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CITY OF BRENTWOOD

WATER, WASTEWATER, AND SOLID WASTE RATE STUDY

October 30, 2013
Revised Nov. 6, 2013

HF&H Consultants, LLC

CITY OF BRENTWOOD
Public Works Department
150 City Park Way, Second Floor
Brentwood, CA 94513

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HF&H CONSULTANTS, LLC
201 North Civic Drive, Suite 230
Walnut Creek, CA 94596

HF&H CONSULTANTS, LLC
Managing Tomorrow's Resources Today

201 North Civic Drive, Suite 230
Walnut Creek, California 94596
Telephone: 925/977-6950
Fax: 925/977-6955
www.hfh-consultants.com

Robert D. Hilton, CMC
John W. Farnkopf, PE
Laith B. Ezzet, CMC
Richard J. Simonson, CMC
Marva M. Sheehan, CPA

October 30, 2013

Mr. Miki Tsubota
Assistant Director of Public Works/Engineering
City of Brentwood
150 City Park Way, Second Floor
Brentwood, CA 94513

Subject: Water, Wastewater, and Solid Waste Rate Study

Dear Mr. Tsubota:

HF&H Consultants, LLC, is pleased to submit this report that documents the updates to the City's water, wastewater, and solid waste rates. It has been a pleasure working with you and City Staff on this challenging project.

Very truly yours,

HF&H CONSULTANTS, LLC

John W. Farnkopf, P.E., Senior Vice President
Rick Simonson, C.M.C., Vice President
Rob Hilton, C.M.C, Vice President
Sima Mostafaei, Senior Associate

TABLE OF CONTENTS

TABLE OF FIGURES

ACRONYMS

BOD Biochemical Oxygen Demand; an organic component of wastewater strength
CCWD Contra Costa Water District
CIP Capital Improvement Plan
COS Cost of service
DU Dwelling unit
ECCID East Contra Costa Irrigation District
EDU Equivalent Dwelling Unit; an average single-family residential customer
EMU Equivalent meter unit
EPA Environmental Protection Agency
FY Fiscal Year
GCD Gallons per Capita per Day
GPD Gallons Per Day
HCF or CCF Hundred (100) Cubic Feet of metered water; 748 gallons; a cube of water 4.6 feet on edge
I&I Inflow and Infiltration; stormwater runoff that enters collection systems as inflow through surface openings or as infiltration through subsurface cracks or other openings

Mg/l Milligrams per Liter
MRF Material Recovery Facility
O&M Operations and Maintenance
OPEB Other Post-Employment Benefits
PAYGo Pay-As-You-Go financing, as opposed to debt financing
SFR Single Family Residential
TGAL Thousand Gallons
TSS Total Suspended Solids; an inorganic component of wastewater strength

ACKNOWLEDGEMENTS

City Council
Robert Taylor, Mayor
Joel Bryant, Vice Mayor
Steve Barr, Council Member
Gene Clare, Council Member
Erick Stonebarger, Council Member

City Staff
Paul Eldredge, City Manager
Bailey Grewal, Public Works Director
Miki Tsubota, Assistant Public Works Director - Engineering
Chris Ehlers, Assistant Public Works Director - Operations
Debra Galey, Management Analyst
Pam Ehler, Finance Director
Kerry Breen, Assistant Finance Director

HF&H Consultants, LLC
John Farnkopf, Sr. Vice President
Rick Simonson, Vice President
Rob Hilton, Vice President
Sima Mostafaei, Senior Associate
Marisa Gan, Associate Analyst

Special Counsel
Michael Colantuono, Esq.
Amy Sparrow, Esq.

1. EXECUTIVE SUMMARY

The City of Brentwood (City) provides water, wastewater, and solid waste services to residents and businesses primarily located inside the city limits. In order to increase rates for these services, the City must comply with Article XIIID, Section 6 of the California Constitution, which was enacted by Proposition 218 in 1996. This Constitutional Section requires (1) Revenues derived from fees or charges for property related service shall not exceed the cost to provide service, (2) Revenues derived from fees or charges shall not be used for any purpose other than that for which it was imposed, (3) The amount of a fee or charge upon a parcel shall not exceed the proportional cost of the service attributable to the parcel. The last rate studies to analyze these types of property related fees and services were completed in 2007 for water and wastewater and in 2004 for solid waste.

1.1 STUDY PURPOSE AND OBJECTIVES

The purpose of this study is to conduct a comprehensive analysis of the City's utility rates, including documentation of the analysis, underlying assumptions, and the rationale for the recommended rates. The study is required to demonstrate that the recommended rates result in fees and charges that are proportionate to the cost of service for each customer class.

This study has several key objectives:

- Determine revenue that is necessary to meet the City's requirements, including O&M, capital improvement, and reserve funds.
- Determine the cost of service for each customer class.
- Evaluate alternative rate structures that will ensure that each customer class is paying its proportionate share of the revenue requirements.
- Ensure that the proposed rate structure is compatible with conservation pricing and Proposition 218 mandates for proportionality.

These objectives are met by applying industry standards and by complying with all applicable laws.

1.2 METHODOLOGY

This rate study included three analytic stages for each utility:

1. **Revenue Requirement Projections.** The expenses and revenues are projected based on the City's 10-year fund projections for each of the water, wastewater and solid waste enterprises, incorporating expected cost escalation factors and growth rates. The difference between expenses and revenues must be offset by annual revenue increases.
2. **Cost of Service Analysis.** The revenue requirement for the coming rate year is allocated to each customer class based on the cost of service.
3. **Rate Design and Bill Comparison.** Rates are designed for each customer class to recover its share of the cost of service.

The analyses for each utility were performed in spreadsheet models. The tables presented in this report are derived from these models.

1.3 RATE-STRUCTURE OBJECTIVES

The following are several rate-structure objectives that the recommended rates are designed to achieve:

- **Revenue Sufficiency.** Rates need to be sufficient to fund operating and capital costs and maintain adequate reserves.
- **Revenue Stability.** Rates are designed to recover revenue from the City's fixed and variable charges that will cover its fixed and variable costs.
- **Conservation Signal**. Rates are designed to reward customers for efficiency and to discourage waste.
- **Administrative Ease**. Rates are designed to enable easy implementation and ongoing administration, including monitoring and updating.
- **Affordability.** Rates need to be as affordable as possible while maintaining the City's sound financial position and credit rating.
- **Customer Acceptance**. Rates are designed to be as simple as possible to facilitate customer understanding and acceptance.
- **Fairness.** Rates are designed so that each customer class pays its proportionate share of the required revenue in compliance with legally prescribed rate-structure requirements.

1.4 FINDINGS AND RECOMMMENDATIONS

Revenue Requirement Projections

Figure 1-1 summarizes the annual revenue requirement that rates must be set to fund.

Figure 1-1. Revenue Requirement Projections

		Proposed				
	FY 2012-13	FY2013-14	FY2014-15	FY2015-16	FY2016-17	FY2017-18
Water	$16,730,050	$17,183,420	$18,320,894	$19,076,342	$19,922,221	$20,783,542
Wastewater	$9,900,000	$10,030,140	$10,444,685	$10,908,639	$11,381,964	$11,910,998
Solid Waste	$10,529,359	$9,392,048	$10,072,894	$10,310,196	$10,682,587	$10,971,794

Cost of Service Analysis

Water

The cost of service analysis for Water indicated that the current rates are closely aligned with the cost of serving each class; no adjustments to the rate structure are needed.

Wastewater

The cost of service analysis for Wastewater indicated that the 3% increase in the wastewater revenue requirement in FY 2013-14 impacts residential and non-residential customers differently. Hence, the recommended wastewater rate increases for FY 2013-14 were set to align the resulting revenue from each class with the cost of service for each class. The re-alignment resulted in residential rates increasing an average of 3.0% and non-residential rates increase an average of 1.0%, for FY 2013-14. All subsequent rate increases for the remaining four years are equal percentages for all customer classes.

Solid Waste

The cost of service analysis for Solid Waste indicated that the residential and commercial customer rates are closely aligned with the cost of serving each class, with some minor exceptions at certain rate categories (e.g. commercial cart rates need to be adjusted to match residential cart rates) which are described in more detail in Section 4. Roll-off customers are not generating sufficient revenue to cover the cost of providing service to them and the rates for those customers need to be increased by 6.3% per year for each of the next five years in order to balance the revenues and costs within this customer class.

Implementation

We recommend that City staff confirm the need for each year's rate increase prior to adopting the change. The City has the option to implement a lower rate increase than was adopted but, with one exception, cannot adopt an increase that is higher than the adopted amount without conducting a Proposition 218 notification procedure. The exception applies to increases in wholesale charges for purchased water (e.g., the rate the City pays for raw water) or adjustments for inflation. Automatic adjustments for these "pass through" increases (i.e., increases in costs that are outside the City's control) are permitted without the need to conduct a Proposition 218 notification procedure.[1]

The formula for making the pass-through adjustment is described below and illustrated in **Figure 1-2.**

1. Subtract the previously estimated unit cost (line b) from the updated unit cost (line a). If the result is positive, a pass-through adjustment may be made.
2. Multiply the difference (line c) times the projected units (line d). This amount represents the additional cost to be recovered by the pass-through adjustment (line e).
3. Divide the additional pass-through cost (line e) by the rate revenue from the previously adopted rate increase (line f).
4. Multiply additional pass-through rate increase (line g) times the previously adopted rates to recover the additional pass-through costs.
5. For the next year (Year 2) replace the previously estimated unit cost with the updated unit cost in Year 1 and follow steps (1) through (4).

Figure 1-2. Sample Pass-Through Cost Adjustment

Line		Year 1	Year 2
a	Updated unit cost	$550	$560
b	Previously estimated unit cost	$500	$550
c	Additional unit cost increase	$50	$10
d	Projected units	10,000	10,000
e	Additional pass-through cost	$500,000	$100,000
f	Rate revenue after adopted rate increase	$15,000,000	$16,000,000
g	Additional pass-through rate increase	3.33%	0.63%

[1] Cf. Govt Code Sec. 53756, which states "An agency providing water, sewer, or refuse collection service may adopt a schedule of fees or charges authorizing automatic adjustments of pass-through increases in wholesale charges for water or adjustments for inflation…"

2. WATER RATES

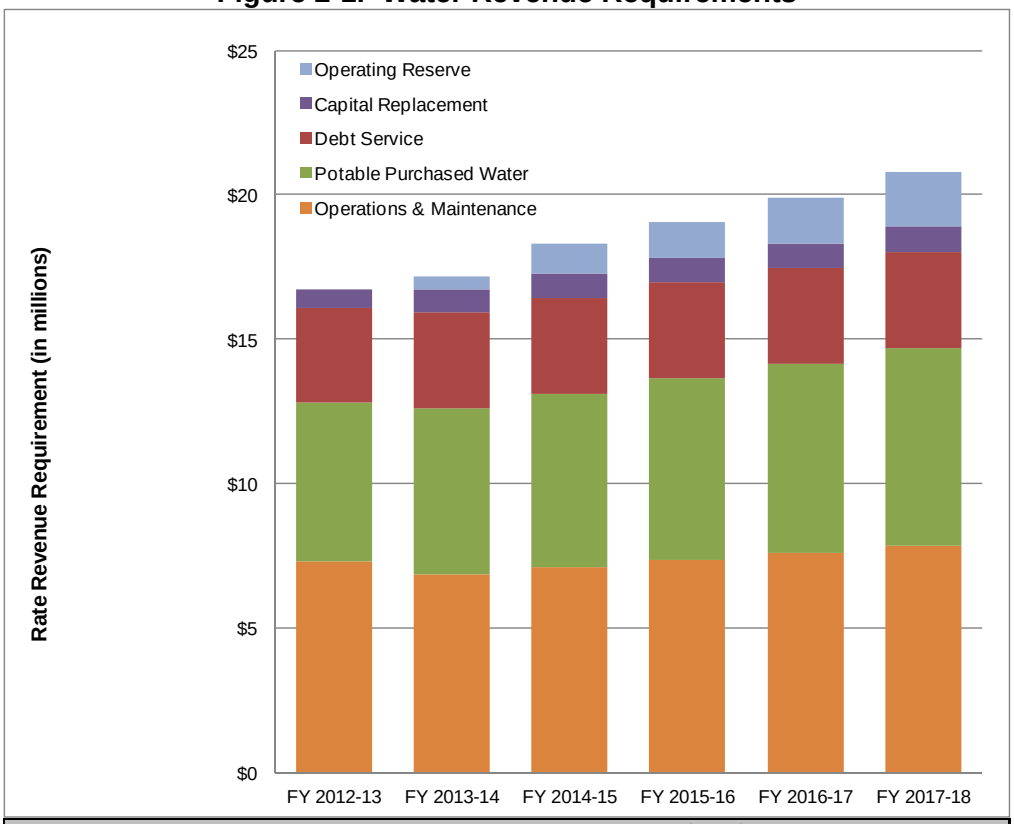
2.1 BACKGROUND

The City provides water service to more than 17,000 residential and non-residential customers through a system of treatment plants, wells, reservoirs, booster pumps, and distribution pipelines; all of the customers are metered. The City currently charges customers monthly bills that are the sum of a base charge plus a volumetric charge. The current base charge is $19.08 per month for a 5/8" or 3/4" meter. The volumetric charge per 1,000 gallons applies to all water used, and is charged using a 4-tier increasing block structure for residential customers and a 2-tier increasing block structure for non-residential customers.

