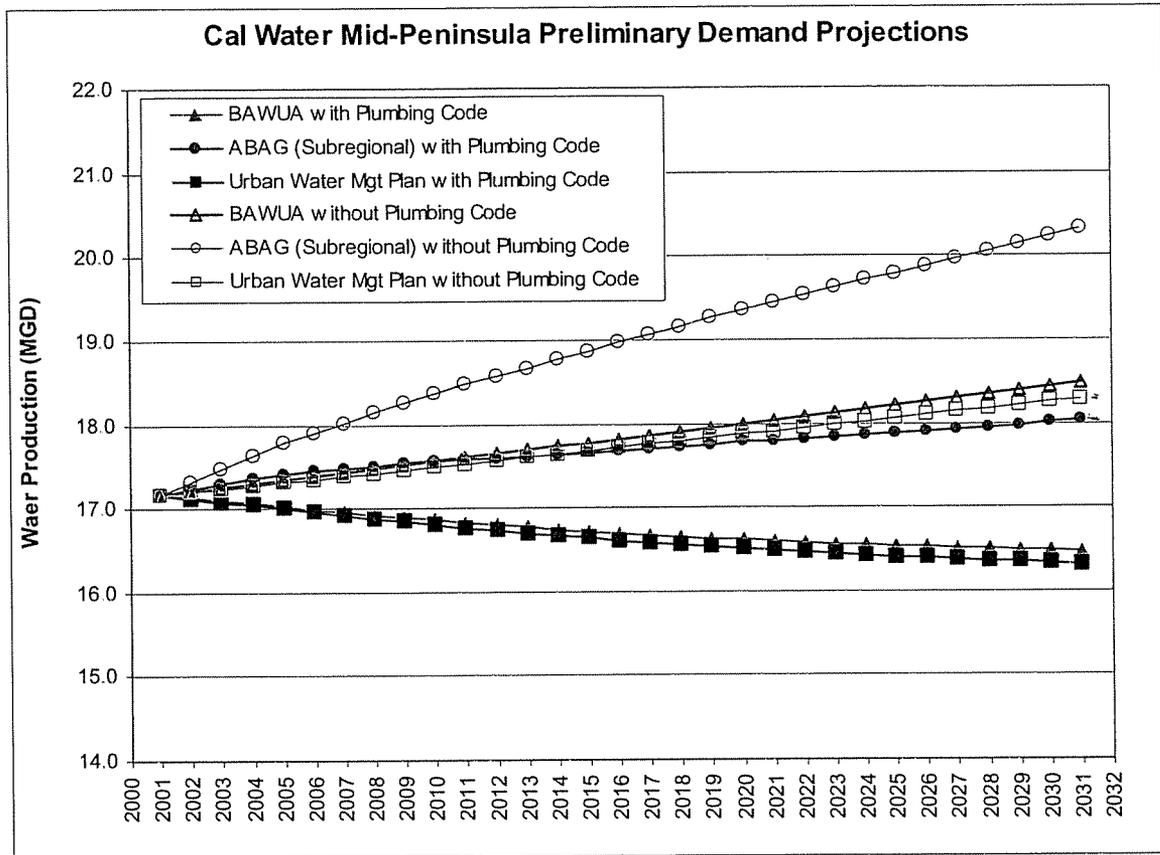


FIGURE 4-1. Baseline Water Use Projections for Cal Water Mid-Peninsula

**TABLE 4-1
Baseline Water Use Results for Cal Water Mid-Peninsula**

Data Source for Projection		Plumbing Code	Water Production, Average Day (MGD)						
Residential	Non-Residential		2001	2005	2010	2015	2020	2025	2030
BAWUA (Population)	BAWUA (Population)	Included	17.2	17.0	16.9	16.7	16.6	16.5	16.5
ABAG (Subregional Population)	ABAG (Subregional Employment)	Included	17.2	17.4	17.6	17.7	17.8	17.9	18.0
Urban Water Management Plan (Population)	Urban Water Management Plan (Population)	Included	17.2	17.0	16.8	16.6	16.5	16.4	16.3
BAWUA (Population)	BAWUA (Population)	Not Included	17.2	17.3	17.6	17.8	18.0	18.2	18.4
ABAG (Subregional Population)	ABAG (Subregional Employment)	Not Included	17.2	17.8	18.4	18.9	19.4	19.8	20.2
Urban Water Management Plan (Population)	Urban Water Management Plan (Population)	Not Included	17.2	17.3	17.5	17.7	17.9	18.1	18.2

Cal Water Mid Peninsula Water Service Area¹

Base Year Average Use and Indoor Percentages by Billing Category for DSS Model²

Year	Single family		Multifamily		Business		Industrial		Public Authority		Other							
	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor						
2001	314	66%	3612	90%	935	81%	1,083	81%	2522	48%	6056	35%						

Category	Number of Accounts FY, 2001 ³	Water Use 2001 gpd/a ⁴	Water Use, MGD 2001	Use Profile Percent	Water Use gpd	Indoor Water Use gpd
Single family	30,943	314	9.72	60.59%	108	71
Multifamily	583	3,612	2.11	13.13%	67	60
Business	3,289	935	3.07	19.16%		
Industrial	102	1,083	0.11	0.69%		
Public Authority	327	2,522	0.83	5.15%		
Other	34	6,056	0.21	1.29%		
	0	0	0.00	0.00%		
	0	0	0.00	0.00%		
Total	35,278		16.04	100.00%		
Total Water Purchased (produced) =			17.23 MGD			
Unaccounted For Water (UFW) =			6.4% Percent			
Estimated UFW for DSS Model =			7% Percent			
Water Produced for use in DSS Model			17.16 MGD			
Peaking Factor			1.53			
Peaking Factor for DSS Model =			1.53			

Blue cells are entered by modeler
Yellow cells are input to DSS Model

NOTES

- Communities served (includes all or portions of) San Mateo, San Carlos and nearby unincorporated areas according to BAWUA survey
- Average gpd/a is based on a 12-month moving average through December 2001. Indoor use is based on average of 2 lowest consecutive months in the winter if meters read bimonthly, or single lowest month if meters read monthly.
- Number of accounts is from data provided by water agency for this project (see worksheet with account data in this file)
- Total water Purchased (produced) taken from BAWUA for Fiscal Year 2001-2002 or agency if provided (INSERT SOURCE OF PURCHASE DATA - SURVEY OR AGENCY)
- Unaccounted for Water (UFW) is the percent difference between the total water purchased and the total water use.
- For reference see additional population estimates provided in population and employment estimates corresponding to service area table.
- Initial estimate based on census data for renter occupied units. For reference see table below that has 2000 census data for corresponding water service area city or cities.

