CITY OF COLUMBIA, MISSOURI

SOLID WASTE COST OF SERVICE AND RATE RECOMMENDATION
FY15 Update

FINAL REPORT

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Errata: The final report was originally submitted on March 26, 2015. This update clarifies several items in Section 3.2.3 regarding the recommended rate increases for commercial collection.

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1 INTRODUCTION

1.1 INTRODUCTION

The City of Columbia provides a vertically integrated solid waste management system. The Solid Waste Utility is managed under the City's Public Works Department, and collectively serves approximately 33,400 single family households, 10,700 multi-family dwelling units and almost 2,000 businesses, as well as the University of Missouri under a multi-year contract. Pursuant to City ordinance, the City is responsible for the provision of solid waste service to all residential customers, and to commercial and institutional customers that generate food wastes of any type. The City also competes with private hauling companies to provide bulk container collection from commercial businesses and institutions that do not generate food wastes.

The Solid Waste Utility operates as an enterprise fund. Accordingly, the residential and commercial users of the system are charged appropriate user fees for the collection, recycling, composting and disposal services they receive. These user fees are required to fund the full cost of the solid waste system, including system management and administrative costs, capital improvements and ongoing operating costs.

The City's last formal evaluation of the cost-of-service and rate structure for its solid waste system was performed in 2007. Since that time, the City has adopted a number of new technologies and adapted to other dynamics affecting its collection and disposal system. Since 2007, the City has developed a bio-reactor landfill and, consequently, eliminated separate yard waste collection for residents; begun converting its solid waste vehicle fleet from diesel to compressed natural gas (CNG) fuel; and expanded recycling collection services provided to businesses, the University of Missouri-Columbia (University), and neighboring areas of the City. On a broader scale, the City's recycling program must contend with market fluctuations in the value for recovered recyclables, the relatively small scale of its recyclables processing facility, and the significant distance from Columbia to markets for recyclable materials.

The results of the study presented herein are a financial plan and rate structure, which were designed to provide revenues sufficient to fund the ongoing operating and capital costs necessary to operate the City's solid waste utility, while meeting the financial requirements and goals set forth by the City for the solid waste enterprise fund. This report seeks specifically to meet the following objectives:

- Review the City's current rates and related financial management policies of the solid waste system;
- Compare the City's solid waste system and rates with other cities that serve roughly the same population to gain insight on best practices that may be applicable in Columbia;
- Determine revenue requirements, including sufficient cash reserves and appropriate rates of return, for a test year and for a 10-year planning horizon for the solid waste utility;
- Identify the full cost of services provided by the City and compare full-cost rates to current rates;
- Recommend a three to five year rate path;
- Provide an analysis of the cost of residential roll-cart collection for refuse compared to the current bag-based refuse collection service;
- Provide guidance on volume-based pricing, also called Pay-As-You-Throw (PAYT), to give residents a financial incentive to increase their use of the recycling collection service and reduce the amount of wastes they generate.

This report has been prepared by MSW Consultants and the detailed cost and rate modeling was supported by Willdan Financial Services (Project Team).

1.2 ORGANIZATION OF THE REPORT

This study is primarily focused on presenting an overview of the rate-making concepts employed in the development of the analysis contained herein, followed by a discussion of the data, assumptions and results associated with each component of the analysis. This report compliments a spreadsheet-based cost and rate model which has been delivered separately for use by the City. The report is organized as follows:

- This section, **Section 1,** contains an introduction to the project, an overview of solid waste services provided by the City, and notable insights from benchmarking research with other jurisdictions with similar sized customer bases.
- **Section 2** summarizes the rate-making principles, financial analysis, and results of the cost and rate study. This section addresses conceptual volume-based, or Pay-As-You-Throw (PAYT) rates, and also includes an ad hoc analysis of the likely operating and cost impacts of converting from the current manual residential waste collection system to an automated system using rollcarts.
- **Section 3** contains a concise list of conclusions and recommendations for consideration by the City.

There are also a series of Appendices that provide a range of supplementary data, including benchmarking matrices and a series of detailed financial schedules from the rate study model. The final spreadsheet-based financial model will be delivered to the City in addition to this report.

1.3 SOLID WASTE SYSTEM OVERVIEW

The City provides a comprehensive set of collection services, and also owns and operates a landfill, compost facility, and a material recovery facility (MRF). It was beyond the scope of this study to perform any detailed evaluations of the City's facility operations. However, in order to understand the many collection services provided by the City, the Project Team spent four person-days observing collection practices and set-out characteristics for residential, commercial, and downtown Community Improvement District (CID) customers, as well as for the University of Missouri.

Specific services are briefly summarized below:

1.3.1 RESIDENTIAL CURBSIDE COLLECTION

The City of Columbia provides weekly collection of refuse and recyclables to its residential households, who pay $15.42 per month. As part of this fee, the City administers a voucher system that provides an unlimited number of blue recycling bags to residents.[1] The blue recycling bags are to be used for bottles and cans made of steel, aluminum, glass and #1-#7 plastic, while paper and cardboard are to be placed on the curb in cardboard boxes or Kraft paper bags.

Yard waste is collected along with the trash and is delivered directly to the City's bioreactor landfill; no separate curbside yard waste collection is required. Residents may also schedule collection of oversized items for no charge, or major appliances (white goods) for a fee of $18.93.

Most residential customers are charged a monthly fee of $15.42, although multi-family customers pay a slightly lower fee if they do not receive bags or if their landlord is responsible for paying collection fees through a centralized utility account. This flat fee is charged regardless of the overall quantity of wastes set out for collection, and regardless of the extent of recycling that takes place at each household.

Figure 1-1 contains several photographs of the residential curbside collection system. Photograph (a) shows a standard set-out of refuse (black bag), recyclable containers (blue bag) and recyclable fiber (Kraft paper bag). Photograph (b) is an example of a larger than usual set-out of wastes in both bags and a

[1] The City historically provided vouchers for free black refuse bags; during this study, the City opted to limit the number of trash bag vouchers provided on an annual basis.

cardboard box. The City uses split packer (photograph c) for dual stream recycling collection and a conventional rearload packer truck (photograph d) to collect wastes.

Figure 1-1 Residential Curbside Collection Photographs

a) Standard Set-out with Refuse and Recyclables

b) Larger-Volume Set-out of Wastes

c) Split Packer for Dual Collection of Container and Fiber Recyclables

d) Conventional Rearloader for Waste

1.3.2 REARLOAD BULK CONTAINER COLLECTION

Multi-family apartments with more than four units are required by ordinance to have a bulk container for waste disposal, and many multi-family apartments with fewer than four units also have bulk containers. Further, many commercial establishments and service locations on the University campus also use rearload bulk containers for disposal of wastes and/or cardboard and other recycling.

Rearload bulk container collection can be characterized as a premium service for multi-family and commercial waste generators. This is because of the time it takes to provide bulk container service via rearload collection vehicle. Such service requires either a single operator, or more commonly two operators, to exit the vehicle cab, position the bulk container behind the truck, attach a hoist or other mechanized means to tip the container into the truck, detach the mechanical tipping apparatus, and replace the container in its proper location.

Figure 1-2 shows two examples of rearload bulk container collection. Photograph (a) shows a single equipment operator tipping an 8-yard dumpster containing corrugated cardboard. Photograph (b) shows two operators positioning a wheeled 2-yard container for tipping wastes.

Figure 1-2 Rearload Bulk Container Collection

a) Cardboard Recycling Dumpster

b) 2-Yard Container for University Recycling

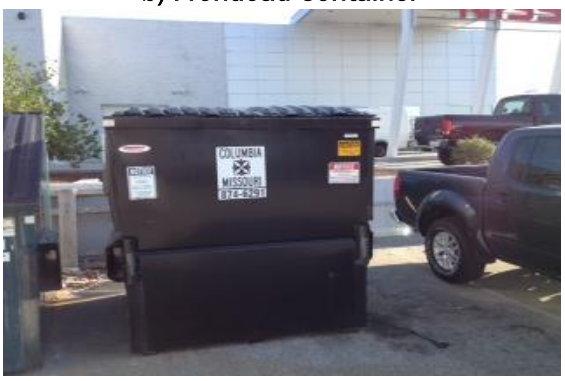
1.3.3 FRONTLOAD BULK CONTAINER COLLECTION

The City also provides bulk container collection using frontload collection vehicles. Frontload vehicles require only a single operator, who stays predominantly inside the cab at all times. As its name implies, the frontloader uses its front forks to pick up a bulk container, lift the container over the cab to empty materials, and replace the container. Frontload collection of bulk containers is significantly more efficient than rearload collection of bulk containers. A City frontload collection vehicle and frontload container is shown in Figure 1-3.

Figure 1-3 Frontload Bulk Container Collection

a) Frontload Collection Truck

b) Frontload Container



1.3.4 BULK CONTAINER RATES

In Columbia, bulk container pricing differs for residential customers and commercial customers. Multi-family residential customers receive bulk container service, but are charged based on the number of dwelling units in the building. Multi-family households are charged the same amount as single family households if they get bags. This is because the City also offers recycling to multi-family apartments in addition to the bulk refuse collection. Discounts apply for multi-family dwelling units that do not get vouchers for bags (the rate drops to $14.67 per month) and for multi-family dwelling units that do not get vouchers for bags and also have their bill paid by a landlord ($14.42 per month).

The pricing for commercial generators that receive bulk container service depends on the material being collected, the size of the bulk container, and the weekly collection frequency. The FY15 rate structure for refuse collected in bulk containers is shown in Table 1-1. Although not shown, recyclables are priced via a similar matrix showing recyclable material type, container size and collection frequency.

Table 1-1 FY15 Commercial Bulk Container Pricing for Refuse ($/Month)

Container Size Cubic Yards	Number of Collections Per Week					
	1	2	3	4	5	6
1	$64.24	$74.59	$84.93	$95.28	$105.62	$115.97
2	$72.39	$93.08	$113.77	$134.46	$155.16	$175.85
3	$80.53	$111.57	$142.60	$173.65	$204.68	$235.72
4	$87.58	$128.96	$170.35	$211.73	$253.11	$294.48
6	$106.07	$168.15	$230.22	$292.28	$354.35	$416.43
8	$123.46	$206.23	$288.98	$371.75	$454.51	$537.27

It is important to note that the rates above are currently applied by the City for both rearload and frontload bulk container service. Operationally, the rearload container service is more costly to provide than the frontload container service.

1.3.5 ROLL-OFF COLLECTION

The City also provides roll-off collection of bulk containers over eight cubic yards. Roll-off trucks require only a single operator.

Unlike frontload and rearload trucks, which collect from dozens or hundreds of customers each day, a roll-off truck must make a round trip to tip after collecting each container, and consequently can typically collect about eight stops per 8-hour work day. Roll-off containers may contain wastes or recyclables, and may be compacting or non-compacting. Table 1-2 summarizes the City's FY15 roll-off rates. As shown, pull charges are fixed for refuse and variable for recyclables, dependent on the material and container yardage. Refuse roll-offs are charged a tip fee for disposal at the landfill, while recycling roll-offs tip for free at the MRF. Although not shown, the City will entertain rebates for large-quantity generators of clean cardboard and possibly for other segregated recyclables. Rebates on recycling roll-off are not consistently applied, as they depend somewhat on the timing of when these accounts were started and the City's then-current rebate policy. No attempt was made during this study to inventory the range of services and fees currently being provided to commercial customers for recycling services.

Table 1-2 FY15 Roll-off Container Pricing

Roll-off Type	Material	Minimum Monthly Charge	Pull Charge	Disposal Charge ($/ton)
Mini (14 CY)	Refuse	$60.90	$60.90	$41.00
20 to 40 CY	Refuse	$85.66	$85.66	$41.00
20 to 40 CY	Cardboard; Office Paper; Aluminum	$85.66	$0.00	$0.00
20 to 40 CY	Mixed Fiber; Bottles & Cans Excl. Glass	$85.66	$4.00/CY	$0.00
20 to 40 CY	Bottles & Cans Incl. Glass	$85.66	$8.00/CY	$0.00

It should also be noted that the City offers to spot 4, 6 or 8 yard containers for residential clean-outs and/or remodel projects. Although these bulk containers are serviced by a frontload truck, this service

functions somewhat comparably to a roll-off service insofar as the bulk container must be spotted for a short duration job and removed when the job is complete. Table 1-3 shows the FY15 rates for temporary frontload service. Note that the service charge is the same for all three container sizes, even though larger container presumably will hold more waste and cost more to dispose at the landfill.

Table 1-3 FY15 Temporary Frontload Construction Can Pricing

Container Size Cubic Yards	Container Spotting Fee	Service Charge (per Service)
4 CY	$87.12	$56.16
6 CY	$87.12	$56.16
8 CY	$87.12	$56.16

1.3.6 BIOREACTOR LANDFILL AND ANCILLARY FACILITIES

Beginning in 2009, disposal cells developed at the City landfill have been designed to function as bio-reactors, with bio-reactor Cell 5 currently in operation. The bioreactor cell involves adding liquids to the disposed wastes, which accelerates decomposition, waste stabilization and gas production. Methane gas generated from the landfill is being converted to electricity at the on-site bioenergy facility. The landfill processed roughly 164,000 tons (~600 tons per day) in FY2014; 56 percent of these wastes were delivered by City collection vehicles, and the remaining 44 percent by third party haulers. The current tip fee at the landfill is $41.00 per ton.

The landfill is home to a compost facility which processes yard wastes collected from one of two drop-off locations, third party deliveries, small amounts of food waste, and some gypsum drywall. Although not located at the landfill site, the City also operates a Household Hazardous Waste (HHW) facility where residents can take their hazardous household products for proper disposal. These products are not supposed to be placed in the curbside refuse set outs.

1.3.7 MATERIAL RECOVERY FACILITY

The City's MRF processes dual stream recyclables from the residential blue bag routes and public drop-offs, as well as cardboard, mixed fiber and containers collected from commercial generators, the University, and the City's downtown Community Improvement District (CID). The MRF processed over 10,600 tons of materials in 2014. Roughly 45 percent of this material is from the residential blue bag program; 27 percent from the drop-off recycling program; 19 percent from City-provided commercial recycling; and the remainder from the University. Negligible amounts are delivered by third parties.

1.3.8 OTHER SERVICES AND FUNCTIONS

In addition to the primary collection services and facilities described in the above sections, the City also provides various other management, administrative, and peripheral services. These include solid waste division administration and management, support of the Mid-Missouri Solid Waste Management District (MMSWMD), drop-off recycling, and container maintenance. Further, the City provides collection to two special customer classes: the downtown Community Improvement District in the City center, and under contract to the University.

1.4 OVERVIEW OF FINANCIAL MANAGEMENT

The City of Columbia has developed its financial accounts to closely track the costs of providing service. Specifically, the City allocates its operating expenses into 17 accounts spanning management and administration, the various collection services provided, and facility operations. Table 1-4 summarizes the financial accounts into which operating resources are budgeted and managed.

Table 1-4 Solid Waste Financial Accounts and Services Offered

Account	Description	Services Provided					
		Mgmt & Admin	Facility Operation	Residential Curbside	Rearload Container	Frontload Container	Roll-off
6510	Administrative	✓					
6511	MMSWMD	✓					
6520	Commercial				✓	✓	
6521	Container Maintenance				✓	✓	✓
6522	Community Improvement District				✓	✓	✓
6523	Roll-Off						✓
6530	Residential			✓	✓	✓	✓
6540	Landfill		✓				
6541	Composting		✓				
6560	University				✓	✓	✓
6570	Recycling			✓	✓		
6571	Recycling Drop-Off		✓		✓	✓	✓
6573	White Goods			✓			
6574	Household Hazardous Waste		✓				
6576	Commercial Recycling				✓	✓	✓
6577	Material Recovery Facility		✓				

Table 1-4 also shows which accounts include more than one type of collection service. This distinction is made because solid waste collection rate setting is usually based on the specific type of collection service. In the case of Residential, CID, University, Recycling Drop-off, and Commercial Recycling, the cost of multiple collection services are intermingled within an individual account. The result is that it is not possible to easily isolate the costs, billing determinants, and operating parameters associated with the individual collection services provided by the City.

1.5 BENCHMARKING COMPARISON WITH OTHER CITIES

1.5.1 INTRODUCTION

Benchmarking has been defined as the process of searching for best practices, innovative ideas, and effective procedures/policies, and adapting these practices and ideas for the benefit of the organization.

Combined with performance measurement, benchmarking enables the City of Columbia to see how its solid waste collection system measures up to other municipalities with comparable customer bases and service levels.

It should be noted that while benchmarking is conceptually simple, in the realm of solid waste management there are myriad system characteristics that are likely to vary among different local governments. For example, even if the customer base of two municipalities is the same, differences in underlying system characteristics may diminish the comparability of the two systems. It is therefore important to keep in mind that, although the results of this research effort can inform about opportunities that may exist for improving Columbia's solid waste management system, exact comparisons are not possible. In other words, benchmarking has its limits.

1.5.2 BENCHMARKING CITIES

The City of Columbia identified 10 cities with roughly comparable populations and at least some similarities between solid waste management systems. These are shown in Table 1-5.

Table 1-5 Benchmark Cities

City	2012 Population	Housing Units (2010)
Lexington-Fayette County, KY	305,489	134,977
Peoria, AZ	159,789	63,343
Savannah, GA	142,022	62,289
McAllen, TX	134,719	47,784
Cedar Rapids, IA	128,119	57,316
Springfield, IL	117,126	55,822
Norman, OK	115,562	49,137
Murfreesboro, TN	114,038	44,779
Columbia, MO	*113,225*	*47,069*
Davenport, IA	101,363	44,394
Lee's Summit, MO	92,468	35,360

The Project Team compiled numerous details about how solid waste management is provided in these 10 communities, as well as selected collection and disposal rate data, for comparison with Columbia. These data are included in a series of exhibits in Appendix A to this report and are not repeated here. However, the following observations can be made about the benchmarking exercise.

1.5.3 RESIDENTIAL COLLECTION BENCHMARKING OBSERVATIONS

- **Municipal Involvement in Residential Collection**: With two exceptions, every city provides public collection of residential wastes and recyclables. Lee's Summit (MO) and Springfield (IL) require residential households to subscribe for collection with a private hauler.
- **Standardized Rollcarts Are Most Common**: Columbia is the only municipality to rely on manual collection of residential wastes and recyclables in bags. Every other benchmark city provides waste collection via standardized roll carts and some form of automated or semi-automated collection. Recycling collection is predominantly provided via bins or carts.

- **Limiting Refuse Set-outs**: Columbia is the only city to allow unlimited set-out of residential refuse. Every other city charges additional fees for additional carts and/or stickers for bagged wastes that are out of cart.
- **Single Stream Recycling**: Columbia and Davenport (IA) are the only two municipalities that offer dual stream recycling collection, with fibers collected separately from containers. This is influenced by the geographic location of these communities relative to larger metropolitan areas. Single stream recycling plants require a large volume of material to be economically feasible. Neither Columbia nor Davenport generate enough recyclables to justify the development of a single stream MRF for their internally generated volume of recyclables, nor is there a local merchant MRF capable of taking single stream material in these communities. All of the other municipalities provide single stream collection of fiber and containers together in the same truck compartment, and have access to a recycling plant capable of processing the single stream material.
- **Yard Waste**: Columbia's bioreactor landfill has successfully eliminated the need for separate yard waste collection, while many of the benchmark municipalities still provide this service on a regular basis.
- **Bulky Waste Limits**: Most of the benchmark communities provide some form of bulky waste collection in addition to their weekly rollcart service. However, every benchmark community either limits the number of bulky items to be collected over a single year; or charges a fee for bulky items; or collects bulky items only on an infrequent basis. Columbia is unique in collecting bulky items on an unlimited basis.
- **PAYT and Other Recycling Incentives**: Davenport (IA) was the only municipality among the benchmarked cities to offer PAYT with three sizes of cart for refuse collection. Interestingly, while most carts in use in benchmark cities are 65 or 95 gallon as the standard capacity, Cedar Rapids (IA) only offers a 35 gallon refuse cart in an effort to discourage disposal and encourage recycling. Residents in Cedar Rapids pay for stickers that can be used for bagged set-outs that cannot fit in their carts.
- **Multi-family Collection**: Most of the benchmarked cities also provide refuse and recycling collection to multi-family apartments. However, Cedar Rapids (IA) and Murfreesboro (TN) leave multi-family collection to the private sector.
- **Deposit Policies**: While other cities require residential customers to place a deposit as a condition of opening a utility account, Columbia is unique in requiring such a deposit for solid waste service explicitly. McAllen (TX), Norman (OK) and Peoria (AZ) require deposits on their residential water or sewer utility customers.

1.5.4 COMMERCIAL COLLECTION BENCHMARKING OBSERVATIONS

- **Participation in Commercial Collection**: Benchmark cities were less likely to be involved in commercial container collection compared to residential collection. Commercial container collection is provided by the private sector in Cedar Rapids (IA), Lee's Summit (MO), Springfield (IL), Murfreesboro (TN), Davenport (IA).
- **Competing with Private Haulers:** Only Norman (OK), Lexington (KY), and Peoria (AZ) provided commercial collection exclusively. Savannah (GA) and McAllen (TX) offer commercial container collection but do so competitively with the private sector (like Columbia with businesses that do not generate food wastes).
- **Roll-off Collection**: Even fewer benchmark cities provide roll off collection. Savannah (GA) competes with the private sector.
- **Central Business Distric**t: In addition to Columbia, Lexington-Fayette (KY) and Norman (OK) service a central business district.

1.5.5 DISPOSAL BENCHMARKING OBSERVATIONS

- **Facilities in Use**: Not all benchmarking partners rely on a landfill as their primary local disposal facility. Some communities deliver wastes to a local transfer station, and some have access to more than one disposal facility (multiple landfills or a combination of landfills and transfer stations).
- **Facility Ownership:** Columbia is in the minority among benchmark partners in owning a landfill. Several communities own transfer stations, but contract for disposal at private (or county) landfills. Only Lee's Summit (MO) and Murfreesboro (TN) also own their landfill.

1.5.6 RATE COMPARISONS

The City of Columbia has an interest in understanding how its costs of service compare to comparable cities providing the same service. However, the user fees charged in other cities may or may not reflect the actual cost to provide such services. Despite this limitation, this section provides comparative rate data for residential collection and for disposal of wastes at the local landfill or transfer station used by each municipality. Where a municipality offers multiple rates and/or there are more than one disposal option, each option is shown separately. The following figures are shown:

- Figure 1-4 provides a comparison of the monthly rates charged to single family households by the benchmark cities. This Figure also indicates the size of cart(s) offered within the stated rate structure. In Davenport (IA), different carts are charged different amounts. However, other municipalities allow residents to select from more than one refuse cart size, but have only a single rate.
- Figure 1-5 shows the per-ton disposal tip fee incurred by each municipality. In cases where the municipality may deliver to more than one facility, both options are shown.

1.5.7 BENCHMARKING CONCLUSIONS

Each and every municipality is different, and it is not necessarily the case that what works elsewhere will work in Columbia. However, the benchmarking effort suggests the following conclusions:

- The City of Columbia provides a very high level of service to its residents compared to the benchmark communities. Columbia residents have the ability to set out almost any items and the City will collect them on a weekly basis.
- Columbia's bag-based residential collection system was unique among the benchmark municipalities, the rest of which have converted to rollcart collection. However, some municipalities sell stickers for out-of-cart bagged set-outs.
- Benchmark communities were less likely to be engaged in commercial container collection and commercial roll-off collection. These communities have successfully allowed commercial collection to be provided via an open market with general regulations for service frequency and upkeep of container enclosures. Although not evaluated in the research, it is likely that the communities that do not provide commercial collection have lower commercial recycling rates compared to Columbia.
- Should Columbia choose to adopt operating practices from the benchmarking communities, education and outreach will be critical throughout any evolution of services and/or rate structures.

