CITY OF LONG BEACH

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SOLID WASTE COST OF SERVICE AND RATE STUDY

HF&H

November 29, 2018

CITY OF LONG BEACH

2929 E. WILLOW STREET

LONG BEACH, CA 90806

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HF&H CONSULTANTS, LLC

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Walnut Creek, CA 94596

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November 29, 2018

Mr. Diko Melkonian
Manager, Environmental Services Division
City of Long Beach
2929 E. Willow Street
Long Beach CA 90806

Subject: Environmental Services Bureau Cost of Service and Rate Structure Study

Dear Mr. Melkonian:

HF&H Consultants, LLC (HF&H) is pleased to submit this report. The report is organized beginning with determining how much projected revenue is needed from rates during the next two years, Fiscal Year 2018-2019 through Fiscal Year 2019-2020. The report describes how the revenue is apportioned between customers receiving bin and cart service. The report concludes with a discussion of the rate design that is appropriate for each class to ensure that customers are paying their proportionate share.

The report reflects input from the City staff in refining the rates. The resulting rate increases are necessary for several reasons: (1) the City's rates have not generated revenues sufficient to cover the costs and have drawn reserves down instead; (2) the cost of collection of solid waste has increased; and (3) and new State-mandated diversion programs require additional funding.

* * * *

We are pleased to have had the opportunity to assist the City of Long Beach with this study and would like to thank you for your support during the project.

If you have any questions, please call Marva at (925) 977-6961 or Scott at 925-977-6967.

Very truly yours,
HF&H CONSULTANTS, LLC

Marva M. Sheehan, CPA
Vice President

Scott Holt
Project Manger

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ACRONYMS/DEFINITIONS

FY	Fiscal Year
Bin	Container provided by the City usually made from metal. The City provides its bin customers with solid waste collection service at varying frequencies in a range of container sizes to meet each customer's needs. These customers are charged a monthly rate based on their subscription level (e.g., one cubic yard bin, serviced one time per week; three cubic yard bin, serviced three times per week).
Cart	Container provided by the City usually made from plastic with wheels for portability. The City provides its cart customers with solid waste collection in either 32-, 64-, or 100-gallon carts. As part of its contract with the City, Waste Management provides collection in 96-gallon recycling carts to residential and commercial customers.
COS	Cost-of-service
ECU	Equivalent container unit
ECF	Equivalent container factor
ESB	Environmental Services Bureau is one of four bureaus with the Public Works Department. It is responsible for waste reduction, refuse and recycling collection, street sweeping, parking enforcement, litter abatement, and Clean Team services.
Fixed Collection Costs	Costs not dependent on the subscribed volume of service.
Frequency Surcharge	Additional cost for receiving service multiple times per week. Routing is negatively impacted when trucks must return to areas previously serviced.
FTE	Full time equivalent
MSW	Municipal Solid Waste
Rate	Refers to the rate charged to each customer based on size of container and frequency of service.
SFR	Single-family residential
SRRE	Source Reduction and Recycling Element refers to the diversion plan developed by the City to meet the diversion goals established by AB 939. The City has established separate general ledger account codes to capture the expenditures related to the plan.
Volumetric charge	Refers to the variable costs associated with the size of the container subscribed to by residential, multi-family or commercial customers.

LIMITATIONS

This study was prepared solely for the City of Long Beach in accordance with the contract between the City and HF&H and is not in intended for use by any other party for any other purpose.

In preparing this study, HF&H relied on information and instructions from the City, which we consider to be accurate and reliable and did not independently verify. The subscription data supplied by the City required manual adjustments provided by the City and we relied on the adjusted service levels in the cost of service calculations.

The Rate Model and accompanying analyses contain projections of revenues and expenditures based on various assumptions and estimates provided by the City. While we reviewed those projections for reasonableness, actual results of operations will usually differ from projections because events and circumstances do not always occur as expected. Those differences may be significant and materially affect the analyses and findings presented in this report.

Rounding differences caused by stored values in electronic models may exist.

This study addresses relevant laws, regulations, and court decisions but should not be relied upon as legal advice. Questions concerning the interpretation of legal authorities referenced in this study should be referred to a qualified attorney.

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EXECUTIVE SUMMARY

The City of Long Beach (City) provides solid waste services to residents located within the City's limits. The City is also the exclusive provider of solid waste collection services to smaller businesses (less than 3,000 gallons/week of service) and multi-family complexes (less than 1,000 gallons/week, typically about 10 dwelling units). The City competes with permitted private haulers to provide commercial waste hauling services to larger multi-family and commercial accounts. The City's recycling contractor, Waste Management, provides recycling services to all City-serviced solid waste accounts. Separate green waste collection is not offered at this time.

In order to increase rates for these services, the City intends to comply with Article XIIID, Section 6 of the California Constitution, which was enacted by Proposition 218 in 1996. This Section requires that (1) revenues derived from fees or charges for property-related service not exceed the cost to provide service; (2) revenues derived from fees or charges not be used for any purpose other than that for which it was imposed; (3) the amount of a fee or charge upon an account not exceed the proportional cost of the service attributable to the parcel; (4) no fee or charge may be imposed for a service unless that service is actually used by, or immediately available to, the owner of the property; and, (5) no fee or charge may be imposed for general governmental services.. The analysis conducted in support of this study was founded on legal direction related to Proposition 218, which was provided by City's legal counsel.

Study Purpose and Objectives

The purpose of this solid waste rate study is to conduct a comprehensive analysis of the City's solid waste 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 reflect the cost of providing such service.

This study has several key objectives:

- Determine revenue that is necessary to meet the City's requirements, including operations and maintenance, capital improvement, and reserve funds;
- Determine the cost-of-service attributable to each parcel based upon the subscribed service level; and,
- Ensure that the proposed rate structure is compatible with Proposition 218 mandates.

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

Findings and Recommendations

In preparing this solid waste rate update, the following findings were made. Note that these findings describe the results of the initial cost-of-service analysis. Upon review with the City staff, a transitional set of rates was developed and is described beginning with Finding 5.

1. **Operating cost increases.** Operating and Maintenance (O&M) expenses within the Environmental Services Bureau's (ESB) control such as for personnel are increasing above the rate of inflation as set forth in **Figure 2.1**.

2. **Projected revenue increases.** The present rate study projected increasing rates to generate additional overall revenue to cover the recent cost increases and revenue shortfall. Comparing the revenue required to cover the cost of service with the revenue from current rates indicates the need for the following rate increases:

   March 2019 – 19.7%

   October 2019 – 3.0%

   The percentage increases reflect system-wide increases not for each customer class.

3. **Revenue increases by customer class and by charge.** Customer classes for the purpose of this study are "cart" customers and "bin" customers based on the container used for solid waste. Based on the cost-of-service analysis, the bin class' volumetric increase is higher than the cart class'. **Figure ES-1** compares the revenue from current rates with the cost-of-service for FY 2018-19. This figure indicates how much revenue is needed from volumetric and service charges to generate the 19.7% additional overall revenue needed in FY 2018-19. This figure also indicates how much more revenue is needed from the solid waste cart class (27.0 %) than from the recycling cart class (-17.1%). The recycling cart class is funded from the rates, AB 939, franchise and other fees collected from the City's non-exclusive commercial contractors and the City's share of the commodity revenues from the City's recycling contractor. The continued revenue share from the sale of recyclable materials is uncertain due to the restrictions placed on material quality imposed by China and potentially other Southeast Asian countries. The proposed rates, effective March 1, 2019, were derived to generate the necessary revenue and structured based on the cost-of-service analysis.

Figure ES 1
Current Rate Revenue Compared with the Cost of Service
(FY 2018-2019)

Service Class Components	Revenue @ Current Rates		Cost of Service		Difference COS less Current Revenue	
Carts						
Solid Waste	$ 25,404,748	64%	$ 32,265,731	68%	$ 6,860,983	27.0%
Recycling	6,400,170	16%	5,303,606	11%	(1,096,564)	-17.1%
	$ 31,804,918	81%	$ 37,569,337	80%	$ 5,764,419	9.9%
Bins						
Solid Waste	7,601,185	19%	9,613,864	20%	2,012,679	26.5%
Total	$ 39,406,103	100%	$ 47,183,201	100%	$ 7,777,098	19.7%

4. **Monthly rate increases.** The current and cost-of-service-based rates for the most commonly subscribed services are summarized in **Figure ES-2**. The City does not currently have a 4 yard Bin rate but is planning on offering this option in the future.

Figure ES-2
Current and Cost of Service Based Monthly Rates
(Serviced 1 Time per Week)

Solid Waste and Recycling	Current Rates	FY 18/19	% Change	FY 19/20	% Change
64 Gallon Cart	$ 20.47	$ 21.14	3.3%	$ 21.72	2.8%
100 Gallon Cart	$ 24.11	$ 29.70	23.2%	$ 30.61	3.0%
2 Yard Bin	$ 89.16	$ 111.75	25.3%	$ 114.99	2.9%
3 Yard Bin	$ 114.09	$ 159.28	39.6%	$ 164.30	3.2%
4 Yard Bin	$ -	$ 215.65		$ 222.53	3.2%

5. The above rates were presented to City staff. Given the magnitude of the increase to the cost of service rate to the 100 gallon cart rate, the most commonly subscribed service level, from $24.11 to $29.70 per month effective March 1, 2019, a 23.2% increase, City staff requested an alternative that would transition the increase in more gradual increments through FY 2019-2020. **Figures ES-3** and **ES-4** provide two alternatives available to the City. The two alternatives provide transition rates towards the cost of service rates. In most cases, it will be beyond FY 2019-2020 before the rates equal the costs. The City is planning on performing a route and revenue study during the next two years to confirm the level of service provided to its customers.

Figure ES-3
Current and Proposed Transition Rates – Scenario 1

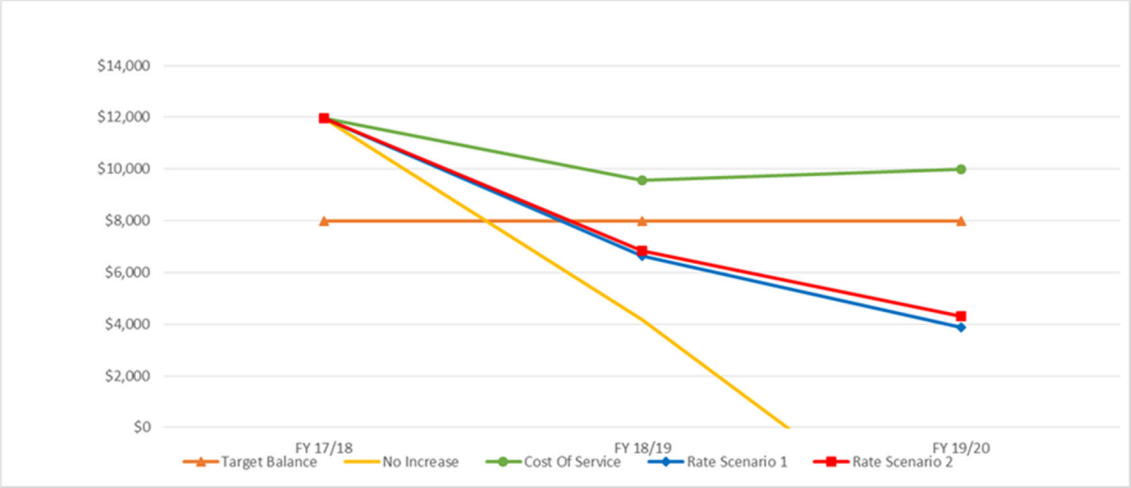
Solid Waste and Recycling	Current Rates	FY 18/19	% Change	FY 19/20	% Change
64 Gallon Carts	$ 20.47	$ 22.12	8.0%	$ 23.93	8.2%
100 Gallon Carts	$ 24.11	$ 26.12	8.3%	$ 28.33	8.5%
2 Yard Bin	$ 89.16	$ 101.93	14.3%	$ 116.61	14.4%
3 Yard Bin	$ 114.09	$ 130.60	14.5%	$ 149.58	14.5%
4 Yard Bin		$ 204.45		$ 234.51	14.7%

Figure ES-4
Current and Proposed Transition Rates - Scenario 2

Solid Waste and Recycling	Current Rates	FY 18/19	% Change	FY 19/20	% Change
64 Gallon Carts	$ 20.47	$ 22.45	9.7%	$ 24.47	9.0%
100 Gallon Carts	$ 24.11	$ 26.52	10.0%	$ 28.99	9.3%
2 Yard Bin	$ 89.16	$ 99.38	11.5%	$ 110.82	11.5%
3 Yard Bin	$ 114.09	$ 127.30	11.6%	$ 142.09	11.6%
4 Yard Bin		$ 199.22		$ 222.64	11.8%

6. Reserve Fund Balance[1] (Figure ES-5). Depending on the rate scenario selected, the City's Reserve Fund Balance will either stay above the target (COS rate structure) or be below the target through FY 2019-2020). Another cost of service and rate study is planned for the FY 2020-2021 rate setting to further evaluate the reserve fund balance. Projected reserves above the target balance are to fund the City's Zero Waste Plan to meet State diversion requirements (AB 2176, AB 341, SB1826 and SB1383). The City is in the early stages of developing the plan to determine the specific programs and costs. SB1383 will require the City to implement organics collection programs and food recovery programs and the programs are to be in place January 1, 2022.

