

DRAFT

WATER COST OF SERVICE RATE ANALYSIS STUDY

B&V PROJECT NO. 172594.0100

PREPARED FOR

City of Napa, CA – Water Division

AUGUST 11, 2011



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1 Introduction

This report was prepared for the City of Napa (City) to document the development of a multi-year financial plan, the cost of service analysis and the design of a rate structure for the City's Water Division. The specific goals of the study were to:

- Review and evaluate existing policies and procedures affecting water rates;
- Evaluate the adequacy of projected revenues under existing rates to meet projected revenue requirements;
- Develop a sound financial plan for the Water Division covering a ten-year study period for both ongoing operations and planned capital improvements;
- Allocate the Water Division's projected Fiscal Year 2011-2012 (FY 12) revenue requirements to the various customer class in accordance with the respective service requirements;
- Develop a suitable rate schedule that produces revenues adequate to meet financial needs while recognizing customer costs of service and local and state policy considerations such as Proposition 218 and Senate Bill x7-7 (SBx7-7)
- Reinstate a structure that includes a fixed element to more accurately reflect costs that are incurred each billing cycle irrespective of the consumption volume; and
- Assess the rate structure to achieve an industry-wide standard that promotes water conservation by reducing discretionary water use as well as proportionately recovering the higher cost incurred in providing a higher level of service during high demand periods.

1.1 BACKGROUND

The City of Napa provides water service to over 24,000 residential, commercial, irrigation, schools, and agricultural accounts. In addition, the City maintains a contract to treat and deliver potable water to the Cities of American Canyon and Calistoga. The City obtains potable water from two primary sources: surface water impounded at two reservoirs and from the State Water Project via the Napa County Flood Control and Water Conservation District.

Surface water at Lake Hennessey and Milliken Reservoir provide the City a storage capacity of 31,000 and 1,390 acre-feet respectively. State Water Project water is delivered through the North Bay Aqueduct and provides the City with 21,900 acre-feet. Surface and State Water Project water is treated at local treatment plants with a total capacity of 43.5 million gallons per day (MGD). All treated water is delivered through the City's extensive system of 380 miles of transmission and distribution pipeline.

The City operates and maintains the Water Division as a self-supporting enterprise. As such, the water rates are developed to provide sufficient levels of revenue to meet all operation and maintenance expenses, debt service requirements, routine annual replacements of capital improvements to be funded from current revenues, and other revenue requirements.

1.2 PURPOSE

The purpose of this report is to present the findings obtained from Black & Veatch Corporation's (Black & Veatch's) study of the Water Division's rate structure and alternatives,

financing, and capital needs. The study develops a financial plan that projects operating revenue, expenses and capital financing costs for the Water Division over a ten-year planning period ending June 30, 2021. As part of the plan, future revenues under existing rates, operation and maintenance expense, principal and interest expense on bonded debt, and capital improvement requirements are considered. Annual projections of customers, water use, revenues, and expenditures have been made using historical data and estimates based on SBx7-7 requirements for the next ten years.

1.3 SCOPE OF WORK

The results of a study of the projected revenues, revenue requirements, costs of service, and rates for water service are presented herein. For purposes of this report, the study period is the ten fiscal years beginning July 1, 2011 and ending June 30, 2021. For this report, reference to the study period (Study Period) focuses on the period between July 1, 2011 and June 30, 2016. Based on Proposition 218, rates cannot be set in excess of 5-year increments. Unless otherwise noted, references in this report to a specific year are for the City's year ending June 30. To avoid confusion between calendar and fiscal years, the term FY refers to the year beginning July 1 and ending June 30. Revenues and revenue requirements for the study period were projected based on a review of historical factors and the Water Division's operating and capital budgets and financial policies. The study of revenue requirements recognizes projected operation and maintenance (O&M) expense, establishment and/or maintenance of reserve funds, and capital financing requirements. Capital financing requirements include payments on outstanding bond issues as well as capital improvement expenditures met from annual revenues and available reserve funds.

The Water Division's costs of service were allocated to customer classes utilizing a cost causative approach endorsed by the American Water Works Association (AWWA) M1 manual. This allocation methodology produces cost of service allocations recognizing the projected customer service requirements for the City. Proposed rates are designed in accordance with allocated cost of service and local policy considerations. The extent to which the existing rate structure recovers revenues from customer classes in accordance with cost of service allocations is also evaluated.

1.4 DISCLAIMER

In conducting our study, we reviewed the books, records, agreements, capital improvement programs, and customer sales and financial projections of the Water Division's as we deemed necessary to express our opinion of the operating results and projections. While we consider such books, records, documents, and projections to be reliable, Black & Veatch has not verified the accuracy of these documents.

The projections set forth in this report below are intended as "forward-looking statements". In formulating these projections, Black & Veatch has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. The methodology utilized in performing the analyses follows generally accepted practices for such projections. Such assumptions and methodologies are reasonable and appropriate for the purpose for which they are used. While we believe the assumptions are reasonable and the projection methodology valid, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that actually occur. Such factors may include the Water Division's ability to execute the capital improvement program as scheduled and within budget, regional climate and weather conditions affecting the demand for water, and adverse legislative, regulatory or legal

decisions (including environmental laws and regulations) affecting the Water Division’s ability to manage the system and meet water quality requirements.

2 Revenue and Revenue Requirements

To meet the costs associated with providing water services to its customers, the Water Division derives revenue from a variety of sources including water user charges, connection fees, interest earned from the investment of available funds, meter installation fees, late penalties, and other miscellaneous revenues. The level of future revenue generated in the study is projected through a combination of an analysis of historical and future system growth in terms of number of accounts and water consumption.

With revenue derived from the various sources, the Water Division meets the cash requirements of operation and maintenance (O&M); principal, interest, and reserve payments on revenue and other bond indebtedness; and recurring annual capital expenditures for replacements, system betterments, and extensions not debt financed. Operation and maintenance expenses are those expenditures necessary to maintain the system in good working order. Routine annual capital expenditures, which include equipment replacements, consist of recurring annual replacements, minor extensions, and betterments which are normally revenue financed. Other capital costs include principal and interest payments, bond covenant-required payments, and the costs of infrequent major capital improvements paid directly from annual operating revenues.

2.2 CUSTOMER AND WATER USAGE PROJECTIONS

The Water Division provides water services to various customer classes which include single-family residential, multi-family residential, commercial and institutional, irrigation, agricultural, and contract. The following provides a brief description of the customer classes:

- Retail consist of residential, commercial and institutional and irrigation customers and are identified as inside or outside city customers. Commercial and institutional customers include all entities that are not residential or have dedicated irrigation services such as businesses, schools, and City service accounts. Outside city connections are customers in unincorporated regions of the County that surround the City. They represent about 10 percent of all retail accounts and usage volumes.
- Agricultural consist of interruptible agricultural customers. The Water Division has the right to interrupt water service to these customers at anytime as a result of water restrictions.
- Contract customers consist of the Cities of American Canyon, Calistoga, St. Helena, Yountville and the Napa State Hospital. For the Cities of American Canyon and Calistoga, the Water Division treats and wheels entitled State Water Project water to them. All other Cities and hospital have normal connections. Contract customers represent less than 1 percent of all accounts and 13 percent of all usage volume.

Based on a detailed review of historical growth patterns and planning estimates of new construction within the City, the number of customer accounts is projected to increase by 0.25 percent annually throughout the Study Period. It should be noted that while the City is not near “build-out”, the economic conditions has slowed growth in the area which has resulted in minimal growth. Projected customer accounts are shown in Table 2-1.

Table 2-1. Number of Customer Accounts

Line No.	Description	Fiscal Year Ending June 30,					
		2011 (accts)	2012 (accts)	2013 (accts)	2014 (accts)	2015 (accts)	2016 (accts)
Retail - Inside							
1	Single Family Residential	19,028	19,076	19,124	19,172	19,220	19,268
2	Multi Family Residential	1,329	1,333	1,337	1,341	1,345	1,349
3	Commerical and Institutional	1,623	1,627	1,631	1,635	1,639	1,643
4	Irrigation	255	255	255	255	255	255
	Total Retail - Inside	22,235	22,291	22,347	22,403	22,459	22,515
Retail - Outside							
5	Single Family Residential	1,985	1,990	1,995	2,000	2,005	2,010
6	Multi Family Residential	86	86	86	86	86	86
7	Commerical and Institutional	42	42	42	42	42	42
8	Irrigation	47	47	47	47	47	47
9	Agricultural	19	19	19	19	19	19
	Total Retail - Outside	2,179	2,184	2,189	2,194	2,199	2,204
10	Total (Retail)	24,414	24,475	24,536	24,597	24,658	24,719
11	Contract (Wholesale)	5	5	5	5	5	5
12	Fire Service	544	546	548	550	552	554
13	Total System	24,963	25,026	25,089	25,152	25,215	25,278

Projected water sales volumes for the Study Period are shown in Table 2-2. In determining the projected water sales volume, historical patterns of water usage was analyzed. In addition, due to water conservation requirements set forth in SBx7-7, which mandates water utilities to reduce their customer's per day per capita use by 15 percent by 2015 and 20 percent by 2020, Black & Veatch incorporated conservation impacts into water use projections. It is projected that the Water Division's water sales volume will be reduced significantly as a result of this regulatory requirement.

Noted in Table 2-2, the water sales volumes in FY 11 were unusually low due to cooler average temperatures, late spring precipitation, increased fiscal prudence by customers due to the economic downturn and an effective water conservation program. In FY 12, it is expected that water usage will climb back to pre-2011 pattern. Thereafter, the volumes will decline gradually as the Water Division moves to meet SBx7-7 requirements.

Table 2-2. Billed Water Usage

Line No.	Description	Fiscal Year Ending June 30,					
		2011 (1,000 gal)	2012 (1,000 gal)	2013 (1,000 gal)	2014 (1,000 gal)	2015 (1,000 gal)	2016 (1,000 gal)
Retail							
1	Single Family Residential	2,398,200	2,482,900	2,485,700	2,454,300	2,431,100	2,407,600
2	Multi Family Residential	696,300	720,900	721,700	712,600	705,800	699,000
3	Commerical and Institutional	845,200	868,800	869,600	860,900	854,500	848,000
4	Irrigation	242,800	251,400	251,700	248,500	246,100	243,700
5	Total Retail	4,182,500	4,324,000	4,328,700	4,276,300	4,237,500	4,198,300
6	Pumped Zones	418,900	433,700	434,200	428,700	424,700	420,500
Interruptible Ag							
7	On-Season (May-Oct)	72,500	72,500	72,500	72,500	72,500	72,500
8	Off-Season (Nov-Apr)	1,500	1,500	1,500	1,500	1,500	1,500
9	Total Int Ag	74,000	74,000	74,000	74,000	74,000	74,000
Contract (Wholesale)							
10	City of American Canyon	96,100	96,100	96,100	96,100	96,100	96,100
11	City of Calistoga	180,800	180,800	180,800	180,800	180,800	180,800
12	City of St. Helena	130,300	195,500	195,500	130,300	130,300	195,500
13	Town of Yountville	100	100	100	100	100	100
14	State Hospital	154,800	154,800	89,600	89,600	89,600	89,600
15	Total Contract	562,100	627,300	562,100	496,900	496,900	562,100
16	Total Water Usage (1,000 Gal)	4,818,600	5,025,300	4,964,800	4,847,200	4,808,400	4,834,400
17	Total Water Usage (AF)	14,788	15,422	15,236	14,875	14,756	14,836

2.3 REVENUE UNDER EXISTING RATES

The primary source of revenue for the Water Division is derived from water user rates. Other revenue sources include; connection fees, interest earned from the investment of available funds, meter installation fees, late penalties, and other miscellaneous revenues. The level of future revenue is projected based on an analysis of historical system growth in terms of number of accounts and water consumption.