Average household size	2.37
Average household size of owner-occupied unit	2.47
Average household size of renter-occupied unit	2.21
Homeowner vacancy rate (percent)	0.44
Rental vacancy rate (percent)	1.65

8 - (INSERT ADDITIONAL ASSUMPTIONS FOR THIS SERVICE AREA)

Data Prepared : July 22, 2003
Revised: September 6, 2003
By: M. Maddaus

Reconcile agency account billing data and census data

Category	2000 Units	No. Buildings	Service Area Billing Accounts - Year 2000	Difference between billing and census data	Data Sources / Notes
Single family					
1-detached	25,829	25,829			
1-attached	4,094	4,094			
2-units	1,236	618			
Subtotal	31,159	30,541	30,931		390 Housing Characteristics from U.S. Census Bureau
Multi family					
3-4 units	1,681	480			
5 to 9 units	3,039	434			
10-19 units	2,581	172			
20 or more units	6,765	135			
mobile homes	43	1			Meter for assumed 50 units per building Meter for mobile home parks, assume 50 per park
Subtotal	14,109	1,223	582	-641	Must be more than one building on an MF meter
MF Average =	11.54	units/building		24	units/account
Total SF + MF units =	45,268				

Category	City of San Mateo and San Carlos Census Population 2000	Estimated Population 2001	Estimated Residential Service Area Population 2001	Data Sources / Notes	
Total Population from Census data ⁶ =	122,823	123,553		Estimated growth from 2000 to 2001 (CA DOF Projections): 0.59% Estimated employment growth from 2000 to 2001 (ABAG Employment Projections): 0.87%	
Subtract Institutionalized Population =	753	757		Water use for the institutionalized population is accounted for in nonresidential billing categories	
Residential Population =	122,070	122,796		Residential population shown corresponds to the city or cities represented by Census data	
Avg. HHS ⁷ =	2.70				
MF Pop @ MF HHS ⁷ =	2.21	31,221	31,406	31,298	25.6% Percent of Population that is MF
SF Pop =	90,850	91,390	89,559		74.4% Percent of Population that is SF
SF HHS ⁷ =	2.92				
Total			120,856	100.0%	
			-1,254		Difference in our estimate and average of 2000-2001 and 2001-2002 BAWUA Surveys
			-2,011		Difference in our estimate and the average 2000-2001 and 2001-2002 BAWUA Surveys including institutionalized population

Estimate Service Area Dwelling Units for 2001
SF Res = 30,723 Equals No. Buildings from cell M21 plus growth in accounts for one year from cell T38
MF Res = 14,135 Equals billing accounts in 2001 from cell C16 times average units per account in cell N30 (or average units per building in cell L30 to minimize population difference in cell N47)

Category	Population	Employment
2000 Census data for jurisdiction	122,823	NA
2000 ABAG (jurisdictional)	123,183	79,527
2005 ABAG Projection (jurisdictional)	128,532	82,981
2000 ABAG (subregional)	125,729	78,512
2005 ABAG Projection (subregional)	131,540	81,963
2000 Department of Finance Benchmark	122,823	From State of California Department of Finance (DOF) table E-4 as of 4-1-2000. Website www.dof.ca.gov
2001 Department of Finance Estimate	123,553	From State of California Department of Finance table E-4 as of 1-1-2001. Website www.dof.ca.gov
2002 Department of Finance Estimate	124,218	From State of California Department of Finance table E-4 as of 1-1-2002. Website www.dof.ca.gov
FY 2000-2001 BAWUA service area	122,070	NA
FY 2001-2002 BAWUA service area	122,150	NA
2001 Employment in Service Area (input to DSS Model) =		79,493

Service Area Employment is determined by the ratio of the 2000-2001 BAWUA service area population to the 2000 ABAG Subregional Population and escalated to 2001 using the assumed growth rate in cell T39.

ABAG	Association of Bay Area Governments	MF	multi family
BAWUA	Bay Area Water Users Association	MGD	million gallons per day
DSS	Decision Support System Model	No.	number
du	dwelling unit	Pop	population
FY	Fiscal Year	Res	residential
gpd/a	gallons per day / per account	SF	single family
gpd	gallons per day	UFW	unaccounted for water
HHS	household size		

**SFPUC CAPITAL IMPROVEMENT PROGRAM
WHOLESALE CUSTOMERS DEMAND PROJECTIONS**

**WHOLESALE CUSTOMER CONCURRENCE FORM FOR DEMAND PROJECTIONS FOR
PLANNING PURPOSES**

Wholesale Customer/Agency Name: California Water, Mid-Peninsula
 Project Main Contact: THOMAS A. SALZANO
 Address: 1720 N. FIRST ST.
SAN JOSE, CA. 95112-4598
 Phone: (408) 367-8340
 E-mail: tsalzano@calwater.com

INPUT DATA SHEET CONCURRENCE

CALIFORNIA WATER SERVICE CO. has reviewed the input data sheets dated January 21, 2004 for the
 (Wholesale Customer/Agency)
 DSS Model that is being used by the SFPUC to develop planning estimates and, to the best of its
 knowledge, considers the sheets to contain accurate data.

PROJECTED WATER DEMANDS (Planning Estimate) CONCURRENCE

CALIFORNIA WATER SERVICE CO. has reviewed the planning estimate output of the DSS Model being
 (Wholesale Customer/Agency)
 used by the SFPUC for projected water demands* dated January 21, 2004 and, to the best of its
 knowledge, considers the estimate to reflect anticipated future water demands.

* Projected water demands represent a baseline condition and do not reflect the effect of future conservation savings, future cost of water, pricing structures, assessment of alternative supplies, demand management and do not represent purchases from the SFPUC.

