



Final Report

Water Utility Cost of Service Rate Study

Prepared for:

City of Modesto

Prepared by:



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1. Introduction and Executive Summary

Introduction

In March 2004, the Modesto City Council directed staff to develop new water rates. These new rates are to be equitable among the City's customer classes, and generate revenue adequate to meet the water utility's operating costs as well as projected new capital and source of supply costs.

To guide the development of these new water rates, the City Manager assembled a Water Task Force that would have responsibility for providing policy direction, necessary data, and guiding the overall rate study process. The Task Force is comprised of representatives from the City Manager's Office, Public Works, the City Attorney's Office and the Finance Department as well as the City's water rate consultant, Foresight Consulting, and a specialized Prop 218 consultant, Harris & Associates.

The primary objectives of this study are to:

- Implement the Task Force's recommended changes in the City's water rate structure
- Ensure that new rates are consistent with the generally accepted water rate cost-of-service principles and are legally defensible
- Ensure that these rates meet the City's projected revenue requirements related to operating costs, capital projects and debt service

Foresight Consulting performed the rate study documented in this report. This report is organized into eight sections. The nature and purpose of each section is described below, followed by a summary of the study's key findings and recommendations.

- **Section 1** – Consists of this introduction and the following executive summary.
- **Section 2** – Describes the City's existing water rates and explains why they were originally developed.
- **Section 3** – Describes the City's current water rate customer classes, their water use characteristics, and provides the rationale behind the design of the new rate structure and new flat rate residential customer classes, not including cash-funded capital projects.
- **Section 4** – Sets forth the current and projected revenue requirements of the City's water utility, and defines the annual revenue that the new water rates will need to generate.
- **Section 5** – Outlines the rate design methodology, including the cost allocation principles and the special City policies that were considered. It also explains the relationship between the utility's three general types of costs (commodity,

demand, and customer costs) and the activities and operations that cause those costs to be incurred.

- **Section 6** – Shows how the rate methodology is applied in developing the new water rates and demonstrates how costs are reasonably and equitably allocated among customers and customer classes.
- **Section 7** – Shows the financial plan, which outlines a strategy for providing adequate funding for current operations and capital projects using a combination of the proposed rate increases, new debt financing, and cash funding from reserves.
- **Section 8** – Describes the recommended new water rates resulting from the analyses described in the previous sections.
- **Section 9** – Describes the study’s findings and recommendations, which are also briefly summarized in the following executive summary.

Executive Summary

The following is a summary of the findings, recommendations, and rate adjustments resulting from this study.

Findings

The primary findings of this study are as follows:

1. The City’s Restructuring of its Water Rates is Consistent with Industry Standards

The City desires to change its rate structure from the current three-zones to a single service area and at the same time adopt a uniform rate structure that treats similar types of customers, such as single-family residential, the same. We believe these changes are consistent with commonly accepted rate-making principles and are an equitable approach to generating sufficient revenues.

2. The City has Defined Its Commitments to Its Water Utility Customers in Four Promises

Along with the City’s intentions to adopt a new single-zone service area and uniform rate structure, the City considers its fundamental commitments to its water utility customers to be encapsulated in the following four promises:

- Providing sufficient quantities of clean water and adequate water pressures under all reasonable circumstances
- Planning for an adequate future supply of water
- Providing system maintenance at a reasonable price
- Meeting the challenge of an unpredictable regulatory climate

3. The Annual Revenue Requirement of the City's Water Utility Will Increase Significantly Over the Next Five Years

The Water Fund's annual revenue requirement is projected to increase approximately 69% by 2008-09, increasing from a current amount of approximately \$30.7 million to more than \$51.8 million. This is primarily due to (1) the loss of numerous wells because of groundwater contamination, (2) debt service payments related to construction of a new MID surface water treatment plant, (3) funding the annual operation and maintenance of this new plant, and (4) construction of new downstream transmission and storage facilities. However, this does not include cash-funded CIP projects of approximately \$55 million that are allocated to existing customers, which will be paid out of reserve funds.

4. Rate Increases for the Largest Group of Customers will be 35% in the First Year (Proposed Adoption on January 1, 2005)

Approximately 50% of all flat-rate residential customers have lot sizes between 5,000 and 7,000 square feet. As the largest single rate class and largest revenue generating class, we have applied the targeted first year rate increase of 35% to this customer class (but it's a 35% increase only for current Zone 1 customers). Based on cost-of-service principles, other smaller residential and non-residential classes will have rate increases either higher or lower than 35%.

5. The City Needs to Adopt a Five-Year Financial Plan That Will Adequately Fund Its Extensive Capital Improvement Program

In order to meet the City's significant capital project costs, new debt service payments, annual bond-coverage ratios, and costs of operations, the City needs a financial plan. This plan should act as a financial "road map" and include additional long-term debt, significant cash-funded projects, and should adopt annual rate increases for the next five years. Rate increases of 35% (varying by customer class and current zone) in January 2005 followed by increases of 20%, 15%, 5% and 5% beginning July 1, 2005 and every July 1 thereafter should be sufficient for these purposes.

Recommendations

The following are the primary recommendations Foresight Consulting is making to the City as a result of this study:

1. Implement a Single-Zone Service Area and Uniform Rate Structure

The City's rate objectives and policy of treating all customers equitably are consistent with cost-of-service principles, a single-zone service area, and a uniform rate structure. (See Section 5)

2. Adopt and Implement the Proposed Five-Year Plan for New Rates

The City should target a first year rate increase of 35% (for Zone 1 only) for flat-rate lot sizes of 5,000-7,000 square feet. The percentage increases for smaller customer classes will vary based on the cost-of-service adjustments developed in this analysis and the current zone customers are in. Following these first year increases, the City should adopt annual across-the-board increases of 20%, 15%, 5% and 5% (see

Section 8). The City should also periodically review these cost-of-service relationships and plan to update this rate analysis no later than Year 3 (FY 2006-07).

3. Implement the Proposed Financial Plan

This plan includes establishing separate operating, rate stabilization, and repair and replacement reserves, adopting reasonable target balances, and using a combination of pay-as-you-go and additional long-term debt to fund future capital improvements (See Section 7). As a part of this plan, the City should adopt an automatic rate increase using the *Consumer Price Index, Urban Wage Earners and Clerical Workers Series* for the San Francisco California Metropolitan Statistical Area (CMSA), prepared by the California Department of Finance, Demographics Research Unit, beginning on July 1, 2009 and applied each subsequent year.

Proposed Rate Adjustments

The City’s Zone 1 and 2 water rates have not been increased, and the rate structure has not changed since the acquisition of the Del Este Water Company in 1995. The proposed new rate structure and rates are designed to be equitable among all the City’s water customers.

A representative sample of the rate impacts is shown in Table ES-1, which compares the current and proposed rates for the two largest customer classes. Rate increases for the other customer classes vary dramatically depending on the zone: flat rate residential customers in Zone 3 (who have historically had lower rates) have rate increases ranging from 28% to 81% in the first year. Some Zone 2 customers actually have a decrease. After these initial adjustments, all customers have across-the-board increases of 20%, 15%, 5% and 5% in the subsequent four years.

Table ES-1
Comparison of Selected Current & Proposed New Water Rates
City of Modesto

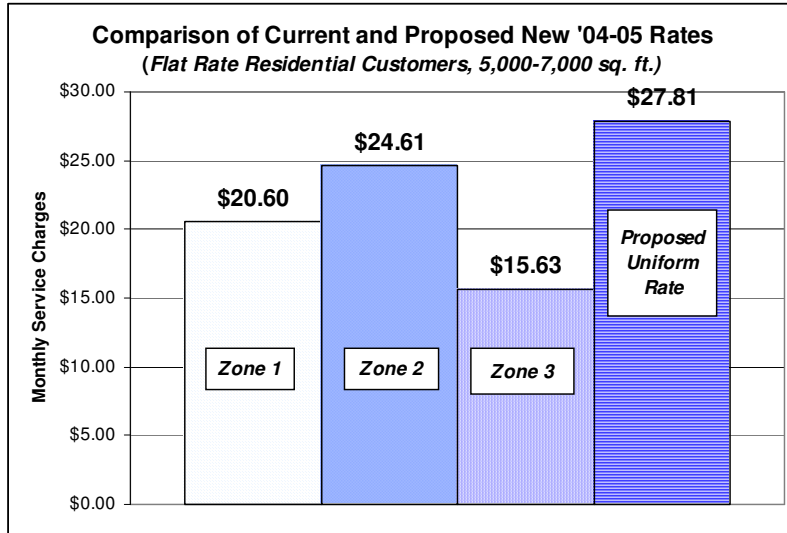
Customer Classes	Current Rates			Proposed New Rates & % Change (a)			
	Zone 1	Zone 2	Zone 3	Uniform	Zone 1	Zone 2	Zone 3
Flat Rate Residential							
5,001-7,000 sq. ft. lot	\$20.60	\$24.61	\$15.63	\$27.81	35%	13%	78%
7,001-11,000 sq. ft. lot	\$23.08	\$28.58	\$18.20	\$33.00	43%	15%	81%
Metered Charges							
Uniform Vol. Charge (\$/hcf) (b)	\$0.82	\$1.005	\$0.601	\$0.84	3%	-16%	40%
Fixed Meter Charges							
5/8"-3/4"	\$13.63	\$8.12	\$11.12	\$9.01	-34%	11%	-19%
1"	\$18.14	\$10.17	\$13.94	\$12.78	-30%	26%	-8%
1-1/2"	\$22.54	\$15.53	\$21.09	\$22.13	-2%	42%	5%
2"	\$27.20	\$21.09	\$28.54	\$33.38	23%	58%	17%

a. From Table 8-1. Proposed new rates are effective January 1, 2005.

b. Current Zone 1 metered charges include a minimum of 1,680 cubic feet/mo. Zone 2 and 3 charges are for the first 100 hcf of use.

Figure ES-1 illustrates changes in the residential flat rate charges for customers with lot sizes of 5,000 to 7,000 square feet, which includes almost half the flat rate residential customers. As seen in this figure, Zone 3 customers have the most significant rate increases because they have the lowest current rate.

Figure ES-1



2. The City's Existing Water Rates

The City's current water rate structure is comprised of three service areas or zones. The City adopted this three-zone structure when it purchased the Del Este Water Company in 1995. The purpose of the three zones was to: (1) avoid significant rate adjustments for Del Este customers, (2) preserve the perceived equity in the then existing rate structure, and (3) reflect the localized differences in sources of supply and costs of service.

- Zone 1 is the area served by the City prior to its acquisition of the Del Este Water Company (Del Este).
- Zones 2 and 3 are the areas previously served by Del Este and were created by Del Este and the California Public Utilities Commission (PUC). At the time of the acquisition, Zone 2 customers were within the City boundaries and receiving treated water from the Modesto Irrigation District (MID).
- Zone 3 customers were outside the City boundaries and were not receiving treated water from the MID, only ground water. Zone 3 includes parts of Ceres and Turlock, and the communities of Salida, Del Rio, Waterford, Hickman, and Grayson.

Prior to 1995, Del Este had established a PUC-approved rate structure with metered rates that had different fixed and variable charges as well as different unmetered (flat-rate) charges in Zones 2 and 3. When the City adopted the current three-zone structure, it also acknowledged that the three zones would need to be converted to a single, unified rate structure at a future date.

The City's current water rates and rate structure are shown in Table 2-1.

Table 2-1
Current Water Rates & Charges
City of Modesto

Customer Classes	Zone 1	Zone 2	Zone 3
Flat Rate Residential - Mo. Service Charges			
0-3,500 sq. ft. lot	\$17.86	--	--
0-6,000 sq. ft. lot	--	\$24.61	\$15.63
3,501-7,000 sq. ft. lot	\$20.60	--	--
6,001-10,000 sq. ft. lot	--	\$28.58	\$18.20
7,001-10,500 sq. ft. lot	\$23.08	--	--
10,501-14,000 sq. ft. lot	\$25.56	--	--
10,001-16,000 sq. ft. lot	--	\$34.30	\$21.80
14,001-17,500 sq. ft. lot	\$30.78	--	--
16,001-25,000 sq. ft. lot	--	\$41.11	\$26.08
17,501-21,000 sq. ft. lot <i>(b)</i>	\$36.09	--	--
Over 25,000 sq. ft. lot	--	\$50.73	\$32.21
Metered Charges (Residential & Commercial)			
Uniform Vol. Charge (\$/hcf) <i>(a)</i>	\$0.82	\$1.005	\$0.601
Fixed Meter Charges			
5/8"-3/4"	\$13.63	\$8.12	\$11.12
1"	\$18.14	\$10.17	\$13.94
1-1/2"	\$22.54	\$15.53	\$21.09
2"	\$27.20	\$21.09	\$28.54
3"	\$36.27	\$33.73	\$45.61
4"	\$47.16	\$51.58	\$69.22
6"	\$70.90	\$83.08	\$111.29
8"	\$90.55	\$119.27	\$159.36
10"	\$109.16	\$180.55	\$241.79
12"	\$127.83	\$219.36	\$293.88

Source of Data: City records.

a. Current Zone 1 metered charges include a minimum consumption of 1,680 cubic feet per month. Zone 2 and 3 meter charges reflect the first 100 hcf of consumption.

b. Lots over 21,000 sq.ft. pay an additional \$4.85 per 3,500 sq.ft.

3. Customer Classes and Water Use Characteristics

Description of Customer Classes

The City’s water utility customers consist of a number of customer classes, but can generally be described as either metered or flat rate customers. Table 3-1 shows the current and projected number of metered and flat rate water customers.

Table 3-1
Projected Number of Water Utility Accounts

City of Modesto

Customer Classes	Existing Accounts		Projected Number of Accounts				
	2003	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
	Yr. End (a)	Adj. to FY (b)	Year 1	Year 2	Year 3	Year 4	Year 5
Flat Rate Customers							
Single-Family Flat Rate (c)	50,812	50,812	50,812	50,812	50,812	50,812	47,245
Single-Family Mtrd-Flat Rate (c)	11,352	11,352	11,352	7,622	3,892	162	0
Subtotal - Flat Rate	62,164	62,164	62,164	58,434	54,704	50,974	47,245
Flat Rate % of Total	84%	83%	82%	76%	70%	64%	58%
Metered Customers							
Single-Family Metered (d)	2,295	2,829	3,869	4,926	5,999	7,090	8,198
Single-Family Meter Retrofits (e)							
2005-06 Retrofits	-	-	-	3,730	3,730	3,730	3,730
2006-07 Retrofits	-	-	-	-	3,730	3,730	3,730
2007-08 Retrofits	-	-	-	-	-	3,730	3,730
2008-09 Retrofits	-	-	-	-	-	-	3,730
Multi-Family (2-4 Units)	3,936	3,967	4,030	4,094	4,160	4,227	4,295
Multi-Family (5+ Units)	588	593	602	612	622	632	642
Commercial	3,948	3,980	4,044	4,109	4,175	4,242	4,310
Landscape Meters	640	645	655	665	676	687	698
Churches	224	226	230	234	238	242	246
Schools	96	97	99	101	103	105	107
Industrial	81	81	81	81	81	81	81
Subtotal - Metered	11,808	12,418	13,610	18,552	23,514	28,496	33,497
Commercial - No Sewer	341	344	350	356	362	368	374
Metered % of Total	16%	17%	18%	24%	30%	36%	42%
Total	74,313	74,926	76,124	77,342	78,580	79,838	81,116
Assumed Growth Rate (f)		0.8%	1.6%	1.6%	1.6%	1.6%	1.6%

a. From Table 3-2.

b. Projected 2003-04 includes an 0.8% growth rate (i.e., 6 months of a 1.6%/year growth rate). All SFR growth is metered.

c. After 2003, all new residential is metered. Also, based on the City’s metering plan, existing single-family flat rate customers are converted to meters only after all metered-flat rate customers are converted to metered use.

d. All new single-family residential is assumed to be metered accounts.

e. These are retrofitted SFR flat-rate customers converted to meters at 6%/yr per the City’s metering plan, beginning in 2005-06.

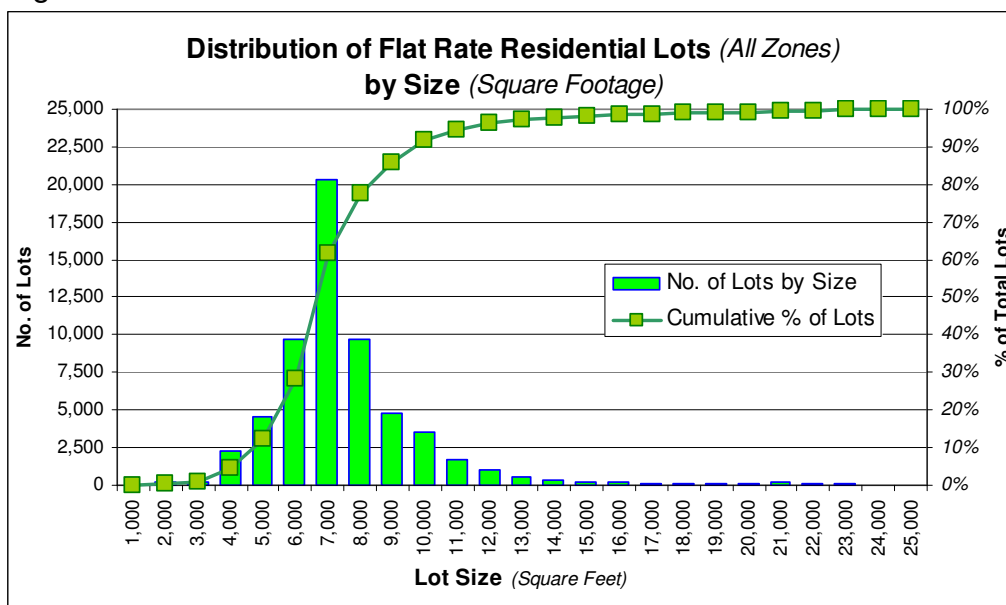
f. Growth rate is reflect in residential metered customer only (i.e., all new residential units are assumed to be metered). Source of projected growth rate: Modesto Planning Department, Memo to Craig Scott, August 19, 2004.

Table 3-1 also shows that in 2004-05 there are approximately 75,000 customers of which 83% are flat rate residential customers and 17% are metered customers. This table also shows the projected number of customers reaching approximately 81,000 by year 2008-09. However, due to the City’s metering plan assumptions for converting flat-rate residential customers to metered usage and its requirement that all new homes be metered, the percentage of metered residential customers is projected to increase significantly while the percentage of flat-rate residential customers declines.