2.2 REVENUE REQUIREMENT PROJECTIONS

Rate analysis begins by determining the revenue requirement that must be met by rates. For purposes of this study, a five-year rate projection period was developed using a spreadsheet model. With this model, revenue requirements were projected for FY 2013-14 through FY 2017-18 by using the City's 10-year water fund projections. **Figure 2-1** summarizes the major categories comprised in the revenue requirements.

Figure 2-1. Water Revenue Requirements



		Projected				
	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Operations & Maintenance	$ 7,291,230	$ 6,833,785	$ 7,106,875	$ 7,364,734	$ 7,597,510	$ 7,843,175
Potable Purchased Water	5,500,000	5,778,867	6,017,707	6,285,014	6,557,720	6,862,523
Debt Service	3,310,570	3,314,045	3,309,045	3,311,295	3,310,295	3,309,120
Operating Reserve	-	435,888	1,051,433	1,264,465	1,590,861	1,887,889
Capital Replacement	628,250	820,835	835,835	850,835	865,835	880,835
Total Revenue Requirement	$16,730,050	$ 17,183,420	$ 18,320,894	$ 19,076,342	$ 19,922,221	$ 20,783,542

Key Assumptions

Potable Purchased Water Expense

The largest operating expense is the cost to purchase water from CCWD and ECCID. The City's budget for FY 2012-13 served as the starting point for projecting purchased water expenses. Each year reflects increases of 3.0% per year for the rising cost of purchasing water. Raw water providers determine the actual cost to the City, which is passed through to the City's customers through rates at cost.

Operations and Maintenance Expense

The City's operations and maintenance expense budget for FY 2012-13 served as the starting point for projecting operations and maintenance expenses (O&M). Personnel costs were modeled in accordance with existing labor contracts, generally, other expenses were increased by 3.0% per year to approximate assumed inflationary increases.

Debt Service

The Enterprise carries existing debt service for bonds issued in 2008 to finance a portion of the Water Treatment Plant. The City plans to fund future capital improvements of existing infrastructure on a pay-as-you-go (PAYGo) basis using a portion of annual rate revenue and available reserves.

Capital Replacement

Contributions are made to the City's Replacement Fund (Fund 563) that vary from year-to-year and range from $820,000 in FY 2013-14 to $880,000 in FY 2017-18 based on the schedule for replacement of aging infrastructure and equipment at the end of their service lives, as well as PAYGo capital improvement projects.

Operating Reserve

Contributions are made to the City's Operating Reserve that vary from year-to-year and range from $436,000 in FY 2013-14 to $1.88 million in FY 2017-18 to provide working capital for monthly O&M expenses funding for capital improvement projects and to meet the City's fiscal policy.

Projected Revenue Increases

Potable Water

The amount by which revenue needs to be increased to cover the revenue requirements is determined by comparing the revenue requirements with the revenue from current rates. Annual surpluses or deficits are credited or debited to reserves. **Figure 2-2** shows the annual revenue increases that are required.

Figure 2-2. Potable Water Fund Balance

		Projected				
	Current	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Revenue Requirement	$16,730,050	$ 17,183,420	$18,320,894	$19,076,342	$ 19,922,221	$ 20,783,542
Revenue from Current Rates	16,730,050	16,929,478	17,269,200	17,457,555	17,700,635	17,928,066
Surplus/(Deficit)	$0	($253,942)	($1,051,694)	($1,618,787)	($2,221,586)	($2,855,476)
Fund Balance (before increase)	$13,073,687	$12,934,280	$12,620,492	$11,070,408	$9,132,130	$7,679,322
Revenue Increase		**3.0%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**
Revenue from Increases		$253,942	$1,051,694	$1,618,787	$2,221,586	$2,855,476
Fund Balance (after increase)	$13,073,687	$13,188,222	$13,926,128	$13,995,221	$14,279,708	$15,690,863

Note that the Fund balance after rate increases reflects not only the additional revenue from rate increases but also other income such as interest earnings.

Non-Potable Water

The City obtains raw water, primarily used for irrigation purposes, via the Roddy Ranch Pump Station on the ECCID Canal, as well as reclaimed water from the Wastewater Treatment Plant, for distribution through the non-potable system. Current non-potable users include golf courses, parks and parkways, schools, and commercial landscaped areas. The majority of non-potable expense is attributable to the cost of purchased raw water from ECCID (32%) and power (33%). Raw water providers determine the actual cost to the City, which is passed through to the City's customer rates at cost. This also applies to the cost of power that is incurred by the Water Enterprise Fund.

Non-potable water rates were analyzed and modeled separately from the potable rates to determine revenue increases. A five-year rate projection period was developed, similar to potable water, and costs were projected for FY 2013-14 through FY 2017-18 by using the City's 10-year water fund projections. Revenue requirements have determined that the non-potable revenue should increase by the same percentage as potable water revenue to meet cost requirements.

Operating and Capital Reserve Funds

Revenue is increased not only to cover projected expenditures but also to maintain operating and capital reserves at adequate levels per City Council fiscal policy and prudent industry practice. It is the City's practice to maintain two reserve funds for Water operations: an operating reserve and a capital replacement reserve.

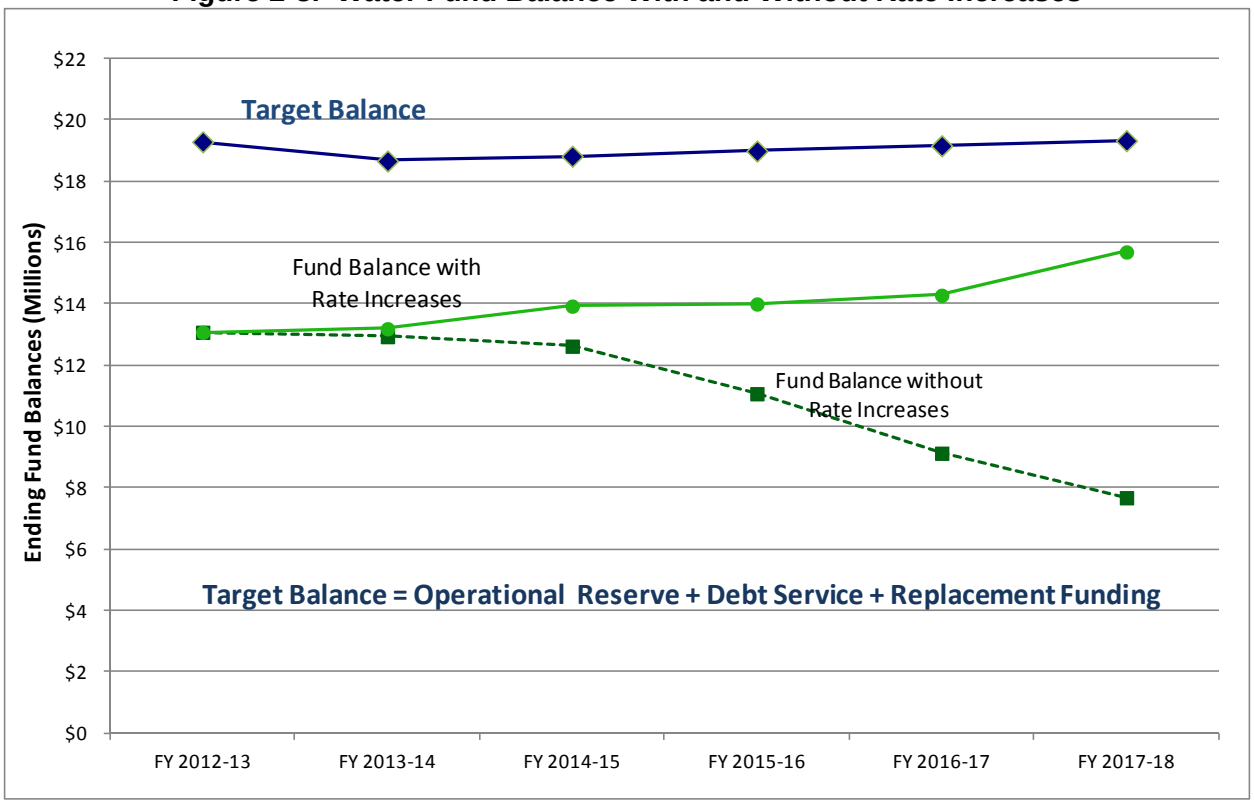
The operating reserve is based on the amount of revenue that is needed to provide month-to-month cash flow for O&M expenses and debt service without borrowing from the General Fund, as is industry practice. In addition, a capital replacement reserve has been established for capital improvements so that sufficient funds are available to pay for ongoing PAYGo projects without cash flow constraints.

For purposes of rate setting, a target reserve balance was established that is comprised of approximately 30% of annual O&M expense, annual debt service, and a cash margin for capital replacement. The capital component is set to equal current replacement reserves of $13.4 million plus 30% of annual depreciation expense to adequately prepare for and fund systematic

replacement without the need for significant rate fluctuations. This will prevent the City from having to fund future replacement and/or upgrade projects with debt or short-term rate increases and better allocates the cost of the facilities/equipment over time to those receiving benefit, achieving what rate-makers refer to as "inter-generational equity".

The preceding modeling assumptions lead to the projected fund balances shown in **Figure 2-3**. The need for the series of revenue increases in **Figure 2-2** is demonstrated by the resulting fund balances. Without the revenue increases, the fund balance would drop to unacceptably low levels.

Figure 2-3. Water Fund Balance With and Without Rate Increases



2.3 COST OF SERVICE ANALYSIS

Cost of service analysis determines each customer classes' proportionate share of the revenue requirement. Rates are then designed to ensure that each class is paying its share of the cost to provide service. The cost of service is determined in three steps.

1. Revenue requirements are categorized by functions or services.

2. The unit cost of service is calculated by dividing the cost for each service by its respective units of service.

3. The revenue requirements are allocated to each customer class by multiplying the unit cost by the units of service utilized by each class.

These three steps follow the rate-making procedure set forth by the American Water Works Association in its Manual M-1.

Allocation of Costs to Functions

Water supply systems provide capacity to meet demands. For purposes of this rate study, the revenue requirements are accordingly apportioned into two categories corresponding to capacity and demand functions. The capacity function is defined as those operating and capital costs that are primarily fixed in nature and independent of the metered water use. Demand costs are variable and dependent on the metered water use.

Much of the water systems costs are fixed and do not vary in proportion to flow, such as salaries, annual capital improvements, and debt service. These fixed costs are typically recovered partly from fixed charges and partly from volumetric charges. The portion of capacity costs that is recovered through fixed charges is based on the size of the service connection. The remainder of the capacity costs plus the demand costs are recovered from volumetric charges that are specifically designed to recover the cost of service from each customer class (potable and nonpotable).

The City's existing fixed charge ("base rate") generates 34% of the total rate revenue, which is consistent with the industry guideline recommended by the California Urban Water Conservation Council so that the volumetric portion of rates sends a strong conservation signal to consumers while providing sufficient revenue stability (via the fixed component of rates) to meet the enterprise's cash flow needs. The City's current allocation of fixed and variable rate revenue will continue to generate the same proportions to provide both a conservation price signal and revenue stability.