Form Reviewed and Completed By:

THOMAS A. SALZANO
WATER RESOURCE PLANNING SUPERVISOR Thomas A. Salzano 3/1/04
 Name and Title Signature Date

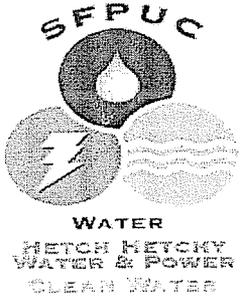
Name and signature of person with authority to concur with projected water demands:

MIKE ROSSI
CHIEF ENGINEER Mike Rossi 3/4/04
 Name and Title Signature Date

Please complete form in full and return via mail or fax by February 27, 2004 to Nicole Sandkulla and send a copy to Ellen Levin:

Nicole Sandkulla
 Bay Area Water Supply and
 Conservation Agency
 155 Bovet Road, Suite 302
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 Tel: (650) 349-3000
 Fax: (650) 349-8395

Ellen Levin
 San Francisco Public Utilities Commission
 Planning Bureau
 1145 Market Street
 Suite 401
 San Francisco, CA 94103
 Fax: (415) 934-5751



SAN FRANCISCO PUBLIC UTILITIES COMMISSION



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VICE PRESIDENT

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ADAM WERBACH
RYAN L. BROOKS

PATRICIA E. MARTEL
GENERAL MANAGER

TO: Thomas A. Salzano, California Water Service Company, Mid-Peninsula

FROM: Michael P. Carlin, Planning Bureau Manager

DATE: January 23, 2004

RE: Wholesale Customer Water Demand Projections
Final Projected Water Demand for Planning Purposes (Planning Estimate)

OBJECTIVE

This memorandum has two purposes:

(1) to provide the population projection selected by your agency in Fall 2003 and a list of model revisions that have been made since the draft water demand projections were distributed to you in August 2003 (Attachment 1), and

(2) to provide your agency's model Input Sheet (Attachment 2) and Projected Water Demand (Planning Estimate) graph (Attachment 3). The graph is a result of incorporating the population projection your agency has chosen as well as changes to the model based on comments received from your agency.

A concurrence form is provided in this package to be completed by a representative from your agency who has authority to concur with the water demand projection (Attachment 4).

PROJECT OVERVIEW AND NEXT PHASE

The San Francisco Public Utilities Commission (SFPUC) has been working with your agency to develop a model to forecast future water demands for your service area through the year 2030. It is the SFPUC's intention to use the information generated from these models and future SFPUC purchase estimates to be identified by your agency as Baseline Forecasts for the Capital Improvement Plan (CIP) Environmental Impact Report (EIR). As a reminder, the water demand projections project is summarized below, and an updated flow diagram is included in this packet illustrating project progress and next phases (Attachment 5).

PLANNING BUREAU

1145 Market Street - Suite 401 - San Francisco, CA 94103 • Tel. (415) 934-5700 • Fax (415) 934-5750

- A team of consultants has been working with your agency on the water demand projections project over the past year and has just completed individual agency Projected Water Demands (Planning Estimate) that were developed with your agency's input.
- These projections do not include conservation measures beyond the current plumbing and appliance codes.
- The next phase of the project currently underway is to examine the cost-effectiveness to each agency of implementing 32 different conservation measures.
- A workshop and individual meetings will be scheduled to review the next phases of the study. This next workshop and set of meetings will likely occur in late February/early March.

LIST OF CONTENTS

The following items are included in this packet:

1. List of model revisions and population projection use for your model (Attachment 1)
2. DSS Input Sheet (Attachment 2)
3. Projected Water Demand (Planning Estimate) Graph (Attachment 3)
4. Concurrence form to be completed by your agency (Attachment 4)
5. Project Flow Diagram (Attachment 5)

Your cooperation and timely submittal of the concurrence form is greatly appreciated. Please provide your concurrence form to Nicole Sandkulla of BAWSCA and send a copy to Ellen Levin of SFPUC on or before February 27, 2004. If you plan to take the concurrence form to your agency's governing body and you require additional time, please contact Nicole Sandkulla at (650) 349-3000. If you have any questions please call Ellen Levin of SFPUC at (415) 934-5704.

Wholesale Customer/Agency Name:	California Water Service Company, Mid-Peninsula
Project Main Contact and Title:	Thomas A. Salzano, Water Resource Planning Supervisor
Date of Population Projection Selection Form:	November 25, 2003
Population Projection Selected:	ABAG Projections 2002, Subregional Area Projections

List of Global Revisions Made to All Models

Based on saturation studies of efficient fixture installation provided by ACWD, SCVWD, and EBMUD plus other information on new technology and new regulations the following changes were made to all models. Following the changes the models were recalibrated to each local situation. Thus impacts of these changes varied by agency.

- RSF/RMF initial proportions for 1.6 gpf toilet adjusted to 25% to account for natural replacement
- RSF/RMF initial proportions for 3.5 gpf toilet adjusted to 5% to account for natural replacement
- BUS initial proportions for 1.6 gpf toilet adjusted to 30% to account for natural replacement
- BUS initial proportions for 3.5 gpf toilet adjusted to 5% to account for natural replacement
- Future annual replacement rates for RSF/RMF high flush toilet adjusted to 4%
- Future annual replacement rates for COM high flush toilet adjusted to 4%
- Future annual replacement rates for RSF/RMF shower fixtures (low, medium, and high) adjusted to 4%
- Washing machines volume of water of water used per use adjusted as follows
efficient 26 gpu, medium 36.4 gpu, top loading 43 gpu
- RSF/RMF initial proportion for efficient washing machines adjusted to 20% to account for natural replacement
- RSF/RMF initial proportion for medium washing machines adjusted to 40% to account for natural replacement
- RSF/RMF initial proportion for top loading washing machines adjusted to 40% to account for natural replacement
- Future annual replacement rates for RSF/RMF washing machines (efficient, medium, and top loading) adjusted to 6.67%
- Changed the market penetration of efficient washing machines to reflect new California requirements for efficient fixtures after 2007.
- New fixture model for commercial/industrial urinals added

RSF – Residential Single Family

RMF – Residential Multiple Family

BUS – Business

COM – Commercial

gpf – gallons per flush

gpu – gallons per use

Cal Water Mid Peninsula Water Service Area¹

DSS Input Sheet

January 21, 2004

Base Year Average Use and Indoor Percentages by Billing Category for DSS Model²

Year	Single family		Multifamily		Business		Industrial		Public Authority		Other									
	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor						
2001	314	66%	3612	90%	935	81%	1,083	81%	2522	48%	6056	35%								

Data for DSS Model - - Base Year 2001						
Category	Number of Accounts FY. 2001 ³	Water Use 2001 gpd/a ²	Water Use, MGD 2001	Use Profile Percent	Water Use gpd	Indoor Water Use gpd
Single family	30,943	314	9.72	60.59%	108	71
Multifamily	583	3,612	2.11	13.13%	67	60
Business	3,289	935	3.07	19.16%		
Industrial	102	1,083	0.11	0.69%		
Public Authority	327	2,522	0.83	5.15%		
Other	34	6,056	0.21	1.29%		
	0	0	0.00	0.00%		
	0	0	0.00	0.00%		
Total	35,278		16.04	100.00%		
Total Water Purchased (produced) =			17.23 MGD			
Unaccounted For Water (UFW) ⁵ =			6.4% Percent		From 5 year BAWUA Survey average	
Estimated UFW for DSS Model =			7% Percent		7% if actual is < 7%, otherwise = E25	
Water Produced for use in DSS Model			17.16 MGD		Add UFW to Total Water Use	
Peaking Factor			1.53		Provided by Agency or SFPUC Water Master Plan (or NA)	
Peaking Factor for DSS Model=			1.53		If NA use default value of 1.6.	