Figure 1-4 Comparison of Residential Rates for Refuse, Recycling and Yard Waste Collection (2014 $/month)

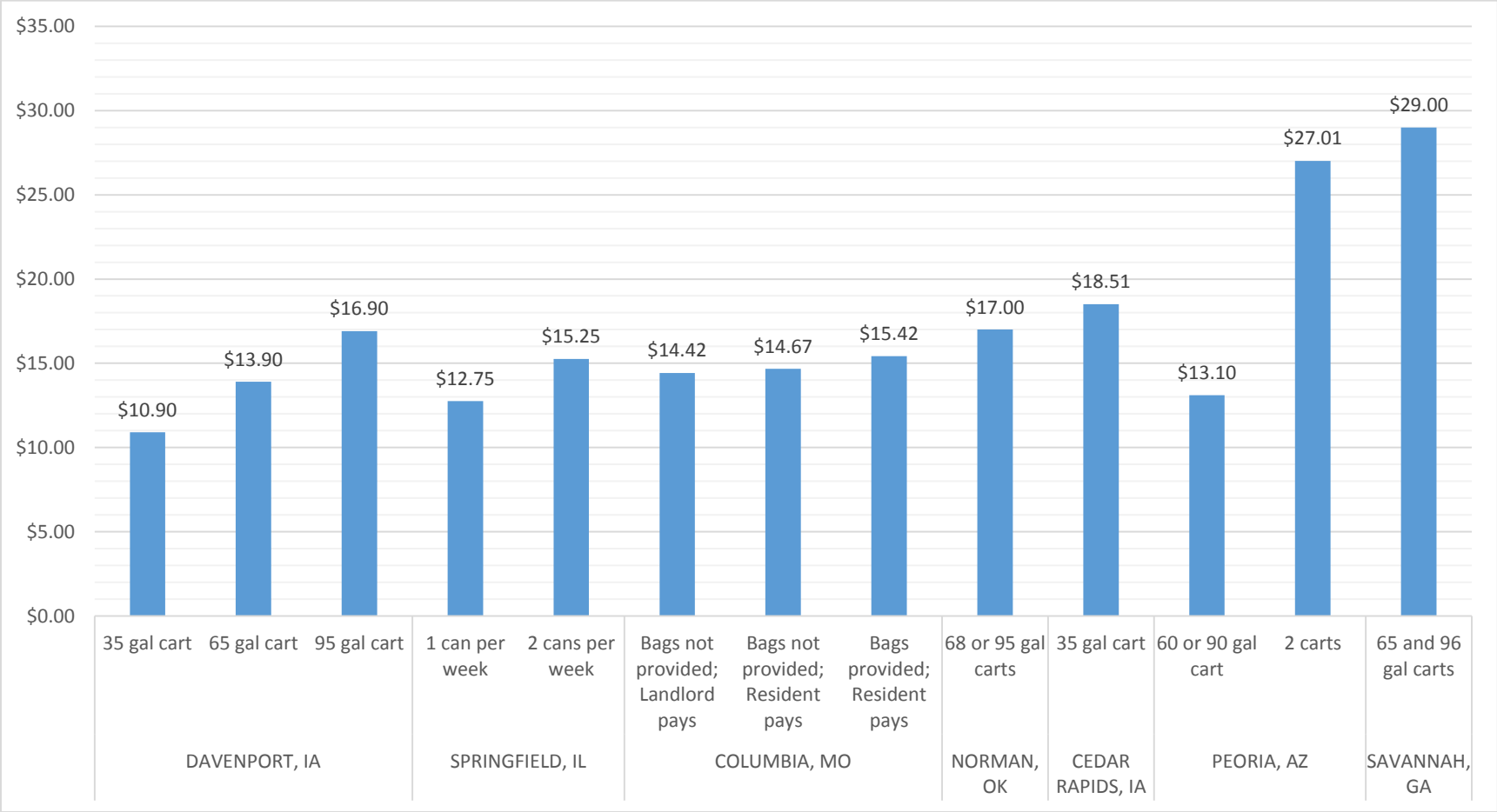


Figure 1-5 Comparison of Disposal Tip Fees (2014 $/ton)

2 COST AND RATE ANALYSIS

2.1 SOLID WASTE RATE-MAKING PRINCIPLES, PROCESSES AND ISSUES

2.1.1 INTRODUCTION

This rate study has been performed to cover the period from FY2015 through FY2023. The rate study process consists of three primary components:

- **Revenue Sufficiency Analysis**: In this step, the existing revenue stream for the solid waste management system is assessed to determine if it is capable of meeting the projected financial requirements of the system (including operating expenses, debt obligations and capital improvements) during the forecast period.
- **Cost of Service Analysis**: The second step involves development of suitable methodologies to allocate system revenue requirements to the various customer classes that are responsible for funding the cost of services they are receiving, and also compiling the number of customers receiving each service.
- **Rate Design**: Finally, specific rates and charges must be designed which provide sufficient revenue, as identified in the Revenue Sufficiency Analysis, to recover costs in a manner consistent with general rate-making practice, as identified in the Cost of Service Analysis, while also addressing the broader goals of the City, such as customer impact, ease of administration, rate equity, and other relevant rate-related issues. To the extent current rates are not sufficient to cover the cost of the system, one or a series of future rate adjustments are necessary. Rates may be adjusted uniformly across all customers, or separately by customer class or by type of service.

The development of rates should, for the most part, be consistent with general rate-making principles as recognized in the industry and related literature. In general, rates designed should:

- Generate a stable revenue stream which, when combined with other sources of funds, is sufficient to meet the financial requirements and goals of the solid waste system;
- Be fair and equitable – that is, they should generate revenue from customer classes which is reasonably in proportion to the cost to provide service to that customer class;
- Be easy to understand by customers;
- Be easy to administer by the utility; and
- Minimize customer impact.

Designing a rate structure which completely addresses all of these principles is challenging given the sometimes competing nature of the principles. Striking the appropriate balance between the principles of rate-making is the result of a detailed process of evaluation of utility revenue requirements and cost of service, and how these elements translate into the rate design alternatives which meet the utility's unique strategic, financial and operational objectives.

2.1.2 RATE SCENARIOS

In order to understand the options for future rate changes, the City has requested the following rate-making scenarios:

- **Status Quo**: The status quo rate path is provided to illustrate impacts to the financial health of the solid waste system in the absence of any changes to the current rates.
- **Setting Rates Equivalent to Actual Cost**: In theory, it makes sense that each customer should be charged exactly what it costs to provide service. In practice, few municipal integrated solid waste management systems achieve this objective. However, so-called "full cost rates" are helpful to the

City because they identify areas where the City may wish to consider medium or long-term changes to the system.

- **Recommended Rate Path**: Finally, the City seeks a responsible rate path that transitions from current rates to revenue sufficient rates. The recommended rate path is not required to have full cost rates for any customer class. The consultant's recommended rate path is provided in Section 3 of this report. It should be noted that the City is responsible for validating consultant's recommendation and adopting final rates, which may or may not conform to the consultant's recommendation.

2.1.3 FINANCIAL MANAGEMENT GOALS

The establishment of specific financial management goals of a utility is a key step in developing financial plans which will ensure the financial health of the utility remains strong. The financial management goals established by the City for its solid waste management enterprise are:

- **Minimum Unrestricted Working Capital Balance**: In order to maintain a certain level of liquidity, the City has developed a goal of maintaining unrestricted working capital in an amount greater than or equal to approximately 20 percent of annual operating expenses, including general fund transfers.
- **Sufficient Reserves to Adequately Fund Vehicle Replacement Requirements**: The City's vehicle replacement plan indicates approximately $23.5 million will be spent over the ten-year study period on the replacement of various vehicles and other equipment used in the collection and disposal of solid waste.
- **Debt Service Coverage**: The City has issued Special Obligation Bonds which contain covenants requiring the solid waste utility to maintain rates and charges such that a debt service coverage ratio, defined as Current Year Net Revenues divided by Current Year Debt Service, be maintained at a minimum of 1.10.

2.2 RATE STUDY DEVELOPMENT

2.2.1 FINANCIAL DATA

In developing the financial plan and rate analysis, the Project Team compiled historical financial data as well as budgets and plans for future expenditures. The following items have been integrated into the financial model:

- FY 2009 - 2014 Comprehensive Annual Financial Report (CAFR);
- FY 2014 estimated expense and FY 2015 Adopted Budgets;
- Current Capital Improvements Plan (CIP);
- Solid Waste Vehicle Replacement Plan;
- Official statements associated with outstanding bonds; and
- General assumptions related to customer growth, cost escalation factors, and new debt.

When reviewing this section, the reader should be aware that estimated actual and/or budget data from the years FY14 and FY15 are sometimes included in the tables and graphics depicting projected results. Subsequent years (2016 and forward) are entirely projected data.

2.2.2 HISTORICAL EXPENSES AND FUND BALANCE

The City's solid waste services are provided through the Solid Waste Utility (SWU), a division of the Public Works Department (PWD). The SWU operates as an enterprise fund and provides for the collection and disposal of refuse as well as the collection and management of recyclable materials. The enterprise fund, known as the Solid Waste Fund, is used to account for the revenue and expenditures associated with collection and landfill operations. As can be seen in Table 2-1, the SWU has been operating at a positive net margin for the historic period fiscal years 2010 through 2014. This information is presented in greater detail in Appendix B, Schedule A-4.

Table 2-1 Historical Operating Expenses

Description	Fiscal Year Ended Sep 30				
	2010	2011	2012	2013	2014
Operating Revenues	$14,999,390	$16,582,235	$16,788,811	$16,913,062	$17,172,008
Operating Expenses	13,755,288	13,836,366	14,892,894	14,708,655	15,153,647
Operating Income (Loss)	**$1,244,102**	**$2,745,869**	**$1,895,917**	**$2,204,407**	**$2,018,361**
Non-Operating Revenues (Expenses)	$163,430	$187,047	$35,164	($294,271)	$219,548
Transfers and Capital Contributions	($34,343)	$360,174	($11,101)	($15,415)	($587,908)
Net Income (Loss)	$1,373,189	$3,293,090	$1,919,980	$1,894,721	$1,650,001

Source: City's audited financial reports for each respective fiscal year.

To better understand the cash reserves SWU available to start the forecast period, a detailed review of FY 2014 CAFR was conducted and reviewed with SWU staff. A summary of the fund balance calculation associated with the SWU enterprise fund for FY 2014, as adjusted for use in this analysis, is presented in Table 2-2 below. (It is assumed that restricted funds are not available to the SWU for general use, and they have therefore been excluded from this calculation.)

Table 2-2 Estimated Beginning Fund Balance

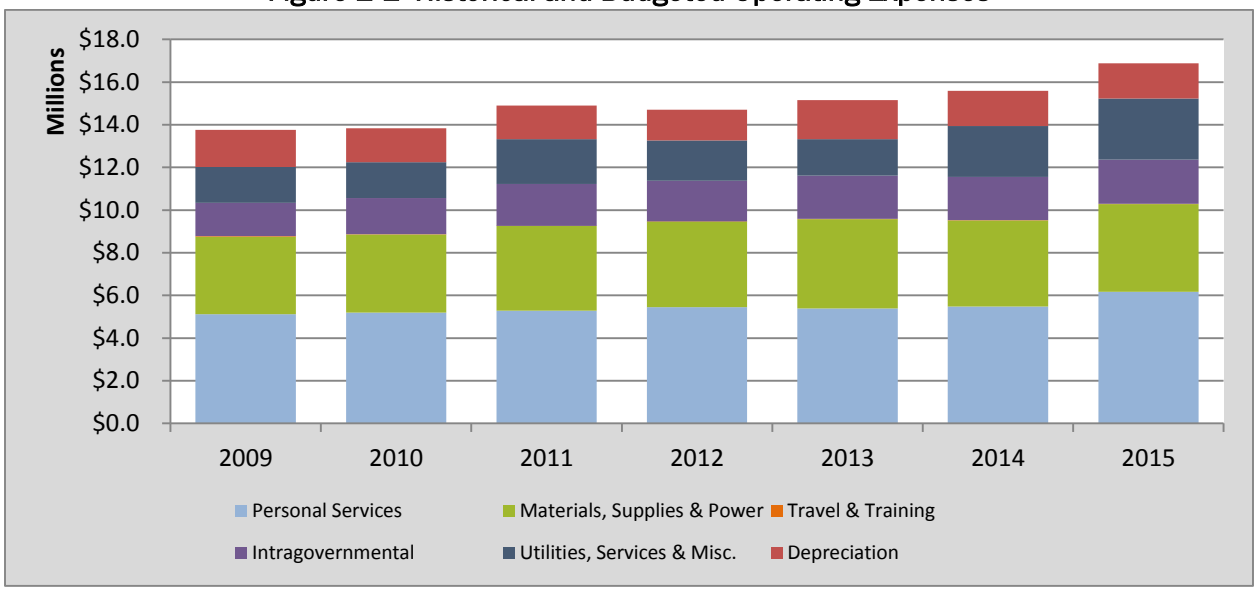
Description	Amount
Total Current Assets	$11,717,857
Total Current Liabilities	(3,033,397)
Net Adjustments	(198,045)
Net Beginning Balances	8,486,415

Source: Derived from the 2014 CAFR, pp. 138.

2.2.3 HISTORICAL AND BUDGETED OPERATING EXPENSES

SWU provided actual historical operating and non-operating expenses, in line item detail, for fiscal years 2009 through 2014. Additionally, budgeted fiscal year-end 2015 information was provided. This historical and estimated data was analyzed to identify any trends and anomalies and then to develop escalation factors for the projection period. These escalation factors were then applied to the fiscal year 2015 operating budget, which served as the basis for projected operating expenses. Figure 2-1 shows the historical and budgeted operating expenses for the period fiscal years 2009 – 2015.

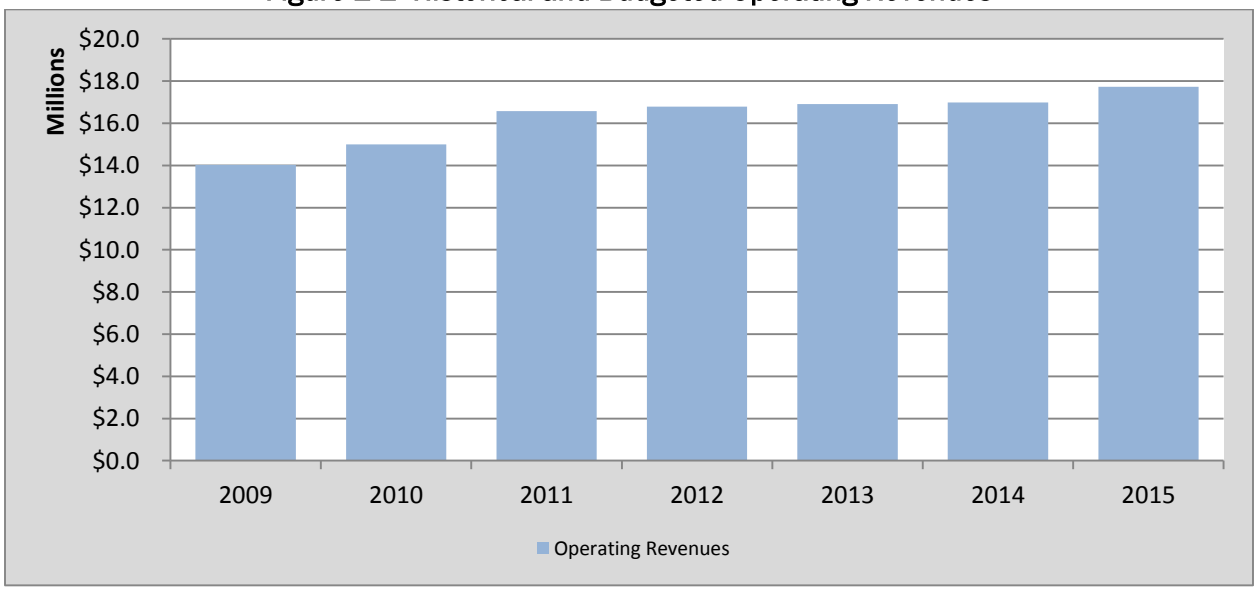
Figure 2-1 Historical and Budgeted Operating Expenses



2.2.4 HISTORICAL AND BUDGETED OPERATING REVENUES

Similar to operating expenses, SWU provided actual historical operating revenues, in line item detail, for fiscal years 2009 through 2013. Additionally, estimated fiscal year-end 2014 information was provided. Operating revenues consist of charges for solid waste collection, recycling and disposal services. Below, Figure 2-2 shows the historical and budgeted operating expenses for the period fiscal years 2009 – 2015. As shown, operating revenues for the system have been relatively flat for the last several years, although are projected to increase in FY15 commensurate with a rate increase of 10 percent to commercial customers and 7.89% to the Landfill.

Figure 2-2 Historical and Budgeted Operating Revenues



2.2.5 HISTORICAL AND BUDGETED OPERATING RESULTS

Comparing FY14 actual operating results to those budgeted by the SWU for fiscal year 2015 indicates revenues are anticipated to increase at approximately 3.2 percent while operating expenses are budgeted to increase approximately 11.4 percent annually. This is shown in Table 2-3 below. A more detailed presentation of the line-item historical and budgeted revenues and expenses is presented in Schedules C-1 and C-3, respectively, in Appendix B.

Table 2-3 Historical and Budgeted Operating Results

Description	Fiscal Year Ended Sep 30	
	2014 (Actual)	2015 (Budget)
Operating Revenues	$17,172,008	$17,723,236
Operating Expenses (incl. Depreciation)	15,153,647	16,880,184
Operating Income (Loss)	**$2,018,361**	**$843,052**
Non-Operating Revenues (Expenses)	($219,548)	$153,675
Transfers and Capital Contributions	($587,908)	$(122,346)
Net Income (Loss)	**$1,650,001**	**$874,381**
Sources: Actual Information for FY14 taken from the City's audited financial reports; budgeted information for FY15 provided by the City.		

2.2.6 CAPITAL IMPROVEMENT PLAN (CIP)

SWU provided a forecast of capital requirements for both the short-term and long-term. This capital forecast was used in the analyses. Where necessary, SWU revised the timing and magnitude of certain projects to more accurately reflect the cash flow requirements associated with those projects for use in the development of alternative capital project funding scenarios in the analysis. This adjusted CIP was then used as the basis for the capital funding requirements included in the analysis. The CIP includes projects which are designed to provide for the expansion and/or improvement of existing infrastructure and to provide additional capacity at the landfill. The CIP also includes an element for the periodic replacement of SWU's vehicle fleet at the end of their respective estimated useful lives.

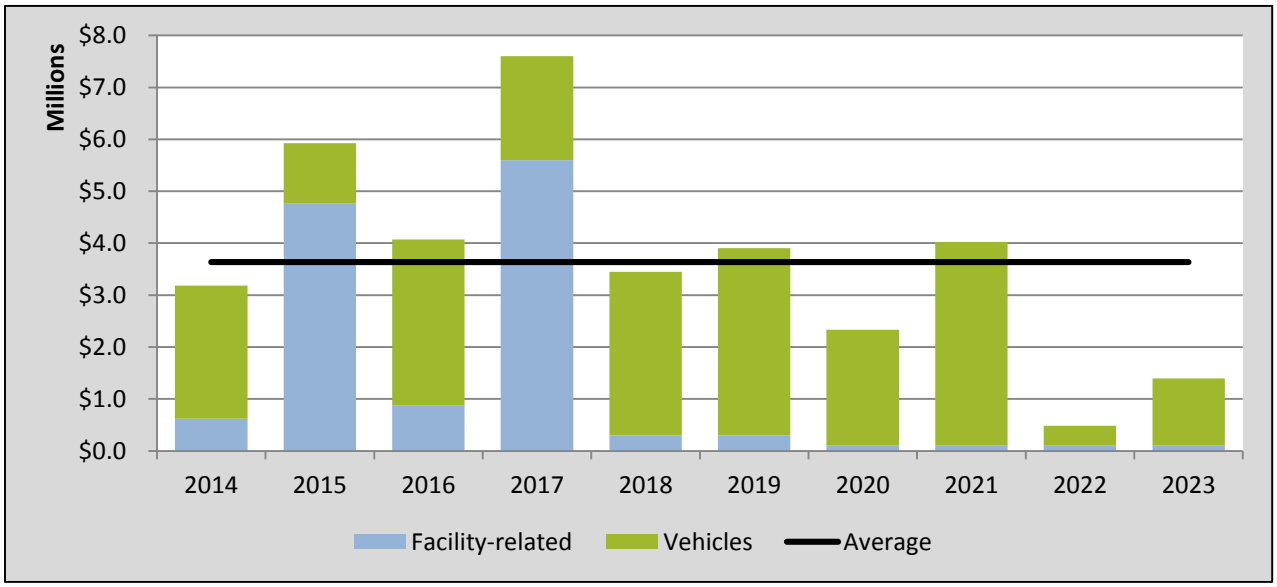
A summary table of the CIP for the FY 2014 – 2023 forecast period is presented in Table 2-4. This table also reflects recommended sources of funding, including revenue bonds, as configured in the financial model. Additionally, Figure 2-3 graphically presents both annual expenditures for the planning period, and delineates the average annual CIP-related expenditure of approximately $4 million.

As shown, over the projection period SWU anticipates spending approximately $12.9 million and $23.5 million, respectively, on facility-related improvements and replacement of utility vehicles. A more detailed CIP, including the timing and funding source for each respective project, is presented in Schedule C-5 in Appendix B.

Table 2-4 Capital Improvement and Vehicle Replacement Plan ($1,000)

Description	10-Yr Total	Fiscal Year Ended Sep 30									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Uses of Funds											
Infrastructure	$12,860	$621	$4,759	$880	$5,600	$300	$300	$100	$100	$100	$100
Vehicles	23,521	2,565	1,170	3,193	2,002	3,150	3,603	2,233	3,924	386	1,296
Total CIP	**$36,381**	**$3,186**	**$5,929**	**$4,073**	**$7,602**	**$3,450**	**$3,903**	**$2,333**	**$4,024**	**$486**	**$1,396**
Funding Sources											
Operating Reserves	$28,581	$3,186	$3,429	$4,073	$2,302	$3,450	$3,903	$2,333	$4,024	$486	$1,396
Designated Loan Fund	$2,500	$-	$2,500	$-	$-	$-	$-	$-	$-	$-	$-
Revenue Bonds	$5,300	$-	$-	$-	$5,300	$-	$-	$-	$-	$-	$-
Subtotal	**$36,381**	**$3,186**	**$5,929**	**$4,073**	**$7,602**	**$3,450**	**$3,903**	**$2,333**	**$4,024**	**$486**	**$1,396**

Figure 2-3 Annual Capital Expenditures



2.2.7 OUTSTANDING DEBT

SWU, like most utilities, has utilized long-term debt to fund capital projects in the past. The rate covenant associated with the Series 2012C Special Obligation Bonds states:

> *"The City intends to fix, establish, maintain and collect such rates, fees and charges for the use of services furnished by or through its Solid Waste System and will produce revenues sufficient to (i) pay the cost of the operation and maintenance of the Solid Waste System; (ii) pay the principal of the interest on any solid waste disposal system revenue bonds of the City and the Solid Waste Project portion of the Bonds, as and when the same become due; and (iii) provide reasonable*

and adequate reserves for the payment of such bonds and for the protection and benefit of the Solid Waste System. However, any failure of the City to revise such rates in accordance with this paragraph does not constitute a default under the Ordinance. Notwithstanding the foregoing, the payment of the Series 2012C Bonds is not limited to the revenues of the Solid Waste System."

While the bond ordinance calls for debt service coverage of 1.10, for purposes of this analysis, it was assumed a minimum debt service coverage of 1.20 annual debt service be maintained, or exceeded, in each year of the forecast period. This means that in each year that a debt service payment is to be made to the bondholders, SWU must generate net revenue that is at least 20 percent greater than the bond debt service payment to be made in that year.

A summary of existing annual debt service associated with the outstanding Special Obligation Bonds is provided in Table 2-5.

Table 2-5 Existing Annual Debt Service ($1,000) Prior to FY15

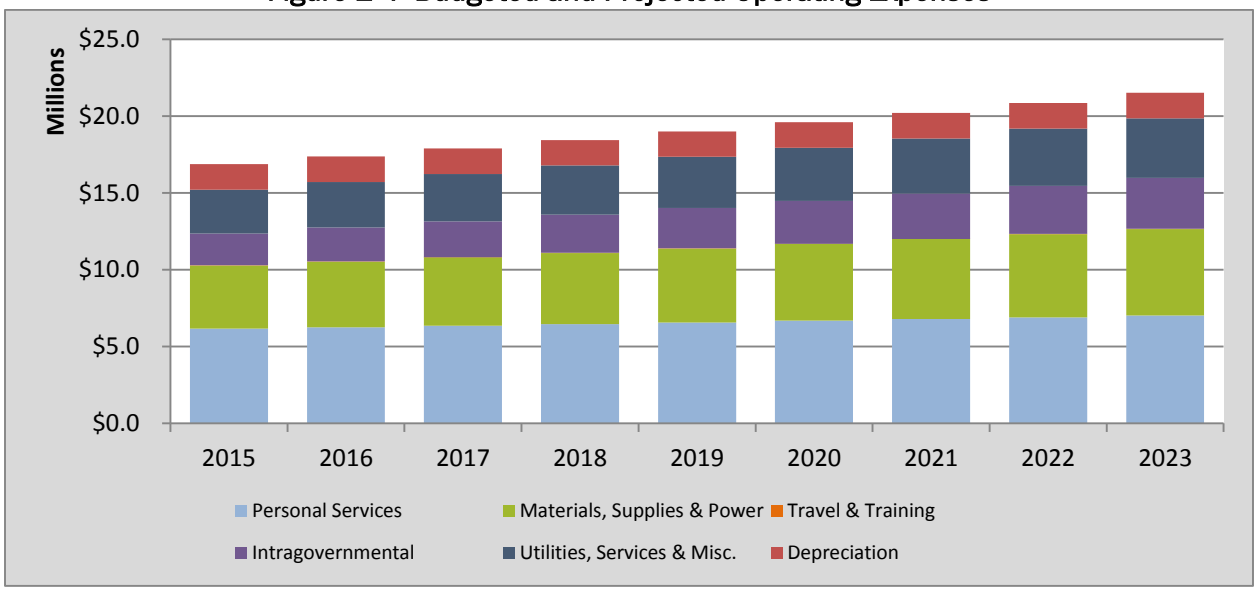
Description	Fiscal Year Ended Sep 30									
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
2006 S.O. - New Money	$146.55	$147.49	$147.87	$153.39	$149.19	$144.99	$150.52	$145.78	$145.86	$145.65
2006 S.O. - Refund 96 S.O.	$360.80	$355.75	$358.75	-	-	-	-	-	-	-
2012 S.O. - Refund 01 S.O.	$319.85	$319.30	$318.65	$322.85	$321.90	$325.80	$324.55	$323.20	-	-
DLF Loan for Land Acquisition	$120.65	$120.65	$120.65	$120.65	$120.65	$120.65	$120.65	-	-	-
Total Existing Debt	**$947.85**	**$943.20**	**$945.92**	**$596.90**	**$591.75**	**$591.45**	**$595.72**	**$468.98**	**$145.86**	**$145.65**

2.2.8 GENERAL ASSUMPTIONS

In order to develop the financial and rate projections, certain assumptions were made with regard to elements of the revenue sufficiency analysis. A summary of those assumptions is presented below.