In addition to an accurate estimate of the number of customers in each class, knowing the distribution of residential flat rate lot sizes is also important for rate-making purposes. To create equitable flat rate charges, it is important to quantify the number of lots by size and their corresponding water consumption, as well as understand whether metered and unmetered (i.e., flat rate) residential customers have similar lot sizes.

Figure 3-1 shows the number of flat rate residential customers within a given range of lot sizes. For example, the tallest vertical bar in Figure 3-1 shows that the largest number of flat rate residential customers have lot sizes between 6,000 and 7,000 square feet.

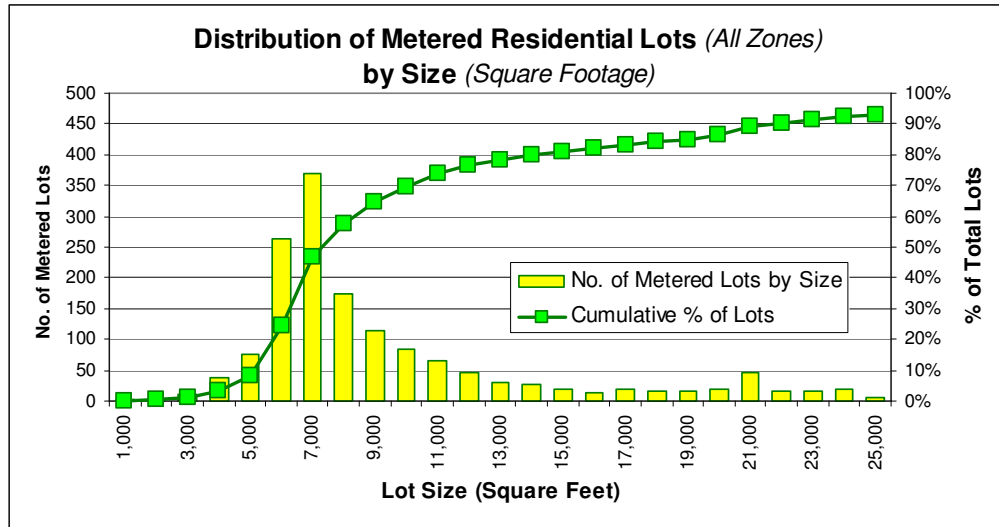
Figure 3-1



The curved line in Figure 3-1 represents the cumulative number of customers that are within or below the given range of lot sizes. For example, using the right-hand scale in this figure, the 90% line indicates that 90% of residential flat rate customer lots are smaller than 10,000 square feet. The largest single lot size is 6,000 to 7,000 square feet, and the distribution of lot sizes is a bell-shaped curve around this category. Although the single largest lot is over 48 acres, there are so few lots above the 25,000 square foot size that they are negligible from a rate-making and revenue generation perspective.

Figure 3-2 presents the same data on lot size distribution for metered customers, and indicates similar results, with the most lots in the 6,000 to 7,000 square foot range, but with a greater number of lots over 10,000 square feet. The reasons for this appear to be (1) this data is from a much smaller number of customers (1,600 metered vs. 61,000 flat rate) and therefore would be expected to have a less smooth distribution, and (2) the metered data is more representative of Zone 2 and 3 lots, which are on average about 25% larger than Zone 1 lots.

Figure 3-2



A comparison of Figures 3-1 and 3-2 shows that, with the exception of lots over 15,000 square feet, the distribution of lot sizes for flat rate customers and metered customers is similar. Therefore, it is reasonable to develop new flat rate customer classes that are at least partly based on data for metered residential customers. As a result, the new rate structure should be designed so that monthly service charges are not significantly different when a flat-rate customer is converted to a metered service.

As mentioned previously, the proposed new residential flat rates use lot sizes that are different than the City's current rates. There are a significant number of lots in these new lot sizes, which illustrates their importance: lots in the 5,000 to 11,000 square foot range account for more than 80% of the flat-rate residential customers. Lots less than 11,000 square feet make up over 93% of all flat-rate lots.

Water Use Characteristics

Water Consumption by Customer Class – Table 3-2 summarizes the estimated current water use by customer class based on current billing information, consumption data, and a recent technical analysis of the City’s water system demand characteristics by West Yost and Associates.

Table 3-2
Actual 2003 Water Consumption and Number of Accounts
City of Modesto

Customer Classes (a)	No. of Accts. (b)	Use/Acct. gpd/acct. (c)	Actual 2003 Consumption			
			mgd	Ac. Ft./yr	hcf/yr.	% of Total
Single-Family Flat Rate	d 50,812	610	31.0	34,722	15,124,722	49.5%
Single-Family Mtrd-Flat Rate (e)	d 11,352	610	6.9	7,757	3,379,041	11.1%
Single-Family Metered (f)	2,295	519	1.2	1,334	581,221	1.9%
Multi-Family (2-4 Units)	3,936	828	3.3	3,651	1,590,243	5.2%
Multi-Family (5+ Units)	g 588	5,907	3.5	3,892	1,695,213	5.5%
Commercial	g 3,948	2,357	9.3	10,424	4,540,754	14.9%
Landscape Meters	g 640	276	0.2	198	86,147	0.3%
Commercial - No Sewer	g 341	2,357	0.8	900	392,198	1.3%
Churches	g 224	1,933	0.4	485	211,286	0.7%
Schools	g 96	1,281	0.1	138	59,987	0.2%
Industrial	g 81	73,554	6.0	6,674	2,907,251	9.5%
Total	74,313		62.6	70,175	30,568,063	100.0%

gpd = gallon per day, mgd = million gallons per day, Ac.Ft. = acre feet, hcf = hundred cubic feet of water consumption

a. Unless noted as flat rate, all accounts are assumed to be metered.

b. From City Billing records, Mark Roberts, 6-15-04. This represents the 2003 year-end number of accounts.

c. From West Yost & Assoc., Water System Hydraulic Model Update, Final Water Demand Evaluation, Tech Memo dated March 19, 2003, Table 9.

d. Hcf/yr consumption is from Table 8, Water System Hydraulic Model Update, Final Water Demand Evaluation, West Yost & Assoc., March 19, 2003. 610 gpd is from Table 9, Water System Hydraulic Model Update, Final Water Demand Evaluation, West Yost & Assoc., March 19, 2003.

e. These accounts are considered flat rate for historical water consumption purposes, but are converted to metered in future years.

f. 1996 data indicates SFR metered use is about 25% lower SFR flat rate (i.e., 25.76 hcf/mo compared to metered SFR use of 20.3 hcf/mo). Current conservation measures are estimated to have already reduced 2003 SFR rate consumption (thereby reducing the potential additional water savings from conversion to meters) and SFR metered consumption is estimated to be about 15% below the SFR flat rate of 610 gpd, which equals 519 gpd.

g. Gpd/acct is calculated from 2003 water use and number of accounts from City billing records.

The results from Table 3-2 form the basis for (1) projecting future water consumption by customer class, and (2) allocating commodity and demand costs.

Table 3-3 summarizes the projected annual water consumption by customer class using the data in Table 3-2 and a number of other assumptions, including an annual growth rate of 1.6%, impacts due to the price elasticity of demand shown at the bottom of Table 3-3, and conversion of 6% per year of existing residential customers from flat rate to metered usage, beginning in 2005-06.

Table 3-3
Projected Annual Water Consumption by Customer Class
 City of Modesto

Customer Classes	2003	2003-04	Projected Consumption (hcf/year)				
	<i>Yr. End (a)</i>	<i>Adj. to FY (b)</i>	2004-05	2005-06	2006-07	2007-08	2008-09
			<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>
Flat Rate Customers							
Single-Family Flat Rate (c)	15,124,722	15,124,722	15,124,722	15,124,722	15,124,722	15,124,722	14,062,860
Single-Family Mtrd-Flat Rate (c)	3,379,041	3,379,041	3,379,041	2,268,815	1,158,589	48,364	0
Subtotal - Flat Rate	18,503,763	18,503,763	18,503,763	17,393,537	16,283,311	15,173,086	14,062,860
Metered Customers							
Single-Family Metered (d)	581,221	716,459	979,844	1,210,109	1,440,541	1,689,754	1,939,169
Single-Family Meter Retrofits (e)							
2005-06 Retrofits	-	-	-	1,076,965	1,052,733	1,044,838	1,037,002
2006-07 Retrofits	-	-	-	-	1,085,292	1,077,152	1,069,073
2007-08 Retrofits	-	-	-	-	-	1,101,946	1,093,681
2008-09 Retrofits	-	-	-	-	-	-	1,101,946
Multi-Family (2-4 Units)	1,590,243	1,602,170	1,627,614	1,636,927	1,650,841	1,673,235	1,695,902
Multi-Family (5+ Units)	1,695,213	1,707,927	1,733,848	1,745,023	1,760,235	1,784,063	1,807,761
Commercial	4,540,754	4,574,810	4,648,375	4,723,089	4,798,953	4,875,966	4,954,129
Landscape Meters	86,147	86,793	88,139	89,485	90,965	92,445	93,925
Commercial - No Sewer	392,198	395,139	402,031	408,923	415,815	422,707	429,599
Churches	211,286	212,871	216,639	220,407	224,175	227,943	231,711
Schools	59,987	60,437	61,683	62,929	64,175	65,421	66,667
Industrial	2,907,251	2,929,056	2,929,056	2,929,056	2,929,056	2,929,056	2,929,056
Subtotal - Metered	12,064,300	12,285,662	12,687,229	14,102,913	15,512,781	16,984,526	18,449,621
Total	30,568,063	30,789,425	31,190,992	31,496,450	31,796,092	32,157,612	32,512,481
<i>Assumed Growth Rate (f)</i>		0.8%	1.6%	1.6%	1.6%	1.6%	1.6%
<i>SFR Price Elasticity (g)</i>	--	--	--	-0.0015	-0.0015	-0.0015	-0.0015
<i>MFR Price Elasticity (g)</i>	--	--	--	-0.0005	-0.0005	-0.0005	-0.0005
<i>Water Rate Increases (%) (h)</i>	--	--	--	20.0%	15.0%	5.0%	5.0%
<i>SFR Net Price Elasticity Impact (i)</i>	--	--	--	-3.00%	-2.25%	-0.75%	-0.75%
<i>MFR Net Price Elasticity Impact (i)</i>	--	--	--	-1.00%	-0.75%	-0.25%	-0.25%

- a. From Table 3-2.
- b. Projected using a 0.8% growth rate (i.e., 6 months of a 1.6%/year growth rate).
- c. After 2003, all residential growth is metered. Also, based on the City's metering plan, existing single-family flat rate customers are converted to meters only after all metered-flat rate customers are converted to metered use.
- d. Includes consumption from all existing metered plus all SFR growth, which is assumed to occur as metered accounts.
- e. Retrofitted flat rate customers per the City's metering plan to convert 6%/year of existing SFR flat-rate to meters beginning in 2005-06. Water consumption assumes retrofitted customers consume at the 2003-04 flat-rate level except for the price elasticity impact in the current year.
- f. Assumed growth rate is same as shown in Table 3-1.
- g. Estimated impacts on residential consumption, shown as the decrease for every 1% increase in water rates, beginning in 2005-06.
- h. From Table 7-1.
- i. Price Elasticity times the Water Rate Increase.

Price Elasticity of Demand Adjustments – Metered residential water customers tend to reduce their consumption when the price of water increases while commercial and industrial customers typically reduce their consumption to a lesser degree. This price response is known as the price elasticity of demand.

Based on information from the California Urban Water Conservation Council (CUWCC) and demand projections prepared by the City's engineering consultant, West Yost & Associates, we have chosen to use a modest price elasticity that is more representative of a year-round and relatively inelastic response, and have not incorporated this impact until the first full year of rate increases, which is 2005-06. These price elasticities are shown at the bottom of Table 3-3, and are described in more depth in Appendix C.

Average Residential Consumption – Figure 3-3 on the next page shows the total amount of monthly water consumption of metered residential customers distributed by lot size and the cumulative percent of total consumption by lot size. For example, all customers with lot sizes from 6,000 and up to 7,000 square feet consume, on average, over 9,000 hundred cubic feet (hcf) of water each month, and that all customers with lot

sizes up to 7,000 square feet consume approximately 50% of all water consumed by metered residential customers.

Figure 3-3 shows the vast majority of total water consumed by metered residential customers comes from the lots in the 5,000 to 8,000 foot range. About 80% of the consumption occurs in lots less than 10,000 square feet, indicating that most of the revenue is generated by customers with lots of 10,000 square feet or less.

Figure 3-3

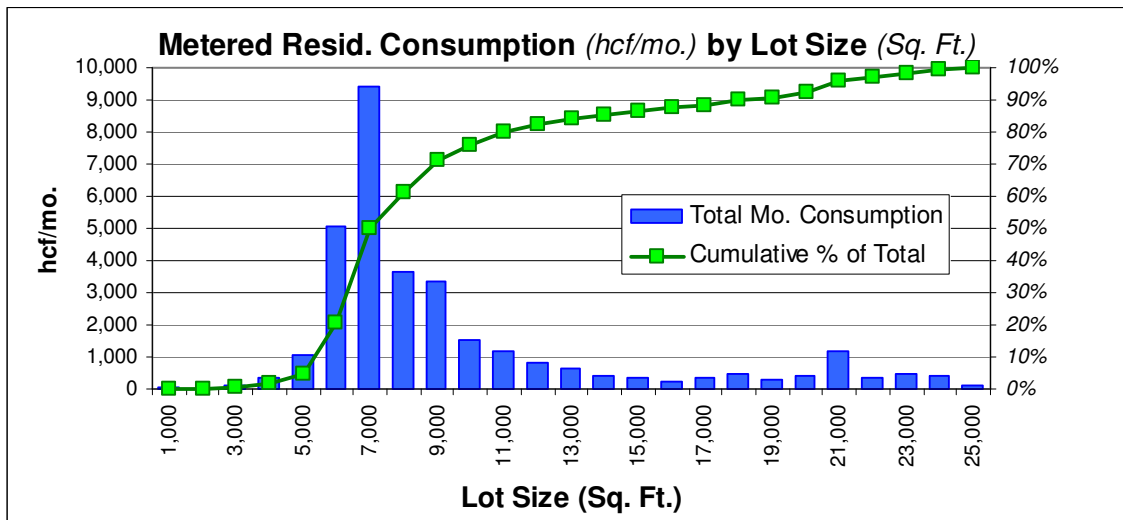


Figure 3-4 shows the average monthly water consumption *per customer* in each of the lot size categories. As seen in this figure, the total monthly metered consumption is surprisingly similar among all the lot size groupings in the 6,000 to 25,000 square foot range. For most of these customer groupings, average monthly water consumption per customer ranges between approximately 20 and 25 hcf per month.

Figure 3-4

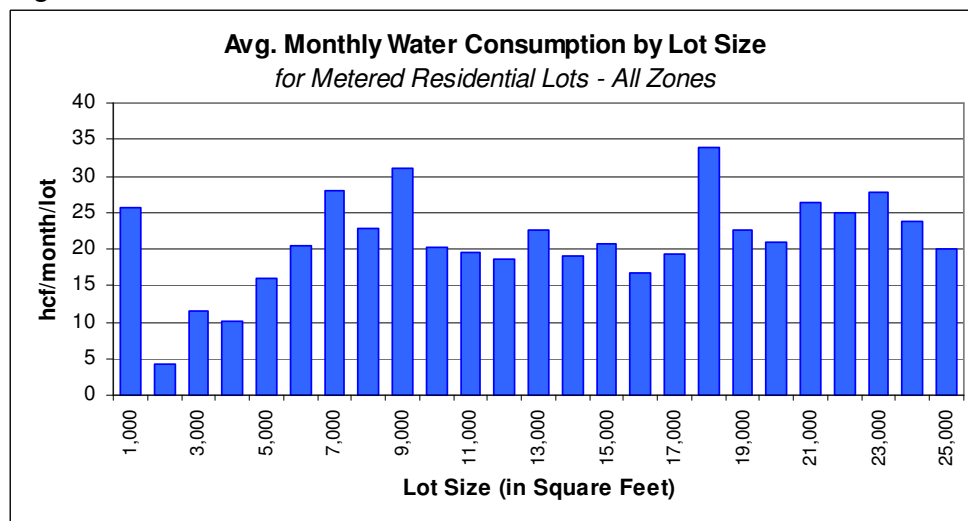
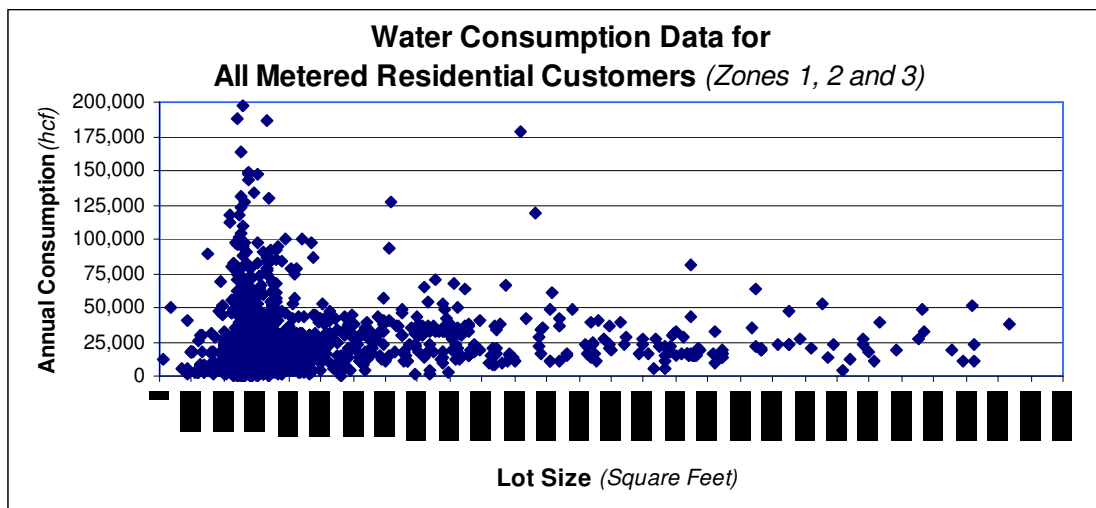


Figure 3-4 also shows that if the 1,000 square foot data is ignored, consumption below 5,000-6,000 square foot range is significantly lower than that in the larger lots. The 1,000 square foot data is questionable because: (1) it is unclear what type of usage is associated with lots under 1,000 square feet, (2) there is a relatively small number of these lots, and at least some may be mis-coded accounts.

