

# WATER UTILITY COST OF SERVICE STUDY REPORT

City of Lomita, CA

26 APRIL 2012



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## EXECUTIVE SUMMARY

The City of Lomita retained Black & Veatch to conduct a water rate study to maintain its water utility on a financially sound and stable basis over the next few fiscal years and into the future. This study analyzed the utility's annual revenue requirements, the costs of providing water service to Lomita customers, and the development of fair and equitable rates to meet expenses related to Operations & Maintenance (O&M), Capital Improvement Projects and debt service on the Cypress Street Reservoir Certificates of Participation (COPs). The study was conducted using historical and projected data on operating and non-operating expenses, capital expenditures, debt service requirements and water customer data provided by the City.

## FINDINGS

This section presents the following findings of the water rate analysis:

- The City has not raised water rates since July 1, 2010. As a result, the current water rate levels and the revenue generated are insufficient to meet the current cost of providing water service (particularly the cost of imported water and capital needs) and to meet the debt coverage ratio of 125 percent as required by the bond covenant for the Cypress Street Reservoir COPs.

In the COPs Official Statement, the City has covenanted, to the fullest extent permitted by law, to fix, prescribe and collect rates and charges from the water system which will be at least sufficient to yield during the Fiscal Year net revenues (not including amounts transferred from the Rate Stabilization Fund to the Revenue Fund in excess of 15% of Debt Service for such Fiscal Year) equal to 125% of debt service for such Fiscal Year. The City may make adjustments from time to time in such rates and charges and may make such classifications thereof as it deems necessary, but will not reduce the rates and charges then in effect unless the net revenues from such reduced rates and charges will at all times be sufficient to meet the coverage requirements.

- As a result of the Water Fund not meeting the required 125 percent debt coverage ratio, the rating agency of Standards & Poor recently downgraded the rating on the COPs. If water revenues are not increased to meet the coverage requirement, the City may face a default of the bonds in the future.
- The water enterprise is faced with increases in its financial obligations due to inflation, an aged water system that needs major repair and replacement, and higher costs for water purchases. Since the last rate study conducted in 2005, the operating expenses of the utility have nearly doubled while capital needs continue to mount.
- If rates remain unchanged and costs continue to increase, the enterprise fund's projected unrestricted net assets (reserve fund balances) will be negative by the end of the study period. A cumulative deficit would continue to increase unless water rates are adjusted to meet revenue requirements. This fund balance amount is recommended to be maintained to account for unforeseen expenses and emergencies that the water fund may encounter.

- The A3 customer group, consisting of customers with  $\frac{3}{4}$  inch by 1 inch metered connections, is charged at a higher rate than  $\frac{5}{8}$  inch and  $\frac{3}{4}$  inch metered customers.

## RECOMMENDATIONS

The findings of this water rate analysis indicate the City should consider adoption of the following recommendations:

- Adopt the proposed water rate structure and levels as presented in this report. The proposed rate levels are projected to meet O&M, capital and debt coverage requirements.
- Utilize approximately \$410,000 in existing unrestricted net assets (reserves) through FY 16/17 to mitigate larger rate increases than those proposed in this report as well as to meet increasing capital improvement expenses.
- Allocate approximately \$75,000 each year from the COP Rate Stabilization Fund as a revenue source to help meet the 125 percent debt coverage requirement.
- Allocate meter equivalency ratios per the methodology recommended in the American Water Works Association M-5 Manual. This approach utilizes gallons per minute flow data per meter size to derive meter equivalency ratios for Lomita meter groups. This approach would treat the  $\frac{3}{4}$  inch by 1 inch metered customers (Group A3) more proportionate to actual use and cost compared to the meter charge methodology utilized for the current rate structure.
- Adopt the proposed rate structure to help ensure compliance with proportionate cost of service requirements mandated by California Constitution Article XIID (Proposition 218). Due to a California Supreme Court ruling in the *Bighorn* case, water rates are considered as property-related fees and therefore subject to the procedural and substantive requirements of Proposition 218 (this was not the case during the 2005 rate study). The cost allocation procedure utilized in this analysis meets the substantive requirements of Proposition 218. However, one change was made in the current rate structure which affects how non-residential customers are charged for water use. In the current structure, non-residential customers are subject to a two-tier rate structure for their consumption charge. Given the wide variety of usage patterns for non-residential customers (as compared to residential customers) it is difficult to treat this class as a homogenous group by implementing an average usage which would serve as a breakpoint between first tier and second tier use. Therefore, to better meet the intent of Proposition 218, we propose a uniform rate for all non-residential customers.
- Allocate City water conservation program costs to the Residential Tier 2 and Tier 3 consumption rates. State law allows municipal water agencies to develop tiered water rates as long as the cost basis for tiers higher than the base tier relates to water conservation program costs and/or alternate source of supply costs. Water conservation program costs in Lomita are primarily aimed at residential water use due to this customer group's ability to trim discretionary water use, particularly outdoor irrigation to meet State mandates for water

reduction targets. Therefore, the nominal City conservation costs are allocated to Residential Tier 2 and Tier 3 rates.

The following tables present the current and proposed water customer rates from Fiscal Year 2011/12 through Fiscal Year 2016/17.

**Table 1. Proposed Bi-Monthly Meter Charges**

Meter Size	Current	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
5/8", 3/4"	\$ 37.59	\$ 36.49	\$ 39.16	\$ 41.93	\$ 44.48	\$ 47.18
3/4" X 1"	75.17	48.65	52.21	55.91	59.30	62.90
1"	75.17	60.81	65.26	69.89	74.13	78.63
1 1/2"	112.76	121.62	130.52	139.78	148.26	157.25
2"	187.94	194.59	208.83	223.64	237.21	251.60
3"	413.46	364.86	391.56	419.33	444.78	471.76
4"	638.98	608.10	652.59	698.88	741.30	786.26
6"	1,240.39	1,216.20	1,305.19	1,397.77	1,482.59	1,572.53
8"	1,992.14	1,945.93	2,088.30	2,236.43	2,372.15	2,516.05

Sources: City of Lomita, Black & Veatch.