Revenue Requirement Allocations to Customer Classes

The allocation of revenue requirements to the capacity and demand functions is patterned after the existing rate structure in which 34% of the rate revenue is generated by fixed charges and 66% by volumetric charges. This relationship is consistent with industry practice. As a result, $5,722,600 of the total revenue requirement in FY 2013-14 is generated by the City's fixed base charge.

The allocation of the remaining revenue requirements to the demand function is $11,065,621 (not including non-potable water). This revenue is generated in the form of the City's volumetric charge. The allocation of the demand costs to each customer class is shown in **Figure 2-4.** The unit cost is applied to the projected units of demand for each class to determine each class' share of the demand function.

Figure 2-4. FY 2013-14 Cost of Service - Water

	Projected Demand (tgal)	Unit Cost of Service	Cost of Service Allocation
Residential	2,537,009	$3.413	$8,658,739
Non-Residential	705,216	$3.413	$2,406,882
Total	3,242,225		$11,065,621

Note: COS Allocation calculation may not foot due to rounding

2.4 RATE DESIGN AND PROJECTED RATE INCREASES

Under Article XIIID, Section 6 of the California Constitution, the City is legally required to set its rates so that the resulting charges do not exceed the proportional cost of service attributable to parcels receiving the service. Section 2.3 demonstrates that the City's current rate structure satisfies this requirement for each customer class.

The rate structure for each customer class distributes the revenue among customers in each class based on a rate design that reflects reasonable rate structuring objectives. The objectives listed in Section 1 are common objectives recognized in the industry for setting rates. The City's current rate structure has been in place for many years and was designed to meet these objectives.

In reviewing customer billing data, the current rate structure continues to meet the City's rate-making objectives. The number of tiers, the location of breakpoints between tiers, and the price increment between tiers are appropriate for the City's customers.

Residential Rate Structure

Four tiers are commonly used for residential customers in order to effectively target the price signal within a comparatively narrow band of usage. Based on an analysis of recent residential monthly customer bills, median winter water use is 6 tgals, median water use is 10 tgals, and median summer water use is 17 tgals. By comparison, the Tier 1 breakpoint is 10 tgals, which covers bills up to the median. The Tier 2 breakpoint is 20 tgals, which covers slightly more than median summer usage. The Tier 3 breakpoint is 30 tgals, which is three times the median and almost twice the median summer bill.

The pricing for each of these tiers is commensurate with the conservation signal. The Tier 1 rate is set at 88% of the average cost of service ($3.41/tgal) because it is less expensive to serve below-average demands. The Tier 2 rate is set at 104% of the average cost because the system can supply median summer demands without excessive costs. The Tier 3 rate is set at 125% of the average cost to cover the higher peak demands imposed on the system by high usage. The Tier 4 rate is set at 146% of the average cost to recover the highest peak demands as well as conservation program costs that are available to encourage efficiency.

Non-Residential Rate Structure

For non-residential customers, two tiers are used to separately target small and large users, who span a much broader range of consumption; the use of more than two tiers for non-residential customers is not as common. The breakpoint and pricing for each of the two tiers follow the residential rate design. Because non-residential demand in Tier 2 can range much higher, there are no common breakpoints for additional tiers that can effectively signal conservation.

Non-potable rates

The existing uniform rate structure without tiers is appropriate for the non-potable water customer class. The primary rate-making objective for this class of customers is equitable cost recovery, which is achieved with a uniform rate structure.

Projected Rates

We recommend that the City apply the recommended rate increases across-the-board, without rate structure changes, to the existing potable and non-potable rate structures to generate the required revenue:

- FY 2013-14 (effective 1/14): 3.0%
- FY 2014-15 (effective 7/1/14): 3.0%
- FY 2015-16 (effective 7/1/15): 3.0%
- FY 2016-17 (effective 7/1/16): 3.0%
- FY 2017-18 (effective 7/1/17): 3.0%

With these increases, rates should cover ongoing contractual and operating cost increases and maintain adequate reserves through FY 2017-18. Each year, prior to implementing the rate increases, City staff should confirm the need for the rate increase. The City can implement a lower rate increase, if conditions warrant, without going through the Proposition 218 notification process. If higher rate increases are needed that exceed the adopted rates, the City will need to initiate a new Proposition 218 proceeding. As noted above, a pass-through increase for wholesale water costs and power can be accomplished without a new Proposition 218 notification process.

The recommended annual increases and corresponding residential, commercial and non-potable water rates are summarized in **Figure 2-5.**

Figure 2-5. Water Monthly Rates - Current and Projected

		Planning Period				
Customer Class	**Current**	**FY 2013-14**	**FY 2014-15**	**FY 2015-16**	**FY 2016-17**	**FY 2017-18**
Rate Increase		**3.0%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**
Monthly Base Rate						
5/8" or 3/4" Meter	$19.08	$19.65	$20.24	$20.85	$21.47	$22.12
1" Meter	$28.62	$29.48	$30.36	$31.27	$32.21	$33.18
1.5" Meter	$57.24	$58.96	$60.73	$62.55	$64.42	$66.36
2" Meter	$95.40	$98.26	$101.21	$104.25	$107.37	$110.59
3" Meter	$171.73	$176.88	$182.19	$187.65	$193.28	$199.08
4" Meter	$248.05	$255.49	$263.16	$271.05	$279.18	$287.56
6" Meter	$515.19	$530.65	$546.57	$562.96	$579.85	$597.25
Usage Rate						
Residential						
Tier 1: 1-10 Units	$2.99	$3.08	$3.17	$3.27	$3.37	$3.47
Tier 2: 11-20 Units	$3.56	$3.67	$3.78	$3.89	$4.01	$4.13
Tier 3: 21-30 Units	$4.26	$4.39	$4.52	$4.66	$4.79	$4.94
Tier 4: 31+ Units	$4.97	$5.12	$5.27	$5.43	$5.59	$5.76
Non-Residential						
Tier 1: 1-10 Units	$2.99	$3.08	$3.17	$3.27	$3.37	$3.47
Tier 2: 11+ Units	$3.56	$3.67	$3.78	$3.89	$4.01	$4.13
Non-Potable						
All Units	$1.10	$1.13	$1.17	$1.20	$1.24	$1.28

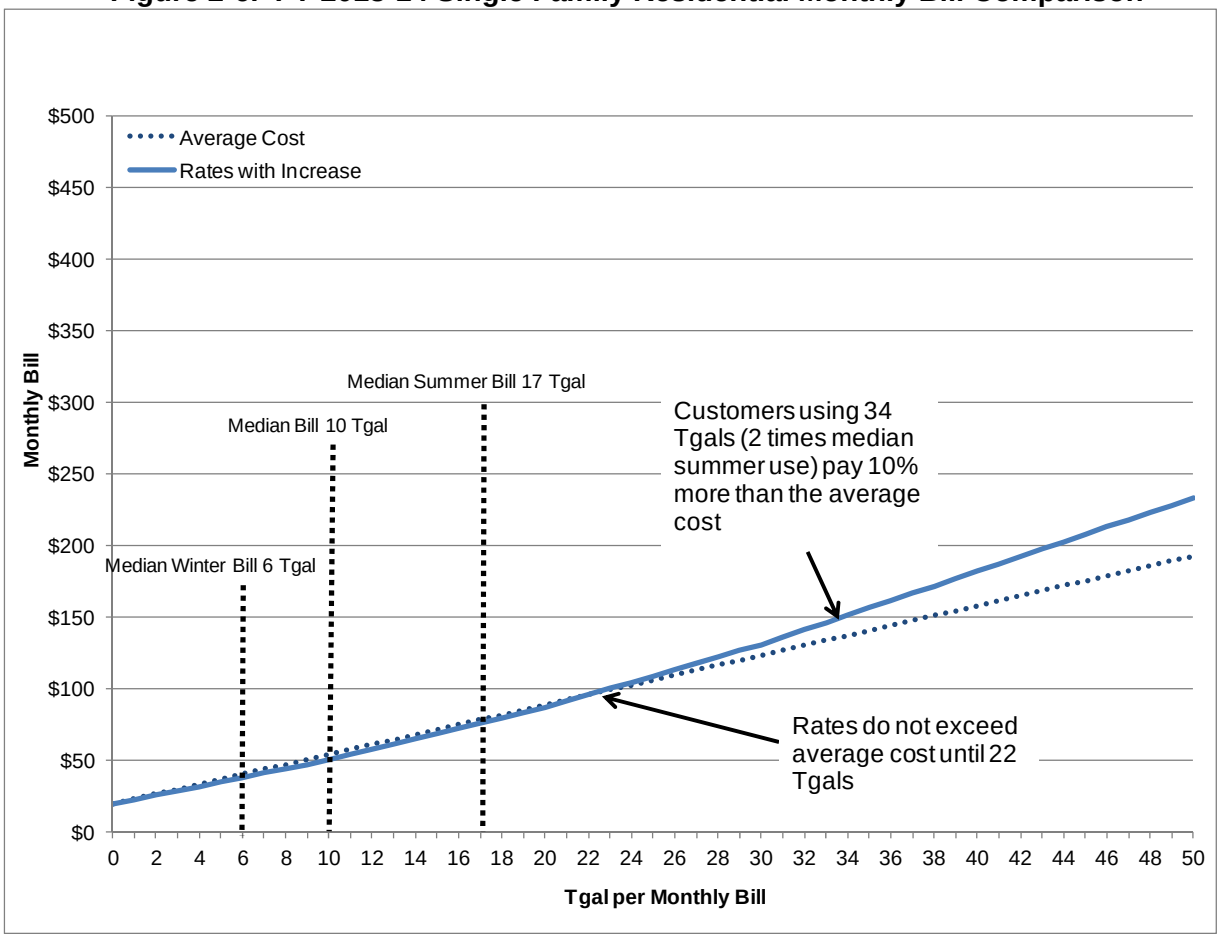
Customer Bill Comparison

Figure 2-6 compares the City's proposed FY 2013-14 bills (including the City's proposed rate change effective January 2014) using the existing rate structure with bills that would result if the SFR customers were charged a single, uniform usage rate per thousand gallons. A uniform rate is a rate that does not increase per unit as demand increases and in effect represents the average unit cost of water. By contrast, the City's existing increasing block rate structure increases per unit with increased use. As a result, increasing block rate structures like the City's shift costs away from low use (which is less expensive to serve because it can be accommodated by the city's least expensive water sources) to high use (which is more expensive to serve because it triggers reliance on the City's most expensive water sources and requires the largest portion of the City's capital investment in its water utility to provide storage and distribution capacity for these larger demands). This shift produces a price signal to conserve as well as reflects the differing costs to serve small and large demands.

The City has legal authority[2] to determine the strength of the price signal by how much it reduces the rates for low use and increases them for high use provided that its tiers are cost-justified as Prop. 218 requires. **Figure 2-6** shows that, with the proposed rates, customers do not pay more than the average cost until 22,000 gallons; only 6% of customer bills exceed this amount. Even so, the resulting price is not out of proportion to the burden. At two times the median summer use (34,000 gallons), customers pay only 10% more than the average cost. The amount charged in excess of the average cost for high use falls well below how much it would cost the City if all customer use were high. For example, the capital cost to double the capacity of a water system is about 1.7 times more. Because the City's rate structure does not yield bills that exceed this amount for high use, it is our opinion that the City's rates are reasonable.

[2] **Cf**. *Brydon v. EBMUD.*

Figure 2-6. FY 2013-14 Single Family Residential Monthly Bill Comparison



3. WASTEWATER RATES

3.1 BACKGROUND

The City provides wastewater collection and treatment services to the City's 17,000 residential and non-residential customers through a system of pipelines and pump stations that transport wastewater to the City's treatment facilities. The City currently charges customers a monthly base charge in addition to a variable charge based on the volume of water usage (because wastewater originates as potable water use). All residential customers pay a variable charge per 1,000 gallons based on the average winter volume of water used (i.e., the time of year when very little outdoor water is used, as outdoor water use does not generate wastewater to the City's utility), while non-residential customers pay based on actual volume of potable water used monthly. The volume of water that is charged on the residential bill per month is adjusted annually to reflect actual potable water use.