Blue cells are entered by modeler
Yellow cells are input to DSS Model

NOTES

- Communities served (includes all or portions of) San Mateo, San Carlos and nearby unincorporated areas according to BAWUA survey
- Average gpd/a is based on a 12-month moving average through December 2001. Indoor use is based on average of 2 lowest consecutive months in the winter if meters read bimonthly, or single lowest month if meters read monthly.
- Number of accounts is from data provided by water agency for this project (see worksheet with account data in this file)
- Total water Purchased (produced) taken from BAWUA for Fiscal Year 2001-2002 or agency if provided. (INSERT SOURCE OF PURCHASE DATA - SURVEY OR AGENCY)
- Unaccounted for Water (UFW) is the percent difference between the total water purchased and the total water use.
- For reference see additional population estimates provided in population and employment estimates corresponding to service area table
- Initial estimate based on census data for renter occupied units. For reference see table below that has 2000 census data for corresponding water service area city or cities

2000 Census Data	
Average household size	2.37
Average household size of owner-occupied unit	2.47
Average household size of renter-occupied unit	2.21
Homeowner vacancy rate (percent)	0.44
Rental vacancy rate (percent)	1.65

8 - (INSERT ADDITIONAL ASSUMPTIONS FOR THIS SERVICE AREA)

Data Prepared : July 22, 2003
Revised: January 10, 2004

By: M. Maddaus

Reconcile agency account billing data and census data						
Total Dwelling Units in Census 2000 for San Mateo and San Carlos						
Category	2000 Units	No. Buildings	Service Area Billing Accounts - Year 2000 ³	Difference between billing and census data	Data Sources / Notes	
Single family						
1-detached	25,829	25,829				
1-attached	4,094	4,094				
2-units	1,236	618				
Subtotal	31,159	30,541	30,931			390 Housing Characteristics from U.S. Census Bureau
Multi family						
3-4 units	1,681	480				
5 to 9 units	3,039	434				
10-19 units	2,581	172				
20 or more units	6,765	135				Meter for assumed 50 units per building
mobile homes	43	1				Meter for mobile home parks, assume 50 per park
Subtotal	14,109	1,223	582			-641 Must be more than one building on an MF meter
MF Average =	11.54	units/building		24	units/account	
Total SF + MF units =	45,268					

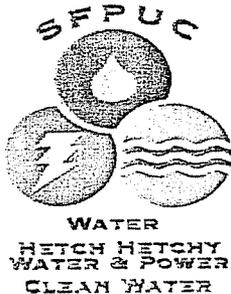
Population and Household Size in Census 2000 for San Mateo and San Carlos				Estimated Residential Service Area Population 2001		Data Sources / Notes	
Category	City of San Mateo and San Carlos		2001	2001	2001	2001	
	Census Population	Estimated Population					
Total Population from Census data ⁶ =	122,823		123,553				Estimated growth from 2000 to 2001 (CA DOF Projections): 0.59%
Subtract Institutionalized Population =	753		757				Estimated employment growth from 2000 to 2001 (ABAG Employment Projections): 0.87%
Residential Population =	122,070		122,796				Water use for the institutionalized population is accounted for in nonresidential billing categories
Avg. HHS ⁷ =	2.70						Residential population shown corresponds to the city or cities represented by Census data
MF Pop @ MF HHS ⁷ =	2.21	31,221	31,406	31,298	25.6%		Percent of Population that is MF
SF Pop =		90,850	91,390	89,559	74.4%		Percent of Population that is SF
SF HHS ⁷ =		2.92					
			Total	120,856	100.0%		
				-1,254			Difference in our estimate and average of 2000-2001 and 2001-2002 BAWUA Surveys
				-2,011			Difference in our estimate and the average 2000-2001 and 2001-2002 BAWUA Surveys including institutionalized population

Estimate Service Area Dwelling Units for 2001
 SF Res = 30,723 Equals No. Buildings from cell M21 plus growth in accounts for one year from cell T38
 MF Res = 14,135 Equals billing accounts in 2001 from cell C16 times average units per account in cell N30 (or average units per building in cell L30 to minimize population difference in cell N47)

Population and Employment Estimates Corresponding to Service Area		
	Population	Employment
2000 Census data for jurisdiction	122,823	NA
2000 ABAG (jurisdictional)	123,183	79,527
2005 ABAG Projection (jurisdictional)	128,532	82,981
2000 ABAG (subregional)	125,729	78,512
2005 ABAG Projection (subregional)	131,540	81,963
2000 Department of Finance Benchmark	122,823	From State of California Department of Finance (DOF) table E-4 as of 4-1-2000. Website www.dof.ca.gov
2001 Department of Finance Estimate	123,553	From State of California Department of Finance table E-4 as of 1-1-2001. Website www.dof.ca.gov
2002 Department of Finance Estimate	124,218	From State of California Department of Finance table E-4 as of 1-1-2002. Website www.dof.ca.gov
FY 2000-2001 BAWUA service area	122,070	NA
FY 2001-2002 BAWUA service area	122,150	NA
2001 Employment in Service Area (input to DSS Model) =		79,493

Service Area Employment is determined by the ratio of the 2000-2001 BAWUA service area population to the 2000 ABAG Subregional Population and escalated to 2001 using the assumed growth rate in cell T39.