While Figure 3-4 shows the *average* water consumption by lot size, Figure 3-5 shows the distribution of water use around the averages. The areas that appear to be “blacked-out” (primarily the 5,000-12,000 square foot range and up to about 25,000 hcf/year) have far more markers than can be seen, and water consumption appears to be more heavily concentrated in the 5,000 to 10,000 square foot lots. Also, consumption in this range varies from very small to very large, with the highest consumption occurring in these smaller lots rather than in the lots above 25,000 square feet. Figure 3-5 shows that customers with lot sizes above 25,000 square feet don’t appear to use significantly greater quantities of water than customers with medium lot sizes.

Figure 3-5



The data in Figures 3-3, 3-4 and 3-5 indicate that the water consumption of larger metered lots is not significantly different than smaller metered lots. If this were true for flat-rate lots, there would be no real advantage to metering these larger flat-rate lots first. However, metered customers pay proportionally for their higher levels of water consumption and therefore have an incentive to not over irrigate or otherwise waste water. In contrast, flat-rate customers pay a fixed charge regardless of their level of consumption and therefore have no incentive to minimize their consumption. Consumption data in Table 3-3 indicates that single-family flat-rate customers consume about 17% more on average than metered single-family customers.

Proposed Simpler and Logical Groupings for Flat Rate Residential Customers -

The data presented in Figures 3-3, 3-4 and 3-5 were the basis for developing a recommendation about ranges of lot sizes for new residential flat rates. We recommend choosing lot sizes that (1) are logical in light of the typical water use and distribution of metered lot sizes, (2) are simple rather than complex, and (3) are reasonably easy to administer from a billing and accounting perspective.

Based on these factors, along with an initial evaluation of the percentage increases various customers in the current rate structure would experience, we recommend the using the lot size groupings shown in Table 3-4 and Figure 3-6.

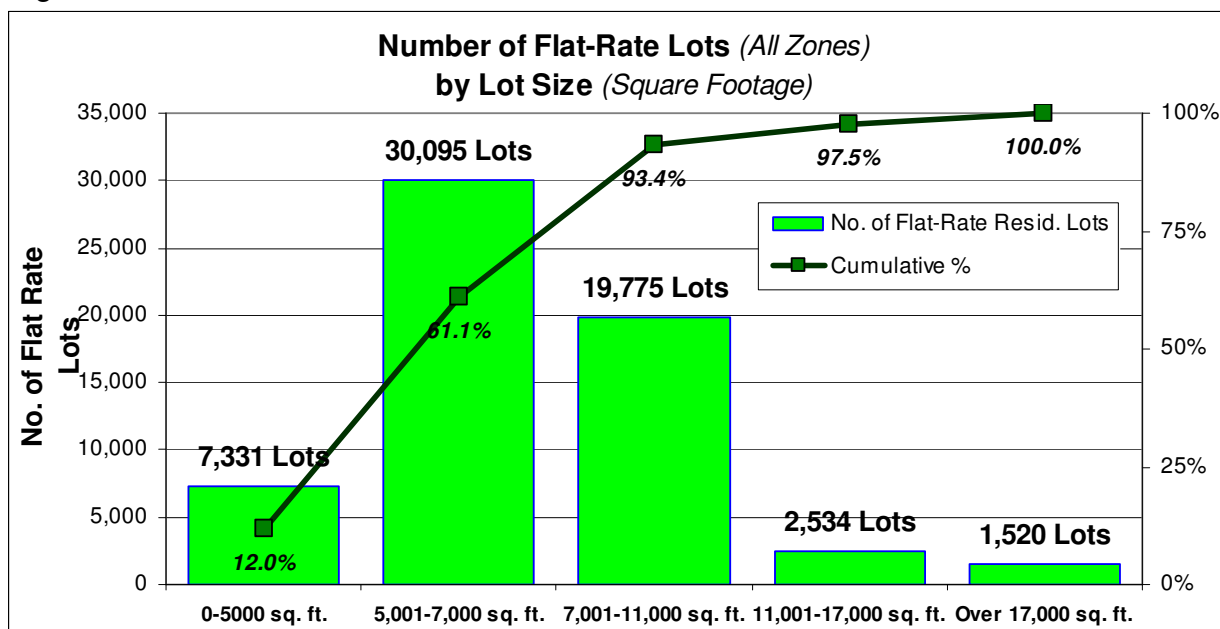
Table 3-4

Flat Rate Lot Sizes (Sq.Ft.)	No. of Flat Rate Lots (2004) (a)		Avg. hcf/mo. per Lot (b)
	Number	% of Total	
0-5,000	7,331	12%	16.7
5,001-7,000	30,095	49%	19.4
7,001-11,000	19,775	32%	23.5
11,001-17,000	2,534	4%	25.1
> 17,000	1,520	2%	30.0
Total	61,255	100%	23.9

a. Source of Data: City Billing records, Mark Roberts, 6-15-04.

b. Average water consumption in 2003 for metered residential customers.

Figure 3-6



As seen in this table and figure, lots in the 5,000 to 7,000 and 7,001 to 11,000 square foot ranges account for almost 50,000 accounts, which are more than 80% of all flat-rate residential customers. This illustrates the importance of these two ranges from a rate-making and revenue-generation perspective.

4. Projected Revenue Requirements

The process of setting water rates is often focused on meeting the utility's annual revenue requirements. However, in the City's case, the rate study objectives are broader than this; in addition to meeting the annual revenue requirements, water rates also need to fund the costs of significant capital improvements allocated to existing customers.

As seen later in the proposed financial plan (Section 7), the proposed rate adjustments are used to fund new capital projects in two ways: (1) by paying the annual debt service on new debt for capital improvements, and (2) by building the City's reserve funds, which are then used to pay for additional capital projects on a pay-as-you-go basis. These new capital facilities include:

- The new MID Regional Water Treatment Plant, which has been the subject of extensive study and engineering analysis by the City's capital projects group (\$37.6 million – funded with new debt)
- Tier 1 Downstream Improvements (\$34 million – new debt)
- Tier 2 Downstream Improvements (\$26.7 million – of which \$15 million is debt-funded and \$11.7 million is cash-funded from reserves)
- Cash-funded Capital Improvements (\$43.15 million – cash-funded from reserves)

In order to construct the MID Plant and downstream improvements, it is critical for the City be able to support the issuance of the additional \$86.6 million of debt funding shown here. This requires rate adjustments that are sufficient enough to improve the City's financial outlook and enable the City to demonstrate that it can meet its current and future bond coverage requirements. The additional debt would then be repaid over a 20-year period through water rates (the estimated time to reach buildout).

It is also important to note that funding for these future capital improvements has been allocated between existing customers and future growth based on an engineering study prepared by West Yost & Associates. This study looked at a total of \$152.8 in capital improvement projects and found that 74.2% of those costs should be born by existing customers and 25.8% by growth. Although actual funding is discussed in more detail in the financial plan (Section 7), rate revenue from existing customers may be used to initially cover growth's capital expenditures if connection fee revenue is not received in a timely manner. However, the City is currently evaluating water system connection fees and expects the new, higher water connection fees to ultimately cover the costs allocated to growth.

Table 4-1 summarizes the projected operating expenditures. The new debt-service payments include:

- \$4.1 million fund the new MID treatment plant
- \$3.6 million beginning in 2007-08 are for the Tier 1 downstream improvements

- \$1.6 million beginning in 2008-09 are for the \$15 million of Tier 2 downstream improvements that are debt-funded

The net revenue requirements shown in Table 4-1 do not directly show how much is spent on “cash-funded” CIP projects, but they illustrate the need to collect additional revenue from ratepayers when compared to the current annual rate revenue of approximately \$28 million per year.

Table 4-1
Projected Water Utility Budgets (From 10-Year Proforma)
 City of Modesto

Agency/Org.	Description	Estimate	Adopted	Projected			
		7/14/04	2004-05	2005-06	2006-07	2007-08	2008-09
		2003-04	Year 1	Year 2	Year 3	Year 4	Year 5
Operating Expenses							
440/5015	Capital Planning	\$766,000	\$998,000	\$1,018,000	\$1,039,000	\$1,059,000	\$1,081,000
440/509x	Billing & Collection	\$1,243,000	\$1,393,000	\$1,422,000	\$1,450,000	\$1,479,000	\$1,508,000
480/5009	Water Admin.	\$594,000	\$866,000	\$883,000	\$901,000	\$919,000	\$937,000
480/50xx	Construction/Repairs	\$7,489,000	\$7,882,000	\$8,040,000	\$7,918,000	\$8,034,000	\$8,153,000
480/50xx	Meter & Service Install.	\$1,366,000	\$1,582,000	\$1,614,000	\$1,647,000	\$1,679,000	\$1,713,000
480/5017	Water Conservation	\$361,000	\$372,000	\$379,000	\$387,000	\$395,000	\$403,000
480/50xx	Well Site Improvement	\$4,526,000	\$5,856,000	\$5,912,000	\$6,335,000	\$6,461,000	\$6,590,000
480/50xx	Water Quality/Lab	\$411,000	\$780,000	\$796,000	\$812,000	\$828,000	\$845,000
	Remainder of Operating Expen.	-\$778,000	-\$2,596,000	\$431,000	\$504,000	\$532,000	\$585,000
	Subtotal - Operating Expenses	\$15,978,000	\$17,133,000	\$20,495,000	\$20,993,000	\$21,386,000	\$21,815,000
480/5013	Treatment (MID T&DA O&M) (a)	\$4,052,000	\$4,853,000	\$4,998,000	\$5,148,000	\$6,795,000	\$8,536,000
N.A.	New Meter Reading & Billing (b)	\$0	\$338,000	\$516,000	\$531,480	\$547,424	\$563,847
N.A.	New Meter & Service O&M (c)	\$0	\$0	\$721,000	\$466,796	\$480,800	\$495,224
	Total Operating Expenditures	\$20,030,000	\$22,324,000	\$26,730,000	\$27,139,276	\$29,209,224	\$31,410,071
Debt Service Payments							
1997 COPs/CDWR Loan		\$2,045,000	\$2,044,944	\$2,049,564	\$2,055,314	\$2,058,776	\$2,056,586
MID T&DA Debt Service		\$6,724,000	\$7,124,000	\$7,124,000	\$7,124,000	\$7,124,000	\$7,124,000
New MID Treatment Plant (\$37.6 mil.) (d, e)		\$0	\$0	\$0	\$0	\$4,110,000	\$4,110,000
Tier 1 Downstream Imprvmnts (\$34 mil.) (d)		\$0	\$0	\$0	\$0	\$3,618,000	\$3,618,000
Tier 2 Downstream Imprvmnts (\$15 mil.) (d)		\$0	\$0	\$0	\$0	\$0	\$1,619,000
	Subtotal - Debt Service	\$8,769,000	\$9,168,944	\$9,173,564	\$9,179,314	\$16,910,776	\$18,527,586
Capital & Other Uses		\$1,869,000	\$2,001,000	\$2,010,000	\$2,012,000	\$1,907,000	\$1,869,000
	Total Revenue Requirements	\$30,668,000	\$33,493,944	\$37,913,564	\$38,330,590	\$48,027,000	\$51,806,657

Unless otherwise noted, source of data is the City Water Utility Budgets and Finance Dept.'s 10-Year Proforma (7-26-04).

a. Assumes the MID Treatment Plant will be completed in the 1st quarter of 2008. therefore, additional O&M costs in '07-08 are for 6 months of operations.

b. Estimate of personnel and O&M costs for new meter reading and billing operations, provided by Cheryl Detmar.

c. Includes \$260,000 in one-time costs and \$440,000 in ongoing costs for meter installation and maintenance, from Judith Ray, 7-26-04.

d. Financing assumption: 6% interest rate, 20-year repayment period, and 12 months of capitalized interest. Source: Peter Miller, Public Financial Mngmt, 9/1/04.

e. Assumes the MID Treatment Plant will be completed in the 1st quarter of 2008, that interest is capitalized, and debt service payments start in 2007-08.

5. Rate Methodology

This section outlines the principles, methodology and key assumptions used to design the proposed new rates, and then summarizes the actual cost-of-service calculations.

Cost-of-Service Principles

This rate study uses a cost-of-service approach that is consistent with generally accepted water rate cost-of-service principles. Following are excerpts of some of the key principles set forth by the American Water Works Association (AWWA). See Appendix A for more details on these cost-of-service principles.

- **Selecting Rate Structures** –The design, of a rate structure is a function of many diverse and sometimes competing objectives. No one rate structure meets all utility objectives equally, and not all objectives are valued the same by the utility or its customers. Some of the more common rate objectives include:
 - Generating sufficient revenue in a stable and predictable manner
 - Promoting fairness and equity
 - Minimizing unexpected changes to customer bills
 - Discouraging wasteful use of water
- **Fixed Versus Variable Charges** – The following are some common types of fixed and variable charges utilities use in their rate designs:
 - Service charges typically recover costs such as meter reading, billing costs, and other costs that the utility incurs on a per customer or per customer class basis.
 - Fixed meter charges increase with meter size and typically recover the same types of costs as service charges, plus other customer-related costs, that change as a function of meter size.
 - Uniform-volume charges are a constant unit price for all metered use of water. However, a uniform rate does not recognize potential cost-of-service differentials among customer classes. *(Note: Although a strict uniform-volume rate structure does not recognize potential cost-of-service differentials between customer classes, these potential differentials are addressed when uniform-volume charges are combined with fixed meter charges, which recognize these differentials because they are based on meter sizes. This is the approach we have used in the City's rate methodology.)*

Methodology and Key Assumptions

Methodology –To implement the City's rate objectives, this rate study uses a cost-of-service approach which (1) determines net revenue requirements to be recovered through system-wide water rates, (2) allocates these revenue requirements first to

functional-cost categories and then to metered and flat-rate customer classes, and (3) divides these costs by the appropriate units to determine monthly service charges.

Under the new rate structure, metered and flat-rate customers are allocated equivalent costs based on their estimated water use and fixed costs, and pay equivalent monthly service charges. In addition, we would like to point out that one of the most important underlying principles of this new rate structure is that all customers, regardless of geographic location within the service area, are provided a minimum level of service that is intended to treat all customers equitably to the greatest extent practical.

Some of the other distinctive aspects of this cost-of-service methodology include:

- **Re-Allocation of Costs** – One of the characteristics of a cost-of-service analysis such as this is that it examines how costs are allocated *between* and *within* customer classes. Because of this, some customer classes will end up with rate increases higher or lower than the overall rate increase.
- **Cost-of-Service Rate Increases** – This analysis develops initial cost-of-service rates for 2004-05 that includes a 35% rate increase for the largest single customer class (which is current Zone 1 flat-rate residential customers with 5,000 to 7,000 square foot lot sizes). This increase was directly applied to this class, while other customer classes had rate increases that were either higher or lower due to the cost-of-service adjustments.
- **Percentage Rate Increases After 2004-05** – While cost-of-service rate adjustments were made by customer class in 2004-05, after 2004-05 rates increases are based on *across-the-board* percentage increases without re-examining the cost-of-service again. The rate revenue these rate adjustments produce is reflected in the financial plan, which also looks at annual surpluses, deficits, and reserves.

Key Assumptions and Limitations – In addition to this general rate methodology and the City's overall rate-making objectives, we have relied on certain key assumptions in selecting and developing the new rate structure and service charges:

- **One Service Area** – The current three-zone rate structure will be converted into a single service area with a uniform rate structure.
- **Rate Increase Limit** – The recommended 35% rate increase is a reasonable target for the average sized single-family residential lot. This mid-year increase will help meet the minimum revenue requirements for Year 1 and is consistent with the policy direction from the Finance Committee and Water Task Force to limit rate increases in the first year to a maximum of 35% for the largest group of Zone 1 residential customers (5,000-7,000 square foot lots).
- **New Residential Flat Rate Classes** – Beginning in January 2005, all un-metered residential customers will use a common set of flat rates with rates corresponding to lot sizes based on the number and distribution of residential lot sizes.
- **Uniform Volume-Based Charge** – All metered customers will use a uniform volume-based charge (i.e., the same charge applies to all metered consumption, regardless of customer class) along with a fixed monthly service charge that varies by meter size.

- **No Minimum Meter Charges** – Minimum water consumption in metered charges will be eliminated (i.e., metered customers will pay a volume-based charge beginning with the first unit of water).
- **Rate Objectives** – Rate-structure objectives include revenue stability and will emphasize equity among customer classes.
- **Metering Policy** – The City Council has directed staff to implement a metering policy that requires the metering of (1) all schools and churches prior to the implementation of new rates in January 2005 and (2) current flat-rate residential customers at an intended rate of six percent per year beginning in fiscal year 2005-06, with meter-ready homes followed by those the City determines can most easily be metered.
- **Future Growth** – To be consistent with engineering analyses by West Yost & Associates, we assume new growth will average 1.6% per year for all customer classes except industrial, which will be assumed to be static (i.e., no change in number of customers or water consumption).
- **Price Elasticity Impacts** – Because of current conservation practices already in place and the difficulty of estimating initial impacts of rate increases implemented during the winter months of 2005, price elasticity of demand impacts will not be included in the first year of the new adopted rates, but will be included starting in the first full year (fiscal year 2005-06).
- **No Fire Service Charges** – All fire service charges will be eliminated.
- **Funding Assumptions** – Future revenue bonds and certificates of participation (COP's) will be issued at interest rates similar to those currently available (approximately 6%) with a repayment period of 20 years.
- **Funding of Future Capital Improvements** – Costs of future capital projects have been allocated to existing vs. future customers based on City engineering studies. However, if revenues from new connection fees (which the City is currently evaluating) are not received in a timely manner, reserves may be used to initially fund some of the growth-related costs. We are assuming growth-related costs will ultimately be fully born by future customers.
- **Changes in Water Quality Regulations** – There will be no significant increases in regulatory water quality standards that would result in loss of more wells than the City is currently expecting based on West-Yost's engineering assumptions.
- **Target Reserve Fund Levels** – To provide for contingencies, (e.g., slower than projected growth, higher interest rates, etc.) rates will be designed to build and maintain reserve levels that are consistent with industry standards for municipal water utilities.

Limitations of Assumptions – Foresight Consulting has relied on guidance from the Water Task Force, City staff, and the City's engineering consultants regarding how to incorporate these assumptions into this rate study. However, events and circumstances often do not occur as planned and actual results of operations often differ from those that were projected. Those differences may be material. Foresight Consulting is not responsible for events and circumstances outside its control.

Summary of Special City Rate Policies and Considerations

When the City purchased the Del Este Water Company in 1995, it agreed in principle to serve these new outlying areas regardless of whether the cost of doing so may be higher or lower than the average customer within the pre-1995 service area. One of the City's primary concerns with the current three-zone rate structure that resulted from this purchase is that groundwater contamination problems could be very costly if they occurred in these outlying areas and the costs were only spread over a smaller service area such as Grayson, Del Rio, and Hickman. For example, City engineering consultants estimate that providing wellhead treatment to existing wells is approximately twice as expensive as water from the new MID water treatment plant.