Projections of future water sales revenue are based on an analysis of historical and forward looking trends for customer growth and average water use per customer. The number of customers and volume of water sold are applied to the applicable rates to determine water sales revenue. Charges are applied bi-monthly and a schedule of the Water Division’s existing rate structure is shown in Table 2-3. The City is separated into 5 distinct pressure zones based on geographic factors. Due to the large difference between zones 1, 2, 3 and 4, 5, the Water Division enacted a pumped zone charge for customers within zones 4 and 5. The pumped zone surcharge is to recuperate the costs associated with electricity and facilities required to serve those customers that require water be pumped up to higher geographic locations. If the system served zones 1, 2, and 3 only, there would be no need for these facilities to exist.

Table 2-3. Existing Water Rates

Description	FY 2011	Description	FY 2011
Meter Charge	(\$/bi-monthly)		(\$/1,000 gal)
Contract			
4"	74.94	SFR, MFR, Commercial, Irrigation	
6"	145.46	Inside	4.09
8"	230.11	Outside	5.78
10"	328.90	Pumped Zone Surcharge	0.42
Fire Service Charge		Interruptible Ag	
1.5"	7.50	On-Season (May-Oct)	4.09
2"	10.00	Off-Season (Nov-Apr)	5.78
2.5"	12.50		
3"	15.00	Contract	
4"	20.00	City of American Canyon	2.68
6"	30.00	City of Calistoga	1.43
8"	40.00	City of St. Helena	5.78
10"	50.00	Town of Youthville	5.78
12"	60.00		

Table 2-4 represents a summary of projected water sales revenue under existing rates and charges. As shown, the revenue generated is anticipated to decrease over the long run in conjunction with the decrease in water usage as a result of mandatory water conservation imposed in SBx7-7. The projected water revenue reduces from \$20,321,300 in FY 11 to \$20,018,600 in FY 16. This represents an overall decrease of roughly 1 percent.

Table 2-4. Revenue under Existing Water Rates

Line No.	Description	Fiscal Year Ending June 30,					
		2011	2012	2013	2014	2015	2016
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Retail							
1	Single Family Residential	10,253,200	10,660,900	10,672,800	10,538,000	10,438,300	10,337,600
2	Multi Family Residential	2,903,000	3,018,500	3,021,700	2,983,700	2,955,200	2,926,700
3	Commercial & Institutional	2,898,700	3,039,600	3,043,100	3,006,000	2,978,900	2,951,300
4	Irrigation	1,067,700	1,110,400	1,111,800	1,097,600	1,087,000	1,076,300
5	Total Retail	17,122,600	17,829,400	17,849,400	17,625,300	17,459,400	17,291,900
6	Pumped Zone	175,900	173,800	174,000	171,800	170,200	168,600
Interruptible Ag							
7	On-Season (May-Oct)	295,300	296,500	296,500	296,500	296,500	296,500
8	Off-Season (Nov-Apr)	8,600	8,700	8,700	8,700	8,700	8,700
9	Total Int Ag	303,900	305,200	305,200	305,200	305,200	305,200
Contract (Wholesale)							
10	City of American Canyon	257,500	257,500	257,500	257,500	257,500	257,500
11	City of Calistoga	258,500	258,500	258,500	258,500	258,500	258,500
12	City of Calistoga (Meter Charge)	1,400	1,400	1,400	1,400	1,400	1,400
13	City of St. Helena	1,220,700	1,374,800	1,374,800	753,100	753,100	1,130,000
14	Town of Youthville	600	600	600	600	600	600
15	State Hospital	894,700	894,700	888,000	748,100	607,200	517,900
16	Total Contract	2,633,400	2,787,500	2,780,800	2,019,200	1,878,300	2,165,900
17	Fire Service	85,500	85,800	86,100	86,300	86,600	87,000
17	Total Water System	20,321,300	21,181,700	21,195,500	20,207,800	19,899,700	20,018,600

2.4 OTHER REVENUE

In addition to revenue from rates, the Water Division obtains revenue from other operating sources. These revenues include charges for hydrants, water installation, penalties, interest on investments, rents and royalties, and other miscellaneous revenues. In total these revenue represent about 5 percent of the Water Division's total revenue. It is anticipated that these revenues will remain relatively constant for the duration of the Study Period since construction and development is not expected to return to 2009 levels (when connection fees generated approximately \$1 million in revenue) within this five-year period, but instead recover to former levels more slowly.

2.5 OPERATING AND MAINTENANCE EXPENSES

Table 2-5 summarizes the Water Division's projected operating and maintenance expense (O&M) for the Study Period. These expenses include costs related to salaries and wages, materials and supplies, contract services, purchased water, and capital outlay. All O&M expenditures are projected to increase between 2 to 5 percent annually from the Water Division's budget for FY 12. The forecasted expenditures are based upon the staff's expertise and knowledge of the water system. Based on historical and anticipated trends, salaries and wages remain flat, benefits were escalated at 3.5 percent annually; utilities at 5.0 percent annually, and administrative expenses at 2.0 percent annually.

The largest O&M expenditure that Water Division incurs is associated with water purchase costs. The City owns its own State Water Project entitlements, yet it pays transportation, capital bond payments, bond surcharges, administrative charges associated with North Bay Aqueduct

(NBA). These charges are incurred by the Water Division regardless of the amount of water that is used by the City. The amount associated with NBA is roughly \$5 million per year.

Table 2-5. O&M Expenses

Line No.	Description	Fiscal Year Ending June 30,					
		Actual	Budgeted		Projected		
		2011	2012	2013	2014	2015	2016
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Operating O&M Expenditures							
1	53001 - Water Admin	8,515,600	9,525,700	9,705,600	9,966,400	10,233,600	10,509,700
2	53002 - Water Billing	230,000	219,000	263,900	272,400	281,000	289,800
3	53003 - Water Distribution	665,000	736,000	749,430	772,100	795,200	819,100
4	53004 - Water Engineering	100,300	220,300	198,700	204,700	210,800	217,000
5	53005 - Water Supply	5,066,800	5,831,100	5,756,000	5,759,600	5,786,800	5,791,600
6	53006 - Water Transmission	127,500	135,000	140,000	144,300	148,700	153,200
7	53007 - Water Treatment	1,484,400	2,139,000	2,154,000	2,217,200	2,282,300	2,349,200
8	53008 - Water Laboratory Expenditure	149,800	164,000	164,000	168,900	173,900	178,900
9	53009 - Water Conservation Expenditure	150,200	262,200	262,200	270,200	278,400	286,800
10	Total [1]	16,489,600	19,232,300	19,393,830	19,775,800	20,190,700	20,595,300
[1] 53010 - Water Debt is Excluded							

As exhibited in Table 2-5, the increase in O&M expenditures between FY 11 and FY 12 is largely attributed to three factors: 1) Water Administration (line 1), 2) NBA Water Supply Costs (line 5), and 3) electricity and chemicals costs (line 7).

A contributing factor to the differential between FY 11 and FY 12 costs is the fact that FY 11 reflects actual costs while FY 12 reflects budgeted costs. Actual labor costs during FY 11 were \$370,000 lower than originally budgeted due to vacancies and five staff members retiring during the year. The Water Division reorganized to eliminate one management position in the water treatment section and realized the one-time cost savings due to periods of vacancies while recruitments were underway. These positions have been filled at equivalent or lower levels and therefore the position costs that were vacant for a portion of FY 11 are included in the budgets for FY 12 through FY 16. Individual salaries and wages remain flat because there have been no cost of living adjustments (COLAs) for staff since 2009 and none anticipated over the coming years. Benefits including rising health care costs are subject to City-wide labor contract negotiations that are anticipated to take place in 2012. Cost increases of \$300,000 from FY 11 to FY 12 within Water Administration are attributed to changes to medical, retirement benefits and worker’s compensation insurance. Rising costs for vehicles and liability insurance costs account for an additional \$100,000.

NBA Water Supply, electricity and chemicals are anticipated to increase due to expected supplier increases and outside market forces. Water Supply costs account for more than a \$750,000 increase in part to pay the capital replacement costs of the NBA terminal tanks that were constructed in 2008, and due to recent landmark court decisions and requirements for habitat protection within the delta. Electricity increases are projected due to energy rate increases as well as increased energy consumption associated with the new ozone treatment process at the Barwick Jamieson Canyon Treatment Plant. Chemical costs have increased consistently over the last five years at a pace that has exceeded the consumer price index and our primary coagulant, liquid aluminum sulfate, is scheduled to increase by over \$100,000 in FY 12 alone. The Water Division participates in a North Bay Regional pool along with other municipal water treatment providers to

insure a highly competitive bid process and chemical pricing is as low as possible. The group coordinates routine delivery schedules to insure transportation charges are minimized.

Additionally, in FY 12 a total cost of \$250,000 is necessary for sludge drying and disposal from the treatment plants. Future ongoing sludge handling operations cost \$130,000 due to regulations and requirements for hauling and disposal become more stringent.

2.6 DEBT SERVICE REQUIREMENTS

Table 2-6 represents the Water Division’s existing debt service obligations. This table shows both principal and interest requirements on the existing debt over the Study Period. It is common practice for utilities to utilize debt to finance capital improvement projects. By financing the cost of the projects, the Water Division is able to fund large projects immediately and spread the payment over a specified time frame. Debt service represents roughly 20 percent of total expenditures. Based on the revenue bond requirements, the debt service coverage ratio is set at 1.25x net revenues for the Water Division.

The Water Revenue Bonds 2007 (Line 1) were used to successfully upgrade the Barwick Jamieson Treatment Plant that will serve the City for the next 40+ years. The Umpqua Bank notes (Line 4) were used to install the solar array at Lake Hennessey to offset the power consumption for the raw water pumps at the treatment plant. In 2010 this project netted out the loan payment for this green energy-producing facility. As energy costs increase, the energy savings will exceed the fixed loan payments. In 2016, off-set energy costs are projected to be valued at \$118,000. In 2026 the loan will be paid off and the City will own the solar array resulting in annual savings of a projected \$150,000 to the Water Division.

