

SANTA FE SOLID WASTE MANAGEMENT AGENCY  
CITY OF SANTA FE AND SANTA FE COUNTY

**Solid Waste Assessment & Management Study**  
**City Section**

FINAL | JULY 2014



# Solid Waste Assessment & Management Study

## Santa Fe Solid Waste Management Agency

### City of Santa Fe and Santa Fe County

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# Section 1

## COST OF SERVICE AND FUNDING OPTIONS

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### 1.1 Introduction

The City of Santa Fe (City) retained Leidos Engineering, LLC to conduct a cost of service and rate design study for the Environmental Services Division (ESD). The purpose of a cost of service study is to determine the total cost of providing solid waste services utilizing a full cost accounting methodology which equitably distributes the costs to each customer class while fully recovering, through user fees, the total cost of providing the services. The total cost of providing service includes costs associated with operations and maintenance (O&M), debt service, and cash capital outlays. The organizational structure of this report is described below:

- Current Solid Waste Services
- Project Approach
- Methodology Overview
- Development of the “Test Year”
- Allocation of Costs to Service Categories
- Allocation to Customer Classes
- Determination of Billing Units
- Calculation of the Cost of Service
- Current Rate Recovery
- Proposed Solid Waste Rates for Consideration
- Recommendations

### 1.2 Current Solid Waste Services

Solid waste services provided by the City include the following:

#### 1.2.1 Residential Services

The City currently serves approximately 27,413<sup>1</sup> residential customers, which is expected to increase by approximately 2,100 residents in FY 2015. This is attributed to the expected growth that will occur with the newly annexed area in the City of Santa Fe. Residential services provided by the City’s solid waste utility are included below:

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<sup>1</sup> Please note that this reflects the addition of approximately 2,100 residents in FY 2014 due to population increases from annexation.

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- **Residential refuse collection:** Weekly residential refuse collection is serviced via automated side-load trucks. One 64- or 96-gallon container is provided to all households, and a monthly charge of \$12.96 is currently assessed for each residential household.
- **Curbside recycling collection:** The City's recycling program is provided to residents via a curbside program every week utilizing 18-gallon bins. The cost of residential recycling is included in the residential monthly fee.
- **Special assistance for people living with disabilities:** elderly persons or persons with restricted mobility which renders them unable to place trash and recyclables at the curbside may be eligible for special assistance from the ESD.
- **Large item pickup:** The ESD offers large-item pick-up service for items that do not fit into the regular 96-gallon container (i.e., large appliances and furniture). This is an on-call service that is typically scheduled on Wednesdays. The current service fee for large item pick up is \$27.42.
- **Bag Tags:** Purchased bag tags must be used when placing additional bags out for collection. Bag tags may be purchased from either Utility Billing or the Cashier's Office at City Hall. Tags are sold in sheets of 5 for \$7.50 per sheet.
- **Household Hazardous Waste (HHW):** HHW consists of leftover household product that has a label or ingredients that contain any of the following warnings: flammable, ignitable, corrosive, reactive, or toxic. These warnings are typically found in the following substances: drain cleaners, motor oil, pesticides, etc. HHW can be properly disposed of at the Household Hazardous Waste Collection Center, which is located at the Buckman Road Recycling and Transfer Station (BuRRT), on Fridays and Saturdays.
- **Trash and Recycling Drop-Off:** Refuse, brush and recycling may be taken to the Buckman Road Recycling & Transfer Station (BuRRT) from 8:00 am to 4:45 pm, Monday through Sunday.
  - Transfer (Refuse) Service:
    - Vehicles less than 4,500 lbs - \$6.00 per load
    - Vehicles with Trailers - \$50.00 per ton
    - Minimum Load Charge - \$6.00 per load
  - Recycling Service
    - Conventional Recycling - No charge
    - Green Waste - \$20.00 per ton
    - Contaminated Green Waste - \$60.00 per ton
    - Minimum Load Charge - \$5.00 per load
    - Passenger Car Tire - \$2.00 per tire
    - Scrap Metal - \$15.00 per ton
    - Freon Bearing Appliance - \$10.00 per unit



- Non-Freon Bearing Appliance (White Goods) - \$5.00 per unit
  - Household Hazardous Waste - \$50.00 per ton
  - Electronic Waste - \$50.00 per ton
  - Mercury Containing Lamps - No Charge
- **Keep Santa Fe Beautiful:** This nonprofit volunteer program is dedicated to environmental education, litter awareness and prevention and beautification programs. The City of Santa Fe and Keep Santa Fe Beautiful work together to sponsor the annual Great American Cleanup in Spring and Toss No Mas Fall Cleanup days, the Adopt-a-Median program to landscape City street medians, the Keep Santa Fe Beautiful Wine Tasting and Silent Auction, and the Otra Vez Trash to Treasures program.

## 1.2.2 Commercial Services

The City of Santa Fe provides trash and recycling services to businesses, institutions, and construction sites in the City of Santa Fe. Available services include front load refuse, rear load refuse and recycling, and roll-off collection. With the exception of roll-off services, the City bills these commercial customers a flat monthly fee based upon the size of the containers collected and the frequency of collection. Please note that commercial accounts are currently charged a per dumpster/cart rental rate (with the exception of compactors), in addition to the flat monthly fee described above.

For roll-offs, the City bills the commercial customer a per pull fee for either a scheduled or non-scheduled pick-up. These customers are billed separately for the cost of disposal, which is charged on a per ton basis.

The various types of services offered to commercial customers are outlined below:

- **Front Load Dumpster:** The majority of commercial accounts are serviced via front load dumpsters. At present, 3, 4, 6, or 8 cubic yard dumpsters are available and may be emptied up to six days per week (Monday through Saturday) between 7 am and 3 pm. Approximately 1,374 front load dumpsters are currently collected in the field.
- **Rear Load Dumpsters & Carts:** Typically rear load dumpsters and carts are utilized to service trash collection in the downtown commercial area where access is limited. Commercial entities serviced via rear load trucks may select either dumpsters (3, 4, or 6 cubic yards) or carts (64- or 96-gallons). Trash dumpsters/carts may be emptied up to six (6) days per week (Monday through Saturday) between 4 am and 8 am. Approximately 203 rear load dumpsters and 1,604 rear load carts are serviced for refuse collection on a weekly basis.

An additional 184 dumpsters and 760 carts are used to collect commercial recycling per week. This includes both commingled recyclables and “cardboard only” accounts.

- **Roll-Off:** Typically used for construction waste, remodeling waste, residential cleanups, carpet and wood working companies, and green waste. 20 or 30 cubic yard roll-off containers are available to the customer. Roll-offs may be scheduled and

emptied up to 5 days per week (Monday through Friday), or emptied on call with a 48 hour notice. It should be noted that the fee for an on call service is higher than the fee for a scheduled service, which is a common industry practice.

- **Compactor:** Customer owned compactors can be scheduled for service up to five (5) days per week or emptied on call with a 48 hour notice.

No large items, furniture or construction waste is accepted in front and rear load dumpsters as the City of Santa Fe offers roll-off container service for these types of materials. Apartment complexes may choose to request roll-off services at the end of each month when tenants are in the process of moving to handle these types of materials. Overloaded containers may be serviced when possible and additional fees charged. In the event that the container cannot be serviced due to overloading, the customer will be notified to remove excess material.

## 1.3 Project Approach

The goal of a cost of service study is to determine the solid waste fees required to adequately recover the cost of providing services. Leidos developed a series of key tasks that provided the foundation for the conduct of the cost of service study. Leidos utilized the following sources of information regarding the City's current system and financial requirements.

### 1.3.1 Data Request

Leidos submitted detailed data requests to the City to collect historical financial and operational information regarding the City's solid waste operations. The information requested included:

- Detailed financial reports and budgets
- Solid waste policies and ordinances
- Personnel rosters
- Solid waste and recycling tonnage reports
- Fleet inventory and operating/capital costs

### 1.3.2 Cost Allocation Meetings

Leidos held meetings with City staff to initiate the cost of service study and allocate solid waste operational costs (both labor and capital) to the appropriate solid waste services. These meetings served as a forum to confirm the scope of services, discuss the data collected by Leidos and finalize the cost centers to be used.

### 1.3.3 On-going Staff Communications

During the course of the cost of service study, Leidos conducted several conference calls with City staff. These conference calls provided the opportunity for Leidos to review project progress, verify assumptions and receive input from City staff.

## 1.4 Methodology Overview

The items listed below provide the background necessary to understand how data compiled in each task provides the information required to determine the cost of service and fees that will adequately recover the cost of service.

- **Development of the “Test Year”:** The first task in conducting the cost of service analysis is the development of an annual revenue requirement for a “Test Year”. The revenue requirement represents the total revenue that a solid waste utility will need to recover during a year in order to fund all expenses associated with the provision of solid waste services. Leidos worked with City staff to select a historical period that reflected the typical operation of the City system.

Leidos then reviewed the financial data and worked with City staff to make any adjustments to costs to make them representative of a typical year. The resulting “Test Year” was used as the basis for forecasting expenses from the fiscal year beginning July 1, 2013 (FY 2014) through FY 2018.

- **Development of the Revenue Requirement Forecast:** After developing the revenue requirement for the “Test Year”, Leidos worked with City staff to project changes in costs due to inflation, salary increases, new equipment, new customers, etc. This resulted in the five-year revenue requirement forecast.
- **Allocation of Costs to Service Categories:** Next, Leidos worked with City staff to assign and allocate costs to various service categories. The service categories represent the primary solid waste services provided by the City. The service categories were determined with the assistance of City staff. The annual revenue requirement was allocated to the appropriate service categories based on Leidos’ extensive experience with solid waste cost of service studies and input from City staff.
- **Allocation to Customer Classes:** Leidos grouped the service categories based on the customer classes that will recover each category’s costs. The customer classes include residential refuse and recycling collection; front load refuse collection; rear load refuse collection; roll-off collection; commingled and cardboard recycling collection.
- **Determination of Billing Units:** Leidos identified the appropriate billing units for each customer class. For example, the residential rate is charged per customer, so the number of residential customers was utilized as the billing unit for this customer class.

- **Calculation of the Cost of Service:** Leidos distributed the costs for each customer class across the appropriate billing units to determine the cost of service for each customer class.

It is important to note that the assumptions underlying the cost of service analysis change over time (i.e., from one year to the next). Thus, periodic updates to the analysis, whether conducted internally by City staff or by a consultant, are important to recognize changes in operations, obligations, inflation, growth, etc.

## 1.5 Development of the “Test Year”

### 1.5.1 Selection of the Test Year

The revenue requirement is defined as the amount of revenue required to recover all costs associated with O&M, debt service, and cash capital outlays. In developing the revenue requirement for solid waste services, Leidos used the City’s FY 2014 projected budget as the basis for the “Test Year”. The FY 2014 budget was compared to financials from FY 2011, FY 2012, and FY 2013. Through this comparison, and with input from City staff, Leidos made adjustments to ensure that the “Test Year” would reflect expenses that occur on a regular basis. Leidos would mention that these types of adjustments are customary when conducting a detailed cost of service and rate design study.

All adjustments to the FY 2014 budget necessary to develop the “Test Year” are detailed in Appendix A, Schedule 1. Key components of the “Test Year” evaluated by Leidos include the annualized cost of replacement vehicles and additional capital improvement projects.

The City revenue requirement is the net of revenue offsets, such as interest income, penalties, and miscellaneous fees, since these amounts reduce the revenue needed to be recovered in the calculated user fees. Total expenses for the City for the “Test Year” were \$14,559,543 and revenue offsets totaled \$1,902,325. The resulting “Test Year” revenue requirement totaled \$12,657,218 for the City.

### 1.5.2 Development of the Revenue Requirement Forecast

In addition to developing the “Test Year” revenue requirement, Leidos forecasted the annual revenue requirement for FY 2014 – FY 2018. In order to develop this forecast, Leidos projected how costs would change over the years due to factors such as inflation. To be conservative, the revenue offsets were assumed to remain flat throughout the five-year forecast.

The assumptions used to develop the forecast include the annual increases shown in Table 1-1 on the following page.

**Table 1-1  
Inflation Factors**

Inflation Factor	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
Salaries	0.0%	3.00%	3.00%	3.00%	3.00%
Benefits	0.0%	3.00%	3.00%	3.00%	3.00%
Overtime	0.0%	0.0%	0.0%	0.0%	0.0%
Fuel	0.0%	3.00%	3.00%	3.00%	3.00%
Maintenance	0.0%	2.00%	2.00%	2.00%	2.00%
Supplies	0.0%	3.00%	3.00%	3.00%	3.00%
Capital Equipment	0.0%	2.00%	2.00%	2.00%	2.00%
Professional Services	0.0%	2.00%	2.00%	2.00%	2.00%
General	0.0%	2.00%	2.00%	2.00%	2.00%
Disposal	0.0%	6.00%	2.00%	2.00%	2.00%

In addition to forecasting cost increases due to inflation, Leidos included the cost of replacing vehicles, equipment, and refuse/recycling dumpsters and carts in the analysis. Leidos also included the landfill care costs associated with the Frank Ortiz Landfill, which are expected to cost approximately \$100,000 per year. Capital replacements and improvements will cost approximately \$1.6 million per year in asset additions, of which approximately \$1.2 million should be allocated to vehicle and equipment replacement. Appendix A, Schedule 2 outlines the utility's capital needs for FY 2014 – FY 2018.

Table 1-2 shows the cost of service for the five-year forecasted period. The detailed composition of the forecast is provided in Appendix A, Schedule 4.

**Table 1-2  
Revenue Requirement**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
Revenue Requirement	\$ 12,710,218	\$ 13,090,693	\$ 13,555,210	\$ 13,863,800	\$ 14,179,826

## 1.6 Allocation of Costs to Service Categories

The City provides a variety of solid waste services to its residential customers. To determine the costs for each service, there is a need to allocate costs to service categories that represent the primary solid waste services provided. These categories were determined through a series of discussions with City staff and are shown below.

- Residential Refuse Collection
  - Garbage Collection
  - Large Item Collection
- Commercial Refuse Collection

- Front Load Garbage Collection
- Rear Load Garbage Collection
- Roll-Off Garbage Collection
- Recycling Collection
  - Residential Recycling Collection
  - Commercial Commingled Recycling Collection
  - Commercial Cardboard Collection
- Container Maintenance
- Education and outreach
  - Keep Santa Fe Beautiful
  - Sustainable Santa Fe
  - City Activities
- Other Services
  - Fleet Maintenance
  - Administration
  - Special Events
- Disposal
  - Refuse
  - Recycling Processing Cost

Identification of the total cost of each service category was a critical step in determining adequate rates that reflect the cost of providing service. These costs were isolated by service category in order to fully capture the total cost by matching the customers that utilize the service with the actual costs for that service. Table 1-3 identifies the cost of providing each service for FY 2014 – FY 2018.

**Table 1-3**  
**Revenue Requirement, by Service Category**

Service Category	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Residential Collection</b>					
Refuse	\$ 2,220,056	\$ 2,271,199	\$ 2,323,827	\$ 2,377,984	\$ 2,433,714
Large Item	73,843	74,790	75,765	76,768	77,801
<b>Commercial Collection</b>					
Front Load Refuse	1,455,982	1,489,620	1,524,227	1,559,832	1,596,465
Rear Load Refuse	751,490	770,677	790,433	810,775	831,720
Roll-Off Refuse	651,563	666,554	681,985	697,871	714,224
<i>(continued on next page)</i>					

Service Category	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Recycling</b>					
Residential Recycling	1,307,239	1,338,929	1,371,553	1,405,139	1,439,716
Commercial Recycling	319,112	325,852	332,789	339,929	347,279
Commercial Cardboard Recycling	147,433	150,438	153,530	156,713	159,988
<b>Landfill Closure/Post Closure</b>					
Paseo de Vista Landfill	6,248	6,434	6,626	6,824	7,028
Frank Ortiz Landfill	106,248	106,434	106,626	106,824	107,028
<b>Container Maintenance Program</b>	318,120	324,542	331,093	337,778	344,598
<b>Education and outreach</b>					
Keep Santa Fe Beautiful	24,154	25,342	26,575	27,855	29,183
Sustainable Santa Fe	109,784	113,059	116,432	119,907	123,485
City Activities	83,017	85,468	87,991	90,591	93,268
<b>Other Services</b>					
Fleet Maintenance	214,390	220,688	227,174	233,854	240,735
Administration	2,332,206	2,388,748	2,611,472	2,671,724	2,732,684
Special Events	84,355	86,796	89,310	91,899	94,565
<b>Disposal</b>					
Recycling Processing Cost	27,004	27,221	27,443	27,673	27,909
Refuse	2,477,974	2,617,904	2,670,356	2,723,860	2,778,438
<b>Revenue Requirement</b>	<b>\$ 12,710,218</b>	<b>\$ 13,090,693</b>	<b>\$ 13,555,210</b>	<b>\$ 13,863,800</b>	<b>\$ 14,179,826</b>

The City of Santa Fe obtains miscellaneous revenue from various sources that are allocated to various services in Table 1-3. These revenue sources include interest on investments, the Keep Santa Fe Beautiful Grant, Infrastructure Gross Revenue Tax, and residential bag tag sales. Table 1-4 outlines each of these revenue offsets in detail.

**Table 1-4**  
**Revenue Offsets**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
Infrastructure GRT	\$ 1,737,859	\$ 1,737,859	\$ 1,737,859	\$ 1,737,859	\$ 1,737,859
Interest on Investment	62,716	62,716	62,716	62,716	62,716
Keep Santa Fe Beautiful Grant	48,000	48,000	48,000	48,000	48,000
Residential Bag Tag Sales	750	750	750	750	750
<b>Total</b>	<b>\$ 1,849,325</b>	<b>\$ 1,849,325</b>	<b>\$ 1,849,325</b>	<b>\$ 1,849,325</b>	<b>\$ 1,849,325</b>

## 1.7 Allocation to Customer Classes

After calculating the costs for each service category over the five-year forecast period, the service categories costs were then allocated by customer class. This assists in identifying the appropriate customers to be charged for each service provided.

The following table identifies how the service categories were grouped and the recovery basis for each service category.

**Table 1-5**  
**Service Category Allocations**

Service Category	Recovery Basis
<b>Residential Refuse Collection</b>	
Refuse	Residential Refuse & Recycling Rate
Large Item	Large Item Refuse Rate
<b>Commercial Refuse Collection</b>	
Front Load Refuse	Commercial Front Load Rate
Rear Load Refuse	Commercial Rear Load Rate
Roll-Off Refuse	Commercial Roll-Off Rate
<b>Recycling Collection</b>	
Residential	Residential Refuse & Recycling Rate
Commercial Commingled	Commercial Commingled Recycling Rate
Commercial Cardboard	Commercial Cardboard Recycling Rate
<b>Landfill Closure/Post-Closure</b>	
Paseo de Vista Landfill	Allocated to Residential and Commercial Collection Service Categories Based on Estimated Tonnage
Frank Ortiz Landfill	Allocated to Residential and Commercial Collection Service Categories Based on Estimated Tonnage
<b>Container Maintenance Program</b>	Allocated to Residential and Commercial Collection Service Categories Based on Estimated Cubic Yards of Capacity
<b>Education and Outreach</b>	
Keep Santa Fe Beautiful	Redistributed Based on Percent of Revenue Requirement
Sustainable Santa Fe	Redistributed Based on Percent of Revenue Requirement
City Activities	Redistributed Based on Percent of Revenue Requirement
<b>Other Services</b>	
Fleet Maintenance	Allocated to Residential and Commercial Collection Service Categories Based on Equipment Maintenance Allocations provided by the City
Administration	Redistributed Based on Percent of Revenue Requirement
Special Events	Redistributed Based on Percent of Revenue Requirement
<b>Disposal</b>	
Recycling Processing Cost	Allocated to Residential and Commercial Commingled Collection Service Categories Based on Estimated Cubic Yards of Capacity
Refuse	Allocated to Residential and Commercial Collection Service Categories Based on Estimated Tonnage



## 1.8 Determination of Billing Units

In order to calculate the cost of service on a customer basis, Leidos determined the number of annual billing units for various customer classes. Leidos received billing data for each customer class from City staff and determined the cost of service by dividing the cost of service by the appropriate billing units. It should be noted that this cost of service study takes into account the growth due to annexation, which results in the addition of approximately 4,200 residential accounts. For the purposes of the cost of service analysis, approximately 2,100 accounts were phased in for FY 2014, and the remaining 2,100 accounts were added in for FY 2015. For commercial accounts, approximately 50 four cubic yard (CY) front load accounts were added in FY 2014; in FY 2015, commercial counts were increased by another 50 four cubic yard (CY) front load accounts.

Leidos proportionally increased disposal costs consistent with the residential and commercial account increases as a result of annexation.

### 1.8.1 Residential Collection

At present, the City charges a flat monthly fee for refuse and recycling to each residential household served by the City. Table 1-6 provides the billing unit forecast for the residential customer class. These growth projections were developed utilizing an approximately 8% growth rate in FY 2014 & FY 2015, which is consistent with the growth attributed to annexation. It is important to note that in FY 2014 the number of residential households totaled 27,413, of which approximately 95 percent have 96-gallon carts and 5 percent have 64-gallon carts. The study additionally takes into account residents with extra carts; it was estimated that approximately 5 percent of all residential households have a second cart.

**Table 1-6**  
**Residential Billing Units**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Billing Units</b>					
96-Gallon Accounts	26,042	28,037	28,037	28,037	28,037
64-Gallon Accounts	1,371	1,476	1,476	1,476	1,476
Total Residential Households	27,413	29,513	29,513	29,513	29,513
Additional Accounts <sup>1</sup>	1,371	1,476	1,476	1,476	1,476

1. Additional accounts are assumed to be 96-gallon container accounts.

The City also provides large item curbside collection on an on-call basis. The City estimates that approximately 252 large items will be collected annually.

### 1.8.2 Commercial Collection

The City provides commercial front load and rear load customers with refuse collection via containers ranging in the following sizes: 3, 4, or 6 cubic yard dumpsters, or 64- or

96-gallon carts for rear load customers; 3, 4, 6, or 8 cubic yard dumpsters for front load customers. At present, commercial customers are charged a monthly flat rate, and for all non-compacting containers, a bin rental fee is added for each city-owned and maintained bin. The billing units for commercial collection, then, consist of the following components:

- **Annual Number of Collections:** Used to recover the cost of collection operations and indirect costs.
- **Annual Cubic Yards of Disposal Capacity:** Measured in cubic yards and used to allocate disposal costs to each cubic yard of container capacity.

Table 1-7 shows the projected billing units for commercial front load and rear load refuse customers. The projections were developed using a modest 1% growth rate for front load customers on 4-CY dumpsters in FY 2014 and FY 2015. As stated previously, this assumption reflects the slight increase in commercial customers projected to occur with annexation. Leidos assumed a zero percent growth rate for rear load customers to maintain a conservative analysis.

**Table 1-7**  
**Commercial Refuse Billing Units**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Front Load Dumpsters</b>					
Number of Containers	1,374	1,424	1,424	1,424	1,424
Annual Collections	140,036	142,636	142,636	142,636	142,636
Annual Disposal Capacity (CY)	870,740	881,140	881,140	881,140	881,140
<b>Rear Load Dumpsters</b>					
Number of Containers	203	203	203	203	203
Annual Collections	22,360	22,360	22,360	22,360	22,360
Annual Disposal Capacity (CY)	81,120	81,120	81,120	81,120	81,120
<b>Rear Load Carts</b>					
Number of Carts	1,604	1,604	1,604	1,604	1,604
Annual Collections	132,340	132,340	132,340	132,340	132,340
Annual Disposal Capacity (CY)	66,147	66,147	66,147	66,147	66,147

The City also provides commercial customers with recycling collection via containers ranging in the following sizes: 3, 4, or 6 cubic yard dumpsters, or 64- or 96-gallon carts. A rental fee is added to the monthly rate for each city-owned and maintained container, and an additional per cart charge is assessed for customers with carts. It is important to note that commingled recycling is serviced via 64- or 96-gallon carts, however cardboard recycling may be serviced by carts or dumpsters.

Additionally, if a cart contains more than 10 percent of non-recyclable materials, an additional \$56.00/\$79.00 per cart/dumpster per service will be charged. The billing units for commercial recycling collection consist of the same components outlined above (annual collections and annual disposal capacity). Table 1-8 shows the projected billing

units for commercial recycling customers. The projections were developed using zero percent growth in the recycling market in order to keep the rate analysis conservative.

**Table 1-8**  
**Commercial Recycling Billing Units**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Commercial Recycling</b>					
<b>Cardboard Dumpsters</b>					
Number of Containers	224	224	224	224	224
Annual Collections	11,648	11,648	11,648	11,648	11,648
Annual Disposal Capacity	51,064	51,064	51,064	51,064	51,064
<b>Cardboard Carts</b>					
Number of Carts	337	337	337	337	337
Annual Collections	17,524	17,524	17,524	17,524	17,524
Annual Disposal Capacity	8,762	8,762	8,762	8,762	8,762
<b>Commingled Carts</b>					
Number of Carts	489	489	489	489	489
Annual Collections	25,428	25,428	25,428	25,428	25,428
Annual Disposal Capacity	12,714	12,714	12,714	12,714	12,714

### 1.8.3 Commercial Roll-Off Collection

Table 1-9 shows the projected billing units for commercial roll-off customers. The projections were developed utilizing a zero percent growth rate for all five years of the forecast. These growth projections were developed by the Leidos Project Team and City staff in order to keep the rate analysis conservative. Please note that compactor and non-compactor pulls are currently charged the same rate.

**Table 1-9**  
**Commercial Roll-Off Billing Units**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Commercial Roll-Off Pulls</b>					
Non-Compactors	2,083	2,083	2,083	2,083	2,083
Compactors	1,040	1,040	1,040	1,040	1,040
	3,123	3,123	3,123	3,123	3,123

## 1.9 Calculation of the Cost of Service

Based on the data discussed in this section, Leidos determined the cost of service for the various ESD programs. As is typical during these types of cost of service studies, Leidos found differences between the rates charged to the various customer classes and the actual cost of providing the associated service. Our proposed rate recommendations

in Section 1.11 would move the City's various solid waste and recycling rates toward a more "equitable" and "cost of service" based rate structure.

## 1.9.1 Residential

Table 1-10 lists the projected cost of service for residential refuse and recycling collection for the five-year forecast. The revenue requirement includes the curbside collection of refuse, recycling, cart maintenance & replacement, recycling processing fees, and a proportional share of the indirect costs (i.e., administration, education and outreach services, etc.). A detailed examination of the residential cost of service for refuse and recycling collection in each year of the forecast is provided in Appendix A, Schedule 5.

**Table 1-10**  
**Residential Revenue Requirement**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Annual Revenue Requirement<sup>1</sup></b>					
Direct Allocation					
Refuse	\$ 2,220,056	\$ 2,271,199	\$ 2,323,827	\$ 2,377,984	\$ 2,433,714
Recycling	1,307,239	1,338,929	1,371,553	1,405,139	1,439,716
Cart Maintenance	164,635	168,092	171,490	174,957	178,494
Recycling Processing Fees	26,531	26,777	26,996	27,222	27,454
Subtotal - Direct	\$ 3,718,461	\$ 3,804,997	\$ 3,893,866	\$ 3,985,301	\$ 4,079,378
Overhead/Indirect					
Administration	\$ 1,200,427	\$ 1,229,625	\$ 1,344,374	\$ 1,375,493	\$ 1,406,980
Keep Santa Fe Beautiful	12,433	13,045	13,681	14,341	15,026
Sustainable Santa Fe	56,508	58,198	59,939	61,732	63,579
City Activities	42,730	43,995	45,298	46,639	48,021
Fleet Maintenance	92,937	95,667	98,479	101,375	104,358
Special Events	43,419	44,679	45,977	47,313	48,689
Subtotal-Indirect/OH	\$ 1,448,454	\$ 1,485,209	\$ 1,607,747	\$ 1,646,893	\$ 1,686,652
<b>Total Collection Costs</b>	<b>\$ 5,166,915</b>	<b>\$ 5,290,206</b>	<b>\$ 5,501,614</b>	<b>\$ 5,632,194</b>	<b>\$ 5,766,029</b>
Disposal	1,071,990	1,173,682	1,196,253	1,219,278	1,242,768
<b>Total</b>	<b>\$ 6,238,905</b>	<b>\$ 6,463,888</b>	<b>\$ 6,697,867</b>	<b>\$ 6,851,473</b>	<b>\$ 7,008,797</b>
<b>Billing Units<sup>2</sup></b>					
96-gallon Accounts	26,042	28,037	28,037	28,037	28,037
64-gallon Accounts	1,371	1,476	1,476	1,476	1,476
Extra Carts <sup>3</sup>	1,371	1,476	1,476	1,476	1,476

(Continued on next page)

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Monthly COS</b>					
96-gallon Accounts	\$ 18.52	\$ 17.83	\$ 18.48	\$ 18.90	\$ 19.34
64-gallon Accounts	17.46	16.75	17.39	17.79	18.20
Extra Carts	10.06	9.55	9.76	9.97	10.19

1. Any minor arithmetic deviation is due to rounding.
2. Billing units reflect growth from annexation.
3. Based on number of households with 96- and 64-gallon containers. Assumed 5% of households have extra carts, per City staff. Please note that extra carts are assumed to be 96-gallon containers.

The revenue requirement for the City's residential large item collection is identified in Table 1-11. The revenue requirement includes the curbside collection of large items, and a proportional share of the fleet maintenance costs. A detailed examination of the cost of service and the corresponding cost components for each year of the forecast is provided in Appendix A, Schedule 6.

**Table 1-11**  
**Residential (Large Item) Revenue Requirement**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Annual Revenue Requirement<sup>1</sup></b>					
Direct Allocation					
Collection	\$ 73,843	\$ 74,790	\$ 75,765	\$ 76,768	\$ 77,801
Indirect Allocation					
Fleet Maintenance	631	649	668	688	708
<b>Total</b>	<b>\$ 74,474</b>	<b>\$ 75,439</b>	<b>\$ 76,433</b>	<b>\$ 77,456</b>	<b>\$ 78,509</b>
<b>Billing Units</b>					
Annual Collections	252	252	252	252	252
<b>Average Cost per Collection</b>	<b>\$ 295.53</b>	<b>\$ 299.36</b>	<b>\$ 303.31</b>	<b>\$ 307.37</b>	<b>\$ 311.55</b>

1. Any minor arithmetic deviation is due to rounding.

## 1.9.2 Commercial Collection

The commercial collection operation includes refuse and recycling service via front load or rear load trucks, and roll-off collection. The sections below outline the cost of service for each major commercial collection service.

### 1.9.2.1 Front Load Collection

Table 1-12 lists the projected cost of service for front load commercial customers for the five-year forecast. The revenue requirement includes the collection of refuse, dumpster maintenance & replacement, and a proportional share of the indirect costs (i.e., administration, education and outreach services, etc.). A detailed examination of the cost of service and the corresponding cost components for each year of the forecast is provided in Appendix A, Schedule 7.

**Table 1-12**  
**Annual Commercial Front Load Cost of Service**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Annual Revenue Requirement<sup>1</sup></b>					
Direct Allocation					
Refuse	\$ 1,455,982	\$ 1,489,620	\$ 1,524,227	\$ 1,559,832	\$ 1,596,465
Dumpster Maintenance	77,783	79,261	80,866	82,504	84,176
Subtotal – Direct	\$ 1,533,765	\$ 1,568,880	\$ 1,605,093	\$ 1,642,336	\$ 1,680,461
Indirect Allocation					
Administration	\$ 495,507	\$ 507,371	\$ 554,512	\$ 567,134	\$ 579,898
Keep Santa Fe Beautiful	5,132	5,383	5,643	5,913	6,193
Sustainable Santa Fe	23,325	24,014	24,723	25,453	26,205
City Activities	17,638	18,153	18,684	19,230	19,792
Fleet Maintenance	74,083	76,259	78,500	80,809	83,186
Special Events	17,922	18,436	18,964	19,508	20,067
Subtotal – Indirect	\$ 633,608	\$ 649,615	\$ 701,025	\$ 718,046	\$ 735,342
Total Collection Costs	\$ 2,167,373	\$ 2,218,495	\$ 2,306,118	\$ 2,360,383	\$ 2,415,982
Disposal Costs	963,758	991,807	1,010,881	1,030,338	1,050,187
<b>Total</b>	<b>\$ 3,131,131</b>	<b>\$ 3,210,303</b>	<b>\$ 3,316,999</b>	<b>\$ 3,390,721</b>	<b>\$ 3,466,170</b>
<b>Billing Units</b>					
Collections per Year	140,036	142,636	142,636	142,636	142,636
Capacity <sup>2</sup>	870,740	881,140	881,140	881,140	881,140
Cost per Collection	\$ 15.48	\$ 15.55	\$ 16.17	\$ 16.55	\$ 16.94
Cost per Cubic Yard <sup>3</sup>	\$ 1.11	\$ 1.13	\$ 1.15	\$ 1.17	\$ 1.19

1. Any minor arithmetic deviation is due to rounding.

2. Cubic yards per year.

3. Charge for disposal services are based on the cubic yards of container capacity.

To identify the monthly rate to be charged based on the cost of service, the different component costs should be calculated as follows:

- Cost per Collection (\$15.48 in FY 2014) times the number of collections per month, PLUS
- Cost per Cubic Yard of Capacity (\$1.11 in FY 2014) times the capacity of the container times the number of collections per month.

For example, in FY 2014 a six-cubic yard front load container collected three times per week (13 collections per month<sup>2</sup>) would result in a monthly rate of:

- $\$15.48 \times 13 +$
- $\$1.11 \times 6 \times 13 =$
- \$287.82 per month <sup>3</sup>

### 1.9.2.2 Rear Load Collection

Table 1-13 lists the projected cost of service for rear load commercial customers for the five-year forecast. The revenue requirement includes the collection of refuse, cart maintenance & replacement, and a proportional share of the indirect costs (i.e., administration, education and outreach services, etc.). A detailed examination of the cost of service and the corresponding cost components for each year of the forecast is provided in Appendix A, Schedule 8.

**Table 1-13**  
**Annual Commercial Rear Load Cost of Service**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Annual Revenue Requirement<sup>1</sup></b>					
Direct Allocation					
Refuse	\$ 751,490	\$ 770,677	\$ 790,433	\$ 810,775	\$ 831,720
Cart Maintenance	40,471	41,261	42,090	42,935	43,798
Subtotal – Direct	\$ 791,961	\$ 811,939	\$ 832,523	\$ 853,710	\$ 875,518
Indirect Allocation					
Administration	\$ 255,751	\$ 262,496	\$ 287,559	\$ 294,787	\$ 302,113
Keep Santa Fe Beautiful	2,649	2,785	2,926	3,073	3,226
Sustainable Santa Fe	12,039	12,424	12,821	13,230	13,652
City Activities	9,104	9,392	9,689	9,995	10,311
Fleet Maintenance	13,323	13,714	14,118	14,533	14,960
Special Events	9,250	9,538	9,834	10,140	10,455
Subtotal – Indirect	\$ 302,116	\$ 310,349	\$ 336,947	\$ 345,758	\$ 354,718
<i>(continued on next page)</i>					

<sup>2</sup> Three collections per week times 52 weeks in a year divided by 12 months in a year [ $3 \times 52 / 12 = 13$ ]

<sup>3</sup> The value of this level of service is listed as \$287.54 due to minor rounding of the cost components.

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
Total Collection Costs	\$ 1,094,077	\$ 1,122,288	\$ 1,169,470	\$ 1,199,469	\$ 1,230,235
Disposal Costs	162,999	165,763	168,950	172,202	175,520
<b>Total</b>	<b>\$ 1,257,076</b>	<b>\$ 1,288,050</b>	<b>\$ 1,338,420</b>	<b>\$ 1,371,671</b>	<b>\$ 1,405,755</b>
<b>Billing Units</b>					
Collections per Year <sup>2</sup>	199,420	199,420	199,420	199,420	199,420
Capacity <sup>3</sup>	147,267	147,267	147,267	147,267	147,267
Cost per Collection	\$ 5.49	\$ 5.63	\$ 5.86	\$ 6.01	\$ 6.17
Cost per Cubic Yard <sup>4</sup>	\$ 1.11	\$ 1.13	\$ 1.15	\$ 1.17	\$ 1.19
<ol style="list-style-type: none"> <li>1. Any minor arithmetic deviation is due to rounding.</li> <li>2. Leidos assumed a 3:1 cart to dumpster ratio to account for the additional time &amp; resources it takes to service a dumpster. Therefore, the total dumpster count in Table 1-7 was multiplied by a factor of 3 and added to the total number of carts.</li> <li>3. Cubic yards per year.</li> <li>4. Charge for disposal services are based on the cubic yards of container capacity.</li> </ol>					

It is important to note that because rear load collection services a combination of dumpsters and carts, Leidos developed a 3:1 cart to dumpster ratio. In other words, dumpsters are weighted three times as much as carts because they require more time and resources to maintain. This 3:1 factor is also utilized in the calculation of the collection cost.

To identify the monthly rate to be charged based on the cost of service *for dumpsters*, the different component costs should be developed as follows:

- Cost per Collection (\$5.49 in FY 2014) times the number of collections per month times the collection factor, PLUS
- Cost per Cubic Yard of Capacity (\$1.11 in FY 2014) times the capacity of the container times the number of collections per month.

For example, in FY 2014 a six-cubic yard rear load container collected three times per week (13 collections per month<sup>4</sup>) would result in a monthly rate of:

- $\$5.49 \times 13 \times 3 +$
- $\$1.11 \times 6 \times 13 =$
- \$300.69 per month<sup>5</sup>

<sup>4</sup> Three collections per week times 52 weeks in a year divided by 12 months in a year [ $3 \times 52 / 12 = 13$ ]

<sup>5</sup> The value of this level of service is listed as \$300.30 due to minor rounding of the cost components.