Definitions / Abbreviations			
ABAG	Association of Bay Area Governments	MF	multi family
BAWUA	Bay Area Water Users Association	MGD	million gallons per day
DSS	Decision Support System Model	No.	number
du	dwelling unit	Pop	population
FY	Fiscal Year	Res	residential
gpd/a	gallons per day / per account	SF	single family
gpd	gallons per day	UFW	unaccounted for water
HHS	household size		



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TO: Tom Salzano, California Water Service – Mid Peninsula
Paul Baker, California Water Service – Mid Peninsula

FROM: Michael P. Carlin, Planning Bureau Manager *MPC*

DATE: June 21, 2004

RE: Wholesale Customer Water Conservation Program Evaluation
Revisions to Conservation Programs

Based on our discussions with you at the one-on-one meeting several weeks ago, revisions have been made to your DSS Model and Water Conservation Program Evaluation. This memo summarizes the DSS Model general enhancements and modifications since your last mailing, as well as specific input received from your agency that was applied to revise the Model. Please note the results included in this packet are based on revised assumptions outlined in this memo and therefore, supercede any results previously sent to your agency.

This mailing includes the following revised attachments and one new attachment:

1. Revised Attachment 1 – Conservation Measures Evaluated in DSS Model
2. Revised Attachment 2 – Results of Conservation Measures Evaluation
3. Revised Attachment 3 – Summary of Current Conservation Programs (changes were made if applicable)
4. Revised Attachment 4 – Summary of Options Package Programs
5. Revised Attachment 5 – Results of Conservation Option Packages Evaluation
6. Revised Attachment 6 – Present Value of Utility Costs Versus Water Saved.
7. Attachment 7 (new) – Reasonable Range of Conservation Concurrence Form

LIST OF DSS MODEL ENHANCEMENTS AND CHANGES

Based on general customer feedback during one-on-one meetings and further internal review of model results for all of the customers, minor modifications were made to the method for which the water savings and costs are calculated. In particular, some of the measures which were designed for moderate to large size customers produced water savings that were unrealistically high for small customers, so those measures were eliminated or downsized.

PLANNING BUREAU

1145 MARKET STREET – SUITE 401 - SAN FRANCISCO, CA 94103 • TEL. (415) 934-5700 • FAX (415) 934-5750

General Modifications Made to All Models

1. Measure 3 (Landscape Water Audits) - Standard factors for turf for parks and colleges were lowered. Water application rates for irrigating landscape were lowered to four feet per year. This has made the amount of landscape that can be irrigated with customer metered water closer to the surveyed amount of irrigable landscape. This did not affect the calculation of water savings or costs.
2. With respect to Irrigation Meters, Measures 4 (Water Budgets) and Measure 29 (Financial Incentives for Budgets) are only applicable to agencies that currently have dedicated irrigation accounts in their billing system. Measure 31 (Irrigation Meters) was removed from programs for agencies that do not currently have dedicated CII irrigation meter accounts, and was selected only for agencies that would start a new program to add dedicated CII irrigation meter accounts.
3. Measure 5 (Clothes Washer Rebates) - utility administrative costs were increased to 30%.
4. Measure 7 (Commercial Water Audits) - water savings were increased to better reflect that this measure only applies to the top 10% of CII customers, as opposed to customers with average water use.
5. Measure 8 (CII Toilet Replacement) - Time period for implementation was reduced to 3 years per CUWCC MOU. In addition some minor adjustments in water savings were made.
6. Measure 9 (Toilet Rebates) - This measure was split into separate programs for single and multifamily customers and a percentage of Free-riders was assigned (32 percent for single family, 19 percent for multifamily). Free-riders are customers who take the rebate but were planning to replace their toilet anyway so do not represent a new retrofit; rather their actions are covered under natural replacement. To match the coverage requirements of the CUWCC MOU, the rebates would be given at the rate of housing turnover rate.
7. Measure 11 (Home Leak Detection) - water savings increased to 90% of estimated leakage.
8. Measure 14 (Xeriscape Classes) was restricted to customers who serve more than 5,000 single family accounts and was repackaged to target training of homeowners as well as nursery staff.
9. Measure 26 (Commercial Awards) was restricted to customers with 1,000 or more accounts and was changed to 3 awards every other year; this lowered the cost and water savings.
10. Measure 30 (Irrigation Equipment Rebates) was targeted at all non-single family customers with or without irrigation meters customers.

The above modifications were also provided to your agency via email on May 18th in the revised "*San Francisco PUC Selected Conservation Measure Unit Costs and End Use Savings Estimates*" table.

Minor changes to the formatting of the final attachments were made. Utility costs for the first five years of measure implementation are now shown in the last column of Attachment 2. The word "Cumulative" was added to Attachment 6, table and graph.

Individual Changes to Your Model

In addition to the general changes made above, the following specific changes were also made to your agency's model based on your input:

1. Changes in the service area assumptions used in the measure database.
 - *Your agency provided confirmation that the assumptions used in the measures database assumptions were correct.*

2. Changes to Programs A, B, and C.

- *Feedback on specific measure placement in programs A, B, and C received from your agency were applied to your model and are reflected in your Final Attachment 4.*

The last attachment (Attachment 7) is a concurrence form to be completed by a representative from your agency with the authority to concur with the range of conservation potential for programs presented in the Final Attachments with this mailing. Your cooperation and timely submittal of Attachment 7 is greatly appreciated.

Please provide your concurrence form to Nicole Sandkulla of BAWSCA and send a copy to Ellen Levin of SFPUC on or before July 9, 2004. If you plan to take the concurrence form to your agency's governing body and you require additional time, please contact Nicole Sandkulla at (650) 349-3000. If you have any questions, please call Ellen Levin of SFPUC at (415) 934-5704.

**REVISED Attachment 1
Conservation Measures Evaluated in DSS Model**

Measure Number	CA BMP Number	Target Customer Category	Measure	Short Description
1	1	RSF, RMF	Residential Water Surveys	Offer indoor and outdoor water surveys to existing single-family and multifamily residential customers with high water use; provide customized report to homeowner.
2	2	RSF, RMF	Residential Retrofit	Provide owners of pre-1992 homes with retrofit kits that contain easy-to-install low flow showerheads, faucet aerators, and toilet tank retrofit devices.
3	5	CII	Large Landscape Conservation Audits	All public and private irrigators of landscapes larger than one acre and separate irrigation accounts would be eligible for free landscape water audits upon request.
4	5	CII	Water Budgets	All irrigators of landscapes larger than one acre and separate irrigation accounts would receive a monthly irrigation water use budget as information on the water bill
5	6	RSF	Clothes Washer Rebate	Homeowners would be eligible to receive a rebate on a new water efficient clothes washer.
6	7	RSF	Public Information Program	Public education would be used to raise awareness of other conservation measures available to customers. Programs could include poster contests, speakers to community groups, radio and television time, and printed educational material such as bill inserts, etc.
7	9	CII	Commercial Water Audits	High water use accounts would be offered a free water audit that would evaluate ways for the business to save water and money
8	9	CII	ULF Toilet and Urinal Rebates	Pre-1994 businesses with high use fixtures, rebates would be offered rebates to for: Commercial ULF Toilets (1.6 gal/flush) Commercial ULF Urinals (1.0 gal/flush)
9	14	RSF, RMF	Residential ULF Toilet Rebate	Homeowners would be eligible to receive a rebate to replace an existing high volume toilet with a new water efficient toilet.
10	14	RSF, RMF	Require 1.6 gal per flush toilets to be installed at the time of sale of existing buildings	Work with the real estate industry to require that a certificate of compliance be submitted to the water utility that verifies that a plumber has inspected the RSF or RMF property and efficient fixtures were either present or were installed at the time of sale, before close of escrow.
11	New	RSF	Home Leak Detection and Repair	Use Leak detection equipment to determine whether and where leaks are occurring on the premises. The Water Utility would then provide a plumber to the customer to repair leaks for free.