The proposed new rate structure combines the outlying areas into a single-zone service area. In doing so, there is no longer a distinction between customers based on whether they are inside or outside of City boundaries and the cost burden of the water system is now spread over the entire new service area.

While this changes the historical relationships and the previously held assumptions about how water rates have been calculated in the past, it is consistent with well-accepted rate practices of how similar customers within a common service area should be treated. For example single-family residential customers are treated as a single customer class, regardless of differences in the service costs of smaller communities within the service area. Therefore, even though some parts of the service area will not receive water from the proposed new facilities, such as the MID surface treatment plant, these costs are still shared equally as a part of the entire water production, transmission and distribution system. Likewise, many of the outlying areas may have future maintenance and filtering costs that are higher than the areas within City boundaries due to their lack of system redundancy and distance from the central service area.

In light of these issues, the City is making certain commitments to all water utility customers, including:

- Providing sufficient quantities of clean water and adequate water pressures under all reasonable circumstances
- Providing an adequate future supply of water
- Providing good maintenance at a reasonable price
- Meeting the challenges of an unpredictable regulatory environment

The City's water utility customers will, in essence, be paying for these commitments, in addition to the fixed assets and variable costs involved in providing water. These specific obligations included in the City's proposed new rate structure means that all areas benefit from the same guarantees of clean and sufficient quality of water, regardless of the varying treatment and maintenance costs and how these might vary with respect to individual ratepayers in any specific area. Appendix B provides a more detailed discussion of these issues.

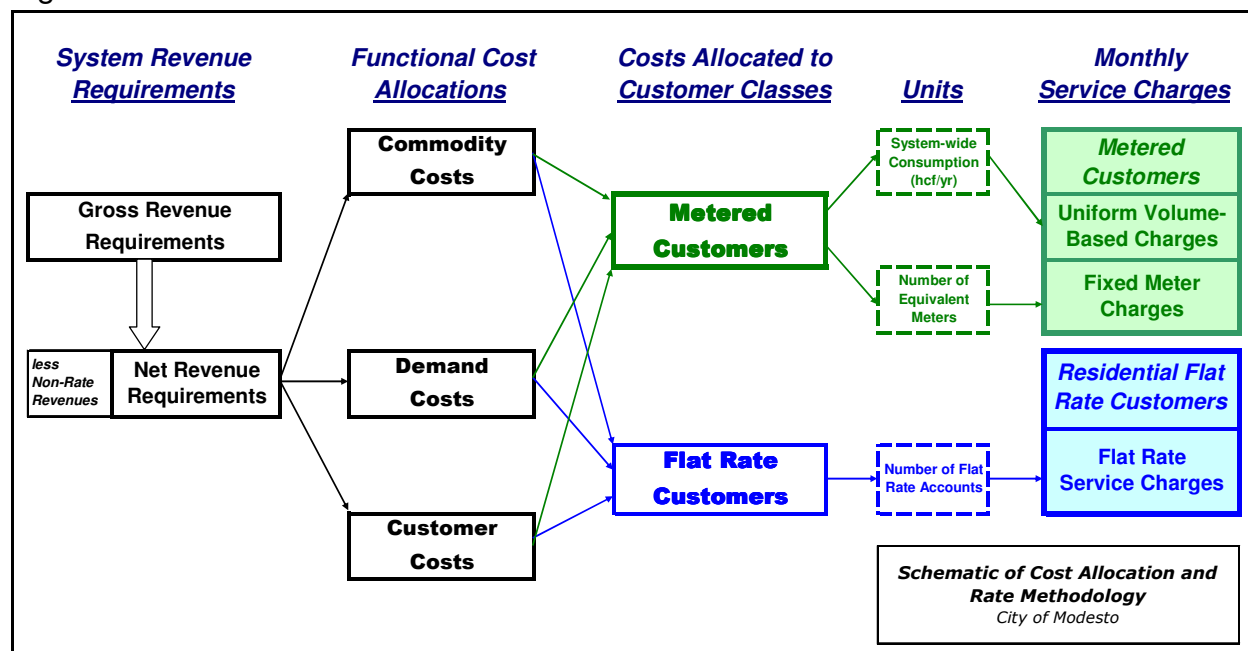
Cost Allocation and Rate Methodology

The cost allocation methodology used to design the new rates is illustrated in Figure 5-1. This methodology is based on the cost of service principles described above, and results in a new uniform rate structure intended to meet the City’s rate-making objectives and assumptions, including the City’s specific commitments.

As shown in Figure 5-1, this methodology begins by determining the net revenue requirements, which are the gross water utility revenue requirements less non-rate revenue. These net revenue requirements are then allocated to functional categories that include:

- **Commodity Costs** – those costs most directly related to water consumption, such as variable pumping costs, chemicals for treatment, and water purchases. These costs will vary with the amount of system-wide water consumption and should be paid by customers on the basis of their individual consumption.
- **Demand Costs** – the fixed costs incurred to meet system’s peak demands and include the maximum design capacity of the water production system (both well and surface water) and the transmission and distribution system. Annual operating costs, debt service, and capital improvements are examples of demand costs.
- **Customer Costs** – include billing, customer service, meter reading and related fixed costs that should be allocated to customers on a per-customer basis.

Figure 5-1



Functional costs are allocated as a percentage of net revenue requirements to each functional category based on the type of cost and professional judgment. Once costs have been divided into commodity, demand and customer costs, each of these categories is then allocated to either metered or flat rate customer classes based on three criteria:

- Commodity costs are allocated to metered and flat-rate customer classes based on their respective percentage of annual water consumption, which is estimated to be 59% flat rate and 41% metered customers in 2004-05.
- Demand costs are allocated using these same water consumption percentages (59% and 41%).
- Customer costs are allocated based on the number of customers, which in 2004-05 is 82% flat rate and 18% metered. However, the percentage of metered customers will increase over time as flat-rate customers are converted to metered use as directed by the City's proposed metering plan.

Metered Customer Rates – As shown in Figure 5-1, metered customers pay both a uniform volume-based rate and a fixed meter charge. The volume-based rates are calculated by dividing the total commodity costs by the total system-wide water consumption. The result is that both metered and flat-rate customers are allocated equitable shares of commodity costs.

The fixed-meter charges are calculated by dividing the demand and customer costs allocated to metered customers by the total number of equivalent meters. That is, each meter size ($\frac{3}{4}$ -inch, 2-inch, 4-inch, etc.) has an equivalent number of $\frac{3}{4}$ -inch meters. Therefore, the total number of equivalent meters is determined by multiplying the number of meters in each size of meters by the equivalent meter factor (an American Water Works Association derived number). This process effectively allocates demand costs by the potential demand each metered customer places on the system.

Flat-Rate Customers – As shown in Figure 5-1, flat-rate residential customers pay only a single, flat-rate service charge, although these charges vary by lot size. These flat rate charges are the sum of separate calculations of the commodity, demand and customer costs, as follows:

- Commodity costs are allocated to lot sizes based on their respective percentage of annual water consumption, just as with metered customers. The consumption by lot size is based on the average monthly consumption of metered lots by lot size. These averages were then applied to the number of flat rate lots in the ranges of lot sizes used for rates, and the percentages of total consumption used to allocate commodity cost to lot sizes.
- Demand costs are allocated based on these same average monthly water consumption data used for commodity costs, rather than the equivalent meter method used for metered customers.
- Customer costs are allocated based on the number of flat-rate customers, with the same charges applied to each customer regardless of lot size.

Calibration of Cost-of-Service Rate Adjustments

As previously discussed, this cost-of-service rate analysis produces different percentage rate adjustment to different customer classes in Year 1. However, by design the rate increase for the largest customer class (Zone 1 flat-rate residential customers with 5,000-7,000 square foot lots) was set at 35%, and other classes were then adjusted accordingly. This required a calibration adjustment so that this 35% is achieved, which is explained in more detail at the end of Section 6.

6. Cost of Service Analysis

This section shows how the rate methodology was used in calculating the new water rates.

Cost Allocations

Table 6-1 summarizes the initial allocation of 2004-05 costs to the three functional categories: (1) commodity costs, (2) demand costs, and (3) customer costs. Using the allocation percentages shown in this table, the total costs are allocated 73% to commodity, 19% to demand, and 9% to customer cost functions.

Table 6-1
Allocation of Water Utility Revenue Requirements - 2004-05
 City of Modesto

Description	2004-05 Allocation Percentages			2004-05 Allocated Costs			Total
	Commodity	Demand	Customer	Commodity	Demand	Customer	
	Uniform Vol.	Fixed Meter	Mo. Serv.	Uniform Vol.	Fixed Meter	Mo. Serv.	
Operating Expenses							
Capital Planning	25%	75%	0%	\$249,500	\$748,500	\$0	\$998,000
Billing & Collection	0%	0%	100%	\$0	\$0	\$1,393,000	\$1,393,000
Water Admin.	75%	0%	25%	\$649,500	\$0	\$216,500	\$866,000
Construction/Repairs	75%	25%	0%	\$5,911,500	\$1,970,500	\$0	\$7,882,000
Meter & Service Install.	50%	0%	50%	\$791,000	\$0	\$791,000	\$1,582,000
Water Conservation	0%	50%	50%	\$0	\$186,000	\$186,000	\$372,000
Well Site Improvement	100%	0%	0%	\$5,856,000	\$0	\$0	\$5,856,000
Water Quality/Lab	100%	0%	0%	\$780,000	\$0	\$0	\$780,000
Remainder of Operating Expen.	75%	12.5%	12.5%	-\$1,947,000	-\$324,500	-\$324,500	-\$2,596,000
Subtotal				\$12,290,500	\$2,580,500	\$2,262,000	\$17,133,000
Treatment (MID T&DA O&M)	75%	25%	0%	\$3,639,750	\$1,213,250	\$0	\$4,853,000
New Meter Reading & Billing (a)	0%	0%	100%	\$0	\$0	\$338,000	\$338,000
New Meter & Service O&M (b)	0%	0%	100%	\$0	\$0	\$0	\$0
1997 COPs/CDWR Loan	75%	25%	0%	\$1,533,708	\$511,236	\$0	\$2,044,944
MID T&DA Debt Service	75%	25%	0%	\$5,343,000	\$1,781,000	\$0	\$7,124,000
Capital & Other Uses	75%	12.5%	12.5%	\$1,500,750	\$250,125	\$250,125	\$2,001,000
Total Water Utility Operations				\$24,307,708	\$6,336,111	\$2,850,125	\$33,493,944
				73%	19%	9%	100%

The next step in the allocation process is to further allocate these commodity, demand and customer costs to (1) volume-based charges, (2) charges related to water demand, and (3) customer-based charges.

Table 6-2 summarizes these three functional costs and shows how they have been allocated to flat rate and metered customer classes. As previously mentioned in the overview of the methodology, the basis for these allocations is:

- Commodity costs – Allocated to metered and flat-rate customer classes based on their respective percentage of annual water consumption.
- Demand costs – Allocated based on the same percentage of annual water consumption as used for commodity costs.
- Customer costs – Allocated based on the number of customers.

Table 6-2
Summary of the Cost Allocation of Annual Revenue Requirements (2004-05)

City of Modesto

<i>Functional Cost Category</i>	<i>Description of Charge</i>	<i>2004-05</i>	<i>Allocation Percentage</i>
Total Costs (a)			
Commodity	Uniform Volume Charge	\$24,307,708	73%
Demand	Fixed Mo. Meter Charge	\$6,336,111	19%
Customer	Monthly Service Charge	\$2,850,125	9%
Total Allocated Costs		\$33,493,944	100%
Allocations to Flat & Metered Customers (b)			
Commodity	Flat Rate Customers	\$14,420,319	59%
	Metered Customers	\$9,887,389	41%
Demand	Flat Rate Customers	\$3,758,838	59%
	Metered Customers	\$2,577,273	41%
Customer	Flat Rate Customers	\$2,338,205	82%
	Metered Customers	\$511,920	18%
Total Alloc. Costs	Flat Rate Customers	\$20,517,363	61%
	Metered Customers	\$12,976,581	39%

a. From Table 6-1.

b. Allocations calculated as follows:

1. Commodity Costs: as shown in Table 6-4.
2. Demand Costs: based on annual water consumption as shown in Table 3-3.
3. Customer Costs: based on total number of accounts (from Table 3-2):

Total Flat Rate Accounts	62,164
Total Metered Accounts	13,610

The allocation percentages used in these allocations are shown for each functional cost in Table 6-2. Also, as shown in this table, the overall percentage of costs allocated to flat-rate customers is 61% and metered customers are 39%.

Uniform Volume-Based Service Charges

Using the total commodity costs from Table 6-2, volume charges for metered customers can be calculated by dividing them into the estimated total annual consumption of the water system. This calculation is shown in Table 6-3, and produces a system-wide uniform volume-based charge that all metered customers will pay. This volume charge is then also used to determine the portion of the commodity costs that flat-rate customer will need to pay, as shown in Table 6-4.

Table 6-3
Calculation of Uniform Volume-Based Charges
City of Modesto

<u>Volume-Based Charge Component</u>	<u>2004-05</u>
Consumption-Based Costs (a)	\$24,307,708
Total Volume (hcf/year) (b)	<u>31,190,992</u>
Uniform Vol-Based Charge (\$/hcf) (c)	<u>\$0.779318</u>

- a. Includes costs allocated to the Commodity function to be recover from volume-based charges. From Table 6-2.
- b. From Table 3-3.
- c. Consumption-Based Costs divided by Total Volume.

Table 6-4 shows the percentage of commodity costs allocated to flat and metered customers.

Table 6-4
Total Volume-Based Charges Recovered from Flat-Rate and Metered-Customers
City of Modesto

	<u>2004-05</u>
<u>Volumes (hcf/year) (a)</u>	
Flat Rate Customers	18,503,763
Metered Customers	<u>12,687,229</u>
<i>Total</i>	<u>31,190,992</u>
<u>Uniform Vol-Based Charge (\$/hcf) (b)</u>	<u>\$0.779318</u>
<u>Volume Charges Recovered (c)</u>	
From Flat Rate Customers	\$14,420,319
From Metered Customers	<u>\$9,887,389</u>
<i>Total Volume-Based Charges</i>	<u>\$24,307,708</u>
From Flat Rate Customers (%)	59%
From Metered Customers (%)	<u>41%</u>

- a. From Table 3-3.
- b. From Table 6-3.
- c. Volume (hcf/yr) times the Uniform Volume-Based Charge.

Fixed Monthly Service Charges

Table 6-5 provides some of the basic data needed to determine the monthly fixed meter charges for metered customers. These data include the number of meters for each customer class and each size of meter, which were estimated assuming the same percentages as currently existing in the City’s system. The equivalent meters shown at the bottom of Table 6-5 were calculated using AWWA equivalent meter factors.

Table 6-5
Number of Accounts and Equivalent Meters - 2004-05
 City of Modesto

Customer Class	Meter Size										Total
	5/8"-3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	
No. of Accounts (a)											
Single-Family	942	2,892	19	16	0	-	-	-	-	-	3,869
Multi-Family	1,409	2,506	377	217	6	39	66	10	2	-	4,632
Commercial	1,025	1,027	489	1,199	68	145	52	32	5	1	4,044
Landscape Meters	33	142	121	325	6	24	1	2	-	-	655
Churches	50	71	26	74	-	8	-	1	-	-	230
Schools	21	7	5	20	17	22	4	1	2	-	99
Industrial	5	2	1	50	5	8	7	3	2	-	81
Total	3,486	6,648	1,038	1,900	102	247	129	48	11	1	13,610
Hydraulic Capacity Factors (b)											
	1.00	1.67	3.33	5.33	10.67	16.67	33.33	53.33	76.67	143.33	
No. of Equivalent Meters (a)											
Single-Family	942	4,829	65	83	3	-	-	-	-	-	5,922
Multi-Family	1,409	4,185	1,256	1,157	68	653	2,189	508	162	-	11,588
Commercial	1,025	1,716	1,629	6,392	727	2,425	1,729	1,682	390	146	17,859
Landscape Meters	33	238	404	1,731	59	408	37	119	-	-	3,028
Churches	50	119	86	393	-	129	-	69	-	-	846
Schools	21	12	15	107	186	367	122	49	141	-	1,020
Industrial	5	3	2	265	49	142	218	139	150	-	972
Total	3,486	11,102	3,457	10,128	1,092	4,123	4,295	2,566	843	146	41,236

a. Source: City billing records from Mark Roberts, 6/21/04.
 b. These factors reflect AWWA commonly used industry standards for hydraulic capacity. See AWWA Manual M1, Table 28-2 for up to 3" meters.

Table 6-6 shows the calculation of fixed monthly service charges by meter size, which includes the customer costs and capacity costs allocated to metered customers previously shown in Table 6-1.

Table 6-6
Monthly Service Charge Calculations - 2004-05
 City of Modesto

Customer/Meter Data	Meter Size										Total
	5/8"-3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	
No. of Customers	3,486	6,648	1,038	1,900	102	247	129	48	11	1	13,610
No. of Equivalent Meters	3,486	11,102	3,457	10,128	1,092	4,123	4,295	2,566	843	146	41,236
Hydraulic Capacity Factor	1.00	1.67	3.33	5.33	10.67	16.67	33.33	53.33	76.67	143.33	
Monthly Service Charge											
Customer Costs	\$3.13	\$3.13	\$3.13	\$3.13	\$3.13	\$3.13	\$3.13	\$3.13	\$3.13	\$3.13	\$3.13
Capacity Costs	\$5.21	\$8.70	\$17.34	\$27.76	\$55.57	\$86.82	\$173.59	\$277.76	\$399.33	\$746.52	
Monthly Service Charge	\$8.34	\$11.83	\$20.48	\$30.90	\$58.71	\$89.96	\$176.73	\$280.90	\$402.46	\$749.65	
Annual Customer Cost (a)	\$131,103	\$250,040	\$39,046	\$71,470	\$3,850	\$9,304	\$4,847	\$1,810	\$414	\$38	\$511,920
Annual Capacity Cost (b)	\$217,847	\$693,849	\$216,050	\$632,982	\$68,252	\$257,706	\$268,423	\$160,355	\$52,696	\$9,111	\$2,577,273
Costs Included in Fixed Monthly Service Charges (c)											\$3,089,192
Customer Costs	\$511,920										
Demand Costs	\$2,577,273										
Total Fixed Costs	\$3,089,192										

a. Allocated based on the number of customers.
 b. Allocated based on the number of equivalent meters.
 c. From Table 6-2.