To identify the monthly rate to be charged based on the cost of service *for carts*, the different component costs should be developed as follows:

- Cost per Collection (\$5.49 in FY 2014) times the number of collections per month, PLUS
- Cost per Cubic Yard of Capacity (\$1.11 in FY 2014) times the capacity of the container times the number of collections per month.<sup>6</sup>

For example, in FY 2014 a 96-gallon rear load container collected three times per week (13 collections per month<sup>7</sup>) would result in a monthly rate of:

- $\$5.49 \times 13 +$
- $\$1.11 \times 13 \times 0.5 =$
- \$78.59 per month<sup>8</sup>

### 1.9.2.3 Cardboard Recycling

Table 1-14 lists the projected cost of service for the cardboard commercial customers for the five-year forecast. The revenue requirement includes the collection of cardboard recycling, cart maintenance, and a proportional share of the indirect costs (i.e., administration, education and outreach services, etc.). A detailed examination of the cost of service and the corresponding cost components for each year of the forecast is provided in Appendix A, Schedule 9.

Table 1-14  
Annual Commercial Cardboard Recycling Cost of Service

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Annual Revenue Requirement<sup>1</sup></b>					
Direct Allocation					
Recycling	\$ 147,433	\$ 150,438	\$ 153,530	\$ 156,713	\$ 159,988
Cart Maintenance	220	215	221	227	234
Subtotal – Direct	\$ 147,652	\$ 150,653	\$ 153,752	\$ 156,940	\$ 160,221
Indirect Allocation					
Administration	\$ 50,175	\$ 51,240	\$ 55,854	\$ 56,979	\$ 58,114
Keep Santa Fe Beautiful	520	544	568	594	621
Sustainable Santa Fe	2,362	2,425	2,490	2,557	2,626
City Activities	1,786	1,833	1,882	1,932	1,983
Fleet Maintenance	5,567	5,730	5,899	6,072	6,251
<i>(continued on next page)</i>					

<sup>6</sup> Leidos assumed that a 96-gallon container is approximately 0.5 cubic yards of capacity & a 64-gallon container is approximately 0.35 cubic yards of capacity.

<sup>7</sup> Three collections per week times 52 weeks in a year divided by 12 months in a year [ $3 \times 52 / 12 = 13$ ]

<sup>8</sup> The value of this level of service is listed as \$78.52 due to minor rounding of the cost components.

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
Special Events	1,815	1,862	1,910	1,960	2,011
Subtotal – Indirect	\$ 62,224	\$ 63,634	\$ 68,604	\$ 70,094	\$ 71,606
<b>Total Collection Costs</b>	<b>\$ 209,877</b>	<b>\$ 214,287</b>	<b>\$ 222,355</b>	<b>\$ 227,034</b>	<b>\$ 231,827</b>
<b>Billing Units</b>					
Collections per Year <sup>2</sup>	52,468	52,468	52,468	52,468	52,468
Capacity <sup>3</sup>	59,826	59,826	59,826	59,826	59,826
Cost per Collection	\$ 4.00	\$ 4.08	\$ 4.24	\$ 4.33	\$ 4.42
Cost per Cubic Yard <sup>4</sup>	\$ -	\$ -	\$ -	\$ -	\$ -
<ol style="list-style-type: none"> <li>Any minor arithmetic deviation is due to rounding.</li> <li>Leidos assumed a 3:1 cart to dumpster ratio to account for the additional resources it takes to service a dumpster. Therefore, the total dumpster count in Table 1-8 was multiplied by a factor of 3 and added to the total number of carts.</li> <li>Leidos did not allocate recycling processing to cardboard recycling as processing costs are specific to glass recycling (i.e., tip fee charged at BuRRT).</li> <li>Charge for disposal services are based on the cubic yards of container capacity.</li> </ol>					

Leidos also included a 3:1 cart to dumpster ratio to account for the combination of dumpster and cart service in the cardboard recycling cost of service analysis. It should also be noted that there is not a recycling processing cost recognized for cardboard recycling, as this is a component of glass recycling. Therefore, the only factor that differentiates rates for cardboard recycling is the frequency of pickup. For example, a 3 cubic yard dumpster picked up 3 times per week is charged the same rate as a 6 cubic yard dumpster picked up 3 times per week.<sup>9</sup>

To identify the monthly rate to be charged based on the cost of service *for dumpsters*, the different component costs should be developed as follows:

- Cost per Collection (\$4.00 in FY 2014) times the number of collections per month times the collection factor

For example, in FY 2014 a six-cubic yard rear load container collected three times per week (13 collections per month<sup>10</sup>) would result in a monthly rate of:

- $\$4.00 \times 13 \times 3 = \$156.00$  per month<sup>11</sup>

To identify the monthly rate to be charged based on the cost of service *for carts*, the different component costs should be developed as follows:

- Cost per Collection (\$4.00 in FY 2014) times the number of collections per month.

<sup>9</sup> There is no cost associated with this service that varies with the size of the container, unlike refuse rates, which include a disposal cost that varies with the cubic yard capacity of the container.

<sup>10</sup> Three collections per week times 52 weeks in a year divided by 12 months in a year [ $3 \times 52 / 12 = 13$ ]

<sup>11</sup> The value of this level of service is listed as \$156.00.

For example, in FY 2014 a 96-gallon rear load container collected three times per week (13 collections per month<sup>12</sup>) would result in a monthly rate of:

■  $\$4.00 \times 13 = \$52.00$  per month<sup>13</sup>

### 1.9.2.4 Commingled Recycling

Table 1-15 lists the projected cost of service for the commingled commercial customers for the five-year forecast. The revenue requirement includes the collection of commingled recycling, cart maintenance, and a proportional share of the indirect costs (i.e., administration, education and outreach services, etc.). A detailed examination of the cost of service and the corresponding cost components for each year of the forecast is provided in Appendix A, Schedule 10.

**Table 1-15**  
**Annual Commercial Commingled Recycling Cost of Service**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Annual Revenue Requirement<sup>1</sup></b>					
Direct Allocation					
Recycling	\$ 319,112	\$ 325,852	\$ 332,789	\$ 339,929	\$ 347,279
Cart Maintenance	12.03	11.79	12.11	12.45	12.79
Subtotal – Direct	\$ 319,124	\$ 325,864	\$ 332,801	\$ 339,942	\$ 347,291
Indirect Allocation					
Administration	\$ 108,602	\$ 110,986	\$ 121,068	\$ 123,594	\$ 126,145
Keep Santa Fe Beautiful	1,125	1,177	1,232	1,289	1,347
Sustainable Santa Fe	5,112	5,253	5,398	5,547	5,700
City Activities	3,866	3,971	4,079	4,191	4,305
Fleet Maintenance	9,688	9,972	10,265	10,567	10,878
Special Events	3,928	4,033	4,140	4,251	4,365
Subtotal – Indirect	\$ 132,320	\$ 135,393	\$ 146,183	\$ 149,438	\$ 152,741
Total Collection Costs	\$ 451,444	\$ 461,256	\$ 478,984	\$ 489,380	\$ 500,033
Recycling Processing Costs	473	444	447	451	455
<b>Total</b>	<b>\$ 451,917</b>	<b>\$ 461,700</b>	<b>\$ 479,432</b>	<b>\$ 489,831</b>	<b>\$ 500,488</b>
<b>Billing Units</b>					
Collections per Year	25,428	25,428	25,428	25,428	25,428
Capacity <sup>2</sup>	12,714	12,714	12,714	12,714	12,714
Cost per Collection	\$ 17.75	\$ 18.14	\$ 18.84	\$ 19.25	\$ 19.66
Cost per Cubic Yard <sup>3</sup>	\$ 0.04	\$ 0.03	\$ 0.04	\$ 0.04	\$ 0.04

1. Any minor arithmetic deviation is due to rounding.

2. Cubic yards per year.

3. Charge for disposal services are based on the cubic yards of container capacity.

<sup>12</sup> Three collections per week times 52 weeks in a year divided by 12 months in a year [ $3 \times 52 / 12 = 13$ ]

<sup>13</sup> The value of this level of service is listed as \$52.00.

To identify the monthly rate to be charged based on the cost of service, the different component costs should be developed as follows:

- Cost per Collection (\$17.75 in FY 2014) times the number of collections per month, PLUS
- Cost per Cubic Yard of Capacity (\$0.04 in FY 2014) times the capacity of the container times the number of collections per month.<sup>14</sup>

For example, in FY 2014 a 96-gallon rear load container collected three times per week (13 collections per month<sup>15</sup>) would result in a monthly rate of:

- $\$17.75 \times 13 + \$0.04 \times 13 \times 0.5 = \$231.01$  per month<sup>16</sup>

### 1.9.2.5 Roll-Off

Table 1-16 lists the projected cost of service for commercial roll-off customers for the five-year forecast. The cost of service includes the revenue requirement for the roll-off collection, as well as the redistributed share of the indirect solid waste costs (i.e. administration, education and outreach services, etc.). The cost of service for roll-off customers does not include disposal because roll-off customers pay for disposal based on the weight of the load at the landfill and is billed separately for the disposal cost. This is a standard industry practice. A detailed examination of the cost of service and the corresponding cost components for each year of the forecast is provided in Appendix A, Schedule 11.

**Table 1-16**  
**Annual Commercial Roll-Off Cost of Service**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Annual Revenue Requirement<sup>1</sup></b>					
Direct Allocation					
Refuse	\$ 651,563	\$ 666,554	\$ 681,985	\$ 697,871	\$ 714,224
Cart Maintenance	35,000	35,700	36,414	37,142	37,885
Subtotal – Direct	\$ 686,563	\$ 702,254	\$ 718,399	\$ 735,013	\$ 752,109
Indirect Allocation					
Administration	\$ 221,743	\$ 227,031	\$ 248,105	\$ 253,737	\$ 259,434
Keep Santa Fe Beautiful	2,297	2,409	2,525	2,645	2,771
Sustainable Santa Fe	10,438	10,745	11,062	11,388	11,723
City Activities	7,893	8,123	8,360	8,603	8,855
Fleet Maintenance	18,162	18,695	19,244	19,810	20,393

*(continued on next page)*

<sup>14</sup> Leidos assumed that a 96-gallon container is approximately 0.5 cubic yards of capacity & a 64-gallon container is approximately 0.35 cubic yards of capacity.

<sup>15</sup> Three collections per week times 52 weeks in a year divided by 12 months in a year [3 \* 52 / 12 = 13]

<sup>16</sup> The value of this level of service is listed as \$231.04 due to minor rounding of the cost components.

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
Special Events	8,020	8,249	8,485	8,728	8,978
Subtotal – Indirect	\$ 268,553	\$ 275,252	\$ 297,781	\$ 304,911	\$ 312,153
Total Collection Costs	\$ 955,116	\$ 977,506	\$ 1,016,181	\$ 1,039,925	\$ 1,064,262
<b>Billing Units</b>					
Number of Pulls	3,123	3,123	3,123	3,123	3,123
Cost per Pull <sup>2</sup>	\$ 305.83	\$ 313.00	\$ 325.39	\$ 332.99	\$ 340.78

1. Any minor arithmetic deviation is due to rounding.
2. Roll-off customers pay for disposal fees separately at the landfill.

## 1.10 Current Rate Recovery

This section of the report forecasts the projected revenue recovered using current rates. The current rate schedule outlined in the City's solid waste ordinance will lead to an under-recovery of costs if left unadjusted. This is largely due to the residential rate schedule specified for FY 2014 – FY 2018. Residential rates are expected to under-recover over \$4.50 per month per household for FY 2014.

Table 1-17 provides a summary of the under-recovery which may be expected if the current rates remain unchanged. A detailed examination of the revenue projections for each year of the forecast is provided in Appendix A, Schedule 11.

**Table 1-17**  
**Revenue Projections Based on Current Rates**

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Revenue</b>					
Residential Operations <sup>1</sup>	\$ 4,411,065	\$ 4,898,599	\$ 5,055,308	\$ 5,055,308	\$ 5,055,308
Commercial Refuse Operations <sup>2</sup>	\$ 7,024,559	\$ 7,363,885	\$ 7,583,263	\$ 7,583,263	\$ 7,583,263
Commercial Recycling Operations <sup>3</sup>	\$ 466,258	\$ 466,258	\$ 466,258	\$ 466,258	\$ 466,258
	<b>\$ 11,901,881</b>	<b>\$ 12,728,742</b>	<b>\$ 13,104,829</b>	<b>\$ 13,104,829</b>	<b>\$ 13,104,829</b>
<b>Revenue Requirement<sup>4</sup></b>	<b>\$ 12,710,218</b>	<b>\$ 13,090,693</b>	<b>\$ 13,555,210</b>	<b>\$ 13,863,800</b>	<b>\$ 14,179,826</b>
<b>Over / (Under) Recovery</b>					
Annual	N/A <sup>5</sup>	(\$ 361,951)	(\$ 450,381)	(\$ 758,971)	(\$ 1,074,997)
Cumulative	N/A	(\$ 361,951)	(\$ 812,333)	(\$ 1,571,304)	(\$ 2,646,301)

1. Includes revenues from residential refuse and recycling.
2. Includes revenues from the roll-off operation (disposal & pull rates)
3. Includes revenues from commercial cardboard and commingled recycling.
4. As developed in Section 1.5.2 of this report
5. The over / (under) recovery for FY 2014 was excluded from this report since at the time of this writing, this fiscal year is nearly over. As a result, Leidos would not be able to recommend rates during this time frame.

## 1.11 Proposed Solid Waste Rates for Consideration

Based on Leidos' experience, and in particular, the project manager's extensive experience in the conduct of solid waste cost of service studies, as well as operational reviews, we would propose the following recommendations:

- **Increase Residential User Fees:** At present, the City's residential fee of \$12.96 for FY 2014, which escalates annually at 3.2 percent, is not sufficient to recover costs for residential refuse and recycling services. Leidos would thus recommend that the City implement the rates shown in Table 1-18 for FY 2015 – FY 2018.

Table 1-18  
Proposed Residential Rates

	Rate per Ordinance (Includes 3.2% Adjustment)	Additional Consultant Recommended Rate Increase <sup>1</sup>	Total	Annual Percent Change
FY 2014	\$ 12.96	-	\$ 12.96	-
FY 2015	13.37	1.00	14.37	10.9%
FY 2016	13.80	-	14.80	3.0%
FY 2017	-	1.25	16.05	8.4%
FY 2018	-	1.25	17.30	7.8%

1. The consultant recommended rate increase is in addition to the rate increase authorized by ordinance for FY 2014 – FY 2016.

- **Increase commercial rates for FY 2015 – FY 2016, per the Ordinance, and then remain unchanged for FY 2017 and FY 2018:** The current commercial rate structure charges an escalating fee based on the size of the container collected, in addition to collection frequency which ranges from one to six times per week. The current rate structure also adds a rental fee for carts and dumpsters and a separate cart service fee for 64- or 96-gallon carts. All commercial rates are escalated at a 3.2 percent rate annually for FY 2014 – FY 2016 per City ordinance; this, however, excludes all recycling rates which are held constant for FY 2014 – FY 2016.

Leidos does not recommend adjusting the commercial rates listed in the City ordinance (other than the 3.2 percent annual adjustment for FY 2014 – FY 2016) as they are sufficiently recovering their costs. Leidos, however, would recommend consolidating the rental and service charges into a singular monthly bill rate. This would improve the efficiency of billing operations. We would also recommend a minimum fee for customer's that have a container that is not collected more than once per month. The minimum fee should be the cost of one collection per month.

- **Conduct an Audit for the Commercial Recycling Service:** While Leidos would not recommend an increase in the commercial recycling rates, Leidos would recommend the City audit its number of cardboard and commingled customers to verify the accuracy of the account being collected versus billed. This will also help with measuring the growth of the City's commercial recycling program in future years.

- **Roll-off Service & Rates:** The City ordinance currently outlines monthly roll-off rates for scheduled service, non-service, and call-in service. Leidos would recommend the City consider implementing our recommendations outlined in the Review of Commercial Collection Operations Section, one of which indicates that the City do away with the grandfathered “double-handled” compactors. By implementing these recommendations, the City should see a decrease in the overall cost of the roll-off collection service. Additionally, Leidos would recommend a \$25-\$50 surcharge for compactors due to the increased time it takes to service a compactor versus an open top.

Once these changes, and the recommendations in “Section 3, Review of Commercial Collection Operations” are implemented with regard to the City’s roll-off operations, we would recommend that the City revisit what its costs are to operate the roll-off program and determine whether any rate changes are required.

- **Charge for Second Residential Cart:** The City charges residents for having a second garbage cart, which is a standard industry practice. We would recommend that the City charge be increased to \$8 per month for a second 64-gallon cart and \$10 for a 96-gallon cart. This will also require the City to track who has second carts, which is not currently being done.
- **Pay-As-You-Throw Rates:** We would recommend the topic of variable rates (i.e. Pay-As-You-Throw rates) be discussed in 12 to 18 months after the recommendations made by Leidos in “Section 2, Review of Residential Collection Operations” have been implemented, along with the other recommendations made within this section of the report. To increase recycling rates, it is critical to have a pricing mechanism which will drive customer behavior to increase their diversion rate. However, with all of the other changes that are recommended, we recommend this one be placed on hold and addressed in 12 to 18 months.

## 1.12 Projected Revenue Recovery with Residential Rate Increase

The rates proposed in this section of the report are projected to generate the revenue listed in Table 1-19 over the five-year forecast. The detailed revenue recovery forecast is listed in Appendix A, Schedule 13. The revenue projection assumes the proposed rates are effective at the beginning of each fiscal year.

Table 1-19  
Proposed Rate Revenue Recovery Forecast

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
Revenue					
Residential Operations					
Refuse	\$ 4,263,270	\$ 5,089,222	\$ 5,241,509	\$ 5,684,204	\$ 6,126,899

*(continued on next page)*

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
Additional Carts	140,135	155,652	160,610	160,610	160,610
Large Item	6,910	7,132	7,361	7,361	7,361
Bag Tags	750	750	750	750	750
	<b>\$ 4,411,065</b>	<b>\$ 5,252,755</b>	<b>\$ 5,410,229</b>	<b>\$ 5,852,924</b>	<b>\$ 6,295,619</b>
Commercial Collection					
Refuse (Rear Load)					
Dumpsters	\$ 591,966	\$ 610,908	\$ 630,458	\$ 630,458	\$ 630,458
Carts <sup>1</sup>	1,711,320	1,765,996	1,811,026	1,811,026	1,811,026
Refuse (Front Load)					
Non-Compactor	3,679,492	3,916,595	4,041,933	4,041,933	4,041,933
Compactor	73,980	76,348	78,791	78,791	78,791
Roll-Off <sup>2</sup>	967,800	994,038	1,021,054	1,021,054	1,021,054
	<b>\$ 7,024,559</b>	<b>\$ 7,363,885</b>	<b>\$ 7,583,263</b>	<b>\$ 7,583,263</b>	<b>\$ 7,583,263</b>
Recycling Collection					
Residential	Included Above	Included Above	Included Above	Included Above	Included Above
Commercial					
Dumpsters	\$ 138,269	\$ 138,269	\$ 138,269	\$ 138,269	\$ 138,269
Carts	327,990	327,990	327,990	327,990	327,990
	<b>\$ 466,258</b>	<b>\$ 466,258</b>	<b>\$ 466,258</b>	<b>\$ 466,258</b>	<b>\$ 466,258</b>
<b>Total Revenue at Projected Rates</b>	<b>\$ 11,901,881</b>	<b>\$ 13,082,898</b>	<b>\$ 13,459,750</b>	<b>\$ 13,902,445</b>	<b>\$ 14,345,140</b>
<b>Revenue Requirement</b>	<b>\$ 12,710,218</b>	<b>\$ 13,090,693</b>	<b>\$ 13,555,210</b>	<b>\$ 13,863,800</b>	<b>\$ 14,179,826</b>
Over / (Under) Recovery					
Annual	N/A <sup>3</sup>	(\$ 7,795)	(\$ 95,460)	\$ 38,645	\$ 165,314
Cumulative	N/A <sup>3</sup>	(\$ 7,795)	(\$ 103,256)	(\$ 64,611)	\$ 100,703

1. 1X per week service was calculated using the light commercial rear-loading rate.

2. Roll-off revenues were calculated using a combination of scheduled & non-scheduled rates. Revenue from disposal is also included.

3. The over / (under) recovery for FY 2014 was excluded from this report since this fiscal year is nearing its end. As a result, Leidos would not be able to recommend rates during this time frame.



## Appendix A SCHEDULES

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The following schedules are included as part of Appendix A:

- Schedule 1: Budget
- Schedule 2: Capital Improvement Plan
- Schedule 3: Debt Service
- Schedule 4: Five Year Forecast
- Schedule 5: Residential Cost of Service
- Schedule 6: Large Item Collection Cost of Service
- Schedule 7: Commercial Front Load Cost of Service
- Schedule 8: Commercial Rear Load Cost of Service
- Schedule 9: Commercial Cardboard Recycling Cost of Service
- Schedule 10: Commercial Commingled Recycling Cost of Service
- Schedule 11: Roll-Off Cost of Service
- Schedule 12: Revenue Projections Based on Current Rates
- Schedule 13: Revenue Projections Based on Recommended Rates

Account Category & Description		FY 2011 Actual Expenditures	FY 2012 Actual Expenditures	FY 2013 Budgeted Amount	FY 2014 Estimated Expenditures	Adjustments	Test Year	Comment	Inflation Factor
<b>ADMINISTRATION</b>									
1 500100	<b>Salaries</b>								
2 500110	Salaries	\$ -	\$ -	\$ -	\$ 552,143	\$ (88,655)	463,488	A	Salary
3 500200	Exempt Full-Time	143,447	9,933	99,840	-	-	-		Salary
4 500350	Classified Full-Time	200,692	331,063	468,260	-	-	-		Salary
5 500750	Temporary Full-Time	6,763	1,001	-	-	3,882	3,882	B	Salary
6 501050	Term Full-time	(168)	-	-	-	-	-		Salary
7 501400	Overtime	2,252	3,646	2,500	3,500	-	3,500		Overtime
8 501500	Worked Holiday	-	-	-	-	-	-		Overtime
9 501510	Worked Holiday @ 1.5	-	243	-	-	-	-		Overtime
10 501512	Worked Holiday @ 2.5	-	51	-	-	-	-		Overtime
11 502000	Annual Leave	(68,674)	54,494	-	-	-	-		Salary
12 502010	Personal Day	-	-	-	-	-	-		
13 502015	Miscellaneous Leave	1,417	3,175	-	-	-	-		Salary
14 502050	Comp-time	(3,629)	6,310	-	-	-	-		Salary
15 502100	Sick Leave	(6,323)	12,325	-	-	-	-		Salary
16 502200	Incentives	-	1,456	-	-	-	-		Benefits
17 503000	<b>Employee Benefits(FICA - City Share Insurance)</b>								
18 503100	FICA	19,166	30,476	42,103	33,958	-	33,958		Benefits
19 503150	Retirement (PERA)	65,347	74,834	111,601	114,779	-	114,779		Benefits
20 503200	Employee Health Insurance	53,884	68,550	129,483	133,405	-	133,405		Benefits
21 503250	Retiree Health Care	5,764	7,219	11,487	11,168	-	11,168		Benefits
22 503300	Unemployment Insurance	8,482	8,482	8,482	8,482	-	8,482		Benefits
23 503350	Workers' Comp	3,880	5,385	7,016	8,070	-	8,070		Benefits
24 503400	City Share Dental Insurance	2,489	3,150	5,536	5,643	-	5,643		Benefits
25 510100	Contractual Services	-	-	-	-	-	-		Prof. Services
26 510250	Compliance Contracts	3,554	5,449	10,896	10,896	-	10,896		Prof. Services
27 510300	Professional Contracts	29,879	82,080	271,327	412,422	(356,443)	55,979	B	Prof. Services
28 510400	Grants and Services	-	707,520	718,563	688,312	-	688,312		Prof. Services
29 513950	Gas	3,366	1,224	6,200	1,500	-	1,500		General
30 514000	Water	-	610	3,000	-	-	-		General
31 514050	Electric	6,258	6,483	8,000	8,000	-	8,000		General
32 514100	Communication	4,591	5,379	8,470	5,000	-	5,000		General
33 514150	Landfill Tip Fees	1,907,597	2,565,936	3,069,468	2,700,000	(231,324)	2,468,676	A	Disposal
34 520010	Repairs and Maintenance	-	-	-	-	-	-		
35 520100	Rep and Maint Build/Structure	11,925	2,205	11,114	5,700	-	5,700		Maintenance
36 520300	Rep & Maint Furn/Fix/Equipment	5,246	919	4,600	2,500	-	2,500		Maintenance
37 520400	Rep & Maint Machine & Equipment	9	1,145	2,000	3,000	-	3,000		Maintenance
38 520500	Rep & Maint Vehicles	185	-	-	-	1,450	1,450	C	Maintenance
39 530010	<b>Supplies</b>	-	-	-	-	-	-		
40 530100	Office Supplies	4,984	5,117	5,500	5,500	-	5,500		Supplies
41 530200	Operating Supplies	1,260	6,956	6,000	6,868	-	6,868		Supplies
42 530300	Safety Supplies	-	3,942	7,975	6,527	-	6,527		Supplies
43 530400	Food	246	44	550	100	-	100		Supplies
44 530500	Uniform, Clothing, Linen	41,463	38,837	42,036	42,869	-	42,869		Supplies
45 530600	Software-Purchased	-	4,612	6,000	3,000	-	3,000		Supplies
46 530800	<b>Vehicles</b>								
47 530850	Auto Parts	537	144	2,250	500	-	500		Supplies
48 530900	Tires	532	762	1,200	750	-	750		Supplies
49 530950	Fuel	-	-	-	-	-	-		
50 531000	Gasoline	8,780	3,598	5,500	7,000	-	7,000		Fuel
51 531050	Diesel	-	562	2,200	1,000	-	1,000		Fuel

	Account Category & Description	FY 2011 Actual Expenditures	FY 2012 Actual Expenditures	FY 2013 Budgeted Amount	FY 2014 Estimated Expenditures	Adjustments	Test Year	Comment	Inflation Factor
52	540000				-		-		
	<b>Depreciation/Amortization</b>				-		-		
53	540010	798,514	759,255	-	-		-		General
54	540020	21,163	21,163	-	-		-		General
55	545010	486,594	64	-	-		-		General
	<b>Bad Debt Expense</b>								
56	555100						-		
	<b>Premiums</b>								
57	555250	127,644	127,644	188,057	284,596		284,596		General
58	555260	14,592	14,592	13,832	13,832		13,832		General
59	560010						-		
	<b>Other Operating Costs</b>								
60	560050				1,836		1,836		General
61	560100				-		-		General
62	560200	-	-	432	-		-		General
	Out of State								
63	560250	537	-	2,000	-		-		General
	In State								
64	560500	648	-	-	836		836		General
65	560550	100	-	-	-		-		General
	In State								
66	560700	1,525	1,144	2,000	1,000		1,000		General
67	561000	-	-	1,500	1,539		1,539		General
68	561200	192	2,125	11,000	4,164	(2,004)	2,160	B	General
69	561300						-		
	<b>Fees and Taxes</b>								
70	561700	58	-	-	-		-		General
	Credit Card Fees								
71	561750	1,266	968	1,410	241		241		General
	Bank Charges & Fees								
72	561800	24,067	18,619	62,514	66,667	(30,216)	36,451	B	General
	Print/Publish								
73	561850	-	-	15,000	69,324		69,324		General
	Advertising								
74	561900	-	573	1,000	500		500		General
	Dues								
75	563100	775,872	804,589	534,935	680,508	73,148	753,656	B	General
	Svcs of other City Depts.								
76	570100	-	-	-	-		-		General
	Capital Outlay								
77	570400	-	-	-	-		-		General
	Building & Structures								
78	570500	-	-	-	-		-		General
	Equipment & Machinery								
79	570850	-	-	6,000	-		-		General
	Software								
80	570950	-	-	-	-		-		Capital Equip
	Vehicles < 1.5								
81	572400	48,962	6,251	20,000	14,370	(14,370)	-	A	General
	Inventory Exempt								
82	572500	8,205	8,969	40,826	21,986	(8,933)	13,053	B	General
	Remodeling & Replacement								
83	590100	-	-	785,000	830,000		830,000		General
	Debt Service Principal								
84	590200	581,963	547,681	516,073	478,823		478,823		General
	Debt Service Interest								
85	590250	(18,110)	(18,110)	-	-		-		General
	DS Interest-Amort Premium								
86	700000						-		
	<b>OTHER FINANCING USES</b>								
87	700100	75,000	75,000	-	275,868	75,000	350,868	B	General
	Operating Transfers Out								
88	700150	45,000	-	-	-		-		General
	Interfund Transfers Out								
89	500003	-	-	-	-		-		General
	<b>Personnel Budget Vacancy</b>								
90	500004	-	-	-	(11,043)	11,043	-	A	General
	Vacancy Credit-Budget Wages								
91	500005	-	-	-	(3,467)	3,467	-	A	General
	Vacancy Credit-Budget Benefits								
92	700400	-	-	-	-		-		General
	Transfer Fixed Assets								
93		-	-	-	19,759		19,759		General
	Glass Processing Costs								
94	<b>Subtotal</b>	\$ 5,458,994	\$ 6,435,844	\$ 7,280,736	\$ 7,533,931	\$	6,969,977		

Account Category & Description		FY 2011 Actual Expenditures	FY 2012 Actual Expenditures	FY 2013 Budgeted Amount	FY 2014 Estimated Expenditures	Adjustments	Test Year	Comment	Inflation Factor
<b>SUSTAINABLE SANTA FE</b>									
95 500100	<b>Salaries</b>								
96 500110	Salaries	\$ -	\$ -	\$ -	\$ 27,539	\$ 41,948	69,487	A	Salary
97 500350	Classified Full-Time	-	87,519	25,887	-		-		Salary
98 501400	Overtime	-	55	1,000	1,000		1,000		Overtime
99 501900	Shift Differential	-	-	160	160		160		Salary
100 502000	Annual Leave	-	(8,784)	-	-		-		Salary
101 502010	Personal Day	-	-	-	-		-		
102 502015	Miscellaneous Leave	-	1,068	-	-		-		Salary
103 502050	Comp-time	-	58	-	-		-		Salary
104 502100	Sick Leave	-	4,824	-	-		-		Salary
105 502200	Incentives	-	146	-	-	146	146	B	Benefits
106 503100	FICA	-	6,116	2,195	2,153		2,153		Benefits
107 503150	Retirement (PERA)	-	20,534	5,266	5,576		5,576		Benefits
108 503200	Employee Health Insuranc	-	14,406	14,656	12,844		12,844		Benefits
109 503250	Retiree Health Care	-	1,981	553	553		553		Benefits
110 503350	Workers' Comp	-	113	92	92		92		Benefits
111 503400	City Share Dental Insurance	-	593	649	649		649		Benefits
112 510010	Contractual Svs & Utilities	-	-	-	-		-		
113 510300	Professional Contracts	-	10,768	17,000	17,000		17,000		Prof. Services
114 514100	Communication	-	-	1,200	750		750		Prof. Services
115 520400	Rep & Maint Machin & Equipment	-	47	-	-		-		Maintenance
116 530400	Food	-	-	250	100		100		Supplies
117 530700	Books/Subscripts/Periodicals	-	104	300	100		100		General
118 530850	Auto Parts	-	-	-	-		-		Supplies
119 560010	Other Operating Costs	-	-	22,443	23,430		23,430		General
120 560500	Out of State	-	-	-	-		-		General
121 560550	In State	-	-	75	75		75		General
122 561800	Print/Publish	-	11,809	10,725	14,380		14,380		General
123 561850	Advertising	-	1,503	6,668	4,000		4,000		General
124 561900	Dues	-	2,163	4,975	4,975		4,975		General
125 700000	OTHER FINANCING USES	-	-	-	-		-		
126	Vehicles	-	-	-	-		-		General
127 500003	<b>Personnel Budget Vacancy C</b>	-	-	-	-		-		
128 500004	Vacancy Credit-Budget Wag	-	-	-	(551)	551	-	A	General
129 500005	Vacancy Credit-Budget Ben	-	-	-	(178)	178	-	A	General
130 520010	Repairs and Maintenance	-	-	-	200		200		General
131	<b>Subtotal</b>	\$ -	\$ 155,023	\$ 114,094	\$ 114,847	\$ -	157,670		

Account Category & Description		FY 2011 Actual Expenditures	FY 2012 Actual Expenditures	FY 2013 Budgeted Amount	FY 2014 Estimated Expenditures	Adjustments	Test Year	Comment	Inflation Factor
<b>MAINTENANCE</b>									
132 500010	<b>Salaries, Wages &amp; Benefits</b>								
133 500100	<b>Salaries</b>								
134 500110	Salaries	\$ -	\$ -	\$ -	\$ 226,500	\$ 52,091	278,591	A	Salary
135 500350	Classified Full-Time	306,376	221,987	231,245	-		-		Salary
136 501400	Overtime	39,684	12,537	16,000	16,000		16,000		Overtime
137 501510	Worked Holiday @ 1.5	4,344	4,538	-	2,759	4,441	7,200	B	Overtime
138 501512	Worked Holiday @ 2.5	988	240	-	-	614	614	B	Overtime
139 502000	Annual Leave	(26,831)	19,009	-	-		-		Salary
140 502010	<b>Personal Day</b>								
141 502015	Miscellaneous Leave	2,185	2,037	-	-		-		Salary
142 502050	Comp-time	(534)	228	-	-		-		Salary
143 502100	Sick Leave	(35,152)	27,375	-	-		-		Salary
144 502200	Incentives	1,000	4,183	-	-	2,592	2,592	B	Benefits
145 503100	FICA	21,226	21,286	20,020	15,940		15,940		Benefits
146 503150	Retirement (PERA)	55,960	53,598	39,626	38,105		38,105		Benefits
147 503200	Employee Health Insurance	53,488	50,680	53,244	63,414		63,414		Benefits
148 503250	Retiree Health Care	4,930	5,170	4,168	3,784		3,784		Benefits
149 503350	Workers' Comp	9,011	7,202	7,293	7,039		7,039		Benefits
150 503400	City Share Dental Insurance	2,405	2,239	2,125	2,058		2,058		Benefits
151 520010	<b>Repairs and Maintenance</b>								
152 520400	Rep & Maint Machine & Equipment	4,080	5,075	5,000	5,000		5,000		Maintenance
153 520500	Rep & Maint Vehicles	-	-	-	-	3,250	3,250	C	Maintenance
154 530010	<b>Supplies</b>								
155 530100	Office Supplies	63	-	-	-		-		Supplies
156 530200	Operating Supplies	-	19,955	30,000	20,048		20,048		Supplies
157 530500	Uniform, Clothing, Linen	-	2,686	7,132	6,940		6,940		Supplies
158 530800	<b>Vehicles</b>		17,655	-	21,750		21,750		Supplies
159 530850	Auto Parts	672	42	1,000	750		750		Supplies
160 530900	Tires	-	-	2,500	2,500		2,500		Supplies
161 530950	Fuel								
162 531000	Gasoline	5,805	8,524	10,709	10,000		10,000		Fuel
163 531050	Diesel	9,484	9,088	7,585	8,500		8,500		Fuel
164 572400	Inventory Exempt	179	540	8,000	3,400	(3,400)	-	A	General
165 700000	<b>OTHER FINANCING USES</b>								
166 500003	<b>Personnel Budget Vacancy</b>								
167 500004	Vacancy Credit-Budget Wages	-	-	-	(4,530)	4,530	-	A	General
168 500005	Vacancy Credit-Budget Benefits	-	-	-	(1,314)	1,314	-	A	General
169	<b>Subtotal</b>	\$ 459,364	\$ 495,877	\$ 445,647	\$ 448,643	\$	514,074		