ES-5. Reserve Balance Projections (000's)



Implementation

After increasing rates effective March 1, 2019, the City should monitor its rates before implementing subsequent rate increases. Additionally, we understand the City will be updating its billing system. As part of that process, the City should consider a billing and operational audit to ensure the customers are billed for the actual level of service received. Once the audit is completed, the City may want to update its cost of service model for subscription levels and for any revisions to the projections.

[1] The fund balance includes reserves for operations and capital.

SECTION 1. INTRODUCTION

Over the years, HF&H Consultants, LLC has, in various capacities, assisted the City with its solid waste system. In 2018, the City requested HF&H to assist with developing a cost-of-service model and rate structure based on the level of service received by each customer class. The purpose of this report is to document the analysis and summarize our assumptions, findings, and recommendations.

The report is organized to explain how the revenue requirements are determined over the next two years. As part of the documentation, this report includes a copy of the spreadsheet model that was used to derive rates.

Study Purpose

One key purpose of this report is to document that the City's rates comply with the relevant laws in California for setting solid waste collection rates. Another key purpose is to ensure that the rates generate sufficient revenue to fund the City's operating and capital costs as well as to maintain adequate reserves.

Current Rates

The City's solid waste accounts are billed through the City's Utility Billing System.

The City's single-family and multi-family rate payers pay the sum of two charges for collection service on a monthly basis: a solid waste collection rate based on the size of container (volume based) and a recycling collection rate (fixed amount).

The City's commercial rate payers also pay the sum of two charges for collection service on a monthly basis: a solid waste collection rate based on the size of container (volume based) and a recycling collection rate (fixed amount).

Rates are set based on a 30-day period but billed at a per day rate. Therefore, monthly charges fluctuate based on the number of days in the month.

The City's Utility Users Exempt Rate Program currently provides for rate relief for low-income senior and low-income disabled customers. Approximately 1% of the City's rate payers participate in the program and the program is funded by non-ratepayer revenue, including fees received from the City's non-exclusive franchise haulers and recycling commodity revenues received from sale of the City's recyclable materials.

The most common rates are summarized in **Figures 1-1** and **1-2**.

Figure 1-1 – Residential Rates

RESIDENTIAL REFUSE AND RECYCLING RATES			
Dwelling Type	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
Single Family	$ 20.08	$ 4.03	$ 24.11
Duplex	$ 18.26	$ 4.03	$ 22.29
Apartments (1-10 Units)	$ 16.44	$ 4.03	$ 20.47
Apartments (11+ Units)	$ 16.44	$ 4.03	$ 20.47
Automated Cart Collection	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
32 Gallon	$ 8.22	$ -	$ 8.22
64 Gallon	$ 16.44	$ -	$ 16.44
64 Gallon with Recycling	$ 16.44	$ 4.03	$ 20.47
64 Gallon with additional 100 Gallon	$ 10.10	$ -	$ 10.10
100 Gallon	$ 20.08	$ -	$ 20.08
100 Gallon with Recycling	$ 20.08	$ 4.03	$ 24.11
250 Gallon	$ 75.07	$ -	$ 75.07
250 Gallon with Recycling	$ 75.07	$ 4.03	$ 79.09
300 Gallon	$ 81.57	$ -	$ 81.57
EXEMPT UTILITY USER'S RATES			
Automated Cart Collection	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
32 Gallon	$ 5.39	$ -	$ 5.39
64 Gallon	$ 10.79	$ -	$ 10.79
64 Gallon with Recycling	$ 10.79	$ 3.27	$ 14.06
100 Gallon	$ 13.21	$ -	$ 13.21
100 Gallon with Recycling	$ 13.21	$ 3.27	$ 16.49

Figure 1-2 Commercial Rates *

COMMERCIAL REFUSE AND RECYCLING RATES			
Manual - 50 Gallon Cans	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
1-2 Cans per Week	$ 21.98	$ 4.03	$ 26.00
3-7 Cans per Week	$ 55.23	$ 4.03	$ 59.26
6-10 Cans per Week	$ 110.06	$ 4.03	$ 114.08
11-15 Cans per Week	$ 165.04	$ 4.03	$ 169.07
16-20 Cans per Week	$ 219.90	$ 4.03	$ 223.93
21-30 Cans per Week	$ 369.96	$ 4.03	$ 373.99
31-40 Cans per Week	$ 519.90	$ 4.03	$ 523.92
41-50 Cans per Week	$ 669.87	$ 4.03	$ 673.90
51-60 Cans per Week	$ 819.80	$ 4.03	$ 823.83
61-70 Cans per Week	$ 969.65	$ 4.03	$ 973.68
71-80 Cans per Week	$ 1,119.71	$ 4.03	$ 1,123.73
81-90 Cans per Week	$ 1,269.72	$ 4.03	$ 1,273.75
91-100 Cans per Week	$ 1,419.66	$ 4.03	$ 1,423.68
101-125 Cans per Week	$ 1,794.67	$ 4.03	$ 1,798.70
126-150 Cans per Week	$ 2,169.48	$ 4.03	$ 2,173.51
151-175 Cans per Week	$ 2,544.21	$ 4.03	$ 2,548.24
176-200 Cans per Week	$ 2,919.31	$ 4.03	$ 2,923.34
201-225 Cans per Week	$ 3,294.24	$ 4.03	$ 3,298.27
226-250 Cans per Week	$ 3,669.05	$ 4.03	$ 3,673.08
251-275 Cans per Week	$ 4,046.41	$ 4.03	$ 4,050.44
276-300 Cans per Week	$ 4,418.88	$ 4.03	$ 4,422.91
301-325 Cans per Week	$ 4,793.69	$ 4.03	$ 4,797.72
326-350 Cans per Week	$ 5,168.63	$ 4.03	$ 5,172.65
351-375 Cans per Week	$ 5,543.56	$ 4.03	$ 5,547.59
376-400 Cans per Week	$ 5,918.57	$ 4.03	$ 5,922.60

COMMERCIAL REFUSE AND RECYCLING RATES			
Bin Service	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
2 yd Bin 1 Time per Week	$ 85.13	$ 4.03	$ 89.15
2 yd Bin 2 Times per Week	$ 160.19	$ 4.03	$ 164.22
2 yd Bin 3 Times per Week	$ 235.30	$ 4.03	$ 239.33
2 yd Bin 4 Times per Week	$ 310.37	$ 4.03	$ 314.40
2 yd Bin 5 Times per Week	$ 385.44	$ 4.03	$ 389.46
2 yd Bin 6 Times per Week	$ 574.93	$ 4.03	$ 578.95
2 yd Bin 7 Times per Week	$ 649.99	$ 4.03	$ 654.02
2 yd Bin 8 Times per Week	$ 725.10	$ 4.03	$ 729.13
2 yd Bin 9 Times per Week	$ 800.17	$ 4.03	$ 804.20
2 yd Bin 10 Times per Week	$ 875.24	$ 4.03	$ 879.26
2 yd Bin 11 Times per Week	$ 1,074.86	$ 4.03	$ 1,078.89
2 yd Bin 12 Times per Week	$ 1,149.93	$ 4.03	$ 1,153.96
2 yd Bin 13 Times per Week	$ 1,225.00	$ 4.03	$ 1,229.03
2 yd Bin 14 Times per Week	$ 1,300.11	$ 4.03	$ 1,304.13
2 yd Bin 15 Times per Week	$ 1,375.17	$ 4.03	$ 1,379.20

*Partial list of rates. The full Commercial refuse and recycling rate sheet is included as Appendix A-11.

Legal Requirements

The City is responsible for setting rates in compliance with California law. Voters passed Proposition 218 in November 1996, which enacted Article XIIID of the California Constitution. Article XIIID[2] has five substantive provisions that must be met: (1) the revenue from rates must not exceed the cost of providing service, (2) the revenue from rates must be used for providing service, (3) the fees and charges must be proportional to the cost of providing the service attributable to the parcel, (4) no fee or charge may be imposed for a service unless that service is actually used by, or immediately available to, the owner of the property, and, (5) no fee or charge may be imposed for general governmental services.

The basis for setting rates that are proportional to the cost of providing service was not prescribed in Article XIIID; therefore, the analyst was responsible for meeting the requirements of Sections 6(b) 1-5, as reasonably as possible. "Reasonable" rates are not capricious (there is a documented source for all data), not arbitrary (decisions required to make assumptions and analyze data have a sound reason), and not discriminatory (the results do not unduly favor one customer at the expense of another).

We interpret this concept to mean that rates must be proportionate to the cost of service across the range of subscribed service. We further interpret it to mean that the rates for each level of service must correlate with the actual demand that customers place on the vehicles and for which the system must be designed to provide the level of service customers require.

[2] Sections 6(b) 1 - 5.

SECTION 2. REVENUE REQUIREMENT PROJECTIONS

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

Expense Projections

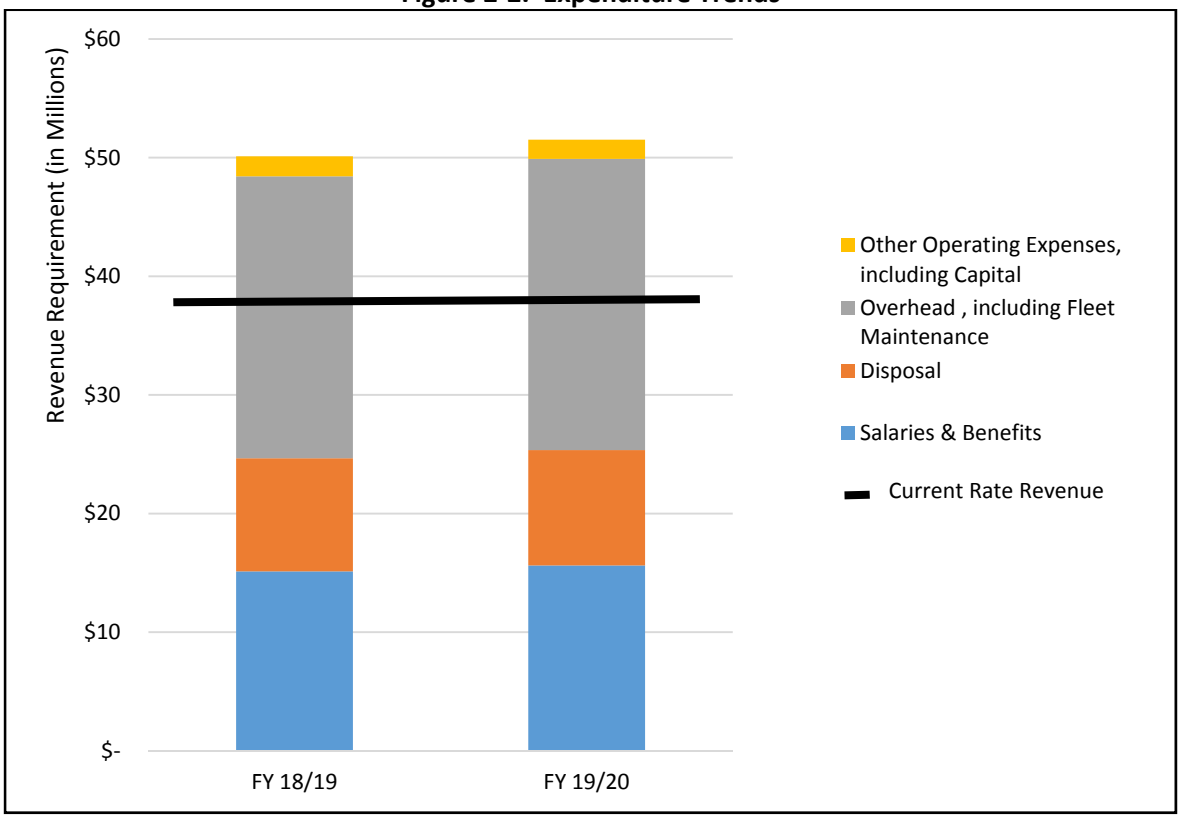
The City's FY 2018-19 budget served as the basis for determining the revenue requirement. The budget is developed annually by the Department of Financial Management (Financial Management) and approved by the City Council. The increase in the operating and maintenance expenses were projected through FY 2019-20 using escalation factors provided by the City's Financial Management as shown in **Figure 2-1**. A 3% CPI escalation factor for those expenses not specifically identified by Financial Management. Capital expenses are projected based on the City's current capital improvement program. Capital improvement costs include the purchase of refuse trucks, refuse carts and bins, the Electronic Vehicle Report System (ZONAR) and the Customer Information System (CIS) used for creating service orders, billing, and reports.

