CITY OF ESCONDIDO

Water and Wastewater Rate Study Report

RFC
RAFTELIS FINANCIAL CONSULTANTS, INC.

Raftelis Financial Consultants, Inc.

December 2010

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December 28, 2010

Ms. Lori Vereker
Director of Utilities
City of Escondido
201 N. Broadway
Escondido, CA 92025

Subject: Water and Wastewater Rate Study Report

Dear Ms. Vereker:

Raftelis Financial Consultants Inc. (RFC) is pleased to present this report on the water and wastewater rate study to the City of Escondido (City). We are confident that the results developed based on a cost of service analysis will result in fair and equitable water rates to the City's users. This report summarizes the recommendations and findings of the study.

The Study involved a comprehensive review of the City's financial plan, user classifications, and rate structure for both water and wastewater enterprises. Based on our findings, RFC recommends that the City implement the following revenue adjustments from fiscal year (FY) 2011 through 2015 in order to fund operating and capital expenses and meet debt coverage requirements.

Effective	Water Utility	Wastewater Utility	Recycled Water
February 2011	9 percent	None	90% of potable
January 2012	9 percent	None	90% of potable
January 2013	9 percent	6 percent	90% of potable
January 2014	8 percent	6 percent	90% of potable
January 2015	8 percent	6 percent	90% of potable

All assumptions, including all increases in operating and capital costs, were factored into the rates. The rates were restructured to promote conservation and increase equity among customers. Various tables describing the calculation of the rates are included.

It was a pleasure working with you and we appreciate the assistance you, Ms. Gail Merriam, and other staff members provided during the course of the study. If you have any questions, please call me at (626) 583-1894.

Sincerely,

Sudhir Pardiwala
Vice President

Hannah Phan
Senior Consultant

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SECTION 1 – EXECUTIVE SUMMARY

The City of Escondido (City) engaged Raftelis Financial Consultants, Inc. (RFC) to conduct a comprehensive water and wastewater rate study to determine the water and wastewater rates over the planning period from fiscal year (FY) 2011 to 2015. The rate study process was conducted in conjunction with input from a stakeholders group composed of residential, agricultural and business customers of the City. This report documents the resultant findings, analyses, and proposed changes that were developed with input from and approved by the stakeholders.

The major objectives of the study include the following:

1. Ensure *Revenue Sufficiency* to meet the operation and maintenance (O&M) and capital needs of the City's water and wastewater enterprises
2. Plan for *Rate and Revenue Stability* to prevent rate spikes and provide for adequate operating and capital reserves and the overall financial health of the water and wastewater enterprises under varying conditions
3. Ensure that rates are *Fair and Equitable* and are based on *Cost of Service* guidelines used in the industry

These objectives were prioritized by stakeholders. This executive summary provides an overview of the study and includes findings and recommendations for water, wastewater, and recycled water rates.

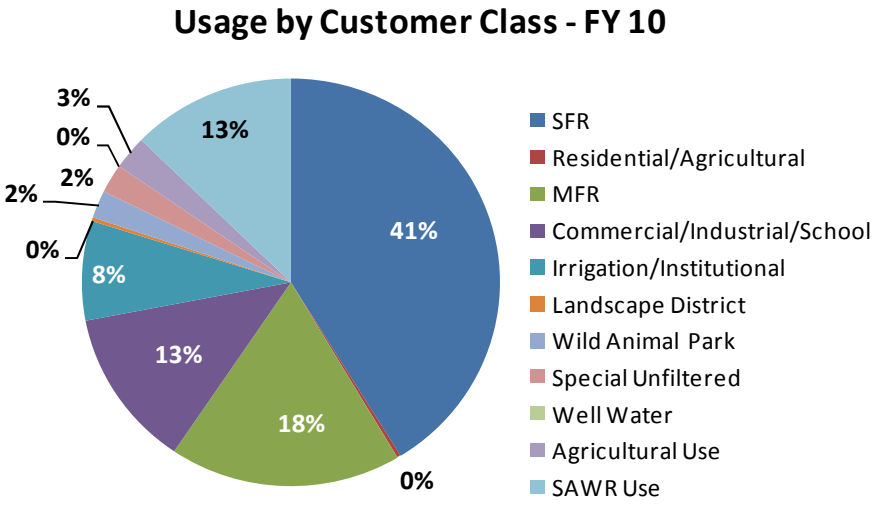
WATER UTILITY

System Background

The Water Division provides service to approximately 25,500 customers in a service area of over 37 square miles. Up to 30 percent of the City's annual water demand is met using local surface water and the remaining is purchased from the San Diego County Water Authority (SDCWA). Due to the drought conditions in recent years, purchased water costs have increased significantly.

The current water rate structure consists of a fixed monthly service charge that varies by meter size, a tiered commodity rate for residential and irrigation customers, and a uniform commodity rate for all other customer classes. Residential customers, including single family residential (SFR) and multi-family residential (MFR), used 59 percent of the total water consumed in fiscal year (FY) 2010, as shown in **Figure 1-1.** Agricultural use constituted 16 percent of the total water usage.

Figure 1-1



Water accounts and usage are projected to grow at one percent in FY 2011 through 2013 and two percent in FY 2014 and 2015, except for irrigation and agricultural customers, projected to have a decrease of one percent in water usage in FY 2013 through 2015 due to conservation and the termination of MWD and the SDCWA agricultural rebate program.

Financing Plan

In order to determine water rates, RFC projected the revenue requirements, including operations and maintenance (O&M), capital improvement expenses, debt service costs, reserves requirements, etc., for the study period from FY 2011 to 2015. O&M expenses include the cost of operating and maintaining water supply, treatment, storage, and distribution facilities, as well as the costs of providing technical services such as laboratory services and other administrative costs of the water system such as meter reading and billing. The O&M projections are based on the City's FY 2011 budget and an inflationary factor of 3 percent in projecting all O&M expenditures, except salaries and benefits, which are projected to increase at 1 percent and 5 percent, respectively. Purchased water costs, which are tracked separately, are forecasted to increase at an average of approximately 12 percent per year over the study period (FY 2011 to 2015). These costs are based upon the latest projections provided by SDCWA and the Metropolitan Water Department (MWD).

In addition to the operating expenses, the City is planning significant capital expenditures over the next five years. The total Capital Improvement Program (CIP) expenditures over the five year period is $69 million, approximately $29 million of which will be funded through debt issue in 2012 and an additional $16 million in 2015. The balance of the CIP is funded by various sources, including connection fees, rate revenues, grants receipts, and contributions from Vista Irrigation District (VID). Existing and anticipated debt service results in annual payments in the range of $3.3 to $5.8 million. To ensure that the City will meet the debt coverage requirements and have adequate revenues to fund operating and capital expenses, RFC recommends the following rate adjustments.

Annual Revenue Increases

Effective Date	Increases
February 1, 2011	9 percent
January 1, 2012	9 percent
January 1, 2013	9 percent
January 1, 2014	8 percent
January 1, 2015	8 percent

Figure 1-2 shows the revenue increases needed and the debt coverage under the proposed financing plan and **Figure 1-3** shows the CIP and the debt funding.

Figure 1-2 Annual Revenue Adjustments and Debt Coverage

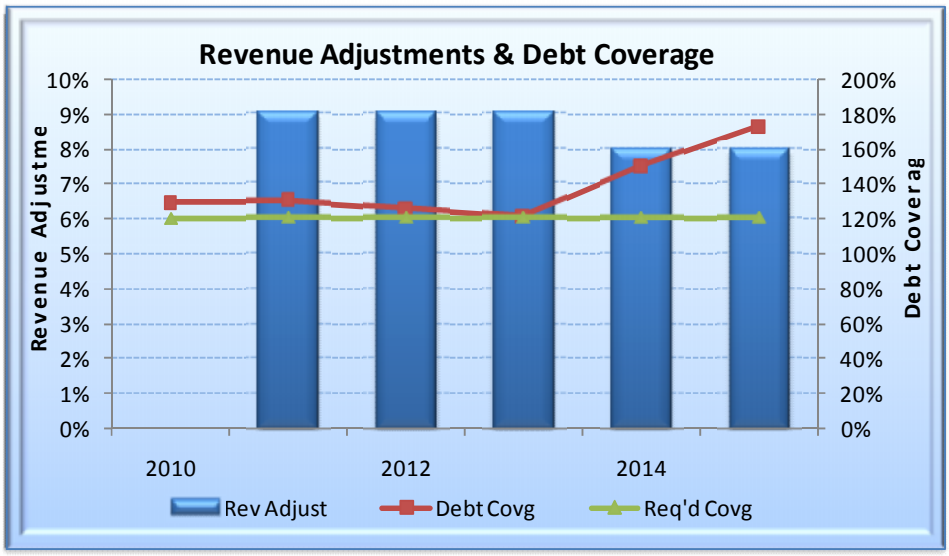
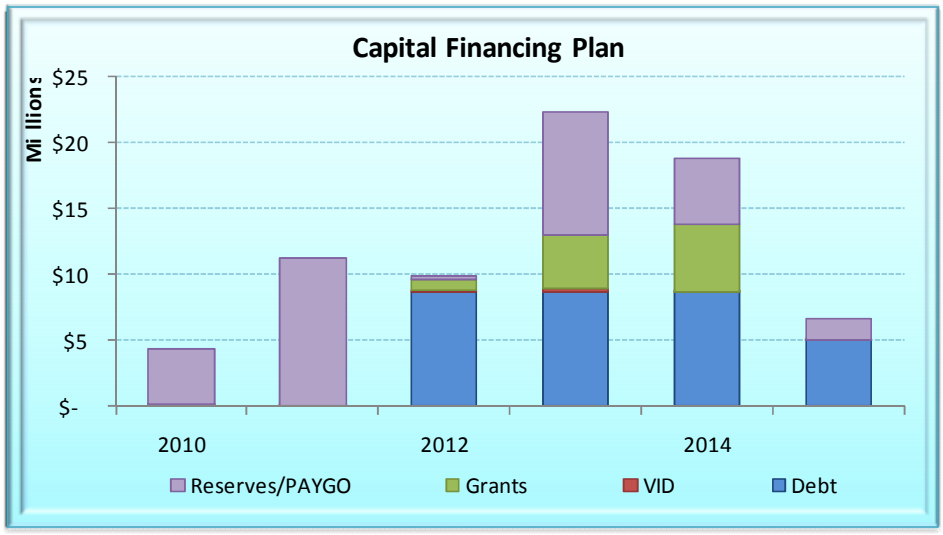


Figure 1-3 Capital Financing Plan



Proposed Water Rates

To calculate fair and equitable rates so that users pay in proportion to the cost of providing service, RFC performed a cost allocation of the total revenue requirements consistent with industry standards. Additionally, we reviewed the current rate structure and have retained the current 3 tiers for residential customers. However, RFC is proposing the following changes:

1. To encourage conservation, reduce the second tier from 20 thousand gallons (kgal) to 15 kgal per month, which represents the average usage for single family residential customers in the City.
2. Provide the same first tier as single family residential customers of 7 kgal per month to residential-agricultural customers to provide the essential usage at the lowest cost.
3. To ensure that multi-family customers are provided an adequate amount of water for their essential needs, RFC is proposing to increase their first tier from 3.5 to 5 kgal per month and second tier from 5 to 7 kgal per month.
4. Since irrigation customers and the Wild Animal Park are large customers, eliminate the tiered commodity structure and provide them water at a uniform rate. Irrigation and landscape customers can be combined into one class.
5. Eliminate the Well Water category since there are no customers in that class.
6. Based on input from the stakeholders, agricultural users would receive 60% of their water from local sources, if available, so that their rates would be reasonable to allow them to stay in business.

The proposed water rate structure will provide greater incentives for conservation. However, it targets large customers who may be using water efficiently. The stakeholders expressed a strong interest to review water budget based rates wherein each customer is provided a water budget which considers indoor water use based on number of people per household and outdoor water use based on landscape area, type of plants and weather. RFC explored this type of rate structure for the City but could not complete the analysis because adequate data was not available. The City should continue to collect the required landscape data for residential and agricultural customers to determine the feasibility of implementing a water budget rate structure.

Table 1-1 shows the proposed rates for the inclining tiered water rate structure for FY 2011 through 2015.

Table 1-1
Proposed Monthly Water Rates

WATER RATES		February 1, 2011	January 1, 2012	January 1, 2013	January 1, 2014	January 1, 2015
Water Availability Charge						
5/8" and 3/4"		$ 19.63	$ 21.40	$ 23.33	$ 25.20	$ 27.22
1"		$ 30.84	$ 33.62	$ 36.65	$ 39.59	$ 42.76
1 1/2"		$ 58.87	$ 64.17	$ 69.95	$ 75.55	$ 81.60
2"		$ 92.51	$ 100.84	$ 109.92	$ 118.72	$ 128.22
3"		$ 199.03	$ 216.95	$ 236.48	$ 255.40	$ 275.84
4"		$ 356.00	$ 388.04	$ 422.97	$ 456.81	$ 493.36
6"		$ 787.67	$ 858.57	$ 935.85	$ 1,010.72	$ 1,091.58
8"		$ 1,348.29	$ 1,469.64	$ 1,601.91	$ 1,730.07	$ 1,868.48
3/4" x 3"		$ 278.63	$ 303.71	$ 331.05	$ 357.54	$ 386.15
1" x 4"		$ 423.27	$ 461.37	$ 502.90	$ 543.14	$ 586.60
1 1/2" x 6"		$ 843.82	$ 919.77	$ 1,002.55	$ 1,082.76	$ 1,169.39
3/4" x 3" x 6"		$ 843.82	$ 919.77	$ 1,002.55	$ 1,082.76	$ 1,169.39
1" x 4" x 8"		$ 1,348.37	$ 1,469.73	$ 1,602.01	$ 1,730.18	$ 1,868.60
2" x 6"		$ 843.82	$ 919.77	$ 1,002.55	$ 1,082.76	$ 1,169.39
2" x 8"		$ 1,348.37	$ 1,469.73	$ 1,602.01	$ 1,730.18	$ 1,868.60
Detector Check		$ 33.39	$ 36.40	$ 39.68	$ 42.86	$ 46.29
Single Family Residential						
Tier 1	0 to 7	$ 3.48	$ 3.79	$ 4.14	$ 4.48	$ 4.84
Tier 2	7 to 15	$ 4.23	$ 4.62	$ 5.04	$ 5.45	$ 5.89
Tier 3	15 +	$ 5.37	$ 5.86	$ 6.39	$ 6.91	$ 7.47
Residential/Agricultural Use						
Tier 1	0 to 7	$ 3.48	$ 3.79	$ 4.14	$ 4.48	$ 4.84
Tier 2	7 +	$ 4.39	$ 4.79	$ 5.23	$ 5.65	$ 6.11
Multi-Family Residential						
Tier 1	0 to 5	$ 3.48	$ 3.79	$ 4.14	$ 4.48	$ 4.84
Tier 2	5 to 7	$ 4.23	$ 4.62	$ 5.04	$ 5.45	$ 5.89
Tier 3	7 +	$ 5.37	$ 5.86	$ 6.39	$ 6.91	$ 7.47
Commercial, Industrial & School						
All water used		$ 4.18	$ 4.56	$ 4.98	$ 5.38	$ 5.82
Irrigation - Institutional						
All water used		$ 4.51	$ 4.92	$ 5.37	$ 5.80	$ 6.27
Landscape Districts						
All water used		$ 4.51	$ 4.92	$ 5.37	$ 5.80	$ 6.27
Wild Animal Park						
All water used		$ 4.18	$ 4.56	$ 4.98	$ 5.38	$ 5.82
Special Unfiltered						
All water used		$ 2.48	$ 2.71	$ 2.96	$ 3.20	$ 3.46
Agricultural Use						
All water used		$ 3.06	$ 3.34	$ 3.65	$ 3.95	$ 4.27
SAWR Use						
All water used		$ 3.37	$ 3.68	$ 4.02	$ 4.35	$ 4.70

Customer Impacts

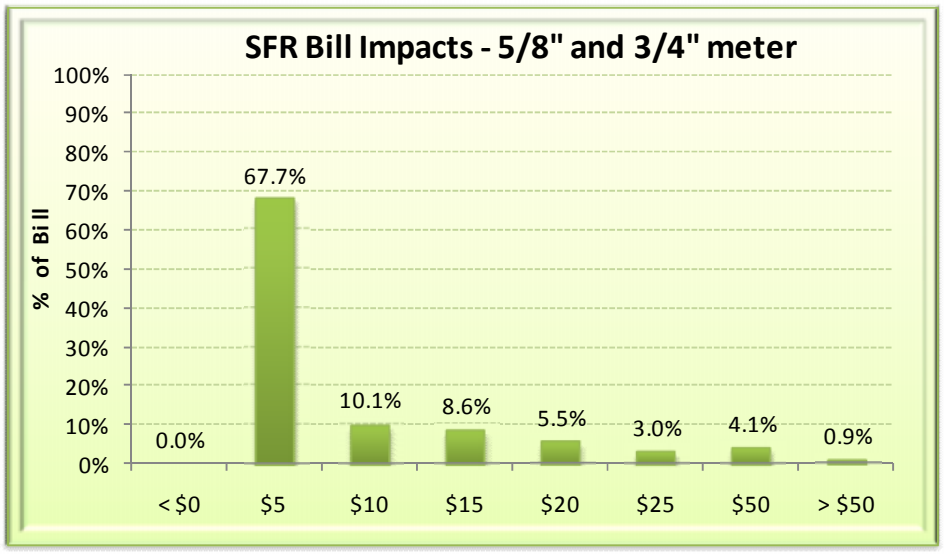
Table 1-2 below shows the impacts of an average single-family residential (SFR) customer with a 5/8" or 3/4" meter using an average 15 kgal of water per month.

Table 1-2
SFR Customer Impacts

	Existing Bill	Proposed Bill 2011	2012	2013	2014	2015
Meter Charge	$ 18.06	$ 19.63	$ 21.40	$ 23.33	$ 25.20	$ 27.22
Commodity Charge	$ 55.45	$ 58.17	$ 63.49	$ 69.30	$ 74.96	$ 81.00
Subtotal	**$ 73.51**	**$ 77.80**	**$ 84.89**	**$ 92.63**	**$ 100.16**	**$ 108.22**
MWD and CWA Charge	$ 4.37	$ 4.80	to be determined			
TOTAL BILL	**$ 77.88**	**$ 82.60**	**$ 84.89**	**$ 92.63**	**$ 100.16**	**$ 108.22**
% Increase		6%	3%	9%	8%	8%

Based on the water usage in 2009, the monthly impacts on SFR customers are shown in **Figure 1-4** below. The figure shows that over 70 percent of the customers will see an impact of less than $5 per month from the water rate increase in 2011.

Figure 1-4 Single Family Residential Impacts



Water Budget Rate Structure

As part of this study, RFC evaluated the feasibility of implementing a water budget rate structure for the City. A water budget rate structure is designed to meet each customer's individual needs so that each customer is incentivized to use water efficiently. Water budgets are typically designed for residential and irrigation accounts. Commercial and industrial accounts are not ideally suited for water budgets

based on the same methodology; typically these customers retain the uniform rate structure or their water budgets are based on historical water use.

Water budget rate structures are based on indoor and outdoor budgets. While the indoor budget can be readily estimated by using typical residential densities, the determination of outdoor budgets requires landscape areas for each account. The City does not have the complete data at this time to implement the water budget rate structure. RFC did perform an analysis based on the data available. A description of water budgets, how they are determined for customers, and our preliminary analysis of impacts based on available data is included in Appendix B.

To implement water budget rates it is recommended that:

1. The City compile landscape data for residential and irrigation properties so that the water budgets can be determined. Landscape data may be estimated by using total parcel area, or total parcel area less building footprint or by determining the actual landscape area for each account.
2. Once the data is available, the City reevaluate and finalize the policy options associated with defining water budgets and the resultant impacts on customers. This would also include updating the wastewater rate structure to a budget based rate structure.
3. The City update the billing system to handle water budget rate structures. The billing system should be capable of storing the data needed to bill customers and to calculate the water budgets based on available weather factors.

WASTEWATER UTILITY

System Background

The City's Wastewater Division is responsible for the collection, treatment, and disposal of wastewater from its customers. Wastewater is treated at the wastewater treatment and disposal facility at the Hale Avenue Resource Recovery Facility (HARRF) to secondary standards before being discharged to the Pacific Ocean. In 2000, the City expanded the HARRF to include tertiary treatment processes to produce recycled water in an effort to reduce wastewater discharge to the ocean.

The current wastewater rate structure consists of a fixed monthly charge to residential customers. Commercial customers are charged a fixed monthly charge plus a volume charge based on 90% of the monthly water usage, subject to a minimum charge per month.

The majority of the City's wastewater accounts are residential customers (SFR and MFR), followed by commercial customers, schools and churches. In addition, the City has 12 recycled water meters. The wastewater accounts, including recycled water accounts, are projected to grow at one percent per year from FY 2011 to 2013 and two percent per year in FY 2014 and 2015.

Revenue Requirements

In order to determine water rates, RFC projected the revenue requirements, including operations and maintenance (O&M), capital improvement expenses, debt service costs, reserves requirements, etc., for the study period from FY 2011 to 2015. O&M expenses include the cost of operating and maintaining wastewater collection, treatment, and disposal facilities, as well as the costs of providing technical services such as laboratory services and other administrative costs of the wastewater system such as customer service and billing. The O&M projections are based on the City's FY 2011 budget and an inflationary factor of 3 percent in projecting all O&M expenditures, except salaries and benefits, which are increasing at 1 percent and 5 percent, respectively. Projected O&M expenditures for the study period are detailed in **Table 1-3**.

Table 1-3
Wastewater Operations & Maintenance Expenses

Line No.		Budgeted FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	WASTEWATER OPERATIONS						
1	Employee Services	$ 7,063,950	$ 7,107,525	$ 7,270,194	$ 7,439,069	$ 7,614,442	$ 7,796,618
2	Maintenance & Operations	$ 5,549,860	$ 5,572,990	$ 5,746,772	$ 5,926,033	$ 6,118,082	$ 6,316,614
3	Capital	$ 72,500	$ 75,500	$ 77,765	$ 80,098	$ 82,501	$ 84,976
4	Internal Service Charges	$ 1,100,790	$ 934,125	$ 962,149	$ 991,013	$ 1,020,744	$ 1,051,366
5	Allocations	$ 1,326,450	$ 1,227,625	$ 1,264,454	$ 1,302,387	$ 1,341,459	$ 1,381,703
6	Subtotal Wastewater Operations	$ 15,113,550	$ 14,917,765	$ 15,321,333	$ 15,738,601	$ 16,177,227	$ 16,631,277
	RECYCLED WATER OPERATIONS						
7	Employee Services	$ 86,155	$ 86,775	$ 88,685	$ 90,666	$ 92,722	$ 94,855
8	Maintenance & Operations	$ 1,299,500	$ 1,049,500	$ 1,127,335	$ 1,210,301	$ 1,298,303	$ 1,391,161
9	Internal Service Charges	$ 10,710	$ 11,120	$ 11,454	$ 11,797	$ 12,151	$ 12,516
10	Allocations	$ 509,535	$ 448,905	$ 462,372	$ 476,243	$ 490,531	$ 505,247
11	Subtotal Recycled Water Operations	$ 1,905,900	$ 1,596,300	$ 1,689,846	$ 1,789,008	$ 1,893,706	$ 2,003,778
	STORMWATER MANAGEMENT OPERATIONS						
12	Employee Services	$ 200,390	$ 196,845	$ 201,449	$ 206,231	$ 211,200	$ 216,363
13	Maintenance & Operations	$ 1,192,350	$ 1,193,000	$ 1,226,730	$ 1,263,532	$ 1,301,438	$ 1,340,481
14	Capital	$ 100,000	$ 100,000	$ 103,000	$ 106,090	$ 109,273	$ 112,551
15	Internal Service Charges	$ 18,615	$ 26,615	$ 27,413	$ 28,236	$ 29,083	$ 29,955
16	Allocations	$ 595,615	$ 615,425	$ 633,888	$ 652,904	$ 672,492	$ 692,666
17	Subtotal Stormwater Management Operations	$ 2,106,970	$ 2,131,885	$ 2,192,480	$ 2,256,993	$ 2,323,485	$ 2,392,016
18	**TOTAL O&M EXPENSES**	**$ 19,126,420**	**$ 18,645,950**	**$ 19,203,659**	**$ 19,784,602**	**$ 20,394,418**	**$ 21,027,071**

Capital expenditures are based on the City's Capital Improvement Program (CIP) and are funded by various sources, including development fees, rate revenues, grants receipts, bonds proceeds, etc. Due to the size of the CIP, the City is projected to issue more debt in the future to fund the capital projects. The total CIP expenditures over the 5-year period is $137 million, approximately $75 million will be funded through debt. Existing and anticipated debt service results in annual payments in the range of $5.2 to $11.7 million. **Table 1-4** shows the annual revenue requirements from rates over the 5-year period.

Table 1-4
Annual Revenue Requirements from Rates

Line No.		Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
1	Wastewater Operations O&M Expenses	$ 14,917,765	$ 15,321,333	$ 15,738,601	$ 16,177,227	$ 16,631,277
2	Stormwater Management O&M Expenses	$ 2,131,885	$ 2,192,480	$ 2,256,993	$ 2,323,485	$ 2,392,016
3	Existing Debt Service	$ 3,496,441	$ 3,495,424	$ 3,493,575	$ 3,494,435	$ 3,495,651
4	Proposed Debt Service	$ -	$ 1,887,780	$ 3,775,560	$ 3,775,560	$ 6,531,718
5	Capital Projects PAYGO	$ 4,000,000	$ 4,120,000	$ 4,243,600	$ 4,370,908	$ 4,502,035
6	Transfers to/(from) Rate Stabilization Fund	$ 1,000,000	$ 750,000	$ 750,000	$ 500,000	$ 500,000
7	**TOTAL EXPENSES**	**$ 25,546,091**	**$ 27,767,017**	**$ 30,258,328**	**$ 30,641,614**	**$ 34,052,697**

Proposed Revenue Adjustments

In order to meet projected revenue requirements and to maintain desired reserves fund balances, the following revenue adjustments are proposed to meet long term rate stability.

Annual Revenue Increases

Effective Date	Increases
February 1, 2011	None
January 1, 2012	None
January 1, 2013	6 percent
January 1, 2014	6 percent
January 1, 2015	6 percent

Proposed Wastewater Rates

Discussion with City staff and stakeholders revealed that Laundromats are classified under the Commercial Laundry category. RFC proposes that the City creates a new commercial category for Laundromat, which has lower wastewater strengths than the Commercial Laundry category. In addition, RFC proposes that the City implement a flow-based rate structure to incentivize conservation and be more equitable by charging users in proportion to the amount of wastewater discharged.

RFC reviewed the winter water usage from December through March for SFR, MFR and Mobile Home (MH) customers. Winter water usage is typically used as a proxy for wastewater generation because there is not much irrigation during the winter. However, winters in California still require some irrigation usage. Thus, RFC proposes a return factor of 80 percent of winter water usage for SFR and MFR customers. MH customers typically do not have irrigation needs; thus their return factor is 100% of winter water usage. Additionally, RFC proposes a cap of 10,000 gallons and 8,000 gallons per unit per month on wastewater generation for SFR and MFR/MH customers, respectively. This means that the maximum amount of wastewater an SFR customer can generate a month is 10,000 gallons.