Projected Operating Expenses: SWU provided reports containing line item detail of actual operating expenses for fiscal years 2009 through 2013. In addition, SWU provided estimated year-end operating expenses for fiscal year 2014 and the operating budget for fiscal year 2015. The historical data was analyzed to identify growth patterns and any relevant historical trends. Subsequent to reviews with SWU staff, escalation factors were developed for each operating expense and applied to the fiscal year 2015 budget to project expense for the remainder of the projection period. Figure 2-4 shows the budgeted and projected operating expenses for the period fiscal years 2015 – 2023.

Figure 2-4 Budgeted and Projected Operating Expenses



New Debt: Based on discussions with SWU staff and management, this report assumes that future capital expenditures related to capital projects and vehicle replacement will be funded from a combination of new, long-term debt and unrestricted cash reserves. In practice, the City may modify these assumptions and the model developed for this study can be manipulated by the City to evaluate alternative financing scenarios. Table 2-6 shows the timing and amounts of anticipated future borrowings.

Table 2-6 Borrowings During Planning Period

Description	Par Amount
DLF Loan 2015	$2,500,000
Series 2017	$5,399,375
Source: Derived from discussions with staff and management.	

To the extent that new debt is issued, it is assumed it will be provided through the City's Designated Loan fund and bonds. Further, it was assumed that to the extent that new debt is required that the requisite debt service coverage requirements would be consistent with the requirements which currently exist. Table 2-7 summarizes assumptions associated with new debt.

Table 2-7 Long Term Debt Assumptions

Description	Bonds	DLF Fund
Term	20 years	10 years
Rate	4.0 percent	1.75 percent
Issuance Cost	1.875 percent	0.0 percent
Coverage Requirement	1.20	N/A

2.2.9 BILLING DETERMINANTS

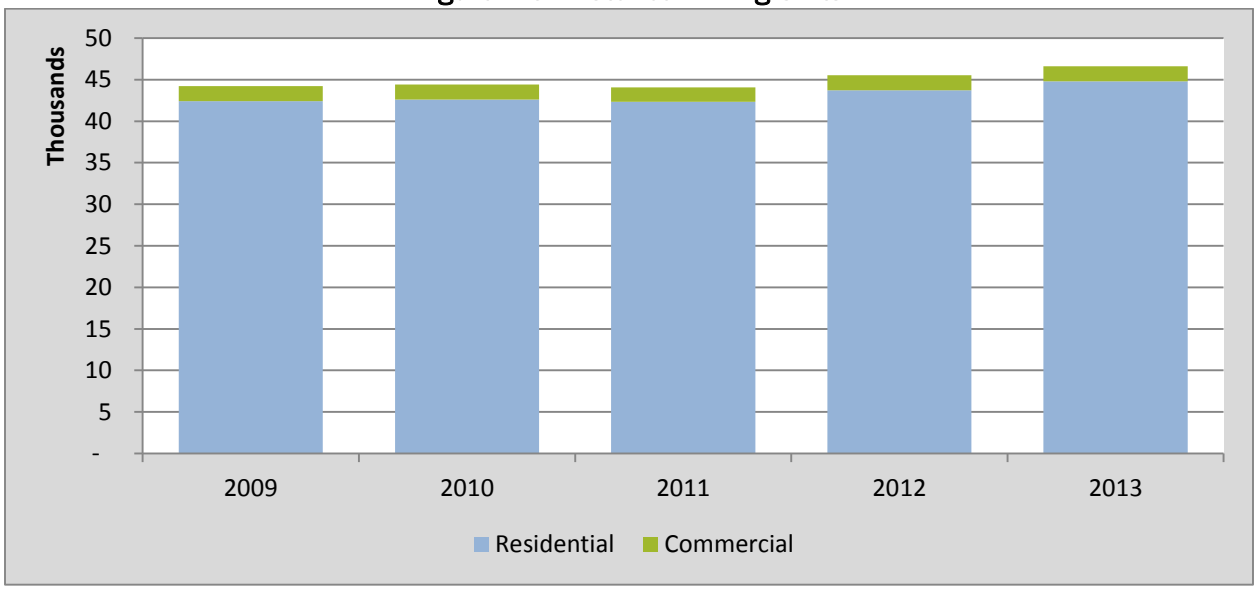
In order to develop rates and charges which recover sufficient revenue to meet the financial goals of SWU in a manner consistent with the cost of service analysis and generally accepted rate-making practice, a detailed review of historical billing units was undertaken. The analysis resulted in the identification of the historical bills issued for each unique customer class in the system for the FY 2009 through FY2013 billing periods. For residential and commercial services excluding roll-off and construction cans, billing determinants are stored in the City's financial system.

However, roll-off and construction can billing determinants are managed in the WasteWorks billing system, which is integrated with the landfill scale system. Although revenues from WasteWorks bills are captured in the City's financial system and are accurately accounted for, billing determinants from WasteWorks are not easily extracted. Consequently, billing determinants for container rental and roll-off service have not been integrated into the model and the financial projections herein rely on escalating reported revenues for each customer class.

In order to validate that the data contained in the billing data is reliable for use in the determination of rates and charges which recover the target revenue requirement, a billing data validation was conducted. The billing data validation consisted of a revenue test in which the rates and charges in place during the last full fiscal year, FY 2013, were applied to the detailed billing data compiled from the same period. The resultant revenue calculated was compared to the revenue collected in FY 2013, as provided by SWU staff. This comparison resulted in the determination that the billing data was within accepted tolerances for use in rate making. Historical billing units are presented in detail in Schedule A-1 in Appendix B.

Figure 2-5 shows the average annual residential and commercial customers for the historical period fiscal year 2009 through 2013. As can be seen, the SWU system serves approximately 46,600 customers, comprised of approximately 44,800 residential customers and 1,800 commercial customers. As depicted in Figure 2-5, the solid waste system has seen relatively low levels of growth over the last five fiscal years.

Figure 2-5 Historical Billing Units



The Project Team analyzed growth trends in historical billing determinants. Based on an analysis of the historical billing data, it was determined that the only customer classes experiencing discernible growth were single and multi-family residential customers. The rate model captures the recent historical growth trends for these customer classes and uses this trend for projecting future growth. These projected growth

rates were found to be consistent with regional population projections provided by the City in the Columbia Imagined plan.

However, the City planning department was able to identify expected growth in residential dwelling units for FY15. In FY15, there is expected to be a surge in growth with at least 1,065 new multi-family units and 500 new single family dwellings. In subsequent year, annual growth in residential dwelling units reverts to the historical averages of approximately 155 new multi-family billing units and 425 residential billing units in each year of the projection period. Figure 2-6 shows the average annual residential and commercial customers for the projection period fiscal year 2014 through 2023. Projected billing units are presented in detail in Schedule A-2 in Appendix B.

Figure 2-6 Projected Billing Units

2.3 REVENUE SUFFICIENCY AND COST OF SERVICE ANALYSES

2.3.1 GENERAL METHODOLOGY

In order to provide guidance to SWU as to how to adequately recover the rate revenue requirements identified in the Revenue Sufficiency Analysis, in a manner consistent with generally accepted rate-making principles, a Cost of Service Analysis was conducted.

The Cost of Service Analysis resulted in the identification of the cost to provide service to customers based on functional cost categories. This provided the rationale for the allocation of costs to expense categories and then used as the basis for the assignment of revenue requirements to each respective customer class upon which the development of rates and charges presented herein is based.

The Revenue Sufficiency and Cost of Service Analyses and results are presented below.

2.3.2 NET SYSTEM REVENUE REQUIREMENTS

The first step in developing the Cost of Service Analysis was to determine the revenue requirements of the solid waste system. The revenue requirements of the system represent the amount of revenues that need to be earned in the test year through rates and charges to meet the various operational and financial obligations of the system. This includes operating expenses (net of depreciation), non-operating expenses,

average annual debt service payments, and average annual capital expenditures. For purposes of this analysis, the average annual debt service payments and average annual capital expenditures are based on a ten (10) year average for each respective category.

Total system revenue requirements were then adjusted to take into consideration revenues earned from sources other than rates and charges. Such revenues include, but are not limited to, interest earnings, grants, bag sales, sale of electricity, sale of compost materials, and other miscellaneous revenues. Total system revenue requirements were reduced by estimated revenues from such sources to arrive at net system revenue requirements or the amount that needs to be earned from user rates and charges.

2.3.3 ALLOCATION OF NET SYSTEM REVENUE REQUIREMENTS

A summary of the allocation net system revenue requirements is presented in Table 2-8 below. A more detailed presentation of the cost allocations is presented in Schedule B-1 and B-2 in Appendix B.

Table 2-8 Test Year 2015 Allocated Net System Revenue Requirements ($1,000)

Cost Center	Total System	Res-idential	Com-mercial	Roll-Off	Landfill	CID	University
Administrative	$1,937	$869	$482	$177	$245	$41	$122
MMSWMD	$145	$71	$39	$14	$20	$0	$0
Commercial	$1,926	$0	$1,926	$0	$0	$0	$0
Container Maintenance	$416	$35	$267	$30	$0	$23	$61
Community Improvement District	$105	$0	$0	$0	$0	$105	$0
Roll-Off	$1,143	$80	$0	$744	$0	$65	$254
Residential	$2,700	$2,700	$0	$0	$0	$0	$0
Landfill	$2,951	$550	$550	$374	$1,315	$60	$102
Composting	$432	$81	$81	$55	$193	$9	$15
University	$329	$0	$0	$0	$0	$0	$329
Recycling	$1,380	$1,380	$0	$0	$0	$0	$0
Recycling Drop-Off	$181	$151	$7	$5	$16	$1	$1
Volunteer Program	$0	$0	$0	$0	$0	$0	$0
White Goods	$18	$18	$0	$0	$0	$0	$0
Household Hazardous Waste	$86	$51	$8	$5	$19	$1	$1
Yard Waste	$0	$0	$0	$0	$0	$0	$0
Commercial Recycling	$420	$0	$420	$0	$0	$0	$0
Material Recovery Facility	$1,324	$973	$80	$12	$157	$19	$83
Capital Project	-	-	-	-	-	-	-
Total Operating Expense	**$15,494**	**$6,959**	**$3,861**	**$1,416**	**$1,965**	**$323**	**$969**
Debt Service	$1,945	$505	$379	$214	$754	$35	$58
Landfill Capital Expenditures	$506	$106	$96	$62	$216	$10	$17
Vehicle Replacement	$2,352	$1,075	$621	$270	$344	$16	$27
Revenues from Other Sources	-$1,590	-$848	-$490	-$55	-$126	-$62	-$9
Net Allocated System Revenue Requirements	**$18,707**	**$7,796**	**$4,466**	**$1,908**	**$3,153**	**$321**	**$1,062**
Percent of Total		41.7%	23.9%	10.2%	16.9%	1.7%	5.7%

The Cost of Service Analysis presented herein sets forth how to appropriately recover the rate revenue requirements identified in the Revenue Sufficiency Analysis.

The process employed in the Cost of Service Analysis results in the identification of the cost to provide solid waste services to customers, allocation of the rate revenue requirements to respective customer classes, and then the development of rate and charge components. A summary of revenue sufficiency under existing rates is presented in Table 2-9 below. A more detailed presentation of the information is presented in Schedule B-3 in Appendix B.

Table 2-9 Revenue Sufficiency Under Existing Rates, Test Year 2015 ($1,000)

Description	Revenue Requirement	Rate Revenues	Revenue Surplus/(Deficit)	Required Rate Increase (Decrease)
Residential Refuse and Recycling	$7,796	$8,497	$701	-8.2%
Commercial				
Refuse – Frontload	$3,091	$2,208	($884)	40.0%
Refuse – Rearload	914	488	(426)	87.2%
Recycling	461	191	(271)	142.0%
Total Commercial	$4,466	$2,886	($1,580)	54.7%
Roll-Off	$1,908	$1,509	($398)	26.4%
Landfill	$3,153	$3,031	($122)	4.0%
Drop-Off Recycling	0	0	0	0.0%
Community Improvement District	321	241	(80)	33.3%
University	1,062	458	(604)	131.9%
Total System	**$18,707**	**$16,622**	**($2,084)**	**12.5%**

2.4 FULL COST RATES

The cost of service study provides full cost rates, which are compared to existing rates in the sections below. However, for the several customer classes where full cost rates were found to be lower than existing rates, full cost rates are not adjusted from the existing rates. The Project Team strongly cautions against reducing rates for any customer class for two reasons: (1) the reductions are not significant relative to the current rate, and (2) the cost of the City's system is increasing and any reductions at this time would begin to reverse immediately in line with annual cost escalation.

2.4.1 FACILITIES

The City's landfill and MRF both handle primarily City-collected material. However, the landfill accepts significant quantities from third parties. The MRF does not receive significant third party material, due in part to the City-provided drop-off recycling program which allows residents and businesses in the surrounding areas to recycle conveniently.

Table 2-10 provides the landfill tip fee and a hypothetical MRF processing fee.

Table 2-10 Landfill Tip Fee and MRF Processing Fee (per ton)

Description	Existing Rate	Full Cost Rate
Landfill	$41.00	$42.64
Clean, separated material	$0.00	$70.98*
Clean co-mingled containers	$30.00	
Clean co-mingled fibers	$25.00	
Mixed containers and fibers	$32.50	
Contaminated recyclables	$38.00	
Unacceptable recyclables	$42.50	

* It was beyond the scope of this project to determine if there are differential processing costs for different materials entering the MRF. In practice it most likely costs less to process clean, separated material than it does to process commingled materials.

It should be noted that the MRF processing cost shown above is an average for all materials received at the MRF. Operationally, the MRF incurs significantly different costs to process different materials. For example, clean cardboard requires only minimal removal of contaminants prior to baling. The cost to process cardboard is accordingly low, while the value of recovered cardboard is high. It is likely that the value of baled, clean corrugated cardboard exceeds the cost to bale and ship the material.

Conversely, blue bagged bottles and cans from the City residential curbside recycling program require extensive processing, which includes opening and emptying of the bags, processing of the mixed bottles and cans over a conveyor belt for manual sorting and removal of contaminants, followed by baling of the sorted materials. Additionally, the value of glass containers is relatively low, and the volume of higher value plastic bottles, aluminums cans and steel cans is relatively small. It was beyond the scope of this study to develop separate processing cost estimates for each incoming material stream, although the City may wish to evaluate its processing costs and options in more detail as a result of this analysis.

Given the scale of the MRF operation, the processing technology in use, and the distance to markets, the City does not achieve a favorable processing cost. As shown in Table 2-10, the cost to process recyclables (in the aggregate) is higher than the cost to dispose of wastes in the landfill.

2.4.2 Residential Flat Rates

SWU's existing and full cost rates for residential customers are presented below in Table 2-11. These rates include both trash and recycling collection services.

Table 2-11 Existing and Full Cost Residential Rates

Description	Existing Rate	Full Cost Rate
Residents Who Get Bags	$15.42	$15.42
Residents Who Do Not Get Bags, But Pay Their Own Trash	$14.67	$14.67
Residents Who Do Not Get Bags, But Landlord Pays Trash	$14.42	$14.42

2.4.3 Residential PAYT Rates

Like many cities, Columbia is contemplating a volume-based, or Pay-As-You-Throw (PAYT) rate structure for residents. PAYT rates give waste generators a financial incentive to reduce their waste disposal by increasing the use of the curbside recycling program and reducing waste generation.

In practice, PAYT rates vary significantly across collection systems. In Columbia, which currently uses bagged collection, a bag-based program would be implemented assuming no changes to current service delivery. However, cart-based PAYT systems are the most common based on the number of customers who receive curbside service. This study provides a framework and describes the considerations for both a bag-based and a cart-based PAYT program. The following discussion is generic in nature but the rates shown reflect the results of the cost and rate analysis.

If the City retains manual collection and implements a PAYT system using bags, then the recommended rate structure includes a monthly fixed fee to cover the cost of providing the collection service, plus a per-bag fee to cover the cost of the wastes actually disposed. This is based on the generally accepted rationale that every household receiving curbside collection provided by the City has the opportunity to use the service, even if that resident does not use the service on a given week. Regardless of whether a resident sets out wastes, the City is obligated to operate the collection vehicle and run the scheduled route past each household.

From a rate making perspective, it is necessary to balance the notion of setting per-bag rates based strictly on the disposal cost of the bag, with the need to give a meaningful financial incentive to generate less waste. This will require the City to compile its historical bag usage; make some assumptions about the likelihood of reduced waste generation; and weigh its tolerance for the fixed fee portion of the rate to fall below actual fixed collection costs.

Table 2-12 shows the current flat rate structure and illustrates two conceptual PAYT rate structures, using special bags or stickers. All data in this table are derived from the City's actual collection costs, disposal costs, and the full cost rate. An explanation of each column is provided below the table.

Table 2-12 Bag-based PAYT Rate Structure (based on 4.3 weeks/month)

Rate Component	Current Rate Structure	Full Cost Rate Structure	Modified Rate Structure
Fixed Portion of Rate	$15.42	$12.95	$8.00
Number of Bags Generated per Week	2	2	2
Cost per Bag (or Sticker)	$0	$0.29	$1.00
Monthly Disposal Charge	$0	$2.47	$8.66
Average Total Monthly Cost per Household	**$15.42**	**$15.42**	**$16.66**
Monthly Cost for Customer at 50% Avg.	*$15.42*	*$14.12*	*$12.33*
Monthly Cost for Customer at 150% Avg.	*$15.42*	*$16.72*	*$20.99*

- **Current Rate Structure**: Currently, the City charges a flat rate of $15.42 per month. This amount is charged no matter whether a resident uses one bag per week or 5 bags per week.
- **Full Cost Rate Structure**: The monthly disposal cost per household was found to be $2.47 based on customer counts and disposal data for residential housing units. Monthly collection and recycling costs (including refuse collection, recycling collection, and recyclables processing) were calculated to be $12.95 per household. Assuming the "average" resident generates two bags per week, this means the average bag costs $0.29 to dispose. This represents how the City might charge the "true cost" of both collection and disposal using a bag-based or sticker-based program.
- **Modified Rate Structure**: Other municipalities that have implemented bag and sticker-based PAYT programs have attempted to set the price of a bag or a sticker at a level that encourages waste generators to recycle and dispose of less waste. This means the price per bag or sticker is higher than the actual cost to dispose of the wastes in the bag. This table shows how a modified bag or sticker-

based PAYT program might be structured to give residents a greater incentive to recycle by charging less than the full cost of collection and recycling, and instead charging a higher cost per bag (or sticker) of disposed waste.

The Modified per-bag rate structure is recommended as the starting point should the City opt to implement a bag-based PAYT system. It will be necessary for the City to undertake a review of average bag usage and to update the analysis above.

Should the City convert to automated rollcart collection for residential curbside service, it would be possible to differentiate rates by the volume of the refuse cart. Table 2-13 summarizes the cart-based variable rate programs in three cities that have mature and successful programs.

Table 2-13 Variable Rate Benchmark Programs

Refuse Container Size	Austin, TX		Gainesville, FL		Davenport, IA	
	Percent	Price	Percent	Price	Percent	Price
<20 gal	0.4%	$12.75	13.0%	$15.25	N/A	N/A
30 - 35 gal.	20.9%	$13.50	29.0%	$19.75	28.3%	$10.90
60 - 65 gal.	61.5%	$18.75	45.0%	$24.50	55.2%	$13.90
90 - 96 gal.	17.2%	$30.95	13.0%	$30.50	16.5%	$16.90

There are several notable factors highlighted in this table:

- **Meaningful Marginal Pricing Differences**: The marginal price increase for each larger refuse container size is significant enough to customers to provide an incentive to recycle more and thereby obtain a smaller refuse container. If pricing tiers are too close to one another, more residents will opt for a larger container as the marginal savings does not provide significant incentive.
- **Four Tiers**: Each of these programs started with only three tiers of service: 30, 60 and 90 gallons for refuse. Over time, because of demand from high-diversion customers, two of them have added a 20 gallon "mini-can." However, the most common refuse container volume in each program is the 60 gallon tier, with a minority of residential households needing a full 90 gallons.

Were Columbia to implement a variable rate system, it will be important to establish levels of service that can be easily differentiated by customers, and that also give sufficient financial incentive for customers to choose better recycling and diversion behaviors. Such rates must also assure revenue sufficiency for the system. Table 2-14 shows a conceptual PAYT rate structure for three cart sizes based on the City's full cost residential rate.

Table 2-14 Conceptual Rate Structure for Variable Refuse Carts ($/mo)

Cart Size	Existing Rate	Full Cost Rate	PAYT Rate
30-36 gal	$15.42	$15.42	$12.00
60-65 gal	$15.42	$15.42	$15.42
90-95 gal	$15.42	$15.42	$20.00

It is important to note that there would be an ongoing evolution if a new variable rate program is enacted in Columbia. Over time, the marginal price of higher tiers will be expected to increase more rapidly, and customers will learn how to maximize diversion and demand less refuse disposal. The inventory of refuse

carts needed to service the residential customer base will shift towards the smaller cart size. Although not shown in this table, it can be hypothesized that a 20-gallon mini-can service will eventually need to be offered to the "super recyclers."

Needless to say, there are additional administrative and operational obstacles to establishing a variable rate system. These issues, which will need to be systematically addressed during implementation planning, include:

- **Account Management**: It will be necessary to monitor the residential refuse service level for each residential customer. This may increase program administrative costs.
- **Cart Inventory Management**: Customers will need to be allowed to change cart sizes over time. The City already manages, repairs, and delivers rollcarts, and should have the ability to perform this task. Cart inventory management, using RFID tags, is offered by multiple vendors serving the waste collection market. As a practical matter it may be necessary to limit the frequency a customer can change cart size (e.g., once every 6 months).
- **Out-of-Cart Set-outs**: From time to time, many households will generate more refuse in a given week than their cart will hold. The City will need to consider how to manage these situations. Options employed in other municipalities include: simply requiring the resident to store bagged wastes until they can fit it into their cart on a subsequent collection day; an amnesty week after certain holidays where residents are allowed to set out additional bags for free; and sale of "extra bag" stickers for a fixed amount.
- **Bulky Waste Set-out Limits**: Variable rate programs that are based on cart size will be undermined if it is possible for residents to set out overflow wastes in an ancillary collection system. It will be critical to properly define the limits to the bulky/overflow system (in terms of number and size of overflow items). Many municipalities have opted to implement a system of charges for bulky waste collection, either on an absolute basis or to be triggered after a few items are collected for free.
- **Contamination in Recycling**: Because households now have an incentive to dispose less, there may be slight increases in contamination levels in the recycling stream. The City should expect to expand public education and possibly enforcement resources to minimize contamination levels in recyclable and compostable materials.
- **Annual Rate Updates**: Because of the change in cart size distribution, it will be necessary to monitor the revenue sufficiency on an ongoing basis, and be prepared to modify rates of one or more cart sizes on an annual basis. The purpose of PAYT rates is to change behaviors – consequently the rates must be modified regularly as behaviors change.

To most effectively implement any new PAYT program, the City may wish to consider phasing in the program so that critical variables and best practices can be established in the early adoption neighborhoods, and rolled out more efficiently to the remaining City neighborhoods.

2.4.4 COMMERCIAL REARLOAD AND FRONTLOAD WASTE COLLECTION

The City currently has a single rate table for bulk container collection. As discussed previously, in practice there are distinct differences in the service costs associated with frontload and rearload collection.

An analysis of the City's bulk container rates relative to industry standard bulk container rates also identified that the City's rates do not increment sufficiently as the number of weekly services increases. The cost of commercial collection is driven by (a) the frequency of collection, and (b) the size of the container (which correlates to disposal cost).

- The collection cost component for container service increases linearly with the number of weekly collections. So, an account collected twice per week would be expected to charge twice as much as an

account collected once per week, because the City has to deploy a vehicle twice instead of once to service the account.

- The disposal cost component is correlated to the container size. So, an account with a 6-yd container would pay 3 times as much for disposal as an account with a 2-yd container because it will cost the City three times more to dispose of the higher volume of wastes.

The commercial rate is a combination of the collection service level and the disposal service level. Commercial rates have not been properly balanced for over 20 years, and it is not known how or if they were originally balanced to capture the cost dynamics described above. However, this analysis found that the City is undercharging customers who require more frequent weekly collection. The Project Team has therefore estimated the full cost rates with greater incremental increases for higher collection frequency.

Table 2-15 shows the existing bulk container rates, as well as separate full cost bulk container rates for frontload and rearload collection. As shown, there is a significant difference in full costs for these different service levels, with frontload collection costs below that of rearload collection.

Table 2-15 Existing and Full Cost Commercial Trash Rates

Container Size (CY)	Pickups per Week					
	1	2	3	4	5	6
Commercial Trash – Existing						
1	$64.24	$74.59	$84.93	$95.28	$105.62	$115.97
2	$72.39	$93.08	$113.77	$134.46	$155.16	$175.85
3	$80.53	$111.57	$142.60	$173.65	$204.68	$235.72
4	$87.58	$128.96	$170.35	$211.73	$253.11	$294.48
6	$106.07	$168.15	$230.22	$292.28	$354.35	$416.43
8	$123.46	$206.23	$288.98	$371.75	$454.51	$537.27
Commercial Trash – Full Cost Front Load						
1	$77.09	$111.89	$152.88	$200.09	$253.49	$313.13
2	$86.87	$139.62	$204.79	$282.37	$372.37	$474.78
3	$92.61	$156.20	$235.30	$329.93	$440.06	$565.73
4	$100.72	$180.55	$281.07	$402.28	$544.19	$706.75
6	$118.80	$221.95	$349.93	$502.72	$680.36	$882.83
8	$135.81	$268.10	$433.47	$631.97	$863.57	$1,128.27
Commercial Trash – Full Cost Rear Load						
1	$93.15	$130.53	$174.11	$223.91	$279.90	$342.12
2	$101.35	$158.24	$227.55	$309.27	$403.40	$509.95
3	$108.72	$178.52	$263.82	$364.66	$480.99	$612.87
4	$113.86	$199.89	$306.62	$434.04	$582.15	$750.93
6	$132.59	$252.22	$402.88	$584.56	$797.30	$1,041.07
8	$148.16	$299.03	$491.27	$724.90	$999.92	$1,316.32

Two additional analyses were performed on commercial bulk container collection:

- **Gated/Locked Service**: Based on City route sheets, 19.4 percent of frontload container lifts and 4.2 percent of rearload container lifts require the driver to open a gate to access the container, and then close the gate after service has been performed. In some cases, the driver must also unlock and re-lock the gate. It was beyond the scope of this study to calculate the full cost of gated/locked service (which would require additional time/motion analysis), although there is clearly an incremental cost to service customers needing this service. Section 3 recommends implementation of an additional fee for gated/locked containers.
- **Food Waste Generators**: Based on City route sheets, 25.7 percent of frontload container lifts and 3.4 percent of rearload container lifts are for customers that generate food waste and which therefore must be serviced by the City pursuant to City ordinance. Because food wastes are typically laden with moisture, they tend to be heavier than other commercial wastes. Although it was beyond the scope of this study to determine the differential in density for food waste generators relative to other commercial generators, Section 3 contemplates the establishment of a slightly higher rate for food waste generators to reflect the higher cost to dispose of heavier wastes.