	Account Category & Description	FY 2011 Actual Expenditures	FY 2012 Actual Expenditures	FY 2013 Budgeted Amount	FY 2014 Estimated Expenditures	Adjustments	Test Year	Comment	Inflation Factor
<b>RESIDENTIAL</b>									
170 500100	<b>Salaries</b>								
171 500110	Salaries	\$ -	\$ -	\$ -	\$ 433,450	\$ 41,830	\$ 475,280	A	Salary
172 500350	Classified Full-Time	606,655	448,317	336,500	-		-		Salary
173 501400	Overtime	19,312	16,288	15,000	25,000	(4,800)	20,200	B	Overtime
174 501510	Worked Holiday @ 1.5	26,378	27,730	14,241	20,000	4,703	24,703	B	Overtime
175 501512	Worked Holiday @ 2.5	36	-	-	-		-		Overtime
176 501900	Shift Differential	-	-	6,250	1,500		1,500		Salary
177 502000	Annual Leave	(1,368)	39,457	-	-		-		Salary
178 502010	Personal Day				-		-		
179 502015	Miscellaneous Leave	3,179	5,707	-	-		-		Salary
180 502050	Comp-time	(4,641)	1,227	-	-		-		Salary
181 502100	Sick Leave	1,379	20,422	-	-		-		Salary
182 502200	Incentives	8,868	8,225	-	1,200	7,347	8,547	B	Benefits
183 503100	FICA	48,184	41,114	28,982	30,952		30,952		Benefits
184 503150	Retirement (PERA)	116,215	101,413	69,176	89,954		89,954		Benefits
185 503200	Employee Health Insurance	165,034	138,385	120,307	153,943		153,943		Benefits
186 503250	Retiree Health Care	10,239	9,783	7,233	8,860		8,860		Benefits
187 503350	Workers' Comp	35,577	25,099	16,584	18,296		18,296		Benefits
188 503400	City Share Dental Insurance	7,095	6,074	4,949	6,411		6,411		Benefits
189 520400	Rep & Maint Machin & Equipment	226,087	159,923	219,110	194,124	51,505	245,629	A	Maintenance
190 530010	<b>Supplies</b>						-		
191 530100	Office Supplies	176	-	-	-		-		Supplies
192 530200	Operating Supplies	28,477	14,863	5,000	15,000	4,447	19,447	B	Supplies
193 530500	Uniform, Clothing, Linen	802	-	-	-		-		Supplies
194 530800	Vehicles	-	282,183	-	309,530		309,530		Supplies
195 530850	Auto Parts	-	254	-	-		-		Supplies
196 530900	Tires	61,434	58,015	67,000	67,030	32,970	100,000	A	Supplies
197 530950	<b>Fuel</b>						-		
198 531000	Gasoline	5,875	6,701	2,000	7,500		7,500		Fuel
199 531050	Diesel	195,126	217,213	227,510	150,000	18,219	168,219	A	Fuel
200 531100	Compressed Natural Gas	-	-	7,643	85,000		85,000		Fuel
201 561800	Print/Publish	1,814	-	-	-		-		General
202 562500	Rental	-	-	-	-		-		General
203 570500	<b>Equipment &amp; Machinery</b>						-		General
204 570950	Vehicles < 1.5	-	-	-	-		-		General
205 571000	Vehicles > 1.5	-	-	1,034,430	276,901	(276,901)	-	D	General
206 572400	Inventory Exempt	93,551	61,143	305,118	169,800	(169,800)	-	D	General
207 700000	<b>OTHER FINANCING USES</b>						-		General
208 700150	Interfund Transfers Out	198,989	-	-	-		-		General
209 500003	<b>Personnel Budget Vacancy Credit</b>	-	-	-	-		-		General
210 500004	Vacancy Credit-Budget Wages	-	-	-	(8,669)	8,669	-	A	General
211 500005	Vacancy Credit-Budget Benefits	-	-	-	(3,043)	3,043	-	A	General
212	<b>Subtotal</b>	\$ 1,854,474	\$ 1,689,537	\$ 2,487,033	\$ 2,052,739		\$ 1,773,970		

Account Category & Description		FY 2011 Actual Expenditures	FY 2012 Actual Expenditures	FY 2013 Budgeted Amount	FY 2014 Estimated Expenditures	Adjustments	Test Year	Comment	Inflation Factor
<b>COMMERCIAL FRONT-LOAD</b>									
213 500100	<b>Salaries</b>								
214 500110	Salaries	\$ -	\$ -	\$ -	\$ 357,594	\$ 46,069	403,663	A	Salary
215 500350	Classified Full-Time	329,089	256,404	407,370	-		-		Salary
216 500400	Classified Part-Time	-	798	-	-		-		Salary
217 501400	Overtime	8,559	7,296	25,000	15,000	(4,715)	10,285	B	Overtime
218 501510	Worked Holiday @ 1.5	13,482	12,848	-	18,500	(3,557)	14,943	B	Overtime
219 501900	Shift Differential	-	-	1,500	6,250		6,250		Salary
220 502000	Annual Leave	(9,236)	49,483	-	-		-		Salary
221 502010	Personal Day				-		-		
222 502015	Miscellaneous Leave	1,453	3,277	-	-		-		Salary
223 502050	Comp-time	(881)	1,106	-	-		-		Salary
224 502100	Sick Leave	506	14,823	-	-		-		Salary
225 502200	Incentives	1,843	2,497	-	-	2,170	2,170	B	Benefits
226 503100	FICA	24,557	25,041	26,354	28,434		28,434		Benefits
227 503150	Retirement (PERA)	60,229	60,543	84,848	73,199		73,199		Benefits
228 503200	Employee Health Insurance	70,794	76,826	152,007	111,526		111,526		Benefits
229 503250	Retiree Health Care	5,305	5,840	8,826	7,233		7,233		Benefits
230 503350	Workers' Comp	17,065	15,563	20,608	16,584		16,584		Benefits
231 503400	City Share Dental Insurance	2,920	3,186	6,591	5,003		5,003		Benefits
232 514100	Communication	929	-	-	-		-		General
233 520400	Rep & Maint Machin & Equipment	173,689	150,781	210,000	195,562	9,033	204,595	C	Maintenance
234 530010	Supplies						-		
235 530200	Operating Supplies	4,983	5,213	19,000	5,000		5,000		Supplies
236 530800	<b>Vehicles</b>				274,959	(274,959)	-	D	Capital Equip
237 530850	Auto Parts	-	744	-	-		-		Supplies
238 530900	Tires	65,553	59,889	67,739	45,207	54,793	100,000	A	Supplies
239 530950	Fuel						-		
240 531000	Gasoline	1,885	2,116	4,020	2,752		2,752		Fuel
241 531050	Diesel	180,679	195,245	235,044	100,000		100,000		Fuel
242 531100	Compressed Natural Gas	-	819	-	127,000		127,000		Fuel
243 571000	Vehicles > 1.5	-	-	796,916	255,165	(255,165)	-	D	General
244 572400	Inventory Exempt	36,169	46,019	370,000	304,061	(304,061)	-	D	General
245 700000	<b>OTHER FINANCING USES</b>	-	-	-	-	-	-		General
246 500003	<b>Personnel Budget Vacancy Credit</b>	-	-	-	-	-	-		General
247 500004	Vacancy Credit-Budget Wages	-	-	-	(7,152)	7,152	-	A	General
248 500005	Vacancy Credit-Budget Benefits	-	-	-	(2,551)	2,551	-	A	General
249	<b>Subtotal</b>	\$ 989,571	\$ 996,358	\$ 2,435,823	\$ 1,939,326	\$	1,218,637		

Account Category & Description		FY 2011 Actual Expenditures	FY 2012 Actual Expenditures	FY 2013 Budgeted Amount	FY 2014 Estimated Expenditures	Adjustments	Test Year	Comment	Inflation Factor
<b>COMMERCIAL REAR-LOADER</b>									
250 500100	<b>Salaries</b>								
251 500110	Salaries	\$ -	\$ -	\$ -	\$ 175,816	\$ (18,137)	157,679	A	Salary
252 500350	Classified Full-Time	229,811	174,899	174,239	-		-		Salary
253 501400	Overtime	4,725	3,075	25,000	5,000		5,000		Overtime
254 501510	Worked Holiday @ 1.5	10,585	11,268	-	10,500		10,500		Overtime
255 501900	Shift Differential	-	-	6,000	6,000		6,000		Salary
256 502000	Annual Leave	(1,481)	17,343	-	-		-		Salary
257 502010	Personal Day				-		-		
258 502015	Miscellaneous Leave	1,352	2,251	-	-		-		Salary
259 502050	Comp-time	(1,266)	2,297	-	-		-		Salary
260 502100	Sick Leave	2,305	12,822	-	-		-		Salary
261 502200	Incentives	3,441	4,548	1,500	1,200	1,863	3,063	B	Benefits
262 503100	FICA	17,584	16,349	16,649	14,114		14,114		Benefits
263 503150	Retirement (PERA)	44,207	41,514	36,624	36,787		36,787		Benefits
264 503200	Employee Health Insurance	55,355	46,589	42,660	59,407		59,407		Benefits
265 503250	Retiree Health Care	3,894	4,005	3,800	3,618		3,618		Benefits
266 503350	Workers' Comp	11,949	11,070	9,859	7,398		7,398		Benefits
267 503400	City Share Dental Insurance	2,021	1,749	1,615	1,615		1,615		Benefits
268 520400	Rep & Maint Machin & Equipment	351	45,053	45,000	30,000		30,000		Maintenance
269 530010	<b>Supplies</b>				85,855		85,855		Supplies
270 530200	Operating Supplies	-	514	940	750		750		Supplies
271 530500	Uniform, Clothing, Linen	445	-	-	-		-		Supplies
272 530800	Vehicles	-	17,531	-	-		-		Supplies
273 530850	Auto Parts	29	-	-	-		-		Supplies
274 530900	Tires	2,533	5,030	30,000	15,105	34,895	50,000	A	Supplies
275 530950	Fuel						-		
276 531000	Gasoline	53	-	-	-		-		Fuel
277 531050	Diesel	14,437	12,500	60,000	25,000		25,000		Fuel
278 531100	Compressed Natural Gas				45,000		45,000		Fuel
279 571000	Vehicles > 1.5				659,448	(659,448)	-	D	General
280 572400	Inventory Exempt	-	6,486	19,700	20,018	(20,018)	-	D	General
281 700000	<b>OTHER FINANCING USES</b>	-	-	-	-	-	-		General
282 500003	<b>Personnel Budget Vacancy Credit</b>						-		General
283 500004	Vacancy Credit-Budget Wages	-	-	-	(3,516)	3,516	-	A	General
284 500005	Vacancy Credit-Budget Benefits	-	-	-	(1,229)	1,229	-	A	General
285	<b>Subtotal</b>	\$ 402,332	\$ 436,892	\$ 473,586	\$ 1,197,886		\$ 541,786		



Account Category & Description		FY 2011 Actual Expenditures	FY 2012 Actual Expenditures	FY 2013 Budgeted Amount	FY 2014 Estimated Expenditures	Adjustments	Test Year	Comment	Inflation Factor
<b>COMMERCIAL ROLL-OFF</b>									
286 500010	<b>Salaries, Wages &amp; Benefits</b>								
287 500100	<b>Salaries</b>								
288 500110	Salaries	\$ -	\$ -	\$ -	206,742	(86,674)	120,068	A	Salary
289 500350	Classified Full-Time	112,141	103,453	194,580	-		-		Salary
290 501400	Overtime	2,767	1,919	7,000	7,000		7,000		Overtime
291 501510	Worked Holiday @ 1.5	5,322	5,298	-	-	5,310	5,310	B	Overtime
292 501512	Worked Holiday @ 2.5	-	-	-	-		-		Overtime
293 501900	Shift Differential	-	-	-	-		-		Salary
294 502000	Annual Leave	39	22,682	-	-		-		Salary
295 502010	Personal Day				-		-		
296 502015	Miscellaneous Leave	908	547	-	-		-		Salary
297 502050	Comp-time	(3,262)	210	-	-		-		Salary
298 502100	Sick Leave	211	5,199	-	-		-		Salary
299 502200	Incentives	888	2,311	-	-	1,599	1,599	B	Benefits
300 503100	FICA	8,224	9,881	16,351	16,035		16,035		Benefits
301 503150	Retirement (PERA)	21,302	24,273	39,307	41,633		41,633		Benefits
302 503200	Employee Health Insurance	34,257	35,933	71,779	62,955		62,955		Benefits
303 503250	Retiree Health Care	1,877	2,341	4,135	4,135		4,135		Benefits
304 503350	Workers' Comp	5,896	7,799	11,003	11,003		11,003		Benefits
305 503400	City Share Dental Insurance	1,482	1,524	2,202	2,256		2,256		Benefits
306 520400	Rep & Maint Machin & Equipment	449	20,950	60,000	30,000	11,361	41,361	A	Maintenance
307 530010	<b>Supplies</b>						-		
308 530200	Operating Supplies	-	2,453	5,000	3,225		3,225		Supplies
309 530800	Vehicles	-	37,435	-	106,000	(106,000)	-	D	Supplies
310 530900	Tires	4,877	15,869	22,557	26,000	14,000	40,000	A	Supplies
311 530950	<b>Fuel</b>						-		
312 531000	Gasoline	-	52	-	-		-		Fuel
313 531050	Diesel	16,036	21,513	123,000	80,000		80,000		Fuel
314 572400	Inventory Exempt	-	-	19,600	50,178	(50,178)	-	D	General
315 700000	<b>OTHER FINANCING USES</b>	-	-	-	-	-	-		General
316 500003	<b>Personnel Budget Vacancy Credit</b>	-	-	-	-		-		General
317 500004	Vacancy Credit-Budget Wages	-	-	-	(4,135)	4,135	-	A	General
318 500005	Vacancy Credit-Budget Benefits	-	-	-	(1,491)	1,491	-	A	General
319	<b>Subtotal</b>	\$ 213,414	\$ 321,642	\$ 576,514	\$ 641,536	\$	436,580		

Account Category & Description		FY 2011 Actual Expenditures	FY 2012 Actual Expenditures	FY 2013 Budgeted Amount	FY 2014 Estimated Expenditures	Adjustments	Test Year	Comment	Inflation Factor
<b>RECYCLING</b>									
320 500110	Salaries	\$ -	\$ -	\$ -	\$ 489,416	\$ (3,580)	485,836	A	Salary
321 500350	Classified Full-Time	216,466	191,952	464,979	-	-	-		Salary
322 501400	Overtime	3,356	4,907	5,000	10,000	(3,912)	6,088	B	Overtime
323 501510	Worked Holiday @ 1.5	7,627	9,637	-	26,630	(11,999)	14,631	B	Overtime
324 501512	Worked Holiday @ 2.5	61	-	-	-	-	-		Overtime
325 501900	Shift Differential	-	-	1,500	1,500	-	1,500		Salary
326 502000	Annual Leave	(12,071)	30,481	-	-	-	-		Salary
327 502010	Personal Day	-	-	-	-	-	-		
328 502015	Miscellaneous Leave	2,151	1,303	-	-	-	-		Salary
329 502050	Comp-time	(6,107)	1,337	-	-	-	-		Salary
330 502100	Sick Leave	310	11,221	-	-	-	-		Salary
331 502200	Incentives	2,810	4,478	3,900	4,200	(371)	3,829	B	Benefits
332 503100	FICA	15,340	18,425	31,631	36,002	-	36,002		Benefits
333 503150	Retirement (PERA)	41,173	43,737	102,263	99,687	-	99,687		Benefits
334 503200	Employee Health Insurance	29,668	52,017	147,919	186,761	-	186,761		Benefits
335 503250	Retiree Health Care	3,627	4,219	10,206	9,892	-	9,892		Benefits
336 503350	Workers' Comp	11,376	18,274	21,633	24,990	-	24,990		Benefits
337 503400	City Share Dental Insurance	1,946	2,333	5,865	6,562	-	6,562		Benefits
338 520400	Rep & Maint Machine & Equipment	2,449	44,604	94,500	94,500	32,889	127,389	A	Maintenance
339 530010	Supplies	-	-	-	-	-	-		
340 530200	Operating Supplies	-	6,078	15,705	5,000	-	5,000		Supplies
341 530800	Vehicles	-	33,219	-	110,431	-	110,431		Supplies
342 530900	Tires	-	7,014	50,770	32,181	47,819	80,000	A	Supplies
343 530950	Fuel	-	-	-	-	-	-		
344 531000	Gasoline	-	3,057	4,000	250	-	250		Fuel
345 531050	Diesel	-	23,148	25,000	50,000	-	50,000		Fuel
346 531100	Compressed Natural Gas	-	-	-	28,000	-	28,000		Fuel
347 570010	Capital Purchases	-	-	-	-	-	-		
348 571000	Vehicles > 1.5	-	-	150,000	1,053,968	(1,053,968)	-	D	General
349 572400	Inventory Exempt	-	40,461	188,750	217,570	(217,570)	-	D	General
350 700000	OTHER FINANCING USES	-	-	-	-	-	-		General
351 500003	Personnel Budget Vacancy Credit	-	-	-	-	-	-		General
352 500004	Vacancy Credit-Budget Wages	-	-	-	(9,788)	9,788	-	A	General
353 500005	Vacancy Credit-Budget Benefits	-	-	-	(3,519)	3,519	-	A	General
354	<b>Subtotal</b>	\$ 320,181	\$ 551,901	\$ 1,323,621	\$ 2,474,233	\$	1,276,849		

Account Category & Description		FY 2011 Actual Expenditures	FY 2012 Actual Expenditures	FY 2013 Budgeted Amount	FY 2014 Estimated Expenditures	Adjustments	Test Year	Comment	Inflation Factor
<b>Capital Improvement</b>									None
355	Frank Ortiz Landfill	\$ -	\$ -	\$ -	\$ -	100,000	\$ 100,000	E	None
356	Replace Wetland Liner	-	-	-	-		-		None
357	Quality Assurance Project Plan	-	-	-	-	50,000	50,000	E	None
358	General Maintenance	-	-	-	-	10,000	10,000	E	None
359	Residential Refuse & Recycling Containers	-	-	-	-	160,000	160,000	E	None
360	Commercial Bins	-	-	-	-	150,000	150,000	E	None
361	<b>Subtotal</b>	\$ -	\$ -	\$ -	\$ -		\$ 470,000		None
<b>Vehicle Replacement</b>									
362	<b>Subtotal</b>	\$ -	\$ -	\$ -	\$ -	1,200,000	1,200,000	E	None
363	<b>TOTAL EXPENSES</b>	\$ 9,378,149	\$ 10,531,172	\$ 13,813,433	\$ 13,928,908		\$ 14,559,543		

		FY 2012 Total Commitments	FY 2013 BA Budget	FY 2014 Budget					
<b>REVENUE OFFSETS</b>									
364	Residential	\$ 4,282,689	\$ 4,295,658	\$ 4,696,893	\$ (4,696,893)	-	F	General	
365	Commercial	4,956,099	5,200,591	5,483,942	(5,483,942)	-	F	General	
366	Recycling	169,551	127,495	169,551	(169,551)	-	F	General	
367	Landfill Tipping - City	(11,503)				-		General	
368	Service Adjustment	(121,060)				-		General	
369	Vacancy Adjustment	(11,854)				-		General	
370	Low Income Adjustment	(103,448)	(53,000)	(53,000)	53,000	-	A	General	
371	Lien Fees	8,365				-		General	
372	Facilities	65,055				-		General	
373	Infrastructure GRT	1,829,904	1,737,859	(1,737,859)		(1,737,859)		None	
374	Finance Charge Penalties	2				-		General	
375	Sales of Capital Assets	23,035				-		General	
376	Sales - Misc.	2,167				-		General	
377	Interest on Investment	56,337	79,313	(62,716)		(62,716)		General	
378	Santa Fe Beautiful Grant	(48,000)	(48,000)	(48,000)		(48,000)		General	
379	Residential Bag Tag			(750)		(750)		General	
380	<b>TOTAL REVENUE</b>	\$ 11,097,339	\$ 11,339,916	\$ 8,448,061		\$ (1,849,325)			

381	<b>REVENUE REQUIREMENT</b>	\$ 9,378,149	\$ 566,167	\$ (2,473,517)	\$ (5,480,847)	\$ 12,710,218			
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**Comment Legend**

A	Adjusted per City Staff
B	Adjusted to reflect historical averages (excluding negative numbers)
C	Adjusted to reflect FY 2013 maintenance expenditures
D	Adjusted to account for capital improvement plan
E	Capital Improvements per City
F	To be determined based on the cost of service analysis and resulting proposed rates

City of Santa Fe  
Capital Improvement and Vehicle Replacement Schedule

Year 1		Total
Vehicle Replacement	\$	1,200,000
Refuse & Recycling Containers		160,000
Commercial Bins		150,000
Frank Ortiz Landfill		100,000
Quality Assurance Project Plan		50,000
General Maintenance		10,000
	\$	1,670,000
Year 2		Total
Vehicle Replacement	\$	1,200,000
Refuse & Recycling Containers		163,200
Commercial Bins		153,000
Frank Ortiz Landfill		100,000
Replace Wetland Liner		50,000
General Maintenance		10,000
	\$	1,676,200
Year 3		Total
Vehicle Replacement	\$	1,200,000
Refuse & Recycling Containers		166,464
Commercial Bins		156,060
Frank Ortiz Landfill		100,000
General Maintenance		10,000
	\$	1,632,524
Year 4		Total
Vehicle Replacement	\$	1,200,000
Refuse & Recycling Containers		169,793
Commercial Bins		159,181
Frank Ortiz Landfill		100,000
General Maintenance		10,000
	\$	1,638,974
Year 5		Total
Vehicle Replacement	\$	1,200,000
Refuse & Recycling Containers		173,189
Commercial Bins		162,365
Frank Ortiz Landfill		100,000
General Maintenance		10,000
	\$	1,645,554

**Future Debt**

Financing Term (Years) 15 Years  
Interest Rate 0%  
Date of Issue 7/1/2015  
Date of Final Maturity 6/27/2030  
Total Bonds Payable from Solid Waste Fund 3,200,000

	Year 1		Year 2		Year 3		Year 4		Year 5	
	FY 2014		FY 2015		FY 2016		FY 2017		FY 2018	
Period										
1 Existing Debt										
Principal	\$	830,000	\$	865,000	\$	900,000	\$	945,000	\$	985,000
Interest		478,823		442,660		408,078		363,060		322,425
Existing Debt Total	\$	1,308,823	\$	1,307,660	\$	1,308,078	\$	1,308,060	\$	1,307,425
2 Future Debt										
Principal	\$	-	\$	-	\$	213,333	\$	213,333	\$	213,333
Interest		-		-		-		-		-
Future Debt Total	\$	-	\$	-	\$	213,333	\$	213,333	\$	213,333
Total Principal	\$	830,000	\$	865,000	\$	1,113,333	\$	1,158,333	\$	1,198,333
Total Interest		478,823		442,660		408,078		363,060		322,425
Total Debt	\$	1,308,823	\$	1,307,660	\$	1,521,411	\$	1,521,393	\$	1,520,758

		Year 1	Year 2	Year 3	Year 4	Year 5
		FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
<b>ADMINISTRATION</b>						
1 500100	<b>Salaries</b>					
2 500110	Salaries	\$ 463,488	\$ 477,393	\$ 491,714	\$ 506,466	\$ 521,660
3 500200	Exempt Full-Time	-	-	-	-	-
4 500350	Classified Full-Time	-	-	-	-	-
5 500750	Temporary Full-Time	3,882	3,998	4,118	4,242	4,369
6 501050	Term Full-time	-	-	-	-	-
7 501400	Overtime	3,500	3,500	3,500	3,500	3,500
8 501500	Worked Holiday	-	-	-	-	-
9 501510	Worked Holiday @ 1.5	-	-	-	-	-
10 501512	Worked Holiday @ 2.5	-	-	-	-	-
11 502000	Annual Leave	-	-	-	-	-
12 502010	Personal Day	-	-	-	-	-
13 502015	Miscellaneous Leave	-	-	-	-	-
14 502050	Comp-time	-	-	-	-	-
15 502100	Sick Leave	-	-	-	-	-
16 502200	Incentives	-	-	-	-	-
17 503000	<b>Employee Benefits(FICA - City Share Insurance)</b>					
18 503100	FICA	33,958	34,977	36,026	37,107	38,220
19 503150	Retirement (PERA)	114,779	118,222	121,769	125,422	129,185
20 503200	Employee Health Insurance	133,405	137,407	141,529	145,775	150,149
21 503250	Retiree Health Care	11,168	11,503	11,848	12,204	12,570
22 503300	Unemployment Insurance	8,482	8,736	8,999	9,269	9,547
23 503350	Workers' Comp	8,070	8,312	8,561	8,818	9,083
24 503400	City Share Dental Insurance	5,643	5,812	5,987	6,166	6,351
25 510100	Contractual Services	-	-	-	-	-
26 510250	Compliance Contracts	10,896	11,114	11,336	11,563	11,794
27 510300	Professional Contracts	55,979	57,099	58,241	59,406	60,594
28 510400	Grants and Services	688,312	702,078	716,120	730,442	745,051
29 513950	Gas	1,500	1,530	1,561	1,592	1,624
30 514000	Water	-	-	-	-	-
31 514050	Electric	8,000	8,160	8,323	8,490	8,659
32 514100	Communication	5,000	5,100	5,202	5,306	5,412
33 514150	Landfill Tip Fees	2,468,676	2,608,328	2,660,494	2,713,704	2,767,978
34 520010	Repairs and Maintenance					
35 520100	Rep and Maint Build/Structure	5,700	5,814	5,930	6,049	6,170
36 520300	Rep & Maint Furn/Fix/Equipment	2,500	2,550	2,601	2,653	2,706
37 520400	Rep & Maint Machine & Equipment	3,000	3,060	3,121	3,184	3,247
38 520500	Rep & Maint Vehicles	1,450	1,479	1,509	1,539	1,570
39 530010	<b>Supplies</b>					
40 530100	Office Supplies	5,500	5,665	5,835	6,010	6,190
41 530200	Operating Supplies	6,868	7,074	7,286	7,505	7,730
42 530300	Safety Supplies	6,527	6,723	6,924	7,132	7,346
43 530400	Food	100	103	106	109	113
44 530500	Uniform, Clothing, Linen	42,869	44,155	45,480	46,844	48,249
45 530600	Software-Purchased	3,000	3,090	3,183	3,278	3,377
46 530800	<b>Vehicles</b>					
47 530850	Auto Parts	500	515	530	546	563
48 530900	Tires	750	773	796	820	844
49 530950	Fuel					
50 531000	Gasoline	7,000	7,210	7,426	7,649	7,879
51 531050	Diesel	1,000	1,030	1,061	1,093	1,126
52 540000	<b>Depreciation/Amortization</b>					
53 540010	Depreciation Expense	-	-	-	-	-
54 540020	Amortization Expense	-	-	-	-	-
55 545010	<b>Bad Debt Expense</b>	-	-	-	-	-
56 555100	<b>Premiums</b>					
57 555250	Gen Liab Dept. Assessment	284,596	290,288	296,094	302,016	308,056
58 555260	Benefits Dept. Assessment	13,832	14,109	14,391	14,679	14,972
59 560010	<b>Other Operating Costs</b>					
60 560050	Travel	1,836	1,873	1,910	1,948	1,987
61 560100	Per Diem	-	-	-	-	-
62 560200	Out of State	-	-	-	-	-
63 560250	In State	-	-	-	-	-

City of Santa Fe  
Revenue Requirement

		Year 1	Year 2	Year 3	Year 4	Year 5
	Account Category	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
64 560500	Out of State	836	853	870	887	905
65 560550	In State	-	-	-	-	-
66 560700	Registration	1,000	1,020	1,040	1,061	1,082
67 561000	Postage and Mail Service	1,539	1,570	1,601	1,633	1,666
68 561200	Employee Training/Tuition	2,160	2,204	2,248	2,293	2,339
69 561300	Fees and Taxes					
70 561700	Credit Card Fees	-	-	-	-	-
71 561750	Bank Charges & Fees	241	246	251	256	261
72 561800	Print/Publish	36,451	37,180	37,923	38,682	39,456
73 561850	Advertising	69,324	70,710	72,125	73,567	75,039
74 561900	Dues	500	510	520	531	541
75 563100	Svcs of other City Depts.	753,656	768,729	784,104	799,786	815,782
76 570100	Capital Outlay	-	-	-	-	-
77 570400	Building & Structures	-	-	-	-	-
78 570500	Equipment & Machinery	-	-	-	-	-
79 570850	Software	-	-	-	-	-
80 570950	Vehicles < 1.5					
81 572400	Inventory Exempt	-	-	-	-	-
82 572500	Remodeling & Replacement	13,053	13,314	13,581	13,852	14,129
83 590100	Debt Service Principal	830,000	865,000	1,113,333	1,158,333	1,198,333
84 590200	Debt Service Interest	478,823	442,660	408,078	363,060	322,425
85 590250	DS Interest-Amort Premium	-	-	-	-	-
86 700000	<b>OTHER FINANCING USES</b>					
87 700100	Operating Transfers Out	350,868	357,885	365,043	372,344	379,791
88 700150	Interfund Transfers Out	-	-	-	-	-
89 500003	<b>Personnel Budget Vacancy</b>	-	-	-	-	-
90 500004	Vacancy Credit-Budget Wages	-	-	-	-	-
91 500005	Vacancy Credit-Budget Benefits	-	-	-	-	-
92 700400	Transfer Fixed Assets	-	-	-	-	-
93	Glass Processing Costs	19,759	19,759	19,759	19,759	19,759
94	<b>Subtotal</b>	\$ 6,969,977	\$ 7,180,420	\$ 7,519,988	\$ 7,648,568	\$ 7,779,376

## SUSTAINABLE SANTA FE

95 500100	<b>Salaries</b>					
96 500110	Salaries	\$ 69,487	\$ 71,572	\$ 73,719	\$ 75,930	\$ 78,208
97 500350	Classified Full-Time	-	-	-	-	-
98 501400	Overtime	1,000	1,000	1,000	1,000	1,000
99 501900	Shift Differential	160	165	170	175	180
100 502000	Annual Leave	-	-	-	-	-
101 502010	Personal Day					
102 502015	Miscellaneous Leave	-	-	-	-	-
103 502050	Comp-time	-	-	-	-	-
104 502100	Sick Leave	-	-	-	-	-
105 502200	Incentives	146	150	155	159	164
106 503100	FICA	2,153	2,218	2,284	2,353	2,423
107 503150	Retirement (PERA)	5,576	5,743	5,916	6,093	6,276
108 503200	Employee Health Insuranc	12,844	13,229	13,626	14,035	14,456
109 503250	Retiree Health Care	553	570	587	604	622
110 503350	Workers' Comp	92	95	98	101	104
111 503400	City Share Dental Insurance	649	668	689	709	730
112 510010	Contractual Svs & Utilities					

City of Santa Fe  
Revenue Requirement

		Year 1	Year 2	Year 3	Year 4	Year 5
	Account Category	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
113 510300	Professional Contracts	17,000	17,340	17,687	18,041	18,401
114 514100	Communication	750	765	780	796	812
115 520400	Rep & Maint Machin & Equipment	-	-	-	-	-
116 530400	Food	100	103	106	109	113
117 530700	Books/Subscrpts/Periodicals	100	102	104	106	108
118 530850	Auto Parts	-	-	-	-	-
119 560010	Other Operating Costs	23,430	23,899	24,377	24,864	25,361
120 560500	Out of State	-	-	-	-	-
121 560550	In State	75	77	78	80	81
122 561800	Print/Publish	14,380	14,668	14,961	15,260	15,565
123 561850	Advertising	4,000	4,080	4,162	4,245	4,330
124 561900	Dues	4,975	5,075	5,176	5,280	5,385
125 700000	OTHER FINANCING USES					
126	Vehicles	-	-	-	-	-
127 500003	<b>Personnel Budget Vacancy C</b>					
128 500004	Vacancy Credit-Budget Wag	-	-	-	-	-
129 500005	Vacancy Credit-Budget Ben	-	-	-	-	-
130 520010	Repairs and Maintenance	200	204	208	212	216
131	<b>Subtotal</b>	\$ 157,670	\$ 161,721	\$ 165,880	\$ 170,151	\$ 174,537

## MAINTENANCE

132 500010	<b>Salaries, Wages &amp; Benefits</b>					
133 500100	<b>Salaries</b>					
134 500110	Salaries	\$ 278,591	\$ 286,949	\$ 295,557	\$ 304,424	\$ 313,557
135 500350	Classified Full-Time	-	-	-	-	-
136 501400	Overtime	16,000	16,000	16,000	16,000	16,000
137 501510	Worked Holiday @ 1.5	7,200	7,200	7,200	7,200	7,200
138 501512	Worked Holiday @ 2.5	614	614	614	614	614
139 502000	Annual Leave	-	-	-	-	-
140 502010	<b>Personal Day</b>					
141 502015	Miscellaneous Leave	-	-	-	-	-
142 502050	Comp-time	-	-	-	-	-
143 502100	Sick Leave	-	-	-	-	-
144 502200	Incentives	2,592	2,669	2,749	2,832	2,917
145 503100	FICA	15,940	16,418	16,911	17,418	17,941
146 503150	Retirement (PERA)	38,105	39,248	40,426	41,638	42,888
147 503200	Employee Health Insurance	63,414	65,316	67,276	69,294	71,373
148 503250	Retiree Health Care	3,784	3,898	4,014	4,135	4,259
149 503350	Workers' Comp	7,039	7,250	7,468	7,692	7,922
150 503400	City Share Dental Insurance	2,058	2,120	2,183	2,249	2,316
151 520010	<b>Repairs and Maintenance</b>					
152 520400	Rep & Maint Machine & Equipment	5,000	5,100	5,202	5,306	5,412
153 520500	Rep & Maint Vehicles	3,250	3,315	3,381	3,449	3,518
154 530010	<b>Supplies</b>					
155 530100	Office Supplies	-	-	-	-	-
156 530200	Operating Supplies	20,048	20,649	21,269	21,907	22,564
157 530500	Uniform, Clothing, Linen	6,940	7,148	7,363	7,584	7,811
158 530800	<b>Vehicles</b>	21,750	22,403	23,075	23,767	24,480
159 530850	Auto Parts	750	773	796	820	844
160 530900	Tires	2,500	2,575	2,652	2,732	2,814
161 530950	Fuel					
162 531000	Gasoline	10,000	10,300	10,609	10,927	11,255
163 531050	Diesel	8,500	8,755	9,018	9,288	9,567
164 572400	Inventory Exempt	-	-	-	-	-
165 700000	OTHER FINANCING USES	-	-	-	-	-
166 500003	<b>Personnel Budget Vacancy</b>	-	-	-	-	-
167 500004	Vacancy Credit-Budget Wages	-	-	-	-	-
168 500005	Vacancy Credit-Budget Benefits	-	-	-	-	-
169	<b>Subtotal</b>	\$ 514,074	\$ 528,700	\$ 543,762	\$ 559,275	\$ 575,251



Account Category	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>RESIDENTIAL</b>					
<b>Salaries</b>					
Salaries	\$ 475,280	\$ 489,538	\$ 504,224	\$ 519,351	\$ 534,932
Classified Full-Time	-	-	-	-	-
Overtime	20,200	20,200	20,200	20,200	20,200
Worked Holiday @ 1.5	24,703	24,703	24,703	24,703	24,703
Worked Holiday @ 2.5	-	-	-	-	-
Shift Differential	1,500	1,545	1,591	1,639	1,688
Annual Leave	-	-	-	-	-
Personal Day	-	-	-	-	-
Miscellaneous Leave	-	-	-	-	-
Comp-time	-	-	-	-	-
Sick Leave	-	-	-	-	-
Incentives	8,547	8,803	9,067	9,339	9,619
FICA	30,952	31,881	32,837	33,822	34,837
Retirement (PERA)	89,954	92,653	95,432	98,295	101,244
Employee Health Insurance	153,943	158,561	163,318	168,218	173,264
Retiree Health Care	8,860	9,126	9,400	9,682	9,972
Workers' Comp	18,296	18,845	19,410	19,993	20,592
City Share Dental Insurance	6,411	6,603	6,801	7,005	7,216
Rep & Maint Machin & Equipment	245,629	250,541	255,552	260,663	265,877
<b>Supplies</b>					
Office Supplies	-	-	-	-	-
Operating Supplies	19,447	20,030	20,631	21,250	21,888
Uniform, Clothing, Linen	-	-	-	-	-
Vehicles	309,530	318,816	328,380	338,232	348,379
Auto Parts	-	-	-	-	-
Tires	100,000	103,000	106,090	109,273	112,551
<b>Fuel</b>					
Gasoline	7,500	7,725	7,957	8,195	8,441
Diesel	168,219	173,266	178,464	183,817	189,332
Compressed Natural Gas	85,000	87,550	90,177	92,882	95,668
Print/Publish	-	-	-	-	-
Rental	-	-	-	-	-
<b>Equipment &amp; Machinery</b>					
Vehicles < 1.5	-	-	-	-	-
Vehicles > 1.5	-	-	-	-	-
Inventory Exempt	-	-	-	-	-
<b>OTHER FINANCING USES</b>					
Interfund Transfers Out	-	-	-	-	-
<b>Personnel Budget Vacancy Credit</b>					
Vacancy Credit-Budget Wages	-	-	-	-	-
Vacancy Credit-Budget Benefits	-	-	-	-	-
<b>Subtotal</b>	\$ 1,773,970	\$ 1,823,386	\$ 1,874,235	\$ 1,926,559	\$ 1,980,402

**COMMERCIAL FRONT-LOAD**

<b>Salaries</b>					
Salaries	\$ 403,663	\$ 415,773	\$ 428,246	\$ 441,093	\$ 454,326
Classified Full-Time	-	-	-	-	-
Classified Part-Time	-	-	-	-	-
Overtime	10,285	10,285	10,285	10,285	10,285
Worked Holiday @ 1.5	14,943	14,943	14,943	14,943	14,943
Shift Differential	6,250	6,438	6,631	6,830	7,034
Annual Leave	-	-	-	-	-
Personal Day	-	-	-	-	-
Miscellaneous Leave	-	-	-	-	-
Comp-time	-	-	-	-	-
Sick Leave	-	-	-	-	-
Incentives	2,170	2,235	2,302	2,371	2,442
FICA	28,434	29,287	30,166	31,071	32,003
Retirement (PERA)	73,199	75,395	77,657	79,987	82,386

City of Santa Fe  
Revenue Requirement

		Year 1	Year 2	Year 3	Year 4	Year 5
	Account Category	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
228 503200	Employee Health Insurance	111,526	114,872	118,318	121,867	125,523
229 503250	Retiree Health Care	7,233	7,450	7,673	7,904	8,141
230 503350	Workers' Comp	16,584	17,082	17,594	18,122	18,665
231 503400	City Share Dental Insurance	5,003	5,153	5,308	5,467	5,631
232 514100	Communication	-	-	-	-	-
233 520400	Rep & Maint Machin & Equipment	204,595	208,687	212,861	217,118	221,460
234 530010	Supplies					
235 530200	Operating Supplies	5,000	5,150	5,305	5,464	5,628
236 530800	<b>Vehicles</b>	-	-	-	-	-
237 530850	Auto Parts	-	-	-	-	-
238 530900	Tires	100,000	103,000	106,090	109,273	112,551
239 530950	Fuel					
240 531000	Gasoline	2,752	2,835	2,920	3,007	3,097
241 531050	Diesel	100,000	103,000	106,090	109,273	112,551
242 531100	Compressed Natural Gas	127,000	130,810	134,734	138,776	142,940
243 571000	Vehicles > 1.5	-	-	-	-	-
244 572400	Inventory Exempt	-	-	-	-	-
245 700000	<b>OTHER FINANCING USES</b>	-	-	-	-	-
246 500003	<b>Personnel Budget Vacancy Credit</b>	-	-	-	-	-
247 500004	Vacancy Credit-Budget Wages	-	-	-	-	-
248 500005	Vacancy Credit-Budget Benefits	-	-	-	-	-
249	<b>Subtotal</b>	\$ 1,218,637	\$ 1,252,394	\$ 1,287,122	\$ 1,322,850	\$ 1,359,607