**Table 2. Proposed Residential Water Consumption Rates**

	Current	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
Block 1 (0 - 20 hcf)	\$ 2.00	\$ 2.80	\$ 3.01	\$ 3.22	\$ 3.42	\$ 3.62
Block 2 (21 - 35 hcf)	2.40	2.87	3.08	3.29	3.49	3.70
Block 3 (36+ hcf)	2.88	3.26	3.47	3.69	3.90	4.12

Sources: City of Lomita, Black & Veatch.

**Table 3. Proposed Non-Residential Water Consumption Rates**

	Current	Rate per hcf				
Uniform Rate	\$2.19 - \$2.62	\$ 2.96	\$ 3.17	\$ 3.39	\$ 3.60	\$ 3.81

Sources: City of Lomita, Black & Veatch.

## INTRODUCTION

The City's last water rate analysis was conducted in 2005 with a subsequent financial plan developed in 2008 to support the Cypress Street Reservoir debt issuance. Since that time, inflationary pressure on the cost of doing business, rising costs of purchased imported water, and debt service requirements of the COPs have caused the current financial challenges faced by the City's water utility. This report develops a rate structure and rate levels that will help address these challenges.

## BACKGROUND

The City of Lomita, California was founded in 1907 and is located approximately 26 miles south of downtown Los Angeles. It was incorporated in 1964. In 1990, the City assumed responsibility for Water District 13 from the County of Los Angeles and has operated it as an enterprise since that time. Currently, the City provides water services to approximately 3,800 residential customers and 450 other customers.

The City's Water System performs all activities related to the distribution of water including production, purchase and delivery of water, and maintenance of the water system. Its primary source of water is the West Basin Municipal Water District (WBMWD) that is a wholesaler of water from the Metropolitan Water District of Southern California (MWD). At the present time, this is the only water source available to the City; therefore the City is subject to the water purchase increases passed on by MWD. The City's transmission system consists of water mains ranging from 2" to 16" in diameter and constructed between 1928 and the present. Many of these assets will need to be replaced in the next 10 to 20 years.

In 2008, the City prepared a financing plan to fund the construction of the 5.2 million gallon Cypress Street Reservoir. Construction of the new reservoir with a storage capacity of 5.0 million gallons (MG) was projected to increase the Water System's reliability and provide for blending of the groundwater from Well No. 5 with imported water. Equally important, the new reservoir was to give the City the ability to reduce its reliance on imported water thus reducing its overall water cost structure. The financing plan for the COPs was predicated in part on this benefit which translated into lower overall rate increases in the near future. Unfortunately, water odor issues have forced the City to shut the facility down until the issues can be resolved. Therefore, the City continues to purchase 100 percent of its water requirement from WBMWD at a rate higher than what was anticipated as part of the financing plan.

## DESCRIPTION OF THE RATE SETTING PROCESS

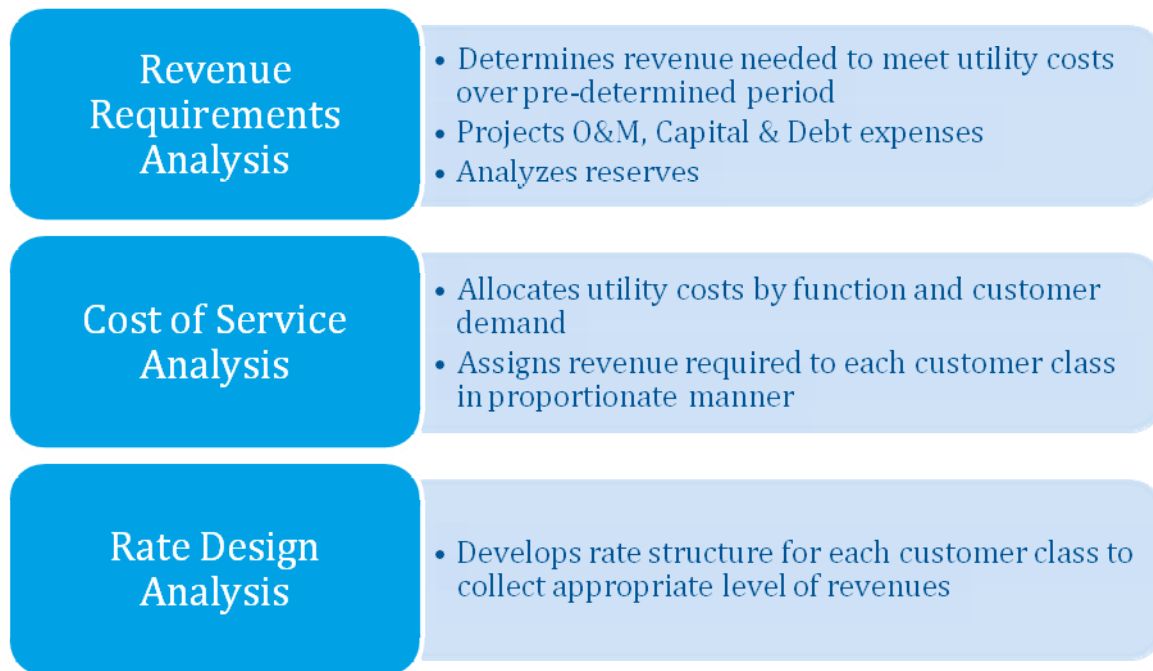
This report documents the results of the rate analysis and describes the cost of service basis for the rates in compliance with California Constitutional Article XIII D (Proposition 218). The methodology used in this study is one endorsed by the leading water utility rate-making organization in the United States, the American Water Works Association (AWWA). As such, the elements of the study include the following principles and actions:



- Multi-year cash pro forma of sources and uses of revenues and expenditures to identify the appropriate level of rate-based revenues;
- Cost of service analysis to compare the costs of the demands placed on the utility system by customers with their payments for services; and,
- Rate structures set to proportionate customer demand in a fixed/variable format.