Table 1-5 shows the proposed wastewater rates for FY 2011. Wastewater rates remain the same for FY 2012 and increase by 6 percent each year in January 2013, 2014, and 2015. There are no increases recommended for the recycled water rates during the study period except to retain the recycled water rates at 90 percent of the lowest potable water rate.

Since the City is planning significant capital expenditures over the next five years, it is appropriate to review the cost allocations periodically and rates to ensure that the rates are consistent with cost of service.

Table 1-5
Proposed FY 2011 Wastewater Rates

Customer Class	Unit	Fixed $/mo	Other $/unit	Flow $/kgal	BOD $/lb	TSS $/lb
Single Family Residential	/unit/mo	$ 16.37		$ 3.15		
Multi-Family Dwelling	/unit/mo	$ 16.37		$ 2.62		
Mobile Homes	/unit/mo	$ 16.37		$ 1.80		
Senior High Schools	/student/yr		$ 23.41			
Elementary and Middle Schools	/student/yr		$ 15.61			
Churches	/100 sts/mo		$ 32.52			
Car Wash/Soft Water Service	/acct/mo	$ 16.37		$ 5.10		
Hotel/Motel without dining	/acct/mo	$ 16.37		$ 5.82		
Hotel/Motel with dining	/acct/mo	$ 16.37		$ 8.43		
Repair Shop/Service Station	/acct/mo	$ 16.37		$ 5.36		
Commercial Laundry	/acct/mo	$ 16.37		$ 6.04		
Laundromats	/acct/mo	$ 16.37		$ 5.31		
Hospital	/acct/mo	$ 16.37		$ 5.69		
Brewery	/acct/mo	$ 16.37		$ 4.71	$ 0.35	$ 0.35
Grocery Store with Meat Dept	/acct/mo	$ 16.37		$ 9.17		
Industrial	/acct/mo	$ 16.37		$ 7.62		
Restaurant	/acct/mo	$ 16.37		$ 9.03		
All Other Commercial	/acct/mo	$ 16.37		$ 5.98		
Discharges to Brine Line	/acct/mo	$ 16.37		$ 0.73		

Customer Impacts

Table 1-6 below shows the impacts of an average SFR customer generating 6.5 kgal of wastewater per month, an average MFR customer generating 4.7 kgal of wastewater per month, and an average MH customer generating 3.6 kgal of wastewater per month.

Table 1-6
Residential Customer Impacts

	Existing Bill	Proposed Bill	Difference	Fixed	Flow*	Winter Usage
Single Family Residential	$ 43.09	$ 36.85	-14.5%	$ 16.37	$ 3.15	6.50
Multi-Family Dwelling	$ 27.24	$ 28.68	5.3%	$ 16.37	$ 2.62	4.70
Mobile Homes	$ 27.24	$ 22.85	-16.1%	$ 16.37	$ 1.80	3.60

* Charge per kgal of water discharged

Table 1-7 shows the impacts to non-residential customers.

Table 1-7
Non-Residential Customer Impacts

	Existing Rate		Proposed Rate		Difference	
Customer Class	**Fixed**	**Flow**	**Fixed**	**Flow**	**Fixed**	**Flow**
Senior High Schools	$ 16.60		$ 23.41		41.0%	
Elementary and Middle Scho	$ 12.87		$ 15.61		21.3%	
Churches	$ 15.46		$ 32.52		110.3%	
Car Wash/Soft Water Service	$ 16.37	$ 4.12	$ 16.37	$ 5.10	0.0%	23.8%
Hotel/Motel without dining	$ 16.37	$ 5.11	$ 16.37	$ 5.82	0.0%	13.9%
Hotel/Motel with dining	$ 16.37	$ 7.40	$ 16.37	$ 8.43	0.0%	13.9%
Repair Shop/Service Station	$ 16.37	$ 5.15	$ 16.37	$ 5.36	0.0%	4.1%
Commercial Laundry	$ 16.37	$ 6.04	$ 16.37	$ 6.04	0.0%	0.0%
Laundromats	$ 16.37		$ 16.37	$ 5.31	0.0%	
Hospital	$ 16.37	$ 4.82	$ 16.37	$ 5.69	0.0%	18.0%
Grocery Store with Meat Dep	$ 16.37	$ 9.20	$ 16.37	$ 9.17	0.0%	-0.3%
Industrial	$ 16.37	$ 3.49	$ 16.37	$ 7.62	0.0%	118.3%
Restaurant	$ 16.37	$ 7.79	$ 16.37	$ 9.03	0.0%	15.9%
All Other Commercial	$ 16.37	$ 3.49	$ 16.37	$ 5.98	0.0%	71.3%
Discharges to Brine Line		$ 1.61		$ 0.73		-54.7%

Proposed Recycled Water Rates

The recycled water monthly service charge, or availability charge, remains the same as for potable water. The commodity rate remains at 90 percent of the lowest residential potable water rate, which is consistent with current City policy. The proposed recycled water rates are shown in **Table 1-8.**

Table 1-8
Proposed Recycled Water Rates

	February 1, 2011	January 1, 2012	January 1, 2013	January 1, 2014	January 1, 2015
Recycled Water Rate ($/kgal)	$3.13	$3.41	$3.73	$4.03	$4.36

SECTION 2 – INTRODUCTION

BACKGROUND

The City of Escondido (City) engaged Raftelis Financial Consultants, Inc. (RFC) to conduct a comprehensive water and wastewater rate study that could be utilized to evaluate and enhance the user charges for the City's water and wastewater service to ensure that there is a proportionate recovery of costs from the various user classes. This report documents the resultant findings, analyses, and proposed changes.

The City's Water Division provides water services to approximately 25,500 residential, commercial, and agricultural accounts. Currently, the City receives about 70 percent of its total water supply from the San Diego County Water Authority (SDCWA). The remaining 30 percent comes from local surface water sources. The Water Division is responsible for operating and maintaining approximately 370 miles of pipelines, 50 pressure reducing/regulating stations, 5 pump stations and 11 reservoirs, as well as the recycled water distribution system.

The Wastewater Division provides sewer services to about 25,900 residential and commercial accounts. It is responsible for the operation and maintenance of the Hale Avenue Resource Recovery Facility (HARRF), 360 miles of pipelines, 14 pump stations, more than 6,000 manholes, and 14 miles of sewer outfall lines. The City operates the water and wastewater systems as self-supporting enterprises, with revenues and expenditures accounted for separately from its other enterprises and General Fund activities.

Stakeholders' Input

The City wanted to ensure that customer concerns and input were considered in the development of the rates. A stakeholder group was convened and the study was conducted in conjunction with input from this group representing residential, agricultural, and commercial customers. Additionally, a couple of council members and senior staff members participated in the meetings and provided input.

Over the course of five meetings, RFC educated stakeholders on the rate study process, the challenges within the water and wastewater industry, and the operations of the water and wastewater utilities. RFC also reviewed customer accounts and water usage, key assumptions used in the study, revenues and expenses, and the proposed water and wastewater rates with the stakeholders. The resultant rates, developed with input from the stakeholders, should be acceptable to the City's customers.

Objectives

A pricing objectives workshop (see **Appendix A** for details) was conducted with the stakeholders group. In this exercise, participants were asked to prioritize twelve pricing objectives that would serve as a guideline in the design of rates. Each objective was given a grade and weight in order to calculate the top, or most important, pricing objectives. The most important objectives that resulted from the exercise were:

- Ensure *Revenue Sufficiency* to meet the operation and maintenance (O&M) and capital needs of the City's water and wastewater enterprises
- Plan for *Rate Stability* to prevent rate spikes
- Plan for *Revenue Stability* to provide for adequate operating and capital reserves and the overall financial health of the water and wastewater enterprises under varying conditions
- Ensure that rates are based on *Cost of Service* guidelines used in the industry
- Provide for *Fairness and Equitability* in the development of a system of user charges
- Develop *Conservation Oriented* rates
- Minimize *Rate Impacts* to reduce financial hardship on user classes and individual members of those classes

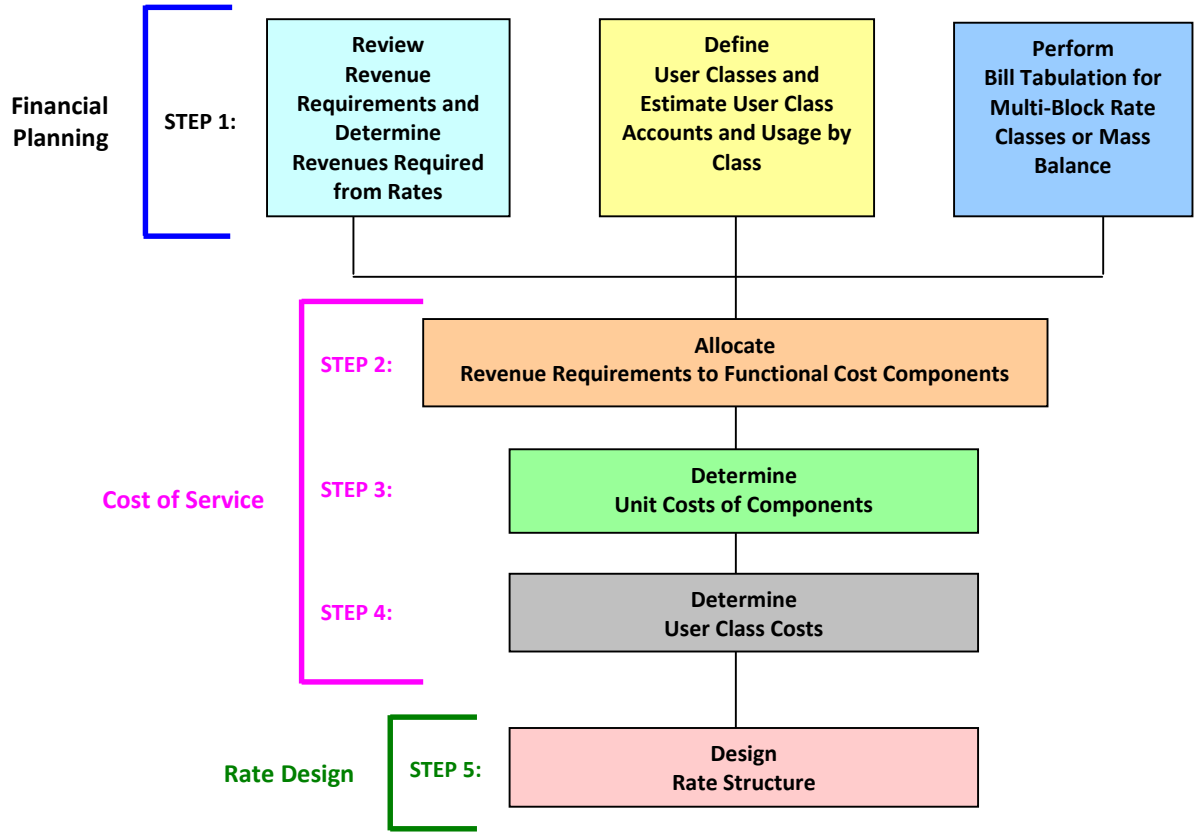
Some of these objectives conflict with others. This being the case, judgment plays a role in the final design of rate structures and rates.

Scope of the Study

The scope of this study results in the development of cost based water and wastewater user rates through a comprehensive cost of service and rate design study process. **Figure 2-1** provides a graphical representation of the various steps involved in the comprehensive cost of service and rate design process. The three major processes are as follows:

- **Financial Planning:** User and usage data from the most recent fiscal year is compiled. The single family residential usage in the different rate tiers is analyzed to determine revenues that will be collected from this class. Operating and capital costs are compiled and revenue requirements are projected for a five-year period from Fiscal Year (FY) 2011 through FY 2015. Financial planning involves estimation of annual O&M and capital expenditures, annual debt service and reserve requirements, operating and capital revenue sources and the determination of required annual user revenues from rates and charges.
- **Cost of Service Analysis:** Cost of Service Analysis involves identifying and apportioning annual revenue requirements to the different user classes proportionate to their demand on the water system and proportionate to their wastewater loadings.
- **Rate Design:** Rate Design involves the development of a fixed and variable schedule of rates for each of the different user classes to proportionately recover the costs attributable to them. This is also where other policy objectives can be achieved, such as encouraging water conservation.

Figure 2-1
Cost of Service/Rate Design Process



Assumptions Used In the Study

The following assumptions are used in the study:

1. Annual O&M and capital expenditures, other revenue sources and reserve requirements, O&M inflation factors and user account growth projections are all based on the City's FY 2010 budget. Purchased water costs are projected using the latest estimates available from SDCWA and MWD.

2. Annual water system accounts and volume data used in the Study are based on data from the City's billing system.

3. Hydraulic capacity ratios are based on rated capacity of meters as indicated in *AWWA M22 Sizing Water Service Lines and Meters.*

This Study report includes three sections in addition to the Executive Summary and the Introduction. A brief description of the remaining sections follows.

- ***Section 3*** describes findings and results of the water rate study. It includes a description of the water system, the current water rates for the various types of customers, and the existing and suggested user classifications. This section also discusses the water system revenues and expenditures, the determination of annual revenues required from user rates, a detailed discussion on the Cost of Service, which includes allocation of costs to water parameters and the determination of unit costs, and a detailed discussion on the merits of alternative rate structures and the expected impact on the different user classes.

- ***Section 4*** describes findings and results of the wastewater rate study. It includes a description of the wastewater system, the current wastewater rates for the various types of customers, and the existing and suggested user classifications. This section also discusses the wastewater system revenues and expenditures, the determination of annual revenues required from user rates, a detailed discussion on the Cost of Service, which includes allocation of costs to wastewater parameters and the determination of unit costs, and a detailed discussion on the merits of alternative rate structures and the expected impact on the different user classes.

- ***Section 5*** includes a survey of water and wastewater charges of the City and neighboring and comparable agencies.

- ***Appendix A*** includes the results of the exercise on Pricing Objectives and the rate structures that best meet those objectives.

- ***Appendix B*** briefly reviews the results and recommendations needed to complete the evaluation and implementation of a water budget rate structure.

SECTION 3 – WATER RATE STUDY

The following subsections present the findings and recommendations of the rate study pertaining to the water utility.

WATER SYSTEM

Below is a brief description of the City's current water system and rate structure.

Water System Infrastructure

The City-owned water system provided water storage, potable, and recycled water to approximately 25,750 residential, commercial, and agricultural customers at the start of FY 2010. Potable water is currently supplied by the Escondido – Vista Water Treatment Plant (WTP) with a rated capacity of 90 million gallons a day (MGD). The City owns 72 MGD of the total capacity and the Vista Irrigation District (Vista) owns the remaining 18 MGD.

In addition to the treatment plant, the water system also includes 370 miles of pipelines, 50 pressure reducing/regulating stations, 5 pump stations and 11 reservoirs that must be capable of delivering water at the desired flow rates and pressures while maintaining optimal water quality. A brief description of some of the major facilities is provided below.

Escondido – Vista Water Treatment Plant (WTP): The WTP was originally constructed in 1974 and later expanded in 1985 to its current capacity of 90 MGD. The WTP is owned and operated under the Joint Powers Agreement between the City and Vista, in which the City has rights to 80 percent of the production capacity of the plant, or 75 MGD. Under the agreement, all capital improvement costs are shared 80/20 between the City and Vista and operations costs are shared by the actual water usage.

Water Reservoirs: The City owns and maintains 11 untreated and treated reservoirs with a total storage of 24.6 million gallons. The City's two lakes, Lake Dixon and Lake Wohlford, are used to store untreated water before entering the WTP. The lakes are also opened to the public for recreational purposes. Treated water from the WTP is stored in the City's remaining reservoirs.

Water Distribution System: Treated water is delivered to Vista via the Vista flume and to the City's customers through 370 miles of pipelines. The City uses 50 pressure regulating stations to maintain appropriate pressure in the different pressure zones within the City and 5 pump stations to pump water to customers in high elevation zones.

Water Rates

The City's current water rates consist of a monthly service charge that varies by meter size and a commodity charge per unit of water. The monthly service charge consists of three components, a City's Availability Charge, Metropolitan Water District (MWD) Availability Charge (Readiness to Serve), and SDCWA Infrastructure Access Charge, as shown in **Table 3-1**.

Table 3-1
Existing Monthly Service Charge

Meter Size	Effective January 1, 2010 City Charge	MWD Charge	CWA Charge
5/8" and 3/4"	$ 18.06	$ 2.32	$ 2.05
1"	$ 29.14	$ 3.74	$ 3.28
1 1/2"	$ 56.91	$ 7.23	$ 6.15
2"	$ 89.82	$ 11.62	$ 10.66
3"	$ 179.06	$ 22.97	$ 19.68
4"	$ 278.87	$ 35.88	$ 33.62
6"	$ 555.69	$ 71.37	$ 61.50
8"	$ 990.30	$ 114.35	$ 106.61
5/8" x 2"	N/A	$ 13.04	$ 10.66
3/4" x 3"	$ 187.28	$ 24.01	$ 33.62
1" x 4"	$ 294.64	$ 37.82	$ 51.25
1 1/2" x 6"	$ 588.43	$ 75.63	$ 102.51
3/4" x 3" x 6"	$ 722.57	$ 92.93	$ 102.51
1" x 4" x 8"	$ 1,138.68	$ 148.04	$ 164.01
2" x 6"	$ 645.61	$ 82.99	$ 102.51
2" x 8"	$ 841.76	$ 115.51	$ 164.01

The commodity rates are shown in **Table 3-2**.

Table 3-2
Existing Commodity Rates

Effective January 1, 2010					
Single Family Residential			**Landscape Districts**		
Tier 1	0-7,000 gal/month	$ 3.35	All water used		$ 3.73
Tier 2	7,000-20,000 gal/month	$ 4.00	**Wild Animal Park**		
Tier 3	Over 20,000 gal/month	$ 4.70	Tier 1	0-18,000 gal/month	$ 3.73
Residential/Agricultural Use			Tier 2	Over 18,000 gal/month	$ 4.00
Tier 1	0-10,000 gal/month	$ 3.73	**Special Unfiltered**		
Tier 2	Over 10,000 gal/month	$ 4.00	All water used		$ 2.38
Multi-Family Residential			**Well Water**		
Tier 1	0-3,500 gal/month/unit	$ 3.35	All water used		$ 1.81
Tier 2	3,500-5,000 gal/month/unit	$ 4.00	**Agricultural Use**		
Tier 3	Over 5,000 gal/month/unit	$ 4.70	All water used		$ 2.80
Commercial, Industrial & School			**SAWR Use**		
All water used		$ 3.73	All water used		$ 3.09
Irrigation - Institutional					
Tier 1	0-18,000 gal/month	$ 3.73			
Tier 2	Over 18,000 gal/month	$ 4.00			

* Commodity rates are shown per thousand gallons of water delivered

Water Accounts and Usage Characteristics

The customer accounts and usage information for FY 2010 are used as the basis for projecting water revenues during the study period. RFC has made certain assumptions regarding the growth and water usage in the City.

Growth Assumptions

RFC assumed that the City will experience account growth rates of one percent in FY 2011 through 2013 and two percent in FY 2014 and 2015. Water usage growth rates are proportional to account growth rates, except for irrigation and agricultural customers, projected to have a decrease of one percent in water usage in FY 2013 through 2015 due to conservation and the end of MWD agricultural rebate program.

Meters & Equivalent Meters

Most customers in the City are provided water service through 5/8-inch and 3/4-inch meter. The total number of meters by size in the City is shown in **Table 3-3** below. The average annual growth rate for the entire City is approximately 1.4 percent per year over the five-year planning period.

To allocate meter-related costs appropriately, the concept of equivalent meters needs to be understood. By using equivalent meters instead of a straight meter count, the analysis reflects the fact that larger meters impose larger demands and are more expensive to install, maintain, and replace than smaller meters and require a greater capacity in the system.

Most rate studies calculate equivalent meters based on meter hydraulic capacity. A ratio of hydraulic capacity is calculated by dividing large meter capacities by the base meter capacity. The base meter is the most common small meter, in our case, a 3/4-inch meter. The actual number of meters by size is multiplied by the corresponding capacity ratio to calculate equivalent meters. The capacity ratio is calculated using the meter capacity in gallons per minute (gpm) provided in the AWWA M22 Manual.

Equivalent meters are used in calculating meter service costs. The equivalent meter ratios used for this study, along with the total number of equivalent meters in the system, are shown in **Table 3-4** below.

Table 3-3
Customer Accounts/Meters – Current & Projected

	Budgeted FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
WATER METERS						
5/8" and 3/4"	21,625	21,841	22,060	22,280	22,726	23,180
1"	2,285	2,308	2,331	2,354	2,401	2,449
1 1/2"	891	900	909	918	936	955
2"	830	838	847	855	872	890
3"	24	24	24	25	25	26
4"	32	32	33	33	34	34
6"	6	6	6	6	6	6
8"	4	4	4	4	4	4
5/8" x 2"	-	-	-	-	-	-
3/4" x 3"	21	21	21	22	22	23
1" x 4"	15	15	15	15	16	16
1 1/2" x 6"	3	3	3	3	3	3
3/4" x 3" x 6"	-	-	-	-	-	-
1" x 4" x 8"	1	1	1	1	1	1
2" x 6"	8	8	8	8	8	9
2" x 8"	1	1	1	1	1	1
Detector Check	276	279	282	284	290	296
TOTAL WATER METERS	**25,746**	**26,003**	**26,263**	**26,526**	**27,057**	**27,598**

Table 3-4
Equivalent Meters – Current & Projected

		Budgeted FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
WATER METERS	AWWA Ratio						
5/8" and 3/4"	1.00	21,625	21,841	22,060	22,280	22,726	23,180
1"	1.67	3,808	3,846	3,885	3,924	4,002	4,082
1 1/2"	3.33	2,970	3,000	3,030	3,060	3,121	3,184
2"	5.33	4,427	4,471	4,516	4,561	4,652	4,745
3"	11.67	280	283	286	288	294	300
4"	21.00	672	679	686	692	706	720
6"	46.67	280	283	286	288	294	300
8"	80.00	320	323	326	330	336	343
5/8" x 2"	5.33	-	-	-	-	-	-
3/4" x 3"	16.40	344	348	351	355	362	369
1" x 4"	25.00	375	379	383	386	394	402
1 1/2" x 6"	50.00	150	152	153	155	158	161
3/4" x 3" x 6"	50.00	-	-	-	-	-	-
1" x 4" x 8"	80.00	80	81	82	82	84	86
2" x 6"	50.00	400	404	408	412	420	429
2" x 8"	80.00	80	81	82	82	84	86
TOTAL EQUIVALENT METERS		**35,811**	**36,170**	**36,531**	**36,897**	**37,635**	**38,387**

Water Usage

Table 3-5 shows the current and projected water usage for each customer class from FY 2011 through 2015. The average annual growth rate for the entire City over the planning period is approximately 1.2 percent.

Table 3-5
Water Usage by Customer Class – Current and Projected (in kgal)

Line No.		Budgeted FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	WATER USAGE						
1	SFR	3,391,821	3,425,739	3,459,997	3,494,597	3,564,488	3,635,778
2	Residential/Agricultural	23,313	23,546	23,782	24,019	24,500	24,990
3	MFR	1,470,637	1,485,343	1,500,197	1,515,199	1,545,503	1,576,413
4	Commercial/Industrial/School	1,033,789	1,044,127	1,054,568	1,065,114	1,086,416	1,108,144
5	Irrigation/Institutional	650,183	656,685	663,252	656,619	650,053	643,552
6	Landscape District	23,891	24,130	24,371	24,615	25,107	25,609
7	Wild Animal Park	182,036	183,856	185,695	187,552	191,303	195,129
8	Special Unfiltered	188,432	190,316	192,219	194,142	198,025	201,985
9	Well Water	-	-	-	-	-	-
10	Agricultural Use	218,253	220,436	222,640	220,413	218,209	216,027
11	SAWR Use	1,042,201	1,052,623	1,063,149	1,073,781	1,095,256	1,117,161
12	**TOTAL WATER USAGE**	**8,224,556**	**8,306,802**	**8,389,870**	**8,456,050**	**8,598,860**	**8,744,790**

Usage Characteristics

Figures 3-1 and **3-2** show the usage and percent of bills by tier, respectively, for SFR and MFR customers. The graphs indicate that a significant portion of MFR customers' usage and bills are in Tier 3 and a disproportionally small usage and bills in Tier 2. This indicates that the tier widths for MFR customers are too restrictive compared to the tier widths for SFR customers. Residential density data from the 2000 SANDAG Data Warehouse indicates that the average density for a single-family residence in Escondido is approximately 3.2 people per household while the average density for a multi-family residence is approximately 2.9 people per household. RFC proposes that the City adjust the tier widths for MFR customers to achieve greater equity in the rate structure. The proposed adjustments are presented in Rate Design subsection.

Figure 3-1
Residential Usage by Tier

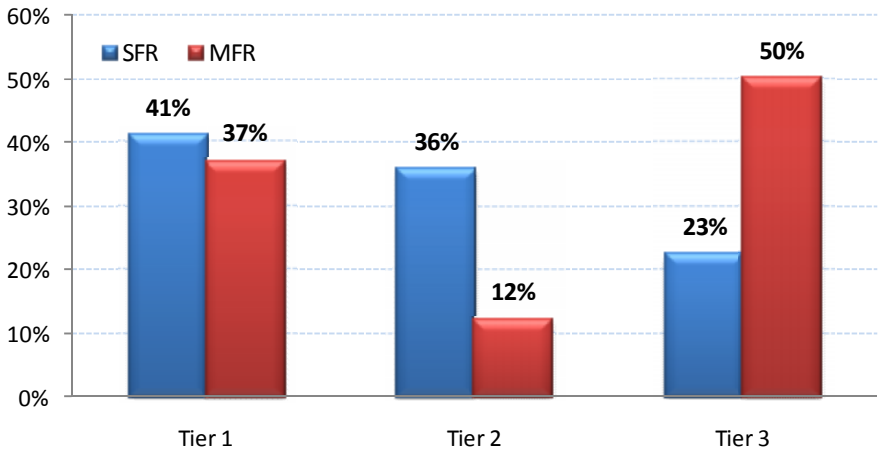
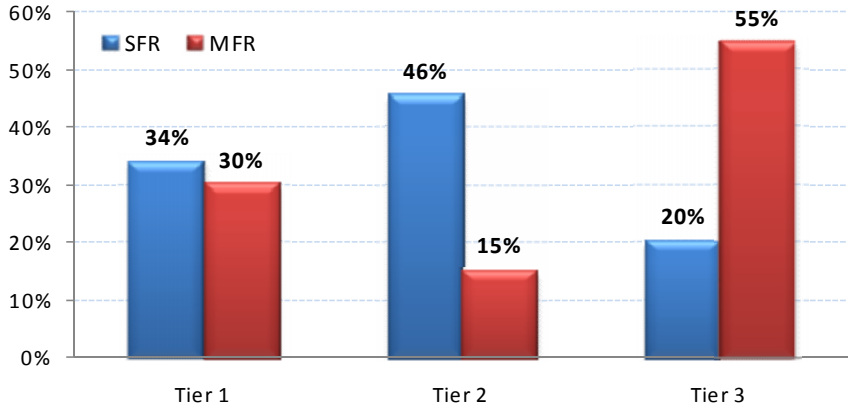


Figure 3-2
Percent Bills by Tier



WATER USER CLASSIFICATION

One of the major tasks in the cost of service and rate design process is the classification of the users of the water and wastewater system and the determination of annual demand and peaking factors associated with each class. A review of the City's existing user classifications and alternative user classes is presented in the following subsections.