Residential Flat Rate Service Charges

While metered customers pay separate monthly volume-based and fixed service charges, flat-rate residential customers pay only one flat-rate charge that combines the commodity, demand, and customer costs. Table 6-7 summarizes these costs for 2004-05.

Table 6-7
Total Costs Recovered from Flat-Rate Customers
City of Modesto

	2004-05
Costs Allocated to Flat Rates (a)	
<i>Commodity Costs - Uniform Volume Charges</i>	\$14,420,319
<i>Demand Costs - Fixed Monthly Charges</i>	\$3,758,838
<i>Customer Costs - Mo. Service Charges</i>	<u>\$2,338,205</u>
Total Flat-Rate Costs	\$20,517,363

a. From Table 6-2.

Table 6-8 shows how each of the three functional costs is then used to calculate their respective portion of the flat-rate customer’s monthly charge.

Table 6-8
Calculation of Monthly Flat-Rate Charges for 2004-05
City of Modesto

Costs Allocated to Flat Rates	Allocated Costs (a)	Total Units (b)	0 to					Over
			5,000 sq.ft.	5,001 to 7,000 sq.ft.	7,001 to 11,000 sq.ft.	11,001 to 17,000 sq.ft.	17,000 sq.ft.	
Commodity Costs - Uniform Volume Charges	\$14,420,319							
<i>Allocation Basis: Est. Consumption (hcf/yr) (c)</i>		18,503,763	1,773,105	8,432,633	6,718,934	919,947	659,144	
<i>Costs Allocated to Flat Rate Lots</i>			\$1,381,813	\$6,571,704	\$5,236,187	\$716,932	\$513,683	
<i>Number of Accounts</i>		62,164	7,440	30,542	20,068	2,572	1,543	
<i>Monthly Flat Rate Charge Per SFR Customer</i>			\$15.48	\$17.93	\$21.74	\$23.23	\$27.75	
Demand Costs - Fixed Monthly Charges	\$3,758,838							
<i>Allocation Basis: Est. Consumption (hcf/yr) (c)</i>		18,503,763	1,773,105	8,432,633	6,718,934	919,947	659,144	
<i>Costs Allocated to Flat Rate Lots</i>			\$360,187	\$1,712,998	\$1,364,878	\$186,877	\$133,898	
<i>Number of Accounts</i>		62,164	7,440	30,542	20,068	2,572	1,543	
<i>Flat Rate Charge Per SFR Customer</i>			\$4.03	\$4.67	\$5.67	\$6.06	\$7.23	
Customer Costs - Mo. Service Charges	\$2,338,205							
<i>Allocation Basis: Number of Accounts</i>		62,164	7,440	30,542	20,068	2,572	1,543	
<i>Costs Allocated to Flat Rate Lots</i>			\$279,836	\$1,148,776	\$754,845	\$96,727	\$58,021	
<i>Flat Rate Charge Per SFR Customer</i>			\$3.13	\$3.13	\$3.13	\$3.13	\$3.13	
Total Flat-Rate Costs & Charges	\$20,517,363		\$22.65	\$25.74	\$30.55	\$32.42	\$38.12	

a. From Table 6-1.

b. Data from either Tables 3-1 or 3-3.

c. Consumption by flat rate class is the total hcf/yr times the "Est. Ave. Mo. Water Use" (in %) of metered lot consumption data as follows:

Flat Rate Lots Sq.Ft. Ranges	Ave. hcf/mo. per Metered Lot	Current No. of Flat Rate Lots Number	%	Est. Ave. Mo. Water Use hcf/mo	%
0-5,000	16.72	7,331	11.97%	122,584	9.58%
5,001-7,000	19.37	30,095	49.13%	582,994	45.57%
7,001-11,000	23.49	19,775	32.28%	464,517	36.31%
11,001-17,000	25.10	2,534	4.14%	63,601	4.97%
Over 17,000	29.98	1,520	2.48%	45,570	3.56%
Total		61,255	100.00%	1,279,267	100.00%

Final Cost-of-Service Rate Adjustment

As discussed at the end of Section 5, there is a calibration adjustment required to set the rate increase at 35% for the largest customer class (Zone 1 flat-rate residential customers with 5,000-7,000 square foot lots). A 35% rate increase equates to a new rate of \$27.81 (i.e., \$20.60 times 1.35). But, as seen in Table 6-8, the flat rate for 5,001-7,000 square foot lots is \$25.74 which is only 25% higher than the current Zone 1 charge of \$20.60. Therefore, an adjustment of 8% is needed (i.e., \$27.81 ÷ \$25.74 = 1.08).

To ensure that all rates are equitable, this same 8% adjustment was then made across-the-board to all the other cost-of-service rates. This results in the final new (proposed) rates for 2004-05 as shown in Table 6-9. These are the rates reflected in Section 8 (Recommended New Water Rates).

Table 6-9

Calibration Adjustment to Cost-of-Service Rates
City of Modesto

Customer Classes	COS Charges (a)	Adjustment for 35% Incr. (b)	Proposed Rates
Flat Rate Customers			
0-5,000 sq. ft. lot	\$22.65/mo.	108.0%	\$24.47/mo.
5,001-7,000 sq. ft. lot	\$25.74/mo.	108.0%	\$27.81/mo.
7,001-11,000 sq. ft. lot	\$30.55/mo.	108.0%	\$33.00/mo.
11,001-17,000 sq. ft. lot	\$32.42/mo.	108.0%	\$35.03/mo.
Over 17,000 sq. ft. lot	\$38.12/mo.	108.0%	\$41.19/mo.
Metered Customers			
<i>Monthly Metered Service Charges</i>			
<u>Meter Size</u>			
5/8"-3/4"	\$8.34/mo.	108.0%	\$9.01/mo.
1"	\$11.83/mo.	108.0%	\$12.78/mo.
1 1/2"	\$20.48/mo.	108.0%	\$22.13/mo.
2"	\$30.90/mo.	108.0%	\$33.38/mo.
3"	\$58.71/mo.	108.0%	\$63.43/mo.
4"	\$89.96/mo.	108.0%	\$97.19/mo.
6"	\$176.73/mo.	108.0%	\$190.95/mo.
8"	\$280.90/mo.	108.0%	\$303.49/mo.
10"	\$402.46/mo.	108.0%	\$434.84/mo.
12"	\$749.65/mo.	108.0%	\$809.95/mo.
Volume-Based Charges	\$0.779/hcf	108.0%	\$0.842/hcf

a. Flat rates are from Table 6-8, Metered service charges are from Table 6-6, and volume-based charge is from Table 6-4.

b. Current rate for 5,001-7,000 sq.ft. lots plus 35%, divided by COS rate (i.e., $(1.35 \times \$20.60)/\$25.74 = 1.08$).

7. Water Utility Financial Plan

Revenue from Proposed Rate Adjustments

Up to this point, this report has focused on the cost-of-service analysis and rate adjustments. However, the City’s Water Utility is facing significant funding requirements to cover additional cash-funded capital projects of approximately \$55 million. Therefore, in developing an overall financial plan, we have attempted to balance two competing objectives:

1. Minimizing the annual rate increases (given the revenue requirements and capital funding needs)
2. Properly building reserves to fund pay-as-you-go capital projects and other long-term funding needs

This financial plan also involves coordinating the additional revenue from the rate increases with the City’s debt service coverage ratio and reserve fund balances. Table 7-1 shows the recommended rate increases and the revenue generated by these increases. The annual net revenue requirements shown in this table were previously summarized in Table 4-1. The estimated 2004-05 revenue from current and new rates was calculated in Tables 7A-1 and 7A-2 shown in Appendix E.

Table 7-1

Financial Plan - Projected Rate Increases and Revenue
City of Modesto

	Current		Projected Revenue Requirements and Rate Increases			
	F Y 03-04	F Y 04-05	F Y 05-06	F Y 06-07	F Y 07-08	F Y 08-09
Annual Net Revenue Req'ts. (a)	\$30,668,000	\$33,493,944	\$37,913,564	\$38,330,590	\$48,027,000	\$51,806,657
Revenue from Rates						
Revenue from Current Rates (b)	\$27,366,000	\$28,322,000	\$28,775,000	\$29,235,000	\$29,703,000	\$30,178,000
Revenue from previous year rate incr.	\$ -	\$ -	\$ 10,071,250	\$ 18,125,700	\$ 25,633,689	\$ 28,854,695
Subtotal	\$27,366,000	\$28,322,000	\$38,846,250	\$47,360,700	\$55,336,689	\$59,032,695
Current Year Surplus/(Deficit)	(\$3,302,000)	(\$5,171,944)	\$932,686	\$9,030,110	\$7,309,689	\$7,226,038
Surplus/(Deficit) (No Rate Increases)	(\$3,302,000)	(\$5,171,944)	(\$9,138,564)	(\$9,095,590)	(\$18,324,000)	(\$21,628,657)
Annual Rate Increase	0.0%	35.0%	20.0%	15.0%	5.0%	5.0%
Cumulative Increase	0.0%	35%	62%	86%	96%	105%
REVENUE FROM INCREASES (c)						
Effective Dec 1: FY 04-05 (d)		\$ 3,855,305	\$ 10,071,250	\$ 10,232,250	\$ 10,396,050	\$ 10,562,300
Effective July 1: FY 05-06			\$ 7,769,250	\$ 7,893,450	\$ 8,019,810	\$ 8,148,060
Effective July 1: FY 06-07				\$ 7,104,105	\$ 7,217,829	\$ 7,333,254
Effective July 1: FY 07-08					\$ 2,766,834	\$ 2,811,081
Effective July 1: FY 08-09						\$ 2,951,635
Subtotal - Revenue from Increases	\$ -	\$ 3,855,305	\$ 17,840,500	\$ 25,229,805	\$ 28,400,523	\$ 31,806,329
Total Annual Rate Revenue	\$27,366,000	\$32,177,305	\$46,615,500	\$54,464,805	\$58,103,523	\$61,984,329
Annual Avail. to Cash-fund CIP Projects (e)	(\$3,302,000)	(\$1,316,639)	\$8,701,936	\$16,134,215	\$10,076,524	\$10,177,673
Cumulative Surplus/(Deficit) after Increase	(\$3,302,000)	(\$4,618,639)	\$4,083,297	\$20,217,512	\$30,294,035	\$40,471,708
Assumed Growth Rate: (From Table 3-1)		1.6%	1.6%	1.6%	1.6%	1.6%

a. From Table 4-1, Projected Water Utility Budgets. Includes Total Operating Expenses, Debt Service Payments, and Non-Rate Revenues.

b. Current rate revenue for FY'03-04 is from Table 7-2, FY'04-05 is based on actual revenue from City billing records (see Appendix E, Table 7A-2).

Projections after FY'04-05 reflect the annual growth rate.

c. Revenue increases calculated from the Annual Rate Increase. FY'04-05 assumes an effective date of January 1, 2005.

d. Revenue from rate increases in FY'04-05 are the estimated total revenue from Appendix E Table 7A-1 less the FY'04-05 revenue from Current Rates.

e. The difference between Total Annual Rate Revenue and Annual Net Revenue Requirements.

Funding of Future Capital Improvements

The costs of future capital improvements have been allocated between existing customers and future growth based on an engineering study prepared by West Yost & Associates (see Table 1, Justification and Cost Allocation for Proposed Water System Improvements, West Yost & Associates, August 27, 2004). This study looked at total capital improvements of \$152.8 and found that 74.2% of those costs should be born by existing customers and 25.8% by future customers (i.e., growth). Chart 7-1 provides a further overview of how the West Yost capital costs are allocated to current and future customers in the financial plan presented here.

Chart 7-1

Overview of West-Yost's Capital Cost Allocations

City of Modesto

<u>Capital Projects</u>	<u>Existing</u>	<u>Future growth</u>	<u>Total</u>	<u>Allocation</u>
MID - Phase 2	\$ 14,621,732	\$ 22,966,268	\$ 37,588,000	25%
	38.9%	61.1%	100%	
Downstream Bond	\$ 56,982,250	\$ 7,042,750	\$ 64,025,000	42%
	89.0%	11.0%	100%	
Pay as you go	\$ 41,799,052	\$ 9,401,948	\$ 51,201,000	34%
	81.6%	18.4%	100%	
Total	\$ 113,403,034	\$ 39,410,966	\$ 152,814,000	100%
	74.2%	25.8%	100%	

Source: West Yost & Associates, Table 1, *Justification and Cost Allocation for Proposed Water System Improvements*, West Yost & Associates, September, 2004.

The City is currently evaluating water system connection fees and expects to adopt new, higher water connection fees in the near future. While this financial plan does not currently reflect those higher connection fees, once those new connection fees are adopted the City expects they will either directly pay for growth's share of future capital costs (i.e., the annual debt service and cash-funded costs), or to at least reimburse existing customers at a later date. Therefore, the City expects growth to ultimately fully pay the costs allocated to growth.

If new growth should occur at a dramatically slower rate than expected, or come to a standstill, existing customers would be ultimately be the only means of paying for these growth-related costs. That is, existing customers would have to pay for the additional system capacity and related improvements instead of new customers.

Should new development occur faster than assumed, the City should (1) ensure that connection fees have been used to fully pay for all capital costs allocated to growth, (2) consider defeasing any debt that was issued to pay for growth's share of these costs, and then (3) use any remaining connection fee revenue to cash-fund growth related improvements or holding those funds in reserve to pay for growth-related improvements when needed.

Coverage Ratios and Other Financial Considerations

Unlike Tables 4-1 and 7-1, Table 7-2 was prepared for the purpose of showing the projected operating results and coverage ratios once the proposed rate adjustments are included. Because of this, it includes certain expenditures (such as transfers out and PCE litigation) and revenue sources (such as transfers in, connection fees and PCE litigation reimbursement), which were not previously included when calculating net revenue requirements.

Coverage ratios are a measure of net revenues divided by annual debt service payments in which lenders stipulate, in the form of a bond covenant, that the borrower maintains a minimum ratio. The City's current minimum coverage ratio of is 1.25, and falling below that level technically puts the City in default on those bonds. In addition, future lenders consider to how strong the City's coverage ratio has been in the past when determining lending conditions such as the interest rate and reserve requirements. In light of the \$86 million in new debt the City and MID is planning on issuing, it is to the City's benefit to project coverage ratios well above the 1.25 minimum.

Table 7-2

Projected Operating Results and Coverage Ratios (\$ in 000's)

City of Modesto Water Fund

	Estimated	Year 1	Year 2	Year 3	Year 4	Year 5
	'03-04	'04-05	'05-06	'06-07	'07-08	'08-09
Expenditures						
Operating Expenses	\$15,978	\$17,133	\$20,495	\$20,993	\$21,386	\$21,815
New Metering, Billing, O&M Costs	NA	\$338	\$1,237	\$998	\$1,028	\$1,059
MID T&DA Debt Svc	\$6,724	\$7,124	\$7,124	\$7,124	\$7,124	\$7,124
MID T&DA O&M	\$4,052	\$4,853	\$4,998	\$5,148	\$6,795	\$8,536
Other Uses (transfers out)	\$1,869	\$2,001	\$2,010	\$2,012	\$1,907	\$1,869
PCE Litigation (Special Item)	\$3,756	\$1,897	\$0	\$0	\$0	\$0
Total Expenditures	\$32,379	\$33,346	\$35,864	\$36,275	\$38,240	\$40,403
Revenue Sources						
Operating Revenue	\$1,702	\$851	\$860	\$868	\$877	\$886
Water Sale - Current Flat Rates (a)	\$16,842	\$17,396	\$17,675	\$17,957	\$18,245	\$18,537
Water Sale - Current Metered Rates (a)	\$10,524	\$10,925	\$11,100	\$11,278	\$11,458	\$11,641
Other Sources (transfers in)	\$2,033	\$2,203	\$2,207	\$2,211	\$2,105	\$2,066
Connection Fee Revenues (b)	\$1,159	\$1,243	\$1,255	\$1,268	\$1,280	\$1,293
PCE Litigation Reimbursement	\$2,572	\$660	\$0	\$0	\$0	\$0
Total Operating Revenue	\$34,832	\$33,279	\$33,097	\$33,582	\$33,965	\$34,423
Net Operating Revenues (c)	\$10,898	\$6,855	\$4,160	\$4,231	\$2,651	\$947
Net Revenues (d)	\$2,453	(\$67)	(\$2,767)	(\$2,694)	(\$4,275)	(\$5,980)
Add'l Revenue from Rate Increases (e)	--	\$3,855	\$17,841	\$25,230	\$28,401	\$31,806
Annual Rate Increase (%)		35%	20%	15%	5%	5%
Debt Service Payments - MID T&DA	\$6,724	\$7,124	\$7,124	\$7,124	\$7,124	\$7,124
1997 COPs/CDWR Loan	\$2,045	\$2,045	\$2,050	\$2,055	\$2,059	\$2,057
New MID Plant Debt Ser. (\$37.6 mil.) (f, g)	\$0	\$0	\$0	\$0	\$4,110	\$4,110
Tier 1 Projects Debt Service (\$34 mil.) (f)	\$0	\$0	\$0	\$0	\$3,618	\$3,618
Tier 2 Projects Debt Service (\$15 mil.) (f)	\$0	\$0	\$0	\$0	\$0	\$1,619
Total - Debt Service	\$8,769	\$9,169	\$9,174	\$9,179	\$16,911	\$18,528
Debt Coverage Ratio (h)	1.24	1.17	2.40	3.21	1.84	1.77
New Debt Coverage Ratio (i)	1.67	1.37	--	2.93	1.68	1.61

a. Rate revenue from current rates. From Table 7-1 - Financial Plan - Projected Rate Increases and Revenue

b. Includes water connection fees at current fee levels. Future revenues are expected to be greater after City increases these fees to reflect planned capital improvements to serve growth.

c. Excludes transfers in and out, and MID T&DA Debt Svc

d. Total Operating Revenue less Total Expenditures.

e. From Table 7-1, Financial Plan - Projected Rate Revenue Including Rate Increases

f. Assumes a 6% interest rate, 20-year repayment period, and 12 months of capitalized interest. Source: Peter Miller, Public Financial Mngmt, 9/1/04.

g. Assumes the MID Treatment Plant will be completed in the 1st quarter of 2008, that interest is capitalized, and debt service payments start in 2007-08.

h. FY'03-04 will be different assuming adopted debt ratio has adjustments for environmental litigation.

i. FY'03-04 and '04-05 are the Auditor's interpretation, which does not include PCE Litigation expenses. After '05-06 are new debt coverage ratios for future projects, which may exclude connection fee revenue and use 95% of planned rate increases.