2.4.5 COMMERCIAL RECYCLING COLLECTION

Recycling collection service in Columbia varies according to many factors, including (a) the mix of recyclable materials generated at a given business, (b) the quantity of recyclables at a given business, and (c) the means of collection for the recyclables. The City's rate schedule attempts to capture the range of recycling accounts that are encountered.

In order to provide incentives for businesses to recycle, the City's policy is to set proportionately lower rates for recycling collection relative to trash collection. Specifically, cardboard recycling collection rates are set at 80 percent of the comparable trash rate; mixed container recycling rates are set at 85 percent of the comparable trash rate.

Table 2-16 shows the existing and estimated full cost rates for commercial recycling services. It should be noted that these full cost rates are based strictly on the percentage increase required to make up the revenue shortfall. It was beyond the scope of this study to perform sufficient operational analysis to validate the full cost of each recycling rate.

Table 2-16 Existing and Full Cost Commercial Recycling Rates

Description	Existing Rate	Full Cost Rate
Small Volume Generator (Rollcart) Business (per month)	$15.00	$28.65
Large Volume Generator Business (per yard per collection)		
Clean Cardboard, Office Paper, Or Aluminum	None	None
Mixed Fiber Only; Mixed Aluminum/Metal/Plastic Containers	$4.00	$7.64
Glass Or Mixed Fiber With Containers	$8.00	$15.28

Table 2-16 (continued)

Medium Volume Generators Business						
Container Size	Pickups per Week					
	1	2	3	4	5	6
Clean Segregated Corrugated Cardboard Only ($/Mo) – Existing						
2	$57.91	$74.47	$91.02	$107.57	$124.12	$140.68
4	$70.07	$103.17	$136.28	$169.38	$202.49	$235.58
6	$84.86	$134.52	$184.18	$233.82	$283.48	$333.14
8	$98.77	$164.98	$231.18	$297.40	$363.61	$429.82
Clean Segregated Corrugated Cardboard Only ($/Mo) – Full Cost						
2	$61.67	$89.51	$122.30	$160.07	$202.79	$250.50
4	$80.58	$144.44	$224.86	$321.83	$435.35	$565.40
6	$95.04	$177.56	$279.95	$402.18	$544.29	$706.26
8	$108.65	$214.48	$346.78	$505.57	$690.85	$902.62
Aluminum, Metal or Plastic Containers: Sorted or Mixed Fibers ($/Mo) – Existing						
2	$61.53	$79.12	$96.71	$114.29	$131.88	$149.47
4	$74.44	$109.62	$144.79	$179.97	$215.14	$250.31
6	$90.16	$142.92	$195.69	$248.44	$301.20	$353.96
8	$104.94	$175.29	$245.63	$315.98	$386.33	$456.68
Aluminum, Metal or Plastic Containers: Sorted or Mixed Fibers ($/Mo) – Full Cost						
2	$73.84	$118.68	$174.07	$240.02	$316.52	$403.57
4	$85.61	$153.47	$238.91	$341.94	$462.56	$600.74
6	$100.98	$188.66	$297.44	$427.31	$578.31	$750.40
8	$115.44	$227.88	$368.45	$537.17	$734.03	$959.03
Glass or Mixed Fibers with Containers in Same Container ($/Mo) – Existing						
2	$41.51	$59.02	$75.84	$90.10	$108.82	$126.57
4	$62.32	$87.12	$111.95	$136.95	$161.75	$186.76
6	$84.35	$94.25	$112.50	$149.27	$176.29	$204.25
8	$100.35	$119.18	$154.45	$188.73	$224.04	$258.34
Glass or Mixed Fibers with Containers in Same Container ($/Mo) – Full Cost						
2	$86.87	$139.62	$204.79	$282.37	$372.37	$474.78
4	$100.72	$180.55	$281.07	$402.28	$544.19	$706.75
6	$118.80	$221.95	$349.93	$502.72	$680.36	$882.83
8	$135.81	$268.10	$433.47	$631.97	$863.57	$1,128.27

2.4.6 ROLL-OFF COLLECTION

Current and full cost rates for roll-off collection are shown in Table 2-17. As shown, the disposal cost portion of full cost roll-off rates equates to the full cost landfill rate.

Table 2-17 Existing and Full Cost Roll-off Rates

Roll-off	Description	Existing Rate	Full Cost Rate
Mini	Minimum Monthly Rental	$60.90	$70.03
	Pull Charge	$60.90	$70.03
	Disposal Fee (per ton)	$41.00	$42.64
Full-Size	Minimum Monthly Rental	$85.66	$98.51
	Pull Charge	$85.66	$98.51
	Disposal Fee (per ton)	$41.00	$42.64

2.5 RESIDENTIAL AUTOMATED COLLECTION

The City has previously contemplated converting its residential system to automated collection. This study included a separate analysis of the likely operating and cost impacts of converting the residential curbside system from manual collection of bags to automated collection. The current analysis was performed with the aid of MSW Consultants' Route Optimization Model, a proprietary spreadsheet-based model that compiles critical operating parameters for residential high density collection systems, and allows for comparisons of the routing, fleet and labor needed to staff a collection system.

The results of this analysis are shown in the following tables. It is important to note that this analysis assumes the City would adopt automated frontload (AFL) as the preferred collection technology.

Table 2-18Table 2-18 compares the current system operating parameters with an AFL collection system. As shown, collection productivity improves in the automated collection system, allowing one truck to collect more homes in a standard work day. With this increased productivity, the City would be expected to reduce one daily route.

Table 2-18 Comparison of Operating Parameters

	Current System	Automated Rollcart
Households Served	33,483	33,483
Collection Days per Week	Mon-Fri	Mon-Fri
Length of Work Day (hours)	8	8
Truck Capacity (tons)	12	13
Collection Frequency	1x/week	1x/week
Average Pounds per Set-out	40.4	41.8
Set-out Rate	88%	85%
Productive Seconds per Stop	30.0	23.0
Refuse Routes per Day	**8**	**7**
Average Households per Route	**840**	**960**

Table 2-19 compares the capital costs of the current system with an AFL system. These costs are based on the City's current equipment contract, the City's expected vehicle life, as well as quotes from local dealers. As shown, the AFL system has substantially higher capital costs compared to the current system.

Table 2-19 Comparison of Equipment Capital Cost

	Current System	Automated Rollcart
Number of Trucks		
Active	8	7
Spare	2	2
Total	10	9
Number of Rollcarts	0	33,483
Capital Cost per Unit		
Trucks	$265,000	$247,000
Curotto Can	N/A	$35,000
Rollcarts 90 gal including A&D	N/A	$55
Total Capital Cost		
Trucks	$2,650,000	$2,223,000
Curotto Can	$0	$490,000
Rollcarts	$0	$1,841,565
Total Capital Costs	**$2,650,000**	**$4,064,565**
Useful Life (Yrs)	*10*	*10*
Depreciation	*$265,000*	*$406,457*

Table 2-20 compares the operating cost profile of the current system with an automated system. As shown, the AFL system is substantially less costly to operate. This stems from a substantial reduction in labor combined with the elimination of management fees for the current black bag program. It is also worth noting that automated collection systems typically experience lower workers' compensation claims and may reduce insurance costs over time. The impact of these "soft" cost savings are not shown in the table below.

Table 2-20 Comparison of Operating Cost

	Current System	Automated Rollcart
Labor		
Crew Size	2	1
Spare Employee	9.6%	5.8%
Average Salary	$28,000	$34,000
Benefits	45%	45%
Subtotal Labor	$712,062	$365,010
Annual Equipment O&M per Vehicle		
PM	$2,600	$3,900
Repair	$8,000	$15,000
Tires	$6,900	$6,900
Fuel per Route ($2.00/gal CNG)	$14,625	$14,625
Cart Repair/Replacement ($2.50/yr)	$0	$92,078
Black Bag Program Costs	$300,000	$0
Subtotal O&M	$592,000	$426,653
Total Direct Operating Cost	**$1,304,062**	**$791,663**

Table 2-21 combines the annualized capital costs and O&M costs to compare the annual full cost of a rollcart system with the current system. The analysis suggests the potential for meaningful cost savings.

Table 2-21 Cost Summary: Current System v. Rollcart System

	Current System	Automated Rollcart	Difference
Capital Costs	$2,650,000	$4,064,565	$1,414,565
Annual Depreciation	$265,000	$406,457	$141,457
Operating Costs	$1,304,062	$791,663	($512,399)
Net Annual Cost (O&M + Depreciation)	**$1,569,062**	**$1,198,119**	**($370,942)**

In practice, the City should expect to transition to automated rollcart collection over a period of years, integrating new neighborhoods over time. A multi-year transition can be completed within scheduled vehicle replacement; which would reduce the degree of financing required on an annual basis. Additionally, lessons learned in the initially converted neighborhoods can be applied to subsequent neighborhoods.

3 CONCLUSIONS AND RECOMMENDATIONS

3.1 CONCLUSIONS

The Project Team has constructed a detailed financial model to project the performance of the City's solid waste utility for a through 2023. The final model incorporates the adopted FY15 budget and rate revisions that occurred while this study was ongoing. The operating revenues and operating expenses for the forecast period were developed by, and/or in consultation with, City staff and are based upon reasonable projections. The projected capital project expenses have been developed by City staff to address system renewal, vehicle replacement, capacity expansion-related needs, and other facility improvements. The financial model developed for this project contains all data and assumptions used in this analysis and has been delivered separately to the City for ongoing use in projecting and modifying solid waste rates.

Based on the results of the financial model, the Project Team concludes that the required rate increase for the solid waste utility is approximately 12.5 percent for FY15 after rate increases for the landfill, commercial refuse collection, roll-off collection, and after linking commercial recycling collection rates to calculate as a set percentage of the commercial refuse rate. Further, the FY15 rate increases are not sufficient to fund solid waste in subsequent years, and the deficit would increase. The overall system deficit is driven primarily by a deficit for the provision of commercial waste and recycling collection, and includes the University contract and the CID. Consequently, Section 2 of this report provides the full cost rates that would be required in FY16 (after taking into account the adopted rates for FY15) to achieve revenue sufficiency.

The Project Team is of the opinion that the financial projections and full cost rates in Section 2 would enable the City to meet its obligations with regard to:

- Operating expenses,
- Non-operating expenses,
- Capital project expenses, and
- Key financial policies, including:
  - Maintenance of at least 20 percent of operating reserve balances,
  - Debt service coverage of at least 1.20
  - Cash funding of annual utility vehicle replacements.

In practice, it is unlikely that the City can or should immediately transition from the current rate structure to full cost rates. Doing so raises two primary risks:

1) Fall-out from customers whose rates experience significant increases; and
2) Significant loss of business from commercial refuse bulk container customers who would be more inclined to seek lower price service from private haulers. This situation is exacerbated because the commercial trash rates must subsidize commercial recycling.

Because of these significant risks, the Project Team believes that a more measured approach to evolving the City's solid waste rates is warranted. Such a rate strategy is provided in Section 3.2 below. While this recommendation is offered by the Project Team, the City is ultimately responsible for reviewing and, at the City's discretion, modifying the consultant's rate recommendation contained herein based on the operational, management, and political factors known to the City. While the consultant's recommendation also achieves the City's financial policies, it is intended to serve as a guideline only.

In addition to these primary conclusions, the following are other conclusions that were drawn in the course of this engagement:

- **Automated Collection**: Automated collection could be phased in for residential trash collection and would be expected to achieve cost savings.
- **PAYT**: The City could implement a successful PAYT system based on either bags, stickers or (if it transitions to automated collection) carts. Suggested full cost PAYT rates for bag/sticker programs and variable cart programs are provided in this report. However, the City should expect to develop associated policies, ordinance language, and a final rate structure before implementing a PAYT program. It is further recommended that the City select only one form of PAYT rates, and not attempt to give residents a choice of carts or bags/stickers.
- **Collection Operations Analysis**: It was beyond the scope of this project to assess the operational efficiency and optimal performance level of the City's collection, recycling and disposal system. However, preliminary route observations and the results of the financial analysis confirm that the City should analyze at least the following solid waste functions to identify if operational productivity increases and associated cost savings are achievable:
  - Bulk container refuse collection provided by both frontloaders and rearloaders, including services provided to multi-family apartments, the University and the CID;
  - All commercial recycling collection, including services provided to the University and the CID; and
  - Dual stream blue bag recyclables collection and processing.

  The Project Team recommends against making any significant changes to the City's commercial collection business (such as making dramatic rate changes, or exiting some or all of this business) until an operational analysis is performed and the City has a complete understanding of the dynamics of its commercial collection operations relative to the local private market and industry productivity standards.
- **Deposit Policy**: Many city utilities have deposit policies for residential service and the Project Team found nothing problematic about Columbia's deposit policy. The deposit policy would appear to be especially appropriate if the City were to implement automated curbside collection and provide residents with rollcarts.

3.2 CONSULTANT'S RATE RECOMMENDATION

This section contains the Project Team's recommended rate path (consultant recommendation) that is intended to achieve all financial objectives and policies of the solid waste utility, while minimizing the degree of financial impact on any single customer class in a given year. The Consultant's rate recommendation subscribes to the belief that revenue sufficiency of the utility is of primary importance.

Additionally, while the financial model delivered with this report contains a rate plan through 2023, in practice the Project Team believes the City will likely need to update its rates within the next three years as it raises commercial rates, undertakes collection optimization efforts, renegotiates a contract with the University, evaluates its recycling program, converts to automated roll-cart collection, implements PAYT, and undertakes the range of capital projects currently budgeted. This section only shows the projected rate path for the next three years, and it is assumed that a 1.0 to 2.0 percent escalation will be applied annually to rates thereafter.

3.2.1 FACILITY TIP FEES

The Project Team supports increasing the landfill tip fee to full cost. Because the MRF processing cost is higher than the landfill disposal cost, the City must balance the need to achieve revenue sufficiency with the need to give generators and haulers an incentive to recycle. Consequently, the Project Team believes the City should charge fees for all processing at the MRF (i.e., eliminate all rebates and discounts), but that these fees should be lower than landfill disposal fees to maintain an incentive to recycle. Table 3-1 summarizes the Consultant's recommended landfill tip fee.

Table 3-1 Landfill Tip Fee (per ton)

Description	FY14 Rate	FY15 (Adopted)	Recommendation		
			FY16	FY17	FY18
Landfill Annual Rate Increase		7.89%	3.0%	2.5%	2.5%
Landfill Tip Fee	$38.00	$41.00	$42.23	$43.29	44.37

3.2.2 RESIDENTIAL COLLECTION RATES

The Project Team believes small annual escalation in the residential rates are appropriate to enable prudent management of the solid waste utility. Consultant's recommended residential rates are shown in Table 3-2.

Table 3-2 Recommended 3-year Residential Rate Path

Description	Existing Rate	FY15 (Adopted)	Recommendation		
			FY16	FY17	FY18
Annual Rate Increase		0.0%	1.0%	2.0%	2.0%
Residents Who Get Bags	$15.42	$15.42	$15.57	$15.89	$16.20
Residents Who Do Not Get Bags, But Pay Their Own Trash	$14.67	$14.67	$14.82	$15.11	$15.72
Residents Who Do Not Get Bags, But Landlord Pays Trash	$14.42	$14.42	$14.56	$14.86	$15.46

3.2.3 COMMERCIAL COLLECTION RATE INCREASES

More significant rate increases are warranted for the commercial sector, including the University and CID. Of equal importance, the commercial dumpster rate structure should be re-balanced to more equitably charge customers with higher collection frequency and larger container size. The Project Team recommends that the City:

- Establish a separate rate matrix for frontload and rearload service to recognize that rearload service has a higher cost and customers requiring this service should be required to pay accordingly or else find a way to shift to frontload service. Because of the complexity of re-balancing container rates, the Consultant recommends new rates in FY16 that collectively close the revenue shortfall, resulting in various rate increases for individual commercial customers and an overall commercial revenue increase of 43 percent. The recommended rates for FY16 are shown in Table 3-3, with rate increases for the subsequent years shown in Table 3-4.
- Consider adding a disposal premium to commercial establishments that generate food wastes to reflect the higher density, and hence more costly disposal, of wastes from these establishments. Although it was beyond the scope of this project to determine an appropriate premium, such premium could be based on an estimated difference in density, or the City could undertake representative sampling of containers with and without food waste to determine the precise density differential, and calculate a premium accordingly.
- Initiate a $5 fee for gated/locked/roll-out containers to be charged each time the City equipment operator must exit the vehicle cab to open/close or unlock/lock a gate to access any refuse or recycling containers, or to roll out a container that is not directly accessible by the collection vehicle approach.

Table 3-3 Recommended FY16 Commercial Trash Rates

Container Size (CY)	Pickups per Week					
	1	2	3	4	5	6
Commercial Trash – Front Load						
1	$64.24	$96.97	$135.89	$181.04	$232.37	$289.93
2	$72.39	$121.01	$182.04	$255.48	$341.34	$439.62
3	$80.53	$139.47	$213.91	$303.88	$409.35	$530.37
4	$87.58	$161.21	$255.52	$370.52	$506.22	$662.58
6	$106.07	$201.78	$322.31	$467.65	$637.84	$832.85
8	$123.46	$247.47	$404.57	$594.79	$818.12	$1,074.55
Commercial Trash – Rear Load						
1	$80.30	$115.62	$157.12	$204.86	$258.77	$318.93
2	$86.87	$139.62	$204.79	$282.37	$372.37	$474.78
3	$92.61	$156.20	$235.30	$329.93	$440.06	$565.73
4	$96.34	$174.10	$272.55	$391.70	$531.53	$692.03
6	$111.38	$218.59	$356.84	$526.11	$726.43	$957.78
8	$123.46	$257.79	$433.47	$650.55	$909.02	$1,208.86

Table 3-4 Recommended 3-year Rate Escalations for Commercial Trash Collection

Description	Recommendation		
	FY16	FY17	FY18
Commercial Refuse – Front Load	Rebalanced	5.0%	5.0%
Commercial Refuse – Rearload	Rebalanced	5.0%	5.0%

Note that commercial recycling rate increases are not shown because recycling rates are recommended to stay set at either 80 percent (for cardboard) or 85 percent (for other recyclables) of the rearload trash rates.

Table 3-5 summarizes the recommended annual escalations for remaining commercial services.

Table 3-5 Recommended 3-year Rate Escalations for Roll-off and CID

Description	Recommendation		
	FY16	FY17	FY18
Roll-off	5.0%	5.0%	5.0%
CID	20.0%	10.0%	5.0%

As shown in the above tables, the total rate increase required for each service is generally spread over multiple years to minimize the annual impact on customers. However:

- Rearload rates are escalated more rapidly because the rearload service is higher cost and cannot be as easily replaced by private sector haulers who are primarily targeting frontload accounts.

- The University contract comes up for rebid in the coming year and it is recommended that the City propose the full costs for providing the range of refuse and recycling collection required by the University.
- CID rate increases are front loaded in an effort to attain sufficiency more rapidly.

3.2.4 COMMERCIAL RECYCLING COLLECTION RATE INCREASES

The Project Team also recommends that the City revisit its entire recycling rate structure after performing a full analysis of options for collection, transportation and processing of recyclables. This analysis should compare and contrast:

- **Best Mix**: Should the City retain dual stream recycling or convert to single stream?
- **Bags or Carts**: Are blue bags the most effective means for recycling set-outs?
- **Local Processing or Transfer and Transport**: Does it still make sense to process all recyclables locally at the City's MRF, or are economies to be improved by transfer and processing at a larger and more efficient facility in the Kansas City or St. Louis areas?

Significant increases in recycling rates for commercial customers and the University may either (a) diminish demand for recycling collection and shift wastes back to disposal, or (b) allow a private sector entity to provide a lower cost recycling collection service resulting in loss of business for the City.

3.2.5 ANNUAL RATE SCHEDULES

Because of the number of rate matrices involved, specific rates for each of the next three years are not provided in the body of this report. Rather, they are included in a copy of the financial model that has been developed for this project.

3.3 OTHER RECOMMENDATIONS

In addition to the rate-related recommendations above, the Project Team makes the following ancillary recommendations:

- The City should test the proposed rates in their billing system prior to implementation to evaluate the projected billings from the billing system as compared to the projected rate revenue presented in this Study for reasonableness.
- The City should update the revenue sufficiency analysis portion of this study each year to ensure projected revenue is sufficient to fund projected expenses going forward as assumptions made during this analysis may change and have a material impact upon the analysis.
- The City should update the cost of service analysis portion of this study every three years, or upon implementation of any major changes to the collection system, landfill, or MRF, to ensure costs are recovered consistent with cost of service principles and customer characteristics.

The following are more general recommendations for consideration by the City that were identified in the course of performing the primary cost and rate study:

- **Premium Rearload Bulk Container Service**: The rearload containers serviced by the City often require significantly more time, resources, and effort to service compared to frontload containers. This service operates as a premium collection service, and should be charged a higher rate than frontload containers. This new rate has been incorporated into the rate recommendation.
- **Eliminate Recycling Rebates**: Although recycled materials certainly have value, this study suggests the City's cost to collect, process and transport recyclables is higher than the recovered value. The City should eliminate rebates and instead charge a small fee for processing of recyclables.
- **Levelize Rates for Same Services**: At the current time, the University enjoys a discount on its collection and disposal rates. In practice, the City cannot provide services to the University at a lower

cost than is required to service other commercial customers. The University should be charged the same collection and disposal rates as other customers.

- **New Service Fees**: The benchmarking research performed for this project confirms that many other municipalities, as well as most if not all private sector haulers, charge commercial customers for any services that take extra time and effort to provide. The City should adopt similar, reasonable rates for these services, which include:
  - Roll-out service that requires any container to be manually maneuvered in order for the truck to lift the container;
  - Gate service that requires equipment operators to exit the cab to open and close an unlocked gate for accessing the container;
  - Locked container service that requires the equipment operator to use a key to open the gate before accessing the container;
  - Excessive backing charge for any account that requires a rearloader to back more than 50 feet in order to access the container;
  - Bagged recyclables surcharge, which would be assessed to any commercial recycling customer that places recyclables in bags.

  It has been previously recommended that a $5 per visit surcharge be added for the roll-out, gated service, and lock service. The City Solid Waste Utility Manager should have some leeway in setting charges for excessive backing, as the length of the approach and difficulty of accessing a container will influence the time (and therefore, the cost) to service any given customer. Similarly, the surcharge for bagged recyclables should be based on the quantity of recyclables and on the incremental cost to de-bag these materials at the MRF. Determining such cost was beyond the scope of this study.
- **Automated Rollcart Collection**: The ad hoc cost and operating analysis performed for this study identifies automated collection as having potential to reduce costs and increase collection productivity. Further, extensive industry data suggests that collection crew health and safety will improve under automated collection, which tends to reduce soft costs associated with insurance and workers compensation, and also reduce turnover. Finally, automated collection will enable the use of a three-tiered cart-based PAYT program, which has been proven effective at increasing recycling in municipalities across the country. It is recommended that Columbia take steps to convert to automated curbside collection.
- **Budgetary Tracking**: Consider re-organizing the subaccounts used to manage the solid waste system to reflect specific collection vehicle types, rather than specific customer classes. The current subaccount structure does an excellent job delineating the various customer groups and materials being collected. Counterintuitively, this subaccount structure combines operations from multiple collection services and in so doing, obscures the ability to easily capture billing determinants, operating parameters, and other metrics that are customarily used to set rates for these collection services. Table 3-6 contains a suggested simplification of City solid waste subaccounts that aggregate each collection service independent of customer class and material collected.