Figure 2-1. Escalators Provided by City Financial Management

Sub-Object	Title	% Inflator 2018	% Inflator 2019
100001	Permanent-Full Time (Regular)	2%	2%
131001	Retirement PERS - Applied	10%	12%
131006	Health/Dental/Life - Applied	4%	4%
131009	Post Employment Benefits	12%	11%
310004	Liability Insurance Allocated - Interfd	4%	3%
141001	Workers Comp Chgd to Depts (Applied)	3%	1%
Various	Refuse Fleet Costs (Fuel, Parts, Repairs, etc.)	-2%	7%

Figure 2-2 summarizes expenditure trends that are projected.

Figure 2-2. Expenditure Trends



The expenditure trends are noteworthy in the following respects:

- **Operating and other expenses** – Operating and maintenance (O&M) and other expenses are projected to increase during the projection period. These expenses are within the City's direct control and have been held to low annual increases.
- **Migration** – When there are significant rate increases, customers may downsize their subscription levels to a lower cost service. Based on industry standards, we have anticipated a 10% migration in developing the rate structure.

Rates need to generate sufficient revenue to cover the City's annual expenditures and to maintain adequate reserves.

Reserve Funds

Reserves are required to stabilize rates and to provide for contingencies. Reserves can be drawn on in years when the City experiences above average costs and augmented during years when costs are below average. The City's reserves are used for operating and capital purposes. Each of these purposes has its own requirements that lead to an optimum target balance of 3 to 5 months of operating expenses based on industry best practices. Rates must be set so that the fund balance achieves the target balance.

Operating Reserve Component

As part of this engagement, we also reviewed the ability of the proposed rates to fund the ESB's Operating Reserve at a level sufficient to provide operating funds for funding of anticipated programs. The purpose

of this reserve is to provide the ability to effectively respond to unforeseen events or emergencies and new diversion programs in order to be compliant with AB341, SB1826, SB1383 and AB 2176.

Our review found that the cost of service adjustment scenario proposed will provide sufficient revenues to maintain the required balance in the Operating Reserve. Scenario 1 and 2 rate adjustments will need to utilize the reserve in each of the two years projected.

Revenue Increases

Revenue increases were derived to cover the City's costs and to fund its reserves. **Figure 2-3** summarizes the projected revenue from current rates, annual revenue requirements, annual variances, and the rate increases necessary to cover the City's costs. It is assumed the full rate increase required to meet the current year revenue requirement is implemented.

The projected rate revenue is constant because it was assumed there would be no growth in accounts or increases in services, which is a conservative assumption. The revenue requirement (shown in greater detail in **Figure 2-2**) grows by the projected change using inflation factors provided by Financial Management (**Figure 2-1**) and the Consumer Price Index. When the revenue from current rates is compared with the net revenue requirements (i.e., revenue requirement less non-operating revenue), there is a deficit variance that requires a large revenue increase in 2018-2019 but then remains constant thereafter.

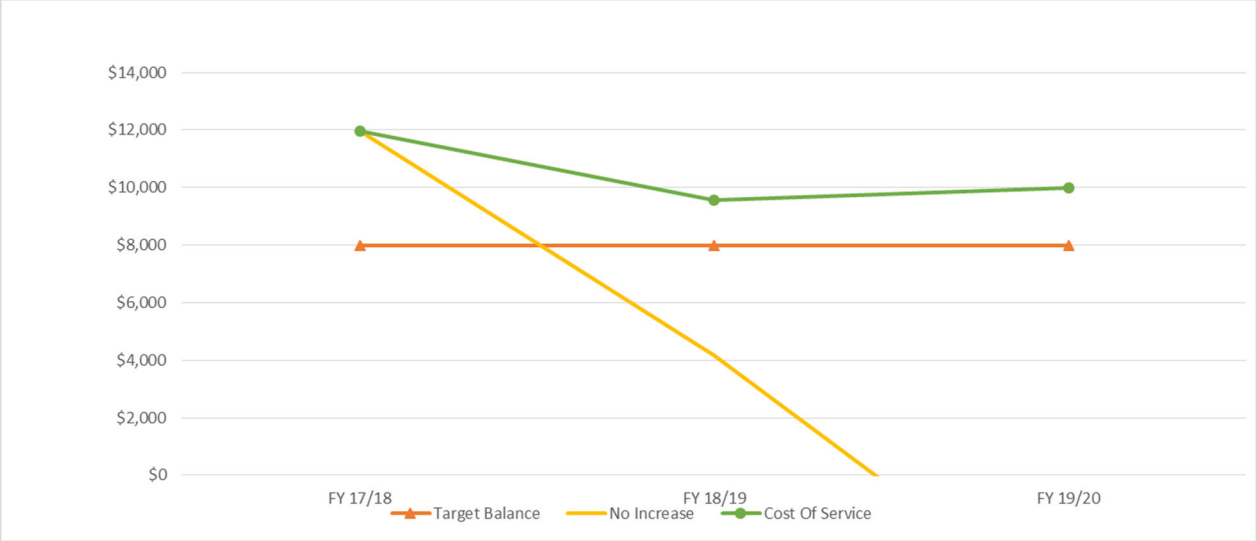
Figure 2-3. Rate Increase Calculations

		FY 18-19	FY 19-20
Revenue from Current Rates	a	$ 41,553,151	$ 47,183,201
Revenue Requirement*		$ 50,444,285	$ 51,865,426
Less: Non-operating Revenue		$ (3,261,084)	$ (3,287,544)
Net Revenue Requirement	b	$ 47,183,201	$ 48,577,882
Revenue Shortfall	c=a-b	$ (5,630,051)	$ (1,394,681)
Rate Increase Necessary	c÷a	13.5%	3.0%

* Projected Budget Expenditures

The initial FY 2018-2019 rate increase has been adjusted to reflect that the increase will not become effective until March 1, 2019. **Figure 2-4** shows the reserves compared with target balance. The orange line labeled "Target Balance" (triangle symbols) represents the target balance for the operating reserve. The green line labeled "Cost of Service" (circle symbols) is the reserve balance assuming the rate increases were applied uniformly to all cart and bin rates as shown in **Figure 2-3.** The yellow line represents the reserve if no rate increases are implemented over the next two years, resulting in over a $40 million reserve deficit.

Figure 2-4. Projected Reserve Fund Balance at Year End



Revenue increases are achieved by increasing rates. In years when rates are not being restructured to align with the cost-of-service, rates would be increased by the same percentage to generate the required revenue increase. For example, a 5% revenue increase would be achieved with a 5% across-the-board increase in the current cart and bin rates at the various subscription levels.[3] In the current rate study, however, rates are being restructured to align with the cost of service. As a result, different percentage increases in the service and volume charges will occur. The derivation of these rate increases is explained in the next section of this report.

[3] The *rate* increase is the same as the *revenue* increase when the rate increase is effective for the whole 12 months. If the rate increase is in effect for less than a whole year, the percentage *rate* increase needs to be higher than the percentage *revenue* increase to generate the required revenue in a shorter period of time. This will be the case with the City's rate increase for FY 2018-19, which is projected to become effective on March 1, 2019, not October 1, 2018.

SECTION 3. COST-OF-SERVICE ANALYSIS

Methodology

A Cost-of-Service (COS) analysis determines the unit cost of the services provided to the City's solid waste customers. Each customer class is charged the same unit cost for its share of the services that it requires. In this way, the total revenue requirement is split between the fixed service charges and the volumetric charges; with the volumetric charges further proportioned among the customer classes. Because the service is provided based on the type of truck and container, we have determined customer classes for this rate study to be classified as "cart" and "bin" customers.

The majority of the City's solid waste services are related to meeting customer demands for the solid waste and recycling collection services offered by the City. The collection services vary based on the customer's subscribed size and type of container (bin vs cart) used for the collection of solid waste materials. There are certain services, such as 96 gallon cart recycling services, that are offered to all ratepayers and therefore are a fixed component of the monthly rate.

The solid waste collection service levels are defined as follows:

1. **Bin Customers –** Bin customers receive service in a bin that has 2 or 3 cubic yards of volume. The bins are collected either by a rear-loader or front-loader refuse truck. Typically, these containers are used at multi-family complexes or commercial businesses.

Solid Waste Bin

2. **Cart Customers –** Cart customers receive service in a 64 or 100 gallon cart. The carts are typically collected by a rear-loader truck and are used by residential, multi-family, and commercial customers depending on the amount of capacity required.

City businesses and residents receive recycling materials are collected in a 96 gallon purple cart.

The collection system costs are allocated based on various factors as shown in **Figure 3-1.**

Figure 3-1. Allocation Factors

Allocation Factor	Solid Waste		Recycling
	Bins	Carts	Customer
% of 1st Container Recycling Gallons/Yards			100.00%
% based on Total Recycling Gallons/Yards	-	-	100.00%
Overhead Allocation (% of Direct Costs)	19.60%	66.80%	13.60%
% based on Total Solid Waste Gallons/Yards	23.03%	76.97%	-
% of actual cart and bin purchases	24.00%	76.00%	-
50-50 Split between SW Bins & Carts	50.00%	50.00%	-

Figure 3-2 provides a detailed breakdown of the expenses and cost-of-service allocations.

Figure 3-2. Cost of Service Allocations

	FY 18-19 Budget	Allocation Factor	Solid Waste Bins	Solid Waste Carts	Recycling Customer
Administrative	$3,073,706	Overhead Allocation (% of Direct Costs)	$602,446	$2,053,236	$418,024
ESB Facility	958,040	Overhead Allocation (% of Direct Costs)	187,776	639,971	130,293
SRRE Programs	4,008,030	% of 1st Container Recycling Gallons/Yards	-	-	4,008,046
SRRE Programs/Public Education	1,405,114	% of 1st Container Recycling Gallons/Yards	-	-	1,405,102
SRRE Programs, Other Grants	269,000	% of 1st Container Recycling Gallons/Yards	-	-	268,998
SRRE Program Grants	130,000	% based on Total Recycling Gallons/Yards	-	-	129,999
Refuse Collection - Administration	1,584,886	Overhead Allocation (% of Direct Costs)	310,638	1,058,704	215,545
Refuse Collection - Manual	13,848,543	% based on Total Solid Waste Gallons/Yards	3,189,285	10,659,257	-
Refuse Collection - Dumped Items	7,000	% based on Total Solid Waste Gallons/Yards	1,612	5,388	-
Refuse Collection - Special Collection	20,500	% based on Total Solid Waste Gallons/Yards	0	20,500	-
Refuse Collection - Automated	6,157,388	% based on Total Solid Waste Gallons/Yards	1,418,031	4,739,356	-
Cart & Bin Delivery	729,018	% of actual cart and bin purchases	174,964	554,054	-
Litter Reduction Campaign	2,500,294	50-50 Split between Solid Waste Bins & Carts	575,812	1,924,482	-
Community Support General	4,883,000	Overhead Allocation (% of Direct Costs)	957,068	3,261,844	664,088
Refuse Indirect Cost Plan	708,367	Overhead Allocation (% of Direct Costs)	138,840	473,189	96,338
MSW Transfer/Processing/Disposal Costs (2nd Container)	1,311,524	% based on Total Solid Waste Gallons/Yards	175,724	1,135,801	-
MSW Transfer/Processing/Disposal Costs	8,849,876	% based on Total Solid Waste Gallons/Yards	2,164,422	6,685,454	-
Subtotal	$50,444,285		$9,896,618	$33,211,236	$7,336,432
Non-Rate Revenue	-$3,261,084		-$282,753	-$945,505	-$2,032,825
Total Revenue Requirement	**$47,183,201**		**$9,613,864**	**$32,265,731**	**$5,303,606**

The customer class allocations and the expense attributable to customer accounts are compared with the estimated revenue from current rates in **Figure 3-3**. The allocation of costs between volumetric and fixed costs is not available for the current rate structures.