A comprehensive rate analysis consists of three interrelated analyses as illustrated below in Figure 1.

**Figure 1. Rate Setting Process**



## ANNUAL REVENUE REQUIREMENTS

### PROJECT ASSUMPTIONS

The first step in the Revenue Requirement Analysis is to project future revenues and expenditures, growth, inflation and financial factors are estimated, as well as revenue increases for the water utility. The following lists these factors:

- The actual financial results for the water fund for fiscal year ending June 30, 2011 and the FY 2011/12 fund budget were used as the base year figures for the pro forma.
- The beginning unrestricted operating fund balance (Fund 510) for fiscal year 2011/2012 is estimated at \$1,689,278 and the beginning unrestricted capital reserve fund balance (Fund 520) for 2011/12 is estimated at \$3,085,735.
- The annual customer growth rate for the system as a whole is assumed to be 0.25 percent due to the current economic and housing slowdowns as well as factoring in the built-out nature of the City.
- An escalation factor of 3.0 percent is used to project future operating expenses, except for water costs. Personnel costs are assumed to increase 2.0 percent per year.
- WBMWD water purchase costs are projected based on forecasted increases in replenishment assessment costs and MWD imported water charges. At this time we are using a moderate 2 percent increase in MWD annual rates. However, should the increases be larger than anticipated the City can pass those increases on directly to the customers assuming the City's adopted rate ordinance includes related language and the notice of public hearing to each customer includes this language.
- The Unrestricted Fund 510 operating reserve balance is targeted at 90 days of annual Operations and Maintenance (O&M) expense and capital reserves are targeted at a balance of approximately \$2,500,000 per year. The capital reserve target is based on a 25 percent factor of the 10-year estimated CIP cost (\$10,000,000) as provided by the City.
- The City will utilize reserve funds (approximately \$410,000 through FY 16/17) to minimize the rate increases to each customer class and fund a portion of the CIP program costs.

As is the case with most municipal water agencies, the City of Lomita water utility is operated on an enterprise basis with expenses and revenues accounted for separately from the City's general and other funds. The City's water enterprise fund must receive sufficient total revenue to ensure proper operation and maintenance of the department as well as preserve the financial integrity of the utility and the fund. Adequacy of water revenues can be measured by comparing the water system's revenue requirements to be met from the water rates it charges to its customers.

In order to develop adequate revenues from a system of water rates, the annual revenue requirements of the water utility must be determined. There are two commonly accepted bases for determining annual revenue requirements in order to develop a financially sound water rate structure. These approaches are the “cash needs” approach and the “utility” approach. Both approaches are endorsed by the AWWA.

The “cash needs” basis is typically used by municipally-owned water utilities when establishing rates for their customers. Under this approach, the basic revenue-requirement components include:

- Operating and maintenance (O&M) expenses;
- Debt service costs (principal and interest on water utility-related debt instruments);
- Capital expenditures funded directly from current revenues or accruals on a pay-as-you-go basis; and,
- Other elements such as interdepartmental expenses (cost allocation), in-lieu taxes, and interest earnings (considered as a credit to the expenses).

The “utility” basis for determining annual revenue requirements is typically used by regulated investor-owned utilities and regulated municipal utilities. Items normally included in annual revenue requirements based on this approach include:

- Operating and maintenance (O&M) expenses;
- In-lieu taxes;
- Depreciation expense; and,
- Fair rate of return on the rate base.

To determine the revenue requirements for the City’s water utility we have used the “cash needs” basis as described earlier.

## **CURRENT AND FUTURE REVENUE REQUIREMENTS**

The annual revenue requirements are derived from maintenance and operations costs, debt service expenses, and projected capital expense items. Water District property taxes, COP Rate Stabilization funds, unrestricted reserves, interest earnings, capacity fees, fines and forfeitures, and other miscellaneous income help offset some of these expenses, but the majority of the costs are recovered via customer rates and charges. The City prepares an annual budget for the water system that itemizes all the expenditures for each fiscal year. These expenses include personnel costs, maintenance and operations, equipment repair and replacement, and Capital Improvement Program (CIP) costs.

As mentioned earlier in this report, the water enterprise fund has several restricted and unrestricted reserve fund balances to account for contingencies, unplanned emergencies and capital needs such as

repair and replacement. For this analysis, the proposed informal target balances for the unrestricted operating and capital reserves are as follows:

1. Unrestricted CIP Reserve - to set aside funds for the replacement of major systems in the City's facilities. The annual amount to be held in the fund balance for capital needs is approximately \$2.5 million. Based on discussions with City staff, this amount is necessary to address the City's aging water infrastructure.
2. Unrestricted Operating Reserve - to ensure that funds are available for emergency purposes and to mitigate rate shock in the future. Based on discussions with City staff, the annual amount to be held in the fund balance for operating reserves should be equal to 90 days of operating expenses.

The water system activities included in our analysis were gathered from the City's annual operating budget and audited financial statements. Base year income and expense data for the water system were obtained for fiscal year 2010/11 and budgeted data for FY 2011/12. The evaluation of future water fund revenue requirements utilizes these data. For the purpose of determining annual revenue requirements as a basis to set future water rates, we used a projection period through Fiscal Year 2016/17. Given that purchased water costs are difficult to predict past one or two years, the water utility's CIP needs will continue to increase, and meeting the required debt service coverage ratio of 125 percent is critical to the water fund, we recommend that the City conduct another comprehensive rate study during the 2016/17 fiscal year.

On the following page, Table 4 presents multi-year projected revenue requirements for the water utility. This table includes annual revenues projected to be raised using current rates, the additional revenue required to meet projected water utility expenditures utilizing rate increases, and the projected operating and non-operating expenses. Table 5 presents the fund balance information based on the revenues generated from rate and other revenues.