## COMMERCIAL REAR-LOADER

250 500100	<b>Salaries</b>					
251 500110	Salaries	\$ 157,679	\$ 162,409	\$ 167,282	\$ 172,300	\$ 177,469
252 500350	Classified Full-Time	-	-	-	-	-
253 501400	Overtime	5,000	5,000	5,000	5,000	5,000
254 501510	Worked Holiday @ 1.5	10,500	10,500	10,500	10,500	10,500
255 501900	Shift Differential	6,000	6,180	6,365	6,556	6,753
256 502000	Annual Leave	-	-	-	-	-
257 502010	Personal Day					
258 502015	Miscellaneous Leave	-	-	-	-	-
259 502050	Comp-time	-	-	-	-	-
260 502100	Sick Leave	-	-	-	-	-
261 502200	Incentives	3,063	3,155	3,250	3,347	3,448
262 503100	FICA	14,114	14,537	14,974	15,423	15,885
263 503150	Retirement (PERA)	36,787	37,891	39,027	40,198	41,404
264 503200	Employee Health Insurance	59,407	61,189	63,025	64,916	66,863
265 503250	Retiree Health Care	3,618	3,727	3,838	3,953	4,072
266 503350	Workers' Comp	7,398	7,620	7,849	8,084	8,327
267 503400	City Share Dental Insurance	1,615	1,663	1,713	1,765	1,818
268 520400	Rep & Maint Machin & Equipment	30,000	30,600	31,212	31,836	32,473
269 530010	<b>Supplies</b>	85,855	88,431	91,084	93,816	96,631
270 530200	Operating Supplies	750	773	796	820	844
271 530500	Uniform, Clothing, Linen	-	-	-	-	-
272 530800	Vehicles	-	-	-	-	-
273 530850	Auto Parts	-	-	-	-	-
274 530900	Tires	50,000	51,500	53,045	54,636	56,275
275 530950	Fuel					
276 531000	Gasoline	-	-	-	-	-
277 531050	Diesel	25,000	25,750	26,523	27,318	28,138
278 531100	Compressed Natural Gas	45,000	46,350	47,741	49,173	50,648
279 571000	Vehicles > 1.5	-	-	-	-	-
280 572400	Inventory Exempt	-	-	-	-	-
281 700000	<b>OTHER FINANCING USES</b>	-	-	-	-	-
282 500003	<b>Personnel Budget Vacancy Credit</b>	-	-	-	-	-
283 500004	Vacancy Credit-Budget Wages	-	-	-	-	-
284 500005	Vacancy Credit-Budget Benefits	-	-	-	-	-
285	<b>Subtotal</b>	\$ 541,786	\$ 557,275	\$ 573,222	\$ 589,641	\$ 606,547

## COMMERCIAL ROLL-OFF

286 500010	<b>Salaries, Wages &amp; Benefits</b>
287 500100	<b>Salaries</b>

City of Santa Fe  
Revenue Requirement

	Account Category	Year 1		Year 2		Year 3		Year 4		Year 5	
		FY 2014		FY 2015		FY 2016		FY 2017		FY 2018	
288 500110	Salaries	\$ 120,068	\$	123,670	\$	127,380	\$	131,202	\$	135,138	
289 500350	Classified Full-Time	-		-		-		-		-	
290 501400	Overtime	7,000		7,000		7,000		7,000		7,000	
291 501510	Worked Holiday @ 1.5	5,310		5,310		5,310		5,310		5,310	
292 501512	Worked Holiday @ 2.5	-		-		-		-		-	
293 501900	Shift Differential	-		-		-		-		-	
294 502000	Annual Leave	-		-		-		-		-	
295 502010	Personal Day	-		-		-		-		-	
296 502015	Miscellaneous Leave	-		-		-		-		-	
297 502050	Comp-time	-		-		-		-		-	
298 502100	Sick Leave	-		-		-		-		-	
299 502200	Incentives	1,599		1,647		1,697		1,748		1,800	
300 503100	FICA	16,035		16,516		17,012		17,522		18,048	
301 503150	Retirement (PERA)	41,633		42,882		44,168		45,494		46,858	
302 503200	Employee Health Insurance	62,955		64,844		66,789		68,793		70,856	
303 503250	Retiree Health Care	4,135		4,259		4,387		4,518		4,654	
304 503350	Workers' Comp	11,003		11,333		11,673		12,023		12,384	
305 503400	City Share Dental Insurance	2,256		2,324		2,393		2,465		2,539	
306 520400	Rep & Maint Machin & Equipment	41,361		42,188		43,032		43,893		44,770	
307 530010	<b>Supplies</b>										
308 530200	Operating Supplies	3,225		3,322		3,421		3,524		3,630	
309 530800	Vehicles	-		-		-		-		-	
310 530900	Tires	40,000		41,200		42,436		43,709		45,020	
311 530950	<b>Fuel</b>										
312 531000	Gasoline	-		-		-		-		-	
313 531050	Diesel	80,000		82,400		84,872		87,418		90,041	
314 572400	Inventory Exempt	-		-		-		-		-	
315 700000	<b>OTHER FINANCING USES</b>										
316 500003	<b>Personnel Budget Vacancy Credit</b>										
317 500004	Vacancy Credit-Budget Wages	-		-		-		-		-	
318 500005	Vacancy Credit-Budget Benefits	-		-		-		-		-	
319	<b>Subtotal</b>	\$ 436,580	\$	448,895	\$	461,570	\$	474,618	\$	488,048	
<b>RECYCLING</b>											
320 500110	<b>Salaries</b>	\$ 485,836	\$	500,411	\$	515,423	\$	530,886	\$	546,813	
321 500350	Classified Full-Time	-		-		-		-		-	
322 501400	Overtime	6,088		6,088		6,088		6,088		6,088	
323 501510	Worked Holiday @ 1.5	14,631		14,631		14,631		14,631		14,631	
324 501512	Worked Holiday @ 2.5	-		-		-		-		-	
325 501900	Shift Differential	1,500		1,545		1,591		1,639		1,688	
326 502000	Annual Leave	-		-		-		-		-	
327 502010	Personal Day	-		-		-		-		-	
328 502015	Miscellaneous Leave	-		-		-		-		-	
329 502050	Comp-time	-		-		-		-		-	
330 502100	Sick Leave	-		-		-		-		-	
331 502200	Incentives	3,829		3,944		4,063		4,185		4,310	
332 503100	FICA	36,002		37,082		38,195		39,340		40,521	
333 503150	Retirement (PERA)	99,687		102,678		105,758		108,931		112,199	
334 503200	Employee Health Insurance	186,761		192,364		198,135		204,079		210,201	
335 503250	Retiree Health Care	9,892		10,189		10,494		10,809		11,134	
336 503350	Workers' Comp	24,990		25,740		26,512		27,307		28,126	
337 503400	City Share Dental Insurance	6,562		6,759		6,962		7,170		7,386	

		City of Santa Fe Revenue Requirement				
		Year 1	Year 2	Year 3	Year 4	Year 5
		FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
338 520400	Rep & Maint Machine & Equipment	127,389	129,937	132,536	135,186	137,890
339 530010	<b>Supplies</b>					
340 530200	Operating Supplies	5,000	5,150	5,305	5,464	5,628
341 530800	Vehicles	110,431	113,744	117,156	120,671	124,291
342 530900	Tires	80,000	82,400	84,872	87,418	90,041
343 530950	Fuel					
344 531000	Gasoline	250	258	265	273	281
345 531050	Diesel	50,000	51,500	53,045	54,636	56,275
346 531100	Compressed Natural Gas	28,000	28,840	29,705	30,596	31,514
347 570010	<b>Capital Purchases</b>					
348 571000	Vehicles > 1.5					
349 572400	Inventory Exempt					
350 700000	<b>OTHER FINANCING USES</b>	-	-	-	-	-
351 500003	<b>Personnel Budget Vacancy Credit</b>	-	-	-	-	-
352 500004	Vacancy Credit-Budget Wages	-	-	-	-	-
353 500005	Vacancy Credit-Budget Benefits	-	-	-	-	-
	<b>Subtotal</b>	\$ 1,276,849	\$ 1,313,258	\$ 1,350,735	\$ 1,389,310	\$ 1,429,016
<b>Capital Improvement</b>						
351	Frank Ortiz Landfill	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
352	Replace Wetland Liner		50,000			
353	Quality Assurance Project Plan	50,000				
354	General Maintenance	10,000	10,000	10,000	10,000	10,000
355	Residential Refuse & Recycling Containers	160,000	163,200	166,464	169,793	173,189
356	Commercial Bins	150,000	153,000	156,060	159,181	162,365
357	<b>Subtotal</b>	\$ 470,000	\$ 476,200	\$ 432,524	\$ 438,974	\$ 445,554
<b>Vehicle Replacement</b>		1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
358	<b>Subtotal</b>	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000
359	<b>TOTAL EXPENSES</b>	\$ 14,559,543	\$ 14,942,247	\$ 15,409,039	\$ 15,719,948	\$ 16,038,340
<b>REVENUE OFFSETS</b>						
360	Residential	\$ -	\$ -	\$ -	\$ -	\$ -
361	Commercial	-	-	-	-	-
362	Recycling	-	-	-	-	-
363	Landfill Tipping - City	-	-	-	-	-
364	Service Adjustment					
365	Vacancy Adjustment					
366	Low Income Adjustment	-	-	-	-	-
367	Lien Fees	-	-	-	-	-
368	Facilities	-	-	-	-	-
369	Infrastructure GRT	(1,737,859)	(1,737,859)	(1,737,859)	(1,737,859)	(1,737,859)
370	Finance Charge Penalties	-	-	-	-	-
371	Sales of Capital Assets	-	-	-	-	-
372	Sales - Misc.	-	-	-	-	-
373	Interest on Investment	(62,716)	(63,970)	(65,250)	(66,555)	(67,886)
374	Santa Fe Beautiful Grant	(48,000)	(48,960)	(49,939)	(50,938)	(51,957)
375	Residential Bag Tag	(750)	(765)	(780)	(796)	(812)
376	<b>TOTAL REVENUE</b>	\$ (1,849,325)	\$ (1,851,554)	\$ (1,853,828)	\$ (1,856,148)	\$ (1,858,513)
377	<b>REVENUE REQUIREMENT</b>	\$ 12,710,218	\$ 13,090,693	\$ 13,555,210	\$ 13,863,800	\$ 14,179,826

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Direct Costs</b>					
Refuse	\$ 2,220,056	\$ 2,271,199	\$ 2,323,827	\$ 2,377,984	\$ 2,433,714
Recycling	1,307,239	1,338,929	1,371,553	1,405,139	1,439,716
Cart Maintenance/Replacement	164,635	168,092	171,490	174,957	178,494
Recycling Processing Fees	26,531	26,777	26,996	27,222	27,454
Subtotal - Direct	\$ 3,718,461	\$ 3,804,997	\$ 3,893,866	\$ 3,985,301	\$ 4,079,378
<b>Overhead/Indirect</b>					
Administration	\$ 1,200,427	\$ 1,229,625	\$ 1,344,374	\$ 1,375,493	\$ 1,406,980
Keep Santa Fe Beautiful	12,433	13,045	13,681	14,341	15,026
Sustainable Santa Fe	56,508	58,198	59,939	61,732	63,579
City Activities	42,730	43,995	45,298	46,639	48,021
Fleet Maintenance	92,937	95,667	98,479	101,375	104,358
Special Events	43,419	44,679	45,977	47,313	48,689
Subtotal - Indirect/OH	1,448,454	1,485,209	1,607,747	1,646,893	1,686,652
<b>Total Collection and OH<sup>(1)</sup></b>	\$ 5,166,915	\$ 5,290,206	\$ 5,501,614	\$ 5,632,194	\$ 5,766,029

**Collection<sup>(2)</sup>**

96-gal	\$ 4,800,690	\$ 4,915,347	\$ 5,113,650	\$ 5,235,095	\$ 5,359,557
64-gal	252,668	258,702	269,139	275,531	282,082
Extra Carts <sup>(3)</sup>	113,557	116,157	118,825	121,569	124,391

**Disposal**

96-gal	\$ 985,539	\$ 1,082,758	\$ 1,103,581	\$ 1,124,822	\$ 1,146,492
64-gal	34,580	37,992	38,722	39,467	40,228
Extra Carts	51,870	52,932	53,950	54,989	56,048
Total Disposal	\$ 1,071,990	\$ 1,173,682	\$ 1,196,253	\$ 1,219,278	\$ 1,242,768

**Customers - Active Accounts<sup>(4)</sup>**

96-gal	26,042	28,037	28,037	28,037	28,037
64-gal	1,371	1,476	1,476	1,476	1,476
Extra Carts <sup>(5)</sup>	1,371	1,476	1,476	1,476	1,476
Total Accounts	28,784	30,989	30,989	30,989	30,989

**Total with Disposal**

96-gal	\$ 5,786,230	\$ 5,998,105	\$ 6,217,230	\$ 6,359,917	\$ 6,506,048
64-gal	287,248	296,694	307,862	314,999	322,310
Extra Carts	165,427	169,089	172,775	176,557	180,439
Total Rev. Requirement	\$ 6,238,905	\$ 6,463,888	\$ 6,697,867	\$ 6,851,473	\$ 7,008,797

**Monthly COS**

96-gal	\$ 18.52	\$ 17.83	\$ 18.48	\$ 18.90	\$ 19.34
64-gal	17.46	16.75	17.39	17.79	18.20
Extra Carts	10.06	9.55	9.76	9.97	10.19

1. Combined costs shown in Schedules 5 &amp; 6.

2. Based on number of households with 96 and 64 gallon containers. Assumed 5% of households have extra carts, per City staff.

3. Cost for extra carts includes only collection and container maintenance costs.

4. Active accounts reflect growth from annexation.

5. Extra carts are all 96-gallon containers.

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Direct Costs</b>					
Collection	\$ 73,843	\$ 74,790	\$ 75,765	\$ 76,768	\$ 77,801
<b>Overhead/Indirect</b>					
Fleet Maintenance	631	649	668	688	708
<b>Total Collection and OH</b>	\$ 74,474	\$ 75,439	\$ 76,433	\$ 77,456	\$ 78,509
 <b>Total Revenue Requirement</b>	 \$ 74,474	 \$ 75,439	 \$ 76,433	 \$ 77,456	 \$ 78,509
 <b>Collections</b>	 252	 252	 252	 252	 252
<b>Cost per Collection</b>	\$ 295.53	\$ 299.36	\$ 303.31	\$ 307.37	\$ 311.55

City of Santa Fe  
Commercial Front Load Cost of Service

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Direct Costs</b>					
Refuse	\$1,455,982	\$1,489,620	\$1,524,227	\$1,559,832	\$1,596,465
Cart Maintenance/Replacement	77,783	79,261	80,866	82,504	84,176
Subtotal - Direct	\$1,533,765	\$1,568,880	\$1,605,093	\$1,642,336	\$1,680,641
<b>Overhead/Indirect</b>					
Administration	\$495,507	\$507,371	\$554,512	\$567,134	\$579,898
Keep Santa Fe Beautiful	5,132	5,383	5,643	5,913	6,193
Sustainable Santa Fe	23,325	24,014	24,723	25,453	26,205
City Activities	17,638	18,153	18,684	19,230	19,792
Fleet Maintenance	74,083	76,259	78,500	80,809	83,186
Special Events	17,922	18,436	18,964	19,508	20,067
Subtotal - Indirect/OH	633,608	649,615	701,025	718,046	735,342
Total Collection Cost <sup>(1)</sup>	\$2,167,373	\$2,218,495	\$2,306,118	\$2,360,383	\$2,415,982
Number of Collections	140,036	142,636	142,636	142,636	142,636
Cost per Collection	\$15.48	\$15.55	\$16.17	\$16.55	\$16.94
<b>Disposal Costs</b>					
Cubic Yards Collected	870,740	881,140	881,140	881,140	881,140
Cost per CY	\$1.11	\$1.13	\$1.15	\$1.17	\$1.19
<b>Total FL Rev Req</b>	<b>\$3,131,131</b>	<b>\$3,210,303</b>	<b>\$3,316,999</b>	<b>\$3,390,721</b>	<b>\$3,466,170</b>

1. Combined costs shown in Schedules 5 & 6.

Cost of Service FL Rates - FY 2014

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 81.46	\$ 162.91	\$ 244.37	\$ 325.83	\$ 407.28	\$ 488.74
4 cy	\$ 86.25	\$ 172.51	\$ 258.76	\$ 345.01	\$ 431.27	\$ 517.52
6 cy	\$ 95.85	\$ 191.69	\$ 287.54	\$ 383.38	\$ 479.23	\$ 575.07
8 cy	\$ 105.44	\$ 210.88	\$ 316.31	\$ 421.75	\$ 527.19	\$ 632.63
C3	\$ 110.23	\$ 220.47	\$ 330.70	\$ 440.94	\$ 551.17	\$ 661.41
C4	\$ 124.62	\$ 249.25	\$ 373.87	\$ 498.49	\$ 623.12	\$ 747.74
C6	\$ 153.40	\$ 306.80	\$ 460.20	\$ 613.60	\$ 767.00	\$ 920.40
C8	\$ 182.18	\$ 364.36	\$ 546.53	\$ 728.71	\$ 910.89	\$ 1,093.07

Cost of Service FL Rates - FY 2015

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 82.03	\$ 164.06	\$ 246.09	\$ 328.13	\$ 410.16	\$ 492.19
4 cy	\$ 86.91	\$ 173.82	\$ 260.73	\$ 347.64	\$ 434.55	\$ 521.45
6 cy	\$ 96.66	\$ 193.33	\$ 289.99	\$ 386.66	\$ 483.32	\$ 579.99
8 cy	\$ 106.42	\$ 212.84	\$ 319.26	\$ 425.68	\$ 532.10	\$ 638.52
C3	\$ 111.30	\$ 222.59	\$ 333.89	\$ 445.19	\$ 556.48	\$ 667.78
C4	\$ 125.93	\$ 251.86	\$ 377.79	\$ 503.72	\$ 629.65	\$ 755.58
C6	\$ 155.20	\$ 310.39	\$ 465.59	\$ 620.78	\$ 775.98	\$ 931.17
C8	\$ 184.46	\$ 368.92	\$ 553.38	\$ 737.84	\$ 922.30	\$ 1,106.76

Cost of Service FL Rates - FY 2016

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 84.97	\$ 169.95	\$ 254.92	\$ 339.90	\$ 424.87	\$ 509.85
4 cy	\$ 89.95	\$ 179.89	\$ 269.84	\$ 359.78	\$ 449.73	\$ 539.68
6 cy	\$ 99.89	\$ 199.78	\$ 299.67	\$ 399.56	\$ 499.44	\$ 599.33
8 cy	\$ 109.83	\$ 219.66	\$ 329.50	\$ 439.33	\$ 549.16	\$ 658.99
C3	\$ 114.80	\$ 229.61	\$ 344.41	\$ 459.21	\$ 574.02	\$ 688.82
C4	\$ 129.72	\$ 259.43	\$ 389.15	\$ 518.87	\$ 648.59	\$ 778.30
C6	\$ 159.55	\$ 319.09	\$ 478.64	\$ 638.18	\$ 797.73	\$ 957.27
C8	\$ 189.37	\$ 378.75	\$ 568.12	\$ 757.50	\$ 946.87	\$ 1,136.24

Cost of Service FL Rates - FY 2017

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 86.91	\$ 173.82	\$ 260.73	\$ 347.64	\$ 434.55	\$ 521.46
4 cy	\$ 91.98	\$ 183.96	\$ 275.93	\$ 367.91	\$ 459.89	\$ 551.87
6 cy	\$ 102.11	\$ 204.22	\$ 306.34	\$ 408.45	\$ 510.56	\$ 612.67
8 cy	\$ 112.25	\$ 224.49	\$ 336.74	\$ 448.98	\$ 561.23	\$ 673.48
C3	\$ 117.31	\$ 234.63	\$ 351.94	\$ 469.25	\$ 586.56	\$ 703.88
C4	\$ 132.51	\$ 265.03	\$ 397.54	\$ 530.06	\$ 662.57	\$ 795.08
C6	\$ 162.92	\$ 325.83	\$ 488.75	\$ 651.67	\$ 814.58	\$ 977.50
C8	\$ 193.32	\$ 386.64	\$ 579.96	\$ 773.28	\$ 966.59	\$ 1,159.91

Cost of Service FL Rates - FY 2018

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 88.89	\$ 177.78	\$ 266.68	\$ 355.57	\$ 444.46	\$ 533.35
4 cy	\$ 94.06	\$ 188.11	\$ 282.17	\$ 376.23	\$ 470.29	\$ 564.34
6 cy	\$ 104.39	\$ 208.77	\$ 313.16	\$ 417.55	\$ 521.93	\$ 626.32
8 cy	\$ 114.72	\$ 229.43	\$ 344.15	\$ 458.86	\$ 573.58	\$ 688.30
C3	\$ 119.88	\$ 239.76	\$ 359.64	\$ 479.52	\$ 599.40	\$ 719.28
C4	\$ 135.37	\$ 270.75	\$ 406.12	\$ 541.50	\$ 676.87	\$ 812.25
C6	\$ 166.36	\$ 332.73	\$ 499.09	\$ 665.45	\$ 831.81	\$ 998.18
C8	\$ 197.35	\$ 394.70	\$ 592.05	\$ 789.40	\$ 986.75	\$ 1,184.11

Note: Volume based costs for compactors based on 3 times container size.



RL to Cart Collection Ratio

3

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Direct Costs</b>					
Refuse	\$751,490	\$770,677	\$790,433	\$810,775	\$831,720
Container Maintenance/Replacement					
Dumpsters	22,293	22,728	23,185	23,650	24,125
Carts	18,178	18,533	18,905	19,285	19,672
Subtotal - Direct	\$791,961	\$811,939	\$832,523	\$853,710	\$875,518
<b>Overhead/Indirect</b>					
Administration	\$255,751	\$262,496	\$287,559	\$294,787	\$302,113
Keep Santa Fe Beautiful	2,649	2,785	2,926	3,073	3,226
Sustainable Santa Fe	12,039	12,424	12,821	13,230	13,652
City Activities	9,104	9,392	9,689	9,995	10,311
Fleet Maintenance	13,323	13,714	14,118	14,533	14,960
Special Events	9,250	9,538	9,834	10,140	10,455
Subtotal - Indirect/OH	302,116	310,349	336,947	345,758	354,718
Total Collection Cost <sup>(1)</sup>	\$1,094,077	\$1,122,288	\$1,169,470	\$1,199,469	\$1,230,235
Number of Collections <sup>(2)</sup>	199,420	199,420	199,420	199,420	199,420
Dumpsters (Actual)	22,360	22,360	22,360	22,360	22,360
Dumpsters (with Collection Factor)	67,080	67,080	67,080	67,080	67,080
Carts	132,340	132,340	132,340	132,340	132,340
Cost per Collection	\$5.49	\$5.63	\$5.86	\$6.01	\$6.17
<b>Disposal Costs</b>					
Cubic Yards Collected	\$162,999	\$165,763	\$168,950	\$172,202	\$175,520
Cost per CY	147,267	147,267	147,267	147,267	147,267
	\$1.11	\$1.13	\$1.15	\$1.17	\$1.19
<b>Total RL Rev Req</b>	<b>\$1,257,076</b>	<b>\$1,288,050</b>	<b>\$1,338,420</b>	<b>\$1,371,671</b>	<b>\$1,405,755</b>

1. Combined costs shown in Schedules 5 &amp; 6.

2. Sum of Carts and Dumpsters (with Collection Factor).

## Cost of Service RL/Cart Rates - FY 2014

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 85.71	\$ 171.42	\$ 257.13	\$ 342.84	\$ 428.55	\$ 514.26
4 cy	\$ 90.51	\$ 181.01	\$ 271.52	\$ 362.03	\$ 452.53	\$ 543.04
6 cy	\$ 100.10	\$ 200.20	\$ 300.30	\$ 400.40	\$ 500.50	\$ 600.60
96-gal	\$ 26.17	\$ 52.34	\$ 78.52	\$ 104.69	\$ 130.86	\$ 157.03
64-gal	\$ 25.45	\$ 50.91	\$ 76.36	\$ 101.81	\$ 127.26	\$ 152.72

## Cost of Service RL/Cart Rates - FY 2015

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 87.79	\$ 175.59	\$ 263.38	\$ 351.17	\$ 438.97	\$ 526.76
4 cy	\$ 92.67	\$ 185.34	\$ 278.01	\$ 370.68	\$ 463.36	\$ 556.03
6 cy	\$ 102.43	\$ 204.85	\$ 307.28	\$ 409.71	\$ 512.13	\$ 614.56
96-gal	\$ 26.83	\$ 53.65	\$ 80.48	\$ 107.30	\$ 134.13	\$ 160.95
64-gal	\$ 26.09	\$ 52.19	\$ 78.28	\$ 104.38	\$ 130.47	\$ 156.56

## Cost of Service RL/Cart Rates - FY 2016

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 91.15	\$ 182.30	\$ 273.45	\$ 364.60	\$ 455.75	\$ 546.90
4 cy	\$ 96.12	\$ 192.24	\$ 288.37	\$ 384.49	\$ 480.61	\$ 576.73
6 cy	\$ 106.06	\$ 212.13	\$ 318.19	\$ 424.26	\$ 530.32	\$ 636.39
96-gal	\$ 27.90	\$ 55.80	\$ 83.69	\$ 111.59	\$ 139.49	\$ 167.39
64-gal	\$ 27.15	\$ 54.30	\$ 81.46	\$ 108.61	\$ 135.76	\$ 162.91

## Cost of Service RL/Cart Rates - FY 2017

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 93.39	\$ 186.79	\$ 280.18	\$ 373.57	\$ 466.97	\$ 560.36
4 cy	\$ 98.46	\$ 196.92	\$ 295.38	\$ 393.84	\$ 492.30	\$ 590.76
6 cy	\$ 108.59	\$ 217.19	\$ 325.78	\$ 434.38	\$ 542.97	\$ 651.57
96-gal	\$ 28.60	\$ 57.20	\$ 85.79	\$ 114.39	\$ 142.99	\$ 171.59
64-gal	\$ 27.84	\$ 55.68	\$ 83.51	\$ 111.35	\$ 139.19	\$ 167.03

## Cost of Service RL/Cart Rates - FY 2018

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 95.69	\$ 191.38	\$ 287.08	\$ 382.77	\$ 478.46	\$ 574.15
4 cy	\$ 100.86	\$ 201.71	\$ 302.57	\$ 403.43	\$ 504.28	\$ 605.14
6 cy	\$ 111.19	\$ 222.37	\$ 333.56	\$ 444.74	\$ 555.93	\$ 667.12
96-gal	\$ 29.31	\$ 58.63	\$ 87.94	\$ 117.26	\$ 146.57	\$ 175.89
64-gal	\$ 28.54	\$ 57.08	\$ 85.62	\$ 114.16	\$ 142.70	\$ 171.24

Recycling to Cart Collection Ratio

3

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Direct Costs</b>					
Commercial Cardboard Recycling	\$147,433	\$150,438	\$153,530	\$156,713	\$159,988
Container Maintenance					
Dumpsters	163	160	164	169	173
Carts	57	55	57	59	60
Subtotal - Direct	\$147,652	\$150,653	\$153,752	\$156,940	\$160,221
<b>Overhead/Indirect</b>					
Administration	\$50,175	\$51,240	\$55,854	\$56,979	\$58,114
Keep Santa Fe Beautiful	520	544	568	594	621
Sustainable Santa Fe	2,362	2,425	2,490	2,557	2,626
City Activities	1,786	1,833	1,882	1,932	1,983
Fleet Maintenance	5,567	5,730	5,899	6,072	6,251
Special Events	1,815	1,862	1,910	1,960	2,011
Subtotal - Indirect/OH	62,224	63,634	68,604	70,094	71,606
Total Collection Cost <sup>(1)</sup>	\$209,877	\$214,287	\$222,355	\$227,034	\$231,827
Number of Collections	52,468	52,468	52,468	52,468	52,468
Dumpsters (Actual)	11,648	11,648	11,648	11,648	11,648
Dumpsters (with Collection Factor)	34,944	34,944	34,944	34,944	34,944
Carts	17,524	17,524	17,524	17,524	17,524
Cost per Collection	\$4.00	\$4.08	\$4.24	\$4.33	\$4.42
<b>Disposal Costs</b>	\$0	\$0	\$0	\$0	\$0
Cubic Yards Collected	59,826	59,826	59,826	59,826	59,826
Cost per CY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total Rev Req</b>	<b>\$209,877</b>	<b>\$214,287</b>	<b>\$222,355</b>	<b>\$227,034</b>	<b>\$231,827</b>

1. Combined costs shown in Schedules 5 &amp; 6.

## Cost of Service RL/Cart Rates - FY 2014

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 52.00	\$ 104.00	\$ 156.00	\$ 208.00	\$ 260.01	\$ 312.01
4 cy	\$ 52.00	\$ 104.00	\$ 156.00	\$ 208.00	\$ 260.01	\$ 312.01
6 cy	\$ 52.00	\$ 104.00	\$ 156.00	\$ 208.00	\$ 260.01	\$ 312.01
96-gal	\$ 17.33	\$ 34.67	\$ 52.00	\$ 69.33	\$ 86.67	\$ 104.00
64-gal	\$ 17.33	\$ 34.67	\$ 52.00	\$ 69.33	\$ 86.67	\$ 104.00

## Cost of Service RL/Cart Rates - FY 2015

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 53.09	\$ 106.19	\$ 159.28	\$ 212.38	\$ 265.47	\$ 318.56
4 cy	\$ 53.09	\$ 106.19	\$ 159.28	\$ 212.38	\$ 265.47	\$ 318.56
6 cy	\$ 53.09	\$ 106.19	\$ 159.28	\$ 212.38	\$ 265.47	\$ 318.56
96-gal	\$ 17.70	\$ 35.40	\$ 53.09	\$ 70.79	\$ 88.49	\$ 106.19
64-gal	\$ 17.70	\$ 35.40	\$ 53.09	\$ 70.79	\$ 88.49	\$ 106.19

## Cost of Service RL/Cart Rates - FY 2016

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 55.09	\$ 110.19	\$ 165.28	\$ 220.37	\$ 275.47	\$ 330.56
4 cy	\$ 55.09	\$ 110.19	\$ 165.28	\$ 220.37	\$ 275.47	\$ 330.56
6 cy	\$ 55.09	\$ 110.19	\$ 165.28	\$ 220.37	\$ 275.47	\$ 330.56
96-gal	\$ 18.36	\$ 36.73	\$ 55.09	\$ 73.46	\$ 91.82	\$ 110.19
64-gal	\$ 18.36	\$ 36.73	\$ 55.09	\$ 73.46	\$ 91.82	\$ 110.19

## Cost of Service RL/Cart Rates - FY 2017

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 56.25	\$ 112.50	\$ 168.76	\$ 225.01	\$ 281.26	\$ 337.51
4 cy	\$ 56.25	\$ 112.50	\$ 168.76	\$ 225.01	\$ 281.26	\$ 337.51
6 cy	\$ 56.25	\$ 112.50	\$ 168.76	\$ 225.01	\$ 281.26	\$ 337.51
96-gal	\$ 18.75	\$ 37.50	\$ 56.25	\$ 75.00	\$ 93.75	\$ 112.50
64-gal	\$ 18.75	\$ 37.50	\$ 56.25	\$ 75.00	\$ 93.75	\$ 112.50

## Cost of Service RL/Cart Rates - FY 2018

Frequency	1X	2X	3X	4X	5X	6X
3 cy	\$ 57.44	\$ 114.88	\$ 172.32	\$ 229.76	\$ 287.20	\$ 344.64
4 cy	\$ 57.44	\$ 114.88	\$ 172.32	\$ 229.76	\$ 287.20	\$ 344.64
6 cy	\$ 57.44	\$ 114.88	\$ 172.32	\$ 229.76	\$ 287.20	\$ 344.64
96-gal	\$ 19.15	\$ 38.29	\$ 57.44	\$ 76.59	\$ 95.73	\$ 114.88
64-gal	\$ 19.15	\$ 38.29	\$ 57.44	\$ 76.59	\$ 95.73	\$ 114.88

Note: Volume based costs for compactors based on 3 times container size.

City of Santa Fe  
Commercial Commingled Recycling

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Direct Costs</b>					
Commercial Commingled Recycling	\$319,112	\$325,852	\$332,789	\$339,929	\$347,279
Container Maintenance					
Carts	12.03	11.79	12.11	12.45	12.79
Subtotal - Direct	\$319,124	\$325,864	\$332,801	\$339,942	\$347,291
<b>Overhead/Indirect</b>					
Administration	\$108,602	\$110,986	\$121,068	\$123,594	\$126,145
Keep Santa Fe Beautiful	1,125	1,177	1,232	1,289	1,347
Sustainable Santa Fe	5,112	5,253	5,398	5,547	5,700
City Activities	3,866	3,971	4,079	4,191	4,305
Fleet Maintenance	9,688	9,972	10,265	10,567	10,878
Special Events	3,928	4,033	4,140	4,251	4,365
Subtotal - Indirect/OH	132,320	135,393	146,183	149,438	152,741
Total Collection Cost <sup>(1)</sup>	\$451,444	\$461,256	\$478,984	\$489,380	\$500,033
Number of Collections	25,428	25,428	25,428	25,428	25,428
Carts	25,428	25,428	25,428	25,428	25,428
Cost per Collection	\$17.75	\$18.14	\$18.84	\$19.25	\$19.66
Recycling Processing Costs	\$473	\$444	\$447	\$451	\$455
Cubic Yards Collected	12,714	12,714	12,714	12,714	12,714
Cost per CY	\$0.04	\$0.03	\$0.04	\$0.04	\$0.04
Total Rev Req	\$451,917	\$461,700	\$479,432	\$489,831	\$500,488

1. Combined costs shown in Schedules 5 & 6.

Cost of Service RL/Cart Rates - FY 2014

Frequency	1X	2X	3X	4X	5X	6X
96-gal	\$ 77.01	\$ 154.03	\$ 231.04	\$ 308.06	\$ 385.07	\$ 462.08
64-gal	\$ 76.99	\$ 153.98	\$ 230.97	\$ 307.96	\$ 384.95	\$ 461.94

Cost of Service RL/Cart Rates - FY 2015

Frequency	1X	2X	3X	4X	5X	6X
96-gal	\$ 78.68	\$ 157.36	\$ 236.04	\$ 314.72	\$ 393.41	\$ 472.09
64-gal	\$ 78.66	\$ 157.32	\$ 235.97	\$ 314.63	\$ 393.29	\$ 471.95

Cost of Service RL/Cart Rates - FY 2016

Frequency	1X	2X	3X	4X	5X	6X
96-gal	\$ 81.70	\$ 163.41	\$ 245.11	\$ 326.81	\$ 408.51	\$ 490.22
64-gal	\$ 81.68	\$ 163.36	\$ 245.04	\$ 326.72	\$ 408.40	\$ 490.08

Cost of Service RL/Cart Rates - FY 2017

Frequency	1X	2X	3X	4X	5X	6X
96-gal	\$ 83.47	\$ 166.95	\$ 250.42	\$ 333.90	\$ 417.37	\$ 500.85
64-gal	\$ 83.45	\$ 166.90	\$ 250.36	\$ 333.81	\$ 417.26	\$ 500.71

Cost of Service RL/Cart Rates - FY 2018

Frequency	1X	2X	3X	4X	5X	6X
96-gal	\$ 85.29	\$ 170.58	\$ 255.87	\$ 341.16	\$ 426.45	\$ 511.75
64-gal	\$ 85.27	\$ 170.54	\$ 255.80	\$ 341.07	\$ 426.34	\$ 511.61

Note: Volume based costs for compactors based on 3 times container size.

