

# Conducting a Rate Analysis As Part of a Master Plan Study

Conducting the master planning efforts along with a formal rate/cost of service study enabled Killeen, TX's decision-makers to project costs of the various solid waste management options. Now the City has a long-term financial roadmap and overall planning tool to help evaluate the customer cost impacts of the fleet replacement plan.

■ By Marc J. Rogoff, Jeff Arrington, and Michael Cleghorn

Not unlike other solid waste agencies across Texas and the U.S., the City of Killeen, TX has been considering its long-term future and ways to improve both customer service and efficiency. During a March 2013 workshop, City Council established priorities for City initiatives making citywide recycling the second most important item for consideration that year. As a consequence, a Master Plan study (Study) was initiated in 2014 to help develop a 20-year roadmap for solid waste collection, recycling and disposal for the City. As part of the Study, detailed analysis was undertaken on future collection delivery and fleet replacement.

Further, as part of this Study, City staff and its consulting team, SCS Engineers, partnered with Ft. Hood and neighboring communities on analyzing the potential synergies of a joint material recovery facility (MRF) to enhance recycling opportunities for the metropolitan area surrounding Killeen. If implemented, this new MRF could be one of the largest municipal/military solid waste partnerships in the nation.

During the March 2014 council meeting, staff recommended hiring SCS Engineers to analyze the cost to provide the proposed single stream recycling program as well as develop a solid waste master plan. SCS was selected to develop a 20-year master plan and rate study that is a comprehensive assessment, addressing a range of solid waste issues over the planning period.

The City's current collection and recycling operations were reviewed by SCS to develop recommendations for enhancement and additional efficiency. Items looked at included transfer station operations, a single-stream recycling

partnership with a private recycling company, a regional MRF partnership with Ft. Hood and a fleet replacement program.

Conducting a detailed cost of service/rate study as part of the Study was one of the major differentiators from typical solid waste planning studies. This financial study enabled the planning team to provide detailed "what if" analysis for the political decision makers in terms of customer rates and fees. This article provides an overview of the methodology used and the results obtained from the rate study.

### Killeen Overview

The City of Killeen is located in Central Texas, located halfway between Austin and Waco. Killeen has a current population of just over 130,000 with approximately 400,000 people in the local metro area. It is home to Ft. Hood, one of the largest U.S. military installations in the world, and is the home of III Corps, 1st Cavalry Division, 13th Sustainment Command, First Army Division West, 3rd Armored Cavalry Regiment, 41st Fires Brigade and many other Forces Command and other units. The City of Killeen solid waste management system includes several facilities that serve as key components to the overall program. These facilities are owned and maintained by the City of Killeen:

- Solid waste transfer station
- Administrative offices
- Killeen Recycling Center (KRC)
- Equipment and container storage yard

Figure 1: Revenue requirement by cost center. Figures courtesy of SCS Engineers.

Cost Centers	Fiscal Years					
	Projected					
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Accounting	\$212,107	\$216,986	\$221,976	\$227,082	\$232,305	\$237,648
Residential Services	\$4,083,253	\$4,145,866	\$4,241,221	\$4,338,769	\$4,438,561	\$4,540,648
Commercial Services	\$1,913,432	\$1,987,719	\$2,033,436	\$2,080,205	\$2,128,050	\$2,176,995
Recycling Program	\$437,974	\$448,047	\$458,352	\$468,894	\$479,679	\$490,711
Transfer Station	\$5,139,982	\$5,257,163	\$5,378,078	\$5,501,774	\$5,628,314	\$5,757,766
Mowing	\$962,573	\$985,312	\$1,007,974	\$1,031,158	\$1,054,874	\$1,079,136
Debt Service	\$729,558	\$722,008	\$723,358	\$721,658	\$721,295	\$725,370
Human Resources	\$14,000	\$14,322	\$14,651	\$14,988	\$15,333	\$15,686
Information Technology	\$116,431	\$119,109	\$120,151	\$122,914	\$125,741	\$128,634
General Administration	\$22,500	\$23,018	\$23,547	\$24,088	\$24,643	\$25,209
Non-Departmental	\$2,713,979	\$2,776,401	\$2,840,258	\$2,905,584	\$2,972,412	\$3,040,778
<b>Total Expenditures</b>	<b>\$16,345,788</b>	<b>\$16,695,949</b>	<b>\$17,063,002</b>	<b>\$17,437,114</b>	<b>\$17,821,207</b>	<b>\$18,218,580</b>