Existing User Classification

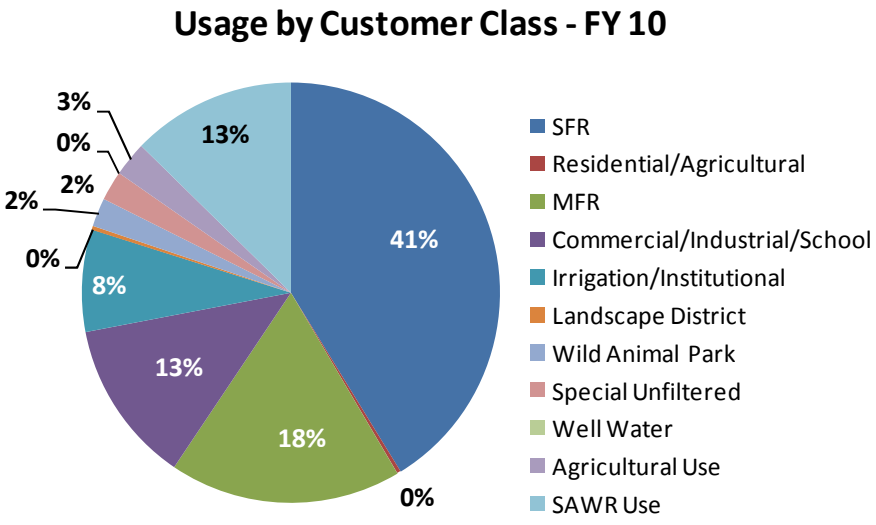
The City currently serves a population of nearly 142,000 within the City's service area. In an ideal scenario, a utility with unlimited resources and perfect information could calculate and implement unique rates for every customer based on each customer's individual usage patterns and their unique costs. However, since in the real world it is costly and time prohibitive to separately track each customer's demands and costs, utilities group customers with similar characteristics into categories or user classifications so rates can be effectively calculated and implemented to recover utility costs in an

equitable manner. The breakdown of the City's water user classes and estimated water usage, in thousand gallons (kgal) associated with each class in FY 2010 are as follows:

User Class Description	Estimated Water Usage in 2010
Single Family Residential	3,391,821 kgal
Residential/Agricultural	23,313 kgal
Multi-Family Residential	1,470,647 kgal
Commercial, Industrial & Schools	1,033,789 kgal
Irrigation – Institutional	650,183 kgal
Landscape District	23,891 kgal
Wild Animal (Safari) Park	182,036 kgal
Special Unfiltered	188,432 kgal
Well Water	0 kgal
Agricultural	218,253 kgal
SAWR	1,042,201 kgal
TOTAL	**8,224,556 kgal**

These are the user classes that are listed in the City's current rate structure and can be identified and isolated within the City's billing system. Agricultural customers included under the Agricultural and Special Agriculture Water Rate (SAWR) classifications have lower commodity rates due to MWD and SDCWA rebate programs. However, the Agricultural class is subjected to mandatory cutbacks in drought situations. Thus, in FY 2010, due to the 30 percent mandatory usage reduction required by MWD for its agricultural rebate program participants, many agricultural customers moved to the SAWR classification, which has a higher commodity rate than the Agricultural classification, in order to avoid the mandatory reduction. The percentage usage breakdown for each customer class is shown in **Figure 3-3.**

Figure 3-3



Residential Classification: The City's residential customers are classified into Single Family Residential (SFR) and Multi-Family Residential (MFR). These residential classes are assumed to be homogenous in water usage and therefore are assigned the same peaking factors. However, usage and peaking will vary

among the individual customers. **Figure 3-3** shows that the residential customers use 59 percent of the total water usage within the City.

Commercial/Industrial Classification: Commercial and Industrial user classes are comprised of a diverse group of customers. The commercial and industrial user classes are essentially "catch-all" categories. All customers that haven't been otherwise classified are put into these categories. These customers are treated equivalently in cost calculations and are assigned the same peaking factors. These customers also typically have lower peaking factors than residential customers.

Irrigation Classification: The City has several classifications that would fall under this category, including Irrigation/Institutional, Landscape District, and Wild Animal Park. These customers have the same peaking factors and typically have higher peaking factors than residential and commercial customers. This means that relatively large amounts of water are used in short periods of time when compared to average usage. Peak usage is more costly to deliver than constant usage because it requires larger capacity facilities to produce and deliver the water demanded in a short time span.

Agriculture Classification: Agricultural customers make up approximately 13 to 16 percent of the total water usage. They also have higher peaking factors than residential and commercial customers due to the large volume of water that is being used seasonally.

Proposed User Classification

Based upon the common characteristics and peaking factors of different customer classes, RFC proposes that the City combines the Landscape District with the Irrigation/Institutional category since they have similar end uses with similar peaking factors. In addition, RFC proposes that the City eliminates the Well Water category since there are no customers under that classification.

WATER REVENUE REQUIREMENTS

A review of a utility's revenue requirements is a key first step in the rate design process. The review involves an analysis of annual operating revenues under the current rates, capacity fee revenues, operation and maintenance (O&M) expenses, capital expenditures, transfers between funds, and reserve requirements. This subsection of the report provides a discussion of the projected revenues, O&M and capital expenditures, capital improvement financing plan, debt service requirements, and the revenue adjustments required to ensure the financial stability of the water enterprise. The water system revenues and expenditures are discussed from a City perspective and the discussion on required revenue adjustments relates exclusively to the City's users.

Water System Revenues

The City's Water Division derives its required annual operating and capital revenues from a number of sources. The principal sources of operating revenues from rates are the water service charges from the City's users which are expected to increase from $40.5 million in FY 2010 to $43.9 million by FY 2015 due to customer growth. Other revenue sources include miscellaneous operating revenues such as installation fees, penalties, fishing licenses, etc. Capital revenue sources include water connection fees, capital funds, bond proceeds, grants and loans, and interest earnings.

RFC reviewed the various sources of operating and capital revenues and the City's financing plan. **Table 3-6** presents the details of the operating and capital related revenues. The table however does not reflect other available sources of funds such as bond proceeds and capital grant funds. Connection fees are based on current water connection fees. The comprehensive operating and capital flow of funds statements presented at the end of this subsection includes all these other revenues.

Table 3-6
Revenue Summary

Line No.		Budgeted FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	Revenue Summary						
	Operating Revenue						
1	Water Usage	$ 30,488,513	$ 31,169,701	$ 31,481,398	$ 31,731,070	$ 32,268,954	$ 32,818,563
2	Water Service	$ 9,207,771	$ 9,649,070	$ 9,743,565	$ 9,839,005	$ 10,031,795	$ 10,228,440
3	Lake Dixon Revenue	$ 693,425	$ 700,359	$ 707,363	$ 714,436	$ 721,581	$ 728,797
4	Lake Wohlford Revenue	$ 115,364	$ 116,517	$ 117,683	$ 118,859	$ 120,048	$ 121,249
5	Total Operating Revenue	$ 40,505,072	$ 41,635,648	$ 42,050,009	$ 42,403,371	$ 43,142,377	$ 43,897,048
6							
7	Other Operating Revenue						
8	State Fishing Licenses	$ 63,166	$ 63,798	$ 64,436	$ 65,080	$ 65,731	$ 66,388
9	Meter Installation	$ 45,273	$ 45,726	$ 46,183	$ 46,645	$ 47,112	$ 47,583
10	Temporary Meter Installations	$ 2,943	$ 2,973	$ 3,002	$ 3,032	$ 3,063	$ 3,093
11	Electrical Energy	$ 150,000	$ 151,500	$ 153,015	$ 154,545	$ 156,091	$ 157,652
12	Electrical Energy - Indian Aff	$ 246	$ 248	$ 251	$ 253	$ 256	$ 258
13	Penalties	$ 1,159,419	$ 1,171,013	$ 1,182,724	$ 1,194,551	$ 1,206,496	$ 1,218,561
14	Rent	$ 35,642	$ 35,998	$ 36,358	$ 36,722	$ 37,089	$ 37,460
15	Damages - City Property	$ 12,170	$ 12,292	$ 12,415	$ 12,539	$ 12,664	$ 12,791
16	Recoveries	$ 44,747	$ 45,194	$ 45,646	$ 46,103	$ 46,564	$ 47,030
17	Other Revenue	$ 22,190	$ 22,412	$ 22,636	$ 22,862	$ 23,091	$ 23,322
18	Misc Over/Short	$ -	$ -	$ -	$ -	$ -	$ -
19	Bad Debt Offset - Contra Acct	$ (242,667)	$ (245,094)	$ (247,545)	$ (250,020)	$ (252,520)	$ (255,046)
20	Transfers Out	$ (17,776)	$ (17,954)	$ (18,133)	$ (18,315)	$ (18,498)	$ (18,683)
21	Total Other Operating Revenue	$ 1,275,353	$ 1,288,107	$ 1,300,988	$ 1,313,998	$ 1,327,138	$ 1,340,409
	Non-Operating Revenue						
22	Federal Grants	$ -					
23	Water Connection Fees	$ 375,000	$ 636,096	$ 642,457	$ 648,882	$ 1,310,741	$ 1,336,956
24	VID Rincon Filtration Charge	$ 1,118,400					
25	Water Line Develp Reimb	$ 143,000					
26	VID - Canal Reimbursement	$ 143,000					
27	Interest	$ 249,357	$ 262,811	$ 292,529	$ 305,744	$ 316,914	$ 396,482
28	Developer Contributions	$ -					
29	Reimb from Outside Agencies	$ 1,058	$ 1,068	$ 1,079	$ 1,090	$ 1,101	$ 1,112
30	Invest - Unrealized Gain or Loss	$ -	$ -	$ -	$ -	$ -	$ -
31	Gain/Loss Disp of Fixed Assets	$ -	$ -	$ -	$ -	$ -	$ -
32	Total Non-Operating Revenue	$ 2,029,815	$ 899,975	$ 936,065	$ 955,716	$ 1,628,756	$ 1,734,549
33	**TOTAL REVENUES**	**$ 43,810,240**	**$ 43,823,730**	**$ 44,287,062**	**$ 44,673,084**	**$ 46,098,271**	**$ 46,972,006**

Note: Water Service Revenue (line 2) includes MWD Readiness-to-Serve charge and SDCWA IAC charge.

Water System Expenditures

For sound financial operation of the City's water system, the revenues generated must be sufficient to meet the revenue requirements or cash obligations of the system. Revenue requirements include water purchase costs, O&M expenses, capital improvement program (CIP) expenditures, principal and interest payments on existing debt, and other obligations.

Operation and Maintenance Expenses

O&M expenditures include the cost of operating and maintaining water supply, treatment, storage, and distribution facilities. O&M expenses also include the costs of providing technical services such as laboratory services and other administrative costs of the water system such as meter reading and billings. These costs are a normal obligation of the system, and are met from operating revenues as they are incurred. The comprehensive forecasted annual O&M expenditures for the study are based upon the City's budgeted FY 2011 expenditures, adjusted for changes since the budget was developed and for anticipated changes in operations and the effect of inflation in future years. The City conservatively uses an inflationary factor of three percent in projecting all O&M expenditures, except salaries and benefits, which are increasing at 1 percent and 5 percent, respectively. Projected O&M expenditures for the study period are detailed in **Table 3-7**.

Table 3-7
Water Operations & Maintenance Expenses

Line No.		Budgeted FY 2010	Budgeted FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	WATER OPERATIONS						
1	Employee Services	$ 6,072,270	$ 6,006,140	$ 6,145,499	$ 6,290,217	$ 6,440,546	$ 6,596,748
2	Maintenance & Operations	$ 6,148,620	$ 6,691,742	$ 6,918,261	$ 7,146,954	$ 7,408,359	$ 7,680,073
3	Purchased Water	$ 16,293,637	$ 18,056,709	$ 20,993,416	$ 23,896,827	$ 26,475,420	$ 29,063,572
4	Capital	$ 63,700	$ 75,000	$ 77,250	$ 79,568	$ 81,955	$ 84,413
5	Internal Service Charges	$ 820,415	$ 868,445	$ 894,498	$ 921,333	$ 948,973	$ 977,442
6	Allocations	$ 4,204,750	$ 4,205,065	$ 4,331,217	$ 4,461,153	$ 4,594,988	$ 4,732,838
7	Subtotal Water Operations	$ 33,603,392	$ 35,903,101	$ 39,360,142	$ 42,796,053	$ 45,950,240	$ 49,135,087
	CANAL OPERATIONS						
8	Employee Services	$ 440,885	$ 447,390	$ 458,135	$ 469,300	$ 480,907	$ 492,975
9	Maintenance & Operations	$ 172,240	$ 180,240	$ 185,647	$ 191,217	$ 196,953	$ 202,862
10	Internal Service Charges	$ 121,045	$ 121,825	$ 125,480	$ 129,244	$ 133,121	$ 137,115
11	Allocations	$ 32,030	$ 22,460	$ 23,134	$ 23,828	$ 24,543	$ 25,279
12	Subtotal Canal Operations	$ 766,200	$ 771,915	$ 792,395	$ 813,589	$ 835,524	$ 858,231
	LAKES OPERATIONS						
13	Employee Services	$ 1,416,205	$ 1,433,730	$ 1,462,461	$ 1,492,198	$ 1,522,988	$ 1,554,880
14	Maintenance & Operations	$ 501,515	$ 510,145	$ 525,449	$ 541,213	$ 557,449	$ 574,173
15	Capital	$ 18,500	$ 8,000	$ 8,240	$ 8,487	$ 8,742	$ 9,004
16	Internal Service Charges	$ 291,410	$ 299,065	$ 308,037	$ 317,278	$ 326,796	$ 336,600
17	Allocations	$ 1,180	$ 1,665	$ 1,715	$ 1,766	$ 1,819	$ 1,874
18	Subtotal Lakes Operations	$ 2,228,810	$ 2,252,605	$ 2,305,902	$ 2,360,942	$ 2,417,795	$ 2,476,531
19	**TOTAL O&M EXPENSES**	**$ 36,598,402**	**$ 38,927,621**	**$ 42,458,440**	**$ 45,970,584**	**$ 49,203,560**	**$ 52,469,850**

Note: Purchased Water Cost (line 2) does not include MWD Readiness-to-Serve charge, SDCWA IAC charge, and the agricultural rebates.

Purchased Water from SDCWA is tracked separately and varies from $16.3 million to $29.1 million in 2010 through 2015. Water purchase costs are forecasted to increase at an average of approximately 12 percent over the study period compared to an anticipated 3 percent average increase in other operating costs. The operating financial plan is presented after discussion of the capital financing plan because it has impacts on the revenue requirements from rates. **Table 3-8** shows the projected water purchase costs in detail.

Table 3-8
Water Purchase Costs

Line No.		Estimated FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
1	**Projected Local Water (AF)**	3,500	3,500	3,500	3,500	3,500	3,500
2	**Water Loss Factor**	8%	8%	8%	8%	8%	8%
	Purchased Water (AF)						
3	Untreated Puchased from CWA	29,506	29,778	30,054	30,273	30,746	31,230
4	Untreated Exchanges with VID	(5,400)	(5,400)	(5,400)	(5,400)	(5,400)	(5,400)
5	Treated Exchanges with Rincon	(300)	(300)	(300)	(300)	(300)	(300)
6	Treated Exchanges with Vallecitos	-	-	-	-	-	-
7	**Total Imported Water (AF)**	**23,806**	**24,078**	**24,354**	**24,573**	**25,046**	**25,530**
	Purchased Water Rates & Charges						
8	CWA M&I Melded Rate ($/AF)	$ 521	$ 565	$ 649	$ 736	$ 798	$ 854
9	CWA Treatment Costs ($/AF)	$ 207	$ 215	$ 232	$ 280	$ 312	$ 320
10	CWA Transportation Charge ($/AF)	$ 67	$ 71	$ 78	$ 80	$ 80	$ 92
11	CWA IAWP Ag Rebate ($/AF)	$ 49	$ 59	$ 70	$ 70	$ -	$ -
12	CWA SAWR Credit (S/AF)	$ 49	$ 48	$ 48	$ 48	$ -	$ -
13	MWD IAWP Ag Rebate ($/AF)	$ 79	$ 68	$ 68	$ 68	$ -	$ -
14	CWA Customer Service Charge ($/year)	$ 714,240	$ 863,838	$ 967,956	$ 1,073,138	$ 1,167,837	$ 1,204,577
15	CWA Emergency Storage Charge ($/year)	$ 1,149,714	$ 1,580,454	$ 1,777,596	$ 2,189,391	$ 2,723,198	$ 3,099,750
16	CWA Infrastructure Access Charge ($/year)	$ 811,302	$ 936,816	$ 1,087,670	$ 1,196,437	$ 1,316,080	$ 1,399,432
17	MWD Readiness-to-Serve Charge ($/year)	$ 915,816	$ 1,070,364	$ 1,177,400	$ 1,295,140	$ 1,424,654	$ 1,467,394
18	MWD Capacity Reservation Charge ($/year)	$ 438,072	$ 422,970	$ 417,847	$ 430,382	$ 443,294	$ 456,593
	Credits						
19	Ag Usage (AF)	670	677	683	676	670	663
20	Ag Rebate Eligibility (AF)	670	677	683	676	670	663
21	SAWR Usage (AF)	3,199	3,231	3,263	3,296	3,361	3,429
	Purchased Water Costs						
22	CWA Commodity Costs	$ 17,319,778	$ 18,924,045	$ 21,833,895	$ 24,702,688	$ 26,979,846	$ 29,512,317
23	Exchanges Costs/(Credits)	$ (3,408,050)	$ (3,686,850)	$ (4,210,500)	$ (4,735,050)	$ (5,095,200)	$ (5,482,500)
24	IAWP and SAWR Credits	$ (242,472)	$ (240,989)	$ (250,915)	$ (251,539)	$ -	$ -
25	CWA and MWD Fixed Costs	$ 4,029,144	$ 4,874,442	$ 5,428,469	$ 6,184,488	$ 7,075,064	$ 7,627,746
26	VID	$ 160,637	$ 172,031	$ 193,775	$ 221,588	$ 240,500	$ 255,873
27	Rincon	$ 2,004	$ 2,146	$ 2,417	$ 2,764	$ 3,000	$ 3,192
28	VC	$ 8,646	$ 9,259	$ 10,430	$ 11,927	$ 12,945	$ 13,772
29	**Total Purchased Water Costs**	**$ 17,869,687**	**$ 20,054,084**	**$ 23,007,571**	**$ 26,136,866**	**$ 29,216,155**	**$ 31,930,399**

Water Capital Improvement Program

The City has developed a comprehensive water Capital Improvement Program (CIP) to address current and future water system needs. As **Table 3-9** indicates, the total estimated water CIP for the study period of FY 2011 to FY 2015 is $69 million. These projected costs include a three percent annual inflation factor due to anticipated increases in construction costs over time. This inflation rate is a conservative estimate and ensures that the City has adequate resources reserved to complete the necessary projects.

Table 3-9
Water Capital Improvement Program - inflated

Line No.			Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	Water Utilities Construction						
1	702811	Utility Building at PW Yard	$ -	$ -	$ -	$ -	$ -
2	704709	WL Alexander Area Phase II (bond$)	$ 2,652,250	$ -	$ -	$ -	$ -
3		WL Alexander Area Phase II	$ -	$ -	$ -	$ -	$ -
4	707901	Piezometer Project	$ -	$ -	$ -	$ -	$ -
5	704911	WL-Cemetery Area	$ 309,000	$ -	$ 7,102,726	$ -	$ -
6	**Subtotal Water Utilities Construction**		**$ 2,961,250**	**$ -**	**$ 7,102,726**	**$ -**	**$ -**
	Pending Projects						
7	701001	WTP Onsite Chlorine Generation	$ 154,500	$ 530,450	$ 874,182	$ -	$ -
8	701705	A-3 Reservoir	$ 515,000	$ 636,540	$ 874,182	$ -	$ -
9	701906	Emergency Treated Water Connection	$ 206,000	$ 848,720	$ -	$ -	$ -
10	704003	Water Pipeline Replacement	$ 515,000	$ 530,450	$ 4,370,908	$ 562,754	$ 579,637
11	704606	Rincon PwrP Mods/Penstck Repl	$ -	$ -	$ -	$ -	$ -
12		Rincon PwrP Mods/Penstck Repl (bond$)	$ -	$ -	$ -	$ -	$ -
13	704708	Reed Reservoir Design & Constr (bond$)	$ 5,150,000	$ 2,121,800	$ -	$ -	$ -
14		Lindley Reservoir Replacement	$ -	$ -	$ 546,364	$ 5,627,544	$ -
15		Vista Verde Reservoir Expand	$ -	$ -	$ -	$ -	$ -
16	**Subtotal Pending Projects**		**$ 6,540,500**	**$ 4,667,960**	**$ 6,665,635**	**$ 6,190,298**	**$ 579,637**
	Water Utilities Maintenance & Other						
17	700239	WTP Major Maint Project	$ 206,000	$ 212,180	$ 218,545	$ 225,102	$ 231,855
18	700329	Miscellaneous Main Replacement	$ -	$ 530,450	$ -	$ -	$ -
19	700519	Misc Canal Projects	$ 51,500	$ 53,045	$ 54,636	$ 56,275	$ 57,964
20	700019	WTP Master Plan Update	$ -	$ 636,540	$ -	$ -	$ -
21	704912	Lake Wohlford Dam Project	$ -	$ 1,591,350	$ 8,195,453	$ 10,129,579	$ -
22	706002	Automatic Meter Reading	$ 1,030,000	$ 2,121,800	$ -	$ -	$ -
23	707818	Project 176 Relicensing	$ -	$ -	$ -	$ -	$ -
24		WTP SCADA Upgrades	$ 51,500	$ 106,090	$ 109,273	$ -	$ -
25		Park Hill Generator	$ 206,000	$ -	$ -	$ -	$ -
26		WTP Upgrades	$ 206,000	$ -	$ -	$ 2,251,018	$ 5,796,370
27		Asset Management Development	$ 51,500	$ -	$ -	$ -	$ -
28	**Subtotal Water Utilities Maintenance & Other**		**$ 1,802,500**	**$ 5,251,455**	**$ 8,577,907**	**$ 12,661,974**	**$ 6,086,189**
29	**TOTAL CIP**		**$ 11,304,250**	**$ 9,919,415**	**$ 22,346,267**	**$ 18,852,273**	**$ 6,665,826**

Major Capital Improvement Financing Plan

The CIP is to be funded through a combination of system revenues and bond financing. The CIP funding sources include the following:

System Revenues:	***Capital Financing:***
Connection Fees	Bond proceeds
Pay-as-you-go revenues	Grant receipts and Contributions
Interest earnings	Reimbursements from Other Agencies

Table 3-10 presents the proposed capital financing plan to finance major CIP projects over the five-year period from FY 2011 to FY 2015.

Table 3-10
Capital Financing Plan

Line No.		Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	Capital Reserves Fund					
1	Beginning Balance	$ 19,987,236	$ 9,859,079	$ 29,130,119	$ 13,436,476	$ 2,327,863
2	Bond Proceeds: Input	$ -	$ 26,000,000	$ -	$ -	$ 15,000,000
3	SRF	$ -	$ -	$ -	$ -	$ -
4	Federal Grants	$ -	$ 795,675	$ 4,097,726	$ 5,064,790	$ -
5	Vista Irrigation District Reimbursement	$ 97,850	$ 175,049	$ 245,864	$ 73,158	$ 75,353
6	Other Revenue Sources					
7	Water Connection Fees	$ 636,096	$ 642,457	$ 648,882	$ 1,310,741	$ 1,336,956
8	VID Rincon Filtration Charge	$ -	$ -	$ -	$ -	$ -
9	Water Line Develp Reimb	$ -	$ -	$ -	$ -	$ -
10	VID - Canal Reimbursement	$ -	$ -	$ -	$ -	$ -
11	Developer Contributions	$ -	$ -	$ -	$ -	$ -
12	Reimb from Outside Agencies	$ 1,068	$ 1,079	$ 1,090	$ 1,101	$ 1,112
13	PAYGO	$ -	$ 1,000,000	$ 1,030,000	$ 1,060,900	$ 1,092,727
14	Capital Projects	$(11,304,250)	$ (9,919,415)	$(22,346,267)	$(18,852,273)	$ (6,665,826)
15	**Ending Balance**	**$ 9,418,000**	**$ 28,553,924**	**$ 12,807,413**	**$ 2,094,892**	**$ 13,168,184**
16	*Interest*	*$ 441,079*	*$ 576,195*	*$ 629,063*	*$ 232,971*	*$ 232,441*

Debt Service Requirements

Debt service requirements consist of principal and interest payments on existing debt. The City currently has debt service obligations associated with the outstanding 2000, 2002, and 2007 Certificates of Participation and a State Revolving Fund (SRF) loan. Existing and anticipated debt service results in annual payments in the range of $3.3 to $5.8 million. **Tables 3-11 and 3-12** show the existing and proposed debt service of the Water Division.

Table 3-11
Existing Debt Service

Line No.		Actual FY 2011	Actual FY 2012	Actual FY 2013	Actual FY 2014	Actual FY 2015
1	2000 Certificate of Participation	$ 855,195	$ 850,988	$ 850,905	$ 844,928	$ 847,900
2	2002 Certificate of Participation	$ 508,038	$ 505,138	$ 507,021	$ 508,563	$ 504,873
3	2007 Certificate of Participation	$ 1,800,850	$ 1,806,950	$ 1,807,150	$ 1,811,450	$ 1,809,850
4	SRF Loan	$ 130,919	$ 130,919	$ 130,919	$ 130,919	$ 130,919
5	**Total Existing Debt Service**	**$ 3,295,001**	**$ 3,293,994**	**$ 3,295,995**	**$ 3,295,859**	**$ 3,293,541**

Table 3-12
Proposed Debt Service

Line No.		Proposed FY 2011	Proposed FY 2012	Proposed FY 2013	Proposed FY 2014	Proposed FY 2015
1	Capital Projects to be Financed	$ -	$ 26,000,000	$ -	$ -	$ 15,000,000
2	Years to Finance	0	3	0	0	3
3	Funds Needed	$ -	$ 26,000,000	$ -	$ -	$ 15,000,000
4	**Amount of Issue**	**$ -**	**$ 28,533,970**	**$ -**	**$ -**	**$ 16,461,906**
5	Month of Issue	6	6	6	6	6
6	Bond Interest Rate (%)	5.5%	5.5%	5.5%	5.5%	5.5%
7	Bond Term (years)	30	30	30	30	30
8	Bond Issuance Expense (%)	2.0%	2.0%	2.0%	2.0%	2.0%
9	Equal Annual Debt Service	$ -	$ 1,963,291	$ -	$ -	$ 1,132,668
	Proposed Bonds Debt Payments					
10	2010	$ -	$ -	$ -	$ -	$ -
11	2011	$ -	$ -	$ -	$ -	$ -
12	2012		$ 981,645	$ 1,963,291	$ 1,963,291	$ 1,963,291
13	2013			$ -	$ -	$ -
14	2014				$ -	$ -
15	2015					$ 566,334
16	**Total Proposed Debt Service**	**$ -**	**$ 981,645**	**$ 1,963,291**	**$ 1,963,291**	**$ 2,529,625**

Reserves

The City requires adequate cash reserves to meet operating, capital, and debt service requirements. Debt reserves provide protection from defaulting on annual debt service payments in times of financial difficulty. One year of debt service payments is required in reserve, so each time the City issues new bonds, additional proceeds are added to the debt reserves. The estimated FY 2011 total reserve is approximately $15.4 million, not including the debt reserves. The reserve levels are maintained at the proposed target level in all years in the study period except for FY 2014 when the reserve level is below the target due to large capital expenditures.