3.2 REVENUE REQUIREMENT PROJECTIONS

To determine whether additional rate revenue is required, projected operating and capital expenses are compared with projected revenue from current rates. Rates are then proposed to be increased so that expenses are covered and operating and capital reserves are maintained.

Key Assumptions

The City's 10-year wastewater fund projections served as the basis for determining the revenue requirement projections for the five-year planning period from FY 2013-14 through FY 2017-18. **Figure 3-1** summarizes the projected expenditure trends, which are noteworthy in the following respects:

Operations and Maintenance Expense

The City's direct and indirect (e.g., administrative overhead, facilities maintenance, information systems, etc.) operations and maintenance expenses budget for FY 2012-13 served as the starting point for projecting operations and maintenance expenses (O&M). Generally, on-going maintenance and operations expenses were increased by approximately 2.7% per year to approximate inflationary increases, growth and in accordance with existing labor contracts. It should be noted that the City's five-year projections include the proposed addition of three full-time equivalent personnel by FY 2017-18 to accommodate additional demands on the wastewater system due to anticipated new residential and commercial developments along with increasingly stringent regulatory requirements.

Debt Service

Debt Service expense includes annual principal and interest expense for a State Revolving Fund Loan entered in FY 2000-01 to finance Phase I construction of a 5 million gallon per day wastewater treatment facility. In addition, the City is expecting to receive a State Revolving Fund Loan in FY 2016-17 (which will result in additional debt service payments beginning in FY 2017-18) for Phase II of the City's wastewater treatment plant expansion. The City plans to fund other future capital improvements on a pay-as-you-go (PAYGo) basis using a portion of annual rate revenue and available reserves (as described in the "Operating Reserve" and "Capital Replacement" section below).

Operating Reserve

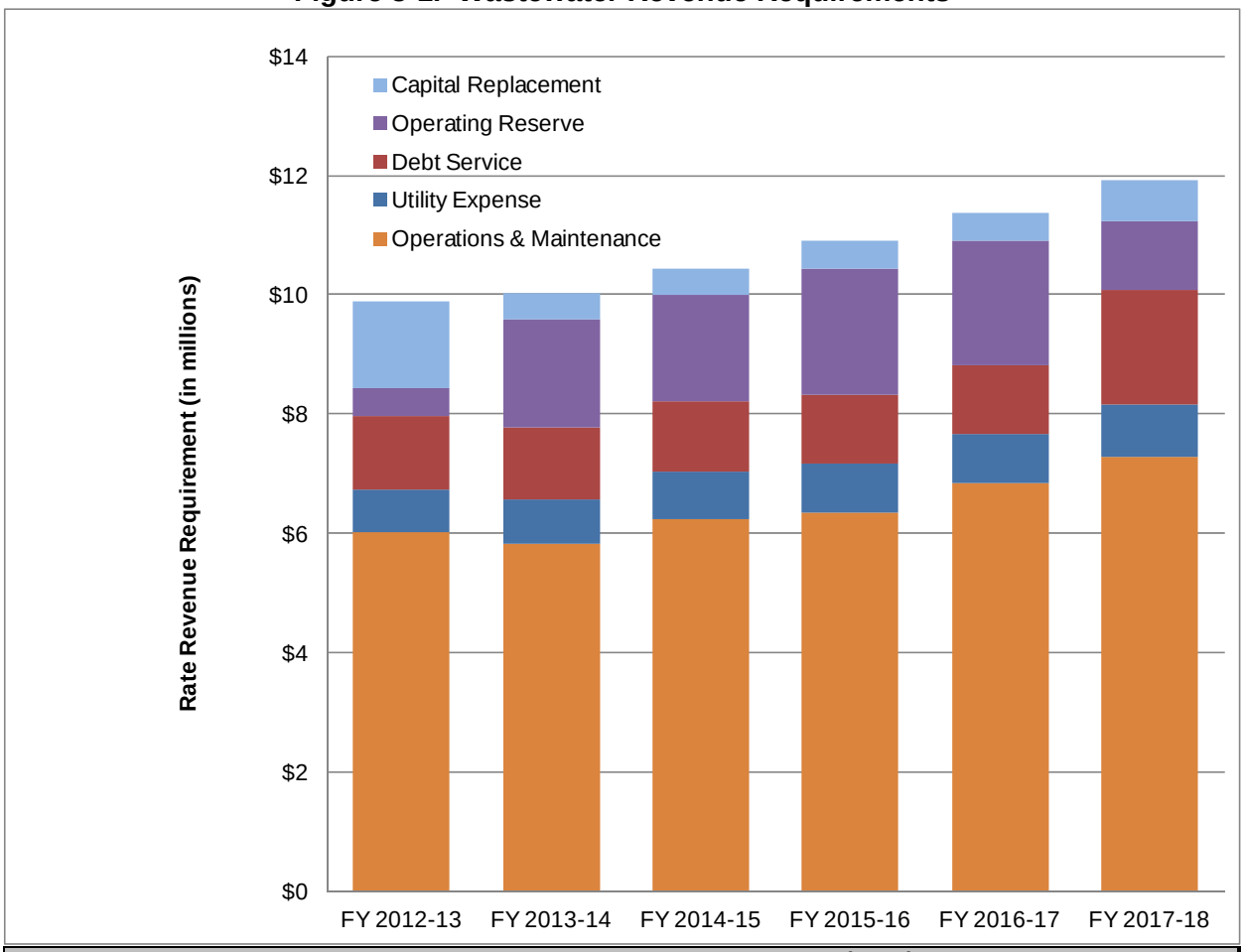
Contributions are made to the City's Operating Reserves (net of non-rate revenue) that vary from year-to-year and average $1,786,000 from FY 2013-14 through FY 2017-18. The

operating reserves are used to provide working capital for monthly O&M expenses, funding for capital improvement projects, and maintain an adequate debt service coverage ratio to comply with bond covenants. Capital improvement projects that are funded from the operating reserve range from $1.8 million to $4.8 million based on projected needs.

Capital Replacement

Contributions are made to the City's Replacement Fund that vary from year-to-year and range from $446,000 in FY 2013-14 to $686,958 in FY 2017-18, based on projected capital replacement needs. The Replacement Fund is used to fund capital replacement improvements.

Figure 3-1. Wastewater Revenue Requirements



		Projected				
	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Operations & Maintenance	$ 6,020,489	$ 5,818,424	$ 6,249,258	$ 6,356,709	$ 6,842,205	$ 7,294,721
Utility Expense	715,000	$ 750,000	$ 776,171	$ 803,253	$ 831,279	$ 860,282
Debt Service	1,225,988	1,206,939	1,187,545	1,167,802	1,147,702	1,936,595
Operating Reserve	465,157	1,808,268	1,780,702	2,118,307	2,093,710	1,132,442
Capital Replacement	1,473,366	446,510	451,010	462,568	467,068	686,958
Total Revenue Requirement	$ 9,900,000	$ 10,030,140	$ 10,444,685	$ 10,908,639	$ 11,381,964	$ 11,910,998

Figure 3-2 summarizes the projected revenue requirements, revenue from current rates (i.e., without any rate increases), annual surpluses and deficits, and the fund balance before rate increases. **Figure 3-2** also shows the projected revenue increases to offset future deficits so that the wastewater reserves are maintained at an adequate level (see discussion on the adequate level of reserves). In FY 2013-14, the revenue increases is slightly less than the actual projected deficit as a result of the cost of service adjustments to the residential and non-residential customers (see discussion pertaining to Figure 3-9)

Figure 3-2. Wastewater Fund Balance

		Projected				
	Current	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Revenue Requirement	$ 9,900,000	$ 10,030,140	$ 10,444,685	$ 10,908,639	$ 11,381,964	$ 11,910,998
Revenue from Current Rates	9,900,000	9,738,000	9,845,118	9,982,950	10,112,728	10,274,532
Surplus/(Deficit)	$0	($292,140)	($599,567)	($925,689)	($1,269,236)	($1,636,466)
Fund Balance (before increase)	$16,741,494	$16,214,364	$13,894,860	$11,046,820	$10,914,931	$9,679,750
Revenue Increase		**2.7%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**
Revenue from Increases		$265,140	$571,452	$896,324	$1,238,597	$1,604,403
Fund Balance (after increase)	$16,741,494	$16,479,504	$14,731,452	$12,779,736	$13,886,445	$14,255,667

Note that the Fund balance after rate increases reflects not only the additional revenue from rate increases but also other income such as interest earnings.

Operating and Capital Reserve Funds

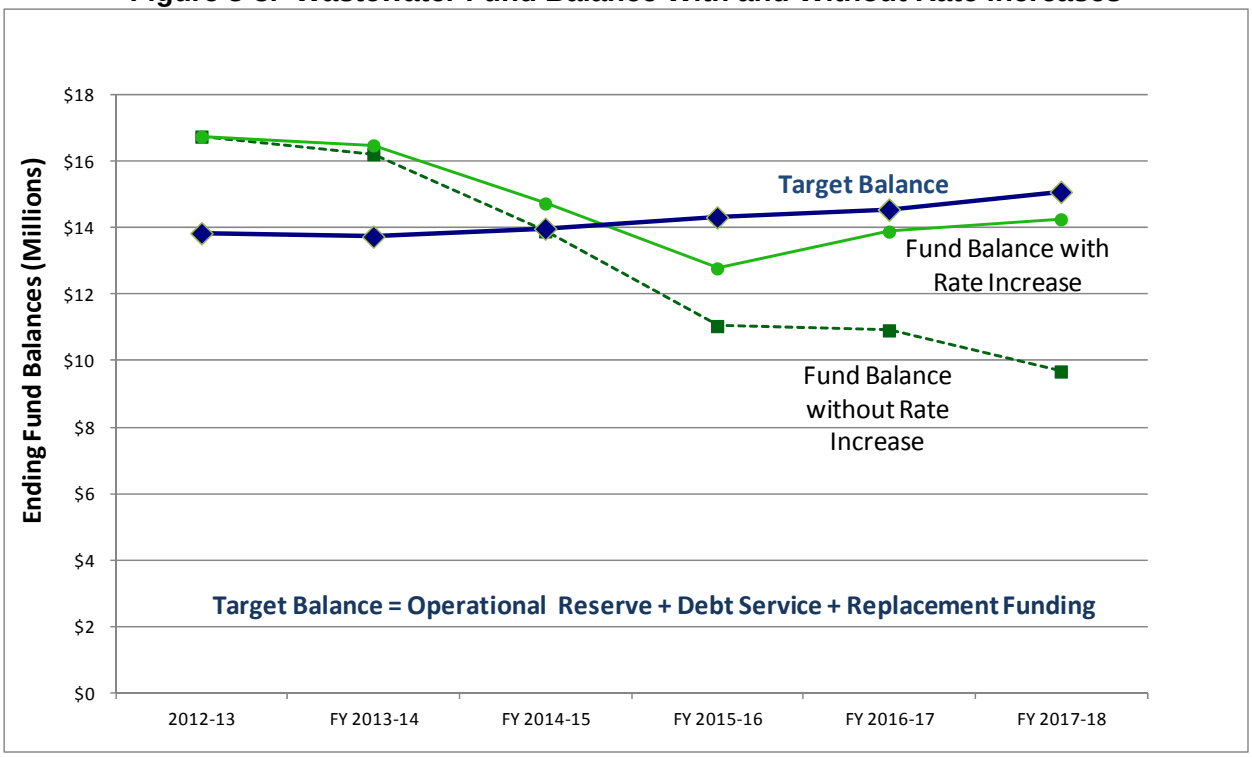
The revenue increases indicated in **Figure 3-2** are required to offset the City's increased costs and to maintain adequate reserves. Revenue is increased not only to cover projected expenditures but also to maintain operating and capital reserves at adequate levels per City Council fiscal policy and prudent industry practice. It is the City's practice to maintain two reserve funds for Wastewater operations: an operating reserve and a capital replacement reserve.

The operating reserve is based on the amount of revenue that is needed to provide month-to-month cash flow for O&M expenses and debt service without borrowing from the General Fund, as is industry practice. In addition, a capital replacement reserve has been established for capital improvements so that sufficient funds are available to pay for ongoing PAYGo projects without cash flow constraints.