Residential Rate Impact (\$/Account/Month)						
Current Program	\$18.92	\$19.10	\$19.30	\$19.50	\$19.70	\$19.91
Fleet Replacement Plan	\$18.92	\$19.76	\$20.09	\$20.41	\$20.73	\$21.05
Single Stream with Ft. Hood	\$18.92	\$19.76	\$21.37	\$21.65	\$21.93	\$22.21
Single Stream - Public/Private	\$18.92	\$19.76	\$21.03	\$21.33	\$21.63	\$21.93
Fleet Replacement Plan No Curbside Recycling	\$18.92	\$19.01	\$19.32	\$19.63	\$19.95	\$20.26
Move Mowing Cost Center	\$18.92	\$17.78	\$17.96	\$18.15	\$18.34	\$18.54

Figure 2: Projected residential rates to meet revenue needs.

Commercial Rate Impact (Annual %)						
Current Program	4.88%	5.52%	6.20%	6.89%	7.59%	8.31%
Fleet Replacement Plan	4.88%	7.80%	8.91%	10.02%	11.12%	12.24%
Eliminate Mowing	4.88%	0.96%	1.60%	2.24%	2.90%	3.58%
Single Stream	N/A	N/A	N/A	N/A	N/A	N/A

Figure 3: Projected commercial solid waste increases.

- Container maintenance shop
- Old transfer station facility
- Closed MSW landfill

### Collection and Transfer

City crews provide residential and commercial solid waste collection services. The City is currently divided into four geographical areas serving about 46,000 residential customers. Each of these four areas has an assigned garbage collection day: Monday, Tuesday, Thursday or Friday. Customers can choose from 96 gallon, 64 gallon or 32 gallon wheeled containers. Pickup is provided using automated equipment that grasps the container, and lifts and empties the container into the collection truck. The Division also provides once per week collection of brush (up to six cubic yards) and bagged yard waste. Additional fees are imposed on the utility billing account for volumes above these limits, as well as bulky waste items (e.g., furniture, white goods or appliances). The City collection fleet is currently very old by industry standards. In order to continue high-quality service, the City needs to replace a substantial percentage of the current collection fleet.

The Division also provides collection services for about 1,700 commercial customers. A variety of containers are provided as well as different pickup schedules based on the need of the business or institution. The City owns and operates a transfer station that receives all commercial and residential waste collected within the City as well as individually hauled wasted materials and recyclables. The transfer station consolidates and transports the solid waste to a regional landfill operated by a private company.

### City Recycling

The establishment of a citywide Single-Stream Recycling (SSR) program was evaluated in three phases prior to the development of the Plan:

1. *Phase one* was to determine the feasibility and cost associated with transitioning from the City's current curb sorted recycling "pilot" program to an SSR program. The results of Phase one were presented to City Council outlining three potential courses of action that included dual-stream recycling, single-stream recycling, and the expansion or elimination of the current curb sorted recycling program. Following this presentation, City Council directed City management to explore an SSR program.

2. *Phase two* evaluated the Solid Waste Division's ability to provide the collection services in-house. As a reminder, an SSR program consists of two overlying operational components: 1) collection services (services needed to collect the recycled materials) and 2) sorting and recycling material services

(once materials are collected, these services take place at the material recycling facility [MRF] to ready materials for sale in the market).

Following this determination, information was presented to City Council on June 4, 2013. Staff outlined the capital required to support the collection functions of an SSR program. Based on this discussion, City Council tentatively supported the estimated \$4.8 million capital outlay if a beneficial proposal could be received to process the city's recyclables.

3. *Phase three* of the SSR program evaluation was to present a course of action for processing the City's potential collected recycling materials (i.e., the sorting and recycling material services previously discussed).