	Year 1 FY 2014	Year 2 FY 2015	Year 3 FY 2016	Year 4 FY 2017	Year 5 FY 2018
<b>Direct Costs</b>					
Refuse	\$ 651,563	\$ 666,554	\$ 681,985	\$ 697,871	\$ 714,224
Cart Maintenance/Replacement	35,000	35,700	36,414	37,142	37,885
Subtotal - Direct	\$ 686,563	\$ 702,254	\$ 718,399	\$ 735,013	\$ 752,109
<b>Overhead/Indirect</b>					
Administration	\$ 221,743	\$ 227,031	\$ 248,105	\$ 253,737	\$ 259,434
Keep Santa Fe Beautiful	2,297	2,409	2,525	2,645	2,771
Sustainable Santa Fe	10,438	10,745	11,062	11,388	11,723
City Activities	7,893	8,123	8,360	8,603	8,855
Fleet Maintenance	18,162	18,695	19,244	19,810	20,393
Special Events	8,020	8,249	8,485	8,728	8,978
Subtotal - Indirect/OH	268,553	275,252	297,781	304,911	312,153
<b>Total Collection and OH<sup>(1)</sup></b>	<b>\$ 955,116</b>	<b>\$ 977,506</b>	<b>\$ 1,016,181</b>	<b>\$ 1,039,925</b>	<b>\$ 1,064,262</b>
<b>Number of Pulls</b>	3,123	3,123	3,123	3,123	3,123
Cost per Pull	\$ 305.83	\$ 313.00	\$ 325.39	\$ 332.99	\$ 340.78

1. Combined costs shown in Schedules 5 & 6.

City of Santa Fe  
Revenue Projections Based on Current Rates

	Year 1		Year 2		Year 3		Year 4		Year 5	
	FY 2014		FY 2015		FY 2016		FY 2017		FY 2018	
Residential Collection										
Refuse	\$	4,263,270	\$	4,735,066	\$	4,886,588	\$	4,886,588	\$	4,886,588
Additional Carts		140,135		155,652		160,610		160,610		160,610
Large Item		6,910		7,132		7,361		7,361		7,361
Bag Tags		750		750		750		750		750
	\$	4,411,065	\$	4,898,599	\$	5,055,308	\$	5,055,308	\$	5,055,308
Commercial Collection										
Refuse (Rear Load)										
Dumpsters	\$	591,966	\$	610,908		630,458		630,458		630,458
Carts <sup>1</sup>		1,711,320	\$	1,765,996		1,811,026		1,811,026		1,811,026
Refuse (Front Load)										
Non-Compactor		3,679,492	\$	3,916,595		4,041,933		4,041,933		4,041,933
Compactor		73,980	\$	76,348		78,791		78,791		78,791
Roll Off <sup>2</sup>		967,800		994,038		1,021,054		1,021,054		1,021,054
	\$	7,024,559	\$	7,363,885	\$	7,583,263	\$	7,583,263	\$	7,583,263
Recycling Collection										
Residential		Included Above		Included Above		Included Above		Included Above		Included Above
Commercial										
Dumpsters	\$	138,269	\$	138,269		138,269		138,269		138,269
Carts		327,990		327,990		327,990		327,990		327,990
	\$	466,258	\$	466,258	\$	466,258	\$	466,258	\$	466,258
Total Revenue at Projected Rates										
	\$	11,901,881	\$	12,728,742	\$	13,104,829	\$	13,104,829	\$	13,104,829
Revenue Requirement <sup>(3)(4)</sup>										
	\$	12,710,218	\$	13,090,693	\$	13,555,210	\$	13,863,800	\$	14,179,826
Over/Under Recovery										
	N/A			(\$361,951)		(\$450,381)		(\$758,971)		(\$1,074,997)
Cumulative Over/Under Recovery										
	N/A			(\$361,951)		(\$812,333)		(\$1,571,304)		(\$2,646,301)

(1) 1X per week service was calculated using the light commercial rear-loading rate.

(2) Roll-Off revenues were calculated using a combination of the scheduled & non-scheduled rates.

(3) For FY 2014, Leidos projected 27,413 households & increased the 4 CY front-load (FL) dumpster count by 50 accounts. For FY 2015 - FY 2018, household count increased to 29,513 & another 50-4 CY FL accounts were added.

(4) Assumes rate increases for FY 2014, FY 2015, FY 2016 as designated in Ordinance No. 2012-24.

City of Santa Fe  
Revenue Projections Based on Recommended Rates

	Year 1		Year 2		Year 3		Year 4		Year 5	
	FY 2014		FY 2015		FY 2016		FY 2017		FY 2018	
Residential Collection										
Refuse	\$	4,263,270	\$	5,089,222	\$	5,241,509	\$	5,684,204	\$	6,126,899
Additional Carts		140,135		155,652		160,610		160,610		160,610
Large Item		6,910		7,132		7,361		7,361		7,361
Bag Tags		750		750		750		750		750
	\$	4,411,065	\$	5,252,755	\$	5,410,229	\$	5,852,924	\$	6,295,619
Commercial Collection										
Refuse (Rear Load)										
Dumpsters	\$	591,966	\$	610,908		630,458		630,458		630,458
Carts <sup>1</sup>		1,711,320		1,765,996		1,811,026		1,811,026		1,811,026
Refuse (Front Load)										
Non-Compactor		3,679,492	\$	3,916,595		4,041,933		4,041,933		4,041,933
Compactor		73,980	\$	76,348		78,791		78,791		78,791
Roll Off <sup>2</sup>		967,800		994,038		1,021,054		1,021,054		1,021,054
	\$	7,024,559	\$	7,363,885	\$	7,583,263	\$	7,583,263	\$	7,583,263
Recycling Collection										
Residential		Included Above		Included Above		Included Above		Included Above		Included Above
Commercial										
Dumpsters	\$	138,269	\$	138,269		138,269		138,269		138,269
Carts		327,990		327,990		327,990		327,990		327,990
	\$	466,258	\$	466,258	\$	466,258	\$	466,258	\$	466,258
Total Revenue at Projected Rates										
	\$	11,901,881	\$	13,082,898	\$	13,459,750	\$	13,902,445	\$	14,345,140
Revenue Requirement <sup>(3)(4)</sup>										
	\$	12,710,218	\$	13,090,693	\$	13,555,210	\$	13,863,800	\$	14,179,826
Over/Under Recovery										
		N/A		(\$7,795)		(\$95,460)		\$38,645		\$165,314
Cumulative Over/Under Recovery										
		N/A		(\$7,795)		(\$103,256)		(\$64,611)		\$100,703

(1) 1X per week service was calculated using the light commercial rear-loading rate.

(2) Roll-Off revenues were calculated using a combination of the scheduled & non-scheduled rates.

(3) For FY 2014, Leidos projected 27,413 households & increased the 4 CY front-load (FL) dumpster count by 50 accounts. For FY 2015 - FY 2018, household count increased to 29,513 & another 50-4 CY FL accounts were added.

(4) Assumes rate increases for FY 2014, FY 2015, FY 2016 as designated in Ordinance No. 2012-24, plus the consultant recommended rate increases.



## Section 2

# REVIEW OF RESIDENTIAL COLLECTION OPERATIONS

---

## 2.1 Introduction

This section addresses the Environmental Service Division's (ESD)<sup>1</sup> existing residential refuse and recycling collection operation and potential changes the City could make to improve the overall efficiency of the operation. Leidos identified the following operational areas of the residential operation as key components to review and analyze.

- Collection efficiency
- Routing
- Staffing
- Equipment

This section will focus on how various aspects of the City's residential collection operation could be modified in order to improve the efficiency. Leidos has provided a summary of key findings at the conclusion of this report section.

## 2.2 Program Overview

The City provides refuse collection service to the City's 27,413 residential customers with 96-gallon rolling carts.<sup>2</sup> Residential collection is provided once per week with automated side-load collection vehicles.

All 27,413 residential customers are provided with curbside recycling collection with 18-gallon bins. The City currently accepts the following material:

- Mixed paper
- Aluminum
- Tin
- Plastic bottles
- Cardboard
- Glass

Due to the City's current recycling processing operation, glass material must be collected separately from the other material commodities. The City collects recyclable material in automated side load vehicles via side-load troughs and two truck body compartments. One truck body compartment contains mixed recyclable materials and the other compartment contains glass material. Each recycling customer is provided

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<sup>1</sup> The terms ESD and City will be used interchangeably.

<sup>2</sup> 64-gallon carts are available, but it is estimated that only approximately 5% of customers use this size cart.

with two 18-gallon bins. One bin is for glass materials and the second bin is for the collection of mixed paper, aluminum, tin and plastic materials. Residents are asked to flatten any cardboard material and stack material at the curb.

In this report section, Leidos will be reviewing the City's current residential refuse and residential recycling routes. Table 2-1 provides a summary of each operation's configuration.

**Table 2-1**  
**Collection Operation Route Configuration**

	Residential Refuse	Residential Recycling
Number of Personnel per Route	1 driver	1 driver 2 workers
Vehicles Used	Automated side-loader	Side-load vehicle with troughs and two vehicle body compartments
Container	96-gallon rolling cart	18-gallon open-top bin
Number of Route Days per Week	41	30
Number of Weekly Routes	8.2	6.0

## 2.3 Level of Service

Leidos has benchmarked the City's level of service and identified that the City provides typical residential services by providing weekly refuse collection and weekly recycling collection.

**Table 2-2**  
**Benchmarking Level of Service**

City	Santa Fe, NM	Albuquerque, NM	Glendale, AZ	Tempe, AZ	Salina, KS	Denton, TX	Midland, TX
Population	69,204	555,417	226,721	161,719	48,045	113,383	119,385
<i>Frequency</i>							
Refuse Collection	1 x wk	1 x wk	1 x wk	1 x wk	1 x wk	1 x wk	2 x wk
Recycling Collection	1 x wk	1 x wk	1 x wk	1 x wk	1 x wk subscription	1 x wk	N/A

## 2.4 Refuse Collection Efficiency

During route observations, Leidos observed that the collection operators exhibited a high level of skill when performing refuse collection. Leidos evaluated time and motion data collected through five days of field observations and data collected by City employees to understand the City's typical refuse collection efficiency.

In completing the operational analysis Leidos utilized two data sets when reviewing the City's collection operation:

1. Data collected on route observations by the Leidos Project Team over a five day period.
2. Operational data provided by City staff, including customer count and number of daily routes.

Leidos found a significant variation between these two data sets. The variation between Leidos and City refuse routing data is summarized below in Table 2-3.

**Table 2-3**  
**Operational Data for Residential Refuse Operation**

	Leidos Data Collected on Route Observations	City Data Based on Current Route Sizing
Daily Collection Time	4.8 hours	4.8 hours
Average Time per Collection	34.6 seconds	23.7 seconds
Households Served/ Hr/ Route	104 households	152 households
Total Households Served/ Day/ Route	497 households	723 households

The data provided in Table 2-3, illustrates the importance of understanding the operational metrics of the daily collection operation. A slight change in the average time per collection can have a dramatic effect on the number of households each route can feasibly collect each day. Based on the data in Table 2-3, City refuse routes are, on average, able to collect between 104 and 152 households per hour. A typical automated collection operation can collect between 120 to 170 households per hour. The data indicates the City is maintaining an average refuse collection efficiency; however, based on the variance between the Leidos route observation data and the City's current route sizing it is difficult to fully validate this finding.

On average, refuse vehicles tip material twice per day. All refuse collection vehicles are directed to the Caja del Rio Landfill (Landfill) to tip material, which takes approximately 57 minutes round trip, based on Leidos' route observations. The City currently does not store any material in the collection vehicles overnight. This is a common industry practice, as storing material in collection vehicles overnight can be a safety hazard (i.e. fire) and can damage the vehicle body.

Based on the City's historical collection efficiency, the collection operation will need to maintain 38 route days to effectively collect the City's refuse customers under the current collection efficiency. If the City is able to increase the collection efficiency from 152 households per hour to 165 households per hour, there is an opportunity to reduce the refuse routes to 35 route days (i.e. 7.0 routes per week). Table 2-4 illustrates the number of routes needed to collect the City's current refuse customers on a weekly basis under the current operation and an improved operational efficiency.

**Table 2-4**  
**Refuse Collection Routes**

Metric	Current Collection Operation		Sensitivity on Collection Operation
Number of City Refuse Customers	27,413 households	27,413 households	27,413 households
Households Served/ Hr/ Route	104 households	152 households	165 households
Total Households Served/ Day/ Route	497 households	723 households	786 households
Number of Weekly Routes Needed	55.2 routes	37.9 routes	34.9 routes
Number of Daily Routes Needed	11.0 routes	7.5 routes	7.0 routes

Currently the refuse operation operates 41 weekly route days. Based on Leidos' analysis the City can eliminate half of a weekly route if refuse routes are able to consistently achieve an average collection rate of 152 households per hour. If the City is able to achieve a higher average collection rate of 165 households per hour, the City has the opportunity to reduce the refuse collection operation from 38 route days per week to 35 route days per week. Marginal increases in efficiency will result in minimal savings (i.e., a "fraction of a route" saved does not generate significant savings); however a decrease in one front-line side load vehicle would result in an annual equipment savings of \$70,719.<sup>3</sup>

## 2.5 Recycling Collection Efficiency

Leidos observed that the collection operators exhibit a high level of skill when performing recycling collection operations. Based on Leidos' route observations, the City's recycling program experiences an average "set-out rate" of 56 percent. This means that 56 percent of residential households set-out recyclable material each week. The time and motion data collected by Leidos during a week of route observations varies from the current customer count and routing data provided by the City. The variation between Leidos and City routing data is summarized below in Table 2-5.

**Table 2-5**  
**Operational Data for Residential Recycling Operation**

	Leidos Data Collected on Route Observations	City Data Based on Current Route Sizing
Daily Collection Time	5.2 hours	5.2 hours
Average Time per Collection	30.6 seconds	20.4 seconds
Recycling Set-out Rate	56%	56%
Households Collected/ Hr/ Route	66 households	99 households
Households Passed-By/ Hr/ Route	52 households	78 households
Households Served/ Hr/ Route	118 households	176 households
Total Households Served/ Day/ Route	609 households	913 households

<sup>3</sup> This reflects the capital, fuel and repair costs for one year, for one side load vehicle.

A recycling program's efficiency and success is directly related to the recycling set-out rate. A program with a low set-out rate can collect material with less routes, as a route with fewer set-outs is passing-by more houses. Correspondingly a low set-out rate also indicates a low participation rate and typically generates marginal volumes of recyclable materials. Although the City can serve a greater number of customers per route with a low set-out rate, it is to the City's benefit to maximize citizen participation in the recycling collection program and divert the greatest amount of recyclables from the waste stream. Having an understanding of the recycling program's operational metrics, such as average time per collection and set-out rate, is crucial to evaluating the efficiency and success of the program.

Based on the City's historical collection efficiency and Leidos' route observations the City needs 31 route days to efficiently collect the City's recycling material. Currently the City is operating 30 route days, reflecting that under the current collection efficiency level the recycling operation is likely to incur regular overtime to complete the weekly residential recycling routes.

On average, City recycling routes tip recyclable materials at the Buckman Road Recycling and Transfer Station (BuRRT) twice per route. Based on Leidos' route observations, it takes on average 45 minutes, round trip, for the recycling vehicles to tip a recyclable load at BuRRT. The City recycling trucks are divided into two compartments to ensure that the glass material is collected separately from other recyclable materials. This truck capacity constraint requires the recycling truck to tip material when either of the two compartments reaches capacity. This operational constraint can require the drivers to tip material when the truck capacity is not fully maximized.

### 2.5.1 Recycling Volume

A common measurement to benchmark a City's recycling and diversion efforts is the City recycling rate. The recycling rate is determined by the volume of material recycled and organics that are diverted, divided by the City's annual generation. Figure 2-1 illustrates the calculation used to determine a city's recycling rate.

$\frac{\text{Material Recycled + Organic Diversion}}{\text{Material Generated}} = \text{Recycling Rate}$ <p style="text-align: center; margin-top: 0;">(Material Disposed + Material Recycled + Organic Diversion)</p>
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Figure 2-1. Calculation for City Recycling Rate

In Table 2-6, Leidos has provided the calculation for the City's recycling rate from fiscal year (FY) 2011 to FY 2013. Leidos was unable to calculate a separate recycling rate for residential and commercial customers as the City does not record residential and commercial recycling tonnage separately.

**Table 2-6  
City Recycling Rate**

	Fiscal Year 2011	Fiscal Year 2012	Fiscal Year 2013
Tons Recycled and Diverted			
Material Recycled	5,035	5,224	5,324
Organics Diverted	57	13	110
<b>Total Recycling and Diversion</b>	<b>5,092</b>	<b>5,237</b>	<b>5,434</b>
Tons Disposed			
Residential	23,089	24,492	23,110
Commercial	27,864	25,588	35,461
Construction and Demolition (C&D)	125	3,280	241
Tires	4	-	206
Appliances	-	-	5
Uncovered	1	-	35
<b>Tons Disposed Subtotal</b>	<b>51,083</b>	<b>53,360</b>	<b>59,058</b>
<b>Annual Generation</b>	<b>56,175</b>	<b>58,597</b>	<b>64,492</b>
<b>Recycling Rate</b>	<b>9.0%</b>	<b>8.9%</b>	<b>8.4%</b>

As shown in Table 2-6, the City has maintained approximately the same recycling rate for the past three years, with refuse generation increasing more rapidly than recyclables in recent years.

In the recent Comprehensive Solid Waste Management Plan, the New Mexico Recycling Coalition identified a 33 percent recycling rate goal for the County, as a whole. If the City is to contribute to achieving this goal, it is Leidos' recommendation that the City focus on increasing the volume of recyclables captured through the residential and commercial recycling programs.

It is typical for commercial recycling customers to generate a greater volume, as well as a different composition and quality of material compared to residential recycling customers; however due to data restrictions Leidos has analyzed the residential and commercial recyclable stream together. There were approximately 25,313 residential recycling customers and 463 commercial recycling customers in the City during FY 2013. With 5,324 tons of recyclables collected annually, the City annually collects approximately 413 pounds of recyclables per customer. Single-stream programs around the nation report a wide range of material collected. It is typical for healthy residential recycling programs to collect between 300 and 700 pounds of recyclables per household annually.<sup>4</sup>

<sup>4</sup> Given that commercial customers and tonnage is included in this calculation, it is safe to assume that the "pounds per customer per year" is significantly less than 413 pounds for residential customers.

To increase the City's annual recycling rate there are several options the City can consider:

- Improving participation in current recycling operations;
- Implementing a seasonal greenwaste collection program; and/or
- Implementing a food waste collection program.

Leidos has provided a brief discussion on each of these recycling and diversion options in Section 2.12 of this report section.

## 2.5.2 Recycling Participation

The current recycling collection operation has an average set-out rate of 56 percent. A well-established curbside recycling program will typically experience a set-out rate of 70 to 80 percent per week. The City can reach a higher set-out and participation rate through various methods, including:

- **Increased public education and outreach** – Ensuring that residents understand how to participate in the program is crucial to improving resident's participation in the program. The City can inform residents on the collection schedule, materials accepted, and educate residents on the environmental and cost benefit of recycling material instead of disposing material. Leidos recommends the City communicate with residents through multiple mediums, such as utility bill inserts, advertisements, electronic media, special events, and integration of recycling information into the local school curriculum.
- **Transition to automated recycling** – The City can increase the recycling capacity for each household by transitioning to rolling carts to collect recyclable material. The implementation of automated cart collection has been shown to increase the recycling rate of residential recycling collection programs by typically 20-40 percent.

## 2.6 Large Item Collection Efficiency

The City currently operates a large item collection program on an on-call basis. The City is currently serving all of the requested collections with one weekly route, operated on Wednesday. Customers are charged \$27.42 per large item collection, regardless of the volume of material set-out.

The City collects furniture, appliances, brush, construction and demolition (C&D) and tires. These materials are typical for residential large item collection, with the exception of C&D material. It is Leidos' experience that collection programs that collect C&D in their residential program frequently encounter businesses that will utilize the residential large item collection program to dispose of C&D material inexpensively. Leidos recommends the City monitor the volume of C&D accepted through the large item collection program to ensure local businesses are not misusing this residential collection service, and if so, to discontinue the collection of C&D.

An advantage of an on-call program is the City can directly charge the residents that use the service a fee for the use of this program.

It is typical that large item collection programs are subsidized in part by the monthly user fee that all residents pay, and a portion of the cost of the program is directly paid for by the user of the program (i.e. \$27.42 in Santa Fe). As shown in “Section 1, Cost of Service and Funding Options”, the City’s cost of the program is not fully recovered through the fixed fee charged to those customers that use the program. We would not recommend increasing the fee too high as there is a concern that if the fee is set too high that it may result in people not using the service and result in an increase in illegal dumping of these materials. Therefore, if the City desires to increase the rate we would recommend only a modest increase of \$5 to \$8 in the one-time fee.

There are a myriad of ways in which these programs are established, and services provided. The City’s on-call program is a typical approach to providing this service. However, Leidos would recommend the City look at perhaps running the route every other week, or possibly every three weeks. It appears the service is somewhat under-utilized and the cost of providing this service could be reduced by reducing the frequency of time on route, without reducing the quality of the service for citizens. Under this approach, a citizen would call in for a pickup and based on the date provided by the City, he/she would put their item out for collection the evening before the assigned date.

The City might also consider splitting the City into two sections and having each section picked up once per month.<sup>5</sup> We have worked with numerous cities that operate their large item programs in this manner. This results in more time spent in one specific area of the city picking up waste and less time driving throughout the entire city.

## 2.7 Routing

Where refuse collection typically experiences a 95 to 100 percent set-out rate, recycling collection set-out rates will vary among cities. The City’s current refuse set-out rate is basically 100 percent, which is much higher than the City’s recycling set-out rate of 56 percent. This variation in set-out rate means the refuse and recycling routes are able to serve a different number of households per hour. Based on time and motion data collected, the City’s refuse routes are able to collect between 104 households and 152 households per hour with a 100 percent set-out rate, and the City’s recycling routes are able to collect between 118 households and 176 households per hour with a 56 percent set-out rate.<sup>6</sup>

Leidos has provided a summary of the operational routing factors that affect the routing size of the refuse and recycling collection operation in Table 2-7.

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<sup>5</sup> This would result in a large item route being operated every other week (i.e. the 1<sup>st</sup> Wednesday of the month for one half of the City and the 2<sup>nd</sup> Wednesday of the month for the other half of the City.).

<sup>6</sup> In other words, only 56% of the 118 to 195 households have a set-out, so the recycling truck stops at only 66 to 99 houses per hour.



**Table 2-7  
Residential Routing**

	Refuse		Recycling		
	Current Operation	Increased Collection Efficiency	Current Operation	Increased Collection Efficiency	Increased Set-out Rate <sup>1</sup>
Daily Trips to Tip	2	2	2	2	2
Set-out Rate	100%	100%	56%	56%	80%
Pounds per Household <sup>2</sup>	1,748	1,748	370	370	370
Non-Collection Time	3.7	3.7	3.3	3.3	3.3
Collection Time	4.8	4.8	5.2	5.2	5.2
Total Daily Time	8.5	8.5	8.5	8.5	8.5
Total HH Served/ Hour/ Route	104 - 152	165	118 – 176	224	133
Total HH Served/ Day/ Route	497 - 723	786	609 – 913	1,162	690
HH Served/ Week	27,413	27,413	27,413	27,413	27,413
Number of Route Days Needed	37.9 - 55.2	34.9	30.0 – 45.0	23.6	37.9
Number of Daily Routes Needed	7.6 – 11.0	7.0	6.0 – 9.0	4.7	7.6

1. Leidos assumed City time and motion data for the Increased Set-out Rate analysis.

2. Leidos assumed a current rate of 370 pounds per HH, not the 413 pounds per HH that includes commercial recycling.

The variation in a recycling program's set-out rate makes it difficult to set routes, as the set-out rate will vary in different parts of the City, and potentially over the course of the life of the recycling program. Leidos recommends the City begin tracking the residential recycling program set-out rate as part of the daily recycling operations.

## 2.8 Staffing

Leidos evaluated whether the City has the appropriate staffing levels to efficiently run the refuse and recycling collection operation. The City currently collects refuse via automated collection vehicles requiring one driver per route. The recycling collection operation is a manual collection operation, requiring one driver and two workers for each residential recycling collection route.

The refuse operation has minimal safety risk, as the driver remains in the vehicle the majority of the collection day. Differing from the refuse operation, the recycling operation is highly physical for the two workers on each route. The two recycling workers walk/run behind the truck and empty recycling bins. The recyclable material from these bins are then placed in the vehicle troughs on the side of the vehicle, which are tipped into the vehicle with hydraulics. During Leidos' route observations, it was noted that workers will sometimes throw material directly into the vehicle body, rather than using the troughs in an attempt to increase collection efficiency. Although this collection method may result in an increased operational efficiency, it is unsafe for the workers to throw material overhead.

Leidos also noted during in-route observations that even when tipped via the vehicle troughs, glass material was observed breaking on the body of the recycling vehicles and small shards of glass hitting the worker. This is just one of the reasons why we evaluated the move to automated cart recycling later in this section of the report.

Table 2-8 outlines the personnel levels currently in place for the residential collection operation.

**Table 2-8**  
**Residential Collection Personnel Levels**

	Current Staffing		Leidos Proposed Staffing <sup>1</sup>	
	Refuse	Recycling	Refuse	Recycling
<b><i>Number of Routes</i></b>	8.2	6.0	8.2	6.0
<b><i>Drivers</i></b>				
Front-Line			8.2	6.0
Back-up			1.6	1.2
Subtotal	10.0	6.0	9.8	7.2
<b><i>Worker<sup>2</sup></i></b>				
Front-Line			2.0	12.0
Back-up			0.5	2.5
Subtotal	2.0	7.0	2.5	14.5
<b><i>Total</i></b>				
Drivers	16.0		17.0	
Workers	9.0		14.5	
<b>Total</b>	<b>25.00</b>		<b>31.50</b>	

1. Leidos Proposed Staffing level for back-up personnel is based on a 20 percent back-up ratio, rounded to the closest whole or half number of FTE for each operational activity.
2. The workers identified for the refuse collection represent workers to complete special refuse collection routes.

As shown in Table 2-8, the City does not have an appropriate number of full-time equivalents (FTE) to maintain a 15-20 percent personnel back-up ratio. Based on the current crew configuration, Leidos recommends the City evaluate the distribution of workers. Based on Leidos' analysis the City is currently employing one FTE less than the appropriate number of drivers to operate with a 15-20 percent personnel back-up ratio. As shown in Table 2-8, the City currently is also operating with too few workers for the City's manual collection operations. It is important to note that if the City decides to transition the current recycling collection operation to an automated operation, the City may benefit from having a healthy volume of drivers on staff, as a reduced number of workers will be required for automated recycling collection. If the City decides to continue with a manual bin recycling collection operation, Leidos recommends the City review the current staffing and consider adding additional workers to the recycling operation.

## 2.9 Vehicles

Leidos has reviewed the City's current fleet age, annual maintenance cost and fuel cost in order to benchmark the City's fleet against similar cities and identify areas for improvement. Any collection operation can only be as dependable and efficient as its fleet, making it imperative to maintain a reliable fleet.

**Table 2-9**  
**Benchmarking of City's Current Fleet**

Vehicle	Number of Vehicles	Front-Line/ Back-up	Average Age	Maintenance Cost <sup>1</sup>	Fuel Cost <sup>1</sup>
<i>Pick-up Truck</i>					
City	12	Front-Line	14.8	\$ 4,097	\$ 3,833
Industry Average <sup>2</sup>	-	-	8.4	2,242	3,990
<i>Automated Side-Load (refuse and recycling)</i>					
City	15	Front-Line	6.1	\$ 20,244	\$ 16,741
City	4	Back-up	7.3	10,780	6,133
Industry Average <sup>2</sup>	-	-	7.0	26,199	11,939
<i>Rear-Load</i>					
City	1	Front-Line	3.0	\$ 19,996	\$ 21,198
City	3	Back-up	7.6	4,141	4,441
Industry Average <sup>2</sup>	-	-	7.8	17,349	7,564
<i>Knuckleboom</i>					
City	1	Front-Line	4.0	\$ 1,656	\$ 1,777
City	1	Back-up	20.0	828	888
Industry Average <sup>2</sup>	-	-	8.0	18,264	7,508

1. The City does not record vehicle maintenance and fuel data based on each vehicle's annual cost. Leidos extrapolated the annual vehicle maintenance and fuel cost for each vehicle based on the annual budget and number of vehicles. Due to minimal City data on a vehicle specific basis, Leidos will discuss these benchmarks at a high level.

2. The Industry Average includes recent operational data from reviews completed by Leidos between 2011-2013. The Industry Average includes data from the following cities; Bozeman, MT; Corpus Christi, TX; Dallas, TX; Del Rio, TX; Denton, TX; El Paso, TX; Phoenix, AZ; Tempe, AZ; and Temple, TX.

Leidos has provided benchmarking data in a compiled "Industry Average" format. As the City does not currently record maintenance cost or fuel cost on a vehicle basis, Leidos has extrapolated the cost for the different vehicles based on City budget data and fleet data. These "Industry Average" costs are comprised of the average cost and vehicle ages from nine different solid waste fleets in the United States, predominantly located in the Southwestern United States.

As shown in Table 2-9, the City is currently incurring maintenance cost slightly lower than average for automated side-loaders and significantly less for knuckleboom equipment, but higher than average for rear-loaders and pick-up trucks. The City's fuel cost for automated side-load and rear-load vehicles is significantly higher than the "Industry Average" fuel cost shown in Table 2-9. This variance in fuel cost from the "Industry Average" further supports the need to record vehicle costs on a vehicle and route basis, to allow the City's costs to be appropriately tracked and benchmarked.

Leidos recommends the City monitor the dependability and annual maintenance cost of vehicles over eight years old to determine when it is cost effective to transition front-line vehicles to back-up vehicles and subsequently, when to sell back-up vehicles.

Vehicles will be transitioned to back-up vehicles on varying schedules based on each City's unique operations and the subsequent wear and tear on the vehicles. Leidos has provided a list of the average age vehicles are typically retired from front-line operations to serve as a guideline for the City;

- Pick-up Truck: 8-10 years
- Automated Side-Loader: 7 years
- Rear-Loader: 7-8 years
- Knuckleboom: 8 years

Leidos has reviewed the City's current back-up ratio to provide direction on the City's current level of vehicle inventory.

**Table 2-10**  
**Residential Vehicle Back-up Ratio <sup>1</sup>**

	Number of Routes	Current Fleet			Industry Standard Back-up Ratio
		Front-Line	Back-up	Back-up Ratio	
Automated Side-Loader	12	15	4	33%	20-30%
Rear-Loader	1	1	3	300%	20-30%
Knuckleboom	1	1	1	100%	20-30%

1. The number of routes and vehicle count is reflective of routes prior to the addition of one automated refuse route and one recycling route to serve the recently annexed service area.

As shown in Table 2-10, the City is currently maintaining an adequate level of back-up vehicles, which is in-line with or exceeds the industry standard. Leidos recommends the City consider eliminating one or two of the City's back-up rear-loaders, as the City is maintaining a high level of back-up rear-loader vehicles for the number of routes served with rear-load vehicles.

## 2.10 Information Systems

During conversations with City staff, the Leidos Project Team determined that many of the Environmental Services Division's (ESD) information systems were not synchronized throughout the ESD and are therefore difficult to access. Through the data request process, City staff had a difficult time collecting and/or completing certain key solid waste metrics, such as customer counts by route; vehicle, maintenance, and fuel costs; and tons collected and disposed by various operations. Leidos would like to note that these challenges with data management are not unique to the City. However, given the complexities of the solid waste industry, Leidos recommends the City invest in software packages specific to the solid waste industry and/or devise one that meets the needs of the City. Such packages could include:

- **Customer billing software.** Having a firm understanding of the City's customer base is a crucial component in managing an efficient collection operation. Leidos recommends the City consider purchasing an automated customer tracking and

billing software package, in order to ensure that customer counts, services and billing revenues are as accurate as possible.<sup>7</sup>

- **GPS units and vehicle tracking software.** Many communities have installed GPS units on their vehicles in order to increase management's tracking and oversight capabilities of route operations. Frequently, these units come as part of a package which can be integrated into container management (i.e. RFID tracking) and vehicle maintenance activities. Key benefits include: improved accuracy and efficiency of route design, improved customer service metrics, automated pre- and post-trip inspections, and increased vehicle oversight from fleet maintenance. If the City elects to utilize a GPS-based tracking and oversight system, Leidos recommends the City develop a comprehensive plan for how the data collected by the system would be utilized and then proactively communicate this plan to staff.
- **Tonnage and trip tracking software.** Currently the City depends on the Agency to track the volume of material that the City collects annually. Leidos recommends the City consider purchasing or developing software that would allow the City to track disposal tonnages, customer counts, and collection trips on a more detailed basis. This type of software would allow the City to better understand how much material each collection operation is collecting annually, identify seasonal disposal trends and neighborhood waste demographics.
- **Route optimization software.** Having appropriately sized routes is imperative to running an efficient collection operation. Although the City's refuse routes were developed according to historical needs, the City has recently re-routed some areas due to the approximately 4,200 new residential accounts from the recent City annexation. Given the City's size and growth, Leidos recommends the City consider adopting a software-based approach for route planning and rebalancing. There are several options for accomplishing this, including;
  - GIS-based routing done by City staff,
  - GIS-based routing done in collaboration with a consulting firm, or
  - Specialized routing software.

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<sup>7</sup> Prior to purchasing this software a meeting should be set with the City's Finance and Information Systems Departments to verify the capabilities are not available "in house."

## 2.11 Initial Key Findings

Leidos has identified key findings from reviewing the City's existing residential collection program.

1. **Low recycling set-out rate.** Leidos has identified that the City is currently achieving a 56 percent recycling set-out rate. An established curbside recycling program should achieve between a 70 to 80 percent set-out rate.
2. **Challenges with glass collection.** Due to processing restrictions the City currently collects recycling in a truck with two body compartments, one compartment for mixed recyclables and one compartment for glass. Although the glass compartment is significantly smaller than the mixed recyclable compartment, utilizing a dual compartment vehicle limits the recycling truck's collection capacity per trip. The recycling truck must tip material if one compartment reaches capacity, regardless of how full the second compartment is, decreasing efficiency as the vehicles' collection capacity is not consistently maximized.

In addition to limiting collection capacity, Leidos observed operational collection hazards with glass collection. This safety concern will need to be addressed if the City continues to collect glass with the current recycling side-load vehicles.

3. **Excess back-up rear-loaders in fleet.** In evaluating the City's current fleet levels, Leidos identified that the City is currently maintaining a high volume of back-up rear-load vehicles. Leidos recommends the City eliminate one or two of the current back-up rear-load vehicles, as aging back-up vehicles incur additional cost to maintain and are not fully utilized. Based on the current maintenance costs, this can result in up to \$8,300 in maintenance savings annually, plus a one-time gain from the sale of the trucks.
4. **Limited historical data regarding vehicle maintenance on a vehicle basis.** Leidos recommends the City begin to track vehicle maintenance on a vehicle basis. Tracking vehicle cost on each vehicle allows City staff to identify common vehicle trends and plan equipment repairs and replacements in a proactive manner. For example, the City may find that the City's automated side loaders' hydraulic arms typically fail in year five of the vehicle's life, correspondingly the staff can monitor and plan for hydraulic arm repairs on automated side loaders in their fifth year of operation.

Tracking vehicle maintenance data per vehicle will allow City staff to identify the appropriate time to transition vehicles from front-line vehicles to back-up vehicles. Older vehicles begin to incur additional cost to maintain; however each vehicle differs based on the wear-and-tear on the vehicle. Utilizing this historical maintenance information, the City can determine the appropriate retirement age for front-line and back-up vehicles, based on the City's operations and vehicles.

Leidos provides additional discussion on the City's current ESD's vehicle maintenance in "Section 4, Review of Fleet Maintenance Operations."

**5. Limited set-out and historical operational data.** Leidos recommends the City begin tracking operational metrics, such as:

- Number of customers per route,
- Set-out rate (recycling),
- Number of improper set-outs (i.e. glass mixed with other recyclables, carts improperly placed, etc.),
- Large item material composition, and
- Volume of large item set-outs.

Understanding customer participation and challenges customers experience with the collection program guidelines allows the ESD to more accurately target customer education and outreach. Utilizing operational data ensures that the City is maximizing its' staff and financial resources when implementing outreach strategies.

## 2.12 Program Alternatives Evaluated

Leidos has evaluated the financial and operational implication of programmatic changes in the residential collection program. In this report section Leidos has evaluated:

- Transitioning the current manual recycling collection operation to an automated collection operation,
- Implementing glass drop-off facilities and a subscription glass program, as a replacement for collecting glass in the automated single-stream recycling collection program, and
- Evaluating the feasibility of a yardwaste (i.e. greenwaste) and/or food waste collection program.

### 2.12.1 Automating Residential Recycling Collection.

Leidos identifies in this section the operational requirements and financial implications of transitioning the ESD's manual recycling collection operation to an automated rolling-cart collection operation. Table 2-11 outlines the differences between the current manual recycling collection program and the proposed automated recycling collection program.

**Table 2-11**  
**Recycling Program Components**

	<b>Current</b>	<b>Proposed</b>
Collection Method	Manual	Automated
Vehicle	Side-Loader, with Troughs	Automated Side-Loader, with Hydraulic Arm
Container	Open-Top Bin	Rolling-Cart
Personnel	1 driver 2 workers	1 driver
Materials Collected	Mixed Paper Cardboard (OCC) Plastic Aluminum Tin Glass	Mixed Paper Cardboard (OCC) Plastic Aluminum Tin

Based on Leidos' experience, an automated recycling program results in a greater level of program participation. In the operational analysis Leidos has modeled an automated recycling collection operation with the same set-out rate as the current program, and a scenario where the City achieves an 80 percent set-out rate.

**Table 2-12**  
**Routing for Recycling Collection**

	<b>Status Quo<sup>1</sup></b>	<b>Automated – Current Conditions<sup>1</sup></b>	<b>Automated – Improved Participation</b>
Container	Bin	Cart	Cart
Set-out Rate	56%	56%	80%
Avg. Seconds per Collection	20.4 - 30.6	16.04	20.8
Households Collected/ Day/ Route	511 - 341	650	718
Households Passed By/ Day/ Route	402 - 268	511	179
Total Households Served/ Day/ Route	913 - 609	1,162	897
Routes Needed	6.0 - 9.0	4.7	6.1
<b>Routes Needed (rounded)</b>	<b>6.0 - 9.0</b>	<b>5.0</b>	<b>6.0</b>

1. Leidos has utilized the higher collection efficiency from the City's refuse cart collection to model the automated collection of recycling material.

As shown in Table 2-12, the City has the opportunity to reduce the recycling operation by one route, under the current recycling program participation levels. If the City is able to increase customer participation in the recycling program, the City will need to maintain six routes to serve the residential recycling operation. As shown in Table 2-12 the residential recycling route would have additional capacity when automated, assuming no increase in participation, as approximately 4.7 routes will be needed to collect residential recyclables, allowing the additional route capacity to be used by commercial recycling or the refuse operation, as needed.