Table 3-6 Simplified Subaccount Structure for Columbia Solid Waste Management

Code	Subaccount Name	Description
6510	Administration	Same as current subaccount
6511	MMSWMD	Same as current subaccount
6521	Container Maintenance	Same as current subaccount; will include management and maintenance of rollcarts should the City implement residential automated collection
6523	Roll-off	Same as current subaccount; will capture all roll-off service including residential and commercial compactors, temporary roll-off service, drop-off recycling collection of roll-off containers; includes CID and University accounts
New	Residential Curbside Collection	Combines the curbside collection routes from 6530 Residential and 6570 Recycling; includes multi-family properties receiving bag service; excludes multi-family bulk container collection
New	Rearload Bulk Container Collection	Includes collection of wastes and recyclables in rearload bulk containers; includes multi-family and commercial customers; includes CID and University accounts
New	Frontload Collection	Includes collection of wastes and recyclables in frontload bulk containers; includes multi-family and commercial customers; includes CID and University accounts; includes construction can accounts
6540	Landfill	Same as current
6541	Composting	Same as current
6573	White Goods Collection	Same as current
6574	HHW	Same as current
6577	MRF	Same as current

- **Recyclables Processing Evaluation**: Re-evaluate all options for transfer, transportation, and processing of each recycling stream. Issues of small scale and outdated sorting technology plague the City's MRF. The City should evaluate options for blue bag containers, loose containers, loose residential paper, clean cardboard, and residential single stream recyclables that involve modifying the MRF to serve as a transfer station, and procuring processing and/or sale of clean materials direct to market. While the City cannot eliminate transportation costs for recyclables, there may be more favorable processing options that reduce the City's net processing cost or even secures a reliable revenue stream for certain materials.
- **Residential and Commercial Route Audit**: This project served primarily to assemble the financial and operating data needed to develop a defensible rate path for the solid waste system. Although limited route observations were performed in support of the primary project objective, it was beyond the scope of this project to evaluate and quantify the efficiency and productivity of the residential and commercial collection system. MSW Consultants believes there are opportunities to improve productivity and possibly reduce one or more daily routes in both the residential and commercial systems. At a minimum, the City should comprehensively audit its commercial rearload and commercial frontload collection services as a precursor to making any decisions about reducing its

commercial collection footprint or exiting the business. The results of this cost and rate analysis are not sufficient to make a determination on the viability of the City's commercial collection service.

APPENDIX A

BENCHMARKING RESEARCH

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Exhibit 1 - US Census Demographics

City	Columbia, MO	Cedar Rapids, IA	Lee's Summit, MO	Springfield, IL	Norman, OK	Murfreesboro, TN	Davenport, IA	Lexington (-Fayette), KY	McAllen, TX	Peoria, AZ	Savannah, GA
Demographics and Economic											
Population, 2012 estimate	113,225	128,119	92,468	117,126	115,562	114,038	101,363	305,489	134,719	159,789	142,022
Population, 2010 (April 1) estimates base	108,841	126,326	91,391	116,249	110,925	109,048	99,685	295,803	129,875	154,098	136,322
Population, percent change, April 1, 2010 to July 1, 2012	4.0%	1.4%	1.2%	0.8%	4.2%	4.6%	1.7%	3.3%	3.7%	3.7%	4.2%
Population 2010	108,500	126,326	91,364	116,250	110,925	108,755	99,685	295,803	129,877	154,065	136,286
Language other than English spoken at home, percent age 5+, 2007-2011	10.6%	5.6%	5.2%	5.6%	9.0%	9.2%	6.3%	11.4%	80.0%	14.7%	7.9%
High school graduate or higher, percent of persons age 25+, 2007-2011	93.4%	92.6%	96.2%	90.7%	93.1%	90.8%	90.0%	88.7%	73.9%	90.3%	84.5%
Bachelor's degree or higher, percent of persons age 25+, 2007-2011	54.1%	30.6%	42.0%	33.10%	43.4%	35.5%	26.2%	39.9%	27.1%	26.2%	24.6%
Housing units, 2010	46,758	57,217	36,679	55,729	47,965	45,500	44,087	135,160	45,862	64,818	61,883
Home ownership rate, 2007-2011	48.4%	69.8%	75.7%	65.0%	58.0%	53.1%	62.9%	56.3%	60.9%	73.6%	46.7%
Housing units in multi-unit structures, percent, 2007-2011	37.2%	29.0%	17.0%	27.0%	28.6%	34.3%	28.8%	33.7%	27.2%	14.2%	35.8%
Median value of owner-occupied housing units, 2007-2011	$168,100	$131,300	$185,100	$115,700	$149,900	$176,200	$119,100	$163,000	$107,900	$191,700	$148,600
Households, 2007-2011	43,153	52,614	33,493	50,142	43,326	41,077	40,957	122,793	41,631	56,000	51,770
Persons per household, 2007-2011	2.31	2.35	2.69	2.25	2.41	2.54	2.37	2.31	3.11	2.74	2.53
Per capita money income in the past 12 months (2011 dollars), 2007-2011	$25,689	$28,503	$34,358	$29,089	$28,267	$25,256	$24,741	$29,339	$21,123	$29,048	$19,835
Median household income, 2007-2011	$43,084	$52,242	$76,179	$49,627	$48,248	$49,450	$45,237	$48,779	$40,636	$63,940	$34,888
Persons below poverty level, percent, 2007-2011	23.6%	12.3%	6.9%	16.8%	17.6%	17.8%	17.2%	18.20%	26.7%	9.1%	26.6%
Housing and Contact Information											
Population	113,225	128,119	92,468	117,126	115,562	114,038	101,363	305,489	134,719	159,789	142,022
Housing Total:	47,069	57,316	35,360	55,822	49,137	44,779	44,394	134,977	47,784	63,343	62,289
1, detached	24,447	36,804	25,973	34,425	30,974	25,319	28,524	81,030	30,845	46,885	34,401
1, attached	3,759	1,866	3,309	3,851	1,889	3,380	1,938	6,883	1,584	3,920	4,633
2, attached	3,830	1,311	1,176	2,424	1,618	1,137	2,366	6,157	1,558	241	4,330
3 or 4	3,104	2,754	1,326	3,183	2,404	2,182	1,627	6,343	3,320	850	5,341
5 to 9	4,259	3,490	794	2,804	3,736	4,887	2,994	8,670	1,989	1,963	6,426
10 to 19	3,095	5,070	1,380	2,824	4,158	4,045	2,933	10,595	2,015	2,107	2,917
20 to 49	3,210	4,011	1,341	3,827	2,154	3,104	2,846	13,680	4,109	3,852	3,271
Mobile home	1,307	2,010	61	2,484	2,178	725	1,166	1,619	2,247	3,423	958
Boat, RV, van, etc.	58	0	0	0	26	0	0	0	117	102	12
Total Area SQ Mile	63.08	70.8	63.35	59.48	178.76	55.35	62.95	283.65	48.34	174.4	103.15
Business Quick Facts											
Manufacturers shipments, 2007 ($1000)	1,259,892	6,894,324	421,744	545,528	930,997	2,273,316	4,016,547	3,061,217	605,022	267,830	2,160,543
Merchant wholesaler sales, 2007 ($1000)	508,281	1,974,431	589,626	1,396,765	442,898	526,107	2,268,308	4,442,420	1,828,801	251,210	1,633,891
Retail sales, 2007 ($1000)	2,672,828	2,774,578	1,092,023	2,366,891	1,767,981	2,008,062	2,168,104	4,778,490	3,599,144	2,340,433	2,521,212
Retail sales per capita, 2007	$26,888	$21,997	$13,892	$20,214	$16,711	$20,417	$21,941	$16,635	$28,682	$15,135	$19,111
Accommodation and food services sales, 2007 ($1000)	286,281	$299,095	119,869	311,787	281,624	257,733	239,815	785,725	357,536	258,496	663,238
Geography Quick Facts											
Land area in square miles, 2010	63.08	70.8	63.35	59.48	178.76	55.35	62.95	283.65	48.34	174.4	103.15
Persons per square mile, 2010	1,720.10	1,784.3	1,442.30	1,954.40	620.5	1,965.00	1,583.60	1,042.80	2,686.50	883.4	1,321.20

Exhibit 2 A - Detailed Comparative Programmatic Information

Comparative Data - Demographic, Economic, and Solid Waste Programmatic Information	Columbia, MO	Cedar Rapids, IA	Lee's Summit, MO	Springfield, IL	Norman, OK	Murfreesboro, TN	Davenport, IA	Lexington-Fayette, KY	McAllen, TX	Peoria, AZ	Savannah, GA
Contact Information											
Web Site	http://www.gocolumbiamo.com/PublicWorks/Solidwaste/	http://www.cedar-rapids.org/resident-resources/utilities/solidwaste/Pages/default.aspx	http://www.cityofls.net/Environment.aspx	http://www.springfield.il.us/index.php/city-departments2/office-of-public-works/waste-recycling	http://www.ci.norman.ok.us/utilities/sa/sanitation	http://www.murfreesborotn.gov/Index.aspx?NID=256	http://www.cityofdavenportiowa.com/department/division.php?structureid=436	http://www.lexingtonky.gov/index.aspx?page=666	https://www.mcallen.net/public-works	http://www.peoriaaz.gov/NewSecondary.aspx?id=793	http://www.savannahga.gov/index.aspx?NID=514
Contact Name	Cynthia Mitchell				City of Norman Sanitation	Joey Smith	Todd Jones	Steve Fees	Department of Public Works		Gene Prevatt
Title	Solid Waste Utility Manager		Environmental Programs Coordinator			Director	Solid Waste Superintendent	Solid Waste Coordinator			Bureau Chief
Contact Phone #	573-874-6291	319-286-5897	816-969-1800.	217-789-2255	405-329-1023	615-893-3681	563-326-7732	859-425-2836	956-681-4050	623-773-7431	912-651-6579
PLANS AND GOALS											
Solid Waste Management Plan	Yes	Yes	Yes	Not found	Not found	Yes	Yes - Multi-county	Yes	Not found	Regional	Yes - County
Date Issued	2012	2011	2006			1994	2011	2007		2005	2008
Recycling Goal			22-26%				50%	20%		Not set	
Rate Goal		50% Reduction, currently 34%	Increase Single Unit Households from 11% to 20, 40, or 50%					zero waste goal			Reduce per capita waste disposed by 10%

Exhibit 2 A - Detailed Comparative Programmatic Information

Comparative Data - Demographic, Economic, and Solid Waste Programmatic Information	Columbia, MO	Cedar Rapids, IA	Lee's Summit, MO	Springfield, IL	Norman, OK	Murfreesboro, TN	Davenport, IA	Lexington-Fayette, KY	McAllen, TX	Peoria, AZ	Savannah, GA
SINGLE FAMILY COLLECTION SERVICES											
Refuse											
Frequency	Weekly	Weekly	N/A	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly
Set out requirement	Bags & cans	35 gal	N/A	Cost is by 1 can or 2 cans	68 and 95 gal carts	96 gal cart	28.3% - 35 gal, 55.2% - 65 gal, 16.5% - 95 gal	90 gal cart		60 gal cart or 90 gal cart	65 and 96 gal cart
Unlimited Set-outs?	Yes	No	N/A	N/A	No	No	No	No	No	No	No
Weight Allowed (lbs.)	50	100	N/A	N/A	N/A	200		200			
Extra garbage set outs (Bags, Carts, Boxes)	Unlimited	Bags	N/A	Cans	Carts	Carts	Bags	Bags	Carts	Carts	Bags
Extra Garbage Purchase Sticker Per Bags	N/A	$1.25	N/A	N/A	N/A	N/A	$4.00	N/A	N/A	N/A	N/A
Collection Technology	Rear loader	Automated side loader	N/A		Automated side loader		Automated side loader		Automated side loader	Automated side loader	
Provided by (public/contract/sub/open)	Public	Public	Open	Open	Public	Public	Public	Public	Public	Public	Public
Recycling											
Frequency	Weekly	Weekly	N/A	Weekly	Weekly	N/A	Bi Weekly	Weekly	Weekly	Weekly	2x/month
Set-outs Allowed		1 cart plus small 2 - 5 gal buckets for glass and a 20"x30"x20" cardboard box for the excess	N/A	unlimited bin set-outs		N/A	unlimited bins	1 Cart	1 Cart	Unlimited	1 Cart Issued, but individual set outs 15 bags per week total
Weight Allowed (lbs.)	50	220	N/A	N/A		N/A	50				
Single Stream or Dual Stream?	Dual stream	Single stream	N/A	Dual or single depending on Hauler	Single stream	N/A	Dual stream to switch to single in 2 years	Single stream	Single stream	Single stream	Single Stream
Collection Technology	Dual rear loader	Automated side loader	N/A			N/A	Rear loader, Side loader	Dual rear loader	Automated side loader	Automated side loader	
Provided by (public/contract/county/open)	Public	Public	Open	Open	Public switching to contract in August 5th	Open	Public	Public	Public	Public	Open including public

Exhibit 2 A - Detailed Comparative Programmatic Information

Comparative Data - Demographic, Economic, and Solid Waste Programmatic Information	Columbia, MO	Cedar Rapids, IA	Lee's Summit, MO	Springfield, IL	Norman, OK	Murfreesboro, TN	Davenport, IA	Lexington-Fayette, KY	McAllen, TX	Peoria, AZ	Savannah, GA
Yard Waste											
Frequency	Included with trash	Weekly	N/A	Unscheduled, collected as needed	Weekly during collection season, monthly collection during winter season.	Every 14-21 days	Free collection weeks, and weekly during season	Weekly	Every 4 - 6 weeks	Once per year roadside collection, otherwise it needs to be scheduled	Weekly
Weight Allowed (lbs.)	N/A	220	N/A	N/A	35 gal max volume		50	Bag or can cannot exceed 30			
Volume-based cart	N/A	65 gal or 95 gal cart	N/A	Must fit in paper bags, branches must be no larger than 4ft wide and 10ft long		32 gal cart maximum	Yes	90 gal cart	No	No	No
Seasonal	N/A	No	N/A	May through November with special free collections in April and November	Spring and fall	No, but leaf collection is annual	Yes, no winter collection	No	No	No	No
Leaf Collection Separate	N/A	Yes, Spring/Fall	N/A	Yes		Yes	Yes	Yes	No	Yes	Yes
Set-outs Allowed	N/A	1 cart given and 2'x3' bundles or second cart purchased	N/A	Unlimited with sticker		Unlimited	Unlimited bags with stickers or 1 rental cart	1 Cart		Unlimited	15 per week total
Separate Collection Leaf Set-outs Allowed	N/A	N/A	N/A	Unlimited with sticker			Unlimited bags with stickers or 1 rental cart			Unlimited	15 per week total
Collection Technology	N/A	Automated side loader, leaf vacuum truck, hook lift truck	N/A		Rear loader	Grapple truck		Rear loader		Gripper truck	
Provided by (public/contract/county/open)	Public	public	Open	Open	Public	Public	Public	Public	Public	Public	Open including public
Bulky Waste											
Scheduled or on-call	On Call	Schedule	N/A	On Call	Schedule	Schedule	Scheduled bi-weekly collection	if larger than a chair or desk then a on call pickup is necessary	Schedule	Once per year roadside collection, otherwise it is on call	On call, only one call per month is uncharged
Set-outs Allowed	Unlimited	unlimited fee based system	N/A	3			4 appliances per year limit	Unlimited		Unlimited	15 per week total
Collection Technology	Roll off	Hook lift truck	N/A					Grabber truck or rear loader	Roll off	Gripper truck	
Provided by (public/contract/county/open)	Public	Public	Open	Open	Public	Open	Public	Public	Public	Public	Public
Other Collection Services											
E-waste	Yes	Yes	N/A		No	No	Yes	No	No	No	No
Tires	No	Yes	N/A	No	No	No	Yes	Yes, under certain conditions	No	No	No
Metal/ Appliances	Yes	Yes	N/A	Yes	No	No	Yes	Yes, under certain conditions	Yes	Yes	Yes

Exhibit 2 A - Detailed Comparative Programmatic Information

Comparative Data - Demographic, Economic, and Solid Waste Programmatic Information	Columbia, MO	Cedar Rapids, IA	Lee's Summit, MO	Springfield, IL	Norman, OK	Murfreesboro, TN	Davenport, IA	Lexington-Fayette, KY	McAllen, TX	Peoria, AZ	Savannah, GA
MULTI-FAMILY COLLECTION SERVICES											
Provided by (public/contract/county/open)	Public	Open	Open	Open	Public	Open	Public	Public	Public	Public	Open including public
Cart only?		No			Yes		Yes	No	No	No	
Including containers?		18 containers for recycling			No		No	Yes	Yes	Yes	
OTHER COLLECTION SERVICES WITH RESIDENTIAL											
Small Business	Yes	Yes, Limited	No, Open Market	Open		Public	Public	Yes	Yes		Yes
[describe]	Clean fiber or 90 gal containers collected weekly at $15.00 per month	Cart services for businesses in a special program who produce less than 100 lbs. per week			$14.00 per month		Cart Only	Public cart collection	Carts		Bulk waste and refuse collection through containers
CENTRAL BUSINESS DISTRICT											
Is there a Central Business District that requires separate special collection?	Yes	No	No	No	Yes		No	Yes			
COMMERCIAL COLLECTION SERVICES											
Refuse											
Provided by (public/contract/county/open)	Public	Open	Open	Open	Public	Open	Open	Public	Open including public	Public	Open including public
Recyclables											
Provided by (public/contract/county/open)	Public	Open	Open	Open	Public	Open	Open	Public	Public	Public	Open including public
ROLL-OFF COLLECTION SERVICES											
Does City provide roll-off Services?	Yes	No	No	No	Yes	N/A	No	No	Yes	Yes	Yes
[describe program]					Rented for remodeling, roofing, and construction					Scheduled service for bulky pickups	City competes with commercial haulers. Can determine that a roll off is too hard to obtain, or there is too much liability and give their business to a commercial hauler.

Exhibit 2 A - Detailed Comparative Programmatic Information

Comparative Data - Demographic, Economic, and Solid Waste Programmatic Information	Columbia, MO	Cedar Rapids, IA	Lee's Summit, MO	Springfield, IL	Norman, OK	Murfreesboro, TN	Davenport, IA	Lexington-Fayette, KY	McAllen, TX	Peoria, AZ	Savannah, GA
OTHER SERVICES PROVIDED BY SOLID WASTE DEPT											
Litter clean-up	Volunteer basis	Yes	Volunteer basis					Yes	Yes		Yes
Litter can/street can collection	Yes	Yes	Yes			Yes	Yes	Yes			Yes
Park/Rec collection		Storm damage removal				Yes	Yes	Yes	Yes		Yes
Municipal Building collection	Yes	Yes				Yes	Yes	Yes	Yes		Yes
Dead animal collection								Yes		Yes	Yes
Illegal dump site clean-up		Yes									Yes
Eviction clean-up							Yes				Yes
DISPOSAL											
What facility type does the City use?											
Landfill	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Landfill ownership	City	County	City	Private		County	County	Private	Public	County	City
Transfer Station	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Transfer Station Ownership	N/A	County	Private	Private	City	N/A	N/A	City	N/A	Private	City
Waste to Energy	No	No	No	No	No	No	No	No	No	No	No
Recyclables Processing											
Is the facility publically or privately owned?	Public	County	Public	Private	Public	Public	Public	Private	Public	Private	Private
Does it process Single Stream or Dual Stream	Dual stream	Dual stream	Dual stream	Dual stream			Dual stream	Dual stream	Single stream	Single stream	
Free or Fee?											
Yard Waste/ Organics Processing											
Is the facility publically or privately owned?	Public	Public	Public	Private	Public	Public	Public	Yes	Public	Private	Private
Is the product compost or is it ground up for land application?	Both	Compost	Compost	Land use application	Compost	Compost	Compost	Compost	Compost	Compost	
Convenience Centers											
Does the City have any, and if so how many?	Yes, 3	Yes. It's owned by/ Linn County	Yes, 3	Yes, 4	Yes	Yes	Yes	Yes, 16	Yes,	Yes, 3	Yes, 7
What do they accept?											
Trash	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes		Yes	Yes
Recycling	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yard Waste	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household Hazardous Waste Facility											
Does the City have a HHW facility?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No, but there are private companies that have this

Exhibit 2 B - Rates

Comparative Data - Economic and Solid Waste Programmatic Rate Structures	Columbia, MO	Cedar Rapids, IA	Lee's Summit, MO	Springfield, IL	Norman, OK	Murfreesboro, TN	Davenport, IA	Lexington-Fayette, KY	McAllen, TX	Peoria, AZ	Savannah, GA
Single Family Trash Pickup Rate Structure: Price of first cart/can/bag	$15.42 for bags, $14.67 for residents that don't get bags and pay their own trash, $14.42 for multi family or renters who have landlords who pay trash	$14.60 per month and includes yard waste collection		$11.25 for 1 can pickup weekly per month; plus $1.50 per month Waste & Recycling fee. $13.75 for two cans - OR $2.50 additional for 2 cans per weekly pick up	$14.00 per month. $6.00 per month for an additional cart	Average property Value of the City means residents pay an average of $1.93 per month in property tax, PV = $100,000 - $1.06 / month, PV = 200,000 - $2.12, PV= $300,000 - $3.18	Volume based Fee's. 35 Gal Cart $10.90 per month. 65 Gal $13.90 per month. 95 Gal $16.90 per month. All fees increase 3% annually	Tax of .1431 cents per $100.00. plus $4.50 per month	Street frontage based monthly fee: Frontage up to 50 feet = $12.80, from 51 - 75 feet = $14.10, from 76 - 100 feet = $15.40, from 101 - 150 feet = $16.70, from 151 - 200 feet = $19.40, from 200 and up = $24.60 and $26.74 for residents located outside of the Certificate of Convenience and Necessity (CCN) area	$9.69 per month. Two Trash Barrels $23.60. Three Trash Barrels $34.10. Four Trash Barrels $44.60. Five or More Trash Barrels (rate per barrel) $13.10	20% ad valorum property tax collected by the mayor for solid waste - $58.00 bi monthly - $29.00 per month
Single Family Recycling Rate Structure	Fee is included with Waste fee	$3.91 per month		Free for single family and duplex homes. $1.50 per month additional charge to monthly refuse bill	$3.00 per month		Fee is included with Waste fee	Fee is included with Waste fee	Fee is included with Waste fee	Single Recycling Barrel $3.41	Fee is included with Waste fee
Single Family Yard Waste Rate Structure	N/A	$14.60 per month and includes refuse collection		$1.50 per sticker, unless the yard waste is set out during their free pick up period in the spring or fall	Fee is included with Waste fee	Fee is included with Waste fee	Sticker Fee $1.60, Otherwise it's included with Solid Waste Fee. Rental cart costs $25.00 to start, then costs $16.77 yearly with a disposal fee of $4.80 per collection	Fee is included with Waste fee	Fee is included with Waste fee	Free on specific days, otherwise a $25.00 fee is charge per every 15 minutes of load time, with a $50.00 additional charge for items requiring a roll off container	Fee is included with Waste fee
Single Family Bulky Waste Rate Structure	Free unless its an appliance which costs $15.00	Furniture = $5.00 per item, TV = $15.00 per item, Large Appliances = $15 Handling fee + $9 per item. Special haul fee $15.00 per haul		Free for 3 items per pickup and only two pickups per 12 month period	$20.00 per pickup		Fee is included with Waste fee: Volume based Fee's. 35 Gal Cart $10.90 per month. 65 Gal $13.90 per month. 95 Gal $16.90 per month. All fees increase 3% annually	Fee is included with Waste fee	Fee is included with Waste fee	Free on specific days, otherwise a $25.00 fee is charge per every 15 minutes of load time, with a $50.00 additional charge for items requiring a roll off container	No Charge if on special collection day, unscheduled pickups are $25.00

Exhibit 2 B - Rates

Comparative Data - Economic and Solid Waste Programmatic Rate Structures	Columbia, MO	Cedar Rapids, IA	Lee's Summit, MO	Springfield, IL	Norman, OK	Murfreesboro, TN	Davenport, IA	Lexington-Fayette, KY	McAllen, TX	Peoria, AZ	Savannah, GA
Central Business District Rate Structure	Based on size and type of business							$25.00 permit fee, $30.00 for 8 yard containers, $25.00 for 6 yard containers, $20.00 for 4 yard containers	$12.80 for each unit		
Commercial Collection Trash Services Rate Structure	See Report Section 2	See Exhibit 4			$19.64 per month			$25.00 permit fee $30.00 for 8 yard containers $25.00 for 6 yard containers $20.00 for 4 yard container	See Exhibit 3	See Exhibit 6	See Exhibit 5
Commercial Recycle Collection Services Rate Structure	See Report Section 2	See Exhibit 4			$19.64 per month				See Exhibit 3	See Exhibit 6	See Exhibit 5
Roll Off Collection Services Rate Structure	See Report Section 2	See Exhibit 4						$75.00 per use	Roll-off/compactor size Monthly/Weekly Rental for Roll-Off Hauling per load Disposal Fee 20 cubic yard $97.02/MN $36.38/wk. $144.38 $17.64/ton 30 cubic yard $97.02/MN $36.38/wk. $151.60 $17.64/ton 40 cubic yard $109.15/MN $36.38/wk. $165.17 $17.64/ton $205.62 plus tax for 30 cyd including weekly rental, haul, and tip fee	See Exhibit 6	$350.00 per pull for a 30 yard up to 7 tons + 1 free extra pickup per month
Disposal Tip Fee Paid	$38.00 per ton	$38.00 per ton with a $20.00 minimum fee	$ 12.10 per cubic yard of MSW or $36.32/ton for larger vehicles with a minimum charge of $6.05 per half cubic/yard. $15.00 per self haul uncovered/unsecured loads. Recycling $10/ cubic yard with a minimum charge of $5.00		Free if recycling. Pull-off $13.00. Yard Waste $10.00 per cu yd. Residents $35.00/ton with a $11.00 minimum. Non-Residents / Commercial Haulers $48.00/ ton with a $14.00 minimum		$25.50 per ton, small loads $8.00 if less than on can, otherwise it's $25.00, appliances are $5.00 each	2 cubic yard - $12.05, 4 cubic yard -$24.10, 6 cubic yard - $36.15, 8 cubic yard -$48.20 The County pays $26.92 per ton to Republic	$21.82 per ton for residents, yard waste is $1.00 and $2.00 per cubic yard	$8.32 per load, or $26.13 per ton, or $20.00 per ton for small loads	$60.00 annual for residents, County landfills are paid through property taxes only Commercial Waste is $33.00 per ton
Residential Utility Deposit	$20.00	N/A	N/A	N/A	$60.00 for metered services only	N/A	N/A Utilities are charged through American Water for metered water service only.	N/A	There is only a Water Utility Deposit: $100.00	Non-owner $200.00 water/sewer utility deposit	N/A
Commercial Utility Deposit	N/A	N/A	N/A	N/A	$30.00 minimum for metered services only	N/A	N/A Utilities are charged through American Water for metered water service only.	N/A	There is only a Water Utility Deposit: $250.00	$225.00 for water and sewer	N/A