### The Rate Model

At the beginning of rate analysis, Division staff provided background data and information concerning residential collection revenues and operating expenses. This included the following critical information:

- Staffing and organizational charts
- Wages and benefit rates
- Customer records
- Rate schedules
- Loans
- Fund account summaries (totals and comparisons)
- Past and current operating budgets by cost centers
- Equipment replacement schedules
- Waste deliveries
- Fleet replacement plan
- Division fleet labor, equipment and fuel costs
- Ordinances

### Rate Model

Using these data, SCS then developed a Microsoft Excel™ spreadsheet-based, pro-forma model (Model) to assist in the completion of the rate analysis. This Model includes the following facets:

- An analysis of operational expenditures (personnel, contract and purchased services, materials and supplies, transfers)
- Analysis of capital outlays (equipment replacement and capital projects)
- Revenue sufficiency analysis (annual revenue projections and rate plan to provide sufficient revenues)
- Funds analysis (reserve requirements, transfers to other funds, administrative costs, beginning and ending fund balances)



Top: New Killeen solid waste vehicles purchased with new fleet replacement plan. Right: City Council reviewing the solid waste master plan and rate study during public hearings. Photos courtesy of the City of Killeen, TX, 2015.



• Based on data and information provided by the Division, these individual spreadsheets were linked to develop an overall Model to conduct the rate analysis.

### Methodology Overview

The following methodology was used by SCS to conduct the cost of service analysis:

• **Collect Historical Actual Expenses and Revenues for the Division System**—The first task was to gather available historical actual revenue and cost data and include these into a financial database.

• **Develop of the “Test Year”**—The second task was the development of an annual revenue requirement for a “Test Year”. The revenue requirement represents the total revenue for the System to recover during a year to fund all System costs. SCS worked with City staff to select a period that reflected a typical year for the System. Actual expenses for FY 13/14 were used as the basis of the Test Year for the Study. SCS then worked with City staff to make these costs more representative of anticipated conditions during the upcoming five-year financial planning horizon. The resulting Test Year was used as the basis for forecasting expenses for the five-year forecast (FY 14/15 to FY 19/20).

• **Development of a Revenue Requirement Projection**—After developing the revenue requirement for the Test Year, SCS worked with Division staff to project changes in anticipated costs due to inflation, labor increases, facility and vehicle maintenance, planning costs, etc. This resulted in a five-year revenue requirement forecast for the entire System including collection, recycling and disposal of solid waste.

• **Revenue Offsets**—SCS worked with Division staff to develop estimates of the sales of recyclables from the single-stream recycling program and drop-off centers

• **Allocation of Solid Waste System Costs**—SCS then worked with Division staff to assign costs to the various cost centers, as previously noted.

• **Calculation of the Residential Monthly Fee**—SCS then distributed the costs across the anticipated number of residential units.

### Development of the Revenue Projection

In addition to developing the Test Year revenue requirements, SCS forecasted the annual revenue requirement for FY 13/14 and FY 14/15 to FY 19/20. In order to develop the forecast, SCS projected how costs would change over the forecast period due to factors such as inflation and growth of the Division’s customer base. The assumptions used to develop the forecast included the following annual increases:

- Inflation: 2.3 percent
- Growth in Customer Accounts: 1.3 percent

### Allocation of Costs to Division’s Cost Centers

As noted in the paragraphs above, the Division has 11 different cost centers. These include the following:

- Accounting
- Residential Service
- Commercial Service
- Recycling
- Transfer Station
- Mowing
- Debt Service
- Human Resources
- Information Technology
- General Administration
- Non-Division

Figure 1, page 72, identifies the cost of providing each service for FY14 through FY19. The data shown for FY13/14 (past year) are the revenues that the City should have appropriated to the Division to meet projected needs.