The manual collection operation utilizes two workers to collect material from the recycling bins and place the material in the troughs on the side of the side-loader. Once



the troughs are full, they are tipped into the body of the truck. In an automated side-loader collection operation there is not a need for the two workers, as the hydraulic arm collects the rolling cart, and tips the material into the body of the truck. Under the two automated operations modeled, fewer personnel would be required, as show in Table 2-13.

**Table 2-13**  
**Operational Requirements for Recycling Collection**

	Status Quo	Automated – Current Conditions	Automated – Improved Participation
<b>Staffing</b>			
<i>Staffing per Route</i>			
Driver	1	1	1
Worker	2	-	-
Staffing Back-up Ratio	20%	20%	20%
Number of Routes	6	5	6
<i>Staffing Needed</i>			
Supervisor/ Manager	1	1	1
Driver	7	6	7
Worker	14	-	-
<i>Total FTE Needed</i>	22	7	8
<b>Vehicles</b>			
<i>Vehicles per Route</i>			
Automated Side-Loader	1	1	1
Vehicle Back-up Ratio	20%	20%	20%
Number of Routes	6	5	6
<i>Vehicles Needed</i>			
<i>Automated Side Loaders</i>			
Front-Line	6	5	6
Back-up	2	1 <sup>(1)</sup>	2 <sup>(1)</sup>
<i>Total Vehicles Needed</i>	8	6	8
<b>Containers</b>			
	Bin	Rolling-Cart	Rolling-Cart
<b>Number of Containers per Customer</b>	2.05	1.05	1.05
<b>Total Containers Needed</b>	<b>56,197</b>	<b>28,784</b>	<b>28,784</b>
1. Potentially additional economies could be realized with the same type automated side loader used for garbage and recycling collection, thereby reducing the total number of back-up vehicles.			

To ensure a conservative analysis Leidos assumed the volume of recyclables captured in the automated collection programs modeled reflected a moderate increase per customer of 0.01 tons (20 pounds) per customer per year. It is reasonable to expect that the City will experience an increase in recyclable tonnage as well as an increase in the

recycling set-out rate with an automated program. However, the exact increase in tonnage and participation is unknown until a recycling program is fully implemented. In Table 2-14, Leidos has provided a sensitivity analysis of the City's recycling rate, considering a variation in annual tonnage collected per customer.

**Table 2-14**  
**Sensitivity Analysis on City Recycling Rate**

	Status Quo	Automated – Current Conditions	Automated – Improved Participation
Residential Recycling Customers	27,413 customers	27,413 customers	27,413 customers
Tons Collected per Customer	0.21 tons	0.22 tons	0.22 tons
Residential Recycling Set-out Rate	56%	56%	80%
Number of Recycling Customers	15,351 customers	15,351 customers	21,930 customers
Setting-out Material			
Recyclables from Residential Customers	3,223 tons	3,377 tons	4,824 tons
<b>Increase in Residential Recycling Tonnage</b>	-	4.8%	49.7%

The City historically collects approximately 0.206 tons (413 pounds) of recyclables per customer annually. In a benchmarking study completed by Leidos (as SAIC) in 2011, of 82 recycling programs in North Central Texas, the average bin based program collected 0.14 tons (280 pounds) of recyclables per household. It is important to note that the City's 413 pounds per customer reflects both residential and commercial recyclables, as residential recycling is not tracked separately from commercial comingled recycling.

In Leidos' experience cart based recycling programs capture a larger volume of recyclables per household. In the same benchmarking study of North Central Texas mentioned previously, the average cart based program captured 0.22 tons (440 pounds) of recyclables per household.

Assuming the City is able to reach the average volume of material captured in a cart based program (0.22 tons per customer) and achieve an increased set-out rate (80%), it is reasonable to project the City's residential recycling tonnage will increase by nearly 50%.<sup>8</sup>

Each recycling operation will result in varying levels of personnel and equipment to effectively collect the City's recyclable material. Leidos has estimated the cost of operating each collection operation based on the City's current operating costs. In the analysis provided in Table 2-15, Leidos has included the following additional program costs, that are not currently included in the City's recycling budget:

- Vehicle replacement costs,
- Container replacement costs, and
- Public education costs.

<sup>8</sup> Note, this is not the recycling rate, merely the increase in tonnage that could potentially be collected in an automated residential recycling program.

Based on Leidos' experience in the solid waste and recycling industry, these are important costs to consider when evaluating a collection program. Vehicle and container replacement costs have been included in the collection operation cost analysis as it is vital to the efficiency of the collection operation that the City has a reliable fleet and the appropriate number of containers (bins or rolling-carts). Leidos has also accounted for a public education budget of \$3.00 per household, annually, to promote and educate residents on the residential recycling program. In Leidos' experience, a successful recycling program will spend between \$3.00 to \$5.00 per household annually on recycling public education. Table 2-15 outlines the cost of each residential recycling collection program.

**Table 2-15**  
**Cost of Residential Recycling Collection**

	Status Quo	Automated – Current Conditions	Automated – Improved Participation
<i>Staffing</i>			
Supervisor	\$72,160	\$72,160	\$72,160
Drivers	406,560	348,480	406,560
Workers	665,280	-	-
Total Staffing Cost	\$1,144,000	\$420,640	\$478,720
<i>Vehicle</i>			
Replacement Cost	\$187,841	\$142,370	\$187,841
Maintenance Cost	165,911	124,433	165,911
Fuel Cost	35,204	29,337	35,204
Total Vehicle Cost	\$388,956	\$296,141	\$388,956
Container Cost	84,295	143,918	143,918
Public Education	82,239	82,239	82,239
<b>Total Program Cost</b>	<b>\$1,699,490</b>	<b>\$942,938</b>	<b>\$1,093,833</b>
<b>Program Cost per Household</b>	<b>\$5.17</b>	<b>\$2.87</b>	<b>\$3.33</b>

As shown in Table 2-15 the City has an opportunity to decrease the recycling program cost by automating the residential recycling operation. The program cost shown in Table 2-15 represents the annualized cost of vehicles and containers; however, it is important to note that implementing an automated program will require an upfront investment in automated vehicles and rolling-carts for residents. These costs will be recovered through rates in proceeding years, although there will be a need for a significant investment to implement automating the recycling operation. This cost would include vehicle purchases (approximately \$850,000 to \$1,000,000) and container purchases (approximately \$1,450,000) expenses. It is possible the City can achieve a more competitive price than the typical industry costs included in this analysis through a competitive bid process.

Transitioning the current manual recycling collection to an automated collection can result in savings of between \$600,000 and \$750,000 annually. These annual cost savings translate into an opportunity to decrease the recycling cost of service by \$1.84 to \$2.30 per customer per month, from the current manual recycling collection operation cost of \$5.17 per customer per month.

### 2.12.2 Glass Collection

The City currently provides glass collection to residential and commercial customers. The current processing facility for the City's recyclables, BuRRT, is not designed to manage glass material, requiring that the City collect glass material separately from other recyclable materials in a split-body vehicle, as discussed in Section 2.2 of this report. Another prominent challenge with glass recycling in the Santa Fe area is the stability of a long term, stable market for the volume of material collected, making the material cost prohibitive to recycle. In this section of the report, Leidos has evaluated the feasibility of transitioning glass collection to a drop-off program and/or a subscription collection service.

Developing drop-off sites for glass collection provides an alternative to providing glass collection in the curbside recycling service, while still maintaining an outlet through which citizens may recycle their glass bottles. Leidos has modeled these drop-off sites as un-staffed sites with one 30 cubic yard roll-off container, including a catwalk and set of stairs to allow customers to access the open-top containers. The potential equipment configuration is similar to some of the County current drop-off sites, as shown in Figure 2-3(a). Figure 2-3(b) provides an example of the glass drop off container. The City could also configure a covered drop-off container similar to Figure 2-3(c).



Figure 2-3(a)



Figure 2-3(b)



Figure 2-3(c)

Figure 2-3. Drop-off Container Configurations

It is important to note that the analysis does not assume full-time staffed drop-off sites, in order to minimize costs of the drop-off operation.

Leidos has modeled two scenarios, one in which the City will be able to provide free sites to place roll-off containers where citizens can bring glass material to be recycled. This scenario assumes the City can utilize the drop-off facility at BURRT, parking lots at local municipal buildings or schools, or team with local non-profit organizations such as churches or community centers to place the glass drop-off centers. Alternatively, Leidos has forecasted the cost of implementing and operating a drop-off center if the City is required to purchase land for the glass drop-off centers. The feasibility analysis of a glass drop-off program is shown in Table 2-16.

**Table 2-16**  
**Glass Drop-off Collection**

	City Owned Area	Purchased Area
Number of Drop-off Sites	3	3
Initial Investment		
Cost of Land (0.5 Acres per site)	\$ -	\$15,000
Signage	3,000	3,000
Total Initial Investment	\$3,000	\$18,000
Amortized Over	20 years	20 years
<b>Annualized Cost of Initial Investment</b>	<b>\$150</b>	<b>\$900</b>
Annual Cost of Operation		
Annualized Cost of Initial Investment	\$150	\$900
Staffing Cost (0.5 FTE)	30,767	30,767
Roll-off Container Costs	1,500	1,500
Stair Costs	2,700	2,700
Annual Roll-off Pulls	31,355	31,335
Glass Tipping Cost	20,741	20,741
<b>Total Annual Cost of Operation</b>	<b>\$ 87,213</b>	<b>\$ 87,963</b>

Operating three glass drop-off sites will cost the City approximately \$87,200 to \$88,000 per year, which equates to \$0.30 per household, per month.

Leidos has also considered that some recycling customers may want to continue to receive curbside collection and be willing to pay a higher cost for this service, such as commercial customers with a large amount of glass material. Leidos has modeled a subscription glass collection program to serve these customers. Subscription programs are less efficient than city-wide (i.e. universal) programs as there is less collection density and a lack of economies of scale, this results in a higher cost for subscription services than universal programs. Table 2-17 outlines the operational requirements needed for a subscription glass collection program.

**Table 2-17**  
**Subscription Glass Collection Program**

	Unit
Residential Accounts	
Number of Residential Accounts	27,413
Participation in Subscription Program	3.0%
Residential Subscription Accounts	822
Commercial Accounts	
Number of Commercial Recycling Cart Accounts	760
Participation in Subscription Program	100.0%
Commercial Subscription Accounts	760
Total Subscription Accounts	1,582
Assumed Set-out Rate	100.0%
Total Collections per Route	160
Total Routes Needed	2.0

The assumptions used to develop the routes needed for a subscription glass program differs from those when modeling a universal recycling program, in Section 2.12.1. The number of customers forecasted to participate in the subscription program is significantly less than a universal program; however, routes are still required to serve the same footprint as a universal program, as the customers are located throughout the City. This program design results in more drive time and fewer collections per route. In a subscription program, it is realistic to assume that the collection operation will experience a higher set-out rate, typically 90 to 100 percent, as customers have made a conscious effort to subscribe and pay for the additional service. Based on these assumptions, Leidos forecasts that the City will need two weekly subscription glass recycling routes to serve residential and commercial customers.

Leidos has modeled the residential glass subscription program to be similar to the current recycling special collection operation, which utilizes one driver and a one-ton recycling truck. The driver exits the vehicle and manually tips material into the bed of the truck at each collection. The residential subscription glass operation will continue to use the current recycling bins used by the City. The commercial subscription program would be similar to the current commercial recycling collection program with an automated side-loader utilizing rolling-carts for glass collection. The commercial operation will differ from the residential glass collection as commercial businesses are expected to generate a larger volume of glass material compared to residential customers and for the safety of collection staff, it is beneficial to utilize automated collection vehicles.

For a back-up operation, to account for front-line vehicle downtime, Leidos has accounted for a second one-ton truck that would be shared between the residential and commercial operations. In the event a commercial back-up recycling route is required, the City will utilize a second FTE on the commercial glass collection back-up route to manage the rolling-carts. It has been assumed the second FTE can be sourced from either the solid waste or recycling operations on a case-by-case basis. The cost of this back-up operation is included in the costs shown in Table 2-18.

**Table 2-18**  
**Subscription Glass Collection**

	Residential Collection	Commercial Collection	Total Subscription Glass Program
<i>Vehicle Cost</i>			
Replacement Cost	6,047	33,705	39,752
Maintenance Cost	25,924	25,924	51,847
Fuel Cost	7,825	7,825	15,650
Total Vehicle Cost	39,796	67,454	107,250
Staffing Cost	69,544	69,544	139,088
Container Cost	4,046	7,790	11,836
<b>Annual Subscription Glass Collection Cost <sup>1</sup></b>	<b>\$113,386</b>	<b>\$144,787</b>	<b>\$258,173</b>
Number of Customers	822	760	1,582
<b>Monthly Collection Cost per Customer</b>	<b>\$11.49</b>	<b>\$15.88</b>	<b>N/A</b>

1. The annual subscription glass collection cost does not include the \$15.75 tipping cost per ton of glass collected, which is expected to add another 10-15% to the cost.

The residential and commercial collection cost have been presented separately in Table 2-18 as the two operations have different vehicle and container requirements, resulting in a slightly different cost of service. The two operations are modeled to share a back-up vehicle and back-up personnel. The collection cost for the residential glass subscription program is projected to cost \$11.49 per customer per month and the commercial glass collection is projected to cost \$15.88 per customer per month. It is important to emphasize that both of these costs do not include the \$15.75 per ton tipping cost of recycling glass at BuRRT.

Leidos recommends the City conduct community outreach to gain a better understanding of how many residential and commercial customers would be willing to subscribe to a glass collection program for a monthly cost of between \$13.00 (residential) and \$20.00 (commercial). Depending on the community response, the City may consider implementing a subscription glass collection program, although Leidos discourages the City from making the development of this program a top priority.

### 2.12.3 Organic Diversion

The City issued a Request for Bid (RFB) for a food waste pilot program in December 2013 with 30 local restaurants. Like many other cities around the United States and Canada, the City has been looking to divert additional material from the landfills, and organics is a natural target, as organic material makes up an average of 28 percent in the United States waste stream.<sup>9</sup>

Although organics is a large portion of the waste stream that can be diverted, it is also a more complicated and intensive material to capture. The City can explore various programs to capture and divert the food waste and yardwaste in an effort to achieve a higher diversion rate; however, based on Leidos' experience this organics material

<sup>9</sup> While it is recognized that green waste is not as a material element in more arid climates like New Mexico, a successful diversion program with regard to yard waste and/or food waste would substantially boost the City of Santa Fe's recycling rate.

stream is much harder to capture than traditional single-stream materials (i.e. paper, plastic, metal).

Leidos has worked with various cities throughout the United States in assessing city-wide and county-wide food waste collection and has provided a list of some of the key challenges with developing and implementing a successful food waste program;

- Requires challenging decisions determining what materials are to be included (i.e. meat and dairy, greenwaste, paper, etc.)
- Involves a high level of education required of both residential and commercial participants
- Requires high level of compliance development and compliance officer involvement (i.e. bag liners, guidelines on materials accepted, container audits)
- Typically a percentage of customers express resistance to a three-cart collection program (i.e. set-out footprint, additional customer effort in material sorting)
- Challenge with identifying local processor that can accept material and material volume
- Certain regions struggle with identifying and developing a market for compost/mulch end product
- Added programs results in increased cost to customers and higher utility rates

If the City does pursue a program to capture organic materials in the future, Leidos recommends the City implement a seasonal residential yardwaste collection program in conjunction with a commercial food waste collection program.<sup>10</sup>

Yardwaste makes up 13.5% of Santa Fe's waste stream. Through implementing a seasonal yardwaste collection program the City can capture a healthy volume of organic material with relatively little capital investment. Additionally, a yardwaste program can be implemented with various collection frequencies (i.e. weekly, monthly, quarterly).

Collecting foodwaste is a more complicated and involved process compared to collecting yardwaste. If the City is intent on diverting foodwaste material from the waste stream, Leidos recommends that the City implement a commercial food waste collection program. Focusing on commercial institutions with high volumes of food waste allows the City to capture a significant volume of foodwaste from a limited number of customers.

Although the City is currently not diverting yardwaste or food waste in their current collection programs, the City does have a fully implemented recycling program with a low participation rate. Leidos recommends the City focus on strengthening the current recycling collection program before adding additional organics related collection programs.

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<sup>10</sup> A detailed description of the Commercial Food Waste Cost Analysis is provided in "Section 3 – Review of Commercial Collection Operations."



Depending on equipment configuration, frequency of collection, materials accepted, etc. a seasonal yard waste collection program would add \$1.50 to \$2.50 to the monthly residential solid waste user fee.

## 2.13 Recommendations<sup>11</sup>

1. **Measure recycling program success and refocus efforts on recycling public outreach and education.** Educating customers on the environmental and financial benefit of diverting recyclable materials from the waste stream can result in a higher participation and set-out rate for the City's recycling program. In order to determine the effectiveness of recycling outreach, the City must first begin tracking the residential recycling program set-out rate.<sup>12</sup>
2. **Evaluate distribution of drivers and workers for refuse and recycling operations.** City does not have an appropriate number of full-time equivalents (FTE) to maintain a 15-20 percent personnel back-up ratio. Based on the current crew configuration, Leidos recommends the City evaluate the distribution of drives and workers. Based on Leidos' analysis the City is currently understaffed one driver; in addition, the City is currently operating with too few workers for manual collection operations. If the City decides to forego automating the City recycling operation, Leidos recommends the City evaluate the number of recycling workers on staff in the residential operation.
3. **Eliminate redundant rear-loader back-up vehicles.** The current fleet is maintaining a high level of back-up rear-loader vehicles. Leidos recommends the City eliminate two rear-loaders, and work towards maintaining a 20-30 percent vehicle back-up ratio. Based on the current maintenance costs, this can result in up to \$8,300 in maintenance savings annually, as well as a one time savings from the sale of these trucks.
4. **Monitor the dependability and annual maintenance cost of vehicles over their useful life.** Utilizing vehicle maintenance data, the City can determine when it is cost effective to transition front-line vehicles to back-up vehicles and subsequently, when to sell back-up vehicles. Vehicles are a crucial aspect of a collection operation and it is imperative to an efficient system that vehicle are properly maintained and appropriately replaced.
5. **Large item collection frequency should be reduced.** Leidos would recommend splitting the City into sections and collecting each section once per month. We would also recommend a modest increase of \$5 to \$8 on the customer fee.
6. **Transition current recycling operation to automated collection.** As discussed in Section 2.12.1, the City can benefit operationally and financially by transitioning from a manual recycling collection operation to an automated

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<sup>11</sup> Read in conjunction with Section 2.11, Initial Key Findings.

<sup>12</sup> More information will be provided regarding education on a system-wide basis (City, County, Agency) in the "Systemwide Report" section at the end of this report.

recycling collection operation. With an automated recycling collection operation the City has the opportunity to collect more customers per hour and increase the volume of material collected annually. Transitioning the current manual recycling collection to an automated collection can result in savings of between \$600,000 and \$750,000 annually. These annual cost savings translate into an opportunity to decrease the recycling cost of service by \$1.84 to \$2.30 per customer per month, from the current manual recycling collection operation cost of \$5.17 per customer per month.

- 7. Remove glass from current recycling operation and transition to a glass drop-off program.** The City's recycling operation would benefit from removing glass collection from the current single-stream collection operation, as glass commodities are challenging to collect and difficult to process and sell in the Santa Fe area. Based on the analysis in Section 2.12.2 the cost of operating three glass drop-off sites will cost the City approximately \$90,000 per year, which equates to \$0.30 per residential customer per month.
- 8. Evaluate residential and commercial customer interest in a glass subscription program.** Providing a subscription curbside glass collection service is a viable option for the City to maintain the current curbside glass collection service for those customers that are interested in paying for this service. Before implementing a subscription glass program, Leidos recommends the City identify the number of customers that would participate in this service before implementing a glass collection program. It is critical to the success of the program that there are enough participants subscribing to the service in order to operate efficiently.
- 9. Invest in industry software and data management.** Based on Leidos' review of City data, Leidos recommends the City invest in software packages specific to the solid waste industry, such as; customer billing software, GPS units and vehicle tracking system, tonnage and trip tracking software and route optimization software. The use of these software packages will enable the City to improve the ESD's operational data. Information that must be gathered at a minimum includes:
  - Number of customers per route,
  - Set-out rate (recycling),
  - Number of improper set-outs (i.e. glass mixed with other recyclables, carts improperly placed, etc.),
  - Large item material composition, and
  - Volume of large item set-outs.

Understanding customer participation and challenges customers experience with the collection program guidelines allows the ESD to more accurately target customer education and outreach. Utilizing operational data ensures that the City is maximizing its' staff and financial resources when implementing outreach strategies.

## Section 3

# REVIEW OF COMMERCIAL COLLECTION OPERATIONS

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### 3.1 Introduction

This section addresses the City's existing commercial refuse and recycling collection operation and potential changes the City may wish to consider to improve the overall efficiency of the commercial operation. Leidos identified the following areas of the commercial operation as key components to review and analyze:

- Collection efficiency
- Staffing
- Routing
- Equipment

Leidos has provided a summary of key findings at the conclusion of this report section.

### 3.2 Program Overview

The City provides commercial collection to businesses within the City limits. The majority of the City's commercial refuse collection is offered as front-load and roll-off service. The City does offer refuse collection in rear-load containers in the downtown area (i.e. The Plaza), due to limited collection space in the area's alleys.

Front-load service is provided on a set collection frequency ranging between one and six times per week. The City offers front-load containers in three cubic yard (CY), four CY, six CY and eight CY containers. Customers that require greater collection capacity than eight CY can be served by roll-off containers. The City collects 20 CY and 30 CY open-top roll-off containers and closed roll-off containers with compacting units. All compacting units are owned by customers, which is a common industry practice.

Rear-load refuse dumpsters are collected primarily in The Plaza area. Rear-load containers are provided in three CY, four CY and six CY containers. The City also provides commercial refuse collection to some commercial customers in 64-gallon and 96-gallon rolling-carts where the businesses do not have adequate space for larger containers.

Commercial recycling is collected in 96-gallon rolling-carts and rear-load containers, ranging in size from three CY, four CY and six CY containers. Commercial recycling service is provided between one to four times per week, depending on the volume of recyclables the business generates.

### 3.3 Market Share

As stated in the City Code, in Chapter XXI: Environmental Services, the City has the exclusive right within the City limits to collect solid waste, with the exception of nonresidential recyclables, dead animals, construction and demolition debris (C&D),

and hazardous wastes. Table 3-1 outlines the volume of commercial material collected by the City in fiscal year (FY) 2013.

**Table 3-1**  
**Fiscal Year 2013 Commercial Tonnage**

	Fiscal Year 2013
Material Hauled by City	
Commercial Waste	35,461
Recycling <sup>1</sup>	5,324
Construction and Demolition (C&D)	241
<b>Total Commercial Tonnage Hauled By City</b>	<b>41,027</b>
Self-Haul <sup>2</sup>	203
<b>Total Annual Commercial Tonnage</b>	<b>41,230</b>

1. Recycling tonnage reflects residential and commercial tonnage as the City's data does not differentiate between commercial and residential recyclable tonnage.
2. Self-Haul tonnage includes 154 commercial waste tons and 49 recycling tons annually.

Although the City does not have the exclusive right to haul nonresidential recyclables or C&D material, the City collection operation commands the majority of the City's commercial solid waste and recycling market, as shown in Table 3-1.

## 3.4 Collection Efficiency

During route observations of the City's commercial collection operation conducted during the week of June 24<sup>th</sup>, 2013, Leidos calculated the average round trip travel time from the collection route to the Caja del Rio landfill to be approximately 57 minutes. The City currently serves 1,374 front-load dumpsters, 1,604 rear-load carts and 203 rear-load dumpsters on a weekly basis.

### 3.4.1 Front-load Collection Efficiency

Front-load refuse collection is offered up to six times per week. Table 3-2 summarizes the current container count and collection frequency of the front-load containers currently served by the front-load collection operation.

**Table 3-2**  
**Front-load Container Frequency**

Container Size	Collection Frequency (per week)						Total (containers)	%
	1	2	3	4	5	6		
3 CY	65	10	2	-	-	-	77	6%
4 CY	313	75	29	1	3	2	423	31%
6 CY	196	129	128	16	6	13	488	36%
8 CY	117	76	126	8	22	37	386	28%
							1,374	100%

Leidos evaluated the productivity of the commercial front-load collection operation based on a combination of field observations, data analyses, staff interviews and benchmarking. A summary of this analysis follows in this section.

Data collected from the field observations is presented in Table 3-3 which illustrates the productivity of the commercial front load operation. It is important to note that Leidos categorized time spent on-route and time spent off-route to determine the levels of efficiency being achieved by the front-load collection observation.

**Table 3-3**  
**Analysis of Leidos Field Observations for Front-load Route**

	Route 1	Route 2	Route 3	Route 4	Average for Field Observations
Total Stops	83	78	66	59	71.5
Total Containers	86	91	72	63	78.0
Total Yards	534	587	410	348	469.8
Total Tons	13.09	11.15	11.71	9.99	11.5
Pounds/Yard	49.03	37.99	57.12	57.41	50.4
Yards/Container	6.21	6.45	5.69	5.52	5.97
Time Spent On-Route	3.70	3.10	3.63	3.98	3.60
Time Spent Off-Route <sup>1</sup>	4.80	5.40	4.87	4.52	4.90
Average Productive Minutes/Container	2.58	2.04	3.03	3.79	2.86
Average Total Minutes/Container	5.93	5.60	7.08	8.10	6.68

1. Includes lunch breaks, pre and post-trip inspections, travel time to landfill, breakdowns, etc.

The Environmental Services Division (ESD) front-load drivers were asked by Leidos to collect the same data for their routes during a one-week period. That data was then compiled by Leidos in Table 3-4. The data was derived from the daily driver route sheets, as well as a “Leidos provided” form. The results of the analysis show that drivers have correctly accounted for daily productivity, as the City data is fairly consistent with Leidos’ observations. However, there are differences with regards to time spent off-route and on-route.

**Table 3-4**  
**Analysis of City Field Observations for Front-load Route**

	Route 5	Route 6	Route 7	Route 8	Route 9	Route 10	Route 11	Route 12	Route 13	Route 14	Route 15	Route 16	Route 17	Average for Field Observations <sup>1</sup>
Total Stops	60	58	53	64	N/A <sup>2</sup>	56	63	67	58	57	77	64	N/A <sup>2</sup>	61.55
Total Containers	100	70	66	82	N/A <sup>2</sup>	77	98	94	61	72	93	88	N/A <sup>2</sup>	81.91
Total Yards	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Total Tons	17.56	15.92	15.30	10.06	15.37	10.99	12.09	10.44	11.15	9.61	18.82	13.38	N/A <sup>2</sup>	13.39
Pounds/Yard	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Yards/Container	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Time Spent On-Route	4.48	5.23	3.90	4.10	5.80	3.10	4.52	3.70	4.00	4.93	4.48	3.88	4.08	4.32
Time Spent Off-Route <sup>3</sup>	4.02	3.37	4.60	4.40	2.70	5.40	3.98	4.80	4.50	3.57	4.02	4.62	4.42	4.18
Average Productive Minutes/Container	2.69	4.49	3.55	3.00	N/A <sup>2</sup>	2.42	2.77	2.36	3.93	4.11	2.89	2.65	N/A <sup>2</sup>	3.17
Average Total Minutes/Container	5.10	7.29	7.73	6.22	N/A <sup>2</sup>	6.62	5.20	5.43	8.36	7.08	5.48	5.80	N/A <sup>2</sup>	6.39

1. Average of Routes 5–17.

2. Data not provided.

3. Includes lunch breaks, pre- and post-trip inspections, travel time to landfill, breakdowns, etc.

A comparison between the observed productivity for the City's front-load collection system and industry standard is presented in Table 3-5. The data used for the analysis in Table 3-5 is based on Leidos' background conducting studies for other cities, as well as the general standards and goals established within the industry.

**Table 3-5**  
**Field Observations vs. Industry Standard**

	Average for Leidos Field Observations (Routes 1-4)	Overall Average for Field Observations (Routes 1-17)	Industry Standard
Total Stops	71.5	64.2	75-80
Total Containers	78.0	80.9	100-110
Total Yards <sup>1</sup>	469.8	469.8	600-650
Total Tons	11.5	12.91	20-26
Pounds/Yard	50.4	50.4	75-90
Yards/Container	5.97	5.97	6.04
Time Spent On-Route	3.60	4.15	5.82
Time Spent Off-Route <sup>2</sup>	4.90	4.35	2.68
Average On-route Minutes/Container	2.86	3.09	3.25
Average Total Minutes/Container <sup>3</sup>	6.68	6.47	4.75

1. Average reflects data observed by Leidos.

2. Includes lunch breaks, pre and post-trip inspections, travel time to landfill, breakdowns, etc.

3. Includes total time on-route and off-route.

During field observations and staff interviews, Leidos identified several factors that have a negative impact on collection efficiencies. This analysis indicates that the productivity levels for the City's front-load operation are less efficient relative to industry standards. The following summarizes some of the identified problems, which are also illustrated in the table above:

- The total stops, containers, and yards serviced per day for each route, on average, lag behind the industry standard.
  - The average number of stops served per day by route ranges from a high of 83 on Tuesday to a low of 53 also collected on another Tuesday route. As a result, an overall average of approximately 64.2 stops is well below the industry average of 75 to 80 stops per day for each route.
  - Approximately 80.9 containers are served per day per route, which falls short of the industry standard of 100 to 110 containers. Please note that this can vary greatly, and Leidos has observed front-load operations that pick up between 130-140 containers served per day by route; this, however, is typically observed when customers have two to four containers per stop.
  - The average number of yards served per day by route ranges from a high of 534 CY on a Tuesday to a low of 348 CY on a Thursday. According to Leidos'

observations, the total cubic yards picked up is 30 to 40 percent below the industry standard.

- The total tons per route is significantly below the industry standard; well-run routes typically pick up 10 to 13 tons per load and average two loads per day.
- Leidos confirmed that most routes are picking up a significant amount of “air” as evidenced by the low tonnage, which averages approximately 50.39 pounds per cubic yard versus the industry standard of 75 to 90 pounds per cubic yard. This means many containers are being picked up that are not very full. This was confirmed on the “ride-alongs” by Leidos as well. This means some of these dumpsters could be serviced less frequently, thereby increasing the operational efficiency of the front-load system. However, this would also result in the loss of some revenue as the customer’s monthly bill will decrease as it has less frequent pick-ups, unless these “reduced” pick-ups are replaced with new customers or a reduction of a route (i.e. cost savings).
- Based on Leidos’ analysis, the City could improve its collection efficiency by moving to a four-day work schedule with 10-hour days (known as “4-10’s”). Many of Leidos’ public sector clients that provide commercial refuse collection use this type of schedule as the additional “two hour” gain in time is nearly 100 percent spent in the field collecting refuse.<sup>1</sup>
- In a 4-10’s scenario, commercial customers requiring a five day collection schedule would still be served on the fifth day by staggering employee schedules. This schedule would result in some drivers having different days of the week off (i.e. Wednesday vs. Friday). Scheduling could be rotated or awarded as a longevity or a performance benefit, at the City’s discretion.

### 3.4.2 Roll-off Collection Efficiency

The City commercial roll-off operation collects scheduled and on-call (i.e. unscheduled) roll-off containers five days a week<sup>2</sup>. In FY 2013, the collection operation collected 2,600 scheduled pulls and 523 on-call pulls. On-call roll-off pulls are typically scheduled the day before, when a customer requests a collection. Based on the FY 2013 pull data, 83 percent of the City’s roll-off service is scheduled collection.

Open-top and compacting containers are both serviced by the City’s commercial collection operation. The closed roll-off containers and compacting units are not provided by the City, but are owned by the customer. Typically closed-top roll-off containers are custom made to fit specific compacting units. This requires the City to return the same roll-off containers to customers after tipping each customers’ load.

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<sup>1</sup> Our industry average shown on Table 3-5 includes clients that utilize 8-hour and 10-hour days, with the standards for 10-hour days adjusted downward on a pro-rata basis to reflect a “normal” 8-hour day. This was done to ensure an “apples to apples” comparison for Santa Fe’s operation.

<sup>2</sup> A higher fee is charged for unscheduled pulls, which is a common industry practice.



Based on Leidos' route observations the week of June 24<sup>th</sup>, 2013 the City's roll-off collection operation averages five roll-off containers per route day<sup>3</sup>.

Based on our experience in dealing with roll-off collection operations, Leidos would make the following recommendations with regard to the City's roll-off collection operations:

- **The City should strongly consider doing away with the grandfathered “double-handled” compactors.** These compactors require the driver to disconnect the compactor from the container, pull the container out from the compactor, then find room to unload the container and then “re-load” the container from the other end so it can be safely secured and transported to the landfill for disposal. This same process is required when the compactor is returned to the customer's location, with the container being handled “twice” on both picking up and returning the container. Requiring customers to move to the newer configurations that don't require the “double handling” should save 10 to 20 minutes on each compactor pull. If the new roll-off compactors are not required, Leidos would recommend a \$25-\$50 surcharge for the “grandfathered” compactors due to the increased time it takes to service them.
- **Different user fee per pull for open-tops versus compactors.** Currently, the City does not charge a different rate for pulling an open-top versus a compactor. We would recommend that an additional \$25-\$35 per pull be charged for compactors, as the driver needs to get out of the truck to disconnect the compactor from the container, etc. and reconnect when returning the compactor. In addition, if the compactors that require to be “double-handled” remain in service, there should be an additional fee of \$25 to \$50 as described in the first bullet in addition to the additional \$25-\$35 being recommended for pulling a compactor versus an open-top. This will assist in getting customers to change to the newer compactor unit which will increase worker safety and productivity.
- **The City “pulls” approximately 3,100 roll-offs per year, which averages 12 per day, on a 5-day work week.** We would recommend the City work with the customers to schedule the pulls as much as possible to “levelize” the work load so that pulls are kept to 11-13 pulls per day as much as possible. If this is accomplished the City should be able to operate with two roll-off drivers instead of the three that are budgeted. Having each driver focus on one section of the town will also assist in helping them to achieve six pulls per day, on average.

It is important to note that over 30 percent of the pulls last year were compactors (1,040 out of 3,123). By moving towards the more efficient compactors the City will save time and increase the productivity of its routes. With these changes, the City should be able to operate with two roll-off drivers instead of three, and only on occasion need to utilize some minimal overtime, or another driver perhaps only 2 or 3 times per month, for part of a day.

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<sup>3</sup> Leidos consultants rode three different roll-off routes, with two routes collecting five roll-offs and the third route collecting six roll-offs.

### 3.4.3 Recycling Collection Efficiency

The City provides commercial single-stream recycling and commercial cardboard recycling. Commercial single-stream recycling is provided in 96-gallon rolling-carts, whereas commercial cardboard recycling is provided via rear-load containers.

The City runs a “night route” to collect commercial cardboard recycling one day per week. This route is operated as a ‘night route’ that begins each Wednesday at 3:00 am in the morning and typically finishes collection by 11:30 am.

The commercial single-stream recycling route is operated from 7:30 am to 4:00 pm on Monday, Tuesday, Thursday and Friday. The commercial single-stream recycling operation utilizes the same side-load collection vehicle used in the residential recycling collection operation.

Table 3-6 summarizes the number of customers receiving commercial recycling collection each week.

**Table 3-6  
Commercial Recycling Collection Frequency**

Container Size	Collection Frequency (per week)				Total (containers)
	1	2	3	4	
<b>Commercial Single-Stream</b>					
96 gallon rolling-cart	702	54	-	4	<b>760</b>
<b>Commercial Cardboard</b>					
3 CY	82	4	-	-	<b>86</b>
4 CY	20	-	9	-	<b>29</b>
6 CY	50	18	-	-	<b>68</b>
8 CY	1	-	-	-	<b>1</b>
<b>Total Rear-Load Containers</b>					<b>184</b>

Based on Leidos’ experience in dealing with commercial recycling programs we made the following observations and resulting recommendations:

- From conducting our field observations while riding on front-load commercial refuse collection routes we observed a significant amount of cardboard being disposed of that could be recycled.
- The current once per week cardboard collection is too infrequent to get some commercial customers to sign up for the program. We heard anecdotal comments about several businesses that have asked for more frequent cardboard collection (requesting three and four times per week collection). The City needs to consider expanding its commercial cardboard collection service to more than once per week.<sup>4</sup>

<sup>4</sup> Leidos has conducted an in-depth analysis of the capital and operating costs associated with expanding the City’s commercial cardboard collection later in Section 3.10.1 of this report.

- We would strongly recommend that the City begin offering commercial cardboard collection services using a front-load truck. The City will still need to utilize a rear-loader truck for some cardboard routes because a front-load truck will not fit in some of the narrow alleys, as well as the narrow roads. However, from a safety standpoint the rear-load collection of commercial cardboard is a dangerous process that requires the workers to put themselves in precarious positions in order to get all of the cardboard out of the dumpster (starting at 3:00 am when it is still dark outside). If the City increases the frequency of commercial cardboard collection, it is going to need two trucks to collect the material so having a front-load and rear-load route would meet both types of clients' needs.
- In addition to educating the customers about the commercial cardboard collection service, as well as the increased frequency of the service (if Leidos' recommendation is implemented), education needs to be provided with regard to the importance of breaking the boxes down so dumpsters are not overflowing with cardboard.<sup>5</sup>
- The City has a customer representative that is supposed to be out promoting the commercial cardboard recycling program to businesses within the City. We would recommend that a monthly report be provided by him to the ESD Director that lists his monthly activities including such items as (number of "cold calls" on new commercial businesses, new accounts signed up, follow up visits with existing customers to check on their satisfaction, etc.)

### 3.5 Routing

Leidos utilized the time and motion data collected through route observations to model the current collection operations' routes. This analysis allows Leidos to determine if the City's collection operations are appropriately sized. The following timing assumptions were applied for all commercial collection operations evaluated.