**Table 4. Water Revenue Requirement Analysis, FY 11/12 – FY 16/17**

<b>Description</b>	<b>Budgeted FY 11/12</b>	<b>Projected FY 12/13</b>	<b>Projected FY 13/14</b>	<b>Projected FY 14/15</b>	<b>Projected FY 15/16</b>	<b>Projected FY 16/17</b>
<b>Revenue from Rates (510)</b>						
Water Billing Fees (510)	\$ 3,862,187	\$ 3,871,843	\$ 3,881,522	\$ 3,891,226	\$ 3,900,954	\$ 3,910,707
<b>Miscellaneous Revenue (510)</b>						
Use of COPs Rate Stabilization Fund 1	-	75,227	75,107	74,957	74,777	75,317
Fees for Services	1,000	1,003	1,005	1,008	1,010	1,013
Late Fees	25,000	25,063	25,125	25,188	25,251	25,314
Interest on Money and Property	6,000	6,000	6,000	6,000	6,000	6,000
Connection Fees	3,000	3,008	3,015	3,023	3,030	3,038
Fire Flow Fees	3,000	3,008	3,015	3,023	3,030	3,038
Miscellaneous Revenues	12,000	12,030	12,060	12,090	12,120	12,151
Water Leases	70,000	70,175	70,350	70,526	70,703	70,879
<b>Total Other Operating Revenue</b>	<b>120,000</b>	<b>195,512</b>	<b>195,678</b>	<b>195,814</b>	<b>195,921</b>	<b>196,749</b>
<b>Additional Rate Revenue Required</b>						
<i>Year</i>						
2011/12	-	-	-	-	-	-
2012/13	-	275,062	300,818	301,570	302,324	303,080
2013/14	-	-	271,852	272,532	273,213	273,896
2014/15	-	-	-	312,573	313,354	314,138
2015/16	-	-	-	-	287,391	288,109
2016/17	-	-	-	-	-	305,396
2017/18	-	-	-	-	-	-
2018/19	-	-	-	-	-	-
2019/20	-	-	-	-	-	-
2020/21	-	-	-	-	-	-
<b>Total Additional Rate Revenue</b>	<b>-</b>	<b>275,062</b>	<b>572,670</b>	<b>886,675</b>	<b>1,176,282</b>	<b>1,484,619</b>
<b>Total Water Fund Operating Revenue (510)</b>	<b>3,982,187</b>	<b>4,342,417</b>	<b>4,649,870</b>	<b>4,973,715</b>	<b>5,273,157</b>	<b>5,592,074</b>
<b>Operating Expenses</b>						
Water Purchases	2,100,000	2,142,000	2,184,840	2,228,537	2,273,108	2,318,570
WRD Assessment Expense	40,000	42,000	44,100	46,305	48,620	51,051
Public Works Personnel	707,263	707,263	721,408	735,836	750,553	765,564
Administrative Personnel	708,287	708,287	723,067	738,184	753,645	769,459
Power and Utilities	100,000	100,000	103,000	106,090	109,273	112,551
Chemicals, Fuel and Supplies	39,500	39,500	40,685	41,906	43,163	44,458
Repair and Maintenance	163,000	163,000	167,890	172,927	178,115	183,458
Contract Services	264,700	264,700	272,641	280,820	289,245	297,922
Safety Compliance	4,500	4,500	4,635	4,774	4,917	5,065
Capital Outlay (excl CIP)	20,000	20,000	20,600	21,218	21,855	22,510
Miscellaneous Expense	78,359	78,359	80,710	83,131	85,625	88,194
<b>Total Operating Expenses</b>	<b>4,225,609</b>	<b>4,269,609</b>	<b>4,363,576</b>	<b>4,459,728</b>	<b>4,558,118</b>	<b>4,658,801</b>
<b>Net Operating Income</b>	<b>(243,422)</b>	<b>72,808</b>	<b>286,294</b>	<b>513,987</b>	<b>715,040</b>	<b>933,273</b>

**Table 4 continued**

<b>Description</b>	<b>Budgeted FY 11/12</b>	<b>Projected FY 12/13</b>	<b>Projected FY 13/14</b>	<b>Projected FY 14/15</b>	<b>Projected FY 15/16</b>	<b>Projected FY 16/17</b>
<b>Capital Fund Revenues (520)</b>						
Waterworks District Property Tax	500,000	501,250	502,503	503,759	505,019	506,281
Water Facilities Fees (Capacity Fees)	45,000	45,113	45,225	45,338	45,452	45,565
Interest on Money and Property	15,000	15,000	15,000	15,000	15,000	15,000
<b>Total Capital Fund Revenues</b>	<b>560,000</b>	<b>561,363</b>	<b>562,728</b>	<b>564,098</b>	<b>565,470</b>	<b>566,847</b>
<b>Non-Operating Expenses (520 &amp; 530)</b>						
Annual Debt Service	502,113	501,513	500,713	499,713	498,513	502,113
Water CIP Projects	-	100,000	400,000	750,000	750,000	1,000,000
<b>Total Non-Operating Expenses</b>	<b>502,113</b>	<b>601,513</b>	<b>900,713</b>	<b>1,249,713</b>	<b>1,248,513</b>	<b>1,502,113</b>
Debt Coverage Ratio	63.0%	126.5%	169.6%	215.7%	256.9%	298.8%
Target Ratio	125.0%	125.0%	125.0%	125.0%	125.0%	125.0%
<b>Use of Unrestricted Reserves</b>						
Operating Reserves (Fund 510)	185,530	-	-	-	-	-
Capital Reserves (Fund 520)	-	-	51,690	171,630	-	1,990
<b>Total Unrestricted Reserves</b>	<b>185,530</b>	<b>-</b>	<b>51,690</b>	<b>171,630</b>	<b>-</b>	<b>1,990</b>
<b>Net Income (Loss) <sup>2</sup></b>	<b>\$ -</b>	<b>\$ 32,660</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 32,000</b>	<b>\$ -</b>

1. Per 2008 COP Bond Covenants, 15% of the 125% Debt Coverage Requirement can be funded by the Rate Stabilization Fund.

2. If applicable, positive net income to be applied to fund balances.

Source: City of Lomita; Black & Veatch.