The PCE litigation expenses and reimbursements shown in Table 7-2 are the subject of pending litigation. However, any settlement money received (assuming the suit is settled in favor of the City) would be equally offset by the new cleanup projects required.

Reserve Fund Contributions

The final part of the proposed financial plan includes the annual contributions to reserves, ending working capital, and reserve fund balances. These are summarized in Table 7-3, followed by a description of the purposes and uses of the reserve funds shown in this table.

Table 7-3

Projected Reserve Levels (in \$000's)

City of Modesto Water Fund

	Estimated '03-04	Year 1 '04-05	Year 2 '05-06	Year 3 '06-07	Year 4 '07-08	Year 5 '08-09	Total Cash- Funded CIP (Years 1-5)
Available Working Capital							
Net Revenues (from Table 7-2)		(\$67)	(\$2,767)	(\$2,694)	(\$4,275)	(\$5,980)	
Add'l Revenue from Rate Increases (From Table 7-1)		\$3,855	\$17,841	\$25,230	\$28,401	\$31,806	
Debt Service Payments							
1997 COPs/CDWR Loan		(\$2,045)	(\$2,050)	(\$2,055)	(\$2,059)	(\$2,057)	
New MID Plant Debt Ser.		\$0	\$0	\$0	(\$4,110)	(\$4,110)	
Tier 1 CIP Debt Service		\$0	\$0	\$0	(\$3,618)	(\$3,618)	
Tier 2 CIP Debt Service		\$0	\$0	\$0	\$0	(\$1,619)	
Available for Reserves & Cash-funding		\$1,743	\$13,024	\$20,481	\$14,339	\$14,423	
Reserve Contributions & Cash-Funding							
Beginning Working Capital (a)	\$17,642	\$5,377	\$0	\$0	\$0	\$0	
Available for Reserves & Cash-funding	--	\$1,743	\$13,024	\$20,481	\$14,339	\$14,423	
Cash-Funded CIP (b)	(\$4,926)	(\$5,330)	(\$9,456)	(\$9,456)	(\$9,456)	(\$9,456)	(\$43,153)
Cash-Funded Tier 2 COP Projects (c)	\$0	\$0	\$0	(\$3,900)	(\$3,900)	(\$3,900)	(\$11,700)
New Contrib. to Rate Stabilization	--	\$1,000	\$0	(\$158)	\$0	\$0	
New Contrib. to Operating Reserve	--	\$0	(\$1,313)	(\$2,000)	\$0	\$0	
New Contrib. to R&R Reserve	--	\$0	(\$1,000)	(\$3,700)	\$297	\$226	
less Connection Fee Revenues (d)	(\$1,159)	(\$1,243)	(\$1,255)	(\$1,268)	(\$1,280)	(\$1,293)	
Existing Restricted Reserves (e)	(\$3,673)	--	--	--	--	--	
Adjustments (f)	(\$2,507)	(\$1,547)	\$0	\$0	\$0	\$0	
Ending Working Capital After CIP (g)	\$5,377	\$0	\$0	\$0	\$0	\$0	(\$54,853)
Balance of Reserves							
Ending Working Capital After CIP	\$5,377	\$0	\$0	\$0	\$0	\$0	
Rate Stabilization Reserve	\$2,847	\$1,847	\$1,847	\$2,004	\$2,004	\$2,004	
Target Balance (h) 20%	\$2,100	\$2,200	\$2,200	\$2,300	\$2,300	\$2,300	
Operating Reserve	\$0	\$0	\$1,313	\$3,313	\$3,313	\$3,313	
Target Balance (i) 25%	\$4,000	\$4,300	\$5,100	\$5,200	\$5,300	\$5,500	
Repair & Replacement Reserve	\$0	\$0	\$1,000	\$4,700	\$4,403	\$4,177	
Target Balance (j) 5%	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	\$4,900	
Balance of Reserves	\$8,224	\$1,847	\$4,160	\$10,018	\$9,720	\$9,494	
Target Balance - Operating Reserves	\$11,000	\$11,400	\$12,200	\$12,400	\$12,500	\$12,700	

a. FY '03-04 is from Finance Department, 10-year proforma.

b. Currently planned cash-funded CIP projects for existing users totaling \$41.8 million plus from 2005-06 through 2008-09, plus \$1.353 mil. carryover from '04-05.

c. Cash-funded portion of existing users share of Tier 2 CIP projects. Remainder of \$15 million is debt funded (see Tables 4-1 and 7-1).

d. Connection fee revenues are included in the Net Revenues, but will not be used to pay for CIP projects for existing customers.

e. Includes existing balance in Rate Stabilization fund as of June 30, 2003 (from p. 117 of CAFR) and restricted cash (p.28).

f. Includes Balance Sheet & Non-Cash adjustments plus annual Surplus/Deficit from 10-Year Proforma, 7-26-04, plus Net Revenues of \$2.453 mil from Table 7-2.

g. Prior year CIP carryover exceeds ending working capital in FY'03-04.

h. Rate Stabilization Fund target balance = 20% of rate revenues from metered customers (from Table 7-1).

i. Operating Reserve target balance = 25% of Operating Expenses (from Table 7-1). Excludes MID O&M, debt service, etc.

j. Repair & Replacement Reserve target balance = 5% of next 5-years of cash- and debt-funded CIP projects (approximately \$100 million).

Reserve Funds

In the past, the City has had to contend with the loss of wells due to contamination and increasingly strict water quality standards. Now it has to fund the new MID surface water treatment plant and a number of new transmission, storage, and related downstream capital improvements. Given these significant funding requirements and other uncertainties in future plans, including actual population growth, COP interest rates, the revenue impacts of higher rates, metering program, and future yet un-funded capital projects, the City needs to re-examine how it will maintain adequate operating and capital reserve funds.

The following is a brief description of each of the recommended reserve funds and their target ending balances.

Working Capital Reserves – A water utility typically needs a certain amount of cash on hand carried over from the previous year to ensure smooth financial operations. In

the City's case, this includes paying MID transmission and distribution O&M and normal operating expenses. In the past, this has been provided for in the working capital. However, as shown in Table 7-3, this is no longer necessary due to the creation of the three new reserve funds (i.e., rate stabilization, operating, and repair and replacement reserves).

Rate Stabilization Reserve – This reserve is intended to cover revenue shortfalls due to sudden or unexpected higher revenue requirements or less than normal water sales that typically occur during a drought or as a result of unusually cool summer temperatures. Historical experience suggests a reserve of about 20% of water rate revenue from metered customers would be appropriate. However, previous City policy was to try to maintain a \$3.0 million rate stabilization reserve, which is reflected in FY 2003-04 in Table 7-3, followed by a lower target balance reflecting this 20% of water rate revenue.

Operating Reserve – This fund is typically intended to fund three months (i.e., 25%) of annual operating expenses. This reserve may, at times, also be used to cover emergencies such as major equipment failures or possible terrorist activity that results in significant, unplanned emergency operating and capital costs, during which there may be little or no revenue from City-services.

Equipment Repair & Replacement Reserve – Intended to fund unforeseen equipment failure, pumps, vehicles, tools, but not major capital facilities such as transmission lines, pump stations, and treatment facilities. Reasonable reserves might be 5-10% of the current 5-year CIP program.

Future Capital Projects Reserve – City engineers have identified significant additional capital projects after 2008-09 that have not been included in the cash-funded CIP plans or reserves. These projects, which will be further evaluated when the City's updates its water master plan, include the metering conversion program and a potential Phase 3 of the MID treatment plant. It would be prudent for the City to begin building a separate capital reserve, starting in Year 6, for these projects in order to avoid another cash shortfall or unplanned rate increase.

The key components included in the proposed financial plan are shown in Figures 7-1 and 7-2:

- The debt coverage ratio – The blue dots in Figure 7-1 are the debt-coverage ratios, which exceeds the required minimum of 1.25. The coverage ratios for 2003-04 and 2005-06 are based on the auditor's interpretation regarding the reimbursement and expenses related to the City's current PCE-litigation case. The ratios for 2006-07 through 2008-09 are the best current estimate of the coverage ratio formula for the new COPs identified in Table 7-2. The red dots in this figure are the projected coverage ratios without any rate increases.
- The green-striped bars in Figure 7-2 represent the annual cash-funding of CIP projects, which, as seen in Table 7-3, total about \$55 million for Years 1 through 5.
- The bright green dotted bars are the annual cash-funding of Tier 2 projects, which total \$15 million in Years 1-5, and together with the CIP projects total approximately \$55 million of cash-funding from reserves.

- The darker green bars show the annual contributions to future capital projects.

Figure 7-3 shows the year-end reserve fund balances of each of the three new reserve funds.

Figure 7-1

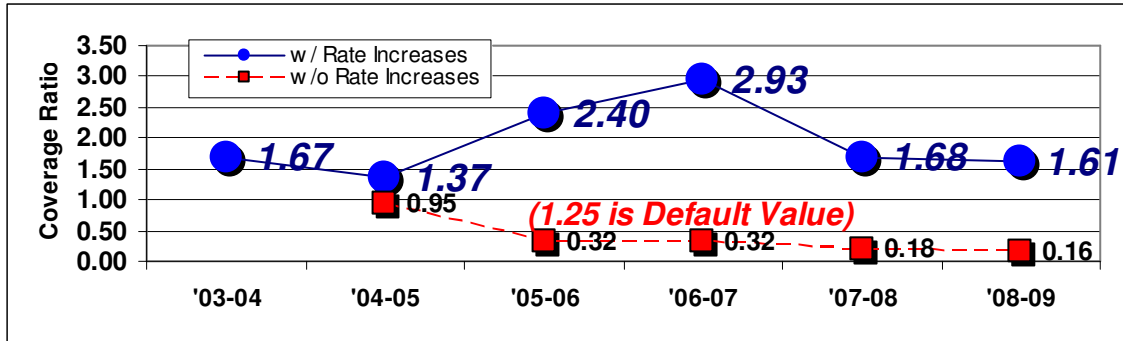


Figure 7-2

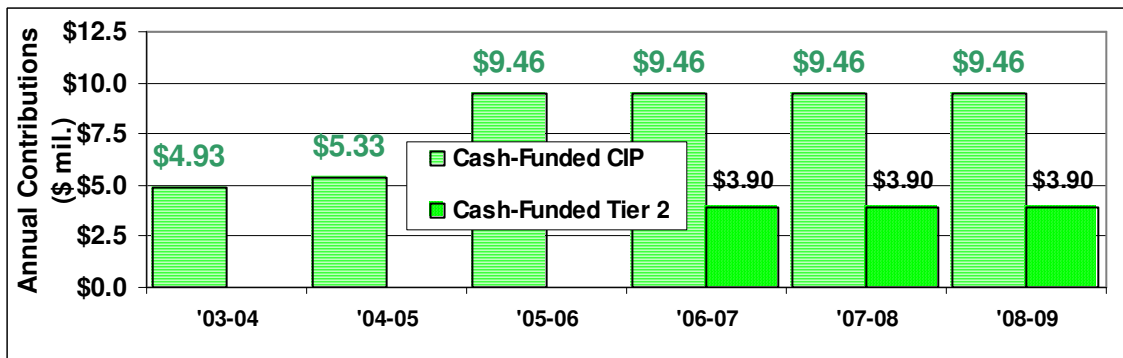
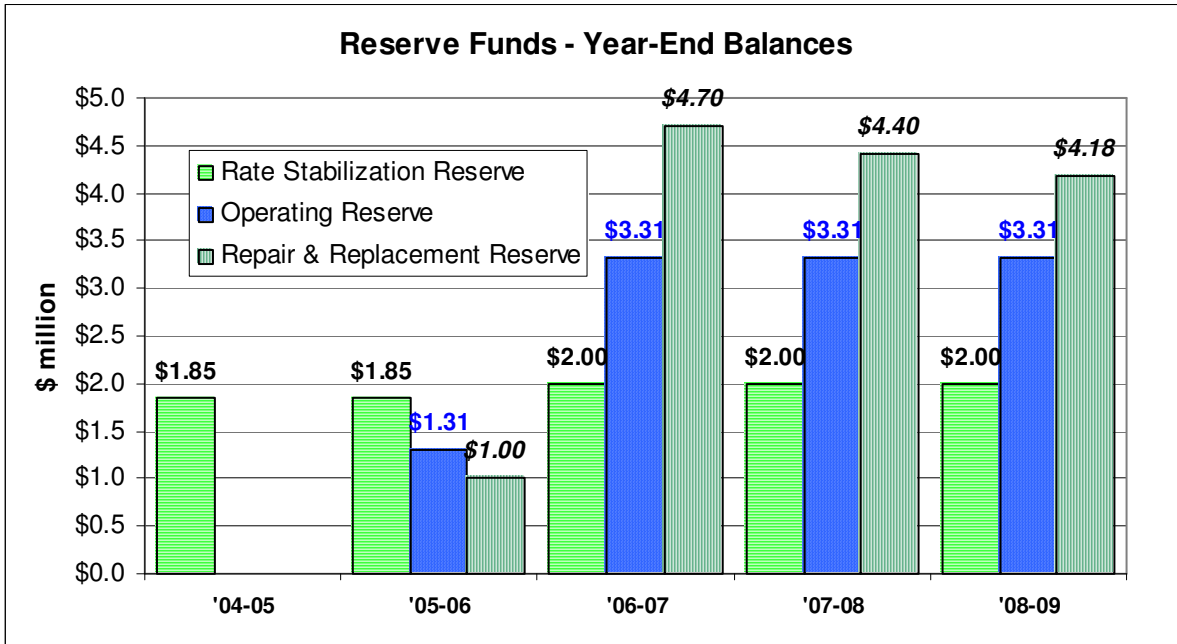


Figure 7-3



8. Recommended New Water Rates

Table 8-1 shows the current flat and metered rates by zone and compares them to the recommended new rates calculated in Section 6. The current and typical new monthly flat rate charges are illustrated in Figure 8-1, with a breakdown of the expenditures that make up the proposed 2004-05 flat rate charge shown in Figure 8-2. Typical residential metered charges are shown in Figure 8-3. These flat and metered rates include the calibration adjustment discussed at the end of Section 6 needed to set the largest customer class (Zone 1 flat-rate residential customers with 5,000-7,000 square foot lots) at 35%.

Table 8-1
Projected Water Utility Service Charges & Rates

City of Modesto

Customer Classes	Current Rates			Projected Charges & Rates (c)				
	Zone 1	Zone 2	Zone 3	2004-05 1/1/2005	2005-06 7/1/2005	2006-07 7/1/2006	2007-08 7/1/2007	2008-09 7/1/2008
Flat Rate - Mo. Service Charges				<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>
0-5,000 sq. ft. lot	\$20.60	\$24.61	\$15.63	\$24.47	\$29.36	\$33.77	\$35.45	\$37.23
5,001-7,000 sq. ft. lot	\$20.60	\$24.61-\$28.58	\$15.63-\$18.20	\$27.81	\$33.37	\$38.38	\$40.30	\$42.31
7,001-11,000 sq. ft. lot	\$23.08	\$28.58-\$34.30	\$18.20-\$21.08	\$33.00	\$39.60	\$45.54	\$47.82	\$50.21
11,001-17,000 sq. ft. lot	\$30.78	\$34.30-\$41.11	\$21.80-\$26.08	\$35.03	\$42.04	\$48.34	\$50.76	\$53.30
Over 17,000 sq. ft. lot	\$36.09	\$41.11-\$50.73	\$26.08-\$32.21	\$41.19	\$49.42	\$56.84	\$59.68	\$62.66
Metered Charges								
Uniform Vol. Charge (\$/hcf) (a)	\$0.82	\$1.005	\$0.601	\$0.84	\$1.01	\$1.16	\$1.22	\$1.28
Fixed Meter Charges (b)								
5/8"-3/4"	\$13.63	\$8.12	\$11.12	\$9.01	\$10.82	\$12.44	\$13.06	\$13.71
1"	\$18.14	\$10.17	\$13.94	\$12.78	\$15.34	\$17.64	\$18.52	\$19.45
1-1/2"	\$22.54	\$15.53	\$21.09	\$22.13	\$26.55	\$30.53	\$32.06	\$33.66
2"	\$27.20	\$21.09	\$28.54	\$33.38	\$40.06	\$46.06	\$48.37	\$50.79
3"	\$36.27	\$33.73	\$45.61	\$63.43	\$76.12	\$87.53	\$91.91	\$96.51
4"	\$47.16	\$51.58	\$69.22	\$97.19	\$116.63	\$134.13	\$140.83	\$147.88
6"	\$70.90	\$83.08	\$111.29	\$190.95	\$229.14	\$263.51	\$276.68	\$290.51
8"	\$90.55	\$119.27	\$159.36	\$303.49	\$364.19	\$418.82	\$439.76	\$461.75
10"	\$109.16	\$180.55	\$241.79	\$434.84	\$521.80	\$600.07	\$630.08	\$661.58
12"	\$127.83	\$219.36	\$293.88	\$809.95	\$971.95	\$1,117.74	\$1,173.62	\$1,232.31
Annual Rate Increase (d)				(varies)	20.0%	15.0%	5.0%	5.0%

a. Current Zone 1 metered charges include a minimum consumption of 1,680 cubic feet per month.

b. Fixed Meter Charges cover customer service, billing, and related costs that do not vary with consumption levels.

c. 2004-05 Flat Rate Charges are from Tables 7-1. 2004-05 Metered Charges are from Tables 6-6. After 2004-05, rates are "across-the-board" increases using the Annual Rate Increase shown. Effective date of implementation is shown below the fiscal year.

d. From Table 7-1, Financial Plan - Projected Rate Revenue Including Rate Increases. Percent rate increases in 2004-05 vary by customer class and current zone.