For purposes of rate setting, a target reserve target balance was established that is comprised of approximately 30% of annual O&M expense, annual debt service, and a cash margin for capital improvements. The capital component is set to equal current replacement reserves of $11.4 million plus 30% of annual depreciation expense to adequately prepare for and fund systematic replacement without the need for significant rate fluctuations. This will prevent the City from having to fund future replacement and/or upgrade projects with debt or short-term rate increases and better allocates the cost of the facilities/equipment over time to those receiving benefit, achieving what rate-makers refer to as "inter-generational equity".

Figure 3-3 shows the combined projected fund balance, with and without the recommended rate increases, compared with the target balance. The line labeled "Target Balance" (diamond symbols) is the sum of the target balances for the Operating Reserve and the Capital Replacement Reserve.

Figure 3-3. Wastewater Fund Balance With and Without Rate Increases



3.3 COST OF SERVICE ANALYSIS

The City's current wastewater rates determine how much of the total revenue requirement is paid by each customer class (e.g., single-family residents, multi-family residents, commercial accounts, industrial accounts). A cost of service analysis determines how much each class should pay based on its respective share of flow and wastewater strength (i.e., biochemical oxygen demand and total suspended solids, the standard measures of wastewater strength) as stronger wastewater is more costly to treat than weaker and larger volumes are more expensive than smaller. A cost of service analysis should be conducted periodically to account for any material changes in the loadings.

Allocation of Costs to Functions

The cost of service analysis is a process by which expenses (i.e., the City's FY 2013-14 revenue requirement) are allocated to the four functions that represent the wastewater services the City provides to customers. Three of the functions are related to the "loading" on the collection system and treatment facility produced by the volume and strength of wastewater; the fourth function is related to customer accounts. The revenue requirement is allocated to functional categories that represent the functions performed by the City's facilities: customer accounts (i.e., customer service activities, which includes billing), flow (i.e., the volume of wastewater to be treated), biochemical oxygen demand (BOD; a standard measure of the strength of wastewater), and total suspended solids (TSS; another standard measure of the strength of wastewater), as shown in **Figure 3-4**.

Collection system costs were allocated 90% to flow because that is the predominant function of the pipelines that convey wastewater. A small portion was allocated to BOD and TSS in recognition that stronger wastewater can lead to greater depreciation of the collection system. The treatment costs were allocated to flow, BOD, and TSS based on experience with other treatment plants, which indicates that the majority of facilities at a treatment plant are designed

to treat flow. Utility billing allocated entirely to customer accounts. The composite allocation factors from the foregoing allocations was used to allocate indirect costs.

When each of these functionalized costs is divided by the associated units of service, the unit costs of service are derived. For example, the unit cost per parcel to service accounts is $12.07 per year; the unit cost per hundred cubic feet of flow is $3.55, as shown **in Figure 3-4**. The unit costs are independent of customer class. In other words, the unit cost to treat flow is the same regardless of customer class because it represents the average for all customers. The unit costs are not rates, however. Unit costs are used to determine each classes' share of the revenue requirement based on each classes' required services (i.e., commercial users generate stronger wastewater and therefore pay a higher rate per thousand gallons of wastewater generated). The rate design determines how the revenue requirement is paid for by each customer depending on which class of service it belongs.

Figure 3-4. Wastewater Allocation of FY 2013-14 Costs to Functions

	FY 2013/14 Revenue Requirement	*Alloc. Method*	Allocation Factors					Allocated Costs				
			Accounts	Flow	BOD	TSS	Total	Accounts	Flow	BOD	TSS	Total
Direct Expenses												
Collection												
Salaries and Benefits	$ 733,145	*1*	*0%*	*90%*	*5%*	*5%*	*100%*	$ -	$ 659,831	$ 36,657	$ 36,657	$ 733,145
Supplies and Services	$ 520,767	*1*	*0%*	*90%*	*5%*	*5%*	*100%*	$ -	$ 468,691	$ 26,038	$ 26,038	$ 520,767
Debt Service - Existing	$ 120,694	*1*	*0%*	*90%*	*5%*	*5%*	*100%*	$ -	$ 108,625	$ 6,035	$ 6,035	$ 120,694
Op and Capital Reserves	$ 1,318,427	*1*	*0%*	*90%*	*5%*	*5%*	*100%*	$ -	$ 1,186,585	$ 65,921	$ 65,921	$ 1,318,427
	$ 2,693,034											
Treatment												
Salaries and Benefits	$ 1,344,099	*2*	*0%*	*50%*	*25%*	*25%*	*100%*	$ -	$ 672,050	$ 336,025	$ 336,025	$ 1,344,099
Supplies and Services	$ 1,706,917	*2*	*0%*	*50%*	*25%*	*25%*	*100%*	$ -	$ 853,459	$ 426,729	$ 426,729	$ 1,706,917
Debt Service - Existing	$ 1,086,245	*2*	*0%*	*50%*	*25%*	*25%*	*100%*	$ -	$ 543,123	$ 271,561	$ 271,561	$ 1,086,245
Op and Capital Reserves	$ 1,598,515	*2*	*0%*	*50%*	*25%*	*25%*	*100%*	$ -	$ 799,258	$ 399,629	$ 399,629	$ 1,598,515
	$ 5,735,777											
Utility Billing	$ 795,571	*3*	*100%*	*0%*	*0%*	*0%*	*0%*	$ 795,571	$ -	$ -	$ -	$ 795,571
Direct Expenses	$ 9,224,382							$ 795,571	$ 5,291,619	$ 1,568,596	$ 1,568,596	$ 9,224,382
					% of Total Direct Expenses			*8.6%*	*57.4%*	*17.0%*	*17.0%*	*100.0%*
Indirect Expenses												
Interfund Services	$ 909,092	*4*	*8.6%*	*57.4%*	*17.0%*	*17.0%*	*100%*	$ 78,406	$ 521,506	$ 154,590	$ 154,590	$ 909,092
Internal Services	$ 546,317	*4*	*8.6%*	*57.4%*	*17.0%*	*17.0%*	*100%*	$ 47,118	$ 313,398	$ 92,901	$ 92,901	$ 546,317
Publications & Dues	$ 12,515	*4*	*8.6%*	*57.4%*	*17.0%*	*17.0%*	*100%*	$ 1,079	$ 7,179	$ 2,128	$ 2,128	$ 12,515
Non-Rate Revenue	$ (662,165)	*4*	*8.6%*	*57.4%*	*17.0%*	*17.0%*	*100%*	$ (57,109)	$ (379,855)	$ (112,600)	$ (112,600)	$ (662,165)
Indirect Expenses	$ 805,758							$ 69,494	$ 462,228	$ 137,018	$ 137,018	$ 805,758
Total Direct and Indirect Expenses	**$ 10,030,140**						**A**	**$ 865,065**	**$ 5,753,847**	**$ 1,705,614**	**$ 1,705,614**	**$ 10,030,140**

Allocation Methods:

1 *Direct attribution with HF&H estimate of flow, BOD, and TSS*
2 *Treatment Plant Operations*
3 *Customer Account Allocations - Direct attribution*
4 *Indirect Expense Allocation: Composite of 1, 2, 3*

Unit Cost Calculations

Units of Service B	18,633	1,243,390	2,696,030	2,431,756
Unit Type	Billing Unit	Tgal	Pounds	Pounds
Unit Costs (A ÷ B) =	**$46.43**	**$4.6275**	**$0.633**	**$0.701**
	$/Billing Unit	*$/Tgal*	*$/lb*	*$/lb*

Customer Class Loadings

Wastewater flows from individual customers are not metered; therefore winter potable water use data for residential customers is the closest representation of flows that customers discharge to the City's system for conveyance and treatment. The assumption is that residents use minimal outside or irrigated water during the winter period; outdoor water use does not generate wastewater as does indoor use. A full twelve months of actual potable water flows were used for non-residential customers. HF&H obtained the metered potable water use data from the City

and summarized the data by customer class. The respective flow data was then multiplied by the strength concentrations stipulated by the State Water Resources Control Board's Guidelines[3] to determine the total loadings on the system for each customer class; Figure 3-5 presents the results of this calculation.

Figure 3-5. Wastewater Customer Class Loadings

Customer Class	Billing Units	Flow Tgal	BOD mg/l	TSS mg/l	BOD lbs	TSS lbs
Residential						
Single-Family	16,267	963,788	200	175	1,203,288	1,052,877
Multi-Family	1,880	60,528	200	175	75,569	66,123
	18,147	1,024,316	200	175	1,278,857	1,119,000
Non-Residential						
School	29	18,008	130	100	14,614	11,242
Restaurant	79	31,814	1000	600	198,596	119,157
Inst/Chch/HOA	48	16,684	200	175	20,830	18,226
Retail	94	15,284	150	150	14,311	14,311
Office/Bank	112	23,292	150	150	21,810	21,810
Auto Sls/Rpr	20	1,860	150	150	1,742	1,742
Gas Sta	15	11,965	150	150	11,204	11,204
Grocery	9	14,842	800	800	74,123	74,123
Laundromat	2	3,329	150	110	3,117	2,286
Barber/Beauty	11	464	150	150	435	435
Hotel No Rest	2	1,942	310	120	3,759	1,455
Laundry - comm	1	146	670	680	613	622
Carwash	5	6,422	20	150	802	6,013
Bakery	3	461	1000	600	2,877	1,726
Mixed	1	32	225	200	45	40
Other	54	12,293	200	175	15,348	13,430
Non-Residential	486	158,839	290	225	384,224	297,821
Inflow & Infiltration (I & I)		60,236			1,032,950	1,014,935
Total	18,633	1,243,390	260	234	2,696,030	2,431,756

Allocation of Inflow & Infiltration

Inflow and Infiltrations (I&I) was subdivided into two portions: that portion reaching the City's sewer utility via private laterals and that portion reaching it via public sewers. The subdivision was based on the relative length of laterals compared to public sewers, assuming that all these pipes are equally susceptible to I&I, which is a reasonable assumption in our professional judgment. **Figure 3-6** shows the allocation of the lateral and public sewer portions of I&I to the functional categories for each customer class.

I&I was allocated to each customer class based on each class' proportionate share of laterals for the lateral portion and their proportionate share of flow (from **Figure 3-5**) for the public sewer portion. Single family accounts are assumed to have 1 equivalent lateral per account. All non-single family accounts are assumed to have 1.5 equivalent laterals per account[4].

[3] State Water Resources Control Board. *Revenue Program Guidelines*. Appendix G. 1979
[4] Equivalent laterals for non-single family accounts assumed at 1.5 laterals per account to reflect the average circumference of non-single family laterals being 1.5 times greater than single family laterals.

Figure 3-6. Allocation of Inflow & Infiltration to Customer Classes

Inflow & Infiltration (I&I) Allocation to Customer Classes	Accounts Laterals	Flow Tgal	BOD lbs	TSS lbs
Inflow & Infiltration (to be Allocated) = 60,236 Tgals (from Figure 3-5)				
Lateral portion	50%	30,330	520,106	511,035
Public sewer portion	50%	29,906	512,844	503,899
		60,236	1,032,950	1,014,935
Step 1: Allocate lateral portion based on assumed equivalent laterals				
Residential	19,087	29,213	500,963	492,226
Non-Residential				
School	44	67	1,142	1,122
Restaurant	118	180	3,094	3,040
Inst/Chch/HOA	73	111	1,906	1,873
Retail	142	217	3,714	3,649
Office/Bank	168	257	4,406	4,329
Auto Sls/Rpr	30	46	787	774
Gas Sta	23	35	594	583
Grocery	14	21	364	358
Laundromat	3	5	79	77
Barber/Beauty	17	26	440	432
Hotel No Rest	3	5	79	77
Laundry - comm	2	2	39	39
Carwash	8	11	197	193
Bakery	5	7	125	122
Mixed	2	2	39	39
Other	82	125	2,139	2,102
Total Non-Residential	729	1,116	19,143	18,809
Subtotal Laterial Portion	**19,816**	**30,330**	**520,106**	**511,035**
Step 2: Allocate public sewer portion based on flow				
Residential	19,087	25,891	394,361	397,978
Non-Residential				
School	44	455	4,507	3,998
Restaurant	118	804	61,241	42,379
Inst/Chch/HOA	73	422	6,423	6,482
Retail	142	386	4,413	5,090
Office/Bank	168	589	6,726	7,757
Auto Sls/Rpr	30	47	537	619
Gas Sta	23	302	3,455	3,985
Grocery	14	375	22,857	26,362
Laundromat	3	84	961	813
Barber/Beauty	17	12	134	155
Hotel No Rest	3	49	1,159	518
Laundry - comm	2	4	189	221
Carwash	8	162	247	2,139
Bakery	5	12	887	614
Mixed	2	1	14	14
Other	82	311	4,733	4,776
Total Non-Residential	729	4,015	118,483	105,921
Subtotal Public Sewer Portion	**19,816**	**29,906**	**512,844**	**503,899**
Total I&I Allocated		**60,236**	**1,032,950**	**1,014,935**

Estimates of customer accounts, flow, BOD, and TSS associated with each customer class are summarized in **Figure 3-7**, after allocating I&I. The totals agree with **Figure 3-5** before I&I was distributed among customer classes. The total units of service are used for determining the unit costs of service as described below.