### Rate Scenarios

The following five different rate scenarios were constructed using the Model:

1. **Current Division Program**—This scenario assumes that the Division would continue to provide existing levels of services to its customers.
2. **Fleet Replacement Plan**—This scenario assumes that the Division would provide the same levels of service to its customers, except that its fleet would be replaced early through an expedited lease purchase program in FY 14/15. This would require the Division to have one-time cash infusion replace antiquated vehicles. This scenario also assumes that the Division would increase its historic funding by an incremental \$100,000 per year over the rate period, in order to maintain a funding in the range of \$1 million a year.
3. **No Curbside Recycling Service**—This scenario assumes that the Division would discontinue its curbside recycling service and implement a single-stream recycling program.
4. **Single Stream/Private MRF**—This scenario assumes that the Division would implement a Citywide curbside recycling program with recyclables collected by the Division and delivered to a private MRF. This rate scenario assumes that City would pay the processing fee all recyclables delivered and receive revenues from the vendor.
5. **Single Stream/Ft. Hood MRF**—This scenario assumes that the Division would implement a Citywide curbside recycling program with recyclables collected delivered to a material recovery facility (MRF) developed in partnership with Ft. Hood and other neighboring cities. This rate scenario assumes that the City would pay the debt service and Fort Hood would provide labor for operations. This cost-sharing structure was initially discussed during the Charrette, the parties concerning the Ft. Hood MRF project. It is also assumed that recycling revenues would be shared among the parties based on the quantities of recyclables delivered to the facility.

### Key Findings and Rate Recommendations

This section of the report provides estimated revenue recovery using current rates, SCS's recommended customer fees, and the projected revenue generated over the five-year forecast period using the recommended fees and rates. A review of the Division's current staffing of residential and commercial services suggested a 80/20 split of Division-wide operational costs; 80 percent to the residential rate base and 20 percent to the commercial rate base. In our experience, this split is fairly typical of most local solid waste agencies offering both residential and exclusive commercial collection services.

Figure 2, page 73, shows the rate impact of each of these five scenarios for consideration by the City Council. The current program rate of \$18.92 for 2014 indicates the need to increase current rates to meet the current expenses. Figure 3, page 73, shows projected commercial solid waste user fee increases from the current rates to meet revenue requirement for each scenario.

### Rate Recommendations

In order to meet the Division anticipated revenue requirements, staff made the following recommendations to City Council:

- That the City move forward with implementing both a residential and commercial customer fee adjustment beginning in Fiscal Year 14/15. This rate increase will enable the Division to have sufficient revenues to meet anticipated fleet replacement needs, as well as help meet increased operating costs. Also, that the City should increase its special service and administrative fees by 5 percent and adjust these based on the CPI to address the Division's cost of providing these services.

- Based on the Division's overall objective of implementing the best value, single-stream recycling program Citywide, implementing a MRF project with Ft. Hood (Scenario #3) appears the most feasible of all the MRF operating scenarios evaluated. More detailed cost estimating work will need to be accomplished should the City implement this option. Further, the roles and responsibilities of both parties will need to be more clearly delineated.

- Rates in the subsequent years should be annually increased for both residential and commercial customers by the Consumer Price Index (CPI) for the Killeen region. Again, this will enable the Division to meet projected increases in operating costs. The solid waste fund balance should be maintained at 25 percent of annual expenses.

- The Division's actual expenses for services should be reviewed annually to assess whether an additional rate increase is warranted for extraordinary Division expenses. At a minimum, the Division should secure the services of an independent rate consultant in the next three years to reassess the Division's operational expenses and projected revenues.

### Lessons Learned

On February 24, 2015, City Council formally adopted the proposed Solid Waste Master Plan and Rate Study. At the time of this writing, City staff is exploring the possibility of a Material Recovery Facility, in order to provide information for future Council consideration. This option would include Fort Hood and the partners of the Centex Sustainable Communities Partnership that encompasses the cities of Copperas Cove, Harker Heights and Gatesville.

Conducting the master planning efforts along with a formal rate/cost of service study enabled the City's decision-makers to project costs of the various solid waste management options, primarily the implementation of a single-stream recycling program. Capital and manpower investments were evaluated in concert with estimated costs of various recyclables processing alternatives. Further, the City now has a long-term financial roadmap and overall planning tool to help evaluate the customer cost impacts of the fleet replacement plan.

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### References

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