Operating reserves may be used to meet ongoing cash flow requirements as well as emergency requirements. Typically, a balance in the range of 10 to 50 percent of annual operating expenses is considered appropriate. This represents one to six months of working capital. RFC proposes that the City maintains a minimum 90-day operating reserve. The minimum operating reserves are shown in **Table 3-13**. Interest from reserve funds may be used to finance operations. The capital reserve is similar in function to the operating reserve, but it is a reserve for capital expenses. It is set at 25 percent of average CIP to cover unexpected increases in capital expenditures. Finally, the rate stabilization reserve is essentially a reserve in that it can be used to supplement operations revenues and maintain the debt coverage in times of need. The target is set at 10 percent of water rate revenue.

Table 3-13
Water Reserves/Fund Balance

Line No.		Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	Operating Reserves Fund					
1	Beginning Balance	$ 5,424,011	$ 5,779,571	$ 5,071,612	$ 4,310,541	$ 5,427,452
2	Net Cash Flow	$ 355,559	$ (707,959)	$ (761,071)	$ 1,116,911	$ 1,934,491
3	**Ending Balance**	**$ 5,779,571**	**$ 5,071,612**	**$ 4,310,541**	**$ 5,427,452**	**$ 7,361,943**
4	*Interest*	*$ 164,112*	*$ 158,380*	*$ 136,146*	*$ 141,316*	*$ 185,894*
5	Target Balance - 25 % of O&M	$ 8,975,775	$ 9,840,036	$ 10,699,013	$ 11,487,560	$ 12,283,772
	Capital Reserves Fund					
6	Beginning Balance	$ 19,987,236	$ 9,859,079	$ 29,130,119	$ 13,436,476	$ 2,327,863
7	Bond Proceeds: Input	$ -	$ 26,000,000	$ -	$ -	$ 15,000,000
8	SRF	$ -	$ -	$ -	$ -	$ -
9	Federal Grants	$ -	$ 795,675	$ 4,097,726	$ 5,064,790	$ -
10	Vista Irrigation District Reimbursement	$ 97,850	$ 175,049	$ 245,864	$ 73,158	$ 75,353
11	Other Revenue Sources					
12	Water Connection Fees	$ 636,096	$ 642,457	$ 648,882	$ 1,310,741	$ 1,336,956
13	VID Rincon Filtration Charge	$ -	$ -	$ -	$ -	$ -
14	Water Line Develp Reimb	$ -	$ -	$ -	$ -	$ -
15	VID - Canal Reimbursement	$ -	$ -	$ -	$ -	$ -
16	Developer Contributions	$ -	$ -	$ -	$ -	$ -
17	Reimb from Outside Agencies	$ 1,068	$ 1,079	$ 1,090	$ 1,101	$ 1,112
18	PAYGO	$ -	$ 1,000,000	$ 1,030,000	$ 1,060,900	$ 1,092,727
19	Capital Projects	$(11,304,250)	$ (9,919,415)	$(22,346,267)	$(18,852,273)	$ (6,665,826)
20	**Ending Balance**	**$ 9,418,000**	**$ 28,553,924**	**$ 12,807,413**	**$ 2,094,892**	**$ 13,168,184**
21	*Interest*	*$ 441,079*	*$ 576,195*	*$ 629,063*	*$ 232,971*	*$ 232,441*
22	Target Balance - 25 % of CIP	$ 2,527,268	$ 2,527,268	$ 2,527,268	$ 2,527,268	$ 2,527,268
	Rate Stabilization Reserves Fund					
23	Beginning Balance	$ -	$ 200,000	$ 400,000	$ 600,000	$ 800,000
24	Transfers from/(to) Operations	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 1,000,000
25	**Ending Balance**	**$ 200,000**	**$ 400,000**	**$ 600,000**	**$ 800,000**	**$ 1,800,000**
26	*Interest*	*$ 3,000*	*$ 9,000*	*$ 15,000*	*$ 21,000*	*$ 39,000*
27	Target Balance - 10 % of Revenue	$ 4,041,039	$ 4,480,756	$ 4,924,576	$ 5,435,484	$ 5,973,330
	Debt Reserves Fund					
28	Beginning Balance	$ 3,189,978	$ 3,189,978	$ 5,153,269	$ 5,153,269	$ 5,153,269
29	Reserves from Additional Debt Issues	$ -	$ 1,963,291	$ -	$ -	$ 1,132,668
30	**Ending Balance**	**$ 3,189,978**	**$ 5,153,269**	**$ 5,153,269**	**$ 5,153,269**	**$ 6,285,937**
31	*Interest*	*$ 95,699*	*$ 125,149*	*$ 154,598*	*$ 154,598*	*$ 171,588*
32	**TOTAL RESERVES**	**$ 18,587,549**	**$ 39,178,805**	**$ 22,871,223**	**$ 13,475,613**	**$ 28,616,064**

Proposed Revenue Adjustments

The operating financial plan presented in **Table 3-14** provides a basis for evaluating the timing and level of water revenue increases required to meet the projected revenue requirements for the study period.

Table 3-14
Water Operating Financial Plan

Line No.		Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
1	Revenue from Existing Rates	$ 38,949,771	$ 39,337,657	$ 39,664,279	$ 40,357,605	$ 41,065,764
	Additional Revenue Needed:					
	Fiscal Year / Revenue Adjustments / Months Effective					
2	2011 / 9.00% / February	$ 1,460,616	$ 3,540,389	$ 3,569,785	$ 3,632,184	$ 3,695,919
3	2012 / 9.00% / January		$ 1,929,512	$ 3,891,066	$ 3,959,081	$ 4,028,551
4	2013 / 9.00% / January			$ 2,120,631	$ 4,315,398	$ 4,391,121
5	2014 / 8.00% / January				$ 2,090,571	$ 4,254,508
6	2015 / 8.00% / January					$ 2,297,435
7	Additional Revenue from Ajdustments	$ 1,460,616	$ 5,469,901	$ 9,581,482	$ 13,997,234	$ 18,667,534
8	Total Revenue from Rates	$ 40,410,387	$ 44,807,558	$ 49,245,761	$ 54,354,839	$ 59,733,298
9	Lake Dixon Revenue	$ 700,359	$ 707,363	$ 714,436	$ 721,581	$ 728,797
10	Lake Wohlford Revenue	$ 116,517	$ 117,683	$ 118,859	$ 120,048	$ 121,249
11	Other Operating Revenue	$ 1,288,107	$ 1,300,988	$ 1,313,998	$ 1,327,138	$ 1,340,409
12	Interest Income	$ 262,811	$ 292,529	$ 305,744	$ 316,914	$ 396,482
13	Non-Operating Revenue	$ -	$ -	$ -	$ -	$ -
14	TOTAL REVENUES	$ 42,778,182	$ 47,226,120	$ 51,698,799	$ 56,840,520	$ 62,320,234
15	Water Operations O&M Expenses	$ 35,903,101	$ 39,360,142	$ 42,796,053	$ 45,950,240	$ 49,135,087
16	Canal O&M Expenses	$ 771,915	$ 792,395	$ 813,589	$ 835,524	$ 858,231
17	Lakes O&M Expenses	$ 2,252,605	$ 2,305,902	$ 2,360,942	$ 2,417,795	$ 2,476,531
18	Existing Debt Service	$ 3,295,001	$ 3,293,994	$ 3,295,995	$ 3,295,859	$ 3,293,541
19	Proposed Debt Service	$ -	$ 981,645	$ 1,963,291	$ 1,963,291	$ 2,529,625
20	Capital Projects PAYGO	$ -	$ 1,000,000	$ 1,030,000	$ 1,060,900	$ 1,092,727
21	Transfer to/(from) Rate Stabilization Fund	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 1,000,000
22	TOTAL EXPENSES	$ 42,422,623	$ 47,934,079	$ 52,459,870	$ 55,723,609	$ 60,385,743
23	**Net Cash Flow**	**$ 355,559**	**$ (707,959)**	**$ (761,071)**	**$ 1,116,911**	**$ 1,934,491**
24	Debt Service Coverage	130%	125%	121%	150%	173%
25	Required Coverage	120%	120%	120%	120%	120%

Note: Revenue from Existing Rates does not include MWD Availability Charge and SDCWA IAC revenues because these costs are pass-through to customers and thus are not included in the O&M expenses.

In order to meet projected revenue requirements and to maintain desired operating, capital, and rate stabilization reserve fund balances, the following revenue adjustments are proposed to meet long term rate stability:

Effective Date	Increases
February 1, 2011	9 percent
January 1, 2012	9 percent
January 1, 2013	9 percent
January 1, 2014	8 percent
January 1, 2015	8 percent

Debt Service Coverage

The City must meet debt service coverage requirements on its outstanding bond issues. Coverage requirements typically vary between 1.0 and 1.60 or higher. The City's required debt coverage is 1.2, which means that the City's Adjusted Net System Revenues shall amount to at least 1.20 times the Annual Debt Service. The System Revenues include funds derived from the ownership and operation of the system including water service charges from the City's users, reclaimed revenue, service charges, revenues received from contracts, and transfers from the Rate Stabilization Fund to pay for O&M of the Water System. Annual Debt Service includes annual principal and interest payments on outstanding debt.

Part of the reason for the revenue adjustments is to meet debt coverage requirements. **Table 3-14** shows that the debt coverage ratio in FY 2013 is 121 percent, while the required coverage is 120 percent. This means that without the proposed 9 percent increase each year in FY 2011 through 2013, the City will not meet its debt coverage in FY 2013 unless it implements significantly higher revenue adjustments.

COST OF SERVICE ANALYSIS

The City's user classifications and the revenue requirements reviewed and finalized through the operating and capital cash flow analysis provide the basis for performing the cost of service analysis. This section of the report discusses the allocation of operating and capital costs to the parameters, the determination of unit rates, and the estimation of user class cost responsibility.

The total revenue requirements net of revenue credits from miscellaneous sources, is by definition, the cost of providing service as shown in **Table 3-15**. This cost is then used as the basis to develop unit rates for the water parameters and to allocate costs to the various user classes in proportion to the water services rendered. The concept of proportionate allocation to user classes implies that allocations should take into consideration not only the average quantity of water used but also the peak rate at which it is consumed. There are costs associated with design and construction of facilities used to meet peak demands, and these need to be allocated appropriately so that users with higher peaks pay proportionately more to offset their cost. In this Study, water rates were calculated for FY 2008, and accordingly FY 2008 is defined as the Test Year. Test Year revenue requirements are used in the cost allocation process.

Cost of Service to be Allocated

The annual revenue requirements or costs of service to be recovered from commodity charges include operation and maintenance (O&M) expenses, costs associated with annual renewal and replacements, and other capital related costs. O&M expenses include costs directly related to the supply, treatment, and distribution of water as well as routine maintenance of system facilities. This maintenance is often referred to as routine capital and represents the annual recurring capital outlay for minor system improvements and purchase of equipment.

The total FY 2011 cost of service to be recovered from the City's users, shown in **Table 3-15** on line 18, is estimated at approximately $44.5 million, of which approximately $39.4 million is operating costs and the remaining $3.1 million is capital costs, which consists of debt service and pay-go capital costs. The cost of service analysis is based upon the premise of generating annual revenues adequate to meet the estimated annual revenue requirements. As part of the cost of service analysis, revenues from other sources except water rates and charges, such as revenues from lakes and miscellaneous services, are deducted from the appropriate cost elements. Additional deductions are made to reflect interest income and other non-operating income during FY 2011. Adjustments are also made to account for cash balances and mid-year rate increases to ensure adequate collection of revenue, as shown on lines 15 and 16 of **Table 3-15,** to determine annual revenues needed from rates.

To allocate the cost of service among the different user classes in proportion to their usage and peaking demands, costs first need to be allocated to the appropriate water parameters. The following section describes the allocation of the operating and capital costs of service to the selected parameters of the water system.

Functional Cost Components

The total cost of water service is analyzed by system function in order to equitably distribute costs of service to the various classes of customers. For this analysis, water utility costs of service are assigned to three basic functional cost components including base costs, extra capacity costs and customer service related costs.

Base costs are those operating and capital costs of the water system associated with serving customers at a constant average rate of use. Extra capacity costs represent those costs incurred to meet customer peak demands for water in excess of average day usage. Total extra capacity costs are subdivided into costs associated with maximum day and maximum hour demands and are explained below.

Customer service costs include customer related and meter related costs. Customer costs are uniform for all customers and include such costs as meter reading, billing, collecting, and accounting. Meter service costs include maintenance and capital costs associated with meters and services related costs. These costs are assigned based on meter size or equivalent meter capacity.

The allocation of costs of service into these principal components provides the means for determining the costs to the various customer classes on the basis of their respective base, extra capacity and customer requirements for service.

Table 3-15
Allocation of Revenue Requirements

Line No.		Allocation of Revenue Requirements FY 2011 Operating	Capital	Total
	Revenue Requirements			
1	Water Operations O&M Expenses	$ 35,903,101		$ 35,903,101
2	Canal O&M Expenses	$ 771,915		$ 771,915
3	Lakes O&M Expenses	$ 2,252,605		$ 2,252,605
4	Existing Debt Service		$ 3,295,001	$ 3,295,001
5	Proposed Debt Service		$ -	$ -
6	Capital Projects PAYGO		$ -	$ -
7	Transfer to/(from) Rate Stabilization Fund	$ 200,000		$ 200,000
8	**Total Revenue Requirements**	**$ 39,127,621**	**$ 3,295,001**	**$ 42,422,623**
	Less Revenue from Other Sources			
9	Lake Dixon Revenue	$ 700,359		$ 700,359
10	Lake Wohlford Revenue	$ 116,517		$ 116,517
11	Other Operating Revenue	$ 1,288,107		$ 1,288,107
12	Interest Income		$ 262,811	$ 262,811
13	Other Non-Operating Revenue		$ -	$ -
14	**Total Revenue from Other Sources**	**$ 2,104,984**	**$ 262,811**	**$ 2,367,794**
	Adjustments			
15	Adjustments to Annualize Rate Increase	$ (2,044,863)		$ (2,044,863)
16	Adjustments for Annual Cash Balance	$ (355,559)		$ (355,559)
17	**Total Adjustments**	**$ (2,400,422)**	**$ -**	**$ (2,400,422)**
18	**Revenue to be Recovered from Rates**	**$ 39,423,060**	**$ 3,032,190**	**$ 42,455,250**

Allocation to Functional Cost Components

The water utility is comprised of various facilities each designed and operated to fulfill a given function. In order to provide adequate service to its customers at all times, the utility must be capable of not only providing the total amount of water used, but also supplying water at peak or maximum rates of demand. The separation of costs into functional components provides a means for distributing such costs to the various classes of customers on the basis of respective responsibilities for each particular type of service.

Determination of Allocation Percentages

Allocation percentages are usually derived from actual historical production as is the case in this Study. RFC performed the following steps to derive the allocation percentages for apportioning the City's O&M and capital costs. Customer service related costs are allocated directly to their cost component so no allocation percentages are necessary. Costs related to meter maintenance are allocated to meter

service. Volume related cost allocation requires some calculation. **Table 3-16** will help in understanding the allocation percentage calculations.

The first step is to assign system peaking factors. Base is equal to average daily demand (ADD) and assigned a value of 1.0. The City's maximum day (Max Day) demand is estimated to be 1.8 times the ADD. Max Day is therefore assigned a value of 1.8. The maximum instantaneous usage is approximated by the maximum hourly (Max Hour) usage and is estimated to be 2.7 times the ADD. Max Hour is therefore assigned a value of 2.7. These peaking factors are obtained from the 2000 Water Master Plan and confirmed by City staff.

Allocations are calculated based on these factors. Cost components that are solely Base related, such as source of supply, are allocated 100 percent to Base. Cost components that are designed to meet Max Day peaks, such as reservoirs, are allocated to Base and Max Day factors. Therefore the allocations are as follows:

Base:	55.6%	=	(1.0/1.8)x100
Max Day:	44.4%	=	(1.8-1)/1.8x100

Cost components such as Distribution that are designed for Max Hour peaks are allocated similarly. The Base allocation percentage is calculated by dividing the Base units of 1.0 by the Max Day peaking factor of 2.7. The Max Day allocation percentage is calculated by dividing the Max Day units (0.8) by the Max Hour factor of 2.7. And the Max Hour allocation percentage is calculated by dividing the Max Hour units (0.9) by the total peak of 2.7.

Base:	37.0%	=	(1.0/2.7)x100
Max Day:	29.6%	=	(0.8/2.7)x100
Max Hour:	33.3%	=	(0.9/2.7)x100

The results of the allocation are presented in **Table 3-16** below.

Table 3-16
Calculation of Allocation Factors

		Percentage Allocation		
General Peaking Factors		Base	Max Day	Max Hour
Average Demand	1.00	100.0%		
Peak Day Demand	1.80	55.6%	44.4%	
Peak Hour Demand	2.70	37.0%	29.6%	33.3%

These percentages are used to spread the operating and capital improvement costs amongst Base, Max Day, and Max Hour parameters for cost of service calculations.

Allocation of Operating Expense

Projected net operating expenses for FY 2011 are allocated to cost components on the basis of the design criteria of the facilities. Water supply costs are allocated to base; storage or reservoir costs are allocated to max day; distribution system costs are allocated to max hour; billing costs are allocated to customer service, etc.

Administration and general expenses are related to total system operations and are allocated the same as the remaining operating expenses. The resulting allocation of operation and maintenance expense serves as the basis for allocating the FY 2011 net operating costs shown in **Table 3-15** to the base, extra capacity and customer costs functions.

Allocation of Plant Investment and Capital Costs

Capital costs include capital improvements financed from annual revenues, debt service and other sources. A reasonable method of assigning capital costs to functional components is to allocate such costs on the basis of net plant investment.

Net plant investment is represented by the total cost of water utility facilities less accumulated depreciation. The estimated fiscal year net plant investment in water facilities consists of net plant in service as of June 30, 2010.

Costs are allocated based on the design criteria of each facility. The investment in general plant is allocated to each cost component on the basis of all other plant investment. The resulting allocation of net plant investment serves as the basis for allocating the capital costs shown in **Table 3-15**.

Unit Cost of Service

In order to allocate costs of service to the different user classes, unit costs of service need to be developed for each cost component. The unit costs of service are developed by dividing the total annual costs allocated to each parameter by the total annual units of the respective component. **Table 3-17** shows the units of service and the development of the FY 2011 unit costs for each of the cost components. To ensure that the costs are appropriately shared between fixed and variable components, a portion of the extra capacity related costs are allocated to meters to recognize the demand that meters place on the system

Different units are used for the different cost components. The volume related cost components are based on volumetric units of one hundred cubic feet or HCF (about 748 gallons). The extra capacity components of Max Day and Max Hour are based on a rate of usage so they are calculated in HCF per day. Customer related cost components are based on accounts or equivalent meters.

Once the total number of units is known they can be used to calculate unit costs. The allocated costs are simply divided by the total number of units for each component to determine the unit costs of each component as shown in **Table 3-17**.

Table 3-17
Development of Unit Cost

	Base	Max Day	Max Hour	Meters	Customer	General	Total
Operating Costs	$ 26,344,507	$ 1,471,884	$ 940,070	$ 382,630	$ 327,418	$ 9,956,551	$ 39,423,060
Capital Costs	$ 1,328,898	$ 711,130	$ 615,801	$ 40,501	$ 386	$ 335,475	$ 3,032,190
Total Cost of Service	$ 27,673,405	$ 2,183,013	$ 1,555,871	$ 423,131	$ 327,804	$ 10,292,026	$ 42,455,250
Allocation of General Costs	$ 8,855,312	$ 698,550	$ 497,869	$ 135,399	$ 104,895	$ (10,292,026)	
Adjustments to General Costs	$ (6,328,770)	$ (499,244)	$ (355,820)	$ 6,741,277	$ 442,557		
Total Adjusted Cost of Service	**$ 30,199,947**	**$ 2,382,319**	**$ 1,697,920**	**$ 7,299,807**	**$ 875,256**	**$ -**	**$ 42,455,250**
Units of Service	8,306,802	29,453	18,692	36,170	26,003		
Units of Measure	kgal	kgal/day	kgal/hr	meter/mo	bills/mo		
Average Unit Cost of Service	$ 3.66	$ 80.89	$ 90.84	$ 16.82	$ 2.80		

User Class Costs

The total cost responsibility of each customer class may be estimated by the distribution of the functionally allocated total cost of service for the utility among the classes based on the respective service requirements of each class.

The allocation of costs of service into these principal components (Base, Extra Capacity, and Customer) provides a means for further allocation of costs to the various customer classes on the basis of their respective service requirements.

The unit cost of each of the cost components shown in **Table 3-17** is then applied to the projected FY 2011 usage and units of each user class to derive user class costs. **Table 3-18** shows the FY 2011 user class units and cost responsibility for each user class to be recovered from commodity rates.

The SFR class has the highest assignment of costs at just over $14.1 million followed by the MFR class at approximately $6.1 million. Together, the City's residential classes (SFR and MFR) are responsible for 60 percent of the total cost of service. The commercial and industrial classes are responsible for 12 percent of the annual cost of service, and the remaining 28 percent is associated with irrigation and agricultural users.

Once the user class cost responsibility is determined, the next step is to design user rate schedules to recover the revenues required from each user class, which is discussed in the next section. The rate design analysis will illustrate how revenues are collected within each class using the current rate structure and how they compare to costs.

Table 3-18
Cost of Service for Each Customer Class

	Base	Max Day	Max Hour	**Total**
SFR				
Units	3,425,739	11,263	7,508	**3,444,510**
Costs	$ 12,547,912	$ 910,994	$ 682,047	**$ 14,140,952**
Residential/Agricultural				
Units	23,546	77	52	**23,675**
Costs	$ 86,246	$ 6,262	$ 4,688	**$ 97,195**
MFR				
Units	1,485,343	4,883	3,256	**1,493,482**
Costs	$ 5,440,565	$ 394,992	$ 295,724	**$ 6,131,281**
Commercial/Industrial/School				
Units	1,044,127	2,145	2,145	**1,048,418**
Costs	$ 3,824,463	$ 173,538	$ 194,888	**$ 4,192,888**
Irrigation/Institutional				
Units	656,685	3,598	1,799	**662,082**
Costs	$ 2,405,327	$ 291,049	$ 163,428	**$ 2,859,805**
Landscape District				
Units	24,130	132	66	**24,328**
Costs	$ 88,384	$ 10,695	$ 6,005	**$ 105,084**
Wild Animal Park				
Units	183,856	378	378	**184,612**
Costs	$ 673,435	$ 30,558	$ 34,317	**$ 738,310**
Special Unfiltered				
Units	190,316	-	-	**190,316**
Costs	$ 470,614	$ -	$ -	**$ 470,614**
Well Water				
Units	-	-	-	**-**
Costs	$ -	$ -	$ -	**$ -**
Agricultural Use (includes IAWP credit)				
Units	220,436	1,208	604	**222,247**
Costs	$ 721,498	$ 97,699	$ 54,859	**$ 874,057**
SAWR Use (includes SAWR credit)				
Units	1,052,623	5,768	2,884	**1,061,275**
Costs	$ 3,700,514	$ 466,533	$ 261,965	**$ 4,429,012**
TOTAL COSTS	**$ 29,958,958**	**$ 2,382,319**	**$ 1,697,920**	**$ 34,039,198**

RATE DESIGN

The revenue requirements and cost of service analyses described in the preceding sections of this report provide a basis for the design of COS based water rates. Rate design is the process of development of rate schedules for each user class which will recover the annual cost of service determined for each user class from the members of that class in an equitable manner. In this Study, the focus of rate design is on the development of rate schedules for each of the City's retail service user classes. This subsection of the report discusses the current water rate structure and a schedule of COS based rates for the City's user classes. It also suggests alternatives for changing the current rate structure that would improve the equitability of cost recovery by class and customer. Finally, this subsection analyzes the impact of these alternative cost allocations and rate designs on user classes and customers within user classes.

Rate Structure Alternatives

Rate structures should be designed in such a way as to ensure that users pay only their proportionate share of costs. In addition, rate structures should be easy to understand, simple to administer, and comply with regulatory requirements. A review of the current rate structure provides insights into the equitability of the current methodology and the changes, if any, that should be considered.

The current rate structure including a meter service charge that varies with meter size and commodity rates is retained. The service charge and the suggested commodity rates for the various user classes are discussed in detail below.

Monthly Service Charges

A service charge is a cost recovery mechanism that is generally included in the rate structure to recover meter and customer related costs, and which provides a stable source of revenue independent of water consumption. Therefore, customer costs related to meter reading and billing are recovered through the service charge. We suggest that the City continue its existing practice of applying consistent monthly service charges to users across all classes.

Customer related costs are fixed expenditures that relate to operational support activities including accounting, water billing, customer service, and administrative and technical support. The customer related costs are essentially common-to-all costs that are independent of user class characteristics. A service charge provides a mechanism for recovering a portion of the fixed costs and ensures a stable source of user revenues for the utility. In addition, there are capacity related costs such as meter maintenance and peaking charges that are included based on the hydraulic capacity of the meters. Since facilities are designed to meet peaking requirements, RFC has assigned capital costs related to peaking to the service charge. The City's customer related costs for FY 2011 are estimated at $8.2 million, as shown in **Table 3-17**. The service charge revenue, including the MWD Availability Charge and SDCWA Infrastructure Access Charge (IAC), represents 23 percent of total rate revenue and is consistent with the existing percentage.

Meter Unit Costs are multiplied by the meter capacity ratios from the AWWA M22 Manual Sizing Water Service Lines and Meters to calculate the Meter Cost. The Meter Cost is then added to the Billing Unit Cost to compute the cost based service charge shown in the right hand column of **Table 3-19**. This schedule does not include the MWD Availability Charge and SDCWA IAC.