Figure 3-7. Summary of Units of Service (after allocating I&I)

Customer Class	Billing Units	Flow Tgal	BOD lbs	TSS lbs
Residential	18,147	1,079,420	2,174,180	2,009,204
Non-Residential	486	163,970	521,850	422,552
Total	18,633	1,243,390	2,696,030	2,431,756

Revenue Requirement Allocation

In a cost of service analysis, all customer classes are treated equally through the application of the same unit costs, which is the fundamental purpose of cost of service analysis. A cost of service analysis fairly distributes the revenue requirement to each customer class, after which rates can be designed to generate the revenue required of each class. **Figure 3-8** presents the results of the revenue requirement allocation, which is calculated for each customer class by multiplying the per unit costs (calculated in **Figure 3-4**) by the customer class loadings from **Figure 3-7** above.

Figure 3-8. Wastewater Revenue Requirement Allocations to Customer Classes

	FY 2013-14 Revenue Requirement Allocation				
Customer Class	**Billing Units**	**Flow (Tgal)**	**BOD (lbs)**	**TSS (lbs)**	**Total**
Residential					
Units of Service (from Figure 3-7)	18,147	1,079,420	2,174,180	2,009,204	5,280,951
Per Unit Costs (from Figure 3-4)	$46.43	$4.6275	$0.63	$0.70	
	$/Billing Unit	*$/Tgal*	*$/lb*	*$/lb*	
Residential Revenue Requirement	$842,490	$4,995,068	$1,375,472	$1,409,240	$8,622,270
Non-Residential					
Units of Service (from Figure 3-7)	486	163,970	521,850	422,552	1,108,858
Per Unit Costs (from Figure 3-4)	$46.43	$4.6275	$0.63	$0.70	
Non-Residential Revenue Requirement	$22,574	$758,779	$330,143	$296,374	$1,407,870
				Total Revenue Requirement	$10,030,140

Figure 3-9 compares the cost of service allocations (from **Figure 3-8**) with the projected revenue for FY 2013-14 under the existing rate structure. Comparing the differences for each class indicates whether the class is paying more or less than its share of the cost of service. The differences for both classes are small but indicate that their current rates require a slight adjustment to cover their respective shares of the FY 2013-14 revenue requirement. The differences indicate that revenue from non-residential customers is closer to covering that class' share of the revenue requirements as newly calculated here on current data.

Figure 3-9. Wastewater FY 2013-14 Cost of Service Comparison

Customer Class	FY 2013-14 COS Revenue Requirement	FY 2013-14 Est. Revenue at Current Rates	COS vs Current	
			$	%
Residential	8,622,000	8,345,000	277,000	3%
Non-Residential	1,408,000	1,393,000	15,000	1%
Total Revenue Requirement	$ 10,030,000	$ 9,738,000	$ 292,000	3%

Although a 3.0% revenue increase is indicated, adjustments to the base charge and variable charge (see below) resulted in a 2.7% adjustment for FY 2013-14 revenue, as shown in **Figure 3-2.**

3.4 RATE INCREASES

A five-year revenue projection was prepared based on the FY 2013-14 through FY 2017-18 revenue requirements (see **Figure 3-1**). After each classes' share of the revenue requirement was determined by the cost of service analysis (see **Figure 3-9**), the FY 2013-14 base and variable charges were adjusted.

Base Charges

Base charges are charged per residential and non-residential account and are intended to cover approximately one-third of total costs. This fixed charge produces revenue stability and ensures that all customers pay at least a minimum amount even when their wastewater flow is very low. This is equitable because the Sewer Fund would still incur at least 70% of its costs absent any flow.

To maintain the existing level of revenue stability, base charges for all customers were increased equally by 3% per year.

Variable Charges

Variable charges recover costs based on flow. For residential customers, average winter metered water use is used, which is when flow includes the least amount of irrigation. For non-residential customers, year-round metered water use is used; any non-residential customers with significant water use has or can obtain a separate irrigation meter.

Residential variable charges were increased 3% per year through FY 2017-18. The residential variable charge will be capped at $36.33 FY 2013-14; this ceiling rate will increase the subsequent 4 years of this Study. For new residential customers in new construction, charges will be based on the citywide residential average wastewater usage due to lack of actual usage history. New residential customers in an existing dwelling are proposed to be charged the lesser of (1) citywide average or (2) previous wastewater usage history at the service address. Non-residential variable charges were increased 1% in FY 2013-14 for the slight cost of service adjustment identified in Section 3.3, and increased 3% in subsequent years. By increasing non-residential variable charges 1% in FY 2013-14, non-residential rates are aligned with the cost of service. It is assumed that during the five-year planning period, the loadings remain fairly stable, which is both common in the industry and reasonable to assume. Hence, the rates in the remaining four years may be calculated by multiplying the FY 2013-14 rates by 3%.

Figure 3-10. Wastewater Proposed Monthly Charges

	Current Rate	PROPOSED RATES PER MONTH				
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Base Charge	13.78	14.19	14.62	15.06	15.51	15.97
Lateral Maintenance Fee	1.70	1.75	1.80	1.86	1.91	1.97
Variable Charge per unit Residential	4.80	4.94	5.09	5.25	5.40	5.56
Residential Maximum per month (Base +Variable)	49.05	50.52	52.04	53.60	55.21	56.86
Variable Charge per unit Non-Residential						
Auto Sales and Repair	5.29	5.34	5.50	5.67	5.84	6.01
Barber & Beauty Shop	4.41	4.45	4.59	4.73	4.87	5.01
Bakery	13.55	13.69	14.10	14.52	14.95	15.40
Car Washes	4.55	4.60	4.73	4.88	5.02	5.17
Gas Stations	5.12	5.17	5.33	5.49	5.65	5.82
Grocery Stores	11.53	11.65	11.99	12.35	12.73	13.11
Hotels without Restaurants	5.28	5.33	5.49	5.66	5.83	6.00
Institutions, Churches, HOAs	4.66	4.71	4.85	4.99	5.14	5.30
Laundromats	4.80	4.85	4.99	5.14	5.30	5.46
Laundry, Commercial	6.22	6.28	6.47	6.66	6.86	7.07
Office Buildings, Banks	4.72	4.77	4.91	5.06	5.21	5.37
Restaurants	12.79	12.92	13.31	13.70	14.12	14.54
Retail Stores	4.80	4.85	4.99	5.14	5.30	5.46
Schools	4.41	4.45	4.59	4.73	4.87	5.01
Other Commercial	4.92	4.97	5.12	5.27	5.43	5.59
Mixed Use	6.44	6.50	6.70	6.90	7.11	7.32

4. SOLID WASTE RATES

4.1 BACKGROUND

The City provides its 16,055 residential customers with weekly solid waste collection and every-other-week recycling, and yard waste collection. The City currently charges its residents $22.71 per month for once-a-week servicing of a 32-gallon solid waste container, $33.76 for a 64-gallon container, or $40.52 for a 96-gallon solid waste container and a 64- or 96-gallon recycling and yard waste container. All materials are delivered to the City's transfer station at 2300 Elkins Way. Solid waste and green waste are transferred to Keller Canyon Landfill in Bay Point and recyclables are transferred to Pacific Rim Material Recovery Facility in Benicia. The City also provides solid waste, mixed recycling, and cardboard collection service to commercial and multi-family customers at varying frequencies in a range of container sizes to meet each customer's needs. These commercial and multi-family customers are charged a monthly rate based on their subscription level (e.g., 1 cubic yard bin, serviced 1 time per week; 3 cubic yard bin, serviced 3 times per week).

4.2 REVENUE REQUIREMENT PROJECTIONS

To determine whether additional rate revenue is required, projected operating and capital expenses are compared with projected revenue from current rates. Rates are then increased so that the expenses are covered and operating and capital reserves are maintained.

Key Assumptions

The City's 10-year solid waste fund projections served as the basis for determining the revenue requirement projections for the ten-year planning period from FY 2013-14 through FY 2021-22. The projection of annual revenues and expenditures during this period was conducted by the City's staff and provided to HF&H. **Figure 4-1** summarizes the projected expenditure trends, which are noteworthy in the following respects:

Personnel Services Expense

The City's direct and indirect (e.g., administrative overhead, facilities maintenance, information systems, etc.) operations and maintenance expenses budget for FY 2012-13 served as the starting point for projecting operations and maintenance expenses (O&M). Generally, on-going maintenance and operations expenses were increased by approximately 2.7% per year to approximate inflationary increases, growth and in accordance with existing labor contracts. The City's projections include the proposed addition of one staff person in FY 2014-15 to accommodate additional demands on the solid waste enterprise due to anticipated new residential and commercial developments along with increasingly stringent regulatory requirements.

Supplies and Services Expense

Supplies and services costs are projected to increase by 18% from FY 2012-13 through FY 2017-18. The majority of the City's supplies and service expenses are projected to gradually increase during the planning period at the projected rate of inflation and growth. Limited exceptions to this include: disposal and processing costs (noted above), and contractual services (which increase and decrease from year to year based on specific projects which will require outside support).

Included in the supplies and services expenses are disposal and processing costs. Disposal and processing costs are projected to increase at 5% which is based on a combination of: 1) the City's contract with Allied Waste for these services, which includes an automatic annual inflationary adjustment; and, 2) projected growth in tonnage (assumed at approximately 1% annually).

Debt Service

The Solid Waste Enterprise does not currently have any debt service, nor are there plans to incur debt to finance purchases during the planning period.

Capital Replacement

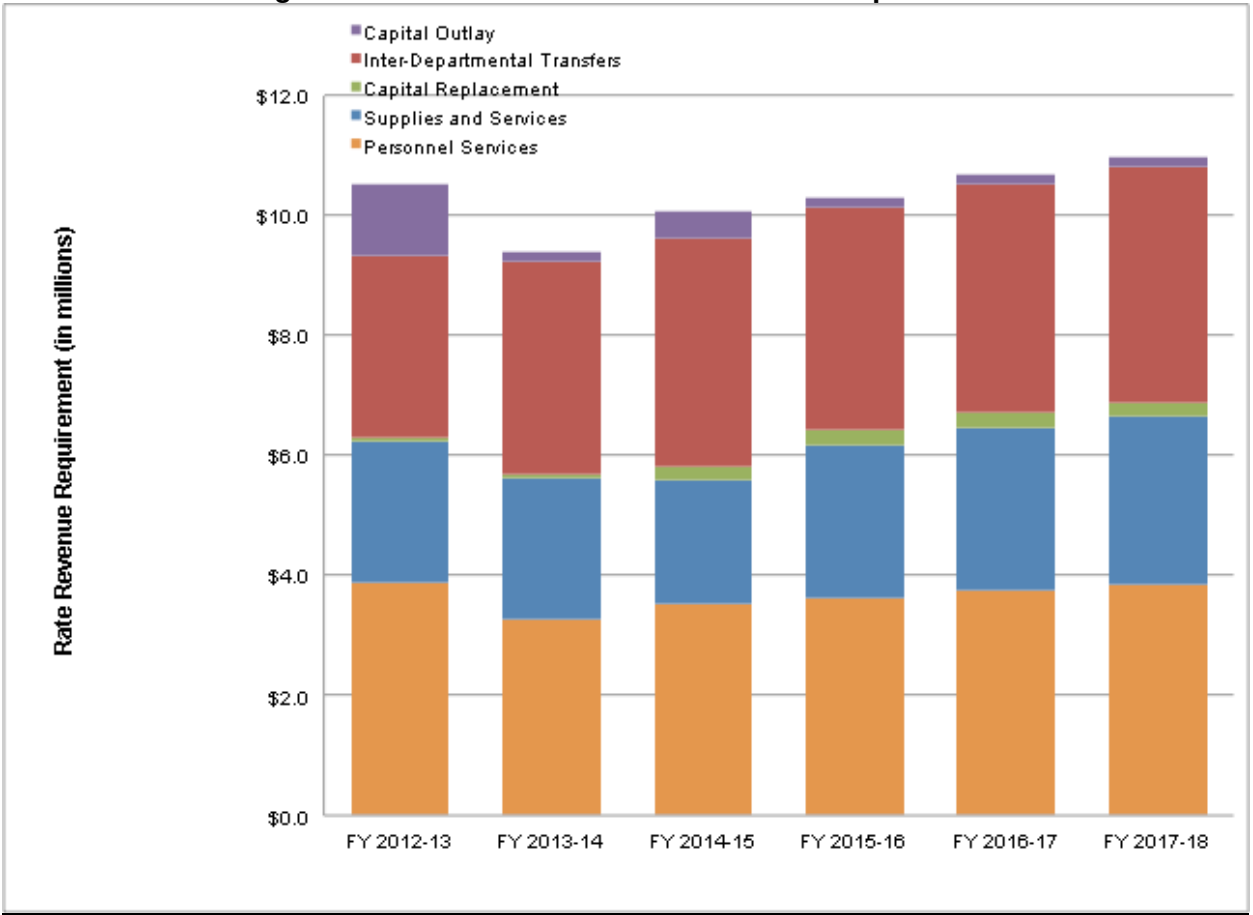
The City will continue to pre-fund the replacement of solid waste vehicles through interdepartmental transfer to the Equipment Replacement Fund and will begin to fund the replacement of the transfer station upon its completion during FY 2014-15.