Figure 3-3. Current Rate Revenue Compared to Cost of Service

Components of Rate Structure	Current Revenue (No Rate Increase)			Cost of Serivce (COS)			Difference COS Minus Current		
	Bins	Carts	Total	Bins	Carts	Total	Bins	Carts	Total
Cost of Service									
Volumetric*									
Solid Waste Collection	N/A	N/A		$ 6,947,462	$ 23,219,868	$ 30,167,330			
Fixed Costs	N/A	N/A							
Solid Waste Collection	N/A	N/A		2,666,402	9,045,862	11,712,265			
Recycling Collection	N/A	N/A		259,056	5,044,550	5,303,606			
	$ 8,209,334	$ 33,837,244	$ 42,046,578	$ 9,872,921	$ 37,310,281	$ 47,183,201	$ 1,663,586	$ 3,473,037	$ 5,136,623
						% Shortfall	20%	10%	12.2%

* Based on size of container N/A - Not Available

The comparison of revenue from current rates with the revenue requirement indicates the following:

- Overall 12.2% ($5,136,623) increase in revenue is needed.
- Key component of the rate study was to determine the volumetric and fixed components of the rates by customer class (bins and carts) for proper rate design.

Rates need to be designed to generate each class's share of the revenue requirement. Section 4 provides a recommended rate structure to meet the cost-of-service.

SECTION 4. RATE DESIGN – COST OF SERVICE

This section discusses the design of volumetric charges for the various sizes of bins and cart customers and the fixed service charges for each customer class. All cost categories were evaluated to determine if the cost would fluctuate (variable) or remain constant (fixed) if there was variances in the subscribed service and type of container.

Volumetric (Variable) Collection Costs

Volumetric (variable) collection costs are proportional costs based on the subscribed size and type of container. In order to properly allocate the variable costs, the various factors identified below were calculated based on existing subscription levels. The variable collection costs exclude transfer and disposal and fixed costs which are calculated separately.

Full Time Equivalent Route Factor

The subscribed level of service, in essence, reserves that particular volume of space in the collection vehicle. The City must route its drivers and vehicles in order to ensure the routes have capacity to meet the customers demand. Therefore, a "Full Time Equivalent Route Factor" (FTE Route Factor) was calculated for each size of container based on collection truck capacity, average route hours and disposal trip time. **Figure 4-1** lists the FTE Route Factors for Carts and Bins:

Figure 4-1. Full Time Equivalent Route Factor

Customer Class		FTE Route Factor
Carts		
	64 Gallon	1.00
	100 Gallon	1.23
Bins	2 Yard	1.38
	3 Yard	1.63
	4 Yard	1.88

Equivalent Container Factor

An Equivalent Container Factor (ECF) was calculated to determine the variable component of the monthly rate as follows:

1. An adjusted number of loads for each size of container were calculated assuming 100% of customers subscribed to one size.
2. An Adjusted Loads Costs was determined based on the actual collection costs divided by actual loads multiplied by the Adjusted Loads.
3. The ECF was calculated by dividing the Adjusted Loads Costs (step 2) by the minimum cost per load.

Figure 4-2 lists the ECF for each customer class:

Figure 4-2. Equivalent Container Factor

Customer Class		Equivalent Container Factor (ECF)
Carts		
	64 Gallon	1.00
	100 Gallon	1.92
Bins	2 Yard	2.44
	3 Yard	4.33
	4 Yard	6.67

Equivalent Container Units

Equivalent Container Units (ECU) were calculated in order to properly allocate the variable collection costs, excluding the solid waste transfer and disposal costs. ECUs were calculated by multiplying the number of containers by size by the applicable ECF. **Figure 4-3** shows the calculation of the ECU's for each customer class.

Figure 4-3. Equivalent Container Units

Customer Class		Equivalent Container Factor (ECF)	Current Containers in Service	Equivalent Container Units (ECU)
		A	B	A X B
Carts				
	64 Gallon	1.00	37,564	37,564
	100 Gallon	1.92	74,800	143,974
			Total Carts ECUs	181,538
Bins	2 Yard	2.44	7,280	17,795
	3 Yard	4.33	502	2,174
	4 Yard	6.67	-	-
			Total Bins ECUs	19,969

Variable Route Collection Costs Calculation

Annual variable costs were determined based on the review of the City's projected budget costs for FY 2018-2019 collection costs that would fluctuate based on the size of container and frequency of service.

Cart Customers

Figure 4-4 shows the calculation of the monthly Variable Route Collection Costs per month.

Figure 4-4. Variable Route Collection Costs per Month - Carts

				Cart Size (Gallons)	
				64	100
Annual Variable Costs	$	15,398,614	A		
Equivalent Container Units (ECU)		181,538	B		
Annual Variable Costs per ECU	$	84.82	A / B = C		
Monthly Variable Cost per ECU	$	7.07	C / 12 = D		
Equivalent Container Factor			E	1.00	1.92
Variable Route Collection Costs per Month			D x E	$ 7.07	$ 13.61

Bin Customers

Figure 4-5 shows the calculation of the monthly Variable Route Collection Costs per month.

Figure 4-5. Variable Route Collection Costs – Bins

				Bin Size (Yards)		
				2	3	4
Annual Variable Costs	$	4,607,316	A			
Equivalent Container Units (ECU)		19,969	B			
Annual Variable Costs per ECU	$	230.72	A / B = C			
Monthly Variable Cost per ECU	$	19.23	C / 12 = D			
Equivalent Container Factor			E	2.44	4.33	6.67
Variable Route Collection Costs per Month			D x E	$ 47.00	$ 83.32	$ 128.18

Fixed Collection Costs

Fixed collection costs are determined based on FY 2018-2019 projected budget costs that are not dependent on the subscribed service volume. Costs include such items as: administration and city-wide refuse and recycling collection programs. Costs are primarily allocated between Bins and Carts based on the percentage of each class's direct costs to total costs. Fixed costs for Carts are lower than the Fixed Costs for Bins due to a larger container base to allocate costs. **Figure 4-6** shows the calculation of Fixed Costs for Bins and Carts.

Figure 4-6. Fixed Collection Costs

		Bin	Cart
Total Annual Fixed Costs	A	$2,666,402	$9,045,862
Number of Accounts	B	5,762	112,205
Fixed Cost per Year	A / B = C	$ 462.75	$ 80.62
Fixed Cost per Month	C / 12	**$ 38.56**	**$ 6.72**

Transfer and Disposal Costs

Transfer and disposal costs represent the FY 2018-2019 projected budget costs to dispose the collected solid waste. The cost per gallon or yard is calculated by dividing the actual disposal costs by the number of subscribed gallons or yards serviced. **Figure 4-7** lists the Transfer and Disposal costs per Bin and Cart.

Figure 4-7. Transfer and Disposal Cost per Month

		Bin	Cart			
Total Disposal Costs	A	$ 2,164,422	$ 6,685,454			
Total Subscribed Yards / Gallons	B	192,907	118,704,790			
Disposal Cost per Yard / Gallon	A / B = C	$ 11.22	$ 0.0563			
		2 Yd Bin	3 Yd Bin	4 Yd Bin	64 Gal Cart	100 Gal Cart
Disposal Cost per Month	C * Size	$ 22.44	$ 33.66	$ 44.88	$ 3.60	$ 5.63

Figure 4-8 summarizes the rates for the bins and carts for service one time per week (first container).

Figure 4-8. Base Collection Rates (Service 1X per Week, First Container)

	Bins			Carts	
	2 Yard	3 Yard	4 Yard	64 Gallon	100 Gallon
Solid Waste Collection - 1st Container					
Variable	$ 47.00	$ 83.32	$ 128.18	$ 7.07	$ 13.61
Fixed	$ 38.56	$ 38.56	$ 38.56	$ 6.72	$ 6.72
Transfer/Disposal	$ 22.44	$ 33.66	$ 44.88	$ 3.60	$ 5.63
	$ 108.00	$ 155.54	$ 211.62	$ 17.39	$ 25.96

Figure 4-9 compares the current and cost of service based rates for cart and bin customer accounts. The percentage increase varies for each level of service based on the proportion of fixed to volumetric components of the rate.

Figure 4-9. Comparison of Current and COS-based Rates

		Projected Cost of Service and Percentage Rate Increase			
Solid Waste and Recycling	**Current Rates**	**FY 18/19**	**% Change**	**FY 19/20**	**% Change**
64 Gallon Cart	$ 20.47	$ 21.14	3.3%	$ 21.72	2.8%
100 Gallon Cart	$ 24.11	$ 29.70	23.2%	$ 30.61	3.0%
2 Yard Bin	$ 89.16	$ 111.75	25.3%	$ 114.99	2.9%
3 Yard Bin	$ 114.09	$ 159.28	39.6%	$ 164.30	3.2%
4 Yard Bin	$ -	$ 215.65		$ 164.30	-23.8%

Multiple Service per Week

A rate for service that is provided to the same customer multiple times per week has the following components:

- First Service Day - Base rate
- Next Service Day – Base rate less fixed portion plus a frequency surcharge. [Frequency surcharge is the additional cost for the truck to service a customer in an area outside of the normal route.]

Figure 4-10 is an example of the calculation of the cost of service rate for a 2 yard bin serviced 3 times per Week. The fixed portion is removed for each additional service day of service.

Figure 4-10. Example of Monthly Rate Calculation for 2 Yard Bin Serviced 3 Times per Week

Base Rate - 2 Yard Bin	A	$ 97.90
Fixed Portion	B	$ 38.56
Frequency Surcharge (per trip beyond the first trip)	C	$ 11.71
Rate Calculation		
1st Day of Service		
Base Rate	A	$ 97.90
2nd Day of Service		
Base Rate	A	97.90
Fixed Portion	B	(38.56)
Frequency Surcharge	C	11.71
3rd Day of Service		
Base Rate	A	97.90
Fixed Portion	B	(38.56)
Frequency Surcharge	C	11.71
Total Rate - 2 Yard Bin Serviced 3 Times per Week		$ 239.99

Second Container

There are occasions, due to service demands, a customer may have more than one solid waste container. A rate for the second container includes the disposal component, fixed container component, and portion of variable costs. The variable cost portion is based on the additional time for the driver to service the second container (labor and truck variable) and truck capacity based on the size of container. The 5% of the variable component was confirmed with City staff that it is reasonable for the City's operations based on the proportionate share of customers with second containers. **Figure 4-11** shows a calculation for two 100 gallon carts serviced one time per week.

Figure 4-11. Calculation of Monthly Rate for Two 100 Gallon Carts Service

Base Rate - 100 Gallon Cart	A	$ 25.96
Disposal	B	$ 5.63
Additional Fixed (Container)	C	$ 0.45
Additional Operating Costs (5% of Variable Component)	D	$ 0.68
Rate Calculation		
1st Day of Service		
Base Rate	A	$ 25.96
2nd Container		
Disposal	B	5.63
Fixed Portion	C	0.45
Variable Portion	D	0.68
		6.76
Total Monthly Rate - Two 100 Gallon Carts Serviced 1 time Per Week		$ 32.72

SECTION 5. CUSTOMER BILL IMPACTS

The current residential and commercial collection service rates alone will not provide the revenue needed to fund existing and projected operating and capital expenses and maintain the required Operating Reserve and therefore must be adjusted.

Using the Rate Model, we developed three rate adjustment scenarios for review by staff. The first scenario assumes the rates are adjusted such that they will be equal to the cost to provide the corresponding level of service. The other two scenarios were presented to provide alternative approaches to achieving the same end result but over a two year period. Other than that difference, all scenarios were developed using the following assumptions:

- Personnel, operating and maintenance expenses were projected to grow based on annual escalators provided by the City's Financial Management as shown in **Figure 5-1** and a 3% CPI escalation factor for those expenses not specifically identified by Financial Management.

Figure 5-1. Escalators Provided by City Financial Management

Sub-Object	Title	% Inflator 2018	% Inflator 2019
100001	Permanent-Full Time (Regular)	2%	2%
131001	Retirement PERS - Applied	10%	12%
131006	Health/Dental/Life - Applied	4%	4%
131009	Post Employment Benefits	12%	11%
310004	Liability Insurance Allocated - Interfd	4%	3%
141001	Workers Comp Chgd to Depts (Applied)	3%	1%
Various	Refuse Fleet Costs (Fuel, Parts, Repairs, etc.)	-2%	7%

- Rates should be sufficient to fund operating and capital expenses and maintain the required Operating Reserve.
- In order to avoid potential Proposition 218 issues in using reserve funds, Operating Reserve monies can only be used to support solid waste-related programs.
- Rates were assumed to be effective on March 1, 2019 and October 1 thereafter.

Figure 5-2 shows the rates necessary to meet the cost of service revenue requirement. The rates for FY 2019-2020 assume an inflation adjustment. Rates will be adjusted by the current rate plus the average monthly percentage changes in the "Consumer Price Index, Urban Wage Earners, All Items, Los Angeles-Riverside-Orange County, CA Area, (1982-84=100)" (CWURA421SA0), which is compiled and published by the U.S. Department of Labor, Bureau of Labor Statistics or its successor agency, between each month's index value during the preceding 12 months ending in July and the corresponding months' index values published 12 months earlier.