REVISED Attachment 1
Conservation Measures Evaluated in DSS Model

Measure Number	CA BMP Number	Target Customer Category	Measure	Short Description
12	New	RSF	Rebates for 6/3 dual flush or 4 liter toilets	Provide a rebate or voucher for the retrofit of a 6/3 dual flush, 4-liter or equivalent very low water use toilet. Rebate amounts would reflect the incremental purchase cost and would be in the range of \$50 to \$100 per toilet replaced.
13	New	RSF, RMF, CII, PUB	ET Controller Rebates	Use the latest state of the art irrigation controllers. These controllers have on-site temperature sensors or rely on a signal from a central weather station that modifies irrigation times at least weekly (preferably daily) as the weather changes. Water Utility could provide a rebate for the controller.
14	New	RSF	Xeriscape education and staff training at retail garden/irrigation supply houses	Water Utility would sponsor training for staff of stores where plants and irrigation equipment is sold. The purpose would be to educate sales people about the benefits of native (low water use) plants, efficiently irrigated.
15	New	RSF	Homeowner irrigation classes	Water Utility would sponsor classes at stores where irrigation equipment is sold or other suitable venues. Instruction would be on selection and installation of efficient equipment (drip irrigation, smart controllers, low volume sprinklers, etc.). Proper plant selection would be covered.
16	New	RSF	Promote water efficient plantings at new homes	Provide information for planting water-efficient landscaping, including avoiding strip turf sections that are difficult to water-efficiently and using native plants that do not require supplemental watering. Information would be provided in brochures with the water bill, or mailed. Informational displays at Provider offices and nurseries could also be provided.
17	New	RMF, CII	Offer incentives for replacement of clothes washers in coin-operated laundries	Apartment and coin-op laundry managers would be offered incentives to retrofit or use efficient clothes washers. The rebate would either go to the manager or the washing machine leasing company.
18	New	RMF	Incentives for retrofitting sub-metering	Rescind any regulations that prohibit sub-metering of multi-family buildings. Sub-metering would be encouraged through water audits and direct mail promotions, and possibly incentives to building owners.
19	New	RMF	Require sub-metering multifamily units	Require all new multi-family units to provide sub-meters on individual units. To help reduce financial impacts on tenant's regulations would be adopted that specify acceptable methods of metering and billing.

REVISED Attachment 1
Conservation Measures Evaluated in DSS Model

Measure Number	CA BMP Number	Target Customer Category	Measure	Short Description
20	New	RMF	Rebate efficient clothes washers	New apartment complexes over a certain size would be eligible to receive a rebate to provide a common laundry room equipped with efficient washing machines.
21	New	RMF, CII	Enforce landscape requirements for new landscaping systems (turf limitations / regulations)	Enforce existing requirements on use of low-water-using or native plants for landscaping purposes. Proof of compliance would be necessary to obtain a water connection on all new multi family residential and commercial projects.
22	New	CII	Restaurant low flow spray rinse nozzles	Provide free installation of 1.6 gpm spray nozzles for the rinse and clean operation in restaurants and other commercial kitchens that did not participate in 2002-3 CUWCC program.
23	New	CII	Focused water audits for hotels/motels	Provide free water audits to hotels and motels. Standardize on the types of services offered to reduce costs. Included would be bathrooms, kitchens, ice machines, cooling towers, and irrigation system schedules.
24	New	CII	WAVE Program (US EPA) for hotels	Provide hotels with information about the US EPA's WAVE program. This program encourages hotels to do their own water audit and then analyze their water use with the software provided. The software identifies water saving projects and computes paybacks. Hotels that agree to participate in the program also agree to install cost-effective water conserving equipment.
25	New	CII	Hotel retrofit (w/financial assistance)	Following a free water audit offer the hotel a rebate for equipment identified that would save water. Provide a rebate schedule for certain efficient equipment such as air-cooled ice machines so hotels could apply without an audit.
26	New	CII	Award program for water savings by businesses	Providers would sponsor an annual awards program for businesses that significantly reduce water use. They would receive a plaque, presented at a lunch with the mayor.
27	New	CII	Replace inefficient water using equipment	Provide a rebate for a standard list of water efficient equipment. Included would be icemakers, efficient dishwashers, cooling towers to replace once through cooling, irrigation controllers, and certain process equipment.
28	New	CII	Require 0.5 gal/flush urinals in new buildings	Require that new building be fitted with 0.5 gal/flush urinals rather than the current standard of 1.0-gal/flush models.

**REVISED Attachment 1
Conservation Measures Evaluated in DSS Model**

Measure Number	CA BMP Number	Target Customer Category	Measure	Short Description
29	New	CII	Financial incentives for complying with water use budget	Link a landscape water budget to a rate schedule that penalizes the account holder for exceeding its water budget and rewards them for using less than the budget.
30	New	CII	Financial incentives for irrigation upgrades	Provide rebates for selected types of irrigation equipment upgrade. Model after EBMUD or Contra Costa Water District, California.
31	New	CII	Require dedicated irrigation meters for new accounts	Require that new accounts that plan a substantial amount of irrigated landscape have dedicated landscape meter and be charged on a separate rate schedule that recognizes the high peak demand placed on the system by irrigators.
32	New	PUB	Water Utility / City Department water reduction goals	Water Utility / City would provide water use reduction goals for metered City and County accounts. Assistance in the form of audits and employee education would be offered.