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<sup>5</sup> This is one of the advantages of a front-load truck being used for commercial cardboard collection as the dumpsters used for collecting cardboard are designed so the boxes need to be flattened before being slid into the dumpster through an opening that is approximately 6 inches by 6 feet across the top of the dumpster.

**Table 3-7**  
**Routing Assumptions**

	Time
Workday	8.5 hours
<i>Non-Collection Route Time</i>	
Pre-trip	10 minutes
Time to Route	20 minutes
Breaks	30 minutes
Lunch	30 minutes
Re-fuelling	15 minutes
Post-trip	5 minutes
Total Non-Collection Time	110 minutes
<i>Disposal Time</i>	
Landfill Trip Time	57 minutes
BuRRT Trip Time	45 minutes

### 3.5.1 Front-load Refuse Routing

If the City is able to achieve 100 to 110 front-load lifts per route the City has the opportunity to reduce three to five route days per week, from the current 31 route days. This would allow the City to achieve some savings with regard to capital and operating and maintenance costs. The key issue is whether this improved operational efficiency can be achieved. If so, the elimination of five route days (i.e. one full route, which equates to one less truck to purchase, one driver, and the associated fuel and maintenance costs) would result in an annualized cost saving of approximately \$120,000 per year.

### 3.5.2 Rear-load Refuse Routing

In Leidos' analysis the City is achieving a collection efficiency very close to one that is modeled based on Leidos' time and motion data. This suggests that the City's rear-load routes are appropriately sized. Even if the City were able to achieve the optimized timing forecast by Leidos, it would not result in a reduction in the number of weekly routes needed to serve the rear-load customers.

### 3.5.3 Roll-off Refuse Routing

Leidos has evaluated the number of routes currently serving the roll-off collection operation, utilizing the current customer data, current routing schedules and the time and motion data collected by Leidos during route observations. This analysis is summarized in Table 3-8.

**Table 3-8**  
**Roll-off Refuse Routing**

	Time
Annual Pulls	3,123 pulls
Number of Weeks per Year	52 weeks
Average Pulls per Week	60 pulls
<b><i>Modeled Operation – Leidos Time and Motion Data</i></b>	
Collection and Disposal Time per Route	6.7 hours
Round Trip Time per Pull	1.1 hours
Potential Pulls per Route	6 pulls
<b><i>Current Operation – City Data</i></b>	
Average Pulls per Week	60 pulls
Route Days per Week	15 route days
Average Pulls per Route	4 pulls
Current Over/ (Under) Capacity on Routes	(2) pulls per route

Based on the time and motion data collected by Leidos the City can collect six pulls per route. The City is currently achieving an average of 5.3 pulls per route, although the current routes are sized to only collect 4 to 6 pulls per route, per day based on customer needs. This indicates that the City is currently operating more route days per week than necessary to serve the current roll-off customer base, if the scheduling of pick-ups could be leveled. Using the recommendations that Leidos made in Section 3.4 Collection Efficiency, the City should be able to reduce the current number of roll-off routes from three to two.

## 3.6 Staffing

Leidos has reviewed the commercial operations current staffing levels and outlined proposed staffing levels to ensure a 15 to 20 percent back-up ratio is maintained for each commercial operation. The current and proposed staffing levels are provided below.

**Table 3-9**  
**Commercial Collection Personnel Levels**

	Current Operation		Proposed Level	
	Level of FTE	Back –up %	Proposed Level of FTE	Back-up %
<b><i>Commercial Refuse Operation</i></b>				
Manager	1.30		1.30	
Mechanic	1.90		1.90	
Admin	0.95		1.00	
Supervisor	0.55		0.55	
<i>(continued on next page)</i>				

	Number of Routes	Current Operation		Proposed Level	
		Level of FTE	Back -up %	Proposed Level of FTE	Back-up %
Front-load	6.20				
Driver		9.00	45%	7.50	21%
Rear-load <sup>1</sup>	2.20				
Driver		4.00	(10%)	5.00	14%
Roll-off	3.00				
Driver		3.00	0%	3.50	17%
Subtotal	11.40	20.70		20.0	
<b>Commercial Recycling Operation</b>					
Manager		0.25		0.25	
Mechanic		0.60		0.60	
Admin		0.50		0.50	
Supervisor		0.20		0.20	
Single-stream	1.60				
Driver		1.6	0%	2.00	25%
Rear-load Cardboard <sup>1</sup>	0.20				
Driver		0.40	0%	0.50	25%
Subtotal	1.80	3.55		4.05	
<b>Total</b>	13.20	24.25		24.80	
<b>Total Commercial Staffing (Rounded)</b>		25.00		25.00	

1. Two personnel are required to operate the rear-load commercial collection operation.

The level of personnel needed for each collection operation varies greatly between different collection configurations. It is an industry standard to maintain a back-up ratio of between 15 to 20 percent to ensure that operations are able to run efficiently, accounting for personnel sick days, vacation and training. As shown in in Table 3-9 while the total number of personnel are appropriate, some minor adjustments to staff assignments should possibly be considered.

It is reasonable for the City to maintain a back-up ratio that is less than 15 percent for administrative duties; however, it is crucial to maintain personnel that are cross trained in management and administration to ensure operations are efficiently run in the absence of front-line administrative personnel.

Leidos has proposed recommended staffing levels in order to obtain a 15 to 20 percent back up ratio for each operation in Table 3-9.

## 3.7 Vehicles

The City currently maintains front-load, rear-load, roll-off and automated side-load vehicles to provide commercial collection services. For special collections, the City utilizes smaller pick-up trucks to provide these services, as needed. Table 3-10 outlines

the current volume of commercial solid waste and recycling equipment maintained by the City.

**Table 3-10**  
**Benchmarking of City's Current Fleet**

	Number of Vehicles	Front-Line/ Back-up	Average Age <sup>1</sup>	Maintenance Cost <sup>2</sup>	Fuel Cost <sup>2</sup>
<i>Pick-up Truck</i>					
City	12	Front-Line	14.8	\$ 4,097	\$ 3,833
Industry Average <sup>3</sup>	-	-	8.4	2,242	3,990
<i>Front-Load</i>					
City	6	Front-Line	3.6	\$22,869	\$16,411
City	5	Back-up	9.2	22,869	16,411
Industry Average <sup>3</sup>	-	-	7.3	22,692	10,914
<i>Rear-Load</i>					
City	2	Front-Line	6.5	\$16,667	\$23,333
City	1	Back-up	10.0	16,667	23,333
Industry Average <sup>3</sup>	-	-	7.8	17,349	7,564
<i>Roll-off</i>					
City	3	Front-Line	4.7	\$11,667	\$3,129
City	3	Back-up	17.7	11,667	3,129
Industry Average <sup>3</sup>	-	-	11.2	18,215	7,466
<i>Automated Side-Loader</i>					
City	1	Front-Line	3.0	\$20,739	\$7,825
City	1	Back-up	9.0	20,739	7,825
Industry Average <sup>3</sup>	-	-	7.0	26,199	11,939

1. The Average Age represents the average age for the City's vehicles and the Industry Average useful life of vehicles.
2. The City does not record vehicle maintenance and fuel data based on each vehicles annual cost. Leidos extrapolated the annual vehicle maintenance and fuel cost for each vehicle based on the annual budget and number of vehicles. Due to there being minimal data on a vehicle specific basis, Leidos will discuss theses benchmarks at a high level.
3. The Industry Average includes recent operational data from reviews completed by Leidos between 2011-2013. The Industry Average includes data from the following cities: Bozeman, MT; Corpus Christi, TX; Dallas, TX; Del Rio, TX; Denton, TX; El Paso, TX; Phoenix, AZ; Tempe, AZ; and Temple, TX.

As shown in Table 3-10, the City is currently incurring maintenance costs slightly lower than the industry average, or comparable, for all commercial equipment, with the exception of pick-up trucks. On average, the City's fuel cost are slightly lower, or comparable, to the industry average, with the exception of the front-load and rear-load vehicles, which are much higher.

Leidos recommends the City begin to track vehicle maintenance and fuel data on a vehicle specific basis. This will enable the City to track vehicle maintenance trends and make informed decisions on when to retire vehicles and pro-actively schedule routine

maintenance. Leidos discusses the City's fleet maintenance in greater depth in Section 4 of this report.

### 3.7.1 Vehicle Back-up Ratio

A key operational measurement to evaluate is the vehicle back-up ratio. Maintaining adequate back-up vehicles ensures the collection operation is able to run consistently, accounting for vehicle down-time related to service and break-downs. It is industry standard and operationally optimal to maintain a 20 to 30 percent vehicle back-up ratio. Leidos has reviewed the City's current fleet's back-up ratio, based on the number of routes currently being operated.

**Table 3-11**  
**Commercial Vehicle Front-Line and Back-up Ratio**

	Number of Routes	Current Fleet				Industry Standard Back-up Ratio
		Front-Line	Front-Line Ratio	Back-up	Back-up Ratio	
Front-loader	6.2	6	97%	5	80%	20-30%
Rear-loader	2.4	2	83%	1	41%	20-30%
Roll-off	3.0	3	100%	3	100%	20-30%
Automated Side-Loader <sup>1</sup>	1.6	1	63%	1	62%	20-30%

1. The automated side-loader route operates 2 routes per week, 4 days per week and is currently operating with less than appropriate front-line vehicles.

Although the City is currently maintaining a healthy back-up ratio for all commercial vehicles used in the commercial collection operation, it is important to note that the City is not maintaining a healthy front-line ratio for some commercial routes. Under the current fleet volume, some routes must operate front-line vehicles up to six-days per week, or regularly operate back-up vehicles on front-line routes.

As shown in Table 3-11, the front-load operation has 6.2 weekly routes, reflecting that one route is operated on Saturday, but only has six front-line vehicles. This front-load vehicle configuration requires one vehicle to be operated six-days each week, increasing the annual wear and tear of the front-line vehicles. The front-load operation is also maintaining a high level of back-up vehicles. Maintaining a large number of back-up vehicles can increase annual maintenance costs as these aged vehicles require an increased amount of annual up-keep in later years of their useful life. Leidos recommends the City reduce the front-load back-up vehicles to three back-up vehicles, reducing the number of back-up vehicles but still remains above the industry average.

Based on the number of routes currently operated and the number of rear-load vehicles currently maintained, Leidos recommends the City consider investing in an additional rear-loader vehicle to serve the 2.4 weekly rear-load routes. This will bring the front-line ratio to a percentage closer to 100 percent, ensuring that there is sufficient front-line equipment to serve the commercial routes on a daily basis.



For the commercial automated side-loader routes, a low front-line ratio requires one route to utilize the back-up vehicle as a front-line vehicle for the commercial single-stream recycling collection. Leidos recommends the City consider investing in an additional front-line automated side loader for the commercial side-load recycling program.

Leidos would recommend that the oldest roll-off back up truck, or the one incurring the most repair costs, be sold.

### 3.8 Commercial Rate Benchmarking

The market for a commercial collection operation differs from residential collection, as typically the municipal operation has to compete against private companies in the front-load and roll-off collection operation. Competition with private markets typically requires the commercial operation to operate at a higher level of efficiency, ensuring the City provided service is rate competitive compared to the private collection operations. Leidos has done market research to evaluate if the current rates the City is charging are competitive with the surrounding area.

Table 3-12  
Commercial Rate Benchmarking

City	Santa Fe, NM	Albuquerque, NM	Glendale, AZ	Tucson, AZ	Peoria, AZ	El Paso, TX
4 CY Front-load 2 x weekly	<b>\$186.91</b>	\$254.31	\$91.96	\$ 154.00	\$116.23	\$148.00
40 CY Roll-off 1 pull	<b>\$187.95/ \$236.31</b> <sup>2</sup>	\$1,070.75 <sup>3</sup>	\$175.00	\$ 130.00	\$195.00	\$230.00

1. Per rate ordinance, effective July 1, 2014.

2. For scheduled and call-in service, respectively.

3. Reflects rate for a 30 CY container, and additionally includes disposal costs.

As shown in Table 3-12, the City's current front-load rate is competitive with Albuquerque, NM. The New Mexico rates for front-load service are higher than other benchmarked cities in the Southwest; however, it is important to note that there are multiple costs that effect the front-load rates that can vary significantly in different regions, including disposal costs, route density, larger commercial customer base, exclusive vs. non-exclusive service areas, etc.

Leidos has not provided rear-load rate benchmarking as few cities provide rear-load service. Typically rear-load rates are closely aligned with a city's front-load collection rates.

## 3.9 Initial Key Findings

Leidos has identified the following key findings from reviewing the City's existing program.

- 1. Increase collection efficiency of front-load collection operation.** Leidos recommends the City target 100 to 110 lifts per front-load route, bringing the collection efficiency to be more in-line with industry standard. If the City is able to achieve 100 to 110 front-load lifts per route the City has the opportunity to reduce three to five route days per week, from the current 31 route days. This would allow the City to achieve some savings with regard to capital and operating and maintenance costs. The key issue is whether this improved operational efficiency can be achieved. If so, the elimination of five route days (i.e. one full route, which equates to one less truck to purchase, one driver, and the associated fuel and maintenance costs) would result in an annualized cost savings of approximately \$120,000 per year. It should be noted that if this improved operational efficiency can be used to absorb the additional commercial accounts that are being annexed, this will result in a "cost savings" as the City will realize the additional revenue from serving these customers without needing to add an additional route to serve them.
- 2. Reduce roll-off weekly routes operated.** Based on our time and motion modeling, and operational analysis we believe the City can serve current roll-off customers with two full roll-off routes and a partial roll-off route that would be only needed infrequently (2-3 times per month) if our recommendations in Section 3.4.2 are implemented which include the following:
  - The City should no longer allow customers to use "grandfathered" compactors that require "double-handling" by the route driver.
  - Different user fees should be charged for open top roll-offs versus compactors.
  - The City should work to "levelize" its routes – in coordination with its customers.
- 3. Commercial cardboard recycling collection program has significant opportunity for growth.** Leidos recommends the City reach out to the businesses participating in the cardboard recycling program to better understand why the program is not more fully utilized. As mentioned in Section 3.4.3 we made the following observations:
  - We found a significant amount of cardboard being disposed of via front load refuse collection. There is a significant amount of material that is being landfilled that could be recycled.
  - Once per week cardboard collection is infrequent to get customers to sign up, so increased service needs to be considered (the cost of this expanded cardboard collection service is addressed in Section 3.10.1).
  - The City should incorporate a front load collection truck into the cardboard recycling program. An additional truck will be required, as the program grows, and using a front-load truck to collect cardboard is

standard in the industry. The rear-load truck will still be needed for certain parts of town.

- The City's customer representative that is out promoting this service to businesses needs to provide the ESD Director with a monthly report documenting his activities (new account set-ups, "cold calls" on new businesses, etc.).
4. **The City is operating with a low front-line ratio for some commercial equipment.** Leidos recommends the City consider investing in an additional front-line automated side-loader for the commercial recycling program, and an additional rear-loader vehicle to serve the 2.4 weekly rear-load routes. This will bring the front-line ratio to a percentage closer to 100 percent, ensuring that there is sufficient front-line equipment to serve the commercial routes on a daily basis. Another option would be to transfer some "excess" equipment from the Residential Collection operation if practical. For instance, the Residential Collection has one to two excess rear-loaders that we recommend be sold. If one of them is in good working condition, it could be transferred to the Commercial Collection operation.
  5. **The front-load operation is currently maintaining a high level of back-up equipment.** Leidos recommends the City reduce the front-load back-up fleet by two vehicles. Maintaining three front-load back-up vehicles will allow the City to achieve a 48 percent back-up ratio for front-load vehicles.
  6. **The roll-off operation is currently maintaining a high level of back-up equipment.** Leidos recommends the City reduce its roll-off back-up fleet by one truck, selling either the oldest or the one that has the highest repair and maintenance costs.

## 3.10 Program Alternatives Evaluated

Leidos has provided discussion on the operational requirement and financial implications of the following commercial collection operational changes:

- Expand the commercial cardboard collection operation; and
- Implement a commercial food waste collection operation.

### 3.10.1 Commercial Cardboard Collection

As discussed in Section 3.4.3, the City's current commercial cardboard collection operation is collected once per week. The cardboard collection operation can be increased to operate three days per week, or five days per week and provide cardboard collection to a greater number of customers.

With an increased level of weekly service, the City will incur a greater cost for operating the cardboard collection operation when a second route is added for the 3 days per week and 5 days per week scenarios. As shown in Table 3-13, with the increased capacity to collect cardboard, however, the cost per ton will decrease from approximately \$120 per ton for one collection per week to under \$60 per ton when operating three days a week and five days per week with a second route.

**Table 3-13**  
**Commercial Cardboard Scenarios**

	Collection Operation Frequency		
	1 Day per Week	3 Days per Week	5 Days per Week
	1 Route (A)	2 Routes (B)	2 Routes (C)
Capital <sup>2</sup>	$\$220,000 \div 7$	$\$440,000 \div 7$	$\$440,000 \div 7$
	200 dumpsters x $\$700 \div 10 \text{ yrs}$	$300 \times \$700 \div 10$	$400 \times \$700 \div 10$
	\$31,500	\$63,000	\$63,000
	14,000	21,000	28,000
<b>Capital Subtotal</b>	<b>\$45,500</b>	<b>\$84,000</b>	<b>\$91,000</b>
Maintenance & Fuel			
Maintenance	\$4,600	\$27,600	\$46,000
Fuel	3,200	19,200	32,000
<b>Maintenance &amp; Fuel Subtotal</b>	<b>\$7,800</b>	<b>\$46,800</b>	<b>\$78,000</b>
Personnel			
Supervisor	\$12,000	\$18,000	\$24,000
Drivers	10,000	60,000	100,000
<b>Personnel Subtotal</b>	<b>\$22,000</b>	<b>78,000</b>	<b>\$124,000</b>
<b>Total Cost</b>	<b>\$75,300</b>	<b>\$208,300</b>	<b>\$293,000</b>
<b>Cost Per Ton<sup>1</sup></b>	<b>\$120</b>	<b>\$56</b>	<b>\$47</b>

1. Assumes 12 tons per route date. A conservative assumption. Scenario A 624 tons per year, Scenario B 3,744 tons per year, Scenario C assumes 6,240 tons per year.
2. Assumes seven year life for trucks, 10 year life for dumpsters.

Due to a significant amount fixed operating costs, as the operation serves more customers with the weekly cardboard route, the cost of providing the service to customers decreases and the cost per ton of material collected decreases. If the City is able to serve an increased number of commercial cardboard customers, and collect a healthy volume of material from each customer, the cardboard collection operation has the opportunity to become a more cost effective service by expanding and operating more than one day per week. Leidos recommends the City work to expand the current commercial cardboard operation to three days per week and develop cardboard recycling within the City's commercial customer base.

### 3.10.2 Commercial Food Waste Collection

In December 2013 the City completed a competitive bid process to acquire a service provider, Reunity Resources, to pilot a City food waste collection program. There are three key and complex aspects of a food waste program:

1. Collection;
2. Processing (composting); and
3. End Product Market Development.

Composting is a complicated and intensive operation, in which the City does not currently have the equipment, expertise or experience in the processing or the retail compost markets<sup>6</sup>. Based on the City's current operation, Leidos recommends the City outsource the food waste processing and end product market development to private companies. It is reasonable for the City to consider operating a commercial food waste collection program in the future; however key operational aspects must be considered, such as, but not limited to, the following;

- **Material composition available.** Composting requires a balanced combination of carbon and nitrogen rich materials to produce healthy composting activities. To facilitate a healthy compost processing operation a carbon to nitrogen ratio of 25:1 is typically required. Without the right combination of carbon and nitrogen the compost can fail to break down the material or the material can generate excess heat causing a risk of fire as healthy compost maintains a temperature of approximately 140 degrees. Many large scale operations will utilize a combination of brush scraps with food waste to ensure there is a sufficient carbon to nitrogen ratio. Before beginning a composting collection operation it is imperative to the success of the operation that the City has sufficient carbon rich and nitrogen rich material to create a healthy compost product.
- **Local processing capacity.** The site size of the compost processing location will determine the volume of material the City can accept, and correspondingly the number of customers the City can serve in the food waste collection operation. Material can be at the processing site for several months during the processing operation, including the time required to process the material and the time the material must be stored before being sold on the retail market. The City can be constrained by the amount of material the processing facility can accommodate on a regular basis.
- **Local market demand for compost material.** There must be an end market to sell the end compost product. It is imperative to the health of the compost operation that there is a consistent demand for the end compost product from the food waste collection operation. If the operation is unable to identify end users for the product, the processing facility will be overwhelmed with finished compost material to store, and will not have the capacity to accept food waste and process new material.
- **Customer interest in food waste collection.** Commercial customers must be interested and willing to participate in the food waste collection operation. The collection of food waste requires more customer involvement than traditional refuse and single-stream recycling collection. The customers involved in the food waste collection program will need to be educated on what materials are accepted (i.e. meat, dairy, paper products, etc.) and play a role in actively monitoring the on-site sorting of food waste material from the traditional waste stream.

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<sup>6</sup> With the exception of the composting facility currently operated by the City's water and wastewater utility.

If the City does implement a commercial food waste collection operation, Leidos recommends the City outsource the processing and marketing of the compost end-product. Leidos has provided a high-level cost estimate for a food waste collection operation based on the following program assumptions.

**Table 3-14**  
**Food Waste Collection Assumptions**

Vehicle Used	Rear-Load Vehicle
Average Containers per Customer	3 96-gallon containers
Number of Personnel per Route	2 FTE
Average number of Tips per Route	2.5 tips
Tons per Tip	8.13 tons

Based on the collection configuration outlined in Table 3-14, Leidos forecasts that the City will be able to provide food waste collection to 65 commercial customers, via 96-gallon rolling containers with five days per week collection. Leidos has assumed each customer will require five day per week collection as food waste must be collected on a frequent basis to mitigate vectors. The modeled food waste collection operation can collect 195 containers of food waste per day with a total of 20 tons of food waste per day using two FTE and a rear-load vehicle. Leidos has provided a projected range of operational costs of the food waste collection operation in Table 3-15.

**Table 3-15**  
**Forecasted Food Waste Collection and Processing Costs**

Cost of Operation	Low	High
<i>Equipment</i>		
Capital Costs	\$21,071	\$21,071
Maintenance	23,000	34,500
Fuel	16,000	24,000
Container Costs	985	1,200
<i>Total Equipment Cost</i>	\$61,056	\$80,771
<i>Personnel Costs</i>	\$100,000	\$116,000
<i>Public Education and Outreach</i>	5,000	5,000
<i>Processing Costs</i>	105,639	264,098
<i>Revenue from Sale of End Product</i>	-	(110,921)
<b>Total Operational Cost</b>	<b>\$271,695</b>	<b>\$354,948</b>
<b>Monthly Cost per Customer<sup>1</sup></b>	<b>\$348</b>	<b>\$455</b>
<b>Cost per CY<sup>2</sup></b>	<b>\$10.71</b>	<b>\$14.00</b>

1. Assumes 65 commercial establishments picked up, 5 days per week.

2. Assumes 195 gallon containers collected 5 days per week (195 x .5CY x 5 days x 52 weeks = 25,350 CYs per year).

As shown in Table 3-15, collecting food waste separately from refuse is only financially viable if the City is able to negotiate a reasonable processing cost, sale price for the end-product, and have a sufficient number of customers to operate the collection operation cost effectively. Table 3-16 provides a cost comparison between the food waste collection operation costs and the current front-load commercial collection and disposal costs.

Table 3-16  
Commercial Collection

	Current Commercial Operation <sup>1</sup>	Food Waste	
		Low	High
Assumed Disposal/ Processing Cost (ton)	(\$40.00)	(\$20.00)	(\$50.00)
Assumed Sale Price of Compost (ton)	N/A	\$-	\$30.00
Volume of Compost Sold Annually	N/A	70%	70%
Net Disposal Cost per Ton	(\$40.00)	(\$20.00)	(\$29.00)
<i>Collection &amp; Disposal Cost</i>			
Annual Cost	\$3,131,131	\$271,695	\$354,948
Annual CY Collected	870,740	25,350	25,350
Cost per CY	<b>\$3.60</b>	<b>\$10.71</b>	<b>\$14.00</b>

1. Commercial Operation cost and cubic yards reflect the City's current front-load and rear-load refuse operation.

The food waste collection operation is significantly more expensive than the standard commercial refuse collection operation, as the commercial refuse collection operation has a greater economy of scale. Collection of food waste is more labor intensive, achieves a lower compaction ratio and requires more frequent collections.

Although it is challenging to quantify at this stage, there are some benefits that exist from implementing a food waste collection operation, such as:

- **Processing cost.** The processing costs associated with the food waste can result in savings, compared to the current \$40.00 disposal cost of commercial waste at the Caja Del Rio Landfill.
- **Decrease in refuse collection requirement.** The collection of food waste will allow some commercial customers to decrease their refuse collection schedule, as their refuse waste stream will no longer contain organic waste; however, it is difficult to forecast the overall reduction in refuse collection costs that will result from the introduction of a food waste collection.
- **Increased City diversion rate.** A commercial food waste program will improve the City's diversion and contribute to an increased recycling rate; however, unless it is operated on a large scale, the food waste collection operation is forecasted to be more costly than the current commercial refuse operation.

### 3.11 Recommendations <sup>7</sup>

1. **Increase collection efficiency of front-load collection operation.** Leidos recommends the City target 100 to 110 lifts per front-load route, bringing the collection efficiency to be more in-line with industry standard. If the City is able to achieve 100 to 110 front-load lifts per route the City has the opportunity to reduce three to five route days per week, from the current 31 route days. This would allow the City to achieve some savings with regard to capital and operating and maintenance costs. The key issue is whether this improved operational efficiency can be achieved. If so, the elimination of five route days (i.e. one full route, which equates to one less truck to purchase, one driver, and the associated fuel and maintenance costs) would result in an annualized cost savings of approximately \$120,000 per year. It should be noted that if this improved operational efficiency can be used to absorb the additional commercial accounts that are being annexed, this will result in a “cost savings” as the City will realize the additional revenue from serving these customers without needing to add an additional route to serve them.
2. **Reduce roll-off weekly routes operated.** Based on our time and motion modeling, and operational analysis we believe the City can serve current roll-off customers with two full roll-off routes and a partial roll-off route that would be only needed infrequently (2-3 times per month) if our recommendations in Section 3.4.2 are implemented which include the following:
  - The City should no longer allow customers to use “grandfathered” compactors that require “double-handling” by the route driver.
  - Different user fees should be charged for open top roll-offs versus compactors.
  - The City should work to “levelize” its routes – in coordination with its customers.
3. **Evaluate the current commercial customer collection schedules and container sizing based on container capacity utilized.** Based on Leidos’ analysis of the commercial container capacity utilized, the City can potentially transfer a number of customers to a smaller container or lower collection frequency. If the City does transition customers from their current service levels to an alternative container or collection frequency it is important for the City to monitor the commercial revenue, as the rate structure for these customers varies based on the container size and collection frequency.
4. **Begin tracking vehicle maintenance cost by vehicle.** Leidos recommends the City begin to track vehicle maintenance data on a vehicle specific basis. This will enable the City to track vehicle maintenance trends and make informed decisions on when to retire vehicles and pro-actively schedule routine maintenance.

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<sup>7</sup> Read in conjunction with the Section 3.9, Initial Key Findings.



- 5. Commercial cardboard recycling collection program has significant opportunity for growth.** Leidos recommends the City reach out to the businesses participating in the cardboard recycling program to better understand why the program is not more fully utilized. As mentioned in Section 3.4.3 we made the following observations:
- We found a significant amount of cardboard being disposed of via front load refuse collection. There is a significant amount of material that is being landfilled that could be recycled.
  - Once per week cardboard collection is too infrequent to get customers to sign up, so increased service needs to be considered (the cost of this expanded cardboard collection service is addressed in Section 3.10.1.
  - The City should incorporate a front load collection truck into the cardboard recycling program. An additional truck will be required, as the program grows, and using a front-load truck to collect cardboard is standard in the industry. The rear-load truck will still be needed for certain parts of town.
  - The City's customer representative that is out promoting this service to businesses needs to provide the ESD Director with a monthly report documenting his activities (new account set-ups, "cold calls" on new businesses, etc.).
- 6. Eliminate excess front-load back-up vehicles.** Leidos recommends the City eliminate two front-load back-up vehicles to bring the back-up ratio to be more in-line with the industry standard of a 20 to 30 percent back-up ratio. Maintaining three front-load back-up vehicles will allow for a 48 percent back-up ratio that can help support the front-load operations with a low front-line vehicle ratio.
- 7. The roll-off operation is currently maintaining a high level of back-up equipment.** Leidos recommends the City reduce its roll-off back-up fleet by one truck, selling either the oldest, or the one that has the highest repair and maintenance costs.
- 8. Purchase an automated side-loader and rear-load vehicle to ensure sufficient front-load and back-up equipment to maintain consistent daily operations.** These equipment purchases will bring the front-line ratio to a percentage closer to 100 percent for all commercial collection operations, ensuring that there is sufficient front-line equipment to serve the commercial routes on a daily basis.
- 9. If the City decides to collect and divert commercial food waste, Leidos recommends the City develop a commercial food waste collection operation and outsource the food waste processing and end product market development to a private company(s).** Composting is a complicated and intensive operation, in which the City does not currently have the equipment, expertise or experience in the processing or selling with regard to the retail compost market. The analysis provided in Section 3.10.2 illustrates that the viability of the food waste collection operation is highly dependent on negotiating a competitive processing contract, developing a healthy end-market

market for the compost product generated and achieving a substantial customer base among commercial customers for the food waste collection operation to source food waste material.

## Section 4

# REVIEW OF FLEET MAINTENANCE OPERATIONS

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### 4.1 Introduction/Overview

The City's Environmental Services Division (ESD) includes a fleet maintenance operations (fleet maintenance) that is organized and operated as a distinctly separate operation from the City's other fleet maintenance activities. The fleet maintenance is conducted out of a one-bay facility in proximity to the City's general fleet maintenance shop and the collection vehicle parking lot. Table 4-1 shows the count of principal rolling stock maintained by fleet maintenance. Sections 2 and 3 of this report present additional information concerning the solid waste division's vehicles and maintenance costs.

**Table 4-1**  
**Principal Rolling Stock**

Operation	Front-Line Vehicles <sup>1</sup>	Back-Up Vehicles <sup>1</sup>
Administration	5	0
Fleet Maintenance	6	0
Residential Refuse Collection	13	7
Commercial Front-Load	8	6
Commercial Rear-Load	2	1
Commercial Roll-Off	3	3
Recycling	8	2
Total	45	19

1. Includes all assigned units including heavy trucks, pick-up trucks, and other vehicles.

### 4.2 Fleet Staffing

Four staff are assigned to fleet maintenance, one fleet maintenance supervisor and three mechanics. Staff work Monday through Friday, eight hours per day. Staff begin work on a staggered schedule starting at 6:00 am, 7:00 am, and 8:00 am. Each of the mechanics is nominally assigned to one of the collection operations (i.e., recycling, commercial, or residential). This nominal assignment is intended to assure vehicle maintenance issues are effectively communicated between the operations supervisors and the mechanics.

The current fleet maintenance staff have a range of backgrounds and training. Staff report that opportunities for continuing education and training on new equipment is limited because all of staff's time is committed to working on equipment so that it can stay in service to meet operational demands. Because of limited training opportunities for training, staff does not have proper training or certifications to work on compressed

natural gas (CNG) vehicles, and CNG engines. This is an important consideration in light of the City's acquisition of new CNG vehicles.

Fleet maintenance is not supported by dedicated clerical staff, parts staff, or helpers. All parts are ordered through the City's main fleet services operation, or by direct purchase orders (PO) through the City's procurement system to vendors.

### 4.3 Facilities and Equipment

Fleet maintenance operates out of a 4,100 square foot, one-bay facility. The shop was not originally designed for vehicle maintenance and is not outfitted with typical vehicle maintenance parts storage or truck lifts expected in such a facility. The work bay is not equipped to vent vehicle exhausts out of the facility. The equipment service areas do not have adequate safety protection required for work to be performed on CNG vehicles. Generally, facilities servicing CNG vehicles are required to have methane gas detection systems (with emergency backup in case of power loss), specific air handling system to deal with methane, electrical and heating upgrades to address methane safety concerns, and shop safety plans and procedures to address methane safety. Assessment for safety issues related to CNG safety should be addressed by a professional with competency in this field. Local fire and safety regulations should also be consulted. While the section of the building used for fleet maintenance has two roll up doors on the side and one in the front, because of equipment storage, truck access is only through the one front door.



Figure 4-1. One Bay Fleet Maintenance Shop Exterior



Figure 4-2. Equipment Maintenance Facility Interior

## 4.4 Work Processes

### 4.4.1 Routine Maintenance

Drivers are required to complete pre- and post-trip inspections every day on their vehicles. Any problems with the equipment should be noted on the inspection form. The inspection forms are turned in by the driver to their operations supervisor on a daily basis. The operations supervisor is responsible for relaying any problems noted on the drivers' inspection form to the designated mechanic or fleet maintenance supervisor to schedule a repair. Employees report that some repairs are not addressed in a timely manner because of supervisors or operators desire not to take trucks out of service for repair, but rather to keep the “best” trucks on the routes.

Staff reports that all of the CNG vehicles are newer and any repairs to them have so far been completed under warranty. Because the maintenance mechanics and shop are not certified for CNG work, certain work on the CNG vehicles needs to be contracted out.

### 4.4.2 Preventive Maintenance

Preventive maintenance (PM) is scheduled every six months for most equipment. A schedule of PMs is maintained on a white board posted in the fleet maintenance supervisor's office. Maintenance employees report that PMs are scheduled when there are no other repairs scheduled. There are no written procedures for PMs, and maintenance employees report that they “know” what needs to be done with each PM. The PMs conducted each cycle are always the same, there is no differentiation (e.g., A, B, or C) where more or less service is provided with a PM. Fleet maintenance does not analyze oil samples for wear metals.

TRUCK	DATE	MILES	DUE	MAINTENANCE	UNIT	PM DATE	MILES	DUE	MAINT
541	July 13		JAN 14						
548	JUN 13		DAC 12						
547	NOV 13		MAY 14						
546	JAN 12		MAR 13						
563	MAY 13	PM	NOV 13						
561	JUN 13		DEC 13						
549	APR 13	PM	DEC 13						
547	NOV 13	PM	MAY 14						
543	CNG								
542	CNG								
540	JULY 13		DEC 13						
539	APR 12	PM	DEC 13						
535	APR 13	PM	Oct 13						
534	10-9-13		Sept 13	Robert's TA					
528	FEB 12		MAY 12						
526	APR 12		Oct 12						
524	FEB 12		AUG 12						
500	JUNE 13		DEC 13	SPAL And. Vd					
532	APR 13	PM	Oct 13						
536	APR 13	PM	Oct 13						
531	FEB 13	PM	AUG 13						
541	MAY 13	PM	DEC 13						
OUT OF SERVICE									
TRUCK IN SERVICE									
PM & SAFETY									

Figure 4-3. PM Scheduling Whiteboard

### 4.4.3 Non-Routine Maintenance

An important role performed by fleet maintenance is responding to equipment failures or accidents, repairing equipment quickly, and returning it to service as soon as possible. Non-routine repairs can be completed in the field in the case of a breakdown, or in the shop if a vehicle can be returned to the facility to affect the repair. In responding to breakdowns, fleet maintenance frequently sends two people into the field to conduct repairs. The reason for sending two people is reported as wanting to assure worker safety while in the field, although in most cases of a breakdown, the truck driver will be in the field with the disabled vehicle.

### 4.4.4 Work Assignments and Record Keeping

The fleet maintenance supervisor assigns work to the mechanics daily in response to breakdowns needing repair, PMs needing to be scheduled, reported deficiencies, etc. Work is apparently scheduled based on the understanding of the fleet maintenance supervisor, operations supervisors, and mechanics. Mechanics are provided their assignments through written work orders and a second white board with daily assignments. Of course, scheduled work can be displaced by the need to respond to an immediately needed repair.



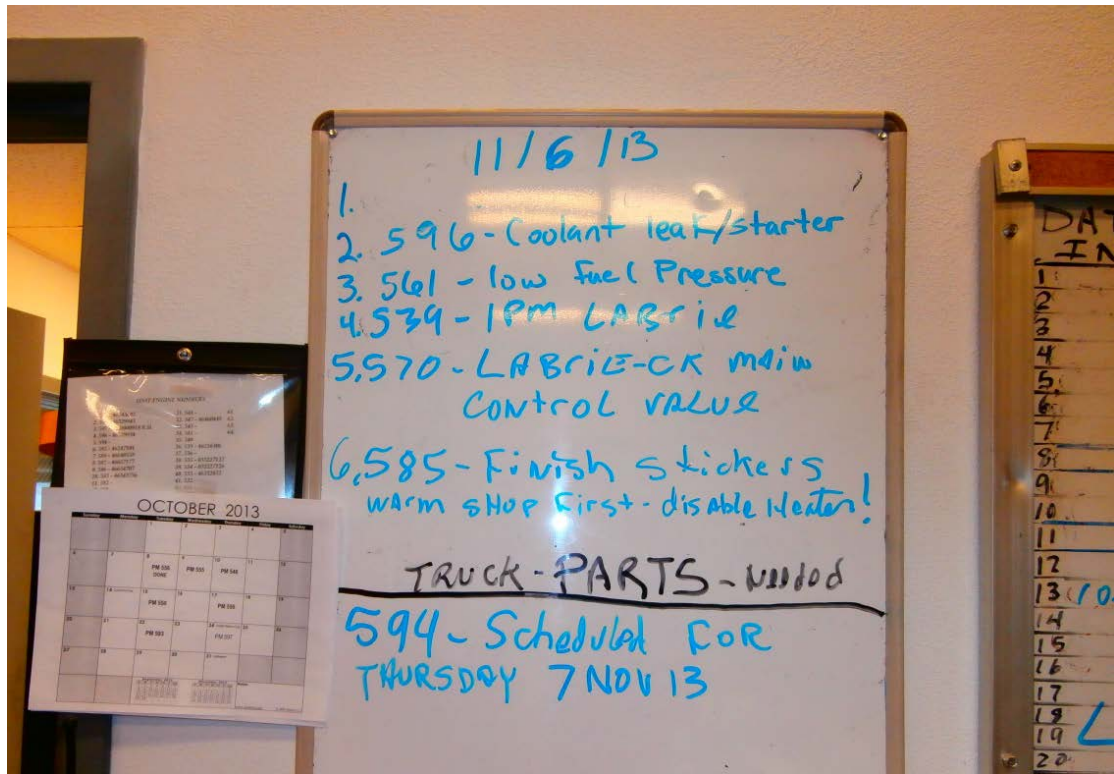


Figure 4-4. Daily Work Assignments Whiteboard

Mechanics record work completed by manually writing up completed work orders. The fleet maintenance manager enters the work completed into an Excel spreadsheet, maintained by equipment unit number, by date. The spreadsheet allows the fleet maintenance supervisor to review the repair history of a piece of equipment, but the spreadsheet does not allow cumulative work history and costs to be reviewed. The fleet maintenance system does not track repair costs (parts or labor) by unit number, so there is no way to assess the performance of individual trucks or mechanics. The City did not provide Leidos records of repair turn-around time, downtime, or warranty work on a per vehicle basis, or employee effort on repairs.