Figure 8-1

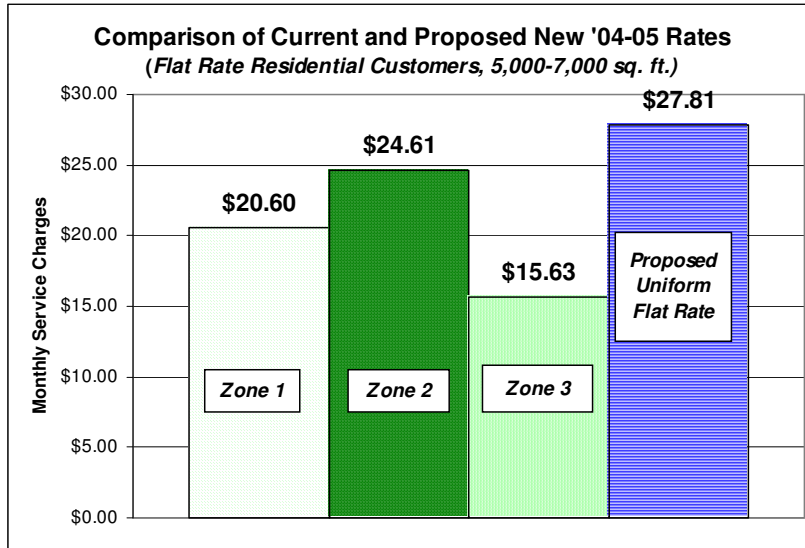


Figure 8-2

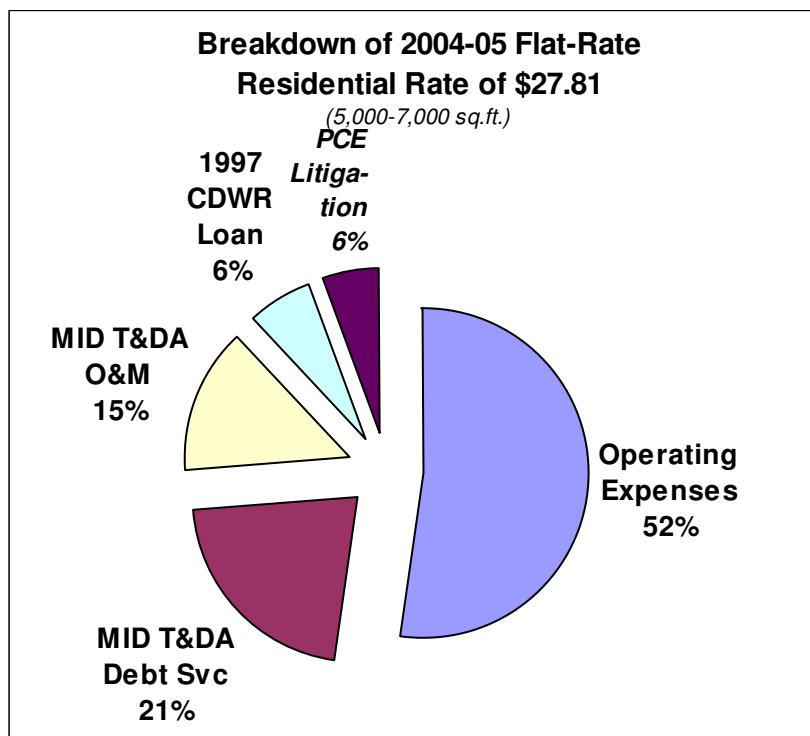


Figure 8-3

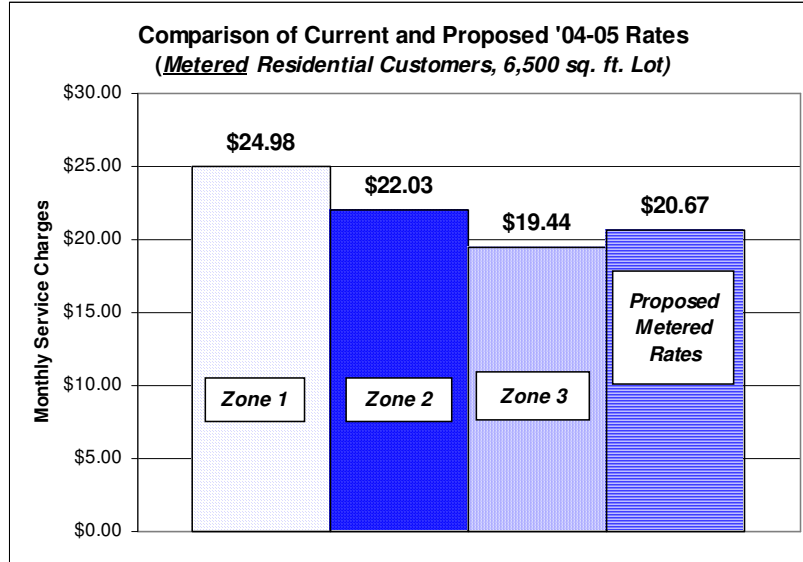
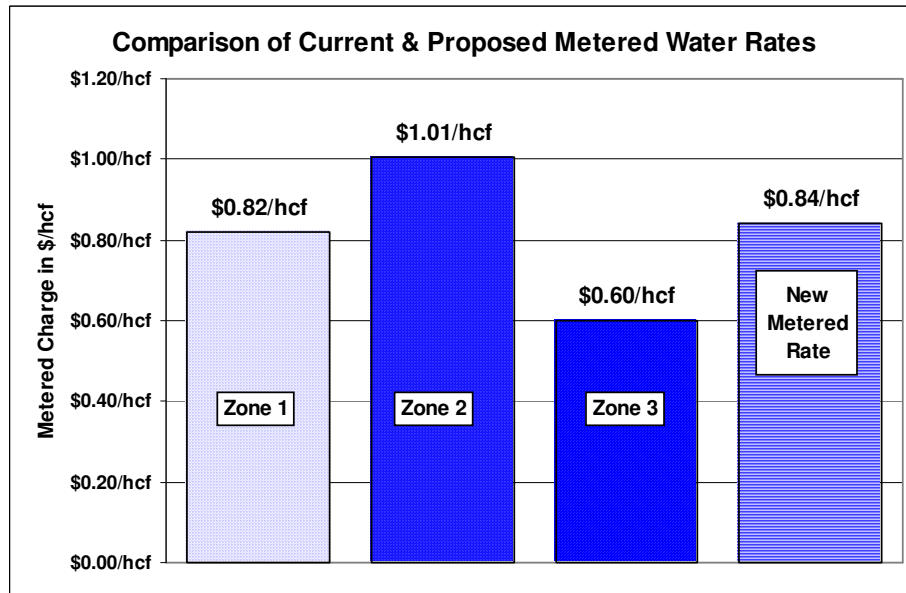


Figure 8-4 compares the current metered volume charges for each zone with the new uniform metered volume charge. Figure 8-5 is a comparison of the new volume charge on a per gallon basis with what consumers typically pay for (1) a gallon of water from the grocery store or a water vendor and (2) the common grocery store price per gallon for brand name 16 ounce bottled water. If the fixed monthly meter charge for a 1-inch meter were added to the City’s new volume charge of \$0.0011/gallon, the price would approximately double to \$0.0024/gallon.

Figure 8-4



hcf = "hundred cubic feet" of water consumption

Figure 8-5

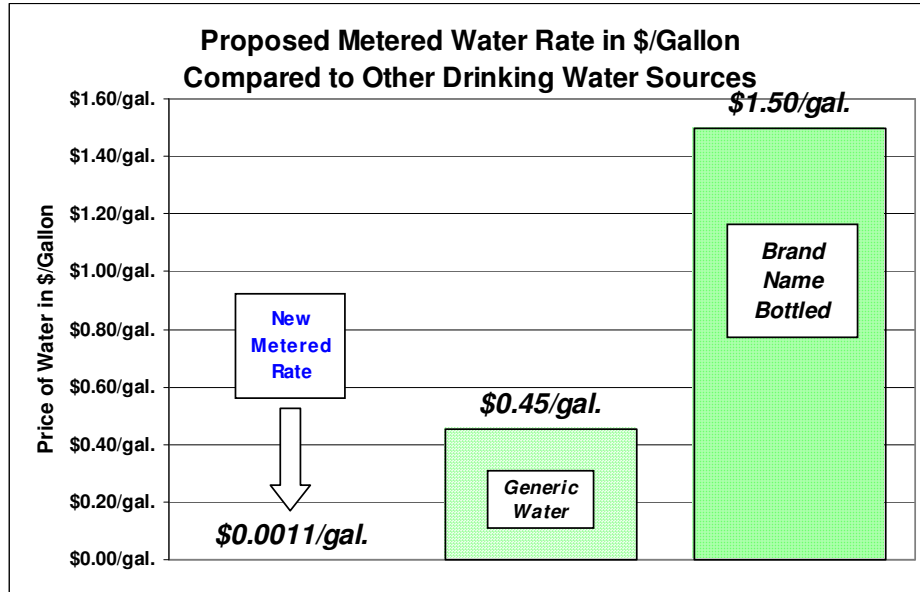


Table 8-2 summarizes the annual percentage increases of the rates shown in Table 8-1. As shown in this table, the flat rate category with the largest number of customers is the 5,001-7,000 square foot range, which has almost half the flat rate customers. Zone 1 customers in this class have a 35% rate increase in 2004-05. Zone 2 and 3 customers in this class and other flat-rate customers have larger or smaller increases due to the cost-of-service allocation process described above, which often results in some customer classes paying more or less than the average rate increase. These differences are often more dramatic when it has been many years since the last cost-of-service analysis was performed.

The percent changes in metered rates further illustrates this point: the fixed meter charges actually decline for the smaller meter sizes, while the uniform volume charge increases by 2.7%.

Table 8-2

Projected Water Rates and Annual Percentage Increases

City of Modesto

Current Flat Rates - Zone 1				New '04-05 SFR Flat Rates		
Current Sq. Ft. Ranges	Increment	% of Flat-Rate Lots	Current Rates	Low End	High End	% Change
<3,500 sq. ft. lot	<3,500	2.2%	\$17.86	\$24.47	--	37.0%
3,501-7,000 sq. ft. lot	3,501-5,000	9.8%	\$20.60	\$24.47	--	18.8%
	5,001-7,000	49.1%	\$20.60	--	\$27.81	35.0%
7,001-10,500 sq. ft. lot	7,001-10,000	29.5%	\$23.08	\$27.81	--	20.5%
	10,001-10,500	1.7%	\$23.08	--	\$33.00	43.0%
10,501-14,000 sq. ft. lot	10,501-14,000	4.4%	\$25.56	\$33.00	--	29.1%
14,001-17,500 sq. ft. lot	14,001-17,000	0.9%	\$30.78	\$35.03	--	13.8%
	17,001-17,500	0.1%	\$30.78	--	\$41.19	33.8%
17,501-21,000 sq. ft. lot	17,501-21,000	0.8%	\$36.09	\$41.19	--	14.1%

Annual Percent Increases of Flat Rates (b)						
New Flat Rate Charges	Current Rates (a)	2004-05 (a)	2005-06	2006-07	2007-08	2008-09
0-5,000 sq. ft. lot	\$20.60	18.8%	20.0%	15.0%	5.0%	5.0%
5,001-7,000 sq. ft. lot	\$20.60	35.0%	20.0%	15.0%	5.0%	5.0%
7,001-11,000 sq. ft. lot	\$23.08	43.0%	20.0%	15.0%	5.0%	5.0%
11,001-17,000 sq. ft. lot	\$30.78	13.8%	20.0%	15.0%	5.0%	5.0%
Over 17,000 sq. ft. lot	\$36.09	14.1%	20.0%	15.0%	5.0%	5.0%

Metered Rates - Zone 1						
Annual Percent Increases of Metered Rates (b)						
Metered Charges	Current Rates	2004-05	2005-06	2006-07	2007-08	2008-09
Uniform Volume Charge	\$0.82	2.7%	20.0%	15.0%	5.0%	5.0%
Fixed Meter Charges						
5/8"-3/4"	\$13.63	-33.9%	20.0%	15.0%	5.0%	5.0%
1"	\$18.14	-29.5%	20.0%	15.0%	5.0%	5.0%
1-1/2"	\$22.54	-1.8%	20.0%	15.0%	5.0%	5.0%
2"	\$27.20	22.7%	20.0%	15.0%	5.0%	5.0%
3"	\$36.27	74.9%	20.0%	15.0%	5.0%	5.0%
4"	\$47.16	106.1%	20.0%	15.0%	5.0%	5.0%
6"	\$70.90	169.3%	20.0%	15.0%	5.0%	5.0%
8"	\$90.55	235.2%	20.0%	15.0%	5.0%	5.0%
10"	\$109.16	298.3%	20.0%	15.0%	5.0%	5.0%
12"	\$127.83	533.6%	20.0%	15.0%	5.0%	5.0%

Source of rate information: Table 8-1.

a. Rates reflects the lowest current rate in the lot-size range.

b. Effective dates of new rates are 1-1-05 (Year 1), 7-1-05 (Year 2), 7-1-06 (Year 3), 7-1-07 (Year 4), and 7-1-08 (Year 5).

Similar comparisons of the percentage increases in Zone 2 and 3 customers are shown in Table 8-3. As this table indicates, Zone 2 customers have smaller increases or even decreases because their rates were the highest of the three zones prior to the adjustment. In contrast, Zone 3 customers have the highest percentage increases because their current rates were the lowest among the three zones.

Table 8-3
Projected Water Rates and Annual Percentage Increases
City of Modesto

Current Flat Rates - Zone 2			New '04-05 SFR Flat Rates		
<i>Current Sq. Ft. Ranges</i>	<i>Increment</i>	<i>Current Rates</i>	<i>Low End</i>	<i>High End</i>	<i>% Change</i>
0-6,000 sq. ft. lot	0-5,000	\$24.81	\$24.47	--	-1.4%
	5,001-6,000	\$24.81	--	\$27.81	12.1%
6,001-10,000 sq. ft. lot	6,001-7,000	\$28.58	\$27.81	--	-2.7%
	7,001-10,000	\$28.58	--	\$33.00	15.5%
10,001-16,000 sq. ft. lot	10,001-11,000	\$34.30	\$33.00	--	-3.8%
	11,001-16,000	\$34.30	--	\$35.03	2.1%
16,001-25,000 sq. ft. lot	16,001-17,000	\$41.11	\$35.03	--	-14.8%
	17,001-25,000	\$41.11	--	\$41.19	0.2%
>25,000 sq. ft. lot	>25,000	\$50.73	\$41.19	--	-18.8%
Annual Percent Increases of Projected Rates					
New Flat Rate Charges	2004-05 (a)	2005-06	2006-07	2007-08	2008-09
0-5,000 sq. ft. lot	-1.4%	20.0%	15.0%	5.0%	5.0%
5,001-7,000 sq. ft. lot	-2.7%	20.0%	15.0%	5.0%	5.0%
7,001-11,000 sq. ft. lot	15.5%	20.0%	15.0%	5.0%	5.0%
11,001-17,000 sq. ft. lot	2.1%	20.0%	15.0%	5.0%	5.0%
Over 17,000 sq. ft. lot	0.2%	20.0%	15.0%	5.0%	5.0%

Current Flat Rates - Zone 3			New '04-05 SFR Flat Rates		
<i>Current Sq. Ft. Ranges</i>	<i>Increment</i>	<i>Current Rates</i>	<i>Low End</i>	<i>High End</i>	<i>% Change</i>
0-6,000 sq. ft. lot	0-5,000	\$15.63	\$24.47	--	56.5%
	5,001-6,000	\$15.63	--	\$27.81	77.9%
6,001-10,000 sq. ft. lot	6,001-7,000	\$18.20	\$27.81	--	52.8%
	7,001-10,000	\$18.20	--	\$33.00	81.3%
10,001-16,000 sq. ft. lot	10,001-11,000	\$21.80	\$33.00	--	51.4%
	11,001-16,000	\$21.80	--	\$35.03	60.7%
16,001-25,000 sq. ft. lot	16,001-17,000	\$26.08	\$35.03	--	34.3%
	17,001-25,000	\$26.08	--	\$41.19	57.9%
>25,000 sq. ft. lot	>25,000	\$32.21	\$41.19	--	27.9%
Annual Percent Increases of Projected Rates					
New Flat Rate Charges	2004-05 (a)	2005-06	2006-07	2007-08	2008-09
0-5,000 sq. ft. lot	56.5%	20.0%	15.0%	5.0%	5.0%
5,001-7,000 sq. ft. lot	52.8%	20.0%	15.0%	5.0%	5.0%
7,001-11,000 sq. ft. lot	81.3%	20.0%	15.0%	5.0%	5.0%
11,001-17,000 sq. ft. lot	60.7%	20.0%	15.0%	5.0%	5.0%
Over 17,000 sq. ft. lot	57.9%	20.0%	15.0%	5.0%	5.0%

a. Reflects percentage increases for the lot sizes with the most accounts.

Source of rate information: Table 8-1.

Because of the larger percentage rate increases for Zone 3 flat rate residential customers, we have shown the number of residential lots in each lot size in Table 8-4 along with the percentage rate increase and the percentage those lots make up of all flat rate lots.

Table 8-4
Number of Zone 3 Lots by Size and Their % Rate Increases
City of Modesto

Lot Sizes <i>(square feet)</i>	% Rate Increase <i>(2004-05) (a)</i>	Number of Zone 3 Lots (b)	% of All Flat Rate Lots
0-5,000	56.5%	327	0.5%
5,001-6,000	77.9%	1,035	1.7%
6,001-7,000	52.8%	3,677	6.0%
7,001-10,000	81.3%	2,331	3.8%
10,001-11,000	51.4%	181	0.3%
11,001-16,000	60.7%	385	0.6%
16,001-17,000	34.3%	43	0.1%
17,001-25,000	57.9%	343	0.6%
>25,000	27.9%	246	0.4%
Total - Zone 3	--	8,568	14.0%
Total - All Zones	--	61,255	--

a. From Table 8-3

b. From City billing records.

9. Summary of Findings and Recommendations

Findings

The primary findings of this study are as follows:

1. The City's Restructuring of its Water Rates is Consistent with Industry Standards

The City desires to change its rate structure from the current three-zones to a single service area and at the same time adopt a uniform rate structure that treats similar types of customers, such as single-family residential, the same. We believe these changes are consistent with commonly accepted rate-making principles and are an equitable approach to generating sufficient revenues.

2. The City has Defined Its Commitment to Its Water Utility Customers in Four Promises

Along with the City's intentions to adopt a new single-zone service area and uniform rate structure, the City considers the following set of commitments to be the foundation of the water services it offers all its water utility customers:

- Providing sufficient quantities of clean water and adequate water pressures under all reasonable circumstances
- Planning for an adequate future supply of water
- Providing system maintenance at a reasonable price
- Meeting the challenge of an unpredictable regulatory climate

3. The Annual Revenue Requirement of the City's Water Utility Will Increase Significantly Over the Next Five Years

The Water Fund's annual revenue requirement is projected to increase approximately 69% by 2008-09, increasing from a current amount of approximately \$31 million to more than \$51.8 million. This is primarily due to (1) the loss of numerous wells because of groundwater contamination, (2) debt service payments related to construction of a new MID surface water treatment plant, (3) funding the annual operation and maintenance of this new plant, and (4) construction of new downstream transmission and storage facilities. However, this does not include cash-funded CIP projects of approximately \$55 million that are allocated to existing customers, which will be paid out of reserve funds.