Figure 5-2. Projected Rates – Cost of Service

		Projected Cost of Service and Percentage Rate Increase			
Solid Waste and Recycling	Current Rates	FY 18/19	% Change	FY 19/20	% Change
64 Gallon Cart	$ 20.47	$ 21.14	3.3%	$ 21.72	2.8%
100 Gallon Cart	$ 24.11	$ 29.70	23.2%	$ 30.61	3.0%
2 Yard Bin	$ 89.16	$ 111.75	25.3%	$ 114.99	2.9%
3 Yard Bin	$ 114.09	$ 159.28	39.6%	$ 164.30	3.2%
4 Yard Bin	$ -	$ 215.65		$ 222.53	3.2%

Figure 5-3 shows a two-year phased in approach to the rate adjustments in order to minimize the rate shock to the City's ratepayers. The cart rate adjustments are smoothed over the two years and the bin rates are front loaded in the two years. The rates will generate sufficient revenue to cover the cost of service as well as contribute to the operating reserve to fund future diversion programs and other operational requirements.

Figure 5-3. Projected Rates
Cart Rate Adjustments Spread Equally Over 2 Years
Bin Rate Adjustments Front Loaded in Over 2 Years

		Projected Transition Rates - Rate Scenario 1			
Solid Waste and Recycling	Current Rates	FY 18/19	% Change	FY 19/20	% Change
64 Gallon Carts	$ 20.47	$ 22.12	8.0%	$ 23.93	8.2%
100 Gallon Carts	$ 24.11	$ 26.12	8.3%	$ 28.33	8.5%
2 Yard Bin	$ 89.16	$ 101.93	14.3%	$ 116.61	14.4%
3 Yard Bin	$ 114.09	$ 130.60	14.5%	$ 149.58	14.5%
4 Yard Bin		$ 204.45		$ 234.51	14.7%

Figure 5-4 shows an additional two-year phased in approach with the cart rates slightly declining in the subsequent year and the bin rates smoothed over the two years. Similar to Scenario 2, he rates will generate sufficient revenue to cover the cost of service as well as contribute to the operating reserve to fund future diversion programs and other operational requirements.

Figure 5-4. Projected Rates
Cart Rate Adjustments Annual Decline
Bin Rate Adjustments Flat over 2 Years

		Projected Transition Rates - Rate Scenario 2			
Solid Waste and Recycling	Current Rates	FY 18/19	% Change	FY 19/20	% Change
64 Gallon Carts	$ 20.47	$ 22.45	9.7%	$ 24.47	9.0%
100 Gallon Carts	$ 24.11	$ 26.52	10.0%	$ 28.99	9.3%
2 Yard Bin	$ 89.16	$ 99.38	11.5%	$ 110.82	11.5%
3 Yard Bin	$ 114.09	$ 127.30	11.6%	$ 142.09	11.6%
4 Yard Bin		$ 199.22		$ 222.64	11.8%

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CITY OF LONG BEACH

2929 E. WILLOW STREET

LONG BEACH, CA 90806

COST OF SERVICE AND RATE STUDY APPENDICES

A-1 Rate Model Summary

A-2 Solid Waste Cart Cost of Service Calculations

A-3 Recycling Rates by Customer

A-4 Solid Waste Bin Cost of Service Calculations

A-5 Monthly Cart Rates – Cost of Service

A-6 Monthly Cart Rates – Scenario 1

A-7 Monthly Cart Rates – Scenario 2

A-8 Monthly Bin Rates – Cost of Service

A-9 Monthly Bin Rates - Scenario 1

A-10 Monthly Bin Rates – Scenario 3

A-11 Current Rate Schedule

HF&H CONSULTANTS, LLC

APPENDIX A-1:
RATE MODEL SUMMARY

Rate Model Summary

Select Filter
Cost of Service

CITY OF LONG BEACH

SOLID WASTE RATE MODEL

SUMMARY RESULTS	FY 17/18 Preliminary Actual (City Data)	FY 18/19 Proposed (City Data)	FY 19/20 Projected
Revenue	$ 43,487,804	$ 47,554,652	$ 52,278,475
Expenditures	$ 44,883,363	$ 50,444,285	$ 51,865,426
Overall Surplus/(Shortfall)	**$ (1,395,559)**	**$ (2,889,633)**	**$ 413,049**
as % of Total Expenditures	**-3.1%**	**-5.7%**	**0.8%**
Operating Reserve			
Beginning of FY (Oct. 1)	$ 13,360,886	$ 11,965,327	$ 9,075,693
End of FY (Sept. 30)	**$ 11,965,327**	**$ 9,075,693**	**$ 9,488,742**
% of Expenditures	26.7%	18.0%	18.3%
Months of Expenditures	3.2	2.2	2.2
LOB Surplus/(Shortfall)			
Solid Waste Carts	$ (3,155,164)	$ (2,815,847)	$ 100,547
Recycling Carts	$ 2,545,398	$ 456,902	$ -
Carts Total Surplus/(Shortfall)	**$ (609,765)**	**$ (2,358,945)**	**$ 100,547**
Solid Waste Bins	$ (785,794)	$ (530,688)	$ 312,502
Recycling Bins	$ -	$ -	$ -
Bins Total Surplus/(Shortfall)	**$ (785,794)**	**$ (530,688)**	**$ 312,502**
Overall Surplus/(Shortfall)	**$ (1,395,559)**	**$ (2,889,633)**	**$ 413,049**

REVENUE AND EXPENSE ADJUSTMENTS

RATE ADJUSTMENT TIMING INPUTS		FY 18/19	FY 19/20
Rate Adjustment Effective Date	-	March 1st	October 1st

Note: *All fiscal years begin October 1st, and the default rate adjustment date is October 1st. Any later rate adjustment date will result in decreas*

RATE/REVENUE ADJUSTMENT INPUTS		FY 18/19	FY 19/20
Revenue Category	**Rate Revenue?**		
Cost of Service	COS	**Calculated**	**Calculated**
Rate Scenario 1		**User Input**	**User Input**
Solid Waste Cart Rates	**RS1**	**0.0%**	**10.0%**
Solid Waste Bin Rates	**RS1**	**0.0%**	**15.0%**
Recycling Cart Rates	**RS1**	**0.0%**	**0.0%**
Rate Scenario 2		**User Input**	**User Input**
Solid Waste Cart Rates	**RS2**	**12.0%**	**11.0%**
Solid Waste Bin Rates	**RS2**	**12.0%**	**12.0%**
Recycling Cart Rates	**RS2**	**0.0%**	**0.0%**

EXPENDITURE ADJUSTMENT INPUTS		FY 18/19	FY 19/20
Expenditure Category	**-**		
All Expenses	-	3.0%	3.0%
No Adjustment	-	0.0%	0.0%

APPENDIX A-2:
SOLID WASTE CART COST OF SERVICE CALCULATIONS

Solid Waste Cart Cost of Service Calculations

FY2018/19	Cost of Service Information
$ 32,265,731	Total Solid Waste Cart Costs
$ 2,053,236	ADMINISTRATION
$ 639,971	ESB FACILITY
$ -	SRRE PROGRAMS
$ -	SREE PROGRAM, PUBLIC EDUCATION
$ -	SRRE PROGRAM, OTHER GRANTS
	SRRE PROGRAM-RMDZ
$ -	SRRE PROGRAM GRANTS
	DEFAULT-REFUSE FUND
$ 1,058,704	REFUSE COLLECTION-ADMINISTRATION
$ 10,659,257	REFUSE COLLECTION-MANUAL
$ 5,388	REFUSE COLLECTION-DUMPED ITEMS
$ 20,500	REFUSE COLLECTION-CHRISTMAS TREES
	REFUSE COLLECTION-SPECIAL COLLECTION
$ 4,739,356	REFUSE COLLECTION-AUTOMATED
$ 554,054	CART & BIN DELIVERY
$ 1,924,482	LITTER REDUCTION CAMPAIGN
$ 3,261,844	COMMUNITY SUPPORT GENERAL
$ 473,189	REFUSE INDIRECT COST PLAN
$ 1,135,801	MSW Transfer/Processing/Disposal Costs (2nd Cart)
$ 6,685,454	MSW Transfer/Processing/Disposal Costs
$ (945,505)	Non-Rate Revenue
$ 32,265,731	Total All Costs
$ (0)	*Check - All Costs Included if 0*
$ 9,045,862	Fixed Cost
$ 15,398,614	MSW Collection Operations Costs
$ 0.05632	MSW Transfer/Disposal per Gallon/Month
0.62	MSW Pounds per Gallon
19.69	32-Gal MSW Pounds per Setout
39.38	64-Gal MSW Pounds per Setout
61.52	100-Gal MSW Pounds per Setout
0.16	32-Gal Yardage Conversion
0.32	64-Gal Yardage Conversion
0.50	100-Gal Yardage Conversion
25	Collection Body MSW Yards
8.00	Collection Body MSW Tons
$ 4.68	Cost/min for additional freq. of service
2.5	Additional Service Frequency Time (Minutes)
$ 11.71	Additional Service Frequency Cost

Operational Information

Container Size	64	64	100	TOTAL
Disposal				
Cart 1	39	39	62	
Cart 2	39	39	62	
Subscribed Gal				
Cart 1	5,860	3,528,169	5,705,340	9,239,368
Cart 2	864	401,722	1,023,910	1,426,496
Cart 1 Tons	94	56,438	91,264	147,796
Cart 2 Tons	14	6,426	16,379	22,819
Calc'd Rate/ton				$ 49.78
Cart 2 Disposal	$ 688	$ 319,858	$ 815,255	$ 1,135,800.82
MSW - 1st cart	183	37,381	74,800	112,364
MSW - 2nd cart	27	5,175	11,341	16,543
TOTAL	210	42,556	86,141	128,907
Avg per Route Day	**64**	**64**	**100**	**TOTAL**
MSW Lifts / Route	1	261	528	791
				-
				-
TOTAL	1	261	528	791

Estimation of Equivalent Routes

Subscription Level	64	64	100	
Containers (1st and 2nd)	210	42,556	86,141	128,907
% of All Subscribers	0%	33%	67%	100%
Ideal 1-Load Route?	1	134	174	309
Setouts in Max Load	406	406	260	
	1.00	1.00	1.00	
Req'd Rte Days	317.24	317.24	495.68	
Calculated Loads	417.7			
Lifts/Hr.	119.4			

Container Size	64	64	100	Standard
Hours to Pack-out	3.40	3.40	2.18	
Avg Route Time	6.63	6.63	6.63	6.63
Loads	2.00	2.00	4.00	2.00
Hours/Dump Trip	1.00	1.00	1.00	1.00
Dump Time	2.00	2.00	4.00	2.00
Total Route Time	8.63	8.63	10.63	8.63
FTE Route Factor	1.00	1.00	1.23	1.00

MSW Accounts	183	37,313	74,708	112,205
MSW 2nd Container	27	5,157	11,166	16,350
TOTAL Accounts	210	42,470	85,874	128,555

MSW Cart Rates by Cost of Service

Container Size		64		64		100
Setouts/Max Load		406.34		406.34		260.06
Total Containers (1st Container)		112,364		112,364		112,364
Loads if All Subs (per Week)		276.52		276.52		432.07
"FTE Route Factor"		1.00		1.00		1.23
Adjusted Loads if All Subs		276.52		276.52		532.25
Cost per Load	$					1,125.34
Cost all Loads	$	311,184.53	$	311,184.53	$	598,963.82
Minimum	$					311,184.53
Equivalent Container Factor		1.00		1.00		1.92
Containers by Size (Frequency)		183		37,381		74,800
Equivalent Container Units (ECU)		183		37,381		143,974
Annual Variable Route Costs	$	15,398,614				
ECUs		181,538				
Annual Variable/ECU	$	84.82				
Monthly Variable/ECU	$	7.07				
Equivalent Cart Factor		1.00		1.00		1.92
Variable Route Costs/Month	$	7.07	$	7.07	$	13.61
Fixed Costs/Container/Month	$	6.72	$	6.72	$	6.72
MSW Txfr & Disp Cost/Month	$	3.60	$	3.60	$	5.63
TOTAL MONTHLY RATE @ 1x/wk	$	17.39	$	17.39	$	25.96
2nd Container						
Disposal	$	3.60	$	3.60	$	5.63
Addl Fixed (Depreciation)	$	0.40	$	0.40	$	0.45
Addl Operating Costs	$	0.35	$	0.35	$	0.68
Assume 5% of Variable Costs	$	4.35	$	4.35	$	6.76
Estimated Cost of Container	$	47.57	$	47.57	$	53.96
Depreciation (10year life)	$	0.40	$	0.40	$	0.45