The City uses a fuel management system that requires the use of a key to access the fuel pump. Because drivers are not diligent about using each vehicle's dedicated key or entering correct mileage, the fuel system cannot be used to gather data on truck mileage or mile per gallon performance.

## 4.5 Comparison with Other Fleet Maintenance Operations

To provide the City with some comparative fleet operations data, Leidos surveyed other fleet maintenance operations to gather general information about their operations. The intent of this survey was to offer a snap shot of how other organizations organize and track their fleet maintenance operations. Because of differences in the way operations organize and track their fleet maintenance operations, an "apples-to-apples" comparison is not possible, rather general trends should be noted. The results of the survey are provided in Appendix B.

General observation considering the responses received to the survey are:

- The City operates the only fleet maintenance operation that is separate from the general government fleet maintenance, with the exception of Little Rock. All of the other agencies surveyed indicate their fleet services are integrated with other fleet operations.
- The City is the only operation that does not use a computerized fleet management system.
- The ratio of trucks per mechanic is the highest of operations surveyed – 21.3 vehicles per mechanic. A typical ratio is 10 to 12 trucks per mechanic.
- The City is the only operation without access to truck lifts. Not having lifts available severely limits the effectiveness of a fleet maintenance operation.
- The City is the only operation surveyed operating out of a one-bay shop. Operating with three mechanics in a one-bay facility does not lead to efficient operations.
- The City fleet has one spare truck for each 1.81 frontline truck operated. This is a very large number of backup trucks relative to frontline trucks in the fleet. Typical fleets maintain a ratio of one back up for each three to five front-line vehicles.
- The size of the City's shop is larger than two of the agencies surveyed, but because it was not initially developed as a vehicle maintenance facility, much of the City's shop is dedicated to equipment storage and support areas.

## 4.6 Recommendations

1. **Upgrade the fleet management facility to match the work effort and equipment being operated.** The current maintenance facility is undersized and inadequately equipped to support the solid waste fleet. At a minimum, the fleet operations should be provided three maintenance bays with associated support facilities for tires, parts, washing, and staff facilities. For any new facility, the City must assure that applicable health and safety standards applicable to working with CNG vehicles are met. To develop the plans for a new equipment maintenance facility, the City should work with an experienced architect who is familiar with local codes and conditions to lay-out a new facility.
2. **Provide training to staff to work on equipment, particularly CNG vehicles.** Fleet maintenance staff report that they have limited or no opportunities for continuing training. As the City transitions to more CNG vehicles, it is imperative that maintenance staff be trained to work on this type of equipment. Solid waste division management staff report that it generally crafts its equipment bid specs to include provisions for employee training on new equipment. This provision is helpful, but the technical demands for effective vehicle maintenance exceed the limited training that a vendor is willing to include in its bid price. In addition, certain trucks are acquired by "piggy-backing" from procurement systems other than the City's, and training is not



included in such purchases. If the City continues to operate fleet maintenance, it must assure that personnel are adequately trained on new vehicle technologies.

3. **Implement use of data tracking systems to monitor and manage performance of the fleet.** Currently, fleet maintenance activities are coordinated through manual systems (e.g., tracking PMs on a white board) or in response to breakdowns or driver reports. Fleet maintenance costs for repairs, maintenance, and fuel are not tracked by the Environmental Services Division. Use of computerized fleet maintenance systems is considered standard industry practice, and as mentioned in Section 4.5 all of the fleet maintenance operations surveyed use some form of fleet management software. Solid waste staff report that a fleet maintenance module is available from the City's accounting software, but such a system has not been put into practice by fleet maintenance. Use of such a system would allow tracking of use and costs on a per vehicle basis, and will provide valuable information concerning proactive maintenance and vehicle replacement decisions.
4. **Enforce use of fuel key system to assure mileage and miles per gallon can be tracked.** The solid waste division is not able to effectively monitor fuel usage on a per unit basis because truck drivers are not diligent in using each vehicle's assigned fuel key. By requiring drivers to use the appropriate fuel key, reliable information concerning miles per gallon, and fuel cost per unit could easily be obtained through the fuel management system. Such information can inform fleet maintenance personnel on potentially faulty equipment and can provide information to management concerning improper vehicle operation or misuse.
5. **Develop written operating procedures including written PM practices in accordance with manufacturers' specifications.** Fleet maintenance has limited written procedures, and mechanics report that they do not use written check-sheets or instructions when performing PMs. The solid waste division should consult available truck information and develop written PM procedures in accordance with each manufactures' requirements. Any work performed should be documented and maintained to support warranty claims.
6. **Investigate reducing back-up equipment.** As described in Section 4.5, the solid waste division maintains a ratio of back-up trucks to front-line trucks that is much higher than the industry average. While this high level of back-up trucks assures that operations can be conducted when a break-down occurs, the high number of back-up vehicles means that mechanics must commit the effort to maintain older, less reliable equipment which distracts them from performing preventative maintenance on front-line equipment and drives up the cost of overall vehicle maintenance.
7. **Review staffing levels to assure they are commensurate with work levels.** As described in Section 4.5, solid waste fleet maintenance has a high ratio of trucks to mechanics. This staffing ratio is likely caused by the high number of back-up vehicles maintained in the fleet. After the City reviews its need for backup equipment (and implements other recommendations provided herein), it

should review its mechanic staffing level to determine if the appropriate ratio of mechanics to trucks can be maintained or if additional staff is needed.

8. **Review the practice of mobilizing two mechanics to field repairs.** For safety and operations support reasons, fleet maintenance often sends two mechanics to respond to repair calls. In most cases, a truck driver will be in the field with a disabled vehicle. The driver should be able to provide assistance and safety backup as the mechanic effects repairs. Having the driver support the field mechanic will allow the second mechanic to continue to perform work in the shop or respond to additional repair calls.
9. **Investigate increased integration of solid waste fleet maintenance operations with the City's other fleet maintenance activities.** The City of Santa Fe is relatively unique in having a fleet maintenance operation that is separate from the general city fleet maintenance operations. Supervisors, drivers, and mechanics report that the reason that solid waste has a separate fleet maintenance operation is because City fleet maintenance would avoid working on collection vehicles because they often had accumulations of garbage or leachate making working on them unpleasant to mechanics. Solid waste fleet maintenance currently depends on the City's fleet maintenance operations to support certain activities like the procurement of filters, parts, etc. It could improve overall efficiency if solid waste fleet maintenance staff was able to coordinate with City fleet maintenance operations to provide additional support services including tracking of expenditures and providing relief mechanic support. Of course, any such coordination would need to overcome employees opposition to change and the "yuck factor" of working on garbage collection trucks.

## Appendix B

# FLEET MAINTENANCE OPERATIONS BENCHMARKING

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This Appendix includes supplemental information regarding Section 4 of this report.

**Table B-1**  
**Fleet Maintenance Operations Benchmarking**

	Santa Fe, NM	Seminole County, FL	New Braunfels, TX	Norman, OK	Olathe, KS	Little Rock, AR	Oklahoma City, OK
<b>Total Pieces of Equipment Reported As Maintained By Agency Fleet Maintenance<sup>1</sup></b>							
Total Number of Vehicles Reported <sup>1</sup>	64	20	40	41	375	64	120
<b>Key Solid Waste Vehicles – Heavy Trucks Only<sup>2</sup></b>							
Front Load Collection (frontline/backup)	7/6	N/A <sup>4</sup>	6/1	7/2	No Info <sup>5</sup>	16/12	0
Rear Load Collection (frontline/backup) <sup>2</sup>	3/4	N/A <sup>4</sup>	6/2	6/3	No Info <sup>5</sup>	17/12	6/4 (4 CNG)
ASL (frontline/backup) <sup>2</sup>	10/2	N/A <sup>4</sup>	10/2	9/4	No Info <sup>5</sup>	N/A <sup>4</sup>	31/7 (13 CNG)
Roll-off (frontline/backup)	3/3	N/A <sup>4</sup>	2	N/A <sup>4</sup>	No Info <sup>5</sup>	N/A <sup>4</sup>	N/A <sup>4</sup>
Recycling Collection (frontline/backup)	6/3	N/A <sup>4</sup>	N/A <sup>4</sup>	N/A <sup>4</sup>	No Info <sup>5</sup>	N/A <sup>4</sup>	N/A <sup>4</sup>
Road Tractors (frontline/backup)	N/A <sup>4</sup>	18/2	N/A <sup>4</sup>	5/1	No Info <sup>5</sup>	N/A <sup>4</sup>	N/A <sup>4</sup>
Trailers	N/A <sup>4</sup>	36	N/A <sup>4</sup>	6	No Info <sup>5</sup>	N/A <sup>4</sup>	N/A <sup>4</sup>
Total "Frontline" Trucks <sup>3</sup>	29	18	24	27	No Info <sup>5</sup>	33	37
Total "Backup" Trucks <sup>3</sup>	18	2	5	10	No Info <sup>5</sup>	24	11
Number of Frontline Truck per Backup <sup>3</sup>	1.61	9	4.8	2.7	No Info <sup>5</sup>	1.38	3.36
Count of Other Equipment	17	0	11	4	No Info <sup>5</sup>	7	72

	Santa Fe, NM	Seminole County, FL	New Braunfels, TX	Norman, OK	Olathe, KS	Little Rock, AR	Oklahoma City, OK
Description of Other Equipment	5 Admin 6 Maintenance 6 Other (pickups, large item, container delivery)	Transfer station heavy equipment also maintained by mechanics	Grapple trucks Container delivery Shop truck Pickups	No Info <sup>5</sup>	No Info <sup>5</sup>	Landfill equipment also maintained by mechanics	33 Light Trucks 33 Other Vehicles 6 Brush/Dump
Notes:			4 of ASLs are Hydraulic hybrids	Peterbuilt/ Mack	Fire,PU,SW,Util, Parks/Rec/PW	Mechanics also work on landfill equipment	Transitioning to principally CNG fleet
<b>Equipment Maintenance</b>							
Contract or Self?	City	Contract – Serco	City	City	City	City	Contract – First Vehicle Services
Part of Public Works or stand-alone?	Stand alone	Contractor, for all county operations including public works, fire, etc.	All of fleet operations are combined under solid waste	All of fleet operations are combined	All of fleet operations are combined	Stand alone	Combined with Utilities Department
<b>Staffing</b>							
Total number of maintenance employees	4	Have "main shop" support	7	14	23	12	15
Number of mechanics	3	4 at TS 2 at LF	5	4	16	9	10
Number of support staff	1	No Info <sup>5</sup>	2	4	5	3	5
Hours mechanics work (describe if multiple shifts)	6:00 to 2:30 7:00 to 3:30 8:00 to 4:30	6:30 to 3:00, 12:00 8:30	8:00 to 5:00 one mechanic on call	7:00 to 3:30 8:30 to 5:00	2 shifts, 8 hours each	No Info <sup>5</sup>	5:00 to 1:30 2:00 to 10:30

	Santa Fe, NM	Seminole County, FL	New Braunfels, TX	Norman, OK	Olathe, KS	Little Rock, AR	Oklahoma City, OK
Total Number of Vehicles <sup>1</sup> per Mechanic	21.3	5.0 (also maintain transfer station equipment)	8.0	10.3	N/A <sup>4</sup>	7.1 (also maintain landfill equipment)	12.0
Facilities							
Size of shop (square feet - estimate)	4,100	3,000	2,992	18,000	22,000	+/- 10,000	9,776
Number of bays	1	2	2	17	25	8	5
Type and number of lifts	None	Portable lifts at Landfill shop, none at TS	1x 2 post, 1x 4 post	5 all types	4 above ground, 12 roll-around heavy lifts	1	4 post mobile lifts
Computerized fleet maintenance tracking used?, name.	None	Faster	Manager Plus Pro	Faster Asset Works	E-1	Faster	M5
Describe computerized system (good, OK, bad)	N/A <sup>4</sup>	No Info <sup>5</sup>	Good	OK	Good	OK	OK
What kind of work (or % of work) do you send off site for repairs	Warranty work, work beyond general repairs	Anything beyond PM and general repairs	10 to 13%, warranty, ASL arms, etc.	20%, hydraulic cylinders, upholstery, collision repair, radiator repair.	No Info <sup>4</sup>	25%	3.5% - Accident damage, alignments, computer programming, transmission overhaul, glass replacement, towing for fuel support or vehicles becoming stuck in mud.

1. "Total Number of Trucks" includes all trucks reported as maintained by the shop, and may include public works, fire, parks, etc. in addition to solid waste.
2. Vehicles (Heavy Vehicles) reconcile to Table 4.1, but vehicle types (i.e., Rear Load) are shared by residential refuse and commercial refuse.
3. Solid waste operations vehicles only, includes collection and transport vehicles only, does not include pickup trucks or support vehicles.
4. N/A means "Not Applicable".
5. No Info means no information was provided by survey respondent.

## Section 5

# REVIEW OF NON-COLLECTION ACTIVITIES

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This section of the report addresses a number of non-collection activities, which the City has requested be reviewed during the course of this study. In addition, these are items that Leidos has addressed for other clients in the past and therefore brings institutional knowledge with regard to what are considered “best practices” concerning these activities.

### 5.1 Container Maintenance

Proper maintenance of containers<sup>1</sup> (commercial front load dumpsters, rear load dumpsters); roll-offs (open top and compactors); and carts (residential and commercial garbage carts – 96 gallon and 64 gallon) is critical to maintaining containers so their useful life is fully maximized. Front load dumpsters can cost \$600 and up and therefore are an expensive city asset that must be properly maintained. To put it in perspective, the City has approximately 1,350 front load dumpsters and 200 rear load dumpsters located throughout the City. At a cost of \$600 per dumpster, that is approximately \$930,000 in dumpsters. The City has over 28,000 residential and commercial carts located throughout the City, at an average cost of \$55 per cart, which represents an investment of over \$1.5 million.

**All containers should have a bar code.** The City maintains an inventory of excess containers that are available for new customers or to replace old containers that either need to be repaired or have completed their useful life. All containers should be bar coded and tracked so the City knows where each container is located in the City (and linked to what account), as well as the size of the container and when it was purchased, and put into service. Depending on the type of customer that is using the container, containers can last 5 to 20 years. For instance, restaurants are oftentimes some of the “toughest” customers and create the most “wear and tear” on containers due to the large amounts of food waste that is wet and heavy. In fact, it is not uncommon for cities to have at least one or two containers damaged by fire on an annual basis because smoldering materials are placed in these containers, which later fully ignite.

**Drivers must report damaged containers.** It is critical that drivers be the “eyes and ears” for the City when they are out on a daily basis picking up containers and emptying them. They need to report containers that have damaged lids, bottoms that are starting to come loose from the sides as well as dumpsters that need to be repainted. The containers’ appearance reflects upon the City. Customers are much more willing to pay their monthly solid waste user fees when they see their containers lids are on tight, the containers are painted, have fresh stickers and make their property look more attractive.

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<sup>1</sup> The term container and dumpster are oftentimes used interchangeably to describe the large 3 to 8 cubic yard containers that are used by commercial businesses, restaurants and apartment complexes to collect their putrescible waste or recyclable cardboard and office paper within the City of Santa Fe. In this specific section of the report we will use the term container.

Leidos has seen where private haulers has used issues like container maintenance to push for privatization of commercial collection services.

**All containers should be reviewed on a periodic basis.** All containers should be reviewed on a scheduled basis (typically 2-3 year basis). Containers should be examined to see if containers need to be brought in for repairs, painting, and/or fresh decals. The driver should not be the only “line of defense”. Review by commercial supervisors is mandatory. If a trend is found where a driver is not reporting containers that need maintenance, that driver needs to be told that is part of his job. It should be part of his performance appraisal.

**Typical container maintenance shop layout.** Figure 5-1 shows what a typical container maintenance shop looks like and how the containers “flow” through the shop. When the new fleet maintenance facility is built, it should include sufficient room for a maintenance shop laid out similar to this figure.

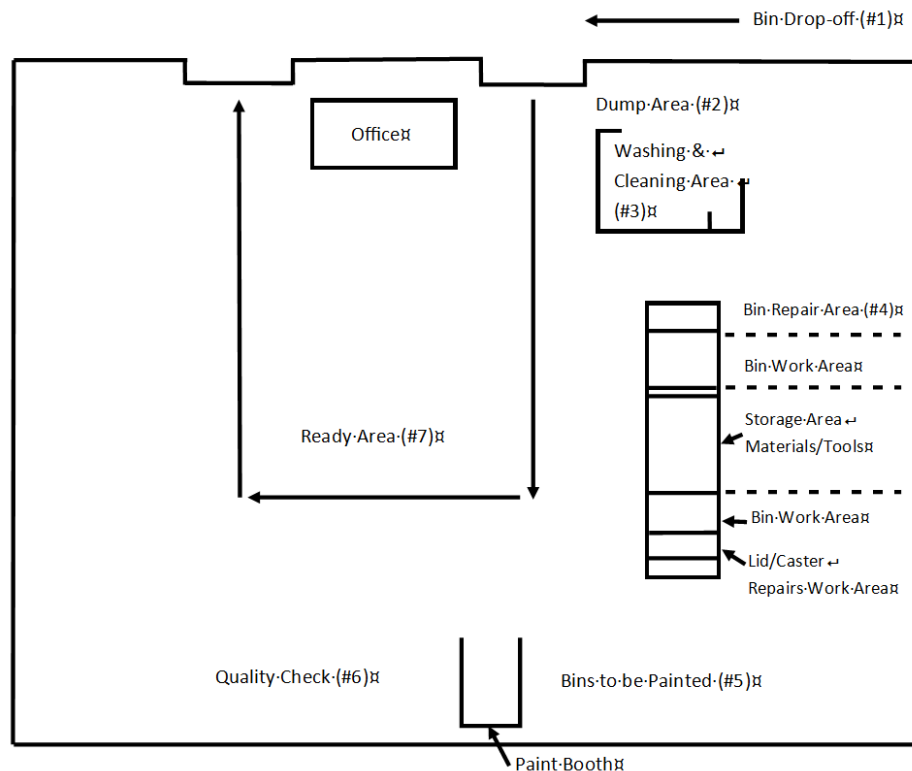


Figure 5-1. Typical Container Maintenance Shop Layout

**Track when containers are brought in for repair.** The fleet maintenance supervisor, or the appropriate manager, needs to be receiving a monthly report that lists the number of containers repaired, repainted, etc. This report should record when the container was brought in and when it was finished. It is critical that container maintenance activities are monitored. To assist in tracking this information, a “container maintenance request form” such as the one shown in Figure 5-2 should be utilized by the City of Santa Fe.<sup>2</sup>

<sup>2</sup> This form is one used by a large city in Texas to manage their containers.



**Cart maintenance is equally important.** While this section has focused on containers, it is important that the City is equally diligent in maintaining the carts that are located throughout the City. The same “best practices” with regard to maintaining the City’s containers should be used for maintaining the City’s carts.

<b>STANDARD OPERATING PROCEDURES</b>  <b>Administration/Customer Service</b>  <b>Container Maintenance Requests</b>	<b>DOCUMENT NO.</b>														
	<b>EFFECTIVE DATE:</b>														
	<b>REVISION DATE:</b>														
	<b>REVISION NO.</b>														
	<b>APPROVAL:</b> <b>Prepared by:</b>														
<b>1.0 PURPOSE</b> The objective of these procedures is to standardize procedures in the delivery and maintenance of containers.															
<b>2.0 REVISION HISTORY</b> <table border="1"> <thead> <tr> <th>Revision Date</th> <th>Revision No.</th> <th>Changes:</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>Initial development</td> </tr> <tr> <td></td> <td></td> <td>Additions</td> </tr> <tr> <td></td> <td></td> <td>Revisions</td> </tr> </tbody> </table>				Revision Date	Revision No.	Changes:			Initial development			Additions			Revisions
Revision Date	Revision No.	Changes:													
		Initial development													
		Additions													
		Revisions													
<b>3.0 PERSONS AFFECTED</b> Senior Office Assistant Communications Dispatcher Office Manager Division Supervisor General Service Worker															
<b>4.0 DEFINITIONS</b> Summarizes the definitions associated with this document.															
<b>5.0 RESPONSIBILITIES</b> Summarizes the roles and responsibilities of all individuals involved with this document.															
<b>6.0 PROCEDURES</b> <ul style="list-style-type: none"> <li>• A telephone call or e-mail is received from residential or commercial customers to request container maintenance (i.e., lid, wheel, damaged), stolen container or new service.</li> <li>• 311 Call taker generates a work order providing all pertinent information (address, name of person requesting service, name of account holder and telephone number, route and date information, specify type of service required).</li> <li>• Work order is automatically assigns to Container Division – repairs and deliveries processed within 10 business days.</li> <li>• Office Staff monitors open work orders, pending and follows up with Container Division.</li> </ul>															

Figure 5-2. Sample Container Maintenance Operating Procedure

## 5.2 Review of Solid Waste Administrative Function

The administrative function within the Environmental Services Division is established in a format which is typical for most cities. There were no significant findings of issues that need to be addressed, or processes changed other than the following:

- Leidos would recommend that the residential and commercial operations share vehicles and personnel where practical. We found there is some resistance to sharing of personnel and equipment (which is not atypical within the industry), but is still one that should be addressed.
- Leidos would recommend the City evaluate the various operating and financial reports generated for the various supervisors. We believe the City could develop three to five key daily, weekly and monthly reports that would allow the supervisors and managers to focus on some of the key metrics that will ensure their utility is operating as efficiently as possible, some of these include:
  1. Number of customers by route, time to complete route (daily);
  2. Tonnage by route (daily);
  3. Overtime (weekly);
  4. Vehicles at fleet maintenance (weekly – listing when it was taken in, for what, expected due date back, a “tickler” report that is generated when the due date is not met); and
  5. Vehicle repair and fuel costs (by truck), (weekly, monthly, and annually).

## 5.3 Review of City Ordinance

In reviewing the City’s Solid Waste Ordinance (Ordinance No. 2012-24) we found it to be current and up to date with regard to the rates in place for the City’s multitude of solid waste refuse and recycling services offered to its residential and commercial customers. It is our understanding that the City is going to, or has implemented an ordinance mandating the use of crushed glass in paving projects within the City limits. We would strongly encourage that recommendation be implemented. We would also recommend that if the “equal space” amendment (ensuring equal space is provided for refuse and recycling containers, dumpsters, etc.) has not been incorporated into the City’s land use/permitting code for new construction projects, that it be implemented as soon as practical, so that recycling services are encouraged at both the residential and commercial level.

## 5.4 Audit solid waste accounts (containers and carts billed versus the number “collected”)

Leidos has oftentimes found during its operational reviews and cost of service studies for solid waste utilities that there are carts and dumpsters in the field being collected by the operator but the account is not being billed. This happens when a citizen or business call in for delivery of a cart and the operations “side of the house” delivers the cart or

dumpster, but the new customer or additional cart/dumpster information is not relayed to the billing department.<sup>3</sup> In reviewing the operational data by route versus the customer count being billed we believe there may be an opportunity for the City to discover some accounts that are not currently being billed for service, or at least not being billed for all services being provided (i.e. more frequent dumpster collection than is being paid for). However, due to some of the inconsistencies with regard to the detailed listings of commercial and residential accounts, by route it is difficult to quantify this dollar amount. The only way to confirm this amount is to do a sample audit of some of the residential and commercial routes to confirm the number of containers in the field, and their frequency of pick-up, versus what is shown in the billing system. This is a laborious effort, but one that is critical to making sure that all customers are being billed for services received. We would estimate that this under-recovery may, at a minimum, be anywhere from \$50,000 to \$150,000 per year.

## 5.5 Additional Materials for Recycling

There has been discussion about expanding the City's recycling program to include additional materials such as cereal boxes, plastics #3-7, and other such materials. Leidos agrees that expansion of the program to accept these materials will help to increase the City's recycling rate, however, at present BuRRT is not capable of taking these additional materials without adversely impacting its current operations and/or adversely affecting the price it gets for its baled commodities. Leidos will be providing a series of recommendations in the SFSWM Agency section of the report with regard to recommended "next steps" concerning BuRRT, specifically the material recovery facility component. Based on the final recommendations and the desires of the SFSWMA Joint Powers Board, changes could be made that would allow the acceptance of additional materials.

## 5.6 Diversion Benchmarks

At present the City is recycling approximately 8.5 to 9.0 percent of its materials (see Table 2-6). If the City were to implement an automated residential recycling program it is not unusual to see a 20-40 percent increase in the volume of material recycled. Based on our commercial cardboard recycling analysis (see Table 3-13) it is quite conceivable that the City could conservatively see an increase in their commercial cardboard recycling by three to five times the current volumes. These two changes would allow the City to see an increase in their overall recycling rate to anywhere between a 16-20 percent recycling rate, or higher. The City should strive to reach 20 percent in the next two years and then 25-30 percent three years later.

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<sup>3</sup> We had one large city in the Southwestern United States approximately 10 years ago that we identified this issue for and they were able to identify over \$2 million per year in unbilled accounts that they began collecting revenue for, thereby postponing a significant rate increase.

## 5.7 “Zero waste” Defined

There has been a great deal of discussion within the solid waste industry concerning the term “zero waste” and what does it mean? Does it mean having no waste going to a landfill? Does it define a 70-80 percent recycling rate as “zero waste”?

To have an effective recycling program that maximizes its recycling rate, it is critical that automated recycling for residential customers be provided, and it is essential that commercial businesses are involved in the diversion process due to the amount of waste generated by businesses, as a direct result of their operations. The next component is to oftentimes focus on food waste for commercial businesses.

It has been shown that as a community’s recycling rate increases, the “next increase in the recycling rate” becomes “incrementally more expensive”. Due to Santa Fe’s limited access to markets (with Albuquerque being the closest end market), we would focus on implementing our recommendations concerning automated residential recycling and expanding the commercial cardboard collection program and then see where the City’s recycling rate is and where the City wants to go from there.

## 5.8 Pay-As-You-Throw Pricing

As mentioned in Section 1 Cost of Service and Funding Options, we would recommend that the City begin preparing to implement a pay-as-you-throw rate structure for 64 and 96 gallons. A rate structure that charges \$3 to \$8 more for a 96 gallon cart versus a 64 gallon cart, coupled with an automated residential recycling program will assist in changing customer behavior and increasing the City’s recycling rate. However, with all the current recommendations that were made in Section 2 Review of Residential Collection Operations, we would recommend the City wait 12 to 18 months before implementing a PAYT pricing strategy (or implement it concurrently with an automated recycling program).

## 5.9 Education/Outreach Programs

The City currently provides outreach with regard to recycling and/or solid waste services through three different entities within the City: Keep Santa Fe Beautiful, Sustainable Santa Fe, and the ESD. This is in addition to information disseminated by the County and the SFSWM Agency. This oftentimes results in different messages being distributed to folks within the City and County that has resulted in unclear messaging. We will discuss in more detail in Section 5 of the report, Systemwide Issues, the need for a universal source for the messaging with regard to proper disposal and recycling methods.

## Section 6

# SUMMARY OF KEY RECOMMENDATIONS

Listed below is a summary of our key recommendations, summarized by section. Where applicable, we have provided a conservative estimate of the potential “Annual Cost Savings” and/or “One Time Cost Savings”. For more information on a particular recommendation, refer back to the appropriate section.

Section 1: Cost of Service and Funding Options	
Recommendation	Benefit/Purpose
<p>Increase residential user fees for FY 2015 – FY 2018 per Table 1-18 in the Cost of Service and Funding Options section.</p> <p>Increase commercial rates for FY 2015 – FY 2016 per the Ordinance; remain unchanged for FY 2017 – FY 2018.</p>	These proposed rate changes for the residential and commercial customers will ensure the financial integrity of the utility.
Audit the Commercial Recycling Service.	This will allow the City to verify the accuracy of the accounts being collected, by the type of container, in addition to accurately forecasting the growth of the program for future years.
Implement operational recommendations (see Section 4) related to the roll-off program and impose a \$25 - \$35 surcharge for compactor vs. open-top roll-off pulls.	Compactor roll-offs require more time to service than an open-top; this additional time should be reflected in an increased rate for compactors.
Increase the fee residential customers pay for an additional cart, to \$8 per month for a 64-gallon cart, and \$10 for a 96-gallon cart.	It is common industry practice to charge for a second cart, which will generate additional revenue for the City.
Revisit Pay-As-You-Throw rates in 12 to 18 months.	Given the number of changes that are being advocated, Leidos would recommend the City consider the topic of variable rates at a later date, or when automated recycling is implemented.

Section 2: Review of Residential Collection Operations			
Recommendation	Benefit	Priority Level	Implementation Time Frame
Evaluate distribution of drivers and workers.	Increases overall efficiency of the ESD.	High	Now–1 year
Eliminate 1-2 redundant rear-loader back-up vehicles.	<p>Annual Cost Savings: \$4,150 - \$8,300</p> <p>One Time Cost Savings: \$25,000 - \$75,000 <sup>1</sup></p>	High	Now–1 year

<sup>1</sup> One time sale of back-up rear-loaders.

Section 2: Review of Residential Collection Operations			
Recommendation	Benefit	Priority Level	Implementation Time Frame
Monitor annual maintenance cost and fuel usage of vehicles over their useful life.	Allows the City to determine when it is cost effective to transition vehicles from front-line to back-up.	High	Now-1 year
Increase the recycling setout rate from 56% to 70% - 80%.	Increases participation and setout rate for the City's recycling program.	Medium	In next 12 months
Transition to automated recycling collection operation.	Annual Cost Savings: \$510,000 - \$660,000 <sup>2</sup>	High	In next 2 years
Remove glass from collection operation and transition to glass drop-off program.	The recycling collection operation would be less challenging to collect, and a drop-off program would still allow residents the opportunity to recycle glass.	High	In conjunction with the movement to automated recycling.
Evaluate residential and commercial customer interest in glass subscription program.	Provides glass recycling collection for residents and businesses interested in paying for this service.	Medium	In next 2 years
Invest in industry software and data management: -Customer billing software -GPS units and vehicle tracking software -Tonnage and trip tracking software -Route optimization software	Improves ESD's operational data.	High	Now-1 year
<b>Potential Cost Savings:</b> <b>One Time:       \$25,000 to \$75,000</b> <b>Annual:         \$514,150 to \$668,300</b>			

Section 3: Review of Commercial Collection Operations			
Recommendation	Benefit	Priority Level	Implementation Time Frame
Expand current commercial cardboard operation to 3 days per week.	Increases the City's recycling rate.	High	In next 2 years
Increase front-load commercial lifts to 100-110 per route.	Minimizes weekly routing by 3 to 5 routes per week. Annual Cost Savings: \$20,000 to \$120,000	High	In next 12 months

<sup>2</sup> Please note that this takes into consideration the annual cost savings after the cost of operating the glass drop-off sites. There would be an initial capital outlay of \$2.3 to \$2.5 million for new trucks and carts, less revenues received from the sale of the City's current recycling trucks.

Section 3: Review of Commercial Collection Operations			
Recommendation	Benefit	Priority Level	Implementation Time Frame
Reduce roll-off weekly routes from 3 to 2, per recommendations.	Annual Cost Savings: \$30,000 to \$40,000 One Time Cost Savings: \$25,000	High	In next 12 months
Evaluate commercial customer container sizing versus the container capacity utilized.	Decreases the amount of “air” the ESD is currently picking up. Operational efficiencies to be gained may have some “adverse” revenue impact.	Medium	In next 12 months
Monitor annual maintenance cost and fuel usage of vehicles over their useful life.	Allows the City to determine when it is cost effective to transition vehicles from front-line to back-up.	High	Now–1 year
Purchase an automated side-loader and rear-load vehicle.	Ensures sufficient front-load and back-up equipment to maintain consistent daily operations. <sup>3</sup>	High	Now–1 year
Eliminate excess front-load back-up vehicles.	Annual Cost Savings: \$10,000 to \$20,000 One Cost Time Savings: \$35,000 to \$70,000	Medium	In next 12 months
If the City decides to collect and divert commercial food waste, Leidos would recommend the City develop the collection program and outsource the processing & end product market development.	Allows City to engage in a food waste collection program without expending the resources required to process and/or sell food waste.	Low	TBD
Invest in industry software and data management: -Customer billing software -GPS units and vehicle tracking software -Tonnage and trip tracking software -Route optimization software	Improves ESD's operational data.	High	Now–1 year
<b>Potential Cost Savings:</b> <b>One Time: \$60,000 to \$95,000</b> <b>Annual: \$60,000 to \$180,000</b>			

<sup>3</sup> May be able to transfer an “excess” rear-loader from the residential collection operation.

Section 4: Operational Assessment of Fleet Maintenance			
Recommendation	Benefit	Priority Level	Implementation Time Frame
Upgrade fleet management facility to match the work effort and equipment being operated.	Improves safety and provides proper support for vehicle maintenance.	High	Now–1 year
Provide training to staff to work on equipment, particularly CNG vehicles.	Allows personnel to be adequately educated on new vehicle technologies.	Medium	In next 18 months
Invest in data tracking systems to monitor and manage the performance of fleet.	Allows tracking of use and costs on a per vehicle basis, which is needed to make proactive maintenance and vehicle replacement decisions.	High	Now–1 year
Enforce use of fuel key system.	Assures mileage and miles per gallon are effectively tracked.	High	Now–1 year
Develop written operating procedures.	Creates accountability and ensures that maintenance is performed in accordance with each manufacturers' requirements.	Low	In next 18–24 months
Reduce back-up equipment. (Addressed in Section 2 & 3)	Realize cost savings.	High	In next 12 months
Review staffing levels	Ensures appropriate staffing and back-up are commensurate with work levels.	High	Now–1 year
Review practice of mobilizing two mechanics to field repairs.	Allows a second mechanic to continue working in the shop and/or respond to additional repair calls.	High	Immediately
Increase integration of fleet maintenance operations with City's other fleet maintenance activities, if possible.	Improves efficiency.	Medium	In next 12 months
<b>Potential Cost Savings:</b> <b>One Time:        Undetermined</b> <b>Annual:         Undetermined</b>			



Section 5: Review of Non-Collection Activities			
Recommendation	Benefit	Priority Level	Implementation Time Frame
<b>Container Maintenance (i-v)</b>			
i. Utilize bar codes for all containers.	Enables container tracking.	Medium	In next 18 months
ii. Report damaged containers.	Maintains attractive appearance of the City.	Medium	In next 18 months
iii. Periodically review containers.	Ensures that containers are maximized for their entire useful life.	Medium	In next 18 months
iv. Container maintenance shop layout should reflect Figure 5-1 in Section 5.	Creates an efficient use of space that allows containers to flow through shop.	Medium	In next 24 months
v. Track when containers are brought in for repair.	Improves ESD's operational data.	Medium	In next 18 months
Share vehicles & personnel where practical among residential & commercial operations.	Increases efficiency.	Medium	In next 12 months
Develop 3-5 key daily, weekly, and monthly reports: -Number of customers by route -Tonnage by route -Overtime -Vehicle repair, fuel costs, etc.	Ensures that the utility is operating as efficiently as possible.	High	Now-1 year
Review City Ordinance and implement the following recommendations: -Mandate the use of crushed glass in paving projects -Implement "equal space" amendment	Encourages recycling services at both residential and commercial level.	High	Now-1 year
Audit solid waste accounts	Ensures that the City is capturing all accounts in their billing system.  Annual Cost Savings: \$50,000 to \$150,000	High	Now-1 year
Expand City's recycling program to include additional materials (i.e., cereal boxes, plastics #3-7, etc.)	Increases City recycling rate.	Low	In next 12-18 months

Section 5: Review of Non-Collection Activities			
Recommendation	Benefit	Priority Level	Implementation Time Frame
Revisit Pay-As-You-Throw rates in 12 to 18 months.	Given the number of changes that are being advocated, Leidos would recommend the City consider the topic of variable rates at a later date, or when automated recycling is implemented.	Low	In 18 months, or when automated recycling is implemented.
Consolidate Education/Outreach programs.	Increases awareness without inundating targeted audience.	Medium	In next 6–12 months
<b>Potential Cost Savings:</b> <b>One Time:</b> N/A <b>Annual:</b> \$50,000 to \$150,000			

Overall Potential Cost Savings	
<b>One Time:</b>	\$85,000 to \$170,000
<b>Annual:</b>	\$624,150 to \$998,300