Exhibit 3 - McAllen, TX Dumpster and Roll Off Collection Rates

McAllen TX Dumpster and Roll Off Collection Rates						
Compactor Size (cubic yards)	Frequency of collections per week					
	1	2	3	4	5	6
6	$349.52	$699.05	$1,048.57	$1,398.10	$1,747.62	$2,097.14

	Monthly Dumpster Collection Rate				
	Frequency of Collections Per Week				
Dumpster Size (Cubic Yard)	2	3	4	5	6
2	$73.37	$110.72	$146.75	$175.60	$200.11
4	$140.07	$209.44	$276.14	$297.49	$378.86
6	$174.76	$261.47	$348.18	$434.89	$520.28
8	$232.12	$348.18	$464.24	$580.30	$696.36

Roll Off Collection Rate				
Roll-off/compactor size	Monthly/Weekly Rental for Roll-Off (Per Month)	Hauling per load (Per Week)	Disposal Fee	Tip Fee (Per Ton)
20 cubic yard	$97.02	$36.38	$144.38	$17.64
30 cubic yard	$97.02	$36.38	$151.60	$17.64
40 cubic yard	$109.15	$36.38	$165.17	$17.64

Charge for Miscellaneous Services			
Container Size (Cubic Yard)	Extra Service Per Container	Wash and Deodorize Per Container	Lid Lock Fee Per Dumpster
2	$14.00	$52.03	$33.08
4	$25.20	$52.03	$33.08
6	$33.60	$52.03	$33.08
8	$42.00	$58.70	$33.08
6 cyd compactor	$139.93	$78.75	N/A
20 cyd compactor	See, Hauling + Disposal Fees i	$147.00	N/A
30 cyd compactor	See, Hauling + Disposal Fees i	$220.50	N/A
40 cyd compactor	See, Hauling + Disposal Fees i	$294.00	N/A

Exhibit 4 - Cedar Rapids, IA Monthly Collection Rates and Fees

Cedar Rapids - IA (Rates reflect Residential Public Collection)		
Type of Charge	Reason for Rate Charge	FY 2014
Nuisance Abatement -	Final Notice Mailed	$0.00
Nuisance Abatement -	Intent to Assess Package - Mailed	$1.25
Nuisance Abatement -	Special Assessment Package - Mailed	$1.25
Nuisance Abatement -	Registered Letter Mailed - Added to Clean Up Invoice	$7.50
Nuisance Abatement -	Administrative Fee - Added To Clean Up Invoice	$55.00
Nuisance Abatement -	Disposal cost - Min. $20.00 or Actual Tipping Fee if Greater than $20.00	$20.00
Nuisance Abatement -	Lift Gate Dump Body Pick Up Truck Per hour - Minimum 1 hour	$27.00
Nuisance Abatement -	8 - 11 yard packer truck per hour - minimum 1 hour	$59.30
Nuisance Abatement -	25 yard packer truck per hour - minimum 1 hour	$86.50
Nuisance Abatement -	Specialized Crane or Debris loader truck - per hour - minimum 1 hour	$162.00
Nuisance Abatement -	Hook-lift truck - per hour - minimum per hour	$162.00
Nuisance Abatement -	Garbage removal - per one, 35 gallon, 40 pound garbage container	$12.00
Nuisance Abatement -	Bulky item removal - large item - per item charge	$15.00
Nuisance Abatement -	Emptying cardboard boxes of garbage - per box	$12.00
Nuisance Abatement -	Emptying of 95 gallon YARDY cart of garbage	$50.00
Nuisance Abatement -	Emptying 65 gallon CURBY cart of garbage	$30.00
Nuisance Abatement -	Appliance removal - per appliance	$24.00
Nuisance Abatement -	scrap metal collection	$20.00
Lien Assessment Fee		$5.00
Illegal Dumping	Disposal cost - min $20.00 or actual tipping fee if greater than $20.00	$20.00
Regular special collection services	Bulky item collection - per item charge	$5.00
Regular special collection services	Twin of full size bed set	$5.00
Regular special collection services	Queen size bed set	$10.00
Regular special collection services	King size bed set	$15.00
Regular special collection services	Appliance collection - per item charge	$9.00
Regular special collection services	Appliance hauling cost - flat rate fee per haul	$15.00
Regular special collection services	scrap metal collection cost - flat rate fee	$15.00
Regular special collection services	TV and computers	$15.00
Regular special collection services	Gaming tables over 200 pounds	$76.00
Regular special collection services	Regular pianos and organs	$76.00
Regular special collection services	Baby grand pianos	$141.00
Regular special collection services	Grand pianos	$153.00
Regular special collection services	Hook-lift truck - per hour - minimum 1 hour	$32.45
Regular special collection services	10 cubic yard hook lift box -per day - minimum 1 day	$2.40
Regular special collection services	15 cubic yard hook lift box -per day - minimum 1 day	$2.50
Regular special collection services	20 cubic yard hook lift box -per day - minimum 1 day	$2.60
Regular special collection services	30 cubic yard hook lift box -per day - minimum 1 day	$2.90
Regular special collection services	40 cubic yard hook lift box -per day - minimum 1 day	$3.10
Regular special collection services	Leaf Vacuum truck per hour - minimum 1 hour	$72.35
Additional GARBY cart daily rate		$0.33
Insufficient fund (NSF) and ACH rejection		$30.00
Late payment penalty (calculated on unpaid account balance)		4.5%

Exhibit 5 - Savannah, GA Commercial Rates and Fees

Savannah, GA Commercial Rates and Fees	
Commercial Collection Fees ($/cu. yd.)	**FY 2014**
River Street	$5.45
Downtown Lanes	$5.20
2-15 Cubic Yards	$3.50
16-47 Cubic Yards	$3.15
48-95 Cubic Yards	$2.75
96+ Cubic Yards	$2.20
Commercial Collection Fee (per cubic yard) -Downtown Lanes	$5.20
Commercial Collection Fee -2 to 15 cubic yard	$3.50
Commercial Collection Fee -16 to 47 cubic yard	$3.15
Commercial Collection Fee -48 to 95 cubic yard	$2.75
Commercial Collection Fee -96+ cubic yard	$2.20
Commercial Disposal Fee ($/cu. yd.)	$4.00
Sanitation Fees (Residential and Commercial)	$2,014.00
Sweeper Parking Citations	$25.00
Residential Service (Monthly)	$29.00
Commercial Disposal Fee (per cubic yard)	$4.00
Commercial Collection Fee (per cubic yard)	$5.45
1. The city openly competes with commercial haulers.	
2. The City reserves the right to reject pulling commercial loads that are too hard to obtain, these businesses must seek private sector haulers.	

Exhibit 6 - Peoria, AZ Monthly Roll Off and Dumpster Fees

Peoria, AZ Roll Off and Dumpster Rates					
Front Load Trash Services ($/Mo)					
	Container Size/Fee				
Collections per Week	2 Cubic Yards	3 Cubic Yards	4 Cubic Yards	6 Cubic Yards	8 Cubic Yards
1 Day	$ 62.44	$ 66.40	$ 70.43	$ 78.42	$ 86.39
2 Days	$ 97.31	$ 106.74	$ 116.23	$ 135.15	$ 153.97
3 Days	$ 143.21	$ 157.31	$ 171.46	$ 199.72	$ 227.90
4 Days	$ 189.11	$ 207.85	$ 226.70	$ 264.29	$ 301.80
5 Days	$ 235.00	$ 258.43	$ 281.92	$ 328.85	$ 375.69
6 Days	$ 280.90	$ 309.00	$ 337.16	$ 393.43	$ 449.61
7 Days	$ 338.28	$ 372.22	$ 406.20	$ 474.15	$ 542.01

Front Load Compactor Services			
	Container Size/Fee		
Collections per Week	4 Cubic Yards	6 Cubic Yards	8 Cubic Yards
1 Day	$ 152.83	$ 173.25	$ 193.33
2 Days	$ 293.92	$ 332.95	$ 371.24
3 Days	$ 435.00	$ 492.45	$ 549.15
4 Days	$ 576.09	$ 651.95	$ 727.07
5 Days	$ 717.18	$ 811.44	$ 904.98
6 Days	$ 858.27	$ 970.95	
7 Days	$ 1,034.64	$ 1,170.34	

Front Load Recycling Services ($/Mo)						
	Container Size/Fee					
Collections per Week	90 Gallon	300 Gallon	2 Cubic Yards	3 Cubic Yards	4 Cubic Yards	6 Cubic Yards
1 Day	$ 25.00	$ 25.00	$ 25.00	$ 25.00	$ 25.00	$ 25.00
2 Days	$ 50.00	$ 50.00	$ 50.00	$ 50.00	$ 50.00	$ 50.00
3 Days	$ 75.00	$ 75.00	$ 75.00	$ 75.00	$ 75.00	$ 75.00
4 Days	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00
5 Days	$ 125.00	$ 125.00	$ 125.00	$ 125.00	$ 125.00	$ 125.00

Roll-Off Services			
	Container Size/Fee		
	20 Yard	30 Yard	40 Yard
Monthly Fees	$ 25.00	$ 35.00	$ 45.00
Pull Fee (per Dump)	$ 195.00	$ 195.00	$ 195.00
Disposal Fee per Ton	$ 28.00	$ 28.00	$ 28.00
Delivery Charge	$ 32.00	$ 32.00	$ 32.00

Miscellaneous	Commercial Sanitation	Amount
Container	Relocation	$35.00
Container	Painting	$70.00
Handling	Gates and Pullout	$3.00
Locking Devices		$5.00
Casters		$6.00
Roll Off	Dry Runs	$35.00
Roll Off	Unloads	$35.00

APPENDIX B

RATE MODEL SCHEDULES

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City of Columbia, MO

Refuse Services Evaluation and Rate study

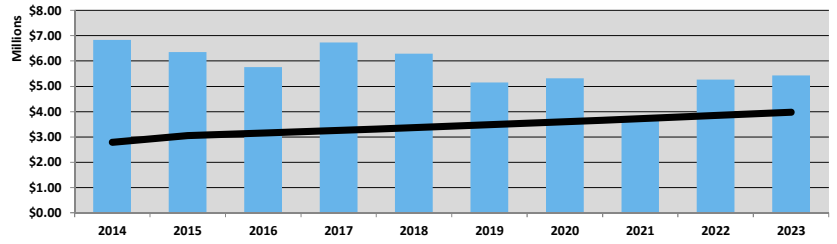
Dashboard - Refuse Services Evaluation and Rate study

WILLDAN Financial Services

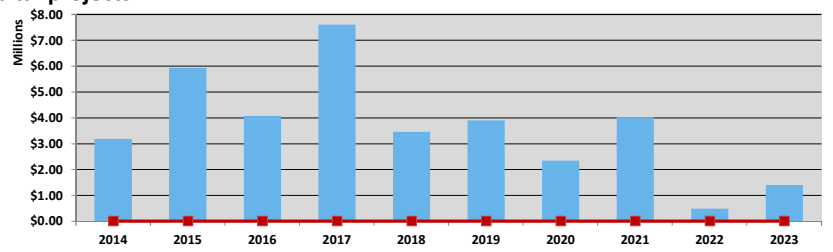
Unrestricted Fund	Operating Reserves

Number of Years to Display	10
Targeted Reserves (Days)	73

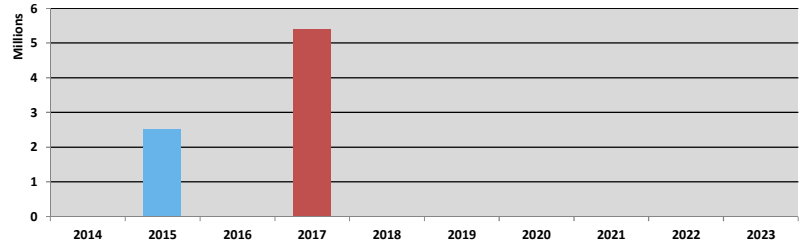
Fund Balance



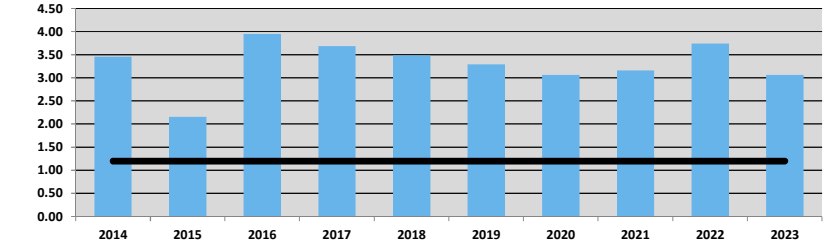
Capital projects



New Long Term Debt Issued



Debt Service Coverage



Months of Rate Increase 1st yr	12
Pct of CIP	100%
Include Inflationary Adj.	No

Fiscal Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Quick Test										
Meets Targeted Debt Service Coverage	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Meets Targeted Operating Reserve	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE
Ending Year Balance	$6,830,809	$6,343,453	$5,746,734	$6,723,881	$6,286,492	$5,150,200	$5,309,903	$3,622,361	$5,254,269	$5,423,353
Targeted Fund Balance	$2,786,619	$3,044,222	$3,143,933	$3,248,522	$3,357,350	$3,470,609	$3,588,504	$3,711,246	$3,839,060	$3,972,180
Surplus/(Deficiency)	$4,044,190	$3,299,231	$2,602,801	$3,475,359	$2,929,143	$1,679,591	$1,721,399	($88,886)	$1,415,209	$1,451,173
Unfunded Projects	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Debt Svc Coverage										
Targeted	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Actual	3.45	2.16	3.95	3.68	3.48	3.29	3.06	3.16	3.74	3.06

Residential Rate Increase Input

Inflationary Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Add'l Rate Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Rate Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Commercial Trash Front Load Rate Increase Input										
Inflationary Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Add'l Rate Adjustment	0.00%	10.00%	38.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
Total Rate Adjustment	0.00%	10.00%	38.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
Commercial Trash Rear Load Rate Increase Input										
Inflationary Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Add'l Rate Adjustment	0.00%	10.00%	86.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
Total Rate Adjustment	0.00%	10.00%	86.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
Commercial Recycling Rate Increase Input										
Inflationary Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Add'l Rate Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Rate Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Roll-Off Rate Increase Input										
Inflationary Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Add'l Rate Adjustment	0.00%	0.00%	15.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
Total Rate Adjustment	0.00%	0.00%	15.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
Special Business District Rate Increase Input										
Inflationary Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Add'l Rate Adjustment	0.00%	10.00%	33.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
Total Rate Adjustment	0.00%	10.00%	33.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
Landfill Rate Increase Input										
Inflationary Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Add'l Rate Adjustment	0.00%	7.89%	4.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
Total Rate Adjustment	0.00%	7.89%	4.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
University Rate Increase Input										
Inflationary Adjustment	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Add'l Rate Adjustment	0.00%	10.00%	75.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%
Total Rate Adjustment	0.00%	10.00%	75.00%	2.50%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%

City of Columbia, MO — **Schedule A-1 HistCust**

Solid Waste Utility Fund

Historical System Customers and Sales

Line No.	Jurisdiction	Description	Fiscal Year Ended Sep 30 2009	2010	2011	2012	2013
	(a)	(e)	(f)	(g)	(h)	(i)	(j)
		Average Annual Number of Billing Units					
1	CO	1 CU YD 1 PU	149	125	119	113	92
2	CO	1 CU YD 1 PU	24	21	12	12	12
3	CO	1 CU YD 2 PU	25	15	11	12	13
4	CO	1 CU YD 3 PU	-	-	-	1	1
5	CO	2 CU YD 1 PU	3,578	3,563	3,457	3,722	3,617
6	CO	2 CU YD 1 PU	97	110	120	110	94
7	CO	2 CU YD 1 PU	14	18	11	12	12
8	CO	2 CU YD 2 PU	1,380	1,301	1,219	1,251	1,244
9	CO	2 CU YD 3 PU	424	414	384	385	438
10	CO	2 CU YD 4 PU	157	159	139	136	115
11	CO	2 CU YD 5 PU	158	163	167	176	173
12	CO	2 CU YD 6 PU	9	12	12	16	12
13	CO	3 CU YD 1 PU	13	11	12	12	-
14	CO	3 CU YD 2 PU	25	23	31	34	25
15	CO	3 CU YD 5 PU	1	-	-	-	-
16	CO	3 CU YD 6 PU	25	24	25	24	24
17	CO	4 CU YD 1 PU	1,252	1,297	1,171	1,225	1,225
18	CO	4 CU YD 2 PU	772	699	648	635	614
19	CO	4 CU YD 3 PU	216	210	212	221	234
20	CO	4 CU YD 4 PU	12	20	21	21	24
21	CO	4 CU YD 5 PU	36	19	22	24	24
22	CO	4 CU YD 6 PU	12	11	11	12	12
23	CO	6 CU YD 1 PU	709	763	739	732	780
24	CO	6 CU YD 2 PU	1,352	1,302	1,275	1,347	1,276
25	CO	6 CU YD 3 PU	780	763	711	691	699
26	CO	6 CU YD 4 PU	205	208	179	169	177
27	CO	6 CU YD 5 PU	339	316	282	258	243
28	CO	6 CU YD 6 PU	71	71	77	72	73
29	CO	8 CU YD 1 PU	471	523	524	597	598
30	CO	8 CU YD 1 PU	12	12	11	12	24
31	CO	8 CU YD 2 PU	1,428	1,379	1,324	1,386	1,393
32	CO	8 CU YD 3 PU	1,122	1,175	1,192	1,182	1,221
33	CO	8 CU YD 4 PU	405	383	324	342	347
34	CO	8 CU YD 5 PU	678	615	552	528	524
35	CO	8 CU YD 6 PU	491	428	417	454	469
36	CO	Apartment Refuse	19,668	18,583	20,874	21,371	23,529
37		Appliance Pickup	-	-	-	-	-
38	CO	Appliance Pickup	6	7	2	1	1
39	CO	Appliance Pickup	609	470	295	155	103
40	CO	Appliance Pickup	4	3	4	4	-
41	CO	Appliance Pickup	1	-	-	-	-
42	CO	Appliance Pickup	-	1	-	-	-
43	CO	Bank Large	48	47	45	48	47
44	CO	Bank Medium	13	12	11	12	12
45	CO	Bank Small	34	36	33	36	39
46	CO	Church Large	72	72	67	73	72
47	CO	Church Medium	-	-	-	-	-
48	CO	Church Small	-	-	-	-	-
49	CO	Compactor Charges	-	-	1	-	-
50	CO	Hand Pickup Refuse	205	176	191	211	236
51	CO	Hand Pickup Refuse	338	317	298	266	247
52	CO	Industrial Large	12	12	11	12	12
53	CO	Industrial Medium	12	12	11	12	12
54	CO	Industrial Small	-	-	-	-	-
55	CO	Lodging Large	-	-	-	-	-
56	CO	Lodging Medium	24	23	11	3	-
57	CO	Lodging Small	-	-	-	-	-
58	CO	Mix Cont 2yd 1wk	32	35	38	70	72
59	CO	Mix Cont 2yd 2wk	-	-	-	-	-
60	CO	Mix Fiber 2yd 1wk	24	33	35	34	24
61	CO	Mix Fiber 2yd 2wk	54	59	57	60	49
62	CO	Mix Fiber 2yd 3wk	7	12	12	12	12
63	CO	Multifamily Refuse	105,485	105,844	106,035	109,665	111,967
64	CO	Multifamily Refuse	-	-	-	1,748	2,904
65	CO	OCC 2yd 1wk	59	76	100	144	210
66	CO	OCC 2yd 2wk	49	70	80	122	154
67	CO	OCC 2yd 3wk	-	1	20	24	29
68	CO	OCC 2yd 4wk	12	12	-	-	-
69	CO	OCC 2yd 5wk	-	-	-	-	6

Line No.	Jurisdiction	Description	Fiscal Year Ended Sep 30 2009	2010	2011	2012	2013
	(a)	(e)	(f)	(g)	(h)	(i)	(j)
70	CO	OCC 4yd 1wk	-	7	13	29	21
71	CO	OCC 4yd 2wk	-	-	-	-	-
72	CO	OCC 4yd 3wk	-	-	-	6	13
73	CO	OCC 4yd 5wk	-	-	-	-	2
74	CO	OCC 6yd 1wk	25	24	24	24	28
75	CO	OCC 6yd 2wk	-	-	-	-	-
76	CO	OCC 6yd 3wk	-	9	11	20	24
77	CO	OCC 8yd 1wk	-	-	1	12	12
78	CO	OCC 8yd 2wk	12	12	11	11	1
79	CO	OCC 8yd 3wk	-	-	-	-	-
80	CO	OCC 8yd 4wk	-	-	-	-	-
81	CO	Office Large	48	48	53	69	72
82	CO	Office Medium	511	511	443	487	472
83	CO	Office Small	752	758	676	721	732
84	CO	Recycling Roll Cart	469	576	658	849	911
85		Refuse Extra Dump	-	-	-	-	-
86	CO	Refuse Extra Dump	72	81	63	95	69
87	CO	Refuse Extra Dump	1	1	-	1	2
88	CO	Refuse Extra Dump	1	1	-	-	-
89		Refuse TOE 1	-	-	-	-	-
90	CO	Refuse TOE 1	1	1	-	-	-
91	CO	Refuse TOE 1	79	180	132	29	64
92	CO	Refuse TOE 1	-	1	3	-	-
93	CO	Refuse TOE 1	-	-	-	1	-
94	CO	RefuseTOE 2 or More	5	8	-	-	-
95	CO	RefuseTOE 2 or More	1	-	-	-	-
96		RefuseTOE 2 or More	-	-	-	-	-
97	CO	Residential Refuse	373,296	376,188	373,093	384,477	391,555
98	CO	Residential Refuse	85	-	-	-	2
99	CO	Residential Refuse	324	336	323	333	332
100	CO	Restaurant Large	168	170	151	154	157
101	CO	Restaurant Medium	410	417	399	410	422
102	CO	Restaurant Small	362	372	341	398	401
103	CO	Retail Large	182	190	172	197	178
104	CO	Retail Medium	422	418	369	389	369
105	CO	Retail Small	775	771	694	722	717
106	CO	Same day extra dump	12	12	14	11	12
107	CO	SBD Residential Apt	12	-	3	50	7
108	CO	Time Charge Comm	2	-	1	-	2
109	CO	Time Charge Comm	-	-	1	1	1
110	CO	Time Charge Resd.	1	-	1	-	-
111	CO	Time Charge Resd.	61	52	40	33	38
112	CO	Time Charge Resd.	-	1	-	-	1
113	CO	Time Charge Resd.	-	-	1	-	-
114	CO		88	120	123	115	134
115	CO		4,035	4,113	3,331	3,213	3,233
116	CO		1	-	-	-	-
117	CO		5,169	5,389	3,867	3,654	3,612
118	CO		8	5	1	1	1
119		**Total Billing Units**	530,600	532,838	528,655	546,519	559,163
		Billing Units By Class					
120		Residential	508,953	511,306	508,132	524,808	537,450
121		Commercial	21,647	21,532	20,523	21,711	21,713
122		**Total Billing Units By Class**	530,600	532,838	528,655	546,519	559,163

Notes:

[1] Based on information provided by the City.