APPENDIX A-3:
RECYCLING RATES BY CUSTOMER

Recycling Rates by Customer

Total	Cost of Service Information
$ 5,303,606	Total Recycling Cart Costs
$ 418,024	ADMINISTRATION
$ 130,293	ESB FACILITY
$ 4,008,030	SRRE PROGRAMS
$ 1,405,114	SREE PROGRAM, PUBLIC EDUCATION
$ 269,000	SRRE PROGRAM, OTHER GRANTS
	SRRE PROGRAM-RMDZ
$ 130,000	SRRE PROGRAM GRANTS
$ -	DEFAULT-REFUSE FUND
$ 215,545	REFUSE COLLECTION-ADMINISTRATION
$ -	REFUSE COLLECTION-MANUAL
$ -	REFUSE COLLECTION-DUMPED ITEMS
$ -	REFUSE COLLECTION-CHRISTMAS TREES
$ -	REFUSE COLLECTION-SPECIAL COLLECTION
$ -	REFUSE COLLECTION-AUTOMATED
$ -	CART & BIN DELIVERY
$ -	LITTER REDUCTION CAMPAIGN
$ 664,088	COMMUNITY SUPPORT GENERAL
$ 96,338	REFUSE INDIRECT COST PLAN
$ (2,032,825)	Non-Rate Revenue
$ 5,303,606	Total All Costs
$ (0)	*Check - All Costs Included if 0*
$ 5,303,606	Fixed Cost

Operational Information

Recycling	Total
Cart Customers	112,205
Bin Customers	5,762
TOTAL	117,967

REC Cart Rates by Cost of Service

	Rate
Fixed Costs / Month	$ 3.75
TOTAL MONTHLY RATE @ 1x/wk	$ 3.75

APPENDIX A-4:
SOLID WASTE BIN COST OF SERVICE CALCULATIONS

Solid Waste Bin Cost of Service Calculations

FY2018/19	Cost of Service Information
$ 9,613,864	Total Solid Waste Bin Costs
$ 602,446	ADMINISTRATION
$ 187,776	ESB FACILITY
$ -	SRRE PROGRAMS
$ -	SREE PROGRAM, PUBLIC EDUCATION
$ -	SRRE PROGRAM, OTHER GRANTS
	SRRE PROGRAM-RMDZ
$ -	SRRE PROGRAM GRANTS
	DEFAULT-REFUSE FUND
$ 310,638	REFUSE COLLECTION-ADMINISTRATION
$ 3,189,285	REFUSE COLLECTION-MANUAL
$ 1,612	REFUSE COLLECTION-DUMPED ITEMS
$ -	REFUSE COLLECTION-CHRISTMAS TREES
	REFUSE COLLECTION-SPECIAL COLLECTION
$ 1,418,031	REFUSE COLLECTION-AUTOMATED
$ 174,964	CART & BIN DELIVERY
$ 575,812	LITTER REDUCTION CAMPAIGN
$ 957,068	COMMUNITY SUPPORT GENERAL
$ 138,840	REFUSE INDIRECT COST PLAN
$ 175,724	2nd Cart Disposal Costs
$ 2,164,422	MSW Transfer/Processing/Disposal Costs
$ (282,753)	Non-Rate Revenue
$ 9,613,864	Total All Costs
$ 0.00	*Check - All Costs Included if 0*
$ 2,666,402	Fixed Cost
$ 4,607,316	MSW Collection Operations Costs
$ 13.33	2nd Cart Disposal Costs
$ 11.22	MSW Transfer/Disposal per Yard/Month
123.66	MSW Pounds per Yard
123.66	1 Yard MSW Pounds per Setout
247.33	2 Yard MSW Pounds per Setout
370.99	3 Yard MSW Pounds per Setout
494.65	4 Yard MSW Pounds per Setout
618.32	5 Yard MSW Pounds per Setout
741.98	6 Yard MSW Pounds per Setout
989.31	8 Yard MSW Pounds per Setout
247.33	1 Yard COMP MSW Pounds per Setout
494.65	2 Yard COMP MSW Pounds per Setout
741.98	3 Yard COMP MSW Pounds per Setout
989.31	4 Yard COMP MSW Pounds per Setout
1483.96	6 Yard COMP MSW Pounds per Setout
0.16	32-Gal Yardage Conversion
0.32	64-Gal Yardage Conversion
0.48	96-Gal Yardage Conversion
29	Collection Body MSW Yards
8.79	Collection Body MSW Tons
$ 4.68	Cost/min for additional freq. of service
2.5	Additional Service Frequency Time (Minutes)
$ 11.71	Additional Service Frequency Cost

Operational Information

Container Size		2	3	4			TOTAL
lbs per container		247.33	370.99				
Gallons							
1st Bin		152,177,099	15,731,609	subscribed Gal			
2nd Bin		8,591,544	2,884,752				
Yards							
1st Bin		757,100	78,267				
2nd Bin		42,744	14,352				
Tons							
1st Bin		46,813	4,839	annual tons		51,652	
2nd Bin		2,643	887				
Disposal Rate	$ 49.78						
2nd Bin Disposal Cost		131,553	44,171				175,724
1st Bin Disposal Cost		2,330,117	240,880				2,570,997
MSW - Containers Svc	-	7,280	502	-	-	-	7,782
MSW 2nd Container		411	92				503
							-
TOTAL Containers Svc	-	7,691	594	-	-	-	8,285
Avg Lifts per Route		**2**	**3**	**4**			**TOTAL**
MSW (From Route Data)	-	285	22	-			307
	-			-			-
	-	-	-	-			-
TOTAL	-	285	22	-			307

Estimation of Equivalent Routes

Subscription Level		**2**	**3**	**4**			
Containers	0	7,691	594	0			8,285
% of All Subscribers	0%	93%	7%	0%			100%
Ideal 1-Load Route	-	66	3	-			69
Setouts in Max Load	142	71	47	36			
	1.00	2.00	3.00	4.00			
Req'd Rte Days	58.29	116.58	174.87	233.16			
Calculated Loads	119.4						
Lifts/Hr.	51.1						
Container Size		2	3	4			Standard
Hours to Pack-out		1.39	0.93	0.69			
Avg Route Time		6.00	6.00	6.00			6.00
Loads		5.00	7.00	9.00			2.00
Hours/Dump Trip		1.00	1.00	1.00			1.00
Dump Time		5.00	7.00	9.00			2.00
Total Route Time		11.00	13.00	15.00			8.00
FTE Route Factor		1.38	1.63	1.88			1.00
MSW Accounts	-	5,460	302	-	-	-	5,762
MSW 2nd Container	-	333	43	-	-	-	376
TOTAL Accounts	-	5,793	345	-	-	-	6,138

MSW Bin Rates by Cost of Service

Container Size			**2**	**3**	**4**
Setouts/Max Load			71.06	47.38	35.53
Total Containers (1st Bin)			7,782	7,782	7,782
Loads if All Subs (per Day)			109.50	164.25	219.00
"FTE Route Factor"			1.38	1.63	1.88
Adjusted Loads if All Subs			150.57	266.91	410.63
Cost per Load		$ 1,171.19			
Cost all Loads		$ 72,139.36	$ 176,340.65	$ 312,603.89	$ 480,929.06
Minimum		$ 72,139.36			
Equivalent Container Factor			2.44	4.33	6.67
Containers by Size (Frequency)		-	7,280	502	-
Equivalent Container Units (ECU)		-	17,795	2,174	-
$ 9,438,141					
Annual Variable Route Costs		$ 4,607,316			
ECUs		19,969			
Annual Variable/ECU		$ 230.72			
Monthly Variable/ECU		$ 19.23			
ECFs			2.44	4.33	6.67
Variable Route Costs/Month			$ 47.00	$ 83.32	$ 128.18
Fixed Costs/Account/Month			$ 38.56	$ 38.56	$ 38.56
MSW Txfr & Disp Cost/Month			$ 22.44	$ 33.66	$ 44.88
TOTAL MONTHLY RATE @ 1x/wk			$ 108.00	$ 155.54	$ 211.62
2nd Container					
Disposal			$ 22.44	$ 33.66	$ 44.88
Addl Fixed (Depreciation)			$ 5.24	$ 6.07	$ 6.78
Addl Operating Costs			$ 2.35	$ 4.17	$ 6.41
Assume 5% of Variable Costs			$ 30.02	$ 43.90	$ 58.07
Estimated Cost of Container			$ 628.43	$ 728.75	$ 814.09
Bin Depreciation (10year life)			$ 5.24	$ 6.07	$ 6.78

APPENDIX A-5:
MONTHLY CART RATES – COST OF SERVICE

Monthly Cart Rates – Cost of Service

MSW Cart Rates - Current		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 16.44	$ 20.08

MSW Cart Rates - 18/19 Full COS		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 17.39	$ 25.96
2 /week	$ 39.77	$ 56.90
3 /week	$ 62.16	$ 87.85
4 /week	$ 84.54	$ 118.80
5 /week	$ 106.92	$ 149.75
6 /week	$ 129.31	$ 180.69
1 2nd Container	$ 4.35	$ 6.76
2 2nd Container	$ 8.71	$ 13.52
3 2nd Container	$ 13.06	$ 20.29
4 2nd Container	$ 17.42	$ 27.05
5 2nd Container	$ 21.77	$ 33.81
6 2nd Container	$ 26.13	$ 40.57

MSW Cart Rates - 19/20 Full COS		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 17.89	$ 26.77
2 /week	$ 41.00	$ 58.77
3 /week	$ 64.10	$ 90.76
4 /week	$ 87.21	$ 122.75
5 /week	$ 110.32	$ 154.75
6 /week	$ 133.43	$ 186.74
1 2nd Container	$ 4.45	$ 6.92
2 2nd Container	$ 8.91	$ 13.83
3 2nd Container	$ 13.36	$ 20.75
4 2nd Container	$ 17.81	$ 27.67
5 2nd Container	$ 22.27	$ 34.59
6 2nd Container	$ 26.72	$ 41.50

REC Cart Rates - Current		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 4.03	$ 4.03

REC Cart Rates - 18/19 Full COS		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 3.75	$ 3.75
2 /week	$ 3.75	$ 3.75
3 /week	$ 3.75	$ 3.75
4 /week	$ 3.75	$ 3.75
5 /week	$ 3.75	$ 3.75
6 /week	$ 3.75	$ 3.75

REC Cart Rates - 19/20 Full COS		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 3.84	$ 3.84
2 /week	$ 3.84	$ 3.84
3 /week	$ 3.84	$ 3.84
4 /week	$ 3.84	$ 3.84
5 /week	$ 3.84	$ 3.84
6 /week	$ 3.84	$ 3.84

Total Cart Rates - Current		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 20.47	$ 24.11

Total Cart Rates - 18/19 Full COS		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 21.14	$ 29.70
2 /week	$ 43.52	$ 60.65
3 /week	$ 65.90	$ 91.60
4 /week	$ 88.29	$ 122.54
5 /week	$ 110.67	$ 153.49
6 /week	$ 133.05	$ 184.44

Total Cart Rates - 19/20 Full COS		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 21.72	$ 30.61
2 /week	$ 44.83	$ 62.60
3 /week	$ 67.94	$ 94.59
4 /week	$ 91.05	$ 126.59
5 /week	$ 114.16	$ 158.58
6 /week	$ 137.27	$ 190.58

APPENDIX A-6:
MONTHLY CART RATES – SCENARIO 1

Monthly Cart Rates – Scenario 1

Increase Percentage

MSW Cart Rates - Current		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 16.44	$ 20.08

10%

MSW Cart Rates - 18/19 Scenario 1		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 18.09	$ 22.09
2 /week	$ 36.17	$ 44.17
3 /week	$ 54.26	$ 66.26
4 /week	$ 72.35	$ 88.35
5 /week	$ 90.44	$ 110.43
6 /week	$ 108.52	$ 132.52
1 2nd Container	$ 18.09	$ 22.09
2 2nd Container	$ 36.17	$ 44.17
3 2nd Container	$ 54.26	$ 66.26
4 2nd Container	$ 72.35	$ 88.35
5 2nd Container	$ 90.44	$ 110.43
6 2nd Container	$ 108.52	$ 132.52

10%

MSW Cart Rates - 19/20 Scenario 1		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 19.90	$ 24.30
2 /week	$ 39.79	$ 48.59
3 /week	$ 59.69	$ 72.89
4 /week	$ 79.58	$ 97.18
5 /week	$ 99.48	$ 121.48
6 /week	$ 119.38	$ 145.77
1 2nd Container	$ 19.90	$ 24.30
2 2nd Container	$ 39.79	$ 48.59
3 2nd Container	$ 59.69	$ 72.89
4 2nd Container	$ 79.58	$ 97.18
5 2nd Container	$ 99.48	$ 121.48
6 2nd Container	$ 119.38	$ 145.77