**Table 5. Water Fund Unrestricted Reserves and Rate Stabilization Analysis**

Description	Estimated FY 11/12	Projected FY 12/13	Projected FY 13/14	Projected FY 14/15	Projected FY 15/16	Projected FY 16/17
<b>Unrestricted Net Assets - Capital Reserves (Fund 520)</b>						
Beginning Balance	\$ 3,085,735	\$ 3,085,735	\$ 3,085,735	\$ 3,034,045	\$ 2,862,415	\$ 2,862,415
Net Assets for Water Fund Expenses	-	-	(51,690)	(171,630)	-	(1,990)
Deposit from Positive Net Income	-	-	-	-	-	-
<b>Ending Balance</b>	<b>3,085,735</b>	<b>3,085,735</b>	<b>3,034,045</b>	<b>2,862,415</b>	<b>2,862,415</b>	<b>2,860,425</b>
Target Balance: 10-year CIP Total	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000
Target Met?	YES	YES	YES	YES	YES	YES
% of Target	123%	123%	121%	114%	114%	114%
	-	32,660	-	-	32,000	-
<b>Unrestricted Net Assets - Operating Reserves (Fund 510)</b>						
Beginning Balance	1,689,278	1,503,748	1,461,181	1,386,074	1,311,117	1,268,341
Net Assets for Rate Stabilization Fund	(185,530)	(75,227)	(75,107)	(74,957)	(74,777)	(75,317)
Net Assets for Water Fund Expenses	-	-	-	-	-	-
Deposit from Positive Net Income	-	32,660	-	-	32,000	-
<b>Ending Balance</b>	<b>1,503,748</b>	<b>1,461,181</b>	<b>1,386,074</b>	<b>1,311,117</b>	<b>1,268,341</b>	<b>1,193,024</b>
Target Balance: 25% of Current Year O&M	1,056,402	1,067,402	1,090,894	1,114,932	1,139,529	1,164,700
Target Met?	YES	YES	YES	YES	YES	YES
% of Target	142%	137%	127%	118%	111%	102%
<b>Rate Stabilization Fund (Fund 530)</b>						
Beginning Balance	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000
Transfer to Revenues for Debt Coverage	-	(75,227)	(75,107)	(74,957)	(74,777)	(75,317)
Deposit from Unrestricted Operating Reserves	-	75,227	75,107	74,957	74,777	75,317
<b>Ending Balance</b>	<b>125,000</b>	<b>125,000</b>	<b>125,000</b>	<b>125,000</b>	<b>125,000</b>	<b>125,000</b>
Target Balance: \$125,000	125,000	125,000	125,000	125,000	125,000	125,000
Target Met?	YES	YES	YES	YES	YES	YES
% of Target	100%	100%	100%	100%	100%	100%
<b>Total</b>	<b>\$ 4,714,483</b>	<b>\$ 4,671,916</b>	<b>\$ 4,545,119</b>	<b>\$ 4,298,532</b>	<b>\$ 4,255,756</b>	<b>\$ 4,178,449</b>

Source: City of Lomita; Black & Veatch.

## ALLOCATION OF WATER COSTS

In *Bighorn-Desert View Water Agency v. Verjil*, the California Supreme Court held water agency's rates were subject to repeal by initiative pursuant to Section 3 of Article XIII C of the California Constitution. Because of the Bighorn decision, water rates in California are now considered property-related fees. Therefore the substantive and procedural requirements of California Constitution Articles XIII C and XIII D (Proposition 218) apply to water rate setting. Section 6 of Article XIII D states:

*The amount of a fee or charge imposed upon any parcel or person as an incident of property ownership shall not exceed the proportional cost of the service attributable to the parcel.*

This utility rate study was performed to allocate the costs of providing service to users in order to ensure that rates are proportionate to the cost of water service to each customer and not unduly discriminatory, thereby satisfying the Proposition 218 requirements. The total cost of serving each customer class is determined by distributing each of the utility cost components among the user classes based upon the respective service requirements of each customer class. Therefore, a true cost of service rate study enables a water utility to adopt rates based on the true costs to each user class. The purposes of this water utility cost of service study include:

- Proportional allocation of the costs of service to users; and,
- Derivation of unit costs to support the development of water rates.

## COST OF SERVICE PROCEDURE

To design equitable water rates, it is necessary to allocate costs among the various customer classes commensurate with the cost of providing service. Revenue requirements are allocated to customer functional characteristics in the first step of a three-step process and then distributed to customers proportionate to their share of each of the functional characteristics. The second step of the allocation process classifies operating and non-operating expenses to the cost components of water costs, customer costs, and meters and services costs. Water costs, or volume costs, vary with the consumption of water by users over a specified period. Customer costs vary with the number of customers served by the system, or number of equivalent meters connected to the system. The final step of the process translates these costs of service into water rates.

## CLASSIFICATION OF EXPENSES TO COST COMPONENTS

Operating and non-operating expenses are allocated directly to functional cost components to distribute the costs to the various user classes. Table 6 present the allocation of each expense component based on its functional category of volume, customer, and meters and services-based costs. Customer costs are costs that occur regardless of the amount of water used, such as customer service or administrative costs. We recommend that customer costs be covered by the customer's bi-monthly meter charge. Volume costs are usage-based costs, such as water supply, pumping,



treatment, and transmission and distribution costs, and are addressed by the customer’s consumption charge.