Interdepartmental Transfers

Interdepartmental transfers are made to other funds within the City (e.g. Information Services, Fleet Maintenance, Facilities, Insurance, etc.) based on the Solid Waste Enterprise's use of the services provided by those funds. The annual amount of the interfund transfers varies from year to year and averages 2.7% annually from FY 2013-14 to FY 2017-18.

Included in the interdepartmental transfers is a vehicle impact transfer. The Solid Waste Enterprise will begin transferring $397,000 per year in FY 2013-14to cover the costs associated with the deterioration caused by solid waste collection vehicles on the City-maintained road network. This cost impact is documented by a nexus study commissioned by the City to identify the appropriate amount of the transfer.

Figure 4-1. Solid Waste Annual Revenue Requirement



		Projected				
	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Personnel Services	$ 3,867,840	$ 3,253,863	$ 3,526,791	$ 3,618,498	$ 3,754,153	$ 3,854,643
Supplies and Services	$ 2,361,593	$ 2,364,959	$ 2,047,574	$ 2,556,170	$ 2,719,609	$ 2,798,287
Capital Replacement	$ 70,903	$ 70,903	$ 240,134	$ 240,134	$ 240,134	$ 240,134
Inter-Departmental Transfers	$ 3,018,145	$ 3,529,389	$ 3,792,533	$ 3,737,408	$ 3,806,488	$ 3,910,362
Capital Outlay	$ 1,210,878	$ 172,934	$ 465,863	$ 157,986	$ 162,204	$ 168,368
	$ 10,529,359	$ 9,392,048	$ 10,072,894	$ 10,310,196	$ 10,682,587	$ 10,971,794

Figure 4-2 summarizes the projected revenue requirements, revenue from current rates (i.e., without any rate increases), annual surpluses and deficits, and the fund balance before rate increases. **Figure 4-2** also shows the projected revenue increases to offset future deficits so that the solid waste reserves are maintained at an adequate level (see Section 4.3 for discussion on the adequate level of reserves). The rate increases that are projected would become effective July 1 of each year, with the exception of the FY 2013-14 increase which would become effective in 2014 (six months into the fiscal year).

Figure 4-2. Solid Waste Fund Balance

		Projected				
	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Revenue Requirement	$10,529,359	$9,392,048	$10,072,894	$10,310,196	$10,682,587	$10,971,794
Revenue from Current Rates	$8,774,380	$8,952,501	$9,050,064	$9,175,951	$9,294,344	$9,441,578
Surplus/(Deficit)	($1,754,979)	($439,547)	($1,022,830)	($1,134,245)	($1,388,243)	($1,530,216)
Fund Balance (before increases)	$2,763,641	$2,456,997	$1,737,897	$909,087	($171,978)	($1,392,468)
Revenue Increase	0.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Revenue from Increase	$0	$202,826	$555,022	$856,914	$1,174,937	$1,514,883
Fund Balance (after increases)	$2,763,641	$2,659,823	$2,495,746	$2,523,849	$2,617,721	$2,912,114

To generate the necessary revenue to maintain the reserve fund balance noted in **Figure 4-2** above, the percent increases noted could be applied across-the-board to all current residential, commercial, and roll-off service rates. However, the City's current rate structure requires some minimal restructuring so that each customer class is paying its proportionate share of the total revenue requirement as calculated above. Section 4.3 of this report discusses the rate structuring analysis conducted to apportion the revenue requirement to each customer class (e.g., residential and commercial) and the resulting rate increases.

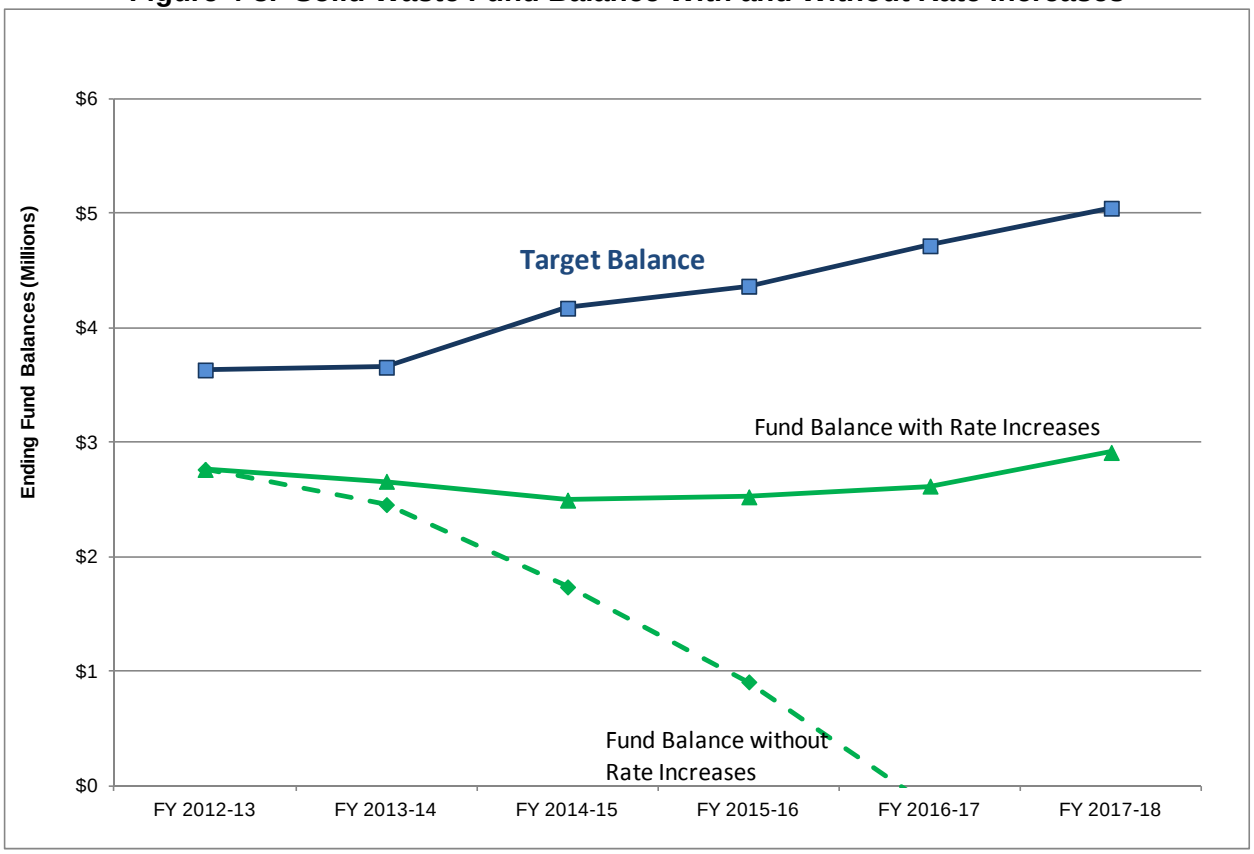
Operating and Capital Reserve Funds

The revenue increases indicated in **Figure 4-2** are required to offset the City's increased costs and to maintain adequate reserves per City Council fiscal policy. Rates must be set so that the fund balance achieves the target balances for the reserve funds. For purposes of rate setting, a reserve target balance was established that is comprised of approximately 30% of annual operating costs (net of depreciation and capital expenses), and a cash margin for future capital costs. The City currently pre-funds its regular capital needs using an equipment replacement fund for vehicles and has not historically needed a separate capital reserve. With the cash financing of the new transfer station, the City will begin to pre-fund the future replacement and/or upgrades to that facility and other solid waste assets by making an annual contribution to a capital fund of approximately $240,000 per year. This will prevent the City from having to fund future replacement and/or upgrade projects with debt or short-term rate increases and better allocates the cost of the facilities/equipment over time to those receiving benefit, achieving what rate-makers refer to as "inter-generational equity".

The preceding modeling assumptions lead to the projected fund balances shown in **Figure 4-3**. The need for the series of revenue increases in **Figure 4-2** is demonstrated by the resulting fund balances. Without the revenue increases, the fund balance would drop to unacceptably low levels.

Figure 4-3 indicates that the fund balance is below the target in FY 2012-13. The combined fund balance declines dramatically starting in FY 2014-15 if revenues are not increased. With the projected revenue increases, the fund balance will drop to its lowest point in FY 2014-15 and will continue to grow and approach the target balance in FY 2020-21. This balances rate increases over time without the need for significant rate fluctuations and customer impacts which would potentially create "rate-shock", when sudden changes in utility charges have distorting effects in customers and economic activity, decreasing demand and generating diseconomies of scale. Provided that rates are proportionate to less than cost of service, the demands of Proposition 218 are met.

Figure 4-3. Solid Waste Fund Balance With and Without Rate Increases



4.3 RATE DESIGN AND PROJECTED RATE INCREASES

The rate design derives rates that will generate the appropriate amount of revenue (i.e., each customer classes' proportionate share of the revenue requirement) for each customer class. In general, the City has found that each class of customers appears to pay its own cost of service, with the exception that temporary roll-off customers (which are not subject to Proposition 218 rate structuring requirements due to the voluntary nature of that service) may not be providing adequate revenue to cover the City's cost of this service, as those costs are calculated in this Study based on current data. In reviewing the costs and revenues associated with serving specific rate categories, the City identified several minor corrections to the structure of the current rates necessary to ensure that customers within each class and rate category are paying their own cost of service. Specifically, the rates were restructured to:

1. Fund the low income senior discount program through non-Proposition 218 revenue sources (i.e. late fees);
2. Eliminate differences that exist in the current rate structure between residential and commercial customers in the charges for weekly 32-, 64-, and 96-gallon cart service;
3. Increase the pick-up and delivery charges to ensure that the revenue received from those services are covering their cost of service;
4. Elimination of the bin rental charge which was rarely applied and created an additional administrative burden on the City; and,
5. Establish a new class of customers comprised of state governmental agencies and a rate structure for those customers that reflects their unique nature (see section 4.4 below).

The annual percentage increases to each customer group and rate category are listed in **Figure 4-4**, specifically noting the unique rate categories that are different from the standard adjustments to that customer class, generally. The rate restructuring associated with items 2 and 3 above resulted in larger than desired one-time increases for those rate categories and are scheduled to be phased in over five years to smooth the annual adjustments, thereby avoiding "rate shock" with potential effects to customers and economic activity.