Line No.	Jurisdiction	Description	Fiscal Year Ended Sep 30									
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	(a)	(e)	(f)	(h)	(i)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
	Average Annual Number of Billing Units											
1	CO	1 CU YD 1 PU	92	92	92	92	92	92	92	92	92	92
2	CO	1 CU YD 1 PU	12	12	12	12	12	12	12	12	12	12
3	CO	1 CU YD 2 PU	13	13	13	13	13	13	13	13	13	13
4	CO	1 CU YD 3 PU	1	1	1	1	1	1	1	1	1	1
5	CO	2 CU YD 1 PU	3,617	3,617	3,617	3,617	3,617	3,617	3,617	3,617	3,617	3,617
6	CO	2 CU YD 1 PU	94	94	94	94	94	94	94	94	94	94
7	CO	2 CU YD 1 PU	12	12	12	12	12	12	12	12	12	12
8	CO	2 CU YD 2 PU	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244	1,244
9	CO	2 CU YD 3 PU	438	438	438	438	438	438	438	438	438	438
10	CO	2 CU YD 4 PU	115	115	115	115	115	115	115	115	115	115
11	CO	2 CU YD 5 PU	173	173	173	173	173	173	173	173	173	173
12	CO	2 CU YD 6 PU	12	12	12	12	12	12	12	12	12	12
13	CO	3 CU YD 1 PU	-	-	-	-	-	-	-	-	-	-
14	CO	3 CU YD 2 PU	25	25	25	25	25	25	25	25	25	25
15	CO	3 CU YD 5 PU	-	-	-	-	-	-	-	-	-	-
16	CO	3 CU YD 6 PU	24	24	24	24	24	24	24	24	24	24
17	CO	4 CU YD 1 PU	1,225	1,225	1,225	1,225	1,225	1,225	1,225	1,225	1,225	1,225
18	CO	4 CU YD 2 PU	614	614	614	614	614	614	614	614	614	614
19	CO	4 CU YD 3 PU	234	234	234	234	234	234	234	234	234	234
20	CO	4 CU YD 4 PU	24	24	24	24	24	24	24	24	24	24
21	CO	4 CU YD 5 PU	24	24	24	24	24	24	24	24	24	24
22	CO	4 CU YD 6 PU	12	12	12	12	12	12	12	12	12	12
23	CO	6 CU YD 1 PU	780	780	780	780	780	780	780	780	780	780
24	CO	6 CU YD 2 PU	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276	1,276
25	CO	6 CU YD 3 PU	699	699	699	699	699	699	699	699	699	699
26	CO	6 CU YD 4 PU	177	177	177	177	177	177	177	177	177	177
27	CO	6 CU YD 5 PU	243	243	243	243	243	243	243	243	243	243
28	CO	6 CU YD 6 PU	73	73	73	73	73	73	73	73	73	73
29	CO	8 CU YD 1 PU	598	598	598	598	598	598	598	598	598	598
30	CO	8 CU YD 1 PU	24	24	24	24	24	24	24	24	24	24
31	CO	8 CU YD 2 PU	1,393	1,393	1,393	1,393	1,393	1,393	1,393	1,393	1,393	1,393
32	CO	8 CU YD 3 PU	1,221	1,221	1,221	1,221	1,221	1,221	1,221	1,221	1,221	1,221
33	CO	8 CU YD 4 PU	347	347	347	347	347	347	347	347	347	347
34	CO	8 CU YD 5 PU	524	524	524	524	524	524	524	524	524	524
35	CO	8 CU YD 6 PU	469	469	469	469	469	469	469	469	469	469
36	CO	Apartment Refuse	23,529	23,529	23,529	23,529	23,529	23,529	23,529	23,529	23,529	23,529
37	0	Appliance Pickup	-	-	-	-	-	-	-	-	-	-
38	CO	Appliance Pickup	1	1	1	1	1	1	1	1	1	1
39	CO	Appliance Pickup	103	103	103	103	103	103	103	103	103	103
40	CO	Appliance Pickup	-	-	-	-	-	-	-	-	-	-

Line No.	Jurisdiction	Description	Fiscal Year Ended Sep 30									
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	(a)	(e)	(f)	(h)	(i)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
41	CO	Appliance Pickup	-	-	-	-	-	-	-	-	-	-
42	CO	Appliance Pickup	-	-	-	-	-	-	-	-	-	-
43	CO	Bank Large	47	47	47	47	47	47	47	47	47	47
44	CO	Bank Medium	12	12	12	12	12	12	12	12	12	12
45	CO	Bank Small	39	39	39	39	39	39	39	39	39	39
46	CO	Church Large	72	72	72	72	72	72	72	72	72	72
47	CO	Church Medium	-	-	-	-	-	-	-	-	-	-
48	CO	Church Small	-	-	-	-	-	-	-	-	-	-
49	CO	Compactor Charges	-	-	-	-	-	-	-	-	-	-
50	CO	Hand Pickup Refuse	236	236	236	236	236	236	236	236	236	236
51	CO	Hand Pickup Refuse	247	247	247	247	247	247	247	247	247	247
52	CO	Industrial Large	12	12	12	12	12	12	12	12	12	12
53	CO	Industrial Medium	12	12	12	12	12	12	12	12	12	12
54	CO	Industrial Small	-	-	-	-	-	-	-	-	-	-
55	CO	Lodging Large	8	12	12	12	12	12	12	12	12	12
56	CO	Lodging Medium	-	-	-	-	-	-	-	-	-	-
57	CO	Lodging Small	6	12	12	12	12	12	12	12	12	12
58	CO	Mix Cont 2yd 1wk	72	72	72	72	72	72	72	72	72	72
59	CO	Mix Cont 2yd 2wk	11	11	11	11	11	11	11	11	11	11
60	CO	Mix Fiber 2yd 1wk	24	24	24	24	24	24	24	24	24	24
61	CO	Mix Fiber 2yd 2wk	58	58	58	58	58	58	58	58	58	58
62	CO	Mix Fiber 2yd 3wk	12	12	12	12	12	12	12	12	12	12
63	CO	Multifamily Refuse	113,767	126,547	128,347	130,147	131,947	133,747	135,547	137,347	139,147	140,947
64	CO	Multifamily Refuse	2,954	3,004	3,054	3,104	3,154	3,204	3,254	3,304	3,354	3,404
65	CO	OCC 2yd 1wk	564	564	564	564	564	564	564	564	564	564
66	CO	OCC 2yd 2wk	247	247	247	247	247	247	247	247	247	247
67	CO	OCC 2yd 3wk	46	46	46	46	46	46	46	46	46	46
68	CO	OCC 2yd 4wk	-	-	-	-	-	-	-	-	-	-
69	CO	OCC 2yd 5wk	21	21	21	21	21	21	21	21	21	21
70	CO	OCC 4yd 1wk	224	224	224	224	224	224	224	224	224	224
71	CO	OCC 4yd 2wk	51	51	51	51	51	51	51	51	51	51
72	CO	OCC 4yd 3wk	31	31	31	31	31	31	31	31	31	31
73	CO	OCC 4yd 5wk	-	-	-	-	-	-	-	-	-	-
74	CO	OCC 6yd 1wk	168	168	168	168	168	168	168	168	168	168
75	CO	OCC 6yd 2wk	32	32	32	32	32	32	32	32	32	32
76	CO	OCC 6yd 3wk	36	36	36	36	36	36	36	36	36	36
77	CO	OCC 8yd 1wk	298	298	298	298	298	298	298	298	298	298
78	CO	OCC 8yd 2wk	113	113	113	113	113	113	113	113	113	113
79	CO	OCC 8yd 3wk	26	26	26	26	26	26	26	26	26	26
80	CO	OCC 8yd 4wk	7	7	7	7	7	7	7	7	7	7
81	CO	Office Large	72	72	72	72	72	72	72	72	72	72
82	CO	Office Medium	472	472	472	472	472	472	472	472	472	472
83	0	Office Small	732	732	732	732	732	732	732	732	732	732
84	CO	Recycling Roll Cart	911	911	911	911	911	911	911	911	911	911
85	CO	Refuse Extra Dump	-	-	-	-	-	-	-	-	-	-

Line No.	Jurisdiction	Description	Fiscal Year Ended Sep 30 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	(a)	(e)	(f)	(h)	(i)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
86	CO	Refuse Extra Dump	69	69	69	69	69	69	69	69	69	69
87	0	Refuse Extra Dump	2	2	2	2	2	2	2	2	2	2
88	CO	Refuse Extra Dump	-	-	-	-	-	-	-	-	-	-
89	CO	Refuse TOE 1	-	-	-	-	-	-	-	-	-	-
90	CO	Refuse TOE 1	-	-	-	-	-	-	-	-	-	-
91	CO	Refuse TOE 1	64	64	64	64	64	64	64	64	64	64
92	CO	Refuse TOE 1	-	-	-	-	-	-	-	-	-	-
93	CO	Refuse TOE 1	-	-	-	-	-	-	-	-	-	-
94	0	RefuseTOE 2 or More	-	-	-	-	-	-	-	-	-	-
95	CO	RefuseTOE 2 or More	-	-	-	-	-	-	-	-	-	-
96	CO	RefuseTOE 2 or More	-	-	-	-	-	-	-	-	-	-
97	CO	Residential Refuse	396,655	402,655	407,755	412,855	417,955	423,055	428,155	433,255	438,355	443,455
98	CO	Residential Refuse	2	2	2	2	2	2	2	2	2	2
99	CO	Residential Refuse	332	332	332	332	332	332	332	332	332	332
100	CO	Restaurant Large	157	157	157	157	157	157	157	157	157	157
101	CO	Restaurant Medium	422	422	422	422	422	422	422	422	422	422
102	CO	Restaurant Small	401	401	401	401	401	401	401	401	401	401
103	CO	Retail Large	178	178	178	178	178	178	178	178	178	178
104	CO	Retail Medium	369	369	369	369	369	369	369	369	369	369
105	CO	Retail Small	717	717	717	717	717	717	717	717	717	717
106	CO	Same day extra dump	12	12	12	12	12	12	12	12	12	12
107	CO	SBD Residential Apt	7	7	7	7	7	7	7	7	7	7
108	CO	Time Charge Comm	2	2	2	2	2	2	2	2	2	2
109	CO	Time Charge Comm	1	1	1	1	1	1	1	1	1	1
110	CO	Time Charge Resd.	-	-	-	-	-	-	-	-	-	-
111	CO	Time Charge Resd.	38	38	38	38	38	38	38	38	38	38
112	CO	Time Charge Resd.	1	1	1	1	1	1	1	1	1	1
113	CO	Time Charge Resd.	-	-	-	-	-	-	-	-	-	-
114	CO	0	134	134	134	134	134	134	134	134	134	134
115	CO	0	3,233	3,233	3,233	3,233	3,233	3,233	3,233	3,233	3,233	3,233
116	CO	0	-	-	-	-	-	-	-	-	-	-
117	0	0	3,612	3,612	3,612	3,612	3,612	3,612	3,612	3,612	3,612	3,612
118	0	0	1	1	1	1	1	1	1	1	1	1
119		**Total Billing Units**	567,511	586,351	593,301	600,251	607,201	614,151	621,101	628,051	635,001	641,951
		Billing Units By Class										
		Residential	544,400	563,230	570,180	577,130	584,080	591,030	597,980	604,930	611,880	618,830
		Commercial	23,111	23,121	23,121	23,121	23,121	23,121	23,121	23,121	23,121	23,121
		Total Billing Units By Class	567,511	586,351	593,301	600,251	607,201	614,151	621,101	628,051	635,001	641,951

Notes:

[1] Based on analysis of historical trends and input from City staff.

City of Columbia, MO
Solid Waste Utility Fund
Capital Improvement Plan For Fiscal Years 2014-2023

Schedule A-3 CIPSum

Line No.	Description	Fiscal Year Ended Sep 30 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	Projected Expenditures [2]											
1	Heavy Equipment	$ -	$ 320,000	$ -	$ 20,000	$ 430,000	$ 700,000	$ 343,000	$ 746,102	$ -	$ 536,506	$ 3,095,607
2	Utility Vehicles	1,865,000	530,000	2,592,500	1,974,889	2,720,360	1,634,000	1,826,900	2,474,275	356,000	249,000	16,222,924
3	Landfill	621,416	4,558,584	880,000	4,300,000	300,000	300,000	100,000	100,000	100,000	100,000	11,360,000
4	MRF	700,000	520,000	600,000	1,300,000	-	1,250,000	35,000	678,845	-	500,000	5,583,845
5	Office, Corporation Yard & Shops	-	-	-	-	-	-	-	-	-	-	-
6	Computers, Software & Equipment	-	-	-	-	-	-	-	-	-	-	-
7	Small Equipment & Other	-	-	-	7,200	-	18,500	28,000	25,000	30,000	10,200	118,900
8	**Total Projected Expenditures**	$ 3,186,416	$ 5,928,584	$ 4,072,500	$ 7,602,089	$ 3,450,360	$ 3,902,500	$ 2,332,900	$ 4,024,221	$ 486,000	$ 1,395,706	$ 36,381,276
	Planned Funding Sources											
9	Operating Reserves	$ 3,186,416	$ 3,428,584	$ 4,072,500	$ 2,302,089	$ 3,450,360	$ 3,902,500	$ 2,332,900	$ 4,024,221	$ 486,000	$ 1,395,706	$ 28,581,276
10	Grants	-	-	-	-	-	-	-	-	-	-	-
11	Designated Loan Fund	-	2,500,000	-	-	-	-	-	-	-	-	2,500,000
12	Short Term Loan	-	-	-	-	-	-	-	-	-	-	-
13	Revenue Bonds	-	-	-	5,300,000	-	-	-	-	-	-	5,300,000
14	**Total Funding Sources**	$ 3,186,416	$ 5,928,584	$ 4,072,500	$ 7,602,089	$ 3,450,360	$ 3,902,500	$ 2,332,900	$ 4,024,221	$ 486,000	$ 1,395,706	$ 36,381,276
	Unfunded Projects	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

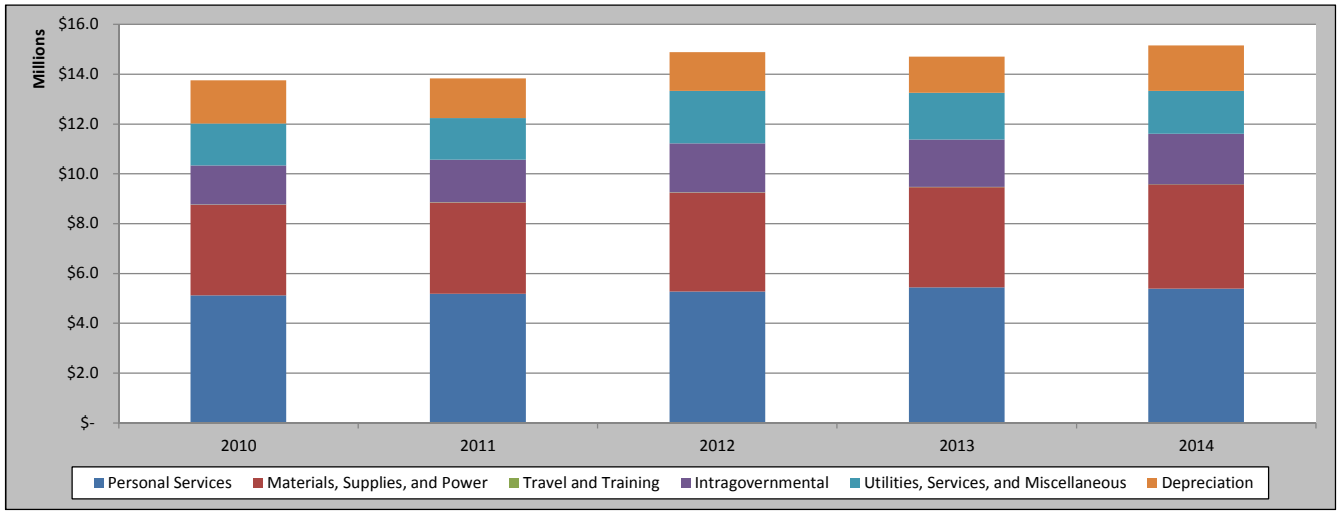
Notes:

[1] Source: Solid Waste Utility Fund Capital Improvement Plan and data provided by the City.

Line No.	Description	Fiscal Year Ended Sep 30 2010	2011	2012	2013	2014
	(a)	(b)	(c)	(d)	(e)	(f)
	Operating Revenues					
1	User Fees	$ 14,999,390	$ 16,582,235	$ 16,788,811	$ 16,913,062	$ 17,172,008
2	**Total Operating Revenues**	$ 14,999,390	$ 16,582,235	$ 16,788,811	$ 16,913,062	$ 17,172,008
	Operating Expenses					
3	Personal Services	$ 5,118,640	$ 5,189,434	$ 5,279,743	$ 5,447,918	$ 5,392,825
4	Materials, Supplies, and Power	3,636,511	3,664,555	3,972,604	4,017,754	4,182,887
5	Travel and Training	18,165	7,508	10,694	5,904	6,193
6	Intragovernmental	1,563,944	1,707,480	1,964,554	1,908,105	2,032,656
7	Utilities, Services, and Miscellaneous	1,685,870	1,673,207	2,100,531	1,878,667	1,715,767
8	Depreciation	1,732,158	1,594,182	1,564,768	1,450,307	1,823,319
9	**Total Operating Expenses**	$ 13,755,288	$ 13,836,366	$ 14,892,894	$ 14,708,655	$ 15,153,647
10	**Operating Income (Loss)**	$ 1,244,102	$ 2,745,869	$ 1,895,917	$ 2,204,407	$ 2,018,361
	Non-Operating Revenues (Expenses)					
11	Interest Revenue	$ 379,732	$ 256,151	$ 126,452	$ (167,562)	$ 203,499
12	Revenue from other Governmental Units	139,682	179,684	139,645	105,366	122,406
13	Miscellaneous Revenue	63,994	146,209	53,905	197,970	70,094
14	Interest Expenses	(297,794)	(307,298)	(255,572)	(186,490)	(161,240)
15	Loss on Disposal of Capital Assets	(112,506)	(78,089)	(19,935)	(234,608)	(14,925)
16	Miscellaneous Expenses	(9,678)	(9,610)	(9,331)	(8,947)	(286)
17	**Total Non-Operating Revenues**	$ 163,430	$ 187,047	$ 35,164	$ (294,271)	$ 219,548
18	**Income (Loss) Before Capital Contributions and Transfers**	$ 1,407,532	$ 2,932,916	$ 1,931,081	$ 1,910,136	$ 2,237,909
	Transfers and Capital Contributions					
19	Capital Contributions	$ -	$ 371,275	$ -	$ -	$ -
20	Transfers In	-	-	-	-	-
21	Transfers Out	(34,343)	(11,101)	(11,101)	(15,415)	(587,908)
22	**Total Transfers and Capital Contributions**	$ (34,343)	$ 360,174	$ (11,101)	$ (15,415)	$ (587,908)
23	**Net Income (Loss)**	$ 1,373,189	$ 3,293,090	$ 1,919,980	$ 1,894,721	$ 1,650,001
	Net Assets					
24	Begnning of Year	$ 11,529,428	$ 12,902,617	$ 16,195,707	$ 18,115,687	$ 20,010,408
25	Adjustment	$ -	$ -	$ -	$ -	$ (54,616)
26	End of Year	$ 12,902,617	$ 16,195,707	$ 18,115,687	$ 20,010,408	$ 21,605,793
27	Add Back Depreciation	$ 1,732,158	$ 1,594,182	$ 1,564,768	$ 1,450,307	$ 1,823,319
28	**Adjusted Net Income (Loss)**	$ 3,105,347	$ 4,887,272	$ 3,484,748	$ 3,345,028	$ 3,473,320

Notes:

[1] Amounts shown are presented in a format similar to the City's audited financial statements.


Millions
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$6.0
$4.0
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2010
2011
2012
2013
2014
Personal Services
Materials, Supplies, and Power
Travel and Training
Intragovernmental
Utilities, Services, and Miscellaneous
Depreciation

City of Columbia, MO
Solid Waste Utility Fund
Projected Operating Results

Schedule A-5 ProjOp

Line No.	Description	Fiscal Year Ended Sep 30									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	(a)	(b)	(c)	(d)	(e)	(f)	(h)	(i)	(i)	(j)	(k)
	Operating Revenues										
1	User Fees	$ 16,982,413	$ 17,620,089	$ 20,221,544	$ 20,599,542	$ 20,917,224	$ 21,239,144	$ 21,565,386	$ 21,896,038	$ 22,001,819	$ 22,107,601
2	**Total Operating Revenues**	$ 16,982,413	$ 17,620,089	$ 20,221,544	$ 20,599,542	$ 20,917,224	$ 21,239,144	$ 21,565,386	$ 21,896,038	$ 22,001,819	$ 22,107,601
	Operating Expenses										
3	Personal Services	$ 5,476,032	$ 6,161,394	$ 6,259,225	$ 6,362,993	$ 6,468,614	$ 6,576,124	$ 6,685,561	$ 6,796,964	$ 6,910,372	$ 7,025,824
4	Materials, Supplies, and Power	4,036,275	4,111,464	4,275,923	4,446,959	4,624,838	4,809,831	5,002,225	5,202,314	5,410,406	5,626,822
5	Travel and Training	12,949	13,570	13,570	13,570	13,570	13,570	13,570	13,570	13,570	13,570
6	Intragovernmental	2,031,867	2,076,431	2,201,017	2,333,078	2,473,063	2,621,446	2,778,733	2,945,457	3,122,184	3,309,516
7	Utilities, Services, and Miscellaneous	2,375,971	2,858,253	2,969,931	3,086,010	3,206,664	3,332,075	3,462,431	3,597,928	3,738,769	3,885,168
8	Depreciation	-	-	-	-	-	-	-	-	-	-
9	**Total Operating Expenses**	$ 13,933,094	$ 15,221,112	$ 15,719,665	$ 16,242,610	$ 16,786,748	$ 17,353,047	$ 17,942,520	$ 18,556,232	$ 19,195,302	$ 19,860,900
10	**Net Operating Revenues**	$ 3,049,319	$ 2,398,977	$ 4,501,878	$ 4,356,932	$ 4,130,475	$ 3,886,097	$ 3,622,866	$ 3,339,805	$ 2,806,518	$ 2,246,701
	Non-Operating Revenues (Expenses)										
11	Interest Revenue	$ 43,781	$ 43,693	$ 38,675	$ 35,347	$ 39,389	$ 36,704	$ 30,607	$ 30,999	$ 22,394	$ 28,884
12	Revenue from other Governmental Units	96,030	95,583	95,583	95,583	95,583	95,583	95,583	95,583	95,583	95,583
13	Miscellaneous Revenue	95,874	96,900	191,900	191,900	142,900	142,900	142,900	142,900	142,900	142,900
14	Interest Expenses	-	-	-	-	-	-	-	-	-	-
15	Loss on Disposal of Capital Assets	(810)	-	-	-	-	-	-	-	-	-
16	Miscellaneous Expenses	(9,420)	(9,300)	(9,300)	(9,300)	(9,300)	(9,300)	(9,300)	(9,300)	(9,300)	(9,300)
17	Total Non-Operating Revenues (Expenses)	$ 225,455	$ 226,876	$ 316,858	$ 313,530	$ 268,572	$ 265,887	$ 259,790	$ 260,182	$ 251,577	$ 258,067
18	**Income (Loss) Before Debt Service, Capital Contributions and Transfers**	$ 3,274,774	$ 2,625,853	$ 4,818,737	$ 4,670,462	$ 4,399,047	$ 4,151,984	$ 3,882,657	$ 3,599,987	$ 3,058,095	$ 2,504,769
	Debt Service										
19	2006 S.O. Solid Waste - New Money	$ 146,550	$ 147,494	$ 147,869	$ 153,394	$ 149,194	$ 144,994	$ 150,522	$ 145,778	$ 145,856	$ 145,650
20	2006 S.O. Solid Waste - Refund 96 S.O.	360,800	355,750	358,750	-	-	-	-	-	-	-
21	2012 S.O. (Refunded 01 S.O.)	319,850	319,300	318,650	322,850	321,900	325,800	324,550	323,200	-	-
22	DLF Loan for Land Acquisition	120,653	120,653	120,653	120,653	120,653	120,653	120,652	-	-	-
23	DLF Loan - New	-	274,688	274,688	274,688	274,688	274,688	274,688	274,688	274,688	274,688
24	Series 2017 - New	-	-	-	397,295	397,295	397,295	397,295	397,295	397,295	397,295
25	Series 2020 - New	-	-	-	-	-	-	-	-	-	-
26	Series 2023 - New	-	-	-	-	-	-	-	-	-	-
27	**Total Debt Service**	$ 947,853	$ 1,217,885	$ 1,220,610	$ 1,268,880	$ 1,263,730	$ 1,263,430	$ 1,267,708	$ 1,140,962	$ 817,840	$ 817,634
28	**Debt Service Coverage**	3.45	2.16	3.95	3.68	3.48	3.29	3.06	3.16	3.74	3.06
29	**Income (Loss) Before Capital Contributions and Transfers**	$ 2,326,922	$ 1,407,968	$ 3,598,127	$ 3,401,582	$ 3,135,317	$ 2,888,553	$ 2,614,949	$ 2,459,025	$ 2,240,255	$ 1,687,135
	Transfers and Capital Contributions										
30	Capital Contributions	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
31	Transfers In	-	-	-	-	-	-	-	-	-	-
32	Transfers Out	(587,908)	(122,346)	(122,346)	(122,346)	(122,346)	(122,346)	(122,346)	(122,346)	(122,346)	(122,346)
33	**Total Transfers and Capital Contributions**	$ (587,908)	$ (122,346)	$ (122,346)	$ (122,346)	$ (122,346)	$ (122,346)	$ (122,346)	$ (122,346)	$ (122,346)	$ (122,346)
34	**Net Income (Loss)**	$ 1,739,014	$ 1,285,622	$ 3,475,781	$ 3,279,236	$ 3,012,971	$ 2,766,207	$ 2,492,603	$ 2,336,679	$ 2,117,909	$ 1,564,789
35	Add Back Depreciation	-	-	-	-	-	-	-	-	-	-
36	**Adjusted Net Income (Loss)**	$ 1,739,014	$ 1,285,622	$ 3,475,781	$ 3,279,236	$ 3,012,971	$ 2,766,207	$ 2,492,603	$ 2,336,679	$ 2,117,909	$ 1,564,789

City of Columbia, MO
Solid Waste Utility Fund
Projected Operating Results

Line No.	Description	Fiscal Year Ended Sep 30									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	(a)	(b)	(c)	(d)	(e)	(f)	(h)	(i)	(i)	(j)	(k)
	Unrestricted Fund Balances										
	Operating Reserves										
37	Beginning Year Balance	$ 8,278,211	$ 8,486,415	$ 6,343,453	$ 5,746,734	$ 6,723,881	$ 6,286,492	$ 5,150,200	$ 5,309,903	$ 3,622,361	$ 5,254,269
38	Deposit/(Withdrawal) from Operations	1,739,014	1,285,622	3,475,781	3,279,236	3,012,971	2,766,207	2,492,603	2,336,679	2,117,909	1,564,789
39	Capital Items paid for from Reserves	(3,186,416)	(3,428,584)	(4,072,500)	(2,302,089)	(3,450,360)	(3,902,500)	(2,332,900)	(4,024,221)	(486,000)	(1,395,706)
40	Other Sources	-	-	-	-	-	-	-	-	-	-
41	Ending Year Balance	$ 6,830,809	$ 6,343,453	$ 5,746,734	$ 6,723,881	$ 6,286,492	$ 5,150,200	$ 5,309,903	$ 3,622,361	$ 5,254,269	$ 5,423,353
42	Targeted Fund Balance	$ 2,786,619	$ 3,044,222	$ 3,143,933	$ 3,248,522	$ 3,357,350	$ 3,470,609	$ 3,588,504	$ 3,711,246	$ 3,839,060	$ 3,972,180
43	Surplus/(Deficiency)	$ 4,044,190	$ 3,299,231	$ 2,602,801	$ 3,475,359	$ 2,929,143	$ 1,679,591	$ 1,721,399	$ (88,886)	$ 1,415,209	$ 1,451,173