Table 3-19
Monthly Service Charge Calculation

Meter Size	AWWA Ratio	Meter Charge	Billing Charge	Proposed Charge
5/8" and 3/4"	1.00	$ 16.82	$ 2.80	$ 19.63
1"	1.67	$ 28.03	$ 2.80	$ 30.84
1 1/2"	3.33	$ 56.06	$ 2.80	$ 58.87
2"	5.33	$ 89.70	$ 2.80	$ 92.51
3"	11.67	$ 196.22	$ 2.80	$ 199.03
4"	21.00	$ 353.19	$ 2.80	$ 356.00
6"	46.67	$ 784.86	$ 2.80	$ 787.67
8"	80.00	$ 1,345.48	$ 2.80	$ 1,348.29
5/8" x 2"	5.33	$ 89.70	$ 2.80	$ 92.51
3/4" x 3"	16.40	$ 275.82	$ 2.80	$ 278.63
1" x 4"	25.00	$ 420.46	$ 2.80	$ 423.27
1 1/2" x 6"	50.00	$ 841.01	$ 2.80	$ 843.82
3/4" x 3" x 6"	50.00	$ 841.01	$ 2.80	$ 843.82
1" x 4" x 8"	80.00	$ 1,345.56	$ 2.80	$ 1,348.37
2" x 6"	50.00	$ 841.01	$ 2.80	$ 843.82
2" x 8"	80.00	$ 1,345.56	$ 2.80	$ 1,348.37

The MWD Availability Charge and SDCWA IAC increase 11 percent and 8 percent for all meter sizes, respectively. These increases are based on MWD and SDCWA's FY 2010-2011 charges to the City.

Table 3-20
MWD and SDCWA Monthly Service Charges

Meter Size	MWD Charge	SDCWA IAC
5/8" and 3/4"	$ 2.58	$ 2.22
1"	$ 4.15	$ 3.55
1 1/2"	$ 8.03	$ 6.66
2"	$ 12.89	$ 11.54
3"	$ 25.49	$ 21.30
4"	$ 39.81	$ 36.39
6"	$ 79.17	$ 66.56
8"	$ 126.85	$ 115.37
5/8" x 2"	$ 14.47	$ 11.54
3/4" x 3"	$ 26.64	$ 36.39
1" x 4"	$ 41.96	$ 55.47
1 1/2" x 6"	$ 83.90	$ 110.94
3/4" x 3" x 6"	$ 103.09	$ 110.94
1" x 4" x 8"	$ 164.22	$ 177.49
2" x 6"	$ 92.06	$ 110.94
2" x 8"	$ 128.14	$ 177.49

Commodity Rate

The commodity rate is the rate developed for each user class which will recover the City's variable volume related costs. The annual estimated FY 2011 revenues required, less annual cost based service charge revenues, are the revenues that need to be recovered through a commodity rate.

COS based commodity rates are developed for each user class based on the principle of maintaining inter-class revenue neutrality and equity. This means that each user class would only pay its assigned share of costs of service (Refer to **Table 3-18** for revenues required from each user class).

The water commodity rate for each user class is computed based on the user class' annual usage revenues required and the estimated annual volume of water usage. The cost based commodity unit rate is shown in **Table 3-17**.

Proposed Changes

A review of the tiers for SFR and MFR customers shows that there are some inequities in the tier widths between the two customer classes (as shown in **Figures 3-1** and **3-2**). RFC proposes that the City adjust the tier widths to ensure more equity between those two customer classes. In addition, irrigation customers use a significant amount of water due to the nature of their use, which would make most of their water usage fall into the second tier of their rate structure. Thus, RFC proposes that the City combines the tiers and have a uniform commodity rate for irrigation customers. **Table 3-21** shows the proposed changes to the tiers.

Rate Alternatives

The two rate alternatives for FY 2011 presented here will produce approximately the same amount of revenue, but individual ratepayers will be impacted differently under each. The difference is the allocation of local water to different user classes. Option A allocates available local water to all customer classes in proportion to their water usage. Option B allocates available local water up to 60 percent of the agricultural annual water demand to agricultural users. The remaining local water is then allocated to other customer classes in proportion to their water usage. This option recognizes the benefits and history of the agricultural community in the City and thus the City, as a policy, agrees to provide the agricultural customers first access to the local water. **Table 3-21** compares the two options with the existing rates. Agricultural customers benefit from discounts provided by MWD and SDCWA. SAWR customers only receive discounts from SDCWA.

Table 3-21
Commodity Rate Options Comparison

PROPOSED WATER RATES		Option A Local Water to All	Option B Local Water to Ag	EXISTING RATES		
Single Family Residential						
Tier 1	0 to 7	$ 3.31	$ 3.48	Tier 1	0 to 7	$ 3.35
Tier 2	7 to 15	$ 4.23	$ 4.23	Tier 2	7 to 20	$ 4.00
Tier 3	15 +	$ 5.13	$ 5.37	Tier 3	20 +	$ 4.70
Residential/Agricultural Use						
Tier 1	0 to 7	$ 3.31	$ 3.48	Tier 1	0 to 10	$ 3.73
Tier 2	7 +	$ 4.23	$ 4.39	Tier 2	10 +	$ 4.00
Multi-Family Residential						
Tier 1	0 to 5	$ 3.31	$ 3.48	Tier 1	0 to 3.5	$ 3.35
Tier 2	5 to 7	$ 4.23	$ 4.23	Tier 2	3.5 to 5	$ 4.00
Tier 3	7 +	$ 5.13	$ 5.37	Tier 3	5 +	$ 4.70
Commercial, Industrial & School						
All water used		$ 4.02	$ 4.18	All water used		$ 3.73
Irrigation - Institutional						
All water used		$ 4.36	$ 4.51	Tier 1	0 to 18	$ 3.73
				Tier 2	18 +	$ 4.00
Landscape Districts						
All water used		$ 4.36	$ 4.51	All water used		$ 3.73
Wild Animal Park						
All water used		$ 4.02	$ 4.18	Tier 1	0 to 18	$ 3.73
				Tier 2	18 +	$ 4.00
Special Unfiltered						
All water used		$ 2.48	$ 2.48	All water used		$ 2.38
Agricultural Use						
All water used		$ 3.97	$ 3.06	All water used		$ 2.80
SAWR Use						
All water used		$ 4.21	$ 3.37	All water used		$ 3.09

Note: Multi-Family tiers are per each dwelling unit.

Proposed Water Rates

Table 3-22 shows the proposed water rates for the next 5 years, from FY 2011 to FY 2015. This schedule does not include MWD Availability Charge and SDCWA IAC because those rates depend on the actual charges from MWD and SDCWA, respectively.

Table 3-22
Proposed Water Rates – 5 year Plan

WATER RATES		February 1, 2011	January 1, 2012	January 1, 2013	January 1, 2014	January 1, 2015
Water Availability Charge						
5/8" and 3/4"		$ 19.63	$ 21.40	$ 23.33	$ 25.20	$ 27.22
1"		$ 30.84	$ 33.62	$ 36.65	$ 39.59	$ 42.76
1 1/2"		$ 58.87	$ 64.17	$ 69.95	$ 75.55	$ 81.60
2"		$ 92.51	$ 100.84	$ 109.92	$ 118.72	$ 128.22
3"		$ 199.03	$ 216.95	$ 236.48	$ 255.40	$ 275.84
4"		$ 356.00	$ 388.04	$ 422.97	$ 456.81	$ 493.36
6"		$ 787.67	$ 858.57	$ 935.85	$ 1,010.72	$ 1,091.58
8"		$ 1,348.29	$ 1,469.64	$ 1,601.91	$ 1,730.07	$ 1,868.48
3/4" x 3"		$ 278.63	$ 303.71	$ 331.05	$ 357.54	$ 386.15
1" x 4"		$ 423.27	$ 461.37	$ 502.90	$ 543.14	$ 586.60
1 1/2" x 6"		$ 843.82	$ 919.77	$ 1,002.55	$ 1,082.76	$ 1,169.39
3/4" x 3" x 6"		$ 843.82	$ 919.77	$ 1,002.55	$ 1,082.76	$ 1,169.39
1" x 4" x 8"		$ 1,348.37	$ 1,469.73	$ 1,602.01	$ 1,730.18	$ 1,868.60
2" x 6"		$ 843.82	$ 919.77	$ 1,002.55	$ 1,082.76	$ 1,169.39
2" x 8"		$ 1,348.37	$ 1,469.73	$ 1,602.01	$ 1,730.18	$ 1,868.60
Detector Check		$ 33.39	$ 36.40	$ 39.68	$ 42.86	$ 46.29
Single Family Residential						
Tier 1	0 to 7	$ 3.48	$ 3.79	$ 4.14	$ 4.48	$ 4.84
Tier 2	7 to 15	$ 4.23	$ 4.62	$ 5.04	$ 5.45	$ 5.89
Tier 3	15 +	$ 5.37	$ 5.86	$ 6.39	$ 6.91	$ 7.47
Residential/Agricultural Use						
Tier 1	0 to 7	$ 3.48	$ 3.79	$ 4.14	$ 4.48	$ 4.84
Tier 2	7 +	$ 4.39	$ 4.79	$ 5.23	$ 5.65	$ 6.11
Multi-Family Residential						
Tier 1	0 to 5	$ 3.48	$ 3.79	$ 4.14	$ 4.48	$ 4.84
Tier 2	5 to 7	$ 4.23	$ 4.62	$ 5.04	$ 5.45	$ 5.89
Tier 3	7 +	$ 5.37	$ 5.86	$ 6.39	$ 6.91	$ 7.47
Commercial, Industrial & School						
All water used		$ 4.18	$ 4.56	$ 4.98	$ 5.38	$ 5.82
Irrigation - Institutional						
All water used		$ 4.51	$ 4.92	$ 5.37	$ 5.80	$ 6.27
Landscape Districts						
All water used		$ 4.51	$ 4.92	$ 5.37	$ 5.80	$ 6.27
Wild Animal Park						
All water used		$ 4.18	$ 4.56	$ 4.98	$ 5.38	$ 5.82
Special Unfiltered						
All water used		$ 2.48	$ 2.71	$ 2.96	$ 3.20	$ 3.46
Agricultural Use						
All water used		$ 3.06	$ 3.34	$ 3.65	$ 3.95	$ 4.27
SAWR Use						
All water used		$ 3.37	$ 3.68	$ 4.02	$ 4.35	$ 4.70

IMPACT ANALYSIS

RFC performed an analysis to evaluate the impact of the proposed rate structure on various users. Non-residential rate impacts vary depending on the meter size and the level of usage for each customer class.

For residential customers, the bill impact of Option A on SFR customers with a 5/8-inch and 3/4-inch is shown below in **Figure 3-4**, and MFR customers with a 1-inch meter is shown in **Figure 3-5**. Under this option, approximately 71 percent and 88 percent of SFR and MFR bills will see an increase of $5 or less per month, respectively. Additionally, approximately 10 percent of MFR bills will see a decrease. **Figures 3-6** and **3-7** show the bill impact of Option B on SFR and MFR customers, respectively. Under this option, approximately 68 percent and 93 percent of SFR and MFR bills will see an increase of $5 or less per month, respectively.

Figure 3-4
SFR Impacts – Option A

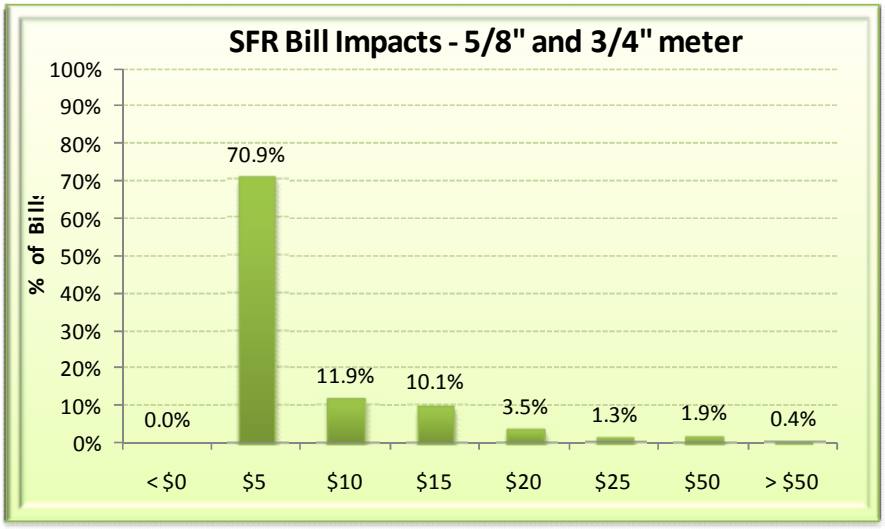


Figure 3-5
MFR Impacts – Option A

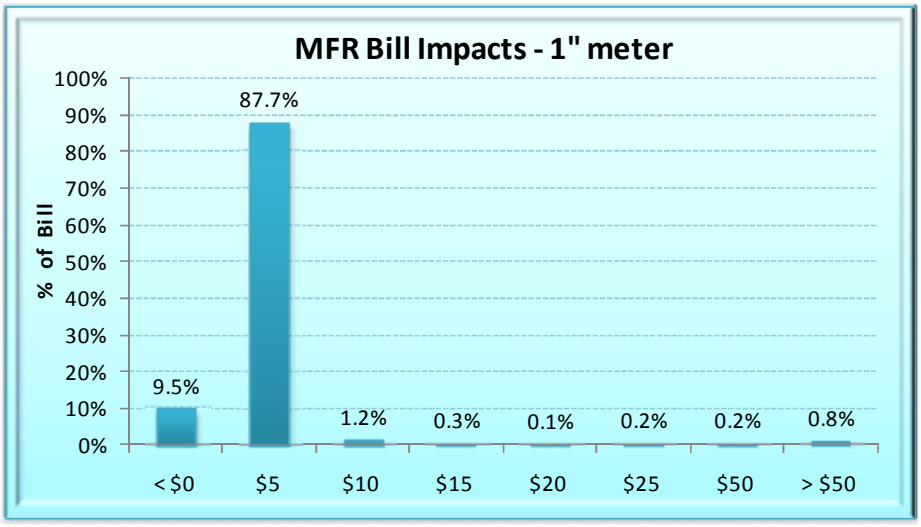


Figure 3-6
SFR Impacts – Option B

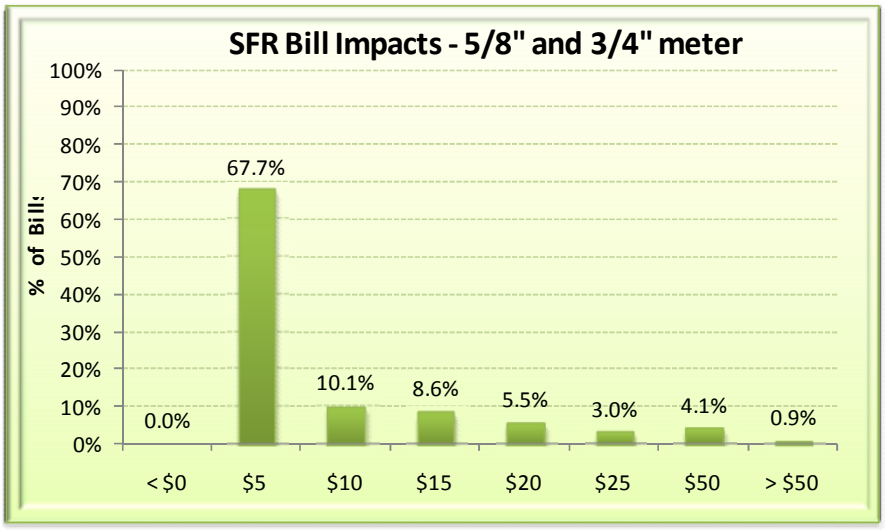
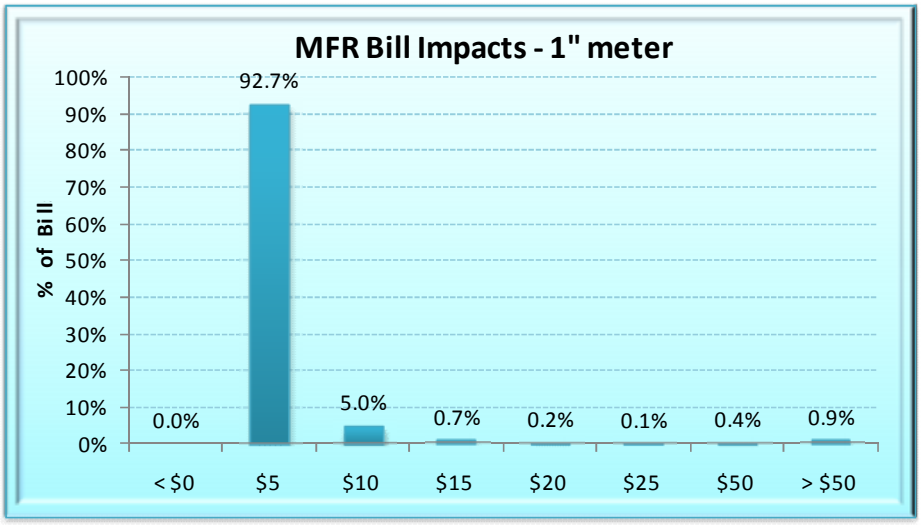


Figure 3-7
MFR Impacts – Option B



SECTION 4 – WASTEWATER RATE STUDY

The following subsections present the findings and recommendations of the rate study pertaining to the wastewater utility, including the recycled water rates.

WASTEWATER SYSTEM

Below is a brief description of the City's current wastewater system and rate structure.

Wastewater System Infrastructure

The City-owned wastewater system collects, treats, and disposes of wastewater from approximately 46,800 residential and commercial customers at the start of FY 2010. Wastewater is treated at the City-owned wastewater treatment and disposal facility at the Hale Avenue Resource Recovery Facility (HARRF). In addition, the City also produces recycled water through advanced tertiary treatment processes for industrial and irrigation purposes.

In addition to the treatment plant, the wastewater system includes 360 miles of sewer pipes, more than 6,000 manholes, and 14 miles of sewer outfall line. The City administers a pretreatment inspection program for food and commercial establishments. A brief description of some of the major facilities is provided below.

Hale Avenue Resource Recovery Facility (HARRF): The HARRF is a standard activated sludge treatment plant. It was originally constructed in 1959 to a capacity of 1.0 million gallons per day (MGD). Major expansions occurred in 1965 (3.0 MGD), 1973 (11.0 MGD), 1981 (16.5 MGD), 1989 (17.5 MGD), 1998 and 2000 when tertiary treatment processes were added. The plant's current rated capacity is 18 MGD, of which 12.7 MGD is owned by the City. The City of San Diego (San Diego) owns 5.0 MGD with an option for an additional 0.3 MGD of capacity to serve the Rancho Bernardo area on the southern edge of the City. Capital improvement costs related to the treatment plant are shared between the City and San Diego based on ownership and operations costs are shared based on actual wastewater flow.

Wastewater Discharge: Treated wastewater is discharged to the Pacific Ocean via a 14-mile long pipeline that connects to the San Elijo Ocean Outfall, an 8,000-foot ocean pipeline. The San Elijo Joint Powers Authority owns and operates the San Elijo Ocean Outfall and the San Elijo Pollution Control Facility. The City leases 79 percent of the estimated 24.3 MGD of Ocean Outfall capacity from the San Elijo Joint Powers Authority. A Pressure Regulating Station is located at the lower end of the Escondido Land Outfall to control flow so that the total does not cause the pressure to exceed the pressure limitation of the reinforced concrete pipe portion of the San Elijo Ocean Outfall. The City sends its dewatered solids to Yuma, Arizona for use as a soil amendment.

Wastewater Collection System: Untreated wastewater is conveyed to the HARRF using the City's 360 miles of pipelines. The City's wastewater flows enter the plant by gravity through three primary interceptors. Wastewater from Rancho Bernardo is pumped to the HARRF for treatment through approximately 5 miles of 24-inch force main from the City of San Diego's Pump Station 77 in Rancho Bernardo.

Wastewater and Recycled Water Rates

The current wastewater rates structure consists of a fixed monthly charge to residential customers. Commercial customers are charged a fixed monthly charge plus a volume charged based on 90% of the monthly water usage, subject to a minimum charge per month, as shown in **Table 4-1**.

Table 4-1
Existing Wastewater Rates

WASTEWATER RATES		Effective 1/1/2010	Minimum Charge
Non-Metered Category			
Monthly Service Charge			
Single Family Residential	/unit/mo	$ 43.09	
Multi-Family Dwelling	/unit/mo	$ 27.24	
Mobile Homes	/unit/mo	$ 27.24	
Senior High Schools	/student/yr	$ 16.60	
Elementary and Middle Schools	/student/yr	$ 12.87	
Churches	/100 sts/mo	$ 15.46	
Metered Category			
Monthly Service Charge			
All Others per account/month		$ 16.37	
Volume Charge* ($/kgal of WW)			
Car Wash/Soft Water Service		$ 4.12	$ 18.49
Hotel/Motel without dining		$ 5.11	$ 18.49
Hotel/Motel with dining		$ 7.40	$ 18.49
Repair Shop/Service Station		$ 5.15	$ 18.49
Commercial Laundry		$ 6.04	$ 18.49
Hospital		$ 4.82	$ 17.61
Brewery		Calculated	$ 43.54
Grocery Store with Meat Dept		$ 9.20	$ 18.49
Industrial		$ 3.49	$ 43.54
Restaurant		$ 7.79	$ 43.54
All Other Commercial		$ 3.49	$ 18.49
Discharges to Brine Line		$ 1.61	$ 43.54

* Volume based on 90% of metered water use unless wastewater is metered.
Calculated volume charge = $3.22 per 1,000 gal WW discharged + $0.43/lb BOD + $0.37/lb TSS.

The City produces and sells recycled water to customers for irrigation purposes. The current recycled water rate schedule, shown in **Table 4-2**, consists of a monthly service charge that varies by meter size, and a uniform commodity rate.

Table 4-2
Existing Recycled Water Rates

RECYCLED WATER RATES	Effective 1/1/2010
Recycled Water	**1,000 gal**
All water used	$ 3.00
Water Availability Charge	**per month**
1"	$ 29.14
1 1/2"	$ 56.91
2"	$ 89.82
3"	$ 179.06
4"	$ 278.87
6"	$ 555.69

WASTEWATER USER CLASSIFICATION

A review of the City's existing user classifications and alternative user classes is presented in the following subsections.

Existing User Classification

Table 4-3 shows that the majority of the City's wastewater accounts are residential customers (SFR and MFR). Since the City charges residential customer per dwelling unit, each multi-family dwelling unit is considered a wastewater account. This figure excludes schools and churches since they are charged on the basis of students and seats, respectively, as shown in **Table 4-3.** There are currently 12 recycled water meters in the City. The wastewater accounts are projected to grow at one percent per year from FY 2011 to 2013 and two percent per year in FY 2014 and 2015.

Table 4-3
Wastewater Accounts – Current & Projected

Line No.			Budgeted FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	WASTEWATER ACCOUNTS							
1	Single Family Residential	unit	23,533	23,768	24,006	24,246	24,731	25,226
2	Multi-Family Dwelling	unit	17,506	17,681	17,858	18,036	18,397	18,765
3	Mobile Homes	unit	3,483	3,518	3,553	3,589	3,660	3,734
4	Senior High Schools	students	9,372	9,466	9,560	9,656	9,849	10,046
5	Elementary and Middle Schools	students	21,788	22,006	22,226	22,448	22,897	23,355
6	Churches	100 seats	210	212	214	216	221	225
7	Car Wash/Soft Water Service	account	8	8	8	8	8	9
8	Hotel/Motel without dining	account	22	22	22	23	23	24
9	Hotel/Motel with dining	account	-	-	-	-	-	-
10	Repair Shop/Service Station	account	171	173	174	176	180	183
11	Commercial Laundry	account	30	30	31	31	32	32
12	Hospital	account	7	7	7	7	7	8
13	Brewery	account	2	2	2	2	2	2
14	Grocery Store with Meat Dept	account	33	33	34	34	35	35
15	Industrial	account	115	116	117	118	121	123
16	Restaurant	account	253	256	258	261	266	271
17	All Other Commercial	account	1,582	1,598	1,614	1,630	1,663	1,696
18	Discharges to Brine Line	account	-	-	-	-	-	-
19	**TOTAL WASTEWATER ACCOUNTS**		**46,745**	**47,212**	**47,685**	**48,161**	**49,125**	**50,107**
	RECYCLED WATER ACCOUNTS/METERS							
20	1"		-	-	-	-	-	-
21	1 1/2"		-	-	-	-	-	-
22	2"		3	3	3	3	3	3
23	3"		-	-	-	-	-	-
24	4"		5	5	5	5	5	5
25	6"		4	4	4	4	4	4
26	**TOTAL RECYCLED WATER ACCOUNTS/METERS**		**12**	**12**	**12**	**12**	**13**	**13**

Growth Assumptions

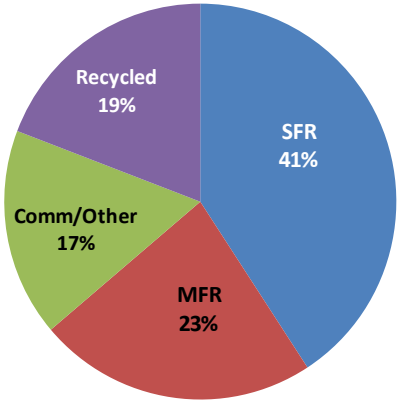
RFC assumed that the City will experience account growth rates of one percent in FY 2011 through 2013 and two percent in FY 2014 and 2015. Water usage growth rates for commercial customers are proportional to account growth rates, except for recycled water customers, projected to increase at approximately 50 acre-feet per year. **Table 4-4** shows the projected water and recycled water usage for non-residential customers. Rincon and SDG&E recycled water usage are contracted amounts and are not projected to increase in the study period. Revenues from these two customers are classified under "Sale of Recyclable Water" instead of "Recycled Water Usage" (see **Table 4-5**, lines 4 and 5).

Table 4-4
Water and Recycled Water Usage – Current & Projected

Line No.		Budgeted FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	WASTEWATER FOR METERED ACCOUNTS (KGAL)						
1	Car Wash/Soft Water Service	15,546	15,701	15,858	16,017	16,337	16,664
2	Hotel/Motel without dining	31,833	32,151	32,473	32,798	33,454	34,123
3	Hotel/Motel with dining	-	-	-	-	-	-
4	Repair Shop/Service Station	47,113	47,584	48,060	48,540	49,511	50,501
5	Commercial Laundry	37,870	38,249	38,631	39,018	39,798	40,594
6	Hospital	39,246	39,639	40,035	40,436	41,244	42,069
7	Brewery	20,544	20,750	20,957	21,167	21,590	22,022
8	Grocery Store with Meat Dept	43,815	44,253	44,695	45,142	46,045	46,966
9	Industrial	38,791	39,178	39,570	39,966	40,765	41,581
10	Restaurant	166,685	168,351	170,035	171,735	175,170	178,673
11	All Other Commercial	392,331	396,254	400,217	404,219	412,303	420,549
12	Discharges to Brine Line	-	-	-	-	-	-
13	**TOTAL WASTEWATER FLOW**	**833,773**	**842,110**	**850,532**	**859,037**	**876,218**	**893,742**
	RECYCLED WATER USAGE (KGAL)						
14	Escondido	147,655	161,682	176,234	191,213	206,511	221,999
15	Rincon	63,834	63,834	63,834	63,834	63,834	63,834
16	SDG&E	990,750	990,750	990,750	990,750	990,750	990,750

Figure 4-1 shows the percentage of wastewater revenue collected from each customer class. Approximately 64 percent of the total revenue is from residential customers. Although there are only 12 recycled water accounts, they use a significant amount of recycled water and contribute approximately 19 percent of the total rate revenue collected by the Wastewater Division.