Notes: RSF = Residential Single Family
 RMF = Residential Multi Family
 CII = Commercial/Industrial/Institutional
 PUB = Public, buildings / grounds owned by the Water Utility or City

REVISED Attachment 2
Results of Conservation Measures Evaluation
California Water Service Company – Mid Peninsula District

Conservation Measure		Water Utility Benefit-Cost Ratio	Total Community Benefit-Cost Ratio	"30-year" Average Water Savings (MGD)	Cost of Savings per Unit Volume (\$/MG)	Net Utility Benefit	First Five Years Utility Cost
1	Residential Water Surveys	1.6	1.9	0.068	\$1,275	\$544,563	\$249,261
2	Residential Retrofit	2.9	7.8	0.042	\$719	\$655,017	\$355,332
3	Large Landscape Conservation	2.4	2.0	0.032	\$797	\$412,851	\$82,323
4	Water Budgets						
5	Clothes Washer Rebate	2.6	2.3	0.023	\$802	\$332,075	\$218,455
6	Public Information Program	1.8	2.8	0.088	\$1,169	\$890,176	\$323,533
7	Commercial Water Audits	0.7	0.7	0.080	\$2,797	(\$765,760)	\$1,545,329
8	Commercial ULF Toilet and Urinal Rebates	11.4	6.3	0.011	\$185	\$234,753	\$25,524
9	Residential ULF Toilet Rebate	1.2	0.8	0.273	\$8,777	\$1,084,473	\$3,146,097
10	Require 1.6 gal per flush toilets to be installed at the time of sale of existing buildings	8.2	0.5	0.307	\$1,121	\$6,181,674	\$396,587
11	Home Leak Detection and Repair	0.6	0.6	0.016	\$3,864	(\$245,753)	\$403,093
12	Rebates for 6/3 dual flush or 4 liter toilets	1.8	1.3	0.189	\$1,120	\$1,846,454	\$1,384,710
13	ET Controller Rebates	1.2	0.8	0.035	\$1,590	\$99,378	\$206,682
14	Xeriscape education and staff training at retail garden/irrigation supply houses	15.5	0.9	0.047	\$117	\$899,280	\$16,500
15	Homeowner irrigation classes	7.1	0.4	0.021	\$257	\$375,537	\$16,500
16	Promote water efficient plantings at new homes	1.1	0.1	0.002	\$1,668	\$4,116	\$13,750
17	Offer incentives for replacement of clothes washers in coin-operated laundries	0.6	1.2	0.001	\$5,127	(\$29,683)	\$70,875
18	Incentives for retrofitting sub-metering	4.4	1.5	0.008	\$443	\$130,649	\$22,033
19	Require sub-metering multifamily units	7.9	2.2	0.011	\$236	\$201,414	\$10,686
20	Rebate efficient clothes washers	8.7	16.9	0.008	\$241	\$165,725	\$22,838
21	Enforce landscape requirements for new landscaping systems (turf limitations / regulations)	5.4	0.8	0.010	\$337	\$172,827	\$10,935

REVISED Attachment 2
Results of Conservation Measures Evaluation
California Water Service Company – Mid Peninsula District

Conservation Measure		Water Utility Benefit-Cost Ratio	Total Community Benefit-Cost Ratio	“30-year” Average Water Savings (MGD)	Cost of Savings per Unit Volume (\$/MG)	Net Utility Benefit	First Five Years Utility Cost
22	Restaurant low flow spray rinse nozzles	15.2	41.3	0.028	\$133	\$600,122	\$46,272
23	Focused water audits for hotels/motels	18.2	11.9	0.030	\$107	\$633,748	\$21,563
24	WAVE Program (US EPA) for hotels	99.1	4.4	0.002	\$20	\$44,250	\$265
25	Hotel retrofit (w/financial assistance)	6.2	3.4	0.016	\$316	\$299,525	\$34,063
26	Award program for water savings by businesses	2.6	0.6	0.004	\$693	\$53,596	\$10,350
27	Replace inefficient water using equipment	0.3	0.0	0.005	\$7,532	(\$290,556)	\$225,226
28	Require 0.5 gal/flush urinals in new buildings	23.9	23.9	0.000	\$78	\$7,790	\$90
29	Financial incentives for complying with water use budget						
30	Financial incentives for irrigation upgrades	0.7	0.4	0.001	\$2,707	(\$6,376)	\$5,314
31	Require dedicated irrigation meters for new accounts	3.0	0.4	0.006	\$605	\$88,096	\$2,775
32	Water Utility / City Department water reduction goals	8.8	2.0	0.034	\$222	\$656,979	\$49,037

Notes:

Numbers in parentheses indicate a negative value

MG – Million Gallons

MGD – Million Gallons per Day

REVISED Attachment 3
Summary of Current Conservation Programs
California Water Service Company - Mid-Peninsula Water District

Description of Conservation Activity	Corresponding Measure Number
Residential Retrofit (CA BMP 2)	2
Clothes Washer Rebate (CA BMP 6)	5
Public Information Program (CA BMP 7)	6
Residential ULF Toilet Rebates (CA BMP 14)	9

Residential Retrofit
 BMP02 ————— 6,000
 Clothes Washer Rebate
 2004 BMP06 ————— 15,000 / 2
 7,500 / 2
 Public Information
 BMP07 ————— 5,000
 School Education
 BMP08 ————— 5,500
 ULF
 BMP14 ————— 7,000
 \$ 54,000

REVISED Attachment 4
Summary of Options Package Programs
Cal Water Service Company – Mid-Peninsula Water District

Description of Conservation Activity	Corresponding Measure Number	Program A	Program B	Program C	Not Attractive
Residential Water Surveys	1		X	X	
Residential Retrofit	2	X	X	X	
Large Landscape Conservation Audits	3			X	
Water Budgets	4				X
Clothes Washer Rebate	5	X	X	X	
Public Information Program	6	X	X	X	
Commercial Water Audits	7			X	
ULF Toilet and Urinal Rebates	8		X	X	
Residential ULF Toilet Rebate	9	X	X	X	
Require 1.6 gal per flush toilets to be installed at the time of sale of existing buildings	10				X
Home Leak Detection and Repair	11				X
Rebates for 6/3 dual flush or 4 liter toilets	12		X	X	
ET Controller Rebates	13			X	
Xeriscape education and staff training at retail garden/irrigation supply houses	14		X	X	