City of Columbia, MO

Solid Waste Utility Fund

Allocated System Revenue Requirements Test Year 2015

Line No.	Fund No.	Allocation Code	Dept	Account	Description	Total System	Residential Refuse	Residential Recycling	Residential White Goods	Commercial Refuse - FL	Commercial Refuse - RL	Commercial Recycling	Roll-Off Refuse	Roll-Off Recycling	Roll-Off Mini-Ref	Roll-Off Mini-Rec	Landfill	Special Business Dist.	University
						Fiscal Year Ended Sep 30													
					Operating Expenses by Category														
1	557				Personal Services	$ 6,161,394	$ 1,613,076	$ 1,311,373	$ -	$ 900,122	$ 248,415	$ 418,284	$ 357,446	$ 43,274	$ 59,749	$ 6,844	$ 688,497	$ 118,813	$ 395,501
2	557				Materials, Supplies, and Power	4,111,464	1,092,603	796,920	-	710,363	214,301	98,050	333,866	39,903	56,891	1,446	428,107	94,375	244,640
3	557				Travel and Training	13,570	2,768	2,922	-	2,373	614	422	807	62	134	14	2,608	237	611
4	557				Intragovernmental	2,076,431	584,609	474,067	-	282,714	81,597	82,236	141,846	17,703	24,020	2,700	217,325	37,548	130,067
5	557				Utilities, Services, and Miscellaneous	2,858,253	644,132	320,338	-	519,591	144,080	78,808	251,221	20,000	42,657	1,388	604,313	69,202	162,524
6	557				Depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7					**Total Operating Expenses by Category**	$ 15,221,112	$ 3,937,187	$ 2,905,620	$ -	$ 2,415,163	$ 689,006	$ 677,799	$ 1,085,186	$ 120,942	$ 183,450	$ 12,392	$ 1,940,850	$ 320,175	$ 933,342
					Non-Operating Expenses														
8	557				Interest Expenses	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	557				Loss on Disposal of Capital Assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	557				Miscellaneous Expenses	9,300	2,416	1,757	-	1,482	424	410	658	73	111	7	1,179	196	587
11					**Total Non-Operating Expenses**	$ 9,300	$ 2,416	$ 1,757	$ -	$ 1,482	$ 424	$ 410	$ 658	$ 73	$ 111	$ 7	$ 1,179	$ 196	$ 587
					Transfers														
12	557				Transfers Out	$ 122,346	$ 31,784	$ 23,121	$ -	$ 19,498	$ 5,574	$ 5,393	$ 8,650	$ 962	$ 1,462	$ 99	$ 15,504	$ 2,577	$ 7,722
13					**Total Transfers**	$ 122,346	$ 31,784	$ 23,121	$ -	$ 19,498	$ 5,574	$ 5,393	$ 8,650	$ 962	$ 1,462	$ 99	$ 15,504	$ 2,577	$ 7,722
					Capital Outlay														
14	557				Capital Outlay	$ 141,000	$ 57,169	$ -	$ -	$ 35,199	$ 11,472	$ -	$ 1,840	$ -	$ 316	$ -	$ 7,572	$ 347	$ 27,086
15					**Total Capital Outlay**	$ 141,000	$ 57,169	$ -	$ -	$ 35,199	$ 11,472	$ -	$ 1,840	$ -	$ 316	$ -	$ 7,572	$ 347	$ 27,086
16					**Total Allocated Revenue Requirements**	$ 15,493,758	$ 4,028,556	$ 2,930,498	$ -	$ 2,471,342	$ 706,476	$ 683,603	$ 1,096,333	$ 121,978	$ 185,339	$ 12,498	$ 1,965,105	$ 323,295	$ 968,737
					Plus:														
17					Debt Service - Landfill (includes coverage requirement)	$ 1,692,003	$ 315,412	$ -	$ -	$ 256,166	$ 59,409	$ -	$ 183,088	$ -	$ 31,408	$ -	$ 753,680	$ 34,563	$ 58,278
18					Debt Service - MRF (includes coverage requirement)	252,971	-	189,701	-	-	-	63,270	-	-	-	-	-	-	-
19					Capital Expenditures (Landfill - Cash Funded)	506,000	90,597	14,998	-	73,579	17,064	5,002	52,589	-	9,021	-	216,482	9,928	16,739
20					Capital Expenditures (Vehicles, Equipment)	2,352,128	559,411	515,484	-	365,222	144,444	110,836	203,513	51	66,859	5	343,539	15,853	26,910
21					**Total Allocated Revenue Requirements Adj. for Debt and Capital**	$ 20,296,860	$ 4,993,975	$ 3,650,681	$ -	$ 3,166,309	$ 927,392	$ 862,711	$ 1,535,523	$ 122,029	$ 292,628	$ 12,503	$ 3,278,806	$ 383,639	$ 1,070,664
					Less:														
22					Total Revenues from Sources Other than User Fees	$ 1,590,352	$ 197,544	$ 650,853	$ -	$ 75,222	$ 13,624	$ 401,473	$ 48,194	$ 821	$ 5,936	$ 84	$ 125,740	$ 62,160	$ 8,700
23					**Total System Net Revenues Requirements**	$ 18,706,508	$ 4,796,431	$ 2,999,827	$ -	$ 3,091,087	$ 913,769	$ 461,238	$ 1,487,329	$ 121,208	$ 286,692	$ 12,419	$ 3,153,066	$ 321,479	$ 1,061,964
24					**CHECK**	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE

City of Columbia, MO
Solid Waste Utility Fund
Allocated System Revenue Requirements Test Year 2015

Schedule B-1 RevReq

Line No.	Fund No.	Allocation Code	Dept	Account	Description	Total System	Residential Refuse	Residential Recycling	Residential White Goods	Commercial Refuse - FL	Commercial Refuse - RL	Commercial Recycling	Roll-Off Refuse	Roll-Off Recycling	Roll-Off Mini-Ref	Roll-Off Mini-Rec	Landfill	Special Business Dist.	University
						Fiscal Year Ended Sep 30													
					Allocation Factors														
					Allocation Factors														
25					Residential Billing Units	1,088,660	544,330	544,330	-	-	-	-	-	-	-	-	-	-	-
26		ResBillUnit			Percentage	100.0%	50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
27					White Goods Billing Units	104	-	-	104	-	-	-	-	-	-	-	-	-	-
28		WGBillUnit			Percentage	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
29					Commercial Billing Units	23,110	-	-	-	18,142	2,016	2,952	-	-	-	-	-	-	-
30		ComBillUnit			Percentage	100.0%	0.0%	0.0%	0.0%	78.5%	8.7%	12.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
31					Roll-Off Billing Units	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32		ROBillUnit			Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
33					Drop-Off Billing Units	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34		DOBillUnit			Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
35					Sidewalk/Roll Cart Billing Units	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36		SWBillUnit			Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
37					Total Billing Units	1,111,874	544,330	544,330	104	18,142	2,016	2,952	-	-	-	-	-	-	-
38		TotBillUnit			Percentage	100.0%	49.0%	49.0%	0.0%	1.6%	0.2%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
39					User Fee Revenues	$ 13,013,477	$ 8,400,000	$ -	$ -	$ 3,301,842	$ -	$ -	$ 1,311,635	$ -	$ -	$ -	$ -	$ -	$ -
40		Rev			Percentage	100.0%	64.5%	0.0%	0.0%	25.4%	0.0%	0.0%	10.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
41					Residential Refuse Volumes (Tons)	30,677	30,677	-	-	-	-	-	-	-	-	-	-	-	-
42		ResRefVol			Percentage	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
43					Residential Recycling Volumes (Tons)	4,894	-	4,894	-	-	-	-	-	-	-	-	-	-	-
44		ResRecVol			Percentage	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
45					Residential Total Volumes (Tons)	35,571	30,677	4,894	-	-	-	-	-	-	-	-	-	-	-
46		ResTotVol			Percentage	100.0%	86.2%	13.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
47					Commercial Refuse Volumes (Tons)	39,723	-	-	-	35,751	3,972	-	-	-	-	-	-	-	-
48		ComRefVol			Percentage	100.0%	0.0%	0.0%	0.0%	90.0%	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
49					Commercial Recycling Volumes (Tons)	1,632	-	-	-	-	-	1,632	-	-	-	-	-	-	-
50		ComRecVol			Percentage	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
51					Commercial Total Volumes (Tons)	41,356	-	-	-	35,751	3,972	1,632	-	-	-	-	-	-	-
52		ComTotVol			Percentage	100.0%	0.0%	0.0%	0.0%	86.4%	9.6%	3.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
53					Roll-Off Refuse Volumes (Tons)	20,862	-	-	-	-	-	-	20,862	-	-	-	-	-	-
54		ORefVol			Percentage	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
55					Roll-Off Recycling Volumes (Tons)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56		ORecVol			Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
57					Roll-Off Total Volumes (Tons)	20,862	-	-	-	-	-	-	20,862	-	-	-	-	-	-
58		OTotVol			Percentage	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
59					Refuse Total Volumes (Tons)	165,954	30,936	-	-	25,125	5,827	-	17,957	-	3,081	-	73,922	3,390	5,716

City of Columbia, MO

Solid Waste Utility Fund

Allocated System Revenue Requirements Test Year 2015

Schedule B-1 RevReq

Line No.	Fund No.	Allocation Code	Dept	Account	Description	Total System	Residential Refuse	Residential Recycling	Residential White Goods	Commercial Refuse - FL	Commercial Refuse - RL	Commercial Recycling	Roll-Off Refuse	Roll-Off Recycling	Roll-Off Mini-Ref	Roll-Off Mini-Rec	Landfill	Special Business Dist.	University
						Fiscal Year Ended Sep 30													
60		RefTotVol			Percentage	100.0%	18.6%	0.0%	0.0%	15.1%	3.5%	0.0%	10.8%	0.0%	1.9%	0.0%	44.5%	2.0%	3.4%
61					Recycling Total Volumes (Tons)	6,526	-	4,894	-	-	-	1,632	-	-	-	-	-	-	-
62		RecTotVol			Percentage	100.0%	0.0%	75.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
63					Total System Volumes (Tons)	172,480	30,936	4,894	-	25,125	5,827	1,632	17,957	-	3,081	-	73,922	3,390	5,716
64		TotVol			Percentage	100.0%	17.9%	2.8%	0.0%	14.6%	3.4%	0.9%	10.4%	0.0%	1.8%	0.0%	42.9%	2.0%	3.3%
					Drop-Recycling														
65		DORecSpec			Percentage	100%	3.7%	80.0%	0.0%	3.0%	0.7%	0.0%	2.2%	0.0%	0.4%	0.0%	8.9%	0.4%	0.7%
65					Total Operating Expense - Landfill, Composting	$ 4,706,994	$ 630,692	$ 972,870	$ -	$ 512,225	$ 118,792	$ 80,130	$ 366,099	$ 774	$ 62,802	$ 10,809	$ 1,664,346	$ 88,016	$ 199,437
66		DbtSvc			Percentage	100.0%	13.4%	20.7%	0.0%	10.9%	2.5%	1.7%	7.8%	0.0%	1.3%	0.2%	35.4%	1.9%	4.2%
67					Total Operating Expenses	$ 15,493,758	$ 4,028,556	$ 2,930,498	$ -	$ 2,471,342	$ 706,476	$ 683,603	$ 1,096,333	$ 121,978	$ 185,339	$ 12,498	$ 1,965,105	$ 323,295	$ 968,737
68		TotOpExp			Percentage	100.0%	26.0%	18.9%	0.0%	16.0%	4.6%	4.4%	7.1%	0.8%	1.2%	0.1%	12.7%	2.1%	6.3%
69					Total Operating Expenses Excl. Admin (6510) & MMSWSMD (6511	$ 13,411,915	$ 3,484,263	$ 2,534,562	$ -	$ 2,137,442	$ 611,025	$ 591,242	$ 948,209	$ 105,497	$ 160,298	$ 10,809	$ 1,699,602	$ 282,492	$ 846,474
70		TotOpExp2			Percentage	100.0%	26.0%	18.9%	0.0%	15.9%	4.6%	4.4%	7.1%	0.8%	1.2%	0.1%	12.7%	2.1%	6.3%
71					Total Operating Expenses Excl. SBD (6522), University (6560) & Rec	$ 12,282,948	$ 3,484,263	$ 2,534,562	$ -	$ 2,137,442	$ 611,025	$ 591,242	$ 948,209	$ 105,497	$ 160,298	$ 10,809	$ 1,699,602	$ -	$ -
72		TotOpExp3			Percentage	100.0%	28.4%	20.6%	0.0%	17.4%	5.0%	4.8%	7.7%	0.9%	1.3%	0.1%	13.8%	0.0%	0.0%
73					Total Operating Expenses Excl. Admin (6510), MMSWSMD (6511) &	$ 13,411,915	$ 3,484,263	$ 2,534,562	$ -	$ 2,137,442	$ 611,025	$ 591,242	$ 948,209	$ 105,497	$ 160,298	$ 10,809	$ 1,699,602	$ 282,492	$ 846,474
74		TotOpExp4			Percentage	100.0%	26.0%	18.9%	0.0%	15.9%	4.6%	4.4%	7.1%	0.8%	1.2%	0.1%	12.7%	2.1%	6.3%
					Direct Allocators														
75		ResRef			Residential Refuse/YW	100.0%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
76		ResRec			Residential Recycling	100.0%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
77		WhiteGoods			White Goods	100.0%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
78		ComRefFL			Commercial Trash Frontloader	100.0%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
79		ComRefRL			Commercial Trash Rearloader	100.0%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
80		ComRec			Commercial Recycling Rearloader	100.0%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
81		RORef			Roll-Off Trash	100.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
82		ORec			Roll-Off Recycling	100.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
83		ROMiniRef			Mini Roll-Off Trash	100.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
84		ROMiniRec			Mini Roll-Off Recycling	100.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
85		Landfill			Landfill	100.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
86		DORec			Drop-off Recycling (mostly RL)	100.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
87		SBD			Special Business District	100.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%
88		Univ			University	100.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
					Special Allocators														
89		Special1			Special Allocator 1	100.0%	0.0%	0.0%	0.0%	75.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
90		Special2			Special Allocator 2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	90.0%	0.0%	0.0%	0.0%	10.0%	0.0%
91		Special3			Special Allocator 3	100.0%	25.0%	75.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
92		Special4			Special Allocator 4	100.0%	7.3%	1.1%	0.0%	40.5%	1.9%	21.8%	3.5%	3.7%	0.0%	0.0%	0.0%	5.5%	14.7%
93		Special5			Special Allocator 5	100.0%	5.7%	1.3%	0.0%	0.0%	0.0%	0.0%	48.9%	7.8%	8.4%	0.0%	0.0%	5.7%	22.2%
94		Special6			Special Allocator 6	100.0%	0.0%	73.5%	0.0%	0.0%	0.0%	6.1%	0.0%	0.1%	0.0%	0.8%	11.9%	1.4%	6.3%
95		Special7			Special Allocator 7	100.0%	0.0%	0.0%	0.0%	91.7%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
96		Special8			Special Allocator 8	100.0%	59.3%	0.0%	0.0%	7.6%	1.8%	0.0%	5.4%	0.0%	0.9%	0.0%	22.3%	1.0%	1.7%

City of Columbia, MO

Solid Waste Utility Fund

Allocated System Revenue Requirements Test Year 2015

Schedule B-1 RevReq

Line No.	Fund No.	Allocation Code	Dept	Account	Description	Total System	Residential Refuse	Residential Recycling	Residential White Goods	Commercial Refuse - FL	Commercial Refuse - RL	Commercial Recycling	Roll-Off Refuse	Roll-Off Recycling	Roll-Off Mini-Ref	Roll-Off Mini-Rec	Landfill	Special Business Dist.	University
						Fiscal Year Ended Sep 30													
					Operating Expense by Cost Center														
97			6510		Administrative	$ 1,937,182	$ 503,258	$ 366,086	$ -	$ 308,727	$ 88,255	$ 85,397	$ 136,957	$ 15,238	$ 23,153	$ 1,561	$ 245,486	$ 40,802	$ 122,263
98			6511		MMSWMD	144,661	41,035	29,851	-	25,173	7,196	6,963	11,167	1,242	1,888	127	20,017	-	-
99			6520		Commercial	1,926,060	-	-	-	1,444,545	481,515	-	-	-	-	-	-	-	-
100			6521		Container Maintenance	416,178	30,386	4,374	-	168,688	7,938	90,677	14,530	15,555	-	-	-	22,827	61,203
101			6522		Special Business District	104,872	-	-	-	-	-	-	-	-	-	-	-	104,872	-
102			6523		Roll-Off	1,143,180	65,161	14,861	-	-	-	-	559,015	89,168	96,027	-	-	65,161	253,786
103			6530		Residential	2,700,297	2,700,297	-	-	-	-	-	-	-	-	-	-	-	-
104			6540		Landfill	2,951,136	550,130	-	-	446,796	103,619	-	319,336	-	54,780	-	1,314,544	60,284	101,647
105			6541		Composting	432,166	80,561	-	-	65,429	15,174	-	46,764	-	8,022	-	192,503	8,828	14,885
106			6560		University	329,322	-	-	-	-	-	-	-	-	-	-	-	-	329,322
107			6570		Recycling	1,380,184	-	1,380,184	-	-	-	-	-	-	-	-	-	-	-
108			6571		Recycling Drop-Off	180,879	6,744	144,703	-	5,477	1,270	-	3,914	-	672	-	16,114	739	1,246
109			6572		Volunteer Program	-	-	-	-	-	-	-	-	-	-	-	-	-	-
110			6573		White Goods	17,569	-	17,569	-	-	-	-	-	-	-	-	-	-	-
111			6574		Household Hazardous Waste	85,945	50,983	-	-	6,506	1,509	-	4,650	-	798	-	19,142	878	1,480
112			6575		Yard Waste	-	-	-	-	-	-	-	-	-	-	-	-	-	-
113			6576		Commercial Recycling	420,435	-	-	-	-	-	420,435	-	-	-	-	-	-	-
114			6577		Material Recovery Facility	1,323,692	-	972,870	-	-	-	80,130	-	774	-	10,809	157,299	18,904	82,905
115			6588		Capital Project	-	-	-	-	-	-	-	-	-	-	-	-	-	-
116					**Total Expenses**	$ 15,493,758	$ 4,028,556	$ 2,930,498	$ -	$ 2,471,342	$ 706,476	$ 683,603	$ 1,096,333	$ 121,978	$ 185,339	$ 12,498	$ 1,965,105	$ 323,295	$ 968,737
117						TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
					Plus:														
118		RefTotVol			Debt Service - Landfill (includes coverage requirement)	$ 1,692,003	$ 315,412	$ -	$ -	$ 256,166	$ 59,409	$ -	$ 183,088	$ -	$ 31,408	$ -	$ 753,680	$ 34,563	$ 58,278
119		RecTotVol			Debt Service - MRF (includes coverage requirement)	252,971	-	189,701	-	-	-	63,270	-	-	-	-	-	-	-
120					Capital Expenditures (Landfill - Cash Funded)	506,000	90,597	14,998	-	73,579	17,064	5,002	52,589	-	9,021	-	216,482	9,928	16,739
121					Capital Expenditures (Vehicles, Equipment)	2,352,128	559,411	515,484	-	365,222	144,444	110,836	203,513	51	66,859	5	343,539	15,853	26,910
122					**Total System Revenue Requirements**	$ 20,296,860	$ 4,993,975	$ 3,650,681	$ -	$ 3,166,309	$ 927,392	$ 862,711	$ 1,535,523	$ 122,029	$ 292,628	$ 12,503	$ 3,278,806	$ 383,639	$ 1,070,664
					Less:														
123					Total Revenues from Sources Other than User Fees	$ 1,590,352	$ 197,544	$ 650,853	$ -	$ 75,222	$ 13,624	$ 401,473	$ 48,194	$ 821	$ 5,936	$ 84	$ 125,740	$ 62,160	$ 8,700
124					**Total System Net Revenues Requirements**	$ 18,706,508	$ 4,796,431	$ 2,999,827	$ -	$ 3,091,087	$ 913,769	$ 461,238	$ 1,487,329	$ 121,208	$ 286,692	$ 12,419	$ 3,153,066	$ 321,479	$ 1,061,964

City of Columbia, MO

Solid Waste Utility Fund

Summary of Allocated Net Revenue Requirements Test Year 2015

Schedule B-2 Allocation Summary

Line No.	Description	Fiscal Year Ended Sep 30						
		Total System	Residential	Commercial	Roll-Off	Landfill	Special Business Dist.	University
	Operating Expense by Cost Center							
1	Administrative	$ 1,937,182	$ 869,343	$ 482,379	$ 176,909	$ 245,486	$ 40,802	$ 122,263
2	MMSWMD	144,661	70,886	39,333	14,425	20,017	-	-
3	Commercial	1,926,060	-	1,926,060	-	-	-	-
4	Container Maintenance	416,178	34,760	267,304	30,085	-	22,827	61,203
5	Special Business District	104,872	-	-	-	-	104,872	-
6	Roll-Off	1,143,180	80,023	-	744,210	-	65,161	253,786
7	Residential	2,700,297	2,700,297	-	-	-	-	-
8	Landfill	2,951,136	550,130	550,415	374,116	1,314,544	60,284	101,647
9	Composting	432,166	80,561	80,603	54,786	192,503	8,828	14,885
10	University	329,322	-	-	-	-	-	329,322
11	Recycling	1,380,184	1,380,184	-	-	-	-	-
12	Recycling Drop-Off	180,879	151,447	6,747	4,586	16,114	739	1,246
13	Volunteer Program	-	-	-	-	-	-	-
14	White Goods	17,569	17,569	-	-	-	-	-
15	Household Hazardous Waste	85,945	50,983	8,015	5,448	19,142	878	1,480
16	Yard Waste	-	-	-	-	-	-	-
17	Commercial Recycling	420,435	-	420,435	-	-	-	-
18	Material Recovery Facility	1,323,692	972,870	80,130	11,584	157,299	18,904	82,905
19	Capital Project	-	-	-	-	-	-	-
20	**Total Operating Expense by Cost Center**	$ 15,493,758	$ 6,959,054	$ 3,861,420	$ 1,416,148	$ 1,965,105	$ 323,295	$ 968,737
21	*Percent of Total*		*44.9%*	*24.9%*	*9.1%*	*12.7%*	*2.1%*	*6.3%*
	Debt Service and Vehicle Replacement							
22	Debt Service	$ 1,944,975	$ 505,113	$ 378,845	$ 214,495	$ 753,680	$ 34,563	$ 58,278
23	Landfill Capital Expenditures (Cash Funded)	$ 506,000	$ 105,595	$ 95,646	$ 61,610	$ 216,482	$ 9,928	$ 16,739
24	Vehicle Replacement	2,352,128	1,074,895	620,501	270,429	343,539	15,853	26,910
25	**Total Debt Service and Vehicle Replacement**	$ 4,803,102	$ 1,685,602	$ 1,094,992	$ 546,534	$ 1,313,701	$ 60,344	$ 101,928
26	*Percent of Total*		*35.1%*	*22.8%*	*11.4%*	*27.4%*	*1.3%*	*2.1%*
27	**Gross Allocated System Revenue Requirements**	$ 20,296,860	$ 8,644,656	$ 4,956,413	$ 1,962,682	$ 3,278,806	$ 383,639	$ 1,070,664
28	*Percent of Total*		*42.6%*	*24.4%*	*9.7%*	*16.2%*	*1.9%*	*5.3%*
29	**Less Revenues from Sources Other than User Fees**	$ 1,590,352	$ 848,398	$ 490,319	$ 55,035	$ 125,740	$ 62,160	$ 8,700
30	*Percent of Total*		*53.3%*	*30.8%*	*3.5%*	*7.9%*	*3.9%*	*0.5%*
31	**Net Allocated System Revenue Requirements**	$ 18,706,508	$ 7,796,258	$ 4,466,094	$ 1,907,647	$ 3,153,066	$ 321,479	$ 1,061,964
32	*Percent of Total*		*41.7%*	*23.9%*	*10.2%*	*16.9%*	*1.7%*	*5.7%*

City of Columbia, MO

Schedule B-3 RevSuff

Solid Waste Utility Fund

Revenue Sufficiency Under Existing Rates Test Year 2015

5

Line No.	Description	Fiscal Year Ended Sep 30			
		Net Rev. Req.	Rate Revenues		
			Amount	Surplus/(Def.)	Percent
	Customer Category				
1	Residential				
2	Refuse	$ 4,796,431			
3	Recycling	2,999,827			
4	White Goods	-			
5	Total Residential	$ 7,796,258	$ 8,496,922	$ 700,663	8.2%
	Commercial				
6	Refuse - FL	$ 3,091,087	$ 2,207,529	$ (883,558)	-40.0%
7	Refuse - RL	913,769	488,160	(425,609)	-87.2%
8	Commercial Refuse	4,004,855	2,695,689	(1,309,166)	-48.6%
9	Recycling	461,238	190,583	(270,656)	-142.0%
10	Total Commercial	$ 4,466,094	$ 2,886,272	$ (1,579,822)	-54.7%
	Roll-Off				
11	Refuse	$ 1,487,329			
12	Recycling	121,208			
13	Mini-Ref	286,692			
14	Mini-Rec	12,419			
15	Total Roll-Off	$ 1,907,647	$ 1,509,200	$ (398,447)	-26.4%
16	Landfill	$ 3,153,066	$ 3,030,802	$ (122,264)	-4.0%
17	Special Business District	$ 321,479	$ 241,235	$ (80,245)	-33.3%
18	University	$ 1,061,964	$ 458,000	$ (603,964)	-131.9%
19	**Total System**	$ 18,706,508	$ 16,622,430	$ (2,084,078)	-12.5%