Increase Percentage

REC Cart Rates - Current		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 4.03	$ 4.03

0%

REC Cart Rates - 18/19 Scenario 1		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 4.03	$ 4.03
2 /week	$ 4.03	$ 4.03
3 /week	$ 4.03	$ 4.03
4 /week	$ 4.03	$ 4.03
5 /week	$ 4.03	$ 4.03
6 /week	$ 4.03	$ 4.03

0%

REC Cart Rates - 19/20 Scenario 1		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 4.03	$ 4.03
2 /week	$ 4.03	$ 4.03
3 /week	$ 4.03	$ 4.03
4 /week	$ 4.03	$ 4.03
5 /week	$ 4.03	$ 4.03
6 /week	$ 4.03	$ 4.03

Total Cart Rates - Current		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 20.47	$ 24.11

Total Cart Rates - 18/19 Scenario 1		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 22.12	$ 26.12
2 /week	$ 40.20	$ 48.20
3 /week	$ 58.29	$ 70.29
4 /week	$ 76.38	$ 92.38
5 /week	$ 94.47	$ 114.46
6 /week	$ 112.55	$ 136.55

Total Cart Rates - 19/20 Scenario 1		
	Container Size	
Frequency	64 Gal	100 Gal
1 /week	$ 23.93	$ 28.33
2 /week	$ 43.82	$ 52.62
3 /week	$ 63.72	$ 76.92
4 /week	$ 83.61	$ 101.21
5 /week	$ 103.51	$ 125.51
6 /week	$ 123.41	$ 149.80

APPENDIX A-7:
MONTHLY CART RATES – SCENARIO 2

Monthly Cart Rates – Scenario 2

Increase Percentage 12%

MSW Cart Rates - Current			MSW Cart Rates - 18/19 Scenario 2			MSW Cart Rates - 19/20 Scenario 2		
	Container Size			Container Size			Container Size	
Frequency	64 Gal	100 Gal	Frequency	64 Gal	100 Gal	Frequency	64 Gal	100 Gal
1 /week	$ 16.44	$ 20.08	1 /week	$ 18.42	$ 22.49	1 /week	$ 20.44	$ 24.96
			2 /week	$ 36.83	$ 44.98	2 /week	$ 40.88	$ 49.92
			3 /week	$ 55.25	$ 67.47	3 /week	$ 61.33	$ 74.89
			4 /week	$ 73.66	$ 89.95	4 /week	$ 81.77	$ 99.85
			5 /week	$ 92.08	$ 112.44	5 /week	$ 102.21	$ 124.81
			6 /week	$ 110.50	$ 134.93	6 /week	$ 122.65	$ 149.77
			1 2nd Container	$ 18.42	$ 6.76	1 2nd Container	$ 20.44	$ 7.51
			2 2nd Container	$ 36.83	$ 13.52	2 2nd Container	$ 40.88	$ 15.01
			3 2nd Container	$ 55.25	$ 20.29	3 2nd Container	$ 61.33	$ 22.52
			4 2nd Container	$ 73.66	$ 27.05	4 2nd Container	$ 81.77	$ 30.02
			5 2nd Container	$ 92.08	$ 33.81	5 2nd Container	$ 102.21	$ 37.53
			6 2nd Container	$ 110.50	$ 40.57	6 2nd Container	$ 122.65	$ 45.04

Increase Percentage 11%

Increase Percentage 0%

REC Cart Rates - Current			REC Cart Rates - 18/19 Scenario 2			REC Cart Rates - 19/20 Scenario 2		
	Container Size			Container Size			Container Size	
Frequency	64 Gal	100 Gal	Frequency	64 Gal	100 Gal	Frequency	64 Gal	100 Gal
1 /week	$ 4.03	$ 4.03	1 /week	$ 4.03	$ 4.03	1 /week	$ 4.03	$ 4.03
			2 /week	$ 4.03	$ 4.03	2 /week	$ 4.03	$ 4.03
			3 /week	$ 4.03	$ 4.03	3 /week	$ 4.03	$ 4.03
			4 /week	$ 4.03	$ 4.03	4 /week	$ 4.03	$ 4.03
			5 /week	$ 4.03	$ 4.03	5 /week	$ 4.03	$ 4.03
			6 /week	$ 4.03	$ 4.03	6 /week	$ 4.03	$ 4.03

Total Cart Rates - Current			Total Cart Rates - 18/19 Scenario 2			Total Cart Rates - 19/20 Scenario 2		
	Container Size			Container Size			Container Size	
Frequency	64 Gal	100 Gal	Frequency	64 Gal	100 Gal	Frequency	64 Gal	100 Gal
1 /week	$ 20.47	$ 24.11	1 /week	$ 22.45	$ 26.52	1 /week	$ 24.47	$ 28.99
			2 /week	$ 40.86	$ 49.01	2 /week	$ 44.91	$ 53.95
			3 /week	$ 59.28	$ 71.50	3 /week	$ 65.36	$ 78.92
			4 /week	$ 77.69	$ 93.98	4 /week	$ 85.80	$ 103.88
			5 /week	$ 96.11	$ 116.47	5 /week	$ 106.24	$ 128.84
			6 /week	$ 114.53	$ 138.96	6 /week	$ 126.68	$ 153.80

APPENDIX A-8:
MONTHLY BIN RATES – COST OF SERVICE

Monthly Bin Rates – Cost of Service

2017/18 MSW Bin Rates - Current		
	Container Size	
Frequency	2	3
1 /week	$ 85.13	$ 110.06
2 /week	$ 160.19	$ 235.30
3 /week	$ 235.30	$ 310.37
4 /week	$ 310.37	$ 574.93
5 /week	$ 385.44	$ 664.55
6 /week	$ 574.93	$ 800.17
1 2nd Container		
2 2nd Container		
3 2nd Container		
4 2nd Container		
5 2nd Container		
6 2nd Container		

2018/19 MSW Bin Rates - Full COS			
	Container Size		
Frequency	2	3	4
1 /week	$ 108.00	$ 155.54	$ 211.62
2 /week	$ 189.15	$ 284.22	$ 396.38
3 /week	$ 270.29	$ 412.90	$ 581.15
4 /week	$ 351.44	$ 541.58	$ 765.91
5 /week	$ 432.58	$ 670.27	$ 950.67
6 /week	$ 513.73	$ 798.95	$ 1,135.44
1 2nd Container	$ 30.02	$ 43.90	$ 58.07
2 2nd Container	$ 60.05	$ 87.79	$ 116.14
3 2nd Container	$ 90.07	$ 131.69	$ 174.21
4 2nd Container	$ 120.10	$ 175.58	$ 232.28
5 2nd Container	$ 150.12	$ 219.48	$ 290.34
6 2nd Container	$ 180.15	$ 263.37	$ 348.41

2019/20 MSW Bin Rates - Full COS			
	Container Size		
Frequency	2	3	4
1 /week	$ 111.15	$ 160.47	$ 218.70
2 /week	$ 195.11	$ 293.74	$ 410.20
3 /week	$ 279.07	$ 427.02	$ 601.70
4 /week	$ 363.03	$ 560.30	$ 793.21
5 /week	$ 446.99	$ 693.57	$ 984.71
6 /week	$ 530.95	$ 826.85	$ 1,176.21
1 2nd Container	$ 30.73	$ 44.93	$ 59.44
2 2nd Container	$ 61.46	$ 89.86	$ 118.89
3 2nd Container	$ 92.19	$ 134.79	$ 178.33
4 2nd Container	$ 122.93	$ 179.72	$ 237.78
5 2nd Container	$ 153.66	$ 224.65	$ 297.22
6 2nd Container	$ 184.39	$ 269.58	$ 356.67

REC Bin Rates		
	Container Size	
Frequency	2	3
1 /week	$ 4.03	$ 4.03
2 /week	$ 4.03	$ 4.03
3 /week	$ 4.03	$ 4.03
4 /week	$ 4.03	$ 4.03
5 /week	$ 4.03	$ 4.03
6 /week	$ 4.03	$ 4.03

REC Bin Rates			
	Container Size		
Frequency	2	3	4
1 /week	$ 3.75	$ 3.75	$ 3.75
2 /week	$ 3.75	$ 3.75	$ 3.75
3 /week	$ 3.75	$ 3.75	$ 3.75
4 /week	$ 3.75	$ 3.75	$ 3.75
5 /week	$ 3.75	$ 3.75	$ 3.75
6 /week	$ 3.75	$ 3.75	$ 3.75

REC Bin Rates			
	Container Size		
Frequency	2	3	4
1 /week	$ 3.84	$ 3.84	$ 3.84
2 /week	$ 3.84	$ 3.84	$ 3.84
3 /week	$ 3.84	$ 3.84	$ 3.84
4 /week	$ 3.84	$ 3.84	$ 3.84
5 /week	$ 3.84	$ 3.84	$ 3.84
6 /week	$ 3.84	$ 3.84	$ 3.84

APPENDIX A-9:
MONTHLY BIN RATES – SCENARIO 1

Monthly Bin Rates – Scenario 1

Increase Percentage

2017/18 MSW Bin Rates - Current		
	Container Size	
Frequency	2	3
1 /week	$ 85.13	$ 110.06
2 /week	$ 160.19	$ 235.30
3 /week	$ 235.30	$ 310.37
4 /week	$ 310.37	$ 574.93
5 /week	$ 385.44	$ 664.55
6 /week	$ 574.93	$ 800.17
1 2nd Container		
2 2nd Container		
3 2nd Container		
4 2nd Container		
5 2nd Container		
6 2nd Container		

		15%	
2018/19 MSW Bin Rates - Scenario1			
	Container Size		
Frequency	2	3	4
1 /week	$ 97.90	$ 126.57	$ 200.42
2 /week	$ 184.22	$ 270.60	$ 373.07
3 /week	$ 270.60	$ 356.93	$ 545.82
4 /week	$ 356.93	$ 661.17	$ 718.48
5 /week	$ 443.26	$ 764.23	$ 891.13
6 /week	$ 661.17	$ 920.20	$ 1,326.95
1 2nd Container	$ 97.90	$ 126.57	$ 200.42
2 2nd Container	$ 184.22	$ 270.60	$ 373.07
3 2nd Container	$ 270.60	$ 356.93	$ 545.82
4 2nd Container	$ 356.93	$ 661.17	$ 718.48
5 2nd Container	$ 443.26	$ 764.23	$ 891.13
6 2nd Container	$ 661.17	$ 920.20	$ 1,326.95

		15%	
2019/20 MSW Bin Rates - Scenario 1			
	Container Size		
Frequency	2	3	4
1 /week	$ 112.58	$ 145.55	$ 230.48
2 /week	$ 211.85	$ 311.18	$ 429.04
3 /week	$ 311.18	$ 410.46	$ 627.70
4 /week	$ 410.46	$ 760.34	$ 826.25
5 /week	$ 509.74	$ 878.87	$ 1,024.80
6 /week	$ 760.34	$ 1,058.22	$ 1,525.99
1 2nd Container	$ 112.58	$ 145.55	$ 230.48
2 2nd Container	$ 211.85	$ 311.18	$ 429.04
3 2nd Container	$ 311.18	$ 410.46	$ 627.70
4 2nd Container	$ 410.46	$ 760.34	$ 826.25
5 2nd Container	$ 509.74	$ 878.87	$ 1,024.80
6 2nd Container	$ 760.34	$ 1,058.22	$ 1,525.99

Increase Percentage

REC Bin Rates		
	Container Size	
Frequency	2	3
1 /week	$ 4.03	$ 4.03
2 /week	$ 4.03	$ 4.03
3 /week	$ 4.03	$ 4.03
4 /week	$ 4.03	$ 4.03
5 /week	$ 4.03	$ 4.03
6 /week	$ 4.03	$ 4.03

REC Bin Rates			
	Container Size		
Frequency	2	3	4
1 /week	$ 4.03	$ 4.03	$ 4.03
2 /week	$ 4.03	$ 4.03	$ 4.03
3 /week	$ 4.03	$ 4.03	$ 4.03
4 /week	$ 4.03	$ 4.03	$ 4.03
5 /week	$ 4.03	$ 4.03	$ 4.03
6 /week	$ 4.03	$ 4.03	$ 4.03

REC Bin Rates			
	Container Size		
Frequency	2	3	4
1 /week	$ 4.03	$ 4.03	$ 4.03
2 /week	$ 4.03	$ 4.03	$ 4.03
3 /week	$ 4.03	$ 4.03	$ 4.03
4 /week	$ 4.03	$ 4.03	$ 4.03
5 /week	$ 4.03	$ 4.03	$ 4.03
6 /week	$ 4.03	$ 4.03	$ 4.03