**Table 6. Water Fund Cost Allocation by Function**

Description	Total Water Expenses	Base Water Demand	Max Day (Peak) Water Demand	Customer Accounts	Meters & Services	Basis of Classification
<b>Source of Supply</b>						
Water Purchase Costs	\$ 2,100,000	\$ 1,272,810	\$ 827,190	\$ -	\$ -	60.61% Base 39.39% Peak
Other Supply Costs	227,516	137,897	89,618	-	-	60.61% Base 39.39% Peak
Total Source of Supply Costs	2,327,516	1,410,707	916,808	-	-	
<b>Water Treatment &amp; Distribution</b>						
Treatment Costs	30,500	30,500	-	-	-	100% Base
Reservoirs	170,000	85,000	-	85,000	-	50% Base 50% Cust Accts
Operations - Pumping	100,000	60,610	39,390	-	-	60.61% Base 39.39% Peak
Operations Costs - Distribution	18,000	9,000	-	9,000	-	50% Base 50% Cust Accts
Water Main Maintenance	20,000	10,000	-	10,000	-	50% Base 50% Cust Accts
Maintenance - Meters	36,000	-	-	-	36,000	100% Meters & Services
Maintenance - Hydrants	20,000	-	-	20,000	-	100% Customer Accounts
Other Distribution Costs	585,447	292,724	-	292,724	-	50% Base 50% Cust Accts
Total Water Distribution Costs	979,947	487,834	39,390	416,724	36,000	
<b>General &amp; Administrative</b>						
Water Conservation	95,500	-	-	95,500	-	100% Customer Accounts
Billing/Customer Service	406,642	-	-	406,642	-	100% Customer Accounts
Misc General Costs	113,859	-	-	113,859	-	100% Customer Accounts
Allocated Indirect Costs	302,145	-	-	302,145	-	100% Customer Accounts
Total G&A Costs	918,146	-	-	918,146	-	
<b>Capital Requirements</b>						
CIP Program Costs	-	-	-	-	-	As % of Treatment & Distribution
Debt Service	501,513	249,661	20,159	213,269	18,424	As % of Treatment & Distribution
Total Capital Requirements Costs	501,513	249,661	20,159	213,269	18,424	
<b>TOTAL FUNCTIONALIZED COSTS</b>	<b>\$ 4,727,122</b>	<b>\$ 2,148,202</b>	<b>\$ 976,357</b>	<b>\$ 1,548,138</b>	<b>\$ 54,424</b>	
<b>FUNCTIONALIZATION FACTOR</b>	<b>100.0%</b>	<b>45.4%</b>	<b>20.7%</b>	<b>32.8%</b>	<b>1.2%</b>	

Sources: City of Lomita; Black & Veatch.

Table 7 presents the allocation of the revenue requirements calculated for FY 2012/13 through FY 2016/17 into customer and volume components. This allocation is based on the functionalization percentages calculated in Table 6. Please note that Water Conservation Program costs were separated to account for the proposed Tier 2 and 3 rates. This allocation is done in compliance with California Assembly Bill 2882 which clarifies which water system costs can be applied to tiered rates to comply with Proposition 218 cost of service requirements.

**Table 7. Allocation of Revenue Requirements**

Description	Functionalization		FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17				
	Factor										
Base Water Demand	45.4%	\$	1,841,128	\$	1,980,772	\$	2,126,577	\$	2,261,267	\$	2,404,438
Peak Water Demand	20.7%		836,792		900,261		966,529		1,027,745		1,092,817
Customer Accounts	32.8%		1,326,840		1,427,477		1,532,554		1,629,620		1,732,799
Meters & Services	1.2%		46,644		50,182		53,876		57,288		60,916
Rate Revenue Required	100.0%	\$	4,051,405	\$	4,358,692	\$	4,679,536	\$	4,975,920	\$	5,290,970
-----											
Residential Tier 2 & 3 Costs - Water Conservation		\$	95,500	\$	95,500	\$	98,365	\$	101,316	\$	104,355

Sources: City of Lomita, Black & Veatch.

## WATER SYSTEM RATE STRUCTURE DEVELOPMENT

The proposed Lomita water rates are developed such that they meet four major objectives:

- Rates must derive sufficient revenue to support operating and non-operating expenses;
- This revenue must be equitably allocated to the various customer classes commensurate with their use of, and the demand placed on, the water system;
- Rates should be designed to discourage the wasteful use of water; and,
- Rates should be easy to implement by City staff and easy to explain to customers.

In the overall rate setting process, there is often the need to establish a minimum threshold or base level of cost or demand for service, against which the costs or demands of a larger customer base can be measured. A convenient means to measure this demand is by using the size of the customer's water meter. The base level of service is attributed to the smaller meter sizes available in the City which are the billing groups A1, A2 and A3 (5/8 inch meter, 3/4 inch meter and 3/4 by 1 inch meter, respectively). Single-family residential customers most typically use these sizes of meters. Some single-family residential customers utilize a 1 inch meter. In these cases, the ability to draw much more water than smaller meters correlates with a larger bi-monthly meter charge.

These sizes of meters are considered as the base level of cost or demand for water service. The baseline is then used to compare all other meter sizes and to determine the cost or demand for service on each of the meter sizes. As the size of a meter increases, so does the burden that the meter places on the water system. As meter sizes increase, the burden or demand placed on the system increases exponentially; in other words, it is greater than a "one for one" relationship. In order to measure this relationship, it is common practice to use a meter equivalent ratio index. This index reflects the level of service to each customer class based on their potential commodity demand. Meter size ratios are determined by the ratio of average flow rates through each meter to the baseline meters in the A1, A2 and A3 billing groups. Table 8 presents the total number of projected meter equivalencies for each meter size billed by the City. The equivalency figures are used in this analysis to fairly allocate customer related costs of the water system.

**Table 8. Meter Equivalencies**

Meter Size	Meter Ratio	Active Meters	Meter Equivalents	% of Total
5/8", 3/4"	1.00	2,266	2,266	36.1%
3/4" X 1"	1.33	1,131	1,508	24.0%
1"	1.67	496	827	13.2%
1 1/2"	3.33	193	643	10.3%
2"	5.33	145	773	12.3%
3"	10.00	10	100	1.6%
4"	16.67	3	50	0.8%
6"	33.33	-	-	0.0%
8"	53.33	2	107	1.7%
Total Meter Equivalents		4,246	6,274	100.00%

Sources: City of Lomita, Black & Veatch.