Figure 4-1
Wastewater Revenue by Class - FY 10



Proposed User Classification

Discussion with City staff and stakeholders revealed that Laundromats are classified under the Commercial Laundry category. RFC proposes that the City creates a new commercial category for Laundromat, which has lower wastewater strengths than the Commercial Laundry category.

WASTEWATER REVENUE REQUIREMENTS

A review of a utility's revenue requirements is a key first step in the rate design process. The review involves an analysis of annual operating revenues under the current rates, development fee revenues, operation and maintenance (O&M) expenses, capital expenditures, transfers between funds, and reserve requirements. This section of the report provides a discussion of the projected revenues, O&M and capital expenditures, capital improvement financing plan, debt service requirements, and the revenue adjustments required to ensure the financial stability of the wastewater enterprise. The wastewater system revenues and expenditures are discussed from a City perspective and the discussion on required revenue adjustments relates exclusively to the City's users.

Wastewater System Revenues

The City's Wastewater Division operates the wastewater system. The City derives its required annual operating and capital revenues from a number of sources. The principal sources of operating revenues from rates are the wastewater service charges, stormwater management charges, and recycled water revenue, from the City's users which are expected to increase from $26.6 million in FY 2010 to $29.1 million by FY 2015. Other revenue sources include miscellaneous operating revenues such as the treatment charge from the City of San Diego, energy surcharge, industrial waste pretreatment, penalties, etc. Capital revenue sources include wastewater development fees, capital funds, bond proceeds, grants and loans, and interest earnings.

RFC reviewed the various sources of operating and capital revenues and the City's financing plan. **Table 4-5** presents the details of the operating and capital related revenues. The table however does not reflect other available sources of funds such as bond proceeds and capital grant funds. Development fees revenues are based on current development fees. The comprehensive operating and capital flow of funds statement presented at the end of this subsection includes all these other revenues.

Table 4-5
Revenue Summary

Line No.		Budgeted FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	Revenue Summary						
	Operating Revenue						
1	Sewer Service Charges	$ 22,125,826	$ 22,898,268	$ 23,127,251	$ 23,358,523	$ 23,825,694	$ 24,302,207
2	Stormwater Management Charge	$ 1,400,608	$ 1,449,505	$ 1,464,000	$ 1,478,640	$ 1,508,212	$ 1,538,377
3	Recycled Water Usage	$ 439,274	$ 485,047	$ 528,701	$ 573,640	$ 619,532	$ 665,997
4	Recycled Water Service Charge	$ 44,951	$ 47,105	$ 47,576	$ 48,052	$ 49,013	$ 49,993
5	Sale of Recyclable Water	$ 2,552,018	$ 2,552,018	$ 2,552,018	$ 2,552,018	$ 2,552,018	$ 2,552,018
6	Total Operating Revenue	$ 26,562,677	$ 27,431,942	$ 27,719,545	$ 28,010,873	$ 28,554,469	$ 29,108,592
	Other Operating Revenue						
7	Treatment Charge - San Diego	$ 1,850,000	$ 1,868,500	$ 1,887,185	$ 1,906,057	$ 1,925,117	$ 1,944,369
8	Other Curr Service Charge - Sewer	$ 82,500	$ 83,325	$ 84,158	$ 85,000	$ 85,850	$ 86,708
9	Industrial Waste Pretreatment	$ 53,165	$ 53,696	$ 54,233	$ 54,776	$ 55,323	$ 55,877
10	Sewer Energy Surcharge	$ 8,350	$ 8,433	$ 8,517	$ 8,603	$ 8,689	$ 8,776
11	Agency Incentives	$ 200,000	$ 202,000	$ 204,020	$ 206,060	$ 208,121	$ 210,202
12	Penalties	$ 2,206	$ 2,228	$ 2,250	$ 2,273	$ 2,295	$ 2,318
13	Recoveries	$ 707,001	$ 714,071	$ 721,212	$ 728,424	$ 735,708	$ 743,065
14	Other Revenue	$ 138,161	$ 139,543	$ 140,938	$ 142,348	$ 143,771	$ 145,209
15	Bad Debt Offset - Contra Acct	$ (148,731)	$ (150,218)	$ (151,721)	$ (153,238)	$ (154,770)	$ (156,318)
16	Transfers Out	$ (11,716)	$ (11,833)	$ (11,951)	$ (12,071)	$ (12,192)	$ (12,314)
17	Total Other Operating Revenue	$ 2,880,935	$ 2,909,745	$ 2,938,842	$ 2,968,231	$ 2,997,913	$ 3,027,892
	Non-Operating Revenue						
18	Sewer Development Fee	$ 375,000	$ 791,380	$ 799,294	$ 807,287	$ 1,630,720	$ 1,663,335
19	Reimbursement from Outside Agencies	$ -	$ -	$ -	$ -	$ -	$ -
20	CIP Reimbursement	$ 140,000					
21	Interest	$ 533,601	$ 658,801	$ 770,062	$ 828,020	$ 829,396	$ 916,711
22	Contributions	$ -	$ -	$ -	$ -	$ -	$ -
23	Developer Contributions	$ -	$ -	$ -	$ -	$ -	$ -
24	Invest-Unrealized Gain or Loss	$ -	$ -	$ -	$ -	$ -	$ -
25	Total Non-Operating Revenue	$ 1,048,601	$ 1,450,181	$ 1,569,357	$ 1,635,307	$ 2,460,116	$ 2,580,046
26	**TOTAL REVENUES**	**$ 30,492,213**	**$ 31,791,868**	**$ 32,227,744**	**$ 32,614,411**	**$ 34,012,497**	**$ 34,716,530**

Wastewater System Expenditures

For sound financial operation of the City's wastewater system, the revenues generated must be sufficient to meet the revenue requirements or cash obligations of the system. Revenue requirements include O&M expenses of allocation, treatment, and disposal, recycled water and stormwater operating costs, capital improvement program (CIP) expenditures, principal and interest payments on existing debt, and other obligations.

Operation and Maintenance Expenses

O&M expenditures include the cost of operating and maintaining wastewater collection, treatment, and disposal facilities. O&M expenses also include the costs of providing technical services such as laboratory services and other administrative costs of the wastewater system. These costs are a normal obligation of the system, and are met from operating revenues as they are incurred. The comprehensive forecasted annual O&M expenditures for the study are based upon the City's budgeted FY 2011 expenditures, adjusted for changes since the budget was developed and for anticipated changes

in operations and the effect of inflation in future years. The City conservatively uses an inflationary factor of three percent in projecting all O&M expenditures, except salaries and benefits, which are increasing at 1 percent and 5 percent, respectively. Projected O&M expenditures for the study period are detailed in **Table 4-6**.

Table 4-6
Wastewater Operations & Maintenance Expenses

Line No.		Budgeted FY 2010	Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	WASTEWATER OPERATIONS						
1	Employee Services	$ 7,063,950	$ 7,107,525	$ 7,270,194	$ 7,439,069	$ 7,614,442	$ 7,796,618
2	Maintenance & Operations	$ 5,549,860	$ 5,572,990	$ 5,746,772	$ 5,926,033	$ 6,118,082	$ 6,316,614
3	Capital	$ 72,500	$ 75,500	$ 77,765	$ 80,098	$ 82,501	$ 84,976
4	Internal Service Charges	$ 1,100,790	$ 934,125	$ 962,149	$ 991,013	$ 1,020,744	$ 1,051,366
5	Allocations	$ 1,326,450	$ 1,227,625	$ 1,264,454	$ 1,302,387	$ 1,341,459	$ 1,381,703
6	Subtotal Wastewater Operations	$ 15,113,550	$ 14,917,765	$ 15,321,333	$ 15,738,601	$ 16,177,227	$ 16,631,277
	RECYCLED WATER OPERATIONS						
7	Employee Services	$ 86,155	$ 86,775	$ 88,685	$ 90,666	$ 92,722	$ 94,855
8	Maintenance & Operations	$ 1,299,500	$ 1,049,500	$ 1,127,335	$ 1,210,301	$ 1,298,303	$ 1,391,161
9	Internal Service Charges	$ 10,710	$ 11,120	$ 11,454	$ 11,797	$ 12,151	$ 12,516
10	Allocations	$ 509,535	$ 448,905	$ 462,372	$ 476,243	$ 490,531	$ 505,247
11	Subtotal Recycled Water Operations	$ 1,905,900	$ 1,596,300	$ 1,689,846	$ 1,789,008	$ 1,893,706	$ 2,003,778
	STORMWATER MANAGEMENT OPERATIONS						
12	Employee Services	$ 200,390	$ 196,845	$ 201,449	$ 206,231	$ 211,200	$ 216,363
13	Maintenance & Operations	$ 1,192,350	$ 1,193,000	$ 1,226,730	$ 1,263,532	$ 1,301,438	$ 1,340,481
14	Capital	$ 100,000	$ 100,000	$ 103,000	$ 106,090	$ 109,273	$ 112,551
15	Internal Service Charges	$ 18,615	$ 26,615	$ 27,413	$ 28,236	$ 29,083	$ 29,955
16	Allocations	$ 595,615	$ 615,425	$ 633,888	$ 652,904	$ 672,492	$ 692,666
17	Subtotal Stormwater Management Operations	$ 2,106,970	$ 2,131,885	$ 2,192,480	$ 2,256,993	$ 2,323,485	$ 2,392,016
18	**TOTAL O&M EXPENSES**	**$ 19,126,420**	**$ 18,645,950**	**$ 19,203,659**	**$ 19,784,602**	**$ 20,394,418**	**$ 21,027,071**

Wastewater Capital Improvement Program

The City has developed a comprehensive wastewater Capital Improvement Program (CIP) to address current and future wastewater system needs. As **Table 4-7** indicates, the total estimated wastewater CIP for the study period of FY 2011 to FY 2015 is $137 million. These projected costs include a three percent annual inflation factor due to anticipated increases in construction costs over time. This inflation rate is a conservative estimate and ensures that the City has adequate resources reserved to complete the necessary projects. The single largest capital cost is related to addressing the capacity issues of the ocean outfall and totals $78 million over 5 years.

Table 4-7
Wastewater Capital Improvement Program - inflated

Line No.			Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	Wastewater Utilities Construction						
1	800309	HARRF Mods Phase II	$ -	$ -	$ -	$ -	$ -
2	800259	Reclamation Irrigation Retrofit	$ -	$ -	$ -	$ -	$ -
3	800389	Lift Stn #4	$ 1,133,000	$ -	$ -	$ -	$ -
4	800699	Lift Stn #1 & Force Main	$ 51,500	$ -	$ -	$ -	$ 1,159,274
7	801706	Filters	$ 154,500	$ 265,225	$ 1,639,091	$ -	$ -
8	801706	Fiber Optic to HARRF	$ -	$ 795,675	$ -	$ -	$ -
9	801706	IPS Design	$ 412,000	$ -	$ -	$ -	$ -
10	801706	Tanks-Primary, Aeration, Clarifier	$ -	$ -	$ -	$ -	$ 463,710
11	801812	HARRF Odor Control	$ 309,000	$ 185,658	$ -	$ -	$ -
12	804001	HARRF Influent Pump Station	$ -	$ 5,304,500	$ 2,731,818	$ -	$ -
13	806809	Lift Station No 3 Upgrades	$ -	$ -	$ 273,182	$ -	$ -
14	**Subtotal Wastewater Utilities Construction**		**$ 2,060,000**	**$ 6,551,058**	**$ 4,644,090**	**$ -**	**$ 1,622,984**
	Pending Projects						
16	801913	Trunk Mn Expan/Auto Pkwy-HARRF	$ -	$ -	$ 2,731,818	$ -	$ -
18	804808	Trunk Main/CCP - Auto Pk Wy	$ -	$ -	$ 1,529,818	$ -	$ -
19	807402	HARRF Secondary Clarifier Rehab	$ 154,500	$ 689,585	$ 546,364	$ -	$ -
20	807704	Sewer Pipe Replacement	$ 2,575,000	$ -	$ -	$ 2,138,467	$ 4,637,096
21	807705	Alley Rehabilitation Project	$ 1,133,000	$ -	$ -	$ -	$ -
22		Primary Building Upgrade	$ -	$ 291,748	$ 2,731,818	$ 4,220,658	$ -
23		Televise Outfall	$ -	$ 1,060,900	$ -	$ -	$ -
24		LS #8 Relocate	$ -	$ -	$ 273,182	$ 2,813,772	$ -
25		LS #2	$ -	$ -	$ -	$ -	$ 231,855
26		LS #10 Willowbrook	$ -	$ -	$ -	$ 168,826	$ 1,738,911
27		LS #7 Esc Christian-17th	$ -	$ -	$ -	$ -	$ 173,891
28		LS #12	$ -	$ -	$ -	$ -	$ -
29		ADDRESS CAPACITY ISSUES	$ -	$ 15,913,500	$ 16,390,905	$ 22,510,176	$ 23,185,481
30	**Subtotal Pending Projects**		**$ 3,862,500**	**$ 17,955,733**	**$ 24,203,903**	**$ 31,851,899**	**$ 29,967,235**
	Wastewater Utilities Maint. & Other						
31	800079	Outfall Maintenance	$ -	$ -	$ -	$ 900,407	$ -
32	800169	Sewer Main Oversizing	$ -	$ -	$ -	$ 562,754	$ -
33	800289	WWTP Major Maintenance	$ 309,000	$ 318,270	$ 327,818	$ 337,653	$ 347,782
34	800319	Manhole Rehabilitation	$ 154,500	$ 159,135	$ 163,909	$ 168,826	$ 173,891
35	800329	Collection System Maintenance	$ 103,000	$ 106,090	$ 109,273	$ 112,551	$ 115,927
36	800379	Lift Stn Major Maintenance	$ 206,000	$ 212,180	$ 163,909	$ 84,413	$ 86,946
37	807503	Digester Cleaning	$ -	$ -	$ -	$ 1,012,958	$ -
39	808810	Evaluation-West Side Lift Station	$ -	$ 318,270	$ 273,182	$ 3,376,526	$ 3,477,822
40	800299	Land Outfall Cathodic Protection	$ -	$ 212,180	$ -	$ -	$ -
41		Sewer Master Plan Update	$ 309,000	$ 212,180	$ -	$ -	$ -
42		Asset Management Development	$ 51,500	$ -	$ -	$ -	$ -
43	**Subtotal Wastewater Utilities Maint. & Other**		**$ 1,133,000**	**$ 1,538,305**	**$ 1,038,091**	**$ 6,556,089**	**$ 4,202,369**
44	**TOTAL CIP**		**$ 7,055,500**	**$ 26,045,095**	**$ 29,886,083**	**$ 38,407,988**	**$ 35,792,587**

Major Capital Improvement Financing Plan

The CIP is to be funded through a combination of system revenues and debt financing. The CIP funding sources include the following:

System Revenues:	***Capital Financing:***
Capacity charges	Debt proceeds
Pay-as-you-go revenues	Grant receipts and Contributions
Interest earnings	

Table 4-8 presents the proposed capital financing plan to finance major CIP projects over the five-year period from FY 2011 to FY 2015.

Table 4-8
Capital Financing Plan

Line No.		Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
1	Beginning Balance	$ 14,828,843	$ 13,194,184	$ 47,867,265	$ 29,190,107	$ 4,573,512
2	Bond Proceeds: Input	$ -	$ 50,000,000	$ -	$ -	$ 73,000,000
3	SRF	$ -	$ -	$ -	$ -	$ -
4	Federal Grants	$ -	$ -	$ -	$ -	$ -
5	City of San Diego Reimbursement	$ 215,327	$ 4,896,496	$ 5,019,259	$ 7,290,796	$ 6,956,546
6	Other Revenue Sources					
7	Sewer Development Fee	$ 791,380	$ 799,294	$ 807,287	$ 1,630,720	$ 1,663,335
8	Reimb from Outside Agencies	$ -	$ -	$ -	$ -	$ -
9	CIP Reimbursement	$ -	$ -	$ -	$ -	$ -
10	Contributions	$ -	$ -	$ -	$ -	$ -
11	Developer Contributions	$ -	$ -	$ -	$ -	$ -
12	PAYGO	$ 4,000,000	$ 4,120,000	$ 4,243,600	$ 4,370,908	$ 4,502,035
13	Capital Projects	$ 7,055,500	$ 26,045,095	$ 29,886,083	$ 38,407,988	$ 35,792,587
14	**Ending Balance**	**$ 12,780,050**	**$ 46,964,879**	**$ 28,051,328**	**$ 4,074,542**	**$ 54,902,841**
15	*Interest*	*$ 414,133*	*$ 902,386*	*$ 1,138,779*	*$ 498,970*	*$ 892,145*

Debt Service Requirements

Debt service requirements consist of principal and interest payments on existing debt. The City currently has debt service obligations associated with the outstanding 2004A Refunding Bonds, the 2004B Revenue Bonds, and several SRF loans. Existing and anticipated debt service results in annual payments in the range of $5.2 to $11.7 million. **Tables 4-9 and 4-10** show the existing and proposed debt service of the Wastewater Division.

Table 4-9
Existing Debt Service

Line No.		Actual FY 2011	Actual FY 2012	Actual FY 2013	Actual FY 2014	Actual FY 2015
1	2004A Refunding Bonds	$ 2,022,841	$ 2,021,179	$ 2,019,666	$ 2,021,841	$ 2,020,474
2	2004B Revenue Bonds	$ 885,793	$ 886,438	$ 886,102	$ 884,787	$ 887,370
3	SRF Loan - 210	$ 488,990	$ 488,990	$ 488,990	$ 488,990	$ 488,990
4	SRF Loan - 110 - Recycled Water	$ 987,722	$ 987,722	$ 987,722	$ 987,722	$ 987,722
5	SRF Loan - 310 - Recycled Water	$ 741,130	$ 741,130	$ 741,130	$ 741,130	$ 741,130
6	SRF Loan - Blowers	$ 98,817	$ 98,817	$ 98,817	$ 98,817	$ 98,817
7	**Total Existing Debt Service**	**$ 5,225,293**	**$ 5,224,276**	**$ 5,222,427**	**$ 5,223,287**	**$ 5,224,503**
8	**Wastewater Debt Service**	**$ 3,496,441**	**$ 3,495,424**	**$ 3,493,575**	**$ 3,494,435**	**$ 3,495,651**
9	**Recycled Water Debt Service**	**$ 1,728,852**	**$ 1,728,852**	**$ 1,728,852**	**$ 1,728,852**	**$ 1,728,852**

Table 4-10
Proposed Debt Service

Line No.		Proposed FY 2011	Proposed FY 2012	Proposed FY 2013	Proposed FY 2014	Proposed FY 2015
1	Capital Projects to be Financed	$ -	$ 50,000,000	$ -	$ -	$ 73,000,000
2	Years to Finance	0	3	0	0	3
3	Funds Needed	$ -	$ 50,000,000	$ -	$ -	$ 73,000,000
4	**Amount of Issue**	**$ -**	**$ 54,873,020**	**$ -**	**$ -**	**$ 80,114,609**
5	Month of Issue	6	6	6	6	6
6	Bond Interest Rate (%)	5.5%	5.5%	5.5%	5.5%	5.5%
7	Bond Term (years)	30	30	30	30	30
8	Bond Issuance Expense (%)	2.0%	2.0%	2.0%	2.0%	2.0%
9	Equal Annual Debt Service	$ -	$ 3,775,560	$ -	$ -	$ 5,512,317
	Proposed Bonds Debt Payments					
10	FY 2010	$ -	$ -	$ -	$ -	$ -
11	FY 2011	$ -	$ -	$ -	$ -	$ -
12	FY 2012		$ 1,887,780	$ 3,775,560	$ 3,775,560	$ 3,775,560
13	FY 2013			$ -	$ -	$ -
14	FY 2014				$ -	$ -
15	FY 2015					$ 2,756,158
16	**Total Proposed Debt Service**	**$ -**	**$ 1,887,780**	**$ 3,775,560**	**$ 3,775,560**	**$ 6,531,718**

Reserves

The City requires adequate cash reserves to meet operating, capital, and debt service requirements. Debt reserves provide protection from defaulting on annual debt service payments in times of financial difficulty. One year of debt service payments is required in reserve, so each time the City issues new bonds, additional proceeds are added to the debt reserves. The estimated FY 2011 total reserve is

approximately $31.9 million, not including the debt reserves. The reserves levels are maintained at the proposed target level in all years in the study period.

Operating reserves may be used to meet ongoing cash flow requirements as well as emergency requirements. Typically, a balance in the range of 10 to 50 percent of annual operating expenses is considered appropriate. This represents one to six months of working capital. RFC proposes that the City maintains a minimum 90-day operating reserve. The minimum operating reserves are shown in **Table 4-11**. Interest from reserve funds may be used to finance operations. The capital reserve is similar in function to the operating reserve, but it is a reserve for capital expenses. It is set at 25 percent of average CIP to cover unexpected increases in capital expenditures. Finally, the rate stabilization reserve is essentially a reserve in that it can be used to supplement operations revenues and maintain the debt coverage in times of need. The target is set at 10 percent of wastewater revenue.

Table 4-11
Wastewater Reserves/Fund Balance

Line No.		Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
	Operating Reserves Fund					
1	Beginning Balance	$ 16,184,901	$ 18,130,645	$ 18,188,045	$ 16,776,908	$ 17,031,104
2	Net Cash Flow	$ 1,945,745	$ 57,400	$ (1,411,138)	$ 254,197	$ (858,153)
3	**Ending Balance**	**$ 18,130,645**	**$ 18,188,045**	**$ 16,776,908**	**$ 17,031,104**	**$ 16,172,952**
4	*Interest*	*$ 504,851*	*$ 533,229*	*$ 512,054*	*$ 494,679*	*$ 484,310*
5	Target Balance - 25 % of O&M	$ 4,661,488	$ 4,800,915	$ 4,946,150	$ 5,098,605	$ 5,256,768
	Capital Reserves Fund					
6	Beginning Balance	$ 14,828,843	$ 13,194,184	$ 47,867,265	$ 29,190,107	$ 4,573,512
7	Bond Proceeds: Input	$ -	$ 50,000,000	$ -	$ -	$ 73,000,000
8	SRF	$ -	$ -	$ -	$ -	$ -
9	Federal Grants	$ -	$ -	$ -	$ -	$ -
10	City of San Diego Reimbursement	$ 215,327	$ 4,896,496	$ 5,019,259	$ 7,290,796	$ 6,956,546
11	Other Revenue Sources					
12	Sewer Development Fee	$ 791,380	$ 799,294	$ 807,287	$ 1,630,720	$ 1,663,335
13	Reimb from Outside Agencies	$ -	$ -	$ -	$ -	$ -
14	CIP Reimbursement	$ -	$ -	$ -	$ -	$ -
15	Contributions	$ -	$ -	$ -	$ -	$ -
16	Developer Contributions	$ -	$ -	$ -	$ -	$ -
17	PAYGO	$ 4,000,000	$ 4,120,000	$ 4,243,600	$ 4,370,908	$ 4,502,035
18	Capital Projects	$ (7,055,500)	$(26,045,095)	$(29,886,083)	$(38,407,988)	$(35,792,587)
19	**Ending Balance**	**$ 12,780,050**	**$ 46,964,879**	**$ 28,051,328**	**$ 4,074,542**	**$ 54,902,841**
20	*Interest*	*$ 414,133*	*$ 902,386*	*$ 1,138,779*	*$ 498,970*	*$ 892,145*
21	Target Balance - 25 % of CIP	$ 6,050,469	$ 6,050,469	$ 6,050,469	$ 6,050,469	$ 6,050,469
	Rate Stabilization Reserves Fund					
22	Beginning Balance	$ -	$ 1,000,000	$ 1,750,000	$ 2,500,000	$ 3,000,000
23	Transfers from/(to) Operations	$ 1,000,000	$ 750,000	$ 750,000	$ 500,000	$ 500,000
24	**Ending Balance**	**$ 1,000,000**	**$ 1,750,000**	**$ 2,500,000**	**$ 3,000,000**	**$ 3,500,000**
25	*Interest*	*$ 15,000*	*$ 41,250*	*$ 63,750*	*$ 82,500*	*$ 97,500*
26	Target Balance - 10 % of Revenue	$ 2,743,194	$ 2,771,955	$ 2,875,599	$ 3,088,012	$ 3,317,352
	Debt Reserves Fund					
27	Beginning Balance	$ 4,631,650	$ 4,631,650	$ 8,407,210	$ 8,407,210	$ 8,407,210
28	Reserves from Additional Debt Issues	$ -	$ 3,775,560	$ -	$ -	$ 5,512,317
29	**Ending Balance**	**$ 4,631,650**	**$ 8,407,210**	**$ 8,407,210**	**$ 8,407,210**	**$ 13,919,527**
30	*Interest*	*$ 138,950*	*$ 195,583*	*$ 252,216*	*$ 252,216*	*$ 334,901*
31	**TOTAL RESERVES**	**$ 36,542,346**	**$ 75,310,134**	**$ 55,735,445**	**$ 32,512,857**	**$ 88,495,320**

Proposed Revenue Adjustments

The operating financial plan presented in **Table 4-12** provides a basis for evaluating the timing and level of wastewater revenue increases required to meet the projected revenue requirements for the study period.

Table 4-12
Wastewater Operating Financial Plan

Line No.				Projected FY 2011	Projected FY 2012	Projected FY 2013	Projected FY 2014	Projected FY 2015
1	Revenue from Existing Rates			$ 24,347,773	$ 24,591,250	$ 24,837,163	$ 25,333,906	$ 25,840,584
	Additional Revenue Needed:							
	Fiscal Year	Revenue Adjustments	Months Effective					
2	FY 2011	0.0%	February	$ -	$ -	$ -	$ -	$ -
3	FY 2012	0.0%	January		$ -	$ -	$ -	$ -
4	FY 2013	6.0%	January			$ 745,115	$ 1,520,034	$ 1,550,435
5	FY 2014	6.0%	January				$ 805,618	$ 1,643,461
6	FY 2015	6.0%	January					$ 871,034
7	Additional Revenue from Ajdustments			$ -	$ -	$ 745,115	$ 2,325,653	$ 4,064,931
8	Total Revenue from Rates			$ 24,347,773	$ 24,591,250	$ 25,582,278	$ 27,659,559	$ 29,905,515
9	Treatment Charge - San Diego			$ 1,868,500	$ 1,887,185	$ 1,906,057	$ 1,925,117	$ 1,944,369
10	Other Operating Revenue			$ 857,745	$ 866,322	$ 874,985	$ 883,735	$ 892,573
11	Interest Income			$ 658,801	$ 770,062	$ 828,020	$ 829,396	$ 916,711
12	Other Non-Operating Revenue			$ -	$ -	$ -	$ -	$ -
13	TOTAL REVENUES			$ 27,732,818	$ 28,114,820	$ 29,191,340	$ 31,297,807	$ 33,659,167
14	Wastewater Operations O&M Expenses			$ 14,917,765	$ 15,321,333	$ 15,738,601	$ 16,177,227	$ 16,631,277
15	Stormwater Management O&M Expenses			$ 2,131,885	$ 2,192,480	$ 2,256,993	$ 2,323,485	$ 2,392,016
16	Existing Debt Service			$ 3,496,441	$ 3,495,424	$ 3,493,575	$ 3,494,435	$ 3,495,651
17	Proposed Debt Service			$ -	$ 1,887,780	$ 3,775,560	$ 3,775,560	$ 6,531,718
18	Capital Projects PAYGO			$ 4,000,000	$ 4,120,000	$ 4,243,600	$ 4,370,908	$ 4,502,035
19	Transfers to/(from) Rate Stabilization Fund			$ 1,000,000	$ 750,000	$ 750,000	$ 500,000	$ 500,000
20	TOTAL EXPENSES			$ 25,546,091	$ 27,767,017	$ 30,258,328	$ 30,641,614	$ 34,052,697
21	**Net Cash Flow**			**$ 2,186,727**	**$ 347,803**	**$ (1,066,988)**	**$ 656,193**	**$ (393,530)**
22	Debt Service Coverage			241%	182%	152%	162%	143%
23	Required Coverage			120%	120%	120%	120%	120%

In order to meet projected revenue requirements and to maintain desired operating, capital, and rate stabilization reserve fund balances, the following revenue adjustments are proposed to meet long term rate stability:

Effective Date	Increases
February 1, 2011	None
January 1, 2012	None
January 1, 2013	6 percent
January 1, 2014	6 percent
January 1, 2015	6 percent

Debt Service Coverage

The City must meet debt service coverage requirements on its outstanding bond issues. Coverage requirements typically vary between 1.0 and 1.60 or higher. The City's required debt coverage is 1.2, which means that the City's Adjusted Net System Revenues shall amount to at least 1.20 times the Annual Debt Service. The System Revenues include funds derived from the ownership and operation of the system including wastewater service charges from the City's users, reclaimed revenue, service charges, revenues received from contracts, and transfers from the Rate Stabilization Fund to pay for O&M of the Wastewater System. Annual Debt Service includes annual principal and interest payments on outstanding debt.