APPENDIX A-10:
MONTHLY BIN RATES – SCENARIO 2

Monthly Bin Rates – Scenario 2

Increase Percentage

2017/18 MSW Bin Rates - Current		
	Container Size	
Frequency	2	3
1 /week	$ 85.13	$ 110.06
2 /week	$ 160.19	$ 235.30
3 /week	$ 235.30	$ 310.37
4 /week	$ 310.37	$ 574.93
5 /week	$ 385.44	$ 664.55
6 /week	$ 574.93	$ 800.17

12%

2018/19 MSW Bin Rates - Scenario 2			
	Container Size		
Frequency	2	3	4
1 /week	$ 95.35	$ 123.27	$ 195.19
2 /week	$ 179.41	$ 263.54	$ 363.34
3 /week	$ 263.54	$ 347.61	$ 531.58
4 /week	$ 347.61	$ 643.92	$ 699.74
5 /week	$ 431.69	$ 744.30	$ 867.89
6 /week	$ 643.92	$ 896.19	$ 1,292.34
1 2nd Container	$ 95.35	$ 123.27	$ 195.19
2 2nd Container	$ 179.41	$ 263.54	$ 363.34
3 2nd Container	$ 263.54	$ 347.61	$ 531.58
4 2nd Container	$ 347.61	$ 643.92	$ 699.74
5 2nd Container	$ 431.69	$ 744.30	$ 867.89
6 2nd Container	$ 643.92	$ 896.19	$ 1,292.34

12%

2019/20 MSW Bin Rates - Scenario 2			
	Container Size		
Frequency	2	3	4
1 /week	$ 106.79	$ 138.06	$ 218.61
2 /week	$ 200.94	$ 295.16	$ 406.94
3 /week	$ 295.16	$ 389.33	$ 595.37
4 /week	$ 389.33	$ 721.19	$ 783.70
5 /week	$ 483.50	$ 833.61	$ 972.03
6 /week	$ 721.19	$ 1,003.73	$ 1,447.42
1 2nd Container	$ 106.79	$ 138.06	$ 218.61
2 2nd Container	$ 200.94	$ 295.16	$ 406.94
3 2nd Container	$ 295.16	$ 389.33	$ 595.37
4 2nd Container	$ 389.33	$ 721.19	$ 783.70
5 2nd Container	$ 483.50	$ 833.61	$ 972.03
6 2nd Container	$ 721.19	$ 1,003.73	$ 1,447.42

Increase Percentage

REC Bin Rates		
	Container Size	
Frequency	2	3
1 /week	$ 4.03	$ 4.03
2 /week	$ 4.03	$ 4.03
3 /week	$ 4.03	$ 4.03
4 /week	$ 4.03	$ 4.03
5 /week	$ 4.03	$ 4.03
6 /week	$ 4.03	$ 4.03

REC Bin Rates			
	Container Size		
Frequency	2	3	4
1 /week	$ 4.03	$ 4.03	$ 4.03
2 /week	$ 4.03	$ 4.03	$ 4.03
3 /week	$ 4.03	$ 4.03	$ 4.03
4 /week	$ 4.03	$ 4.03	$ 4.03
5 /week	$ 4.03	$ 4.03	$ 4.03
6 /week	$ 4.03	$ 4.03	$ 4.03

REC Bin Rates			
	Container Size		
Frequency	2	3	4
1 /week	$ 4.03	$ 4.03	$ 4.03
2 /week	$ 4.03	$ 4.03	$ 4.03
3 /week	$ 4.03	$ 4.03	$ 4.03
4 /week	$ 4.03	$ 4.03	$ 4.03
5 /week	$ 4.03	$ 4.03	$ 4.03
6 /week	$ 4.03	$ 4.03	$ 4.03

APPENDIX A-11:
CURRENT RATE SCHEDULE

RESIDENTIAL REFUSE AND RECYCLING RATES			
Dwelling Type	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
Single Family	$ 20.08	$ 4.03	$ 24.11
Duplex	$ 18.26	$ 4.03	$ 22.29
Apartments (1-10 Units)	$ 16.44	$ 4.03	$ 20.47
Apartments (11+ Units)	$ 16.44	$ 4.03	$ 20.47

Automated Cart Collection	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
32 Gallon	$ 8.22	$ -	$ 8.22
64 Gallon	$ 16.44	$ -	$ 16.44
64 Gallon with Recycling	$ 16.44	$ 4.03	$ 20.47
64 Gallon with additional 100 Gallon	$ 10.10	$ -	$ 10.10
100 Gallon	$ 20.08	$ -	$ 20.08
100 Gallon with Recycling	$ 20.08	$ 4.03	$ 24.11
250 Gallon	$ 75.07	$ -	$ 75.07
250 Gallon with Recycling	$ 75.07	$ 4.03	$ 79.09
300 Gallon	$ 81.57	$ -	$ 81.57

EXEMPT UTILITY USER'S RATES			
Automated Cart Collection	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
32 Gallon	$ 5.39	$ -	$ 5.39
64 Gallon	$ 10.79	$ -	$ 10.79
64 Gallon with Recycling	$ 10.79	$ 3.27	$ 14.06
100 Gallon	$ 13.21	$ -	$ 13.21
100 Gallon with Recycling	$ 13.21	$ 3.27	$ 16.49

APPENDIX A-11:
CURRENT RATE SCHEDULE

COMMERCIAL REFUSE AND RECYCLING RATES			
Manual - 50 Gallon Cans	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
1-2 Cans per Week	$ 21.98	$ 4.03	$ 26.00
3-7 Cans per Week	$ 55.23	$ 4.03	$ 59.26
6-10 Cans per Week	$ 110.06	$ 4.03	$ 114.08
11-15 Cans per Week	$ 165.04	$ 4.03	$ 169.07
16-20 Cans per Week	$ 219.90	$ 4.03	$ 223.93
21-30 Cans per Week	$ 369.96	$ 4.03	$ 373.99
31-40 Cans per Week	$ 519.90	$ 4.03	$ 523.92
41-50 Cans per Week	$ 669.87	$ 4.03	$ 673.90
51-60 Cans per Week	$ 819.80	$ 4.03	$ 823.83
61-70 Cans per Week	$ 969.65	$ 4.03	$ 973.68
71-80 Cans per Week	$ 1,119.71	$ 4.03	$ 1,123.73
81-90 Cans per Week	$ 1,269.72	$ 4.03	$ 1,273.75
91-100 Cans per Week	$ 1,419.66	$ 4.03	$ 1,423.68
101-125 Cans per Week	$ 1,794.67	$ 4.03	$ 1,798.70
126-150 Cans per Week	$ 2,169.48	$ 4.03	$ 2,173.51
151-175 Cans per Week	$ 2,544.21	$ 4.03	$ 2,548.24
176-200 Cans per Week	$ 2,919.31	$ 4.03	$ 2,923.34
201-225 Cans per Week	$ 3,294.24	$ 4.03	$ 3,298.27
226-250 Cans per Week	$ 3,669.05	$ 4.03	$ 3,673.08
251-275 Cans per Week	$ 4,046.41	$ 4.03	$ 4,050.44
276-300 Cans per Week	$ 4,418.88	$ 4.03	$ 4,422.91
301-325 Cans per Week	$ 4,793.69	$ 4.03	$ 4,797.72
326-350 Cans per Week	$ 5,168.63	$ 4.03	$ 5,172.65
351-375 Cans per Week	$ 5,543.56	$ 4.03	$ 5,547.59
376-400 Cans per Week	$ 5,918.57	$ 4.03	$ 5,922.60

COMMERCIAL REFUSE AND RECYCLING RATES			
Bin Service	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
2 yd Bin 1 Time per Week	$ 85.13	$ 4.03	$ 89.15
2 yd Bin 2 Times per Week	$ 160.19	$ 4.03	$ 164.22
2 yd Bin 3 Times per Week	$ 235.30	$ 4.03	$ 239.33
2 yd Bin 4 Times per Week	$ 310.37	$ 4.03	$ 314.40
2 yd Bin 5 Times per Week	$ 385.44	$ 4.03	$ 389.46
2 yd Bin 6 Times per Week	$ 574.93	$ 4.03	$ 578.95
2 yd Bin 7 Times per Week	$ 649.99	$ 4.03	$ 654.02
2 yd Bin 8 Times per Week	$ 725.10	$ 4.03	$ 729.13
2 yd Bin 9 Times per Week	$ 800.17	$ 4.03	$ 804.20
2 yd Bin 10 Times per Week	$ 875.24	$ 4.03	$ 879.26
2 yd Bin 11 Times per Week	$ 1,074.86	$ 4.03	$ 1,078.89
2 yd Bin 12 Times per Week	$ 1,149.93	$ 4.03	$ 1,153.96
2 yd Bin 13 Times per Week	$ 1,225.00	$ 4.03	$ 1,229.03
2 yd Bin 14 Times per Week	$ 1,300.11	$ 4.03	$ 1,304.13
2 yd Bin 15 Times per Week	$ 1,375.17	$ 4.03	$ 1,379.20

APPENDIX A-11:
CURRENT RATE SCHEDULE

COMMERCIAL REFUSE AND RECYCLING RATES			
Bin Service	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
2 yd Bin 16 Times per Week	$ 1,574.72	$ 4.03	$ 1,578.75
2 yd Bin 17 Times per Week	$ 1,649.79	$ 4.03	$ 1,653.81
2 yd Bin 18 Times per Week	$ 1,724.86	$ 4.03	$ 1,728.88
2 yd Bin 19 Times per Week	$ 1,799.96	$ 4.03	$ 1,803.99
2 yd Bin 20 Times per Week	$ 1,875.03	$ 4.03	$ 1,879.06
2 yd Bin 21 Times per Week	$ 2,074.58	$ 4.03	$ 2,078.60
2 yd Bin 22 Times per Week	$ 2,149.64	$ 4.03	$ 2,153.67
2 yd Bin 23 Times per Week	$ 2,224.71	$ 4.03	$ 2,228.74
2 yd Bin 24 Times per Week	$ 2,299.78	$ 4.03	$ 2,303.81
2 yd Bin 25 Times per Week	$ 2,374.89	$ 4.03	$ 2,378.91
2 yd Bin 26 Times per Week	$ 2,574.40	$ 4.03	$ 2,578.42
2 yd Bin 27 Times per Week	$ 2,649.50	$ 4.03	$ 2,653.53
2 yd Bin 28 Times per Week	$ 2,724.57	$ 4.03	$ 2,728.60
2 yd Bin 29 Times per Week	$ 2,799.64	$ 4.03	$ 2,803.66
2 yd Bin 30 Times per Week	$ 2,874.74	$ 4.03	$ 2,878.77
2 yd Bin 31 Times per Week	$ 3,074.33	$ 4.03	$ 3,078.36
2 yd Bin 32 Times per Week	$ 3,173.64	$ 4.03	$ 3,177.66
2 yd Bin 33 Times per Week	$ 3,272.94	$ 4.03	$ 3,276.96
2 yd Bin 34 Times per Week	$ 3,372.24	$ 4.03	$ 3,376.27
2 yd Bin 35 Times per Week	$ 3,471.54	$ 4.03	$ 3,475.57
2 yd Bin 36 Times per Week	$ 3,570.84	$ 4.03	$ 3,574.87
2 yd Bin 37 Times per Week	$ 3,670.15	$ 4.03	$ 3,674.17
2 yd Bin 38 Times per Week	$ 3,769.45	$ 4.03	$ 3,773.48
2 yd Bin 39 Times per Week	$ 3,868.75	$ 4.03	$ 3,872.78
2 yd Bin 40 Times per Week	$ 3,968.05	$ 4.03	$ 3,972.08

COMMERCIAL REFUSE AND RECYCLING RATES			
Bin Service	**Current 30-Day Refuse Bill**	**Current 30-Day Recycling Bill**	**Current Total 30-Day Bill**
3 yd Bin 1 Time per Week	$ 110.06	$ 4.03	$ 114.08
3 yd Bin 2 Times per Week	$ 235.30	$ 4.03	$ 239.33
3 yd Bin 3 Times per Week	$ 310.37	$ 4.03	$ 314.40
3 yd Bin 4 Times per Week	$ 574.93	$ 4.03	$ 578.95
3 yd Bin 5 Times per Week	$ 664.55	$ 4.03	$ 668.58
3 yd Bin 6 Times per Week	$ 800.17	$ 4.03	$ 804.20
3 yd Bin 7 Times per Week	$ 961.96	$ 4.03	$ 965.99
3 yd Bin 8 Times per Week	$ 1,215.28	$ 4.03	$ 1,219.30
3 yd Bin 9 Times per Week	$ 1,364.26	$ 4.03	$ 1,368.29
3 yd Bin 10 Times per Week	$ 1,562.22	$ 4.03	$ 1,566.25