Table 2-6. Debt Service

Line No.	Description	Fiscal Year Ending June 30,					
		2011	2012	2013	2014	2015	2016
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Long-Term Debt							
1	Water Revenue Bonds 2007	3,296,000	3,299,000	3,300,200	3,299,600	3,300,400	3,300,600
2	Imola Tank SRF Debt	189,800	189,800	189,800	189,800	189,800	189,800
3	Alston Park Water Notes	201,700	201,700	201,700	201,700	201,700	201,700
4	Umpqua Bank Notes (Solar Array)	108,000	108,000	108,000	108,000	108,000	108,000
5	Total	3,795,500	3,798,500	3,799,700	3,799,100	3,799,900	3,800,100

2.7 CAPITAL IMPROVEMENT PROGRAM

The Water Division’s Capital Improvement Program (CIP) for FY 11 through FY 16 is summarized in Table 2-7. The Water Division developed this multi-year CIP covering its commitments for the Study Period. This capital program reflects planned projects to be designed and or constructed for each year of the Study Period.

The Water Division is projecting an \$18.7 million capital improvement program over the Study Period, which includes both capital and replacement projects. The staff identified short and long-term capital facilities needs for the system and developed a schedule and costs for the projects. It is anticipated that in FY 17, the Water Division will begin to incur additional CIP costs based on compliance requirements set forth from governmental agencies. Compliance-driven projects including modified process facilities at the Hennessey Treatment Plant are anticipated to total

\$22.5 million over a 5-year period between FY 17 to FY 21. It is also noted that the aging transmission system will need repair and replacement within the 2020 decade. Therefore these distribution and treatment projects need to be completed prior to the period when the transmission system is due for a major overhaul to avoid major deficits in capital available for necessary investments.

Table 2-7. Capital Improvement Projects

Line No.	Description	Fiscal Year Ending June 30,					
		2011	2012	2013	2014	2015	2016
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Water Distribution							
1	Asset Management Software	0	15,000	0	0	0	0
2	Asset Management Hardware	0	74,700	0	0	0	0
Water Distribution							
3	Water Main Replacement Projects	650,000	1,042,000	1,088,000	1,025,000	925,000	925,000
4	Automated Meter Reading (AMR) Program	78,800	338,600	204,000	0	0	0
5	Distribution System Improvement	185,000	0	0	0	0	0
6	Small Meter Replacement	220,000	50,000	52,000	0	0	0
7	Large Meter Replacement	155,500	35,000	36,000	0	0	0
8	Water System Reconfiguration Improvemer	240,000	0	0	0	0	0
9	Meter Lid Replacement	21,000	0	0	0	0	0
10	Cathodic Protection	0	350,000	200,000	230,000	0	415,000
11	Hydrant Replacement	0	125,000	100,000	0	0	200,000
12	Pressure Regulator Upgrades	0	40,000	0	0	0	0
13	Minor Water Main Projects	0	210,000	200,000	425,000	540,000	400,000
14	Replacement and AMR Program	0	0	0	570,000	475,000	0
15	Corp Yard Pressure Regulator	0	0	0	0	50,000	0
Water Quality (Treatment)							
16	Jameison Canyon WTP Improvements	1,665,900	0	0	0	0	0
17	Tank Mixers	30,000	60,000	0	0	0	0
18	SCADA Improvement Phase 1	0	242,000	380,000	0	0	0
19	Hennessey Sed Basin Renovation	0	321,000	0	0	0	0
20	Milliken Chemical Tank Replacements	0	117,800	0	0	0	0
21	Monitoring Equipment Shed Replacement	0	49,100	0	0	0	0
22	Monitoring Equipment Shed Replacement	0	49,100	0	0	0	0
23	SCADA Improvement Phase 2	0	0	0	420,000	0	0
24	Hennessey Traveling Bridge	0	0	0	0	63,000	0
25	Milliken Non-Ionic Automation	0	0	0	0	69,000	0
26	Milliken Tank Roots Removal	0	0	0	0	79,000	0
27	Hennessey Tank Farm	0	0	0	0	296,000	0
28	SCADA Improvement Phase 3	0	0	0	0	0	590,000
29	Hennessey Filters 1-4 Renovation	0	0	0	0	0	0
30	Hennessey Raw Water Flow Meter	0	0	0	0	0	100,000
31	Hennessey Ozone Installation	0	0	0	0	0	0
32	Hennessey PolyBlend Unit	0	0	0	0	0	120,000

Line No.	Description	Fiscal Year Ending June 30,					
		2011	2012	2013	2014	2015	2016
Watershed (Supply Source)							
34	Hennessey Watershed Improvements	80,000	60,000	0	30,000	0	0
35	Hennessey Watershed Building Facilities	35,000	0	0	0	0	0
36	Hennessey Pump Station Painting	31,600	0	0	0	0	0
37	Hennessey Water Lines	0	55,000	40,000	0	0	0
38	Conn Farmer's Weir Outlet Valve	0	0	0	0	70,000	0
39	Hennessey Pump Station VFDs	0	0	0	0	96,000	0
Water Transmission							
40	Replace Transmission Valves	0	0	0	0	210,000	250,000
41	Dwyer Road Pump Station	0	0	700,000	0	0	0
42	Holly Court Electrical Upgrade	48,000	0	0	0	0	0
43	Brown Valley Pressure Relief Lines	0	0	0	120,000	0	0
44	Valve Replacement	0	0	0	180,000	0	0
45	Emergency Power for Pump Stations	0	0	0	0	46,000	0
46	Hagen Road Building Upgrade	0	0	0	0	81,000	0
47	Total Capital Programs	3,440,800	3,234,300	3,000,000	3,000,000	3,000,000	3,000,000

2.7.1 Capital Improvement Financing Plan

Annual expenditures for the CIP are anticipated to be met from a combination of available funds on hand, connection fees, interest earnings, and revenues derived from user rates. As shown in Tables 2-8, the annual CIP expenditure is roughly \$3 million throughout the Study Period. Due to the current level of debt service, the Water Division prefers not utilize revenue bonds to fund its CIP; therefore the program is primarily funded through user rate revenues.

In FY 11, the Water Division will not transfer any user rate revenues to fund the CIP. Due to favorable bids and prudent management of expenditures during construction of the Barwick Jamieson Canyon Water Treatment Plant Improvements Project, the Water Division is able to use remaining funds in the beginning balance from the 2007 Revenue Bond issuance to address CIP needs. Thereafter, the CIP is funded through rate revenue contributions.

Table 2-8. CIP Financing Plan

Line No.	Description	Fiscal Year Ending June 30,					
		2011	2012	2013	2014	2015	2016
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
1	Beginning Balance	\$ 3,664,400	\$ 433,800	\$ 402,100	\$ 402,000	\$ 402,000	\$ 402,000
Sources of Funds							
2	New Revenue Bond Funds	0	0	0	0	0	0
3	Connection Fees	200,000	321,900	321,900	321,900	321,900	321,900
4	Rate Funded CIP Contribution	0	2,878,600	2,676,000	2,676,100	2,676,100	2,676,100
5	Intrfd Tsfr Out / (In) - Reserve	0	0	0	0	0	0
6	Interest Income	10,200	2,100	2,000	2,000	2,000	2,000
7	Total Sources of Funds	\$ 3,874,600	\$ 3,636,400	\$ 3,402,000	\$ 3,402,000	\$ 3,402,000	\$ 3,402,000
Uses of Funds							
8	Capital Improvements	3,440,800	3,234,300	3,000,000	3,000,000	3,000,000	3,000,000
9	Bond Issuance Expense	0	0	0	0	0	0
10	Bond Reserve Requirement	0	0	0	0	0	0
11	Total Uses of Funds	\$ 3,440,800	\$ 3,234,300	\$ 3,000,000	\$ 3,000,000	\$ 3,000,000	\$ 3,000,000
12	Ending Balance	\$ 433,800	\$ 402,100	\$ 402,000	\$ 402,000	\$ 402,000	\$ 402,000

2.8 OTHER OPERATING REQUIREMENTS

In addition to O&M and annual CIP commitments, the Water Division incurs some additional costs which make up the revenue requirements. These costs consist of routine capital outlay and transfers to and from other City funds.

2.8.1 Routine Capital Outlay

In addition to the CIP, the Water Division recognizes the need to perform recurring/annual maintenance to maintain the functionality and reliability of the water system. This maintenance, routine capital outlay usually covers the replacement of small portions of mains; additions and replacements of operating equipment, pump station and superstructure maintenance, fire hydrants, meters and meter boxes, and other miscellaneous items. Routine capital outlays are such that they occur in a system regardless of system growth. Routine capital outlay of \$118,000 in FY 11 is projected to increase to \$173,100 in FY 16.

2.8.2 Transfers

The Water Division performs various transfers throughout the course of the year to and from the operating fund and other funds. Since such expenditures and transfers do not represent direct operating expenses for the Water Division, they are included herein as below-the-line (i.e., after the payment of debt service) cash flow items and not included as O&M Expenses in the calculation of projected debt service coverage. Table 2-11 (Lines 22-29) represents these transfers on an annual basis throughout the Study Period. The following are a brief description of the transfers.

- General Fund transfers represent funds to the General Fund for services provided to the Water Division by Finance, Human Resources, City Attorney and other departments.
- Street Resurfacing Fund transfers represent funds to Public Works for repairing street damage caused by the Water Division during CIP and R&R activities.
- Rate Funded CIP Contribution Fund transfers represent funds to an internal Water Division fund to cover planned CIP project expenditures.
- Non-Recurring Fund transfers represent funds to an internal Water Division fund for one-time large projects within the water system. These include emergency repairs to the system.
- Long-Term Water Supply Fund transfers represent funds to an internal Water Division fund for the purchase of long-term water supply.
- CIP Reserve Fund transfers represent funds to an internal Water Division fund to cover compliance CIP project expenditures.
- Renewal and Replacement (R&R) Fund transfers represent funds to an internal Water Division fund to cover normal repairs or replacements of unforeseen and unbudgeted equipment.
- Rate Stabilization Fund transfers represent funds to an internal Water Division fund to adsorb revenue shortfall due to short-term decreases in water sales.