### INCLINING TIER METHOD

Like most California agencies, the City of Lomita encourages water conservation among its customers. Furthermore, State legislation mandates that California water agencies reduce their total water demand by 20 percent by the year 2020 (per Senate Bill x7-7). An inclining tier method is an effective rate structure to achieve this goal. With this approach, the unit price of water increases with each successive tier, resulting in an increase in the incremental and the average cost of water with increased water use. To date, the City has experienced reductions in overall consumption amounts since the last rate structure adopted in 2005 utilizing an inclining tier approach.

For inclining tier rate structures, the tier or quantity shift points are general based upon the unique demand characteristics of a user class and are focused on high system demand points to enhance water usage awareness. For this approach, we used a three-tier rate structure for all residential classes. To define consumption tiers for residential customers, we use some of the factors derived in the 2005 study. The threshold between Tier 1 and Tier 2 is based on typical indoor water usage assuming 4 persons per household—the typical density per dwelling unit. This amount is estimated to be at 20 hcf per bi-monthly billing period. The Tier 2/Tier 3 threshold is 35 hcf, a figure based on average bi-monthly use among Lomita residential customers.

For non-residential accounts, we applied a uniform rate structure. For this customer group, water use is varied for each type of non-residential use. As a result, it becomes challenging to assign one threshold breakpoint that would treat all non-residential customers fairly and proportionate to cost of service. Therefore a uniform rate approach would most closely approximate proportionate cost of service for Lomita non-residential customers.

## RECOMMENDED RATE STRUCTURE AND RATES

Table 9 presents the bi-monthly meter charge by meter size for FY 2012/13 through FY 2015/16. Table 10 presents the residential customer class consumption charge calculations for the same fiscal years. Table 11 presents the non-residential consumption charges for the same fiscal years.

**Table 9. Bi-Monthly Meter Charge Analysis**

Description		FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
Total Meters and Services Cost		\$ 1,373,485	\$ 1,477,659	\$ 1,586,430	\$ 1,686,909	\$ 1,793,715
Projected Number of Equivalent Meters		6,274	6,290	6,305	6,321	6,337
<b>Bi-Monthly Meter Cost per Baseline Meter</b>		<b>\$ 36.49</b>	<b>\$ 39.16</b>	<b>\$ 41.93</b>	<b>\$ 44.48</b>	<b>\$ 47.18</b>
	<b>Meter Size</b>	<b>Eq Meter Factor</b>				
	5/8", 3/4"	1.0	1.0	1.0	1.0	1.0
	3/4" X 1"	1.3	1.3	1.3	1.3	1.3
	1"	1.7	1.7	1.7	1.7	1.7
	1 1/2"	3.3	3.3	3.3	3.3	3.3
	2"	5.3	5.3	5.3	5.3	5.3
	3"	10.0	10.0	10.0	10.0	10.0
	4"	16.7	16.7	16.7	16.7	16.7
	6"	33.3	33.3	33.3	33.3	33.3
	8"	53.3	53.3	53.3	53.3	53.3

Sources: City of Lomita, Black & Veatch.

**Table 10. Residential Customer Class Consumption Charge Analysis**

Description	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
Block 1 Water Sales (hcf)	409,046	410,068	411,093	412,121	413,152
Block 2 Water Sales (hcf)	223,116	223,674	224,233	224,793	225,355
Block 3 Water Sales (hcf)	133,869	134,204	134,540	134,876	135,213
Total Water Sales (hcf)	766,031	767,946	769,866	771,791	773,720
Allocation of Revenue Requirements:	\$ 2,147,138	\$ 2,309,993	\$ 2,480,031	\$ 2,637,107	\$ 2,804,075
Allocation of Water Conservation Costs:	\$ 76,894	\$ 76,894	\$ 79,201	\$ 81,577	\$ 84,025

	Current	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
Block 1 (0 - 20 hcf)	\$ 2.00	\$ 2.80	\$ 3.01	\$ 3.22	\$ 3.42	\$ 3.62
Block 2 (21 - 35 hcf)	2.40	2.87	3.08	3.29	3.49	3.70
Block 3 (36+ hcf)	2.88	3.26	3.47	3.69	3.90	4.12

Average Bi-monthly Consumption per Water Connection (hcf):	35
Estimated % of Cumulative Billed Usage at or below 20 hcf:	53%
Estimated % of Cumulative Billed Usage 21 hcf to 35 hcf:	29%
Estimated % of Cumulative Billed Usage over 35 hcf:	17%

*Notes:*

Projected block water sales inflated by customer growth assumption of 0.25% per year.

Block 1 range is based on typical indoor water usage assuming 4 persons per household. Block 2 breakpoint of 35 hcf is based on average bi-monthly use among Lomita residential customers.

Cumulative billed usage figures developed through analysis of US Billed Consumption Report provided by City.

Sources: City of Lomita, Black & Veatch.

**Table 11. Non-Residential Customer Class Consumption Charge Analysis**

	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
Allocation of Rev Reqts & Conservation Costs	\$ 549,388	\$ 589,646	\$ 632,238	\$ 671,643	\$ 713,510
Projected Gross Annual Consumption (hcf)	185,352	185,815	186,280	186,746	187,212

	Current	Rate per hcf				
Uniform Rate	\$2.19 - \$2.62	\$ 2.96	\$ 3.17	\$ 3.39	\$ 3.60	\$ 3.81

Sources: City of Lomita, Black & Veatch.

**TYPICAL CUSTOMER BILLS UNDER RECOMMENDED RATE STRUCTURE**

Table 12 presents sample residential bills using the current and proposed rate structures for each fiscal year presented in this study. This table shows the residential bi-monthly water bill under the

proposed water rate structure format for the following types of water use: Average Single-Family Residential Water User (35 hcf use per billing period), Efficient Residential Water User (15 hcf use per billing period), and Excessive Residential Water User (50 hcf water use per billing period).