Figure 4-4. Schedule of Rate Adjustments

	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Residential Cart Service	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**
Commercial Cart Service	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**
32-Gallon 1x per week	0.0%	0.0%	0.0%	0.0%	2.1%
64-Gallon 1x per week	3.5%	5.3%	6.0%	6.8%	7.6%
96-Gallon 1x per week	0.0%	0.0%	0.0%	0.0%	0.0%
Commercial Front-Load Bin Service	**3.0%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**
Non-Scheduled Service	**3.0%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**
Clean Wood, Yard, Metals Processing	1.0%	3.0%	3.0%	3.0%	3.0%
Mixed Recycling Processing	-10.7%	3.0%	3.0%	3.0%	3.0%
Pick-up & Delivery Charges	6.3%	6.3%	6.3%	6.3%	5.2%

The current rates are shown in **Figure 4-5**. The recommended rates for FY 2013-14 are shown **Figure 4-6.**

With these increases, rates should cover ongoing contractual and operating cost increases and provide some contribution reserves through FY2017-18. Each year, prior to implementing the rate increases, City staff should confirm the need for the rate increase. The City can implement a lower rate increase, if conditions warrant, without going through the Proposition 218 notification process. If higher rate increases are needed that exceed the adopted rates, the City will need to initiate a new Proposition 218 proceeding.

Figure 4-5. Solid Waste Monthly Rates - Current (FY 2012-13)

SCHEDULED SERVICES

Residential Cart Service[1]

Service Per Week	32 Gal.	64 Gal.	96 Gal.
1	22.71**	33.76**	40.52**

**The rate is based on the size of the garbage cart and includes up to two recycling/yard waste carts serviced every other week at no additional charge.[2]

3rd Recycle or Yard Waste Cart 11.41

The above Residential Cart rates will increase each year, FY 2013-14 through FY 2017-18 by 2.8%

Commercial Cart Service

Service Per Week	32 Gal.	64 Gal.	96 Gal.
1	25.78**	29.47**	47.88**
2	49.28	56.66	93.47
3	72.78	83.85	139.07

**The rate is based on the size of the garbage cart and includes up to two recycling/yard waste carts serviced every other week at no additional charge.[2]

3rd Recycle or Yard Waste Cart 11.41

The above Commercial Cart rates will increase each year, FY 2013-14 through FY 2017-18 by 2.8% with exceptions as follows for the Commercial Cart 1 X Week Service:

	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18
32 Gal 1X Wk*	0%	0%	0%	0%	2.1%
64 Gal 1X Wk**	3.5%	5.3%	6.0%	6.8%	7.6%
96 Gal 1X Wk***	0%	0%	0%	0%	0%

Commercial Front-Load Bin Service

Garbage

Non-compacted Rates[3,4]

Service Per Week	1 Yard	2 Yard	3 Yard	4 Yard	5 Yard	6 Yard	8 Yard
	Container Size						
1	103.76	207.52	288.54	374.51	448.19	536.58	712.17
2	190.33	380.64	540.26	724.45	874.25	1048.61	1399.79
3	276.28	552.55	825.13	1080.54	1311.39	1572.92	2097.23
4	380.64	761.28	1080.54	1448.90	1748.49	2097.23	2799.56
5	466.59	933.19	1365.41	1804.98	2185.64	2621.53	3497.02

Mixed Recyclables

Non-compacted Rates[3,4]

Service Per Week	1 Yard	2 Yard	3 Yard	4 Yard	5 Yard	6 Yard	8 Yard
	Container Size						
1	83.01	166.00	230.84	299.61	358.54	429.25	569.74
2	152.27	304.51	432.22	579.57	732.55	838.89	1119.84
3	N/A	N/A	N/A	876.78	N/A	N/A	1,621.31

Cardboard Only

Non-compacted Rates[3,4]

Service Per Week	1 Yard	2 Yard	3 Yard	4 Yard	5 Yard	6 Yard	8 Yard
	Container Size						
1	N/A	36.83	53.24	67.53	80.47	98.23	122.79
2	N/A	67.53	81.42	122.79	143.06	171.9	221.02

Government Rate – Rate category does not exist for FY 2012-13

Pick-Up Charge 1-8 Cubic Yards (frontload)	N/A	per haul
Processing Charge		
Mixed Solid Waste	N/A	per cubic yard
Recycling	N/A	per cubic yard

The above Commercial Bin Service rates will increase each year, FY 2013-14 through FY 2017-18 by 3%

[1] Residential Senior Discount Rate $15.23 subject to qualification.

[2] Charge incurred for 3rd cart. Exceptions include: multi-family and commercial establishments

[3] Compacted rates charged at two (2) times the non-compacted rates in the above tables.

[4] Front load bin hard-to-service surcharge - 10% of rates in the above tables.

NON-SCHEDULED SERVICES

Deposit (Required on all rentals)	613.94	per bin
Pick Up & Delivery Charge		
2-8 Cubic Yard (frontload)	92.10	per haul
10-40 Cubic Yard (roll-off)	184.17	per haul
Processing Charge (applicable to 10-40 cyd)		
Garbage	61.39	per ton
Construction/Demolition	49.12	per ton
Clean Wood, Yard Waste or Metals Only	34.38	per ton
Mixed Recyclables Only	49.12	per ton
Other Charges		
40 Yard Compactor Rental	57.90	per month
Haul Materials outside City limits	210.53	per haul
Compactor Special Handling Charge	27.64	per haul

Figure 4-6. Solid Waste Monthly Rates – Proposed (FY 2013-14)

SCHEDULED SERVICES

Residential Cart Service[1]

Service Per Week	32 Gal.	64 Gal.	96 Gal.	
1	23.35	34.70	41.65	The rate is based on the size of the garbage cart and includes up to two recycling/yard waste carts serviced every other week at no additional charge.[2]
				3rd Recycle or Yard Waste Cart 11.73

The above Residential Cart rates will increase each year, FY 2014-15 through FY 2017-18 by 2.8%

Commercial Cart Service

Service Per Week	32 Gal.	64 Gal.	96 Gal.	
1	25.78*	30.52**	47.88***	The rate is based on the size of the garbage cart and includes up to two recycling/yard waste carts serviced every other week at no additional charge.[2]
2	50.66	58.25	96.09	
3	74.82	86.19	142.96	3rd Recycle or Yard Waste Cart 11.73

The above Commercial Cart rates will increase each year, FY 2014-15 through FY 2017-18 by 2.8% with exceptions as follows for the Commercial Cart 1 X Week Service:

	FY 14-15	FY 15-16	FY 16-17	FY 17-18
32 Gal 1X Wk*	0%	0%	0%	2.1%
64 Gal 1X Wk**	5.3%	6.0%	6.8%	7.6%
96 Gal 1X Wk***	0%	0%	0%	0%

Commercial Front-Load Bin Service

Garbage

Non-compacted Rates[3,4]

Service Per Week	Container Size: 1 Yard	2 Yard	3 Yard	4 Yard	5 Yard	6 Yard	8 Yard
1	106.87	213.75	297.20	385.75	461.64	552.68	733.54
2	196.04	392.06	556.47	746.18	900.48	1,080.07	1,441.78
3	284.57	569.13	849.88	1,112.96	1,350.73	1,620.11	2,160.15
4	392.06	784.12	1,112.96	1,492.37	1,800.94	2,160.15	2,883.55
5	480.59	961.19	1,406.37	1,859.13	2,251.21	2,700.18	3,601.93

Mixed Recyclables

Non-compacted Rates[3,4]

Service Per Week	Container Size: 1 Yard	2 Yard	3 Yard	4 Yard	5 Yard	6 Yard	8 Yard
1	85.50	170.98	237.77	308.60	369.30	442.13	586.83
2	156.84	313.65	445.19	596.96	754.53	864.06	1,153.44
3	N/A	N/A	N/A	903.08	N/A	N/A	1,669.95

Cardboard Only

Non-compacted Rates[3,4]

Service Per Week	Container Size: 1 Yard	2 Yard	3 Yard	4 Yard	5 Yard	6 Yard	8 Yard
1	N/A	37.93	54.84	69.56	82.88	101.18	126.47
2	N/A	69.56	83.86	126.47	147.35	177.06	227.65

Government Rate

Pick-Up Charge 1-8 Cubic Yards (frontload)	282.07	per haul
Processing Charge		
Mixed Solid Waste	3.15	per cubic yard
Recycling	.67	per cubic yard

The above Commercial Bin Service rates will increase each year, FY 2014-15 through FY 2017-18 by 3%

[1] Residential Senior Discount Rate $15.66 subject to qualification.

[2] Charge incurred for 3rd cart. Exceptions include: multi-family and commercial establishments

[3] Compacted rates charged at two (2) times the non-compacted rates in the above tables.

[4] Front load bin hard-to-service surcharge - 10% of rates in the above tables.

Figure 4-6 Continued. Solid Waste Monthly Rates – Proposed (FY 2013-14)

NON-SCHEDULED SERVICES		
Deposit (Required on all rentals)	632.36	per bin
Pick Up & Delivery Charge		
1-8 Cubic Yard (frontload)	97.86	per haul
10-40 Cubic Yard (roll-off)	195.69	per haul
Processing Charge (applicable to 10-40 cyd		
Garbage or Construction/Demolition	63.23	per ton
Clean Wood, Yard Waste or Metals Only	34.74	per ton
Mixed Recyclables Only	43.85	per ton
Other Charges		
40 Yard Compactor Rental	59.64	per month
Haul Materials outside City limits	223.70	per haul
Compactor Special Handling Charge	28.46	per haul

4.4 ESTABLISHMENT OF STATE GOVERNMENT CUSTOMER CLASS

The City has identified the need to create a distinct classification for a certain group of governmental agencies within the City. This class of customers is comprised of State governmental agencies, including public community colleges and public school districts. In reviewing the City's rates, cost structure and the subscription levels for this class of customers, HF&H believes that the City could offer an alternative rate structure, unique to this customer class, which complies with the requirements in Proposition 218.

The City's rate structure for the "commercial" class of customers (the current classification for government customers) was constructed to ensure that the revenue resulting from that class covers the cost of providing service to that class, in total. The rate structure is also constructed to create certain incentives and disincentives for customers to assist the City in achieving its waste reduction and recycling requirements under the Public Resources Code (i.e., AB 939). Specifically, commercial customers are charged increasing amounts as their service volume increases (incent waste reduction) and are offered discounted recycling services (to incent recycling activity). For example, customers subscribing to 1 cubic yard of garbage collection one time per week are charged $103.76/month in the current rate structure while customers subscribing to 8 cubic yards of garbage collection one time per week are charged $712.17/month (5.9 times more) and the difference in the City's cost of serving the customer is approximately $96/month. Over the entire class of customers, these incentives are internally funded. Essentially, the higher cost of waste service offsets the discounts offered for recycling. This incentive structure is not necessary for the government customers who would qualify for this class because those agencies are separately required, through the Public Resources Code (AB 75), to participate in waste reduction and recycling activities. Moreover, government customers have the legal right to obtain solid waste service through other providers, without City rate imposition. Accordingly, the City has more freedom to set government customer rates provided other customer classes are not subsidizing the government rate category.

HF&H has identified an alternative rate structure for this class of customers that aligns more directly with the cost of providing service to such customer, absent the incentives described above. This rate structure includes two components: a "per lift" charge and a "volume" charge.

1. The "per lift" charge would be the same amount for each time a container is serviced per week, without consideration of either the type of material in the container (waste versus

recycling), the size of the container, or whether the container is a compactor or a regular bin. The logic behind the "per lift" charge is that it costs the City approximately the same amount to get a driver and truck to the customer's location and service the container regardless of what material is in it, what size the container is, or whether the contents of the container are loose or compacted. This "per lift" charge would be set at the average cost per lift for the entirety of the current commercial customer class ($282.07/month for each time per week a container is serviced).

2. The "volume" charge would be based on the size of the container, type of material, and frequency of service and would be set to recover the City's direct cost of handling the material in the container. This cost is inclusive of the City's handling of the material at the transfer station as well as the cost to deliver that material to a recycling facility or landfill for ultimate disposition. This "volume" charge is determined by converting the City's per-ton costs for material handling to a per cubic-yard cost. The volume charge would differ by material type because the City's costs of material handling vary by material type. The volume charges are calculated to be $3.15 per cubic yard for waste, $0.67 per cubic yard for mixed recycling, and $0.00 for cardboard (the revenue from sale of this commodity offsets the cost of its delivery to a recycling facility.