2.8.3 Reserves

Currently, the Water Division has a stated fiscal policy with respect to reserves. The Water Division has seven reserves that are used for various activities. The reserves consist of the following:

- Operating Reserve represents working capital maintained by the operating fund to cover day-to-day expenses and maintain sufficient funds to cover accounts receivables if we have supplier issues, periods of low water sales, or unforeseen cost increases. Based on policy the fund will maintain 15 to 20 percent of O&M at any given time. The target level is \$2.3 to \$3.1 million. In FY 12, the operating reserve will no longer exist as the working capital will maintain funds to cover day-to-day expenses. The current \$1.7 million will be transferred to the CIP reserve upon termination.
- Rate Stabilization Reserve represents funds used to absorb revenue shortfall due to short-term decreases in water sales due to wet winters and/or dry summers. The target level is \$1 to \$2 million.
- Drought Response Reserve represents funds used to absorb revenue shortfall due to prolonged dry weather or acquisition of water supplies to prepare for drought conditions. The target level is \$3 to \$4 million.
- Long Term Water Supply Reserve represents funds set aside to invest in future water supplies. An annual transfer of \$200 thousand from operating is made into this reserve fund.
- Renewal and Replacement (R&R) Reserve represents funds used for unforeseen and unbudgeted repairs. The target level is \$400 to \$800 thousand annually. Industry best management practices recommend that R&R reserves should aim for to provide sufficient funds to address the failure of a major and critical infrastructure asset. Often times, the cost of replacing such an asset, such as a major reservoir, are greater than can be funded over one year so utilities gradually build up to the recommended reserve level.
- Emergency Reserve represents funds used to fund operating or capital expenditures required as a result of unbudgeted financial liability. The target level is \$800 thousand to \$1.6 million.
- CIP Reserve represents funds that are to be used for unforeseen cost escalations to CIP projects and future compliance projects in FY 16 to FY 21. The intent is to generate sufficient reserve to cover compliance projects in order to minimize future rate revenue needs. With the reallocation of other reserves and annual transfer, the projected reserve balance is expected to reach \$8.4 million by FY 16.

Regardless of the type of reserve, higher reserve levels helps the Water Division attain better bond ratings, which in turn, leads to lower borrowing costs. Black & Veatch suggests that should the Water Division maintain its current rate structure then the current target reserve policies are appropriate. In the event that the Water Division adopts a rate structure that reduces the revenue variability, then the Water Division can lower the level of operating reserves. Table 2-9 represents the existing and proposed reserve levels.

Table 2-9. Reserve Funds

Line No.	Description	Fiscal Year Ending June 30,						
		Existing Reserves [1]			Proposed Reserves [2]			
		2010	2011	2012	2013	2014	2015	2016
			(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Reserve Funds								
1	LT Water Supply	0	200,000	400,000	600,000	800,000	1,000,000	1,200,000
2	Operating Reserve	1,700,000	1,700,000	0	0	0	0	0
3	CIP Reserve	1,500,000	1,500,000	8,000,000	8,019,000	8,365,100	9,061,000	10,145,200
4	Renewal & Replacement	400,000	400,000	400,000	400,000	900,000	1,650,000	2,400,000
5	Rate Stabilization	2,000,000	2,000,000	0	0	0	0	0
6	Drought Response	2,800,000	2,800,000	0	0	0	0	0
7	Emergency Reserve	800,000	800,000	800,000	800,000	800,000	800,000	800,000
8	Total Sources of Funds	\$ 9,200,000	\$ 9,400,000	\$ 9,600,000	\$ 9,819,000	\$ 10,865,100	\$ 12,511,000	\$ 14,545,200

[1] Existing Reserves Under Current Rate Structure (No Fixed Charge plus Uniform Quantity Charge)

[2] Proposed Reserves Under New Rate Structure (SFR Bimonthly Service Charge plus Quantity Charge).

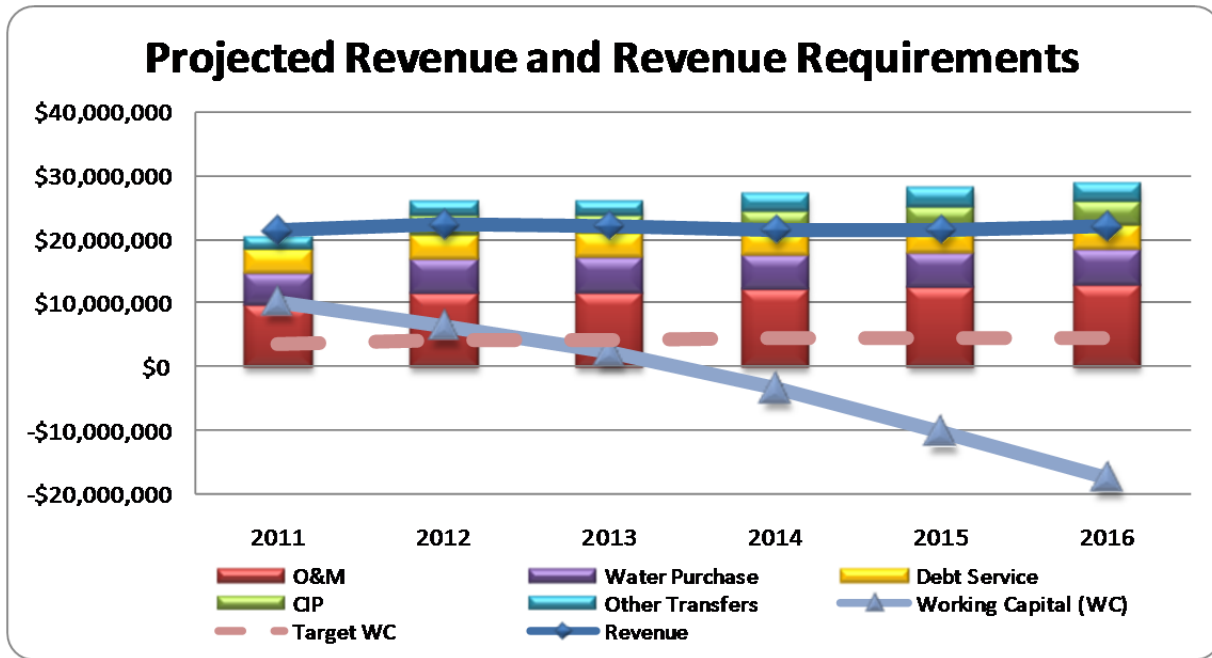
The proposed reserves represent the reallocation of Rate Stabilization and Drought Response Reserves to the capital projects (CIP) reserve based on more stable revenue. The implementation of a fixed charge element stabilizes revenue during years of reduced sales such as 2010 where climactic and economic impacts were incurred simultaneously thus reducing the need for this level of funds. Forecasting the current state of this five-year study period, and consideration of increased State Water Project allocations, completion of the Barwick Jamieson Canyon Water Treatment Plant that allows the City to take beneficial use of the water and a full local reservoir, the Water Division recommends the reallocation of reserves provided the fixed element is incorporated into the rate structure in FY 12 and into the future.

2.9 PROJECTED OPERATING RESULTS

The revenue requirements of the Water Division consist of system O&M expense, routine capital expenditures for equipment and improvements, the CIP, debt service requirements on existing debt, reserve requirements, and transfers to other City funds.

In the analysis, staff sought to examine the state of the Water Division if no revenue increases were to occur. Under the status quo scenario, the Water Division would not impose any revenue increases over the Study Period and continue to execute the planned CIP. As shown in Figure 2-1, the status quo conditions means that the Water Division will operate at an annual deficit position thus tapping into its working capital balance until FY 14 when the operating fund runs out of funds on hand. In addition, since the Water Division has debt service commitments, the debt service coverage will begin to violate debt covenants as soon as FY 12. To meet the debt requirement, the Water Division would need to rely on reserve funds to supplement its revenue.

Figure 2-1. Status Quo



In order to avoid deficit positions, the Water Division examined various options for revenue increases that would meet the revenue requirements. Table 2-10 is a brief summary of the examined options.

Table 2-10. Revenue Increases

Year	Option 1	Option 2	Option 3	Option 4
2012	8.0%	9.0%	6.0%	8.0%
2013	8.0%	9.0%	6.0%	8.0%
2014	8.0%	9.0%	6.0%	8.0%
2015	4.0%	10.0%	5.5%	18.5%
2016	4.0%	10.0%	5.5%	18.5%

- Option 1: This option was designed to achieve the minimum level of revenue increase to support appropriate investments in infrastructure (CIP), yet generate a certain level of reserves for compliance projects and allowing the reclassification of existing reserves.
- Option 2: This option was designed to generate a larger level of reserves for compliance projects by allowing the revenue increases to trend upward.
- Option 3: This option was designed to have minimal revenue increases, yet not generate any reserves for compliance projects.
- Option 4: This option was designed to generate all reserves needed to fund the compliance projects by allowing revenue increases to trend upward.

Based on an evaluation of all the options, the Water Division with guidance from the advisory subcommittee found it prudent to select Option 1 as the preferred option. Table 2-11 reflects the selected option into the operating cash flow. Options 2 and 4 require larger increases to start building a reserve for compliance projects that the Water Division will occur starting in FY 16. After

examining the reserve accounts, the Water Division decided that it would mitigate the impact on customer rates by reclassifying reserves. Option 3 offers smaller revenue increases but excludes the ability to have reserves for compliance projects. By excluding the compliance projects, major increases would be required in FY 17 to FY 21 to cover the expenses. The Water Division deemed this option as inappropriate because the need for capital to implement compliance projects is known and would result in significant increases and rate shock for customers at that time. Option 1 incorporates the building of a reserve for compliance projects and the reclassification of reserve funds as exhibited in Table 2-9.