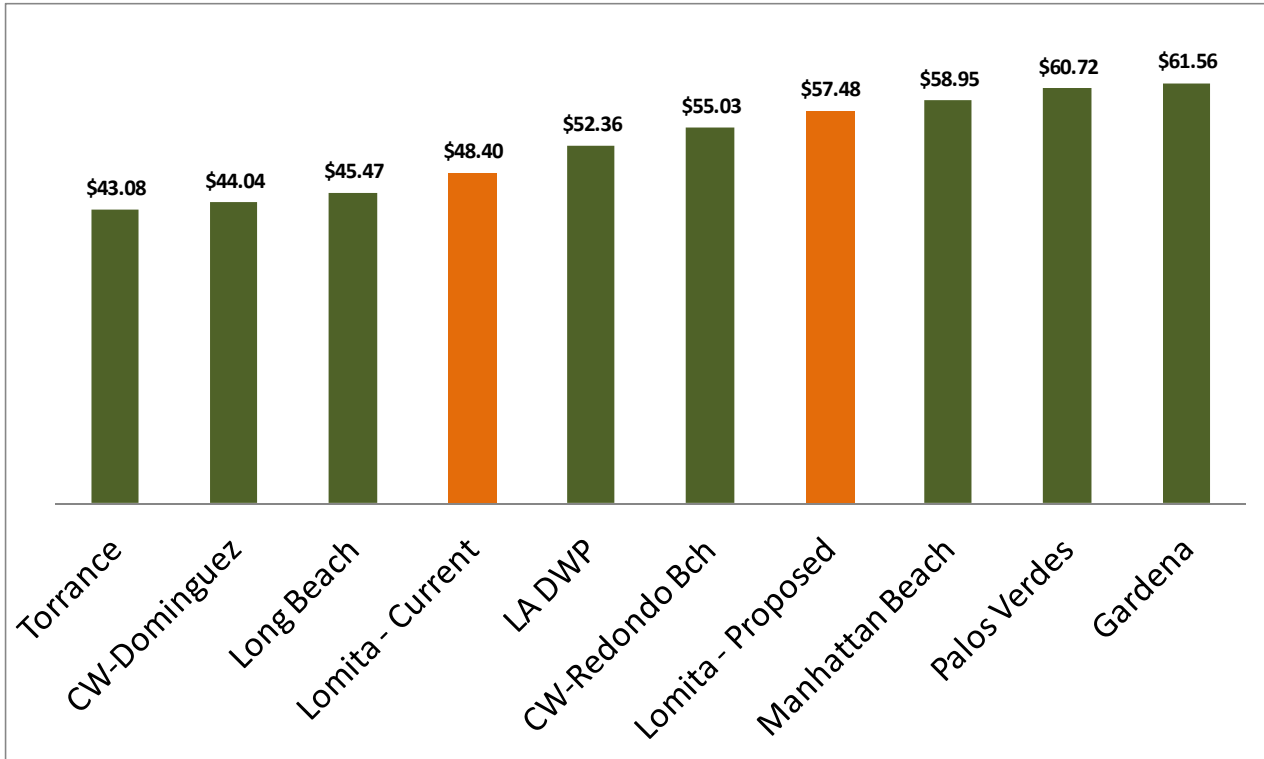
**Table 12. Sample Residential Water Bills Using Proposed Rates**

Description	Current	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
<b>Avg SFR Bill</b>	117.59	135.62	145.47	155.74	165.16	175.14
<b>Bill Difference (\$)</b>	-	<b>18.03</b>	<b>9.84</b>	<b>10.27</b>	<b>9.42</b>	<b>9.98</b>
<b>Bill Difference (%)</b>	<b>0%</b>	<b>15%</b>	<b>7%</b>	<b>7%</b>	<b>6%</b>	<b>6%</b>
Average SFR Use (hcf)	35	35	35	35	35	35
<b>Efficient SFR Bill</b>	69.59	78.53	84.28	90.25	95.73	101.54
<b>Bill Difference (\$)</b>	-	<b>8.94</b>	<b>5.75</b>	<b>5.98</b>	<b>5.48</b>	<b>5.81</b>
<b>Bill Difference (%)</b>	<b>0%</b>	<b>13%</b>	<b>7%</b>	<b>7%</b>	<b>6%</b>	<b>6%</b>
Efficient SFR Use (hcf)	15	15	15	15	15	15
<b>Excessive SFR Bill</b>	160.79	184.56	197.46	211.13	223.67	236.96
<b>Bill Difference (\$)</b>	-	<b>23.77</b>	<b>12.90</b>	<b>13.66</b>	<b>12.54</b>	<b>13.29</b>
<b>Bill Difference (%)</b>	<b>0%</b>	<b>15%</b>	<b>7%</b>	<b>7%</b>	<b>6%</b>	<b>6%</b>
Excessive SFR Use (hcf)	50	50	50	50	50	50

On the next page, we show a comparison (Figure 2) of an average Lomita Single-family Residential customer water bill under current rates and proposed FY 12/13 rates to several neighboring agencies given the latest information of rates from these agencies.

**Figure 2. Lomita Current and Future Rate Comparisons to Neighboring Agencies**

[this figure assumes a monthly bill using 14 units of water (hcf)]





## CONCLUSION

The proposed water rate structure and schedule is based on the City's projected revenue requirements from Fiscal Year 2012/13 through Fiscal Year 2016/17. These revenue needs are allocated by the cost factors each customer class places on the Lomita water utility. The proposed rates are designed to generate additional water revenues to promote revenue adequacy throughout the study period. In addition, the rates were designed to meet the COPs debt coverage requirements and satisfy Proposition 218 requirements by fairly allocating costs to each customer class based on the demand each class places on the water system.

We recommend that the City adopt the proposed rate structure to ensure that the water system has a stable cash flow stream in order to provide for ongoing costs and debt service and allow for the funding of reserves for unscheduled expenses. We also recommend that the City target an operating fund balance of 90 days of annual operations and maintenance expenses to ensure that funds are available for emergency purposes and to mitigate future rate shocks. Finally, we recommend setting a policy of collecting funds annually for CIP reserves targeting a minimum annual balance of approximately \$2,500,000 to provide for future system repairs and replacement due to aging infrastructure issues facing the City.