COST OF SERVICE

The determination of the City's user class flows and loadings and the revenue requirements reviewed and finalized through the operating and capital cash flow analysis provide the basis for performing the cost of service analysis. This section of the report discusses the allocation of operating and capital costs to the Flow, Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) parameters, the determination of unit rates, and the calculation of user class cost responsibility.

The total revenue requirement net of miscellaneous revenue credits, by definition, is the net cost of providing service. This cost of service is then used as the basis to develop unit rates for the wastewater parameters and to allocate costs to the various user classes in proportion to the wastewater services rendered. The concept of proportionate allocation to user classes implies that allocations should take into consideration the quantity of wastewater a user contributes and the strength of wastewater.

In this study, wastewater rates were calculated for FY 2011, and accordingly FY 2011 revenue requirements are used in the cost allocation process.

Costs of Service to Be Allocated

The annual revenue requirement or cost of service to be recovered from wastewater charges includes operation and maintenance expenses, costs associated with annual renewal and replacements, and other capital related costs. O&M expenses include costs directly related to the collection, treatment, and disposal of wastewater and maintenance of system facilities. Renewals and replacements represent the annual recurring capital outlay for minor system improvements and purchase of equipment.

The total FY 2011 net cost of service to be recovered from the City's wastewater users, as shown on line 16 in **Table 4-13**, is estimated at nearly $24.3 million, of which $17.5 million are operating costs and the

remaining $6.8 million are net capital costs. This is the amount that the City would expect to collect if the rates were in place for the full year. The cost of service analysis is based upon the need to generate annual revenues adequate to meet the estimated annual revenue requirement. As part of the cost of service analysis, revenues from other sources except wastewater rates and charges are deducted from the appropriate cost elements. Additional deductions are made to reflect interest income and other non-operating income during FY 2011. Adjustments are also made to account for cash balances to ensure adequate collection of revenue as shown in the operating cash flow.

Table 4-13
Allocation of Revenue Requirements

Line No.		Allocation of Revenue Requirements FY 2011 Operating	Capital	Total
	Revenue Requirements			
1	Wastewater Operations O&M Expenses	$ 14,917,765		$ 14,917,765
2	Stormwater Management O&M Expenses	$ 2,131,885		$ 2,131,885
3	Existing Debt Service		$ 3,496,441	$ 3,496,441
4	Proposed Debt Service		$ -	$ -
5	Capital Projects PAYGO		$ 4,000,000	$ 4,000,000
6	Transfers to/(from) Rate Stabilization Fund	$ 1,000,000		$ 1,000,000
7	**Total Revenue Requirements**	**$ 18,049,650**	**$ 7,496,441**	**$ 25,546,091**
	Less Revenue from Other Sources			
8	Treatment Charge - San Diego	$ 1,868,500		$ 1,868,500
9	Other Operating Revenue	$ 857,745		$ 857,745
10	Interest Income		$ 658,801	$ 658,801
11	Other Non-Operating Revenue		$ -	$ -
12	**Total Revenue from Other Sources**	**$ 2,726,245**	**$ 658,801**	**$ 3,385,045**
	Adjustments			
13	Adjustments to Annualize Rate Increase	$ -		$ -
14	Adjustments for Annual Cash Balance	$ (2,186,727)		$ (2,186,727)
15	**Total Adjustments**	**$ (2,186,727)**	**$ -**	**$ (2,186,727)**
16	**Revenue to be Recovered from Rates**	**$ 17,510,133**	**$ 6,837,640**	**$ 24,347,773**

To allocate the cost of service among the different user classes in proportion to their flow and strength contributions, costs first need to be allocated to selected wastewater parameters. The following subsection describes the allocation of the operating and capital cost of service amounts to the parameters of Flow, TSS, and BOD.

Cost Allocation to Wastewater Parameters

The three main cost allocation parameters are Wastewater Flow, TSS, and BOD. TSS and BOD constitute the strength components of the wastewater discharge. In addition, customer service is an additional cost allocation parameter. The percentages used to allocate the FY 2011 cost of service to the wastewater parameters are derived based on the design method of allocation. Under the design

method of allocations, costs are assigned based on the parameters which dictate the design of each process. The allocation of costs to the three parameters involves:

- Detailed breakdown of O&M costs.
- Itemization of the capital costs by functions such as collection, treatment, outfall, etc.
- Allocation of the functional costs to the wastewater parameters.

Capital costs are allocated in the same manner as the total assets. The tertiary treatment plant costs are allocated to flow, BOD and TSS at 60 percent, 20 percent, and 20 percent, respectively. Pipelines, outfall, and pumping stations costs are all allocated to flow. Similarly, operating costs identified with the collection system are allocated to flow, and treatment costs are allocated in the same manner as the treatment costs in the assets. Billing and customer service costs are allocated to customers. Costs that could not be specifically identified were allocated to general and then proportionately reallocated to the allocations of the remaining capital or operating costs.

The cost of service allocations conducted in this study are based on our experience for tertiary treatment plants and are consistent with the State Water Resources Control Board (SWRCB) revenue program requirements.

Unit Cost of Service

In order to allocate costs of service to the different user classes, unit costs of service need to be developed for Flow, TSS, BOD, and customer service. The unit costs of service are developed by dividing the total annual costs allocated to each parameter by the total annual loadings of the respective parameter (such as the projected annual Flows, TSS, BOD loadings, and accounts for FY 2011). **Table 4-14** shows the total flow and loadings of each customer class in the system. The strength factors for each customer class are based on accepted industry standards. **Table 4-15** shows the units of service and the development of the FY 2011 unit costs for each of the wastewater parameters.

Table 4-14
Flow and Loadings per Customer Class

Customer Class	Flow	BOD		TSS	
	Average WW Flow (kgal)	Average per class (mg/L)	Total Loading (lbs)	Average per class (mg/L)	Total Loading (lbs)
Residential	2,747,222	250	5,731,669	275	6,304,836
Senior High Schools	41,049	130	44,535	110	37,683
Elementary and Middle Schools	63,621	130	69,023	110	58,404
Churches	15,330	130	16,632	110	14,073
Car Wash/Soft Water Service	15,701	20	2,621	150	19,655
Hotel/Motel without dining	32,151	310	83,178	120	32,198
Hotel/Motel with dining	-	500	-	600	-
Repair Shop/Service Station	47,584	180	71,479	280	111,190
Commercial Laundry	-	450	-	240	-
Laundromats	38,249	150	47,880	110	35,112
Hospital	39,639	250	82,700	100	33,080
Brewery	20,750	453	78,522	238	41,203
Grocery Store with Meat Dept	44,253	800	295,446	800	295,446
Industrial	39,178	800	261,568	400	130,784
Restaurant	168,351	1,000	1,404,960	600	842,976
All Other Commercial	396,254	300	992,070	400	1,322,760
TOTAL	**3,709,332**		**9,182,282**		**9,279,400**

Table 4-15
Development of Unit Cost

	Flow	BOD	TSS	Customer	General	Total
Operating Expenses	$ 9,841,667	$ 2,116,350	$ 2,116,350	$ 462,501	$ 2,973,265	$ 17,510,133
Capital Expenses	$ 5,450,091	$ 665,986	$ 665,986	$ -	$ 55,578	$ 6,837,640
Total Cost of Service	$ 15,291,758	$ 2,782,335	$ 2,782,335	$ 462,501	$ 3,028,844	$ 24,347,773
Allocation of General Costs	$ 2,172,545	$ 395,295	$ 395,295	$ 65,709	$ (3,028,844)	
Total Cost of Service	**$ 17,464,304**	**$ 3,177,630**	**$ 3,177,630**	**$ 528,210**	**$ -**	**$ 24,347,773**
Units of Service	3,709,332	9,182,282	9,279,400	47,212		
Units of Measure	kgal	lbs	lbs	bills/mo		
Average Unit Cost of Service	$ 4.71	$ 0.35	$ 0.34	$ 0.93		
	$/kgal	$/lb	$/lb	$/bill/mo		

User Class Costs

The unit costs shown in **Table 4-15** are then applied to the projected FY 2011 flows and loadings of each user class to derive user class costs. **Table 4-16** shows the FY 2011 cost responsibility for each user class.

Table 4-16
Allocation of Costs to Customer Classes

Customer Class	Revenue Required	Existing Revenue	$ Difference	% Difference
Residential	$ 17,580,107	$ 19,219,621	$ (1,639,514)	-8.5%
Senior High Schools	$ 221,585	$ 157,131	$ 64,454	41.0%
Elementary and Middle Schools	$ 343,426	$ 283,216	$ 60,211	21.3%
Churches	$ 82,751	$ 39,349	$ 43,403	110.3%
Car Wash/Soft Water Service	$ 81,652	$ 66,276	$ 15,376	23.2%
Hotel/Motel without dining	$ 191,434	$ 168,658	$ 22,776	13.5%
Hotel/Motel with dining	$ -	$ -	$ -	0.0%
Repair Shop/Service Station	$ 288,779	$ 278,984	$ 9,795	3.5%
Commercial Laundry	$ -	$ -	$ -	0.0%
Laundromat*	$ 209,016	$ 236,976	$ (27,959)	-11.8%
Hospital	$ 226,654	$ 192,448	$ 34,206	17.8%
Brewery	$ 138,999	$ 73,436	$ 65,564	89.3%
Grocery Store with Meat Dept	$ 412,139	$ 413,674	$ (1,534)	-0.4%
Industrial	$ 321,063	$ 159,549	$ 161,514	101.2%
Restaurant	$ 1,570,362	$ 1,361,653	$ 208,708	15.3%
All Other Commercial	$ 2,679,804	$ 1,696,802	$ 983,001	57.9%
TOTAL	**$ 24,347,773**	**$ 24,347,773**	**$ 0**	0.0%

*formerly Commercial Laundry

The residential user class has the highest assignment of costs at $17.6 million and is responsible for 72 percent of the total cost of service. The non-residential user classes are responsible for the remaining 28 percent of the annual cost of service. **Table 4-16** also shows that although the there is no revenue increase required for FY 2011, the revenue required from each customer class varies significantly. The resulting rates are described in the Rate Design subsection.

RATE DESIGN

The revenue requirements and cost of service analyses described in the preceding sections of this report provide a basis for the design of wastewater rates. Rate design involves the development of rate schedules for each user class so as to recover the annual cost of service determined for each user class. In this Study, the focus of rate design is on the development of rate schedules for each of the City's user classes, which was accomplished with input from the stakeholders' group. This subsection of the report discusses suggested wastewater rate structures, presents a schedule of rates for the City's user classes, and analyzes the impact of the proposed changes in user classifications, cost allocation and rate design on the user classes.

Rate Structure Alternatives

The primary emphasis in the design of rate structures is ordinarily placed on achieving fairness and equity, with the objective being to ensure that each customer class, and each user within those classes pays their fair share of costs. In addition, rate structures should be easy to understand, simple to administer, and comply with regulatory requirements. A review of the existing City wastewater rate structures provides insights into the equitability of the current methodology and the changes, if any, that should be considered.

Residential Customers

While the methodology for cost allocation to user classes for equitable cost recovery is covered in some detail by the SWRCB revenue program guidelines, the City has some flexibility to design a rate structure that best meets its needs. For example, many California agencies levy flat charges on their SFR customers; the City could take the total revenue recovery from SFR customers and spread it equally amongst all SFR customers. This would provide a stable source of revenues and all SFR customers would have the same flat charge per month. The City is currently using this rate structure. RFC proposes that the City implement a flow-based rate structure to incentivize conservation and be more equitable by charging users in proportion to the amount of wastewater discharged.

RFC reviewed the winter water usage from December through March for SFR, MFR and Mobile Home (MH) customers. Winter water usage is typically used as a proxy for wastewater generation because there is not much irrigation during the winter. However, winters in California still require some irrigation usage. Thus, RFC proposes a return factor of 80 percent of winter water usage for SFR and MFR customers. MH customers typically do not have irrigation needs; thus their return factor is 100% of winter water usage. Additionally, RFC proposes a cap of 10,000 gallons and 8,000 gallons per unit per month on wastewater generation for SFR and MFR/MH customers, respectively. This means that the maximum amount of wastewater an SFR customer can generate a month is 10,000 gallons.

RFC also calculated the residential wastewater rates under the existing rate structure. The current structure shows that the MFR and MH rates are approximately 63 percent for SFR rates. However, as previously discussed in Section 3, the MFR household density is 90 percent of the SFR density. Thus, to ensure that rates are equitable, RFC revised the MFR rates to be 90 percent of the SFR rates. MH rates remain at 63 percent of SFR rates. **Table 4-17** shows the residential wastewater rates under the existing rate structure and the flow-based rate structure for FY 2011.

Table 4-17
Residential Customers Wastewater Rates

Customer Class	Unit	Fixed $/mo	Flow $/kgal
Winter Usage Structure			
Single Family Residential	/unit/mo	$ 16.37	$ 3.15
Multi-Family Dwelling	/unit/mo	$ 16.37	$ 2.62
Mobile Homes	/unit/mo	$ 16.37	$ 1.80
Existing Structure			
Single Family Residential	/unit/mo	$ 34.90	
Multi-Family Dwelling	/unit/mo	$ 31.50	
Mobile Homes	/unit/mo	$ 22.41	

Non-Residential Customers

A review of the non-residential customer wastewater rates indicates that there are inequities between the different non-residential customer classes. Based on the unit rates indicated in the current rate schedule, RFC calculated the wastewater rates for each customer class based upon the industry standard wastewater strength. The result of the analysis is shown in **Table 4-18**. The numbers highlighted in green indicate that the current rates are higher than what they should be and the numbers highlighted in red indicate that the current rates are lower than what they should be using industry standard loadings.

Table 4-18
Analysis of Current Non-Residential Wastewater Rates

EXISTING UNIT COSTS

Flow	$	3.22	$/kgal
BOD	$	0.43	$/lb
TSS	$	0.37	$/lb

	BOD mg/L	TSS mg/L	BOD lbs/kgal	TSS lbs/kgal	Current Rates	Calculated Rates	Difference Curr./Calc.
Car Wash/Soft Water Service	20	150	0.17	1.25	$ 4.12	$ 3.75	9.7%
Hotel/Motel without dining	310	120	2.59	1.00	$ 5.11	$ 4.70	8.7%
Hotel/Motel with dining	500	600	4.17	5.01	$ 7.40	$ 6.87	7.8%
Repair Shop/Service Station	180	280	1.50	2.34	$ 5.15	$ 4.73	8.9%
Commercial Laundry	450	240	3.76	2.00	$ 6.04	$ 5.58	8.3%
Hospital	250	100	2.09	0.83	$ 4.82	$ 4.43	8.9%
Grocery Store with Meat Dept	800	800	6.68	6.68	$ 9.20	$ 8.56	7.5%
Industrial	800	400	6.68	3.34	$ 3.49	$ 7.33	-52.4%
Restaurant	1,000	600	8.35	5.01	$ 7.79	$ 8.66	-10.1%
All Other Commercial	300	400	2.50	3.34	$ 3.49	$ 5.53	-36.9%

RFC proposes that the City corrects the inequity between the different non-residential customer classes. **Table 4-19** shows the proposed non-residential wastewater rates for FY 2011 using the standard wastewater strength for each customer class.

Table 4-19
Non-Residential Customers Wastewater Rates

Customer Class	Unit	Fixed $/mo	Other $/unit	Flow $/kgal	BOD $/lb	TSS $/lb
Senior High Schools	/student/yr		$ 23.41			
Elementary and Middle Schools	/student/yr		$ 15.61			
Churches	/100 sts/mo		$ 32.52			
Car Wash/Soft Water Service	/acct/mo	$ 16.37		$ 5.10		
Hotel/Motel without dining	/acct/mo	$ 16.37		$ 5.82		
Hotel/Motel with dining	/acct/mo	$ 16.37		$ 8.43		
Repair Shop/Service Station	/acct/mo	$ 16.37		$ 5.36		
Commercial Laundry	/acct/mo	$ 16.37		$ 6.04		
Laundromats	/acct/mo	$ 16.37		$ 5.31		
Hospital	/acct/mo	$ 16.37		$ 5.69		
Brewery	/acct/mo	$ 16.37		$ 4.71	$ 0.35	$ 0.35
Grocery Store with Meat Dept	/acct/mo	$ 16.37		$ 9.17		
Industrial	/acct/mo	$ 16.37		$ 7.62		
Restaurant	/acct/mo	$ 16.37		$ 9.03		
All Other Commercial	/acct/mo	$ 16.37		$ 5.98		
Discharges to Brine Line	/acct/mo	$ 16.37		$ 0.73		

Proposed Wastewater Rates

Table 4-20 shows the proposed wastewater rates for FY 2011. Wastewater rates remain the same for FY 2012 and increase by 6 percent each year in January 2013, 2014, and 2015. There are no increases recommended for the recycled water rates during the study period.

Since the City is planning significant capital expenditures over the next five years, it is appropriate to review the cost allocations periodically and rates to ensure that the rates are consistent with cost of service.

Table 4-20
Proposed FY 2011 Wastewater Rates

Customer Class	Unit	Fixed $/mo	Other $/unit	Flow $/kgal	BOD $/lb	TSS $/lb
Single Family Residential	/unit/mo	$ 16.37		$ 3.15		
Multi-Family Dwelling	/unit/mo	$ 16.37		$ 2.62		
Mobile Homes	/unit/mo	$ 16.37		$ 1.80		
Senior High Schools	/student/yr		$ 23.41			
Elementary and Middle Schools	/student/yr		$ 15.61			
Churches	/100 sts/mo		$ 32.52			
Car Wash/Soft Water Service	/acct/mo	$ 16.37		$ 5.10		
Hotel/Motel without dining	/acct/mo	$ 16.37		$ 5.82		
Hotel/Motel with dining	/acct/mo	$ 16.37		$ 8.43		
Repair Shop/Service Station	/acct/mo	$ 16.37		$ 5.36		
Commercial Laundry	/acct/mo	$ 16.37		$ 6.04		
Laundromats	/acct/mo	$ 16.37		$ 5.31		
Hospital	/acct/mo	$ 16.37		$ 5.69		
Brewery	/acct/mo	$ 16.37		$ 4.71	$ 0.35	$ 0.35
Grocery Store with Meat Dept	/acct/mo	$ 16.37		$ 9.17		
Industrial	/acct/mo	$ 16.37		$ 7.62		
Restaurant	/acct/mo	$ 16.37		$ 9.03		
All Other Commercial	/acct/mo	$ 16.37		$ 5.98		
Discharges to Brine Line	/acct/mo	$ 16.37		$ 0.73		

Proposed Recycled Water Rates

Table 4-21 shows the proposed recycled water rates for FY 2011 to FY 2015. The monthly service charge, or availability charge, remains the same as for potable water. The commodity rate remains at 90 percent of the lowest residential potable water rate, which is consistent with current City policy. The proposed recycled water rates are shown in **Table 4-21.**

Table 4-21
Proposed Recycled Water Rates

	February 1, 2011	January 1, 2012	January 1, 2013	January 1, 2014	January 1, 2015
Recycled Water Rate ($/kgal)	$3.13	$3.41	$3.73	$4.03	$4.36

IMPACT ANALYSIS

RFC performed an impact analysis to evaluate the impact of the recommended changes to the rate structure. The impacts of each of these changes among user classes and within user classes are discussed below.

Residential Customer Impacts

Water usage records analysis indicates that an average SFR customer generates approximately 6,500 gallons of wastewater per month, an average MFR customer generates about 4,700 gallons and an average MH customer generates 3,600 gallons. Using those averages, RFC calculated a sample bill for residential customers, shown in **Table 4-22**, in order to compare the impacts with the existing rates.

Under the proposed winter usage rate structure, SFR customers will experience a range of impacts depending on their usage level. However, an average SFR customer, generating 6,500 gallons of wastewater per month, will see a decrease of approximately 14.5 percent in their monthly bill. An average MFR customer will see a 5.3 percent increase in the monthly bill and an average MH customer will see a reduction of about 16.1 percent compared to the existing rates.

Under the existing rate structure, the rates have been revised to correct for the inequity between SFR and MFR customers. SFR and MH customers will see a decrease of approximately 19 and 17.7 percent, respectively, in their monthly bills while MFR customers will see an increase of about 15.6 percent.

Table 4-22 shows the monthly bill impacts for each type of residential customer.

Table 4-22
Residential Rate Impacts

Winter Usage Structure

	Existing Bill	Proposed Bill	Difference	Fixed	Flow*	Winter Usage
Single Family Residential	$ 43.09	$ 36.85	-14.5%	$ 16.37	$ 3.15	6.50
Multi-Family Dwelling	$ 27.24	$ 28.68	5.3%	$ 16.37	$ 2.62	4.70
Mobile Homes	$ 27.24	$ 22.85	-16.1%	$ 16.37	$ 1.80	3.60

* Charge per kgal of water discharged

Existing Structure

	Existing Bill	Proposed Bill	Difference
Single Family Residential	$ 43.09	$ 34.90	-19.0%
Multi-Family Dwelling	$ 27.24	$ 31.50	15.6%
Mobile Homes	$ 27.24	$ 22.41	-17.7%

Non-Residential Customer Impacts

Due to the corrections of the inequity of the non-residential rates, the impacts to each customer class will vary. **Table 4-23** shows the difference between the proposed rates and the existing rates.

Table 4-23
Non-Residential Rate Impacts

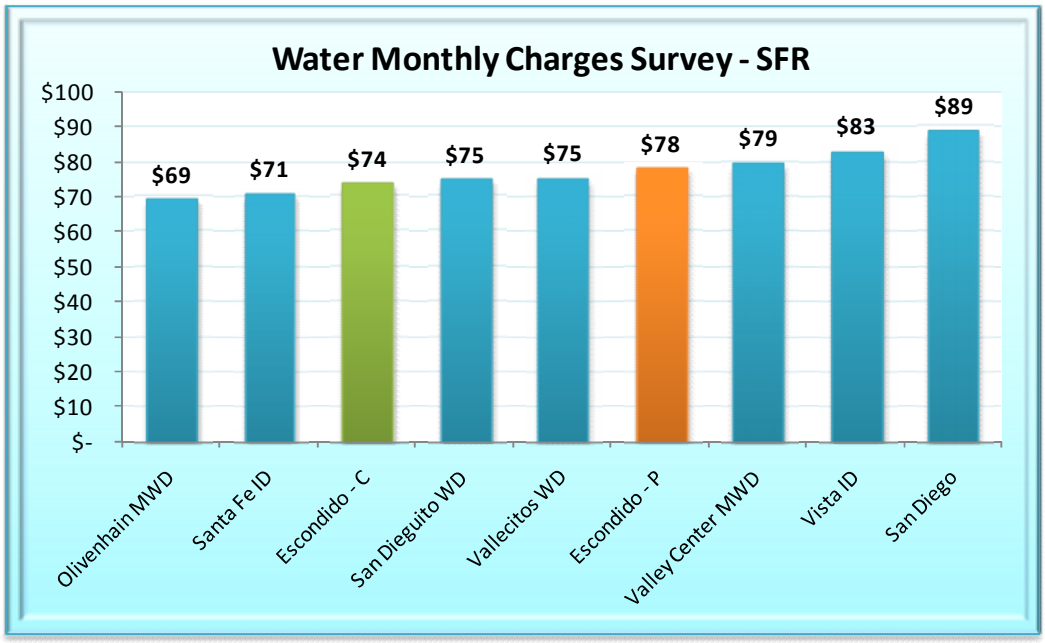
	Existing Rate		Proposed Rate		Difference	
Customer Class	**Fixed**	**Flow**	**Fixed**	**Flow**	**Fixed**	**Flow**
Senior High Schools	$ 16.60		$ 23.41		41.0%	
Elementary and Middle Scho	$ 12.87		$ 15.61		21.3%	
Churches	$ 15.46		$ 32.52		110.3%	
Car Wash/Soft Water Service	$ 16.37	$ 4.12	$ 16.37	$ 5.10	0.0%	23.8%
Hotel/Motel without dining	$ 16.37	$ 5.11	$ 16.37	$ 5.82	0.0%	13.9%
Hotel/Motel with dining	$ 16.37	$ 7.40	$ 16.37	$ 8.43	0.0%	13.9%
Repair Shop/Service Station	$ 16.37	$ 5.15	$ 16.37	$ 5.36	0.0%	4.1%
Commercial Laundry	$ 16.37	$ 6.04	$ 16.37	$ 6.04	0.0%	0.0%
Laundromats	$ 16.37		$ 16.37	$ 5.31	0.0%	
Hospital	$ 16.37	$ 4.82	$ 16.37	$ 5.69	0.0%	18.0%
Grocery Store with Meat Dep	$ 16.37	$ 9.20	$ 16.37	$ 9.17	0.0%	-0.3%
Industrial	$ 16.37	$ 3.49	$ 16.37	$ 7.62	0.0%	118.3%
Restaurant	$ 16.37	$ 7.79	$ 16.37	$ 9.03	0.0%	15.9%
All Other Commercial	$ 16.37	$ 3.49	$ 16.37	$ 5.98	0.0%	71.3%
Discharges to Brine Line		$ 1.61		$ 0.73		-54.7%

SECTION 5 – RATE SURVEY

RFC conducted a water and wastewater rate survey between the City's rates and those of neighboring and comparable agencies in San Diego County. Rate surveys can provide insights into a utility's pricing policies related to service. Care should be taken, however, in drawing conclusions from such a comparison as some factors including geographic location, demand, customer constituency, level of treatment, level of grant funding, age of system, sources of water costs, and rate-setting methodology can affect the cost of providing services. These rates were in effect at the time the survey was conducted in November 2010 for each agency except Vallecitos Water District and San Dieguito Water District whose January 2011 water rates are shown in the **Figure 5-1** below.