Table 2-11. Operating Cash Flow

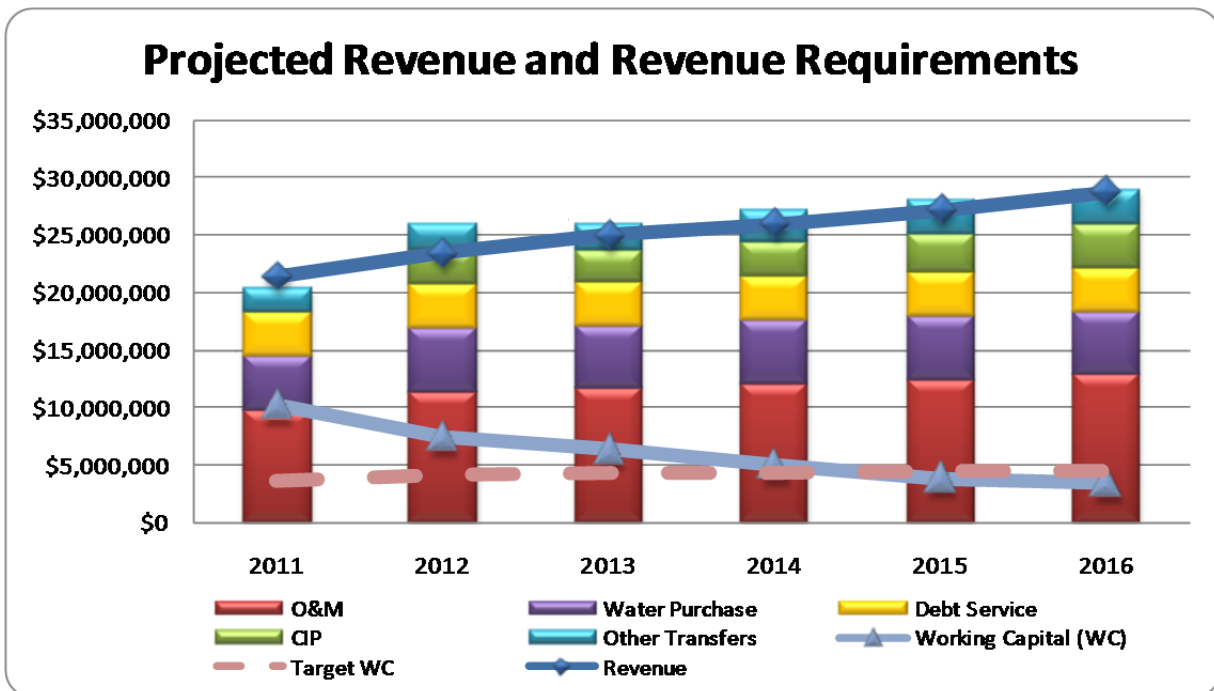
Line No.	Description	Fiscal Year Ending June 30,					
		2011	2012	2013	2014	2015	2016
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Revenue							
1	Revenue from Existing Rates	19,803,900	20,672,700	20,686,500	19,698,600	19,390,500	19,509,200
	Year	Months	Effective	Rate Adj			
2	2011	9		0.0%	0	0	0
3	2012	9		8.0%	1,102,500	1,654,900	1,551,200
4	2013	9		8.0%		1,191,500	1,702,000
5	2014	9		8.0%			1,225,400
6	2015	9		4.0%			651,400
7	2016	9		4.0%			681,600
8	Increased Revenue Due to Adjustments	0	1,102,500	2,865,400	4,849,400	6,383,200	7,815,500
9	Total Rate Revenue	\$ 19,803,900	\$ 21,775,200	\$ 23,551,900	\$ 24,548,000	\$ 25,773,700	\$ 27,324,700
10	Other Operating Revenue	994,200	892,100	815,100	815,100	815,100	815,100
11	Treat & Wheel Customers	517,400	517,400	517,400	517,400	517,400	517,400
12	Interest Income	48,800	175,000	75,000	75,000	75,000	75,000
13	Total Other Revenue	\$ 1,560,400	\$ 1,584,500	\$ 1,407,500	\$ 1,407,500	\$ 1,407,500	\$ 1,407,500
14	Total Revenue	\$ 21,364,300	\$ 23,359,700	\$ 24,959,400	\$ 25,955,500	\$ 27,181,200	\$ 28,732,200
Revenue Requirements							
15	O&M Expenses	9,704,400	11,435,200	11,692,200	12,076,000	12,471,400	12,879,300
16	Water Purchase	4,824,400	5,563,100	5,486,000	5,481,900	5,501,400	5,498,100
17	Routine Capital Outlay	118,000	124,300	173,100	173,100	173,100	173,100
Debt Service							
18	Existing Senior Debt	3,485,900	3,488,900	3,490,100	3,489,500	3,490,200	3,490,400
19	Proposed Debt	0	0	0	0	0	0
20	Existing Subordinate Debt	309,700	309,700	309,700	309,700	309,700	309,700
21	Total Debt Service	\$ 3,795,600	\$ 3,798,600	\$ 3,799,800	\$ 3,799,200	\$ 3,799,900	\$ 3,800,100
Transfers							
22	Intrfd Tsfr Out to General Fd	1,742,800	1,784,700	1,827,500	1,827,500	1,827,500	1,827,500
23	Intrfd Tsfr Out to Str Rsrf	100,000	100,000	100,000	100,000	100,000	100,000
24	Intrfd Tsfr Out to Rate Funded CIP Contribution	0	2,878,600	2,676,000	2,676,100	2,676,100	2,676,100
25	Intrfd Tsfr Out to NR Water	0	225,000	115,000	117,300	117,300	117,300
26	Intrfd Tsfr Out to Long-Term Water Supply Reserve	200,000	200,000	200,000	200,000	200,000	200,000
27	Intrfd Tsfr Out to CIP Reserve	0	0	19,000	346,100	695,900	1,084,200
28	Intrfd Tsfr Out / (In) - R&R Reserve	0	0	0	500,000	750,000	750,000
29	Intrfd Tsfr Out / (In) - Rate Reserve	0	0	0	0	0	0
30	Total Transfers	\$ 2,042,800	\$ 5,188,300	\$ 4,937,500	\$ 5,767,000	\$ 6,366,800	\$ 6,755,100
31	Total Revenue Requirements	\$ 20,485,200	\$ 26,109,500	\$ 26,088,600	\$ 27,297,200	\$ 28,312,600	\$ 29,105,700
31	Net Cash Balance	879,100	(2,749,800)	(1,129,200)	(1,341,700)	(1,131,400)	(373,500)
32	Beginning Fund Balance	9,311,400	10,190,500	7,440,700	6,311,500	4,969,800	3,838,400
33	Net Cumulative Working Capital Balance	\$ 10,190,500	\$ 7,440,700	\$ 6,311,500	\$ 4,969,800	\$ 3,838,400	\$ 3,464,900
34	Target Working Capital Balance	3,582,400	4,191,400	4,235,700	4,329,300	4,431,600	4,531,400
35	Minimum Working Capital Balance	2,388,300	2,794,200	2,823,800	2,886,200	2,954,400	3,020,900

Shown in Tables 2-11 is a summary of the proposed operating fund for the Study Period. Table 2-11 subdivides the operating fund into revenue and revenue requirements. Discussions with Water Division staff and current year demands indicate that water usage for FY 12 is higher than FY 11. Consequently, Table 2-11 reflects higher revenues under existing rates in FY 12 within the revenue portion of the table. FY 11 was an exceptionally low usage year due to unseasonal weather, water conservation measures and contract customer curtailment. In Lines 2 to 7, the required annual revenue increases arrived at in Option 1 are presented. Line 13 represents other revenues, which includes revenue from treat and wheel customers that are calculated for cost of service and will be implemented with amendments to the agreements. These treat and wheel customers have agreements with the City that specify terms and conditions for provision of water services. In Line

14, the total revenues generated from existing rates, revenue from increases and other operating revenue are shown.

In the revenue requirement section, O&M, water purchase, routine capital outlay, debt service, and transfers are discussed earlier. Line 31 represents that total revenue requirement that will need to be met through revenue. The net cumulative working capital balance is indicated in Line 33. The intent of the net cumulative working capital balance is to match to extent possible line 34 the desired target working capital balance. The target working capital balance target is based on 90 days of O&M expenditures and is an industry standard. The minimum working capital balance is 60 day of O&M as shown in line 35. The minimum allows for two-month coverage of expenses. This working capital balance is required to insure the operation is able to continue in the event of a supplier interruption, market price fluctuations of critical equipment or supplies, or an abrupt drop in account receivables. It is probable for the Water Division to operate with a 45 day of O&M minimum working capital balance if the reserves are maintained at conservative levels. In Table 2-11, line 32 indicates that the Water Division has built up a substantial working capital balance that will be drawn down over the next 5-years. Under this scenario the debt service coverage based on the 1.25x requirement is met for Senior Debt in all years. The requirement is set forth by the lending institution and is based on mandatory expenses only. Items such as transfers to reserves are excluded. Figure 2-2 presents the major components of the operating fund.

Figure 2-2. Operating Cash Flow



2.9.1 Test Year Revenue Requirements

In analyzing the Water Division’s cost of service for allocation to its customer classes, the annual revenue requirements for FY 11/12 is selected as the Test Year (TY) requirements to demonstrate the development of cost-of-service water rates. Based on achieving the Water Division’s principal goals within the Study Period, the cash flow in Tables 2-11 serves as the basis for the analyses presented herein.

3 Cost of Service Allocation

The revenue requirements to be derived from rates for water service are synonymous with the definition of the Cost of Service (COS). In developing equitable rate structures, revenue requirements are allocable to the various customer classifications according to the service rendered. Allocations of these requirements to customer classes should take into account the quantity of water consumed, peak rates of water flow, number of customers, and other relevant factors. The total costs of service recovered from water user rates for the Test Year, FY 12, are summarized in Tables 3-1.

Table 3-1. Cost of Service

Line No.	Description	Operating Expense (\$)	Capital Cost (\$)	Total Cost (\$)
Revenue Requirements				
1	O&M Expense	11,435,200	0	11,435,200
2	Water Purchase	5,563,100	0	5,563,100
3	Transfers	1,984,700	3,203,600	5,188,300
4	Debt Service Requirements	0	3,798,600	3,798,600
5	Routine Capital Outlay	0	124,300	124,300
6	Subtotal	18,983,000	7,126,500	26,109,500
Less Revenue Requirements met from Other Sources				
7	Other Miscellaneous Revenue	892,100	0	892,100
8	Treat and Wheel Customers	517,400	0	517,400
9	Interest Income	175,000	0	175,000
10	Subtotal	1,584,500	0	1,584,500
Adjustments				
11	Annual Cash Fund Balance	2,749,800	0	2,749,800
12	Annual Rate Increase	(551,300)	0	(551,300)
13	Subtotal	2,198,500	0	2,198,500
14	Cost of Service to be Recovered from Rates	15,200,000	7,126,500	22,326,500

Shown in line 6 is the total revenue requirement that corresponds with the Table 2-11 line 31. In order to derive the revenue requirement that will need to be recovered by the rates, it is necessary to deduct revenues from other sources as shown in lines 10 and 13. Line 11 represents the net annual cash balance for the utility during the TY. In this case, the \$2.75 million figure indicates that the Water Division is projecting a negative cash balance for the year – it will be drawing down on reserves. Since the rates are scheduled to be implemented across four bimonthly billing cycles starting in October an adjustment is required. Line 12 represents the additional revenues generated if the revenue increase was effective for a full year, versus only 9 months. Line 13 represents operating funds on hand and revenue from rate increases that can be used to offset the total revenue requirement.

3.1 FUNCTIONAL COST COMPONENTS

The cost of providing water service should be analyzed by system function in order to properly allocate the costs to the various classes of customers and subsequently design rates. As a basis for allocating costs of service among customer classes, costs may be separated into the

following four basic functional cost components: (1) “Base”; (2) “Extra Capacity”; (3) “Customer”; and (4) “Direct Assignment”. Base costs are those that vary directly with the quantity of water used, as well as those costs associated with serving customers under average load conditions without the elements necessary to meet water use variations or peak demands.

- Base costs include treatment chemicals and operating and capital costs of the System associated with service to customers to the extent required for a constant, or average annual rate of use.
- Extra Capacity costs represent those operating costs incurred in meeting demands in excess of average, and capital related costs for additional plant and system capacity beyond that required for the average rate of use.
- Customer costs are defined as those that tend to vary in proportion to the number of customers connected to the system. These include meter reading, billing, collecting and accounting, and maintenance and capital costs associated with meters and services.
- Directly assigned costs are costs specifically identified as those incurred to serve a specific customer group(s). The separation of costs of service into these principal categories facilitates allocating such costs to the various customer classes on the basis of the respective service requirements of each class.