**REVISED Attachment 4
Summary of Options Package Programs
Cal Water Service Company – Mid-Peninsula Water District**

Description of Conservation Activity	Corresponding Measure Number	Program A	Program B	Program C	Not Attractive
Homeowner irrigation classes	15			X	
Promote water efficient plantings at new homes	16				X
Offer incentives for replacement of clothes washers in coin-operated laundries	17				X
Incentives for retrofitting sub-metering	18			X	
Require sub-metering multifamily units	19				X
Rebate efficient clothes washers	20		X	X	
Enforce landscape requirements for new landscaping systems (turf limitations / regulations)	21			X	
Restaurant low flow spray rinse nozzles	22		X	X	
Focused water audits for hotels/motels	23		X	X	
WAVE Program (US EPA) for hotels	24				X
Hotel retrofit (w/financial assistance)	25			X	
Award program for water savings by businesses	26				X
Replace inefficient water using equipment	27				X
Require 0.5 gal/flush urinals in new buildings	28				X

REVISED Attachment 4
Summary of Options Package Programs
Cal Water Service Company – Mid-Peninsula Water District

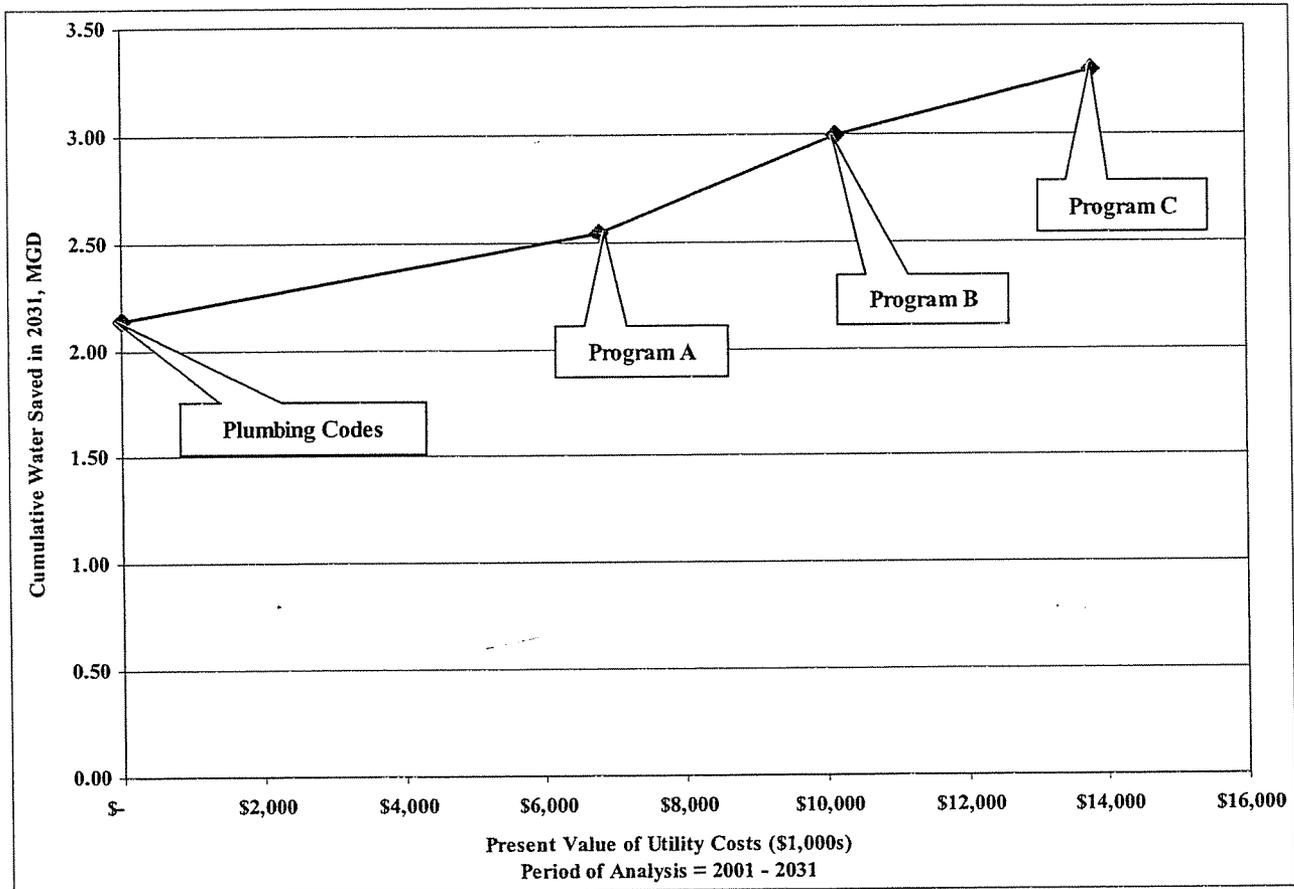
Description of Conservation Activity	Corresponding Measure Number	Program A	Program B	Program C	Not Attractive
Financial incentives for complying with water use budget	29				X
Financial incentives for irrigation upgrades	30				X
Require dedicated irrigation meters for new accounts	31			X	
Water Utility / City Department water reduction goals	32				X
TOTAL NUMBER OF MEASURES		4	11	19	13

REVISED Attachment 5
Results of Conservation Option Packages Evaluation
California Water Service Company – Mid Peninsula Water District

Conservation Option Package	Water Utility Benefit-Cost Ratio	2031 Water Savings (MGD)	2031 Outdoor Water Savings (MGD)	Total Water Savings as a % of Total Production in 2031	Present Value of Water Utility Costs (\$1,000)	First Five Year Total Utility Costs (\$1,000)	Cost of Water Saved (\$/AF)	% of New Water Needed by 2031
A	1.43	0.41	0.04	2.23%	\$6,798	\$3,308	\$464	40%
B	1.70	0.86	0.17	4.71%	\$10,151	\$4,727	\$384	84%
C	1.57	1.16	0.38	6.39%	\$13,803	\$6,257	\$413	115%

Notes: Present Value is determined using an interest rate of 3%
Cost of water saved is present value of water utility cost divided by total 30-year water savings
Percentages of 2031 demand and percentage of new water includes recycled water, if applicable

**REVISED Attachment 6
Present Value of Utility Costs Versus Water Saved
California Water Service Company – Mid Peninsula Water District**



	Plumbing Code	Program A	Program B	Program C
Present Value of Costs (\$1,000s)	\$0	\$6,798	\$10,151	\$13,803
Cumulative Water Saved (MGD)	2.14	2.54	2.99	3.30