Figure 5-1 compares the monthly water service charges for an average SFR customer with a 3/4" meter and 15 kgal of water usage per month.

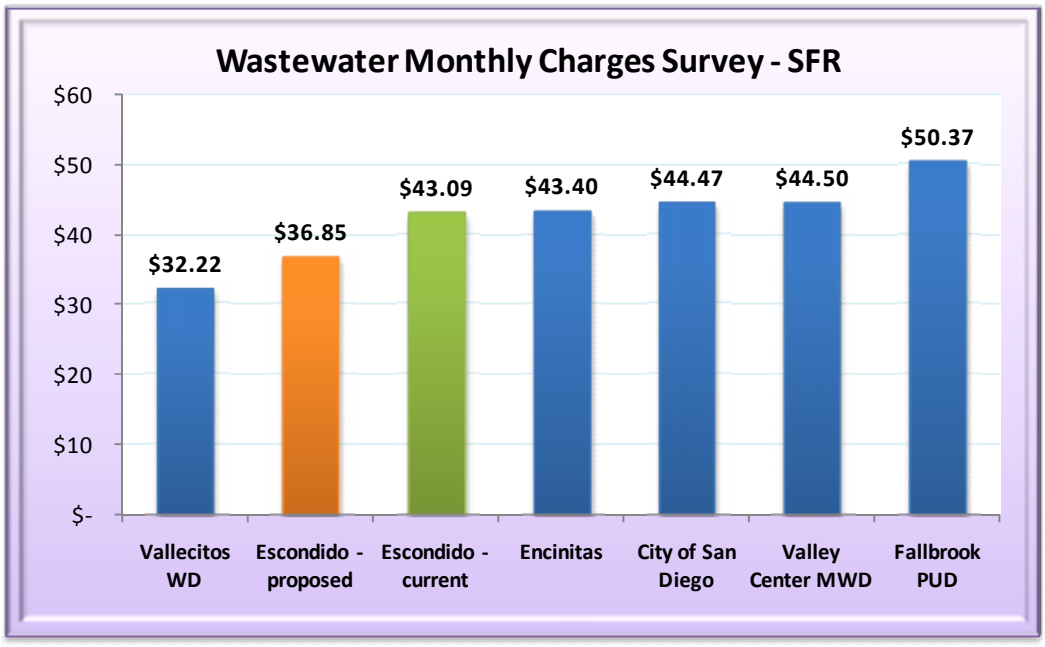
Figure 5-1



Note: Based on 5/8" and 3/4" meter and 15 kgal of water usage per month
Note: Escondido – C = current rates, Escondido – P = proposed rates

Figure 5-2 shows the monthly wastewater charges for an average SFR customer with a 3/4" meter and an average winter water usage of 6.5 kgal per month. Most wastewater utilities have fixed monthly wastewater charges for SFR customers, except for the Cities of San Diego and Encinitas, Fallbrook Public Utility District, and the proposed wastewater charges for the City.

Figure 5-2



Note: Based on 5/8" and 3/4" meter and 6.5 kgal of winter water usage per month

APPENDIX A

PRICING OBJECTIVES WORKSHOP

RFC conducted a pricing objectives workshop with City staff and stakeholders group to determine the objectives stakeholders considered to be most important in the design of water and wastewater rates. **Table A-1** shows a brief description of the 12 pricing objectives presented to the stakeholders.

Stakeholders were asked to rank a maximum of three objectives each as “Most Important” and “Very Important”. The remaining objectives can be ranked as “Important” and “Least Important” depending on the views of each stakeholder. Additionally, stakeholders were asked to rank the sub-objectives under the Conservation objective from 1 to 6, 1 being the most important.

Table A-1
Pricing Objectives Description

Pricing Objective	Description
Financial Sufficiency	The rate structure should not only adequately recover the costs associated with providing service, but also ensure that enough revenues are generated to meet bond coverage and reserve requirements.
Cost of Service Based Allocations	The rate structure should ensure that each customer class is contributing equitably towards revenue requirements based upon the costs of providing service to each customer class.
Minimization of Customer Impacts	The rate structure should be developed such that adverse rate impacts on each customer class are minimized.
Equitable Contributions from New Customers	New customers should be responsible for the capital costs of providing them service.
Economic Development	The rate structure should incorporate a preferential rate that may be used to attract economic development to Escondido.
Rate Stability	The rate structure should minimize dramatic rate increases or decreases over the planning period.
Affordability to Disadvantaged Customers	The rate structure should incorporate practices or procedures that help ensure that economically disadvantaged customers can afford water and wastewater service.
Simple to Understand and Update	The rate structure should be easy for City customers to understand, utilizing a moderate level of educational tools. In addition, the rate structure should be able to be effectively maintained by City staff in future years.
Ease of Implementation	The rate structure should be compatible with City' billing system. In addition, the rate structure should allow for the continuation of existing management and system reports.
Defensibility	The rate structure should be consistent with the rate setting methodologies provided by AWWA and applicable laws, in order to ensure that rates are defensible if challenged in court.
Revenue Stability	The rate structure should provide for a steady and predictable stream of revenues to the utility such that the utility is capable of meeting its current financial requirements.
Conservation/Demand Management ***Sub-Objectives***	The rate structure should encourage water conservation as well as assist in managing system demand. • Reduce Peak Consumption • Reduce Seasonal Consumption • Reduce Total Consumption • Reward Economically Efficient Water Users • Surcharge Nonessential and Non-efficient Water Use • Communicate Conservation Consciousness

The "Most Important" objectives were given a weight of 4; "Very Important" objectives were given a weight of 3; etc. **Table A-2** below shows the combined weighted scores of each objective from all stakeholders.

Table A-2
Pricing Objectives Results

Classification	Rank	Objective	Total
Most Important	1	Financial Sufficiency	**46.0**
	2	Rate Stability	**40.0**
	3	Revenue Stability	**38.0**
	4	Cost of Service Based Allocations	**36.0**
Very Important	5	Conservation/Demand Management	**32.0**
	6	Equitable Contributions from New Customers	**31.0**
	7	Minimization of Customer Impacts	**29.0**
Important	8	Defensibility	**26.0**
	9	Economic Development	**26.0**
	10	Simple to Understand and Update	**26.0**
Least Important	11	Affordability to Disadvantaged Customers	**22.0**
	12	Ease of Implementation	**22.0**

The rankings were then used to compare four water and two wastewater alternative rate structures to determine which rate structures best meet the City's objectives. The selected alternatives for water rates are modifying the tier cut-offs and a water budget structure. The selected alternative for wastewater is the residential flow-based structure. Water and wastewater rates were developed for the selected alternatives, as described in previous sections of the report.

Tables A-3 and **A-4** show the comparison of the alternative rate structures for water and wastewater, respectively.

Table A-3
Comparison of Alternative Water Rate Structures

Classification	Rank Total	Objective	Current Rate Structure	Option 1 - Tier Cutoffs	Option 2 - Add Tier	Option 3: Hybrid	Option 4: Budget
Most Important	1	Financial Sufficiency	**14.8**	14.8	14.8	14.8	14.8
	2	Rate Stability	**16.0**	14.8	13.2	14.8	14.8
	3	Revenue Stability	**16.0**	14.8	13.2	14.8	14.8
	4	Cost of Service Based Allocations	**13.2**	16.0	14.8	14.8	16.0
Very Important	5	Conservation/Demand Management	**9.9**	11.1	11.1	12.0	12.9
	6	Equitable Contributions from New Customers	**12.0**	12.0	12.0	12.0	12.0
	7	Minimization of Customer Impacts	**12.9**	12.0	11.1	11.1	12.0
Important	8	Defensibility	**6.0**	8.0	7.4	8.0	8.6
	9	Economic Development	**6.0**	6.0	6.0	6.0	6.0
	10	Simple to Understand and Update	**8.0**	8.0	8.0	7.4	6.0
Least Important	11	Affordability to Disadvantaged Customers	**3.0**	3.0	3.0	3.0	3.3
	12	Ease of Implementation	**4.3**	4.3	3.7	3.3	2.3
TOTAL SCORE			**122.1**	**124.8**	**118.3**	**122.0**	**123.5**
Difference from Current Rate				2.70	-3.80	-0.10	1.40

Table A-4
Comparison of Alternative Wastewater Rate Structures

Classification	Rank Total	Objective	Current Rate Structure	Flow-based Residential
Most Important	1	Financial Sufficiency	**16.0**	14.8
	2	Rate Stability	**16.0**	14.8
	3	Revenue Stability	**16.0**	14.8
	4	Cost of Service Based Allocations	**10.8**	17.2
Very Important	5	Conservation/Demand Management	**9.9**	12.0
	6	Equitable Contributions from New Customers	**12.0**	12.0
	7	Minimization of Customer Impacts	**12.0**	9.9
Important	8	Defensibility	**6.0**	8.0
	9	Economic Development	**6.0**	6.0
	10	Simple to Understand and Update	**8.0**	7.4
Least Important	11	Affordability to Disadvantaged Customers	**3.0**	3.0
	12	Ease of Implementation	**4.3**	3.3
TOTAL SCORE			**120.0**	**123.2**
Difference from Current Rate				3.20

APPENDIX B

WATER BUDGET EVALUATION

The City and stakeholders expressed an interest in exploring the water budget rate structure in order to enhance equity and encourage conservation. The American Water Works Association defines a water budget as "the quantity of water required for an efficient level of water use by that customer." *(Source: American Water Works Association Journal, May 2008, Volume 100, Number 5).* Water budgets are designed for each customer based on an efficient level of usage for that customer so that the tiers for each customer are different based on their individual characteristics.

Water budget allocations are based upon an indoor and an outdoor allocation. Typically, indoor water budgets are based upon the number of people per household and outdoor water budgets are based upon the landscape area of each parcel.

RFC collected available data from the City to evaluate the feasibility of implementing a water budget rate structure at the City. At this time the data available is incomplete and implementation of a water budget rate structure is not practically feasible. RFC is working with City staff to gather the necessary data to determine water budgets for residential and irrigation customers. This section summarizes our findings and recommendations for evaluating and implementing a water budget rate structure in the future.

Water Budget Allocations

Water budget allocations are usually composed of two components: indoor water budget and outdoor water budget. The determination of indoor and outdoor water budgets is explained below. Both components are based on default allocation factors decided by the City as policy options. Customer-specific factors are subject to variance programs to enhance the accuracy of the individualized allocations and to achieve equitable allocations. Due to the lack of sufficient data for irrigation and agricultural accounts, water budget allocations are calculated for residential customers only. **Table B-1** shows the available data for each customer class.

Table B-1
Total Accounts with Sufficient Data

	SFR	MFR	Res/Ag	Ag	IRR	Total
FY 2009 Accts	25,830	1,360	30	236	563	**28,019**
Accts in Model	16,681	717	8	50	121	**17,577**
% of Total	*65%*	*53%*	*27%*	*21%*	*21%*	***63%***

Indoor Water Budget

The indoor water budget (IWB) is determined by a customer's household size and a standard consumption per person. The proposed IWB formula is as follows:

$$IWB = \frac{GPCD * Household Size * Days of Service * DF_{indoor}}{1000} + V_{indoor}$$

where

- GPCD – Gallons per capita per day. The standard consumption per person per day is set at 60 gallons based on the *AWWARF Residential End Uses of Water Study,* which stated that the mean daily water use per capita per day is 59.8 gallons.
- Household Size – Number of residents. The default values for household size are set based on customer class
  - Single Family: Household Size = 4 persons[1]
  - Multi Family: Household Size = 3 persons
- Days of Service – The number of days of service varies with each billing cycle for each customer. The actual number of days of service will be applied to calculate the indoor water budget for each billing cycle.
- DF_{indoor} – Indoor drought factor. The percentage of indoor water budget allotted during drought conditions. The drought factor is subject to the approval of the City Council at different drought stages. The indoor drought factor is currently set at 100%.
- V_{indoor} – Indoor variance. The additional water allotment to be granted for extenuating circumstances is subject to City's approval or verification as outlined in the variance program and can include medical needs, large animals, etc.

For illustrative purposes, the following indoor water budget calculations for two different customers are shown.

- Customer #1: Household Size = 4 persons, Days of Service in January bill = 30 days, No variance
  - $IWB = \frac{60\,gallons/person/day * 4\,persons * 30\,Days * 100\%}{1000\,gallons} = 7.2\,kgal$
- Customer #2: Household Size = 6 persons, Days of Service in January bill = 28 days, Medical need variance = 2 kgal per billing cycle
  - $IWB = \frac{60\,gallons/person/day * 6\,persons * 28\,Days * 100\%}{1000\,gallons} + 2\,kgal = 12\,kgal$

Outdoor Water Budget

The outdoor water budget (OWB) is determined based on three main variables: irrigable landscape area, weather data and ET Adjustment Factor. The irrigable landscape area, measured as square footage of landscape surface on a customer's property, is estimated using the San Diego County Assessors' parcel data - lot size, building size and landscape area factor - where the actual irrigable landscape area data is not available. The weather data is based on the reference EvapoTranspiration (ET_0), which is the

[1] Based on the 2000 SANDAG Data Warehouse, the average single family residential household size in Escondido is 3.2 persons. To balance the administrative costs associated with variance program and the accuracy of the indoor water budget, single family's water allotment is based on 4 persons per household.

amount of water loss to the atmosphere over a given time period at given specific atmospheric conditions. ET_0 is the amount of water (in inches of water) needed for a hypothetical reference crop to maintain its health and appearance. The ET Adjustment Factor (ETAF) is a coefficient that adjusts ET_0 values based on a plant factor (PF) and irrigation efficiency (IE). The updated California Department of Water Resources' (DWR) Model Water Efficient Landscape Ordinance (Landscape Ordinance) provides the following ETAF for different landscapes:

- Existing landscape (Functional[2]): $ETAF_{Existing}$ = 80%
- New development / redevelopment landscape (Functional): $ETAF_{New}$ = 70%
- Special landscape (Recreational[3]): $ETAF_{Recreational}$ = 100%

The formula to calculate outdoor water budget is as follows:

$$OWB = \left(\frac{\text{LandscapeArea} * ET_0 * ETAF}{897.6} + V_{outdoor} \right) * DF_{outdoor}$$

where

- ET_0 is measured in inches of water during the billing period based on daily data acquired from the California Irrigation Management Information System (CIMIS) Station 153, which is the closest station to the City's service area.
- ETAF (% of ET_0) is defined using the updated Landscape Ordinance as shown above.
- Landscape Area (or Irrigable Landscape Area) (in square feet) is the measured irrigable landscape area served by the customer's meter.
    - Where the measured irrigable landscape area is not available, the landscape area will be estimated by the following formula using the San Diego County Assessors' parcel data, subject to a landscape area cap of 0.4 acre for single family residences. Multi-family residences have no landscape area cap. Landscape factors provide an estimate of the landscape area for a given parcel size.
        - $\text{Landscape Area (sq ft)} = \text{Landscape Factor} * (\text{Lot Size} - \text{Building Size})$
- $DF_{outdoor}$ – Outdoor drought factor. The percentage of outdoor water budget allotted during drought conditions. The drought factor is subject to the approval of the City Council at different drought stages. The outdoor drought factor is currently set at 100%.
- $V_{outdoor}$ – Outdoor variance. The additional water allotment to be granted for extenuating circumstances is subject to City's approval or verification as outlined in the variance program. Outdoor variance is subject to outdoor drought factor.
- 897.6 is the conversion unit from inch*ft^2 to billing unit of thousand gallons (kgal).

[2] Functional for landscape that is used for ornamental and decorative purposes. Recreational for landscape that is used mostly for recreational purposes such as school, park, golf courses, etc.

[3] Based on CA Code of Regulation, Title 23, Chapter 2.7, Section 491, Special Landscape Area is defined as an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

For illustrative purposes, the following outdoor water budget calculations for two different customers are shown.

- Customer #1 – Existing Single Family: Landscape Area = 8,000 sq ft, ET_0 for 30-day January bill = 2.25 inches, No variance
  - $OWB = \left(\frac{8{,}000 \text{sq ft} * 2.25 \text{inches} * 80\%}{897.6} \right) * 100\% = 16 \text{ kgal}$
- Customer #2 – Existing Single Family: Landscape Area = 4,000 sq ft, ET_0 for 28-day January bill = 2.05 inches, Variance = 1 kgal per billing cycle for right of ways
  - $OWB = \left(\frac{4{,}000 \text{sq ft} * 2.05 \text{inches} * 80\%}{897.6} + 1 \text{kgal} \right) * 100\% = 8.3 \text{ kgal}$

Tier Definitions

Based on the information above, the tier definitions are developed as shown in **Table B-2** below.

Table B-2
Tier Definitions

Tiers	Tier Definition
Tier 1 Efficient Indoor Use	100% IWB
Tier 2 Efficient Outdoor Use	100% OWB
Tier 3 Inefficient Use	100% to 125% Total WB (indoor + outdoor)
Tier 4 Unsustainable Use	Above Tier 3

The tier definitions are tailored to the unique consumption patterns of the City's customers and subject to the City's policy decisions. The proposed tier definitions are based on RFC's usage and impact analysis and numerous policy discussions with the Council. The first priority for water use is essential indoor water use for health, safety and sanitary purposes. Maintaining healthy landscape at efficient water use is non-essential, yet important, thus efficient outdoor water use is required to pay the Tier 2 rate. Any usage above an efficient level is subject to higher charges to fund conservation programs and any other supplemental water supply program. The current water supply is reserved for efficient water use within the City for indoor and outdoor use. The higher Tier 3 rate serves as warning for inefficient use before incurring heavy penalty for excessive use in Tier 4.

Single Family Usage Analysis and Customer Impacts

Due to lack of landscape data, about 65 percent of all single family usage and parcel data are incorporated into the analysis. Using the water budget allocations and tier definitions above, the usage

and bill distributions for single family customers are shown below. **Figure B-1** shows that 45 percent of total SFR usage is assessed at the Tier 1 rate for indoor use, 38 percent is assessed at Tier 2 for outdoor use, and about 16 percent is charged the higher rates for inefficient use. Approximately 72 percent of the bills have usage within their allotted indoor and outdoor water budget, thus only paying Tier 1 and Tier 2 rates. Approximately 28 percent of the bills will exceed the total water budgets. In order to achieve the conservation goal of 20 percent reduction by 2020 set by the 2009 Water Conservation Act (SB-7), the City will need to focus on Tiers 4 and 3 customers to help them achieve efficient water use.

Figure B-1

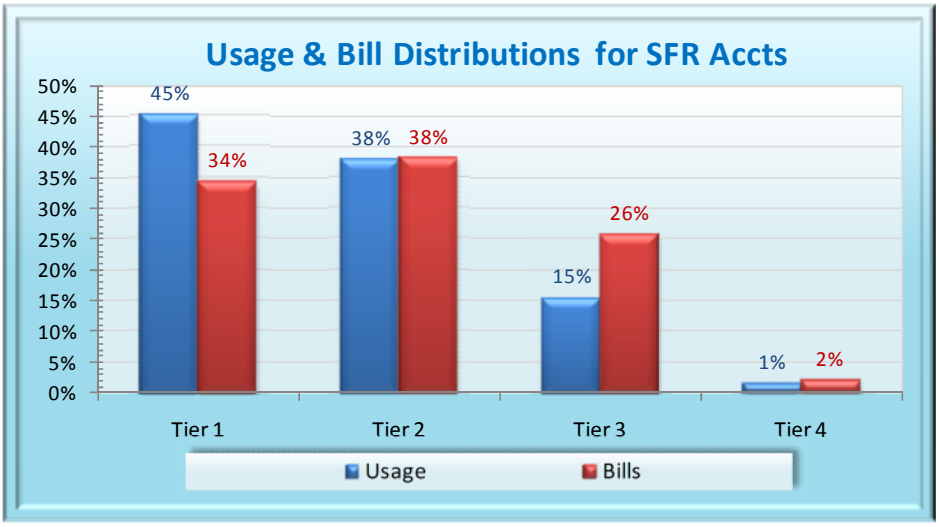
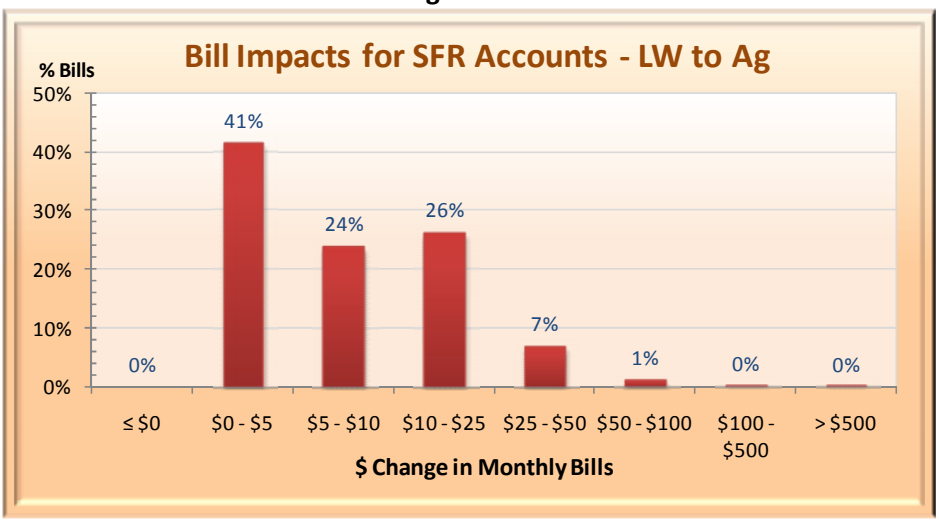


Figure B-2 represents the bill impacts for SFR customers based on the calculated rates under the Local Water to Ag option. The graph indicates that approximately 41 percent of SFR customers will see an increase in their monthly bill from $0 to $5, and 24 percent will see an increase ranging from $5 to $10 per month.

Figure B-2



Multi-Family Usage Analysis and Customer Impacts

As indicated in **Table B-1**, only 53 percent of all multi-family usage and parcel data are incorporated into the analysis. Using the water budget allocations and tier definitions above, the usage and bill distributions for multi-family customers are shown below. **Figure B-3** shows that 64 percent of total MFR usage is assessed at the Tier 1 rate for indoor use, 23 percent is assessed at Tier 2 for outdoor use, and about 13 percent is charged the higher rates for inefficient use. Approximately 69 percent of the bills have usage within their allotted indoor and outdoor water budget, thus only paying Tier 1 and Tier 2 rates. Approximately 30 percent of the bills will exceed the total water budgets.

Figure B-3

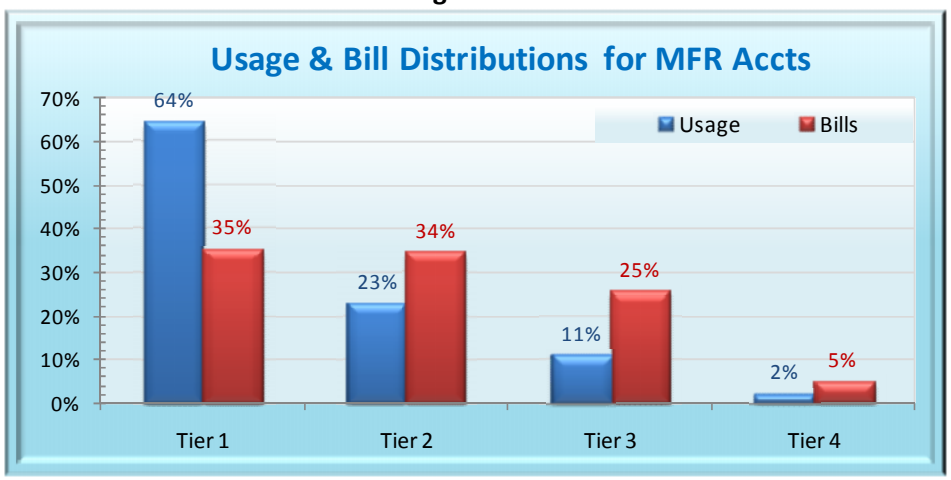
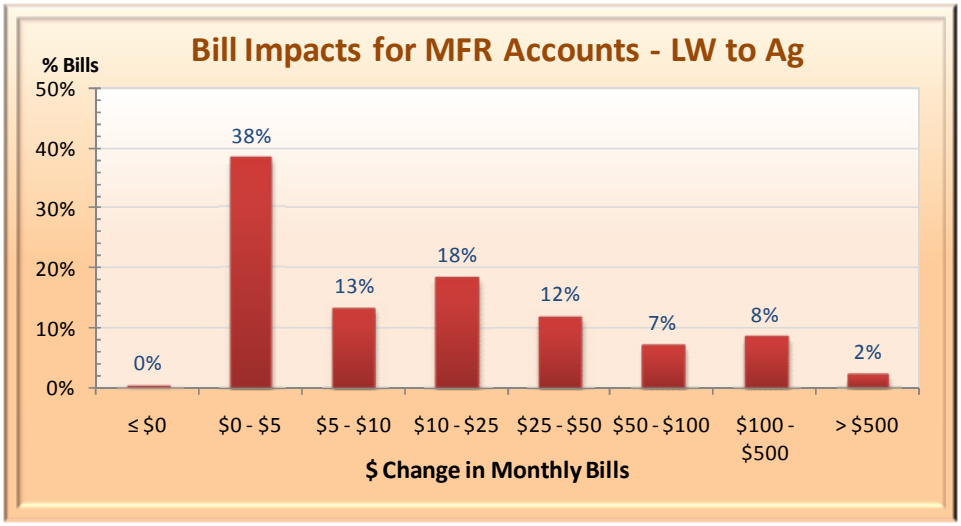


Figure B-4 represents the bill impacts for MFR customers based on the calculated rates under the Local Water to Ag option. The graph indicates that approximately 38 percent of MFR customers will see an increase in their monthly bill from $0 to $5, and 13 percent will see an increase ranging from $5 to $10 per month.

Figure B-4



Next Steps

The City is in the process of collecting and updating more data for SFR, MFR, and Irrigation customer classes. Due to the non-homogeneous natures of agricultural and other non-residential customers, it is recommended that they retain their current rate structures. Once sufficient data has been collected and processed, a complete water budget rate study will be conducted to determine the feasibility of the water budget rate structure and to calculate the actual rates under the new structure.

Wastewater Rate Structure

Once the City has decided to implement the water budget rate structure, the wastewater rates may also be modified to match the indoor water usage to wastewater generation. For example, wastewater is generated by indoor water usage, which is a function of the number of people per household. This would result in a more equitable wastewater rate structure.

Billing System Assessment and Modification

The City's current billing system is not capable of handling water budgets and implementing the water budget rate structure will require the City to update its billing system. Once the policy issues on water budget rates are finalized, RFC will determine the specifications for the City's current billing system and recommend changes in order to facilitate the implementation of the water budget rate structure. Typically, the billing system would need to be updated with all the data needed such as landscape area, people per household, etc., a mechanism to download daily ET data in order to compute the outdoor water budget, and the capability to handle variances filed by customers.