3.2 ALLOCATION TO COST COMPONENTS

Each element of cost is allocated to functional cost components on the basis of the parameter or parameters having the most significant influence on the magnitude of that element of cost. O&M expense items are allocated directly to appropriate cost components, while the allocation of capital and replacement costs is based upon a detailed allocation of related capital investment. The separation of costs into functional components provides a means for distributing such costs to the various classes of customers on the basis of their respective responsibilities for each particular type of service.

3.2.1 Allocation of Operating and Maintenance Expense

In the allocation of O&M expense and investment, costs are allocated directly to cost components to the extent possible. General and administrative cost elements are then allocated on the basis of the allocation of other costs to which they are most nearly related. Table 3-2 represents the allocation of O&M to the functional cost components. Upon allocation to function cost components, revenues from other sources as shown in Table 3-1 lines 10 and 13 are subtracted. The direct assignment represents fire protection, contract, pumped zones, and outside city.

3.2.2 Allocation of Capital Investments

The estimated investment in water system facilities is allocated to appropriate cost components as a basis for the further distribution of capital related costs to the various customer classes. The allocation of estimated system investment serving water customers for the Test Year is shown in Table 3-3. The total net system investment of \$116,357,300 shown on Line 10 represents the estimated Test Year original cost less accumulated depreciation of the system in service. Using the total net system investment allocations, the planned FY 12 capital costs can be distributed to the functional costs. Therefore, the \$116,357,300 represents the total capital assets of the Water Division and not just FY 12.

Table 3-2. Allocation of O&M Expenditures

Line No.	Description	Total Costs	Common to All Customers					Customer Specific			
			Base	Extra Capacity		Customer		Direct			
		(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Operating Expenses											
Water Admin											
1	Salaries & Wages	6,197,600	4,285,200	0	557,800	185,900	371,900	124,000	159,900	110,100	402,800
2	Materials and Supplies	0	0	0	0	0	0	0	0	0	0
3	Services	1,159,100	866,900	0	40,700	26,400	62,200	42,200	60,900	0	59,800
4	Capital Outlay	59,300	44,200	0	2,100	1,400	3,200	2,200	3,100	0	3,100
5	Operating Transfers Out	2,109,700	1,577,900	0	74,000	48,100	113,200	76,800	110,800	0	108,900
Water Billing											
6	Materials and Supplies	58,400	0	0	0	0	58,400	0	0	0	0
7	Services	31,400	0	0	0	0	31,400	0	0	0	0
8	Capital Outlay	129,200	0	0	0	0	129,200	0	0	0	0
Water Distribution											
9	Materials and Supplies	578,200	410,500	0	0	138,800	0	28,900	0	0	0
10	Services	157,800	112,000	0	0	37,900	0	7,900	0	0	0
11	Capital Outlay	0	0	0	0	0	0	0	0	0	0
Water Engineering											
12	Materials and Supplies	32,000	25,600	0	0	0	0	1,600	3,200	0	1,600
13	Services	188,300	150,700	0	0	0	0	9,400	18,800	0	9,400
14	Capital Outlay	0	0	0	0	0	0	0	0	0	0
Water Supply											
15	Materials and Supplies	87,000	69,500	0	0	0	0	4,400	8,700	0	4,400
16	Water Purchase	5,563,100	4,450,400	0	0	0	0	278,200	556,300	0	278,200
17	Services	166,000	132,800	0	0	0	0	8,300	16,600	0	8,300
18	Capital Outlay	15,000	11,900	0	0	0	0	800	1,500	0	800
Water Transmission											
19	Materials and Supplies	25,000	0	0	0	0	0	0	0	25,100	0
20	Electricity	95,000	0	0	0	0	0	0	0	95,000	0
21	Services	15,000	0	0	0	0	0	0	0	15,000	0
Water Treatment											
22	Materials and Supplies	1,635,000	1,055,100	0	0	0	0	81,800	416,300	0	81,800
23	Services	454,000	293,000	0	0	0	0	22,700	115,600	0	22,700
24	Capital Outlay	50,000	32,300	0	0	0	0	2,500	12,700	0	2,500
Water Laboratory											
25	Materials and Supplies	66,000	42,600	0	0	0	0	3,300	16,800	0	3,300
26	Services	98,000	63,200	0	0	0	0	4,900	25,000	0	4,900
27	Capital Outlay	0	0	0	0	0	0	0	0	0	0
Water Conservation											
28	Materials and Supplies	26,000	0	0	0	0	26,000	0	0	0	0
29	Services	236,200	0	0	0	0	236,200	0	0	0	0
30	Total Operating Expenses	19,232,300	13,623,800	0	674,600	438,500	1,031,700	699,900	1,526,200	245,200	992,500
31	Less Other Sources & Adjustments	3,783,000	2,265,200	0	132,700	86,300	202,900	137,700	714,700	48,300	195,200
32	Net Operating Expenses	15,449,300	11,358,600	0	541,900	352,200	828,800	562,200	811,500	196,900	797,300

Table 3-3. Allocation of Capital Costs

Line No.	Description	Total Costs (\$)	Common to All Customers				Customer Specific				
			Base (\$)	Extra Capacity (\$)		Customer Meters (\$)	Cust./Bill. (\$)	Fire Protection (\$)	Contract (\$)	Direct Pumped Zone (\$)	Outside City (\$)
Plant Assets											
1	Source of Supply	30,980,700	24,784,600	0	0	0	0	1,549,000	3,098,100	0	1,549,000
2	Pumping	237,700	190,100	0	0	0	0	11,900	23,800	0	11,900
3	Treatment	44,354,400	22,177,200	21,068,300	0	0	0	1,108,900	0	0	0
4	Transmission & Distribution	25,597,200	7,110,500	7,110,300	5,097,500	639,900	0	639,900	0	4,999,100	0
5	Meters & Services	4,663,000	0	0	0	4,663,000	0	0	0	0	0
6	Hydrants	2,390,900	0	0	0	0	0	2,390,900	0	0	0
7	General Plant	8,133,400	4,453,800	2,117,700	383,100	398,500	0	428,400	234,600	0	117,300
8	Total Plant Assets	116,357,300	58,716,200	30,296,300	5,480,600	5,701,400	0	6,129,000	3,356,500	4,999,100	1,678,200
9	Less Other Sources & Adjustments	0	0	0	0	0	0	0	0	0	0
10	Net Capital Expenses	116,357,300	57,877,200	30,296,300	5,480,600	5,701,400	0	6,129,000	3,356,500	3,750,000	1,249,100

3.3 UNITS OF SERVICE

The total cost responsibility for each customer class may be established by developing unit costs of service for each cost function and subsequently assigning those costs to the customer classes based on the respective service requirements of each. To properly recognize the cost of service, each customer class is allocated its share of base, maximum day and peak hour costs. The number of units of service required by each customer class provides a means for the proportionate distribution of costs previously allocated to respective cost categories. Table 3-4 is a summary of the estimated units of service for the various customer classes.

Base costs vary with the volume of water used and are distributed to customer classes on that basis. Extra Capacity costs are those associated with meeting peak rates of water use, and are distributed to customer classes on the basis of the respective class capacity requirements in excess of average rates of use. Customer costs, which consist of meter related, billing, collection and accounting costs, are allocated to the various classes on the basis of the number of bills and equivalent meters. Equivalent meter ratios are established by the American Water Works Association annual M6; “Water Meters - Selection, Installation, Testing and Maintenance”. Private fire protection costs are allocated on the basis of equivalent fire hydrants.

The estimated test year units of service for the various customer classes are shown in Table 3-4. Generally, residential customers, have a more severe peak to average demand ratio than the commercial customer class. Peak usage information for each customer class is not available. As such, assumptions for maximum day and peak hour ratios for each customer class have been made. Customer billing requirements are distributed to classes on the basis of the number of bills for each customer class. Customer meter requirements are allocated on the basis of the number of equivalent meters serving each customer class. The estimated number of equivalent meters for each customer class is based on the total number of various sizes of meters serving respective classes and the ratio of the cost of meters for the various sizes to the cost of 5/8-inch meters.

3.4 COST OF SERVICE ALLOCATIONS

The costs of service are distributed to the various customer classes by applying the unit costs of service to respective service requirements. The total unit costs of service applied to the respective requirements for each customer class results in the total cost of service for each customer class.

3.4.1 Units Costs of Service

The test year unit cost of service for each functional cost component is based on the total cost divided by the applicable units of service as shown in Tables 3-5. In lines 1 to 3, the total costs represent the cost to be recovered from rates shown in Table 3-1 line 14. The total O&M cost includes O&M, water purchase, transfers less revenue from other sources and adjustments. The total capital cost includes transfers to the capital fund, CIP reserves, and the total debt service includes debt that is owed to the financial institutions. Line 6 represents the unit costs that are used in allocating the costs to the specific customer classes.

3.4.2 Distribution of Costs of Service to Customer Classes

The customer class responsibility for service is obtained by applying the unit costs of service to the number of units for which the customer class is responsible. This process is illustrated in

Table 3-6, in which the unit costs of service are applied to the customer class units of service. The costs attributable to each customer class are based on the functional costs components described in Section 3.1. Each customer class places a burden on the system in different ways and thus the allocation of the units is representative of this burden. For example, the unit cost for the customers/bills functional cost component is \$2.92 per bill. The cost of providing this service to each customer class is then distributed based on the number of bills associated with the class. So, for single family residential customers living within City limits, Table 3-6 shows that 114,456 bills are to be expected. Therefore, the cost of issuing bills for this customer class is 114,456 times \$2.92, which rounds to \$334,100.