4. The City is Planning on Cash-Funding Almost \$55 million in New Capital Improvement Projects Over the Next Five Years.

The increase in annual revenue requirement described above does not include cash-funded CIP projects costing approximately \$55 million that are allocated to existing customers. These are pay-as-you-go projects, which will be fund directly out of reserve funds rather than issuing additional long-term debt.

5. The City's Water Utility Fund Reserves will Fall to Detrimentially Low Levels by June 30, 2005 and After Without Substantial Rate Increases

Without significant rate increases similar to those proposed in this report, the City's reserve funds will continue to rapidly deteriorate and the City will be in technical default of its bond covenant coverage requirements.

6. City Billing and Water Consumption Data Provide an Adequate Basis for Developing New Flat-Rate Residential Customer Classes

It is reasonable for the City to develop new flat-rate residential customer classes and cost-of-service rates using account and water consumption data from the City's billing system records and engineering studies prepared by West Yost & Associates.

7. Rate Increases for the Largest Group of Customers will be 35% in the First Year (Proposed Adoption on January 1, 2005)

Approximately 50% of all flat-rate residential customers have lot sizes between 5,000 and 7,000 square feet. As the largest single rate class and largest revenue generating class, we have applied the targeted first year rate increase of 35% to this customer class (for Zone 1; Zone 2 will be either 15% or -2%, and Zone 3 will be 54% or 78%). Based on cost-of-service principles, other smaller customer classes will have rate increases either higher or lower than 35%.

8. The City Needs to Adopt a Five-Year Financial Plan That Will Adequately Fund Its Extensive Capital Improvement Program

In order to meet the City's significant capital project costs, new debt service payments, annual bond-coverage ratios, and costs of operations, the City needs a financial plan. This plan should include additional long-term debt, significant cash-funded projects, and annual rate increases of 35% (which varies by customer class and current zone), 20%, 15%, 5% and 5% beginning mid-year 2004-05 and then every July 1 thereafter.

Recommendations

During the course of this rate study, a number of rate-related issues have been evaluated. The following are the recommended actions on these issues:

1. Implement a Single-Zone Service Area and Uniform Rate Structure

The City's rate objectives and policy of treating all customers equitably are consistent with cost-of-service principles, a single-zone service area, and a uniform rate structure.

2. Adopt a Cost-of-Service Rate Methodology

To meet the City's overall objectives developed by the City's Water Task Force, we recommend adopting the cost-of-service rate methodology discussed in Section 5, which combines the current three-zone rate structure into one common service area and one set of uniform rates.

3. Adopt and Implement the Proposed 5-Year Plan for New Rates

Adopt the new five-year rate schedule developed in the preceding sections of this report, which include a target first year rate increase of 35% for Zone 1 flat-rate residential customers (5,001-7,000 square foot lots only; other classes and zones are different) followed by annual across-the-board increases of 20%, 15%, 5% and 5%. This is projected to meet the City's water revenue requirements, avoid the need for an annual rate-setting process, and provide advanced notice so that water customers can adequately prepare for the subsequent rate increases.

4. Implement the Proposed Financial Plan

The City should adopt and implement the financial plan outlined in Section 7 of this report, including the separate reserve funds for rate stabilization, operations and repair and replacement, the target balances shown in Table 7-3, and the combined pay-as-you-go and debt approach to funding future capital improvements.

5. Plan to Periodically Review the Cost-of-Service Rate Structure and Update the Rate Analysis No Later Than Year 3 of the Financial Plan (FY 2006-07)

The City is undergoing significant rate-related changes: (1) creation of a single service area, (2) significant rate increases, and (3) residential customers are being converted from flat- to metered rates. The combined effects of these changes on water consumption and total rate revenue should be closely evaluated in the next few years and the City should plan to periodically evaluate these cost-of-service issues and equity among customer classes. To ensure that capital and operating costs are being equitably allocated, the City should plan to update this cost-of-service analysis no later than Year 3, or sooner if warranted.

6. Adopt and Implement a Metering Plan

We recommend the City finalize and implement a metering plan very similar to the one developed by the Water Task Force (and discussed in this report) as a part of its long-term rate policy and capital improvement program. This is recommended because: (1) meter-based rates are the most equitable means of charging customers in direct proportion to their cost of service, (2) conservation-oriented rates and summer-time peak reduction programs are most effective when larger percentages of the customer base is metered, and (3) it is likely that the State will require the City to install meters on residential customers in the not-to-distant future.

7. Adopt a Policy of Automatically Updating Water Rates After Year 5 Using a Consumer Price Index Adjustment

As a part of the City's overall financial plan, we recommend the City adopt and implement a procedure to automatically update its water rates, beginning in Year 6 (July 1, 2009), using the *Consumer Price Index, Urban Wage Earners and Clerical Workers Series* for the San Francisco California Metropolitan Statistical Area (CMSA), prepared by the California Department of Finance, Demographics Research Unit.

APPENDICES

APPENDIX A – COST OF SERVICE RATE MAKING PRINCIPLES

This rate study uses a cost-of-service approach that is consistent with the generally accepted water rate cost-of-service principles. One of the more commonly referenced publications is the Manual of Water Supply Practices (M1), Principles of Water Rates, Fees, and Charges, published by the American Water Works Association (AWWA). The following is a brief summary of some of the more relevant sections from this manual.

- **Chapter 9: Selecting Rate Structures** – A water rate structure is a fee or schedule of fees designed, among other things, to recover the utility's costs. The design, however, is a function of many diverse and sometimes competing objectives. A properly selected rate structure should support and optimize a blend of various utility objectives and should work as a public information tool in communicating these objectives to customers.

No one rate structure meets all utility objectives equally, and not all objectives are valued the same by the utility or its customers. Rate objectives common to many utilities and their customers include

- Yielding necessary revenue in a stable and predictable manner
- Minimizing unexpected changes to customer bills
- Discouraging wasteful use and promoting justified uses
- Promoting fairness and equity
- Maintaining simplicity, certainty, convenience, feasibility, and freedom from controversy

Recognizing and recovering the costs associated within different types of demand from appropriate customer classes avoids subsidies among customer classes and minimizes potential subsidies within customer classes.

- **Chapter 14: Fixed Versus Variable Charges** – Water utilities use many different types of fixed and variable charges in their rate designs, including:
 - Service charges, which typically recover costs such as meter reading, billing costs, and other costs that the utility incurs equally per customer or per customer class.
 - Meter charges are a fixed fee that increases with meter size and typically recover the same costs as a service charge plus other customer-related costs that change as a function of meter size, such as repairs and replacements.
- **Chapter 10: Uniform Rates:**
 - Uniform-volume rates, sometimes called single-tariff pricing, are a constant unit price for all metered volumetric units of water consumed that can be applied to all customer or service classifications, such as residential, commercial, and industrial. When designing a uniform rate applicable to general water service customers, potential cost-of-service differentials between customer and service classifications are not recognized.

- However, a rate structure that combines a uniform-volume charge with fixed meter charges, which do recognize these differentials because they are based on meter sizes, addresses these potential differences, such as peaking requirements, between customer classes.

APPENDIX B – SPECIAL CITY RATE POLICIES AND CONSIDERATIONS

Introduction – Prior to purchasing the Del Este Water Company, the water utility's service area had been contiguous in the sense that its water production, transmission, and distribution facilities benefited essentially all of the existing customers at that time. With the purchase of Del Este, the City acquired the outlying service areas of Del Rio, Waterford, Hickman, Grayson and Turlock, which receive groundwater, not treated surface water. Likewise, the water production, transmission, and distribution facilities in these outlying areas benefited only them.

As a practical matter, when the City purchased Del Este it agreed to, and accepted the obligation to serve these new areas regardless of whether the cost of doing so may be higher or lower than the average customer within the pre-1995 service area.

At this time, the City is facing costly capital improvements, including the new MID surface water treatment plant, which significantly increase the cost of service to the customers within this pre-1995 service area. However, there are also potentially significant service problems associated with serving these smaller outlying areas. The City's engineering staff and their consultants have expressed concerns about how the groundwater contamination and well-head treatment issues currently affecting other City wells could impact the cost of service in these smaller areas. For example, the Water Utility and its engineering consultants estimate that providing well-head treatment to existing wells is more than twice as expensive as water from the new MID water treatment plant. If these kinds of contamination problems occurred in one of the smaller service areas such as Grayson, Del Rio, or Hickman and the costs were only spread over that service area, it would be exorbitantly costly to those rate payers.

However, the proposed new rate structure combines these outlying areas into a single-zone service area, thereby spreading the cost burden of the water system as a whole over the entire new service area. This means the risk of any one of the smaller outlying areas incurring extraordinarily high monthly charges is largely mitigated when costs are spread equally over the entire service area. While this changes the historical relationships and the assumptions previously held regarding how water rates have been calculated in the past, it is consistent with well-accepted rate practices of treating similar customers within a common service area, such as single-family residential, as a single customer class, regardless of differences in the service costs of smaller communities within the service area.

Rate Methodology and City Policies – The following is a brief summary of how the rate methodology used in this rate study applies to these issues, along with a brief summary of the City's policy position on the City's obligations to its customers and the benefits its water utility customers receive.

Proposition 218 (Prop 218), generally known as the “the right to vote on new taxes” law, requires that any fee imposed as an incident of property ownership shall not “...exceed the proportional cost of the service attributable to the parcel.” Municipal water utilities, such as the City of Modesto, have the choice of either taking a legally conservative approach to this law by assuming it applies to any changes in its water rates, or assuming it does not apply. The City is assuming Prop 218 does apply to its water rates and that this law furthermore includes a prohibition against any water utility customer or customer class subsidizing any other customer(s) or customer class.

To address the concern about possible cross-class subsidies, we have used a rate methodology that conforms to commonly accepted industry rate-making practices in that it provides cost-of-service based rates for each customer class. The following is a summary of a few key rate-making principles from the American Water Works Association (AWWA) rate manual (Manual M1) that have been reflected in our rate methodology (*see Appendix A for further detail*):

- **Rate Structure Objectives** – Recognizing and recovering the costs associated within different types of demand from appropriate customer classes avoids subsidies among customer classes and minimizes potential subsidies within customer classes. While no one rate structure meets all utility objectives equally, some of the common accepted rate objectives include:
 - Promoting fairness and equity
 - Yielding necessary revenue in a stable and predictable manner
 - Discouraging wasteful use and promoting justified uses
 - Maintaining simplicity, certainty, and convenience
- **Use of Fixed and Variable Service Charges** – Water utilities use many different types of fixed and variable charges in their rate designs, including:
 - Monthly service charges which typically recover costs such as meter reading, billing costs, and other costs that the utility incurs equally per customer or per customer class.
 - Meter charges that are a fixed fee that increases with meter size and typically recovers costs similar to those collected by service charges, plus customer-related costs that change as a function of meter size.
 - Uniform-volume rates that use a constant unit price for all metered volumetric units of water consumed and are applied to all customers or customer classes, such as residential, commercial, and industrial.

Implications of Rate Methodology for Cost Allocations – A major aspect of the rate methodology is that the current three-zone structure is collapsed into a single service area. In doing so, there is now no distinction between customers based on whether they are inside or outside of City boundaries. As a result of the new combined service area and uniform rate structure, all capital and operating costs are now equally allocated among existing water utility customers (i.e., over the entire rate base and service area).

This rate structure eliminates previous differences in the cost of service in the three zones. For example, the cost of the new MID treatment plant is now spread over the entire service area, even though some parts of the service area will not receive water from the new treatment plant. Likewise, because of their lack of system redundancy and distance from the central service area, many of the outlying areas may have future maintenance and filtering costs that are higher than the areas within City boundaries, but these higher costs would be spread over the entire rate base.

In addressing the concerns about any cross-class subsidies in the new rate structure, particularly in outlying areas versus those within the City boundaries, the water rate resolution the City will use to adopt the new rate structure includes a set of obligations to all water utility customers, including:

- Providing sufficient quantities of clean water and adequate water pressures under all reasonable circumstances
- Providing an adequate future supply of water
- Providing good maintenance at a reasonable price
- Acting promptly to assure a clean water supply in the face of potential unpredictable and sometimes dramatic changes in the regulatory climate

In essence, the City's water utility customers will be paying for these promises, in addition to the fixed assets and variable costs involved in providing water. For example, operating a water utility system involves both fixed assets and variable costs, both of which change over time as new facilities are constructed while others are taken out of service. However, the promise-specific obligations included in the City's proposed new rate structure means that all areas benefit from the same guarantee of clean and sufficient quantities of water, regardless of the varying treatment and maintenance costs or how these might vary with respect to rate payers in any specific area.

As a further illustration, providing water to customers adjacent to the water treatment facilities (or production well) is less expensive than providing that same water to customers that are several miles away from those facilities. That is, transmission facilities such as pipelines and pump stations that are required to move the water to outlying areas, and associate operating cost of these facilities, are higher on a per unit of water than for customers adjacent to the treatment plant. But, because of the City's promise-specific obligations, similar customers (e.g., single-family residential) will pay the same water rates regardless of whether they are adjacent to or miles away from the treatment plant. This is a key rate-making principle imbedded in the proposed new single-zone service area and uniform rate structure.

APPENDIX C – PRICE ELASTICITY OF DEMAND

It is well documented from empirical data and various studies that metered residential water customers tend to reduce their consumption when the price of water increases. Commercial and industrial customers typically reduce their consumption to lesser degree because: (1) they typically have less discretionary water use, and (2) they have often already implemented common conservation practices in an effort to minimize their water charges.

Price elasticity of demand is defined as the percentage change in water consumption in response to a one-percent increase in price. For example, a price elasticity of -0.50 means that if water prices increased by 10%, single-family residential demand would decrease by 5%. The price elasticity is higher in the summer when there is higher consumption and more discretionary consumption, and lower in the winter. Metered single-family customers are thought to have summer-time price elasticity's ranging from -0.20 to -0.50 compared to winter-time elasticity's of -0.10 to -0.30 (*source: California Urban Water Conservation Council, 1994*).

However, Modesto has already implemented significant conservation measures: (1) a Stage 1 conservation program has been in place the last three years, and (2) the City has implemented 12 of the 14 recommended best management practices (BMPs) from the California Urban Water Conservation Council (CUWCC). Also, we have relied on demand projections prepared by the City's engineering consultant, West Yost & Associates, which assume there are no reductions due to the City's metering program or rate increases. These projections, which were prepared for system planning and engineering design purposes, are "conservative" from a hydrological and system capacity perspective. However, they are not conservative from a financial perspective in that they could over-project the future revenue generated from water rates. To address this potential revenue shortfall, we have carefully evaluated the Water Utility's various reserve funds (e.g., rate stabilization and operating reserves) to ensure there are sufficient funds to cover potential short-term revenue reductions.

After considering these factors, we have chosen to use a fairly modest price elasticity of -0.15, which is more representative of a year round and relatively inelasticity response, and have not incorporated this impact until the first full year of rate increases, which is 2005-06. The multi-family price elasticities, which are generally much lower than for single-family customers, has been estimated at -0.05.

APPENDIX D – COST INDICES AND AUTOMATIC ANNUAL COST ADJUSTMENTS

The following are separate recommended procedures for (1) annual adjustments to water rates, and (2) adjusting capital improvement program costs.

Indexed Rate Adjustments – As the City considers the structural changes to its water rate schedule, we recommend the City also consider adopting a procedure for indexing rates beyond the proposed five-year period. The advantage of using a cost-index approach is that it would avoid (1) the need for annually evaluating rate adjustments, and (2) rates lagging behind actual costs and creating budget shortfalls. Assuming the City adopts the proposed rate for the next five years, this indexing procedure would apply to rates after 2008-09 (i.e., beginning July 1, 2009).

We recommend using a regional cost index: the *Consumer Price Index, Urban Wage Earners and Clerical Workers Series* for the San Francisco California Metropolitan Statistical Area (CMSA), prepared by the California Department of Finance, Demographics Research Unit. This index is adjusted monthly and should be used as a composite percentage increase from the month of the last rate adjustment to the most recent month available. For example, if rates were last adjusted September 15, 2004, and the City intended to update them in September 15, 2005, the O&M cost component would cover from the previous September through August 2005, which is the month just prior to implementation.

Capital Improvement Program Costs – The costs of projects included in the City Capital Improvement Program (CIP) involve construction costs for transmission and distribution facilities, pumping plant, water treatment, and engineering design and construction management services. These costs would not be affected by the CPI used for the rate adjustments, but would be handled separately.

CIP costs are tied to what is commonly referred to as “brick and mortar” costs and should therefore be based on an engineering construction cost index. We recommend the City use *The Handy Whitman Index of Public Utility Construction Costs, Trends of Construction Costs*, prepared by Whitman, Requardt & Assoc., LLP. This index is published semi-annually, but reflects monthly changes in costs and has an index specific to water utility construction in the Pacific Region. It has indices that are further broken down by type of construction, including:

- Source of Supply Plant
- Pumping Plant
- Water Treatment Plant
- Transmission Plant
- Distribution Plant
- Miscellaneous Items

The most appropriate type of construction cost index should be applied to each capital cost budget line item in the same manner as the O&M cost adjustments.

Table CCR-2 summarizes the annual average increases in both these cost indices for the last five years.

Table CRR-2 Cost Indices for Last Five Years					
California Consumer Price Indices (CPI)	% Increase from Previous Year				
	1999	2000	2001	2002	2003
	Dec.	Dec.	Dec.	Dec.	Dec.
San Francisco CMSA	4.3%	4.4%	5.3%	1.7%	1.9%
Handy-Whitman Index of Construction Costs	1999	2000	2001	2002	2003
	July	July	July	July	July
Source of Supply Plant					
Collecting & Impounding Res.	1.6%	2.2%	1.8%	1.8%	1.2%
Pumping Plant					
Structures & Improvements	2.4%	6.3%	1.6%	4.0%	0.3%
Water Treatment Plant					
Structures & Improvements	2.4%	6.3%	1.6%	4.0%	0.3%
Transmission Plant					
Steel Mains	2.3%	7.3%	1.0%	3.9%	-0.7%
Distribution Plant					
Mains - Ave. All Types	1.8%	3.8%	1.4%	5.3%	0.0%

Sources: (1) Consumer Price Index: Urban Wage Earners and Clerical Workers Series for the San Francisco CMSA, prepared by the California Department of Finance, Demographics Research Unit. (2) The Handy Whitman Index of Public Utility Construction Costs, Trends of Construction Costs, prepared by Whitman, Requardt & Assoc., LLP.

APPENDIX E – DOCUMENTATION OF RATE MODEL TABLES (Under Separate Cover)