Table 3-4. Units of Service

Line No.	Description	Consumption			Maximum Day		Maximum Day			Meters (9)	Cust/Bills (10)	Fire Protection (11)	Fire Protection (12)
		Annual (1)	Avg. Day (2)	Factor (3)	Total (4)	Extra (5)	Factor (6)	Total (7)	Extra (8)				
	Units of Measure	(1,000 gal)	(1,000 gal/day)		(1,000 gal/day)	(1,000 gal/day)		(1,000 gal/day)	(1,000 gal/day)	(EMs)	(bills)	(EFMs)	(EHs)
Inside City													
1	Single Family Residential	2,183,600	5,982	185%	11,068	5,085	360%	21,537	10,469	21,838	114,456	0	0
2	Multi Family Residential	679,500	1,862	175%	3,258	1,396	275%	5,120	1,862	3,689	7,998	0	0
3	Commerical and Institutional	624,300	1,710	200%	3,421	1,710	275%	4,704	1,283	3,475	8,394	0	0
4	Irrigation	202,800	556	300%	1,667	1,111	500%	2,778	1,111	832	1,530	0	0
Outside City													
5	Single Family Residential	299,300	820	190%	1,558	738	360%	2,952	1,394	2,289	11,940	0	0
6	Multi Family Residential	41,400	113	180%	204	91	240%	272	68	249	516	0	0
7	Commerical and Institutional	66,000	181	180%	325	145	300%	542	217	305	252	0	0
8	Irrigation	48,600	133	300%	399	266	450%	599	200	128	282	0	0
Other													
9	School	105,200	288	200%	576	288	300%	865	288	373	138	0	0
10	Agricultural	74,000	203	300%	608	405	500%	1,014	405	207	114	0	0
11	Contract [*]	350,400	960	200%	1,920	960	360%	3,456	1,536	0	30	0	0
12	City	73,300	201	200%	402	201	275%	552	151	741	1,230	0	0
13	Subtotal	4,748,400	13,009		25,407	12,397		44,391	18,984	34,125	146,880	0	0
Contract													
10	City of American Canyon	96,100	263	200%	527	0	360%	948	0	0	0	0	0
14	City of Calistoga	180,800	495	200%	991	0	360%	1,783	0	0	0	0	0
15	Subtotal	276,900	759		1,517	0		2,731	0	0	0	0	0
Fire													
14	Public	0	0	0%	408	408	0%	4,900	4,492	29,002	133,860	29,002	2,689
16	Private	0	0	0%	73	73	0%	875	802	16,079	3,276	16,079	480
17	Subtotal	0	0		481	481		5,775	5,294	45,080	137,136	45,080	3,169
18	Grand Total	5,025,300	13,768		27,405	12,878		52,897	24,278	79,205	284,016	45,080	3,169
	[*] Reflects only those contract customers with rates tied to Inside/Outside schedule: City of St. Helena, Town of Yountville and State Hospital.												
19	Pumped Zone	433,700	1,188	370%	2,198	0	720%	4,278	0	0	0	0	0

Table 3-5. Units Costs of Service

Line No.	Description	Total Costs (\$)	Common to All Customers				Customer Specific				
			Base (\$)	Extra Capacity (\$)		Customer Meters (\$)	Fire Protection (\$)	Direct (\$)			
			Base	Max. Day	Max. Hour	Meters	Cust/Bill.		Contract	Pumped Zone	Outside City
	Unit Cost of Service										
1	Net Operating Expense	15,200,000	11,109,200	0	541,900	352,200	828,800	562,200	811,500	196,900	797,300
2	Capital Costs	3,327,900	1,679,300	866,500	156,700	163,100	0	175,300	96,000	143,000	48,000
3	Debt Service	3,798,600	1,916,800	989,100	178,900	186,100	0	200,100	109,600	163,200	54,800
4	Total Cost of Service	22,326,500	14,705,300	1,855,600	877,500	701,400	828,800	937,600	1,017,100	503,100	900,100
5	Units of Service (Total)		4,853,600	12,878	24,278	79,205	284,016	45,080	627,300	433,700	455,300
6	Cost per Unit		\$ 3.03	\$ 144.09	\$ 36.14	\$ 8.86	\$ 2.92	\$ 20.80	\$ 1.62	\$ 1.16	\$ 1.98
7	per Unit		1,000 Gal	1,000 Gal/Day	1,000 Gal/Day	EM	Bill	EFM	1,000 Gal	1,000 Gal	1,000 Gal

Table 3-6. Distribution of Costs to Customer Class

Line No.	Description	Total Costs (\$)	Common to All Customers					Customer Specific Direct			
			Base (\$)	Extra Capacity Max. Day (\$)	Max. Hour (\$)	Customer Meters (\$)	Cust/Bill. (\$)	Fire Protection (\$)	Contract (\$)	Pumped Zone (\$)	Outside City (\$)
			1,000 Gal (\$)	1,000 Gal/Day (\$)	1,000 Gal/Day (\$)	EM (\$)	Bill (\$)	EFM (\$)	1,000 Gal (\$)	1,000 Gal (\$)	1,000 Gal (\$)
1	Cost per Unit		\$ 3.04	\$ 144.08	\$ 36.15	\$ 8.86	\$ 2.92	\$ 20.80	\$ 1.62	\$ 1.16	\$ 1.98
Inside City											
Single Family Residential											
2	Units		2,183,600	5,085	10,469	21,838	114,456	0	0	0	0
3	Allocation of costs of service	8,283,700	6,645,100	732,800	378,400	193,300	334,100	0	0	0	0
Multi Family Residential											
4	Units		679,500	1,396	1,862	3,689	7,998	0	0	0	0
5	Allocation of costs of service	2,392,400	2,067,900	201,200	67,300	32,700	23,300	0	0	0	0
Commercial											
6	Units		624,300	1,710	1,283	3,475	8,394	0	0	0	0
7	Allocation of costs of service	2,248,000	1,899,900	246,400	46,400	30,800	24,500	0	0	0	0
Irrigation											
8	Units		202,800	1,111	1,111	832	1,530	0	0	0	0
9	Allocation of costs of service	829,400	617,200	160,100	40,200	7,400	4,500	0	0	0	0
Outside City											
All Outside City											
9	Units		455,300	1,240	1,879	2,971	12,990	0	0	0	455,300
10	Allocation of costs of service	2,596,400	1,385,700	178,600	67,900	26,300	37,800	0	0	0	900,100
Other & Contract											
Other											
11	Units		357,700	895	844	1,320	1,482	0	0	0	0
12	Allocation of costs of service	1,198,400	1,023,100	128,800	30,500	11,700	4,300	0	0	0	0
Contract											
13	Units		350,400	960	1,536	0	30	0	627,300	0	0
14	Allocation of costs of service	2,277,400	1,066,400	138,300	55,500	0	100	0	1,017,100	0	0
Fire											
Public Fire											
15	Units		0	408	4,492	29,002	133,860	29,002	0	0	0
16	Allocation of costs of service	1,471,800	0	58,800	162,400	256,800	390,600	603,200	0	0	0
Private Fire											
17	Units		0	73	802	16,079	3,276	16,079	0	0	0
18	Allocation of costs of service	525,900	0	10,500	29,000	142,400	9,600	334,400	0	0	0
Pumped Zone											
19	Units		0	0	0	0	0	0	0	433,700	0
20	Allocation of costs of service	503,100	0	0	0	0	0	0	0	503,100	0
21	TOTAL COSTS OF SERVICE	\$ 22,326,500	\$ 14,705,300	\$ 1,855,500	\$ 877,600	\$ 701,400	\$ 828,800	\$ 937,600	\$ 1,017,100	\$ 503,100	\$ 900,100

3.5 ADEQUACY OF EXISTING RATES TO MEET COSTS OF SERVICE

Presented in Tables 3-7 is a comparison of the allocated cost of service and revenue under existing rates by individual customer class and for the system in total. The indicated revenue increase required over existing rates for each user class indicates where the emphasis should be directed in the subsequent rate design of water service user rates.

The 8.0 percent, overall increase is considered necessary to meet the projected revenue requirements for the FY 12 test year. This overall level of revenue needs to be produced by the proposed rates developed and presented in subsequent sections of this report.

Table 3-7. Comparison of Cost of Service to Existing Revenue

Line No.	Description	Allocated COS (\$)	Allocation of Beneficial Use (\$)	Adjusted COS (\$)	Rev under Exst Rates (\$)	Indicated Rev Increase (%)
Inside						
1	Inside City Residents	13,753,500	2,268,900	16,022,400	15,093,000	6.2%
Outside						
2	Outside City Residents	2,596,400	411,300	3,007,700	2,631,700	14.3%
Other & Contract						
3	Other & Contract	3,475,800	(791,600)	2,684,200	2,680,000	0.2%
Fire						
4	Public	1,471,800	(1,471,800)	0	0	0.0%
5	Private	525,900	(416,800)	109,100	85,800	27.2%
6	Subtotal	1,997,700	(1,888,600)	109,100	85,800	27.2%
7	Pumped Zone	503,100	0	503,100	182,200	176.1%
8	Total System	\$ 22,326,500	\$ 0	\$ 22,326,500	\$ 20,672,700	8.0%

4 Proposed Water Rate Adjustments

The initial consideration in the derivation of rate schedules for water service is the establishment of equitable charges to the customers commensurate with the cost of providing that service. While the cost of service allocations to customer classes should not be construed as literal or exact determinations, they offer a guide to the necessity for, and the extent of, rate adjustments. Practical considerations sometimes modify rate adjustments by taking into account additional factors such as the extent of bill impacts, existing contracts, and historical local policies and practices.

4.1 EXISTING RATES

The Water Division's existing rates consist of a uniform usage charge which varies by inside and outside city and customer class. In addition, there is a meter charge for the City of Calistoga and Fire service connections. A summary of existing water rates was presented earlier in this report in Table 2-3.

4.2 PROPOSED WATER RATES

The costs of service analyses described in preceding sections of this report provide a basis for the design of water rates. As observed in Table 3-7, the cost of providing service compared to the revenues received from different customer classes is not uniform. That is, for some customer classes, such as private fire protection, the cost of providing service is greater than the revenues received. The rate schedules shown in Table 4-1 take into consideration Water Division policies as well as propose a phased schedule to address the revenue recovery imbalance in different customer classes.

The water rates for single family residential will incur changes in both structure and value. The single family residential rate will transition from a uniform usage rate to a bi-monthly service charge plus inclining tiered rates. The bi-monthly service charge will incorporate 3 units regardless of usage. Upon exceeding 3 units of usage, all usage is based on the inclining tiered rate structure. A unit represents 1,000 gallons. Under an inclining tier rate structure, users pay different commodity rates for different block usages. For example, user may pay \$1/unit for all usage between 4 and 20 units, and then pay \$2/unit for all usage between 21 and 30 units.

The inclining tiered rate structure proposed for single family residential meets California Urban Water Conservation Council (CUWCC) requirements as well as promoting water conservation. The inclining tier rates are designed solely for single family residential customers as this customer class represents the largest potential for water conservation. In addition, during the summer months the single family residential demand triples when compared to winter demand. As a result it costs more to operate the water system because more treatment plants must be run simultaneously, thereby requiring more staff and resources. This high demand time also drives the need for additional system tank storage. Based on the analysis, the selected tiers are: Tier 1 4-20 units, Tier 2 21-40 units, Tier 3 41-75 units and Tier 4 over 75 units. The 0-3 units are included as part of the bi-monthly service charge.

The rates for multi-family residential, commercial, irrigation, agricultural and contract customers will remain a uniform usage rate. In addition, the pumped zone surcharge will remain in effect as surcharge on top of the usage rate for all customers in zones 4 and 5. The City of St. Helena

will be charged the outside city single family residential rate for 4-20 units (\$6.41 per unit for FY11/12) and no bimonthly service fee will apply. The cost to provide treat and wheel services is scheduled to increase from \$2.68 to \$2.69 per unit in FY11/12 and increase by 8%, 8%, 4% and 4% over the ensuing four years. The rates will be \$2.91, \$3.14, \$3.27, and \$3.40 in FY12/13 through FY15/16 respectively.

Tiered rates are not being applied to these customer classes because unlike single family residential customers their usage habits do not have strong ties to seasonal variations when the cost to provide service is increased. For example, many multi-family residential customers have separate irrigation services that are charged at a higher rate. Therefore, multi-family residential customers have indoor use that is consistent throughout the year. Commercial users are not charged according to tiers because their demands are more dependent on the nature of their businesses and they generally do not fluctuate tremendously during the summer and winter months other than their separate irrigation accounts that are charged a higher rate accordingly.

Table 4-1. Proposed Retail Water Rates

Class	FY 11/12 Charge	FY 12/13 Charge	FY 13/14 Charge	FY 14/15 Charge	FY 15/16 Charge
Water Service Charge					
	\$/bi-mo	\$/bi-mo	\$/bi-mo	\$/bi-mo	\$/bi-mo
SFR - Inside	\$13.25	\$14.31	\$15.45	\$16.07	\$16.72
SFR - Outside	\$19.21	\$20.75	\$22.40	\$23.30	\$24.24
Water Usage Charge					
	\$/1,000 Gal	\$/1,000 Gal	\$/1,000 Gal	\$/1,000 Gal	\$/1,000 Gal
Inside City					
Single Family Residential					
4-20	\$4.42	\$4.77	\$5.16	\$5.36	\$5.58
21-40	\$4.58	\$4.95	\$5.34	\$5.56	\$5.78
41-75	\$5.80	\$6.26	\$6.77	\$7.04	\$7.32
>75	\$7.70	\$8.32	\$8.98	\$9.34	\$9.71
Multi-Family Residential	\$4.42	\$4.77	\$5.16	\$5.36	\$5.58
Commercial and Institutional	\$4.50	\$4.86	\$5.25	\$5.46	\$5.68
Irrigation	\$4.64	\$5.01	\$5.41	\$5.63	\$5.86
Pumped Zone	\$0.82	\$0.99	\$1.15	\$1.24	\$1.34
Outside City					
Single Family Residential					
4-20	\$6.41	\$6.92	\$7.48	\$7.77	\$8.09
21-40	\$6.64	\$7.17	\$7.75	\$8.06	\$8.38
41-75	\$8.41	\$9.08	\$9.81	\$10.20	\$10.61
>75	\$11.17	\$12.06	\$13.02	\$13.54	\$14.09
Multi-Family Residential	\$6.41	\$6.92	\$7.48	\$7.77	\$8.09
Commercial and Institutional	\$6.52	\$7.05	\$7.61	\$7.91	\$8.23
Irrigation	\$6.72	\$7.27	\$7.85	\$8.16	\$8.49
Agricultural					
Interruptible - All-Season	\$6.72	\$7.27	\$7.85	\$8.16	\$8.49

4.2.1 Fire Service

As part of the suite of services provided by the Water Division, over 500 accounts have a water line connection to the City’s water system that is specifically for fire protection. To meet fire protection demands, the City must design, operate and maintain a water system that can meet peak fire demand requirements. The City charges the accounts a fire service charge based on the diameter of the line that connects their fire protection system to the City’s water system. The results of the cost-of-service analysis conducted herein indicate that a substantial increase from current fire service charges is necessary in order to achieve full cost recovery in this area. In recognition of the significant change in rates to a number of these accounts, the City proposes to phase in the new fire service charges over a 5-year period. In the early part of the study period there will be a revenue shortfall for this category; however, no other class will subsidize revenue shortfalls in any given year.

Table 4-2. Proposed Fire Water Rates

Size of Meter	FY 11/12 Charge	FY 12/13 Charge	FY 13/14 Charge	FY 14/15 Charge	FY 15/16 Charge
Water Fire Service Charge					
(inches)	\$/bi-mo	\$/bi-mo	\$/bi-mo	\$/bi-mo	\$/bi-mo
1.5"	\$8.10	\$10.11	\$15.17	\$19.47	\$24.34
2"	\$10.80	\$14.69	\$22.04	\$28.30	\$35.37
2.5"	\$13.50	\$14.69	\$22.04	\$28.30	\$35.37
3"	\$16.20	\$26.93	\$40.39	\$51.86	\$64.82
4"	\$21.60	\$40.67	\$61.01	\$78.34	\$97.92
6"	\$36.50	\$78.84	\$118.27	\$151.85	\$189.91
8"	\$64.79	\$139.95	\$209.92	\$269.53	\$336.92
10"	\$103.69	\$223.97	\$335.95	\$431.34	\$539.18
12"	\$153.18	\$330.87	\$496.31	\$637.24	\$796.54

4.2.2 Inside/Outside City

Rates charged to outside city customers are generally based on a multiplier of the inside city rate schedule. This practice is common throughout the nation and water agencies use this approach because it is easy to communicate to customers and relatively simple to implement within utility billing systems. While the concept behind a multiplier is easy to understand, cost-of-service principles still provide the basis for the derivation of the multiplier. Chapter 3 of this report outlines the methodology used to allocate O&M and capital costs to different functional cost components (cost drivers). In arriving at the allocation percentages used in the study, Black & Veatch met with Water Division staff; reviewed historical cost data by cost center (when available); evaluated operational and capital needs; and applied industry standards for areas where limited or no data were available. For cost components such as Outside City customers, Black & Veatch worked with Water Division staff to address specific questions regarding the level of service provided as well as how the City operates and maintains specific water system assets. Table 3-2 shows the allocations of specific cost categories to outside customers to account for additional costs incurred to provide service to these customers. Examples of additional costs include labor, fuel, vehicle use and resources required to provide service to customers in locations that vary widely from inside city customers who are located in relatively dense and geographic proximity. Based on

the results of the cost-of-service analysis, Black & Veatch proposes that the City raise the current outside city multiplier of 1.413 to 1.45 in order to achieve full cost recovery from these customers.

4.3 REVENUE RECOVERY UNDER PROPOSED RATES

As previously discussed, the proposed rate schedule would increase rate revenues by the average system-wide increase of 8 percent and maintain current cost recovery by customer class, as indicated in Table 4-3. It should be noted that although these proposed rates increase rate revenues by 8 percent, it is not an “across the board” rate increase to the City’s existing rate structure. Rather, based on our analysis of the City’s customer usage patterns, the proposed rates were developed to provide the indicated revenue increase, while each customer will be impacted differently based on their usage patterns and characteristics. To the extent possible, rates are designed to recover 100 percent of the costs for each customer class. Variances from the full 100 percent recovery may be due to rounding.

Table 4-3. Comparison of Cost of Service to Projected Revenue

Line No.	Description	Adjusted COS	Rev under New Rates	Cost Recovery
Inside City				
1	Inside City Residents	16,022,400	16,135,800	100.7%
Outside City				
2	Outside City Residents	3,007,700	2,999,100	99.7%
Other & Contract				
3	Other & Contract	2,684,200	2,676,800	99.7%
Fire				
4	Public	0	0	0.0%
5	Private	109,100	108,000	99.0%
6	Subtotal	109,100	108,000	99.0%
7	Pumped Zone	503,100	495,600	98.5%
8	Total System	\$ 22,326,500	\$ 22,415,300	100.4%

4.4 TYPICAL BILLS AND BILL IMPACTS UNDER PROPOSED CHARGES

A comparison of typical bills under the proposed schedule of water user rates with those under existing rates is shown in Tables 4-4a and Table 4-4b. The typical bill represents the average bi-monthly usage by customer class. Bills are highly dependent on usage.

Table 4-4a. Inside City Typical Bill

Customer Class	Average Usage	Existing Rates	Inside City Proposed Rates	Increase/Decrease
Single Family Residential (SFR)	9	\$36.81	\$39.78	8.1%
	27	\$110.43	\$120.45	9.1%
	55	\$224.95	\$267.03	18.7%
	100	\$409.00	\$575.59	40.7%
SFR - Pumped	9	\$40.59	\$47.16	16.2%
	27	\$121.77	\$142.59	17.1%
	55	\$248.05	\$312.13	25.8%
	100	\$451.00	\$657.59	45.8%
Commercial and Institutional	25	\$102.25	\$112.50	10.0%
	120	\$490.80	\$540.00	10.0%
	200	\$818.00	\$900.00	10.0%
Irrigation	25	\$102.25	\$116.00	13.4%
	120	\$490.80	\$556.80	13.4%
	200	\$818.00	\$928.00	13.4%

Table 4-4b. Outside City Typical Bill

Customer Class	Average Usage	Existing Rates	Outside City Proposed Rates	Increase/Decrease
Single Family Residential (SFR)	9	\$52.02	\$57.68	10.9%
	27	\$156.06	\$174.66	11.9%
	55	\$317.90	\$387.19	21.8%
	100	\$578.00	\$834.60	44.4%
SFR - Pumped	9	\$55.80	\$65.06	16.6%
	27	\$167.40	\$196.80	17.6%
	55	\$341.00	\$432.29	26.8%
	100	\$620.00	\$916.60	47.8%
Commercial and Institutional	25	\$144.50	\$163.13	12.9%
	120	\$693.60	\$783.00	12.9%
	200	\$1,156.00	\$1,305.00	12.9%
Irrigation	25	\$144.50	\$168.00	16.3%
	120	\$693.60	\$806.40	16.3%
	200	\$1,156.00	\$1,344.00	16.3%

4.5 NEIGHBORING WATER UTILITIES

Presented in Table 4-5 and Figure 4-1 are the proposed rates compared to rates of neighboring cities, for a single family residential customer with a ¾” meter consuming 9 units bi-monthly in winter and 27 units in the summer. Based on the comparison, the City is currently one of the lowest water providers in the area. With the proposed rate increases, the City remains the lowest water provider for winter usage and migrates to the middle portion for summer usage of the surveyed communities. All surveyed community rates are current as of May 2011. Napa rates for

winter (\$39.78) and summer (\$120.45) remain below the respective average of other area water utilities during both the winter (\$57.35) and summer (\$139.68)

Table 4-5. Comparison to Neighboring Utilities for Typical Resident

Water Provider	Winter Usage 9 units	Summer Usage 27 units
Napa (Current)	36.81	110.43
Napa (Proposed)	39.78	120.45
Vacaville	40.94	76.61
American Canyon	43.76	125.75
North Marin W.D.	44.01	103.23
Petaluma	44.80	120.69
Valley of the Moon W.D.	47.76	117.96
Alameda County W.D.	48.24	119.91
EBMUD	51.66	117.43
Santa Rosa	55.40	156.80
Vallejo	57.14	141.61
San Francisco	58.46	157.75
Yountville	61.77	106.24
Marin Municipal W.D.	62.28	178.22
Fairfield	64.80	110.59
Contra Costa W.D.	72.58	143.32
St. Helena	81.62	174.66
Calistoga	97.90	220.63

Figure 4-1. Comparison to Neighboring Utilities for a Typical Resident (Rates current as of May 2011)

