Integrating Financial Analysis Into Solid Waste Operations Planning

Going before a city council or a county commission with a proposed rate increase has often been compared to the experience of visiting your friendly oral surgeon to have a long-awaited root canal.

By Marc J. Rogoff and Phil Richmond

Faced with rising costs and reduced fund balances, the leadership and communication skills of solid waste managers are being sorely pressed in many solid waste agencies. Typically, what we often find in our rate-study practice are communities faced with the vicious cycle of confronting increasing operational costs, frequent requests from city or county administrators for cutbacks in staff and budget, existing equipment and facilities having high maintenance costs because of their increasing age, and deferred fleet replacement schedules. Ultimately, these situations result from the inability of staff to communicate to the political decision-makers the real urgency for a rate increase.

It is our contention that with focused financial planning and sound analysis of operational alternatives, the decision to bring a proposed rate increase or changes in potential customer services has the best chance of achieving positive approval from your political decision-makers. While it might not be considered a walk in the park, a rate study can turn into an excellent opportunity to communicate with your community's leaders about the levels of services provided by your agency and ways to pay for these services over the long term.

A Typical Rate Case

To illustrate how a cost-of-service or rate study can assist in an agency's strategic financial planning, let's turn to a recent rate study completed for Pensacola, FL. Not unlike other communities with a solid waste collection program, Pensacola was experiencing increasing labor, benefit and operational costs, and had not implemented new rates for several years. SCS Engineers of Long Beach, CA, was engaged by the city this past year to evalu-

ate its solid waste operations and make recommendations on cost savings and revenue-enhancement opportunities. At the same time, the contractor completed a comprehensive financial rate analysis for MSW operations. Based on data and information provided by city staff, a rate model was developed, which enabled SCS to make projections of financial performance of refuse-collection and transfer operations for the upcoming five-year planning period (2007–2011) and model various user rate structures.

Overview of City's System

Briefly, the city has historically provided solid waste collection service to approximately 19,300 residential customers, using automated side-loader vehicles on nine routes, each servicing approximately 1,000-plus customers twice per week. Pursuant to city code, solid waste collection is mandatory within the city limits.

The only exception to this business policy is commercial collection of businesses using rolloff and compactor services requiring specialized vehicles and equipment, which are provided to residents and businesses by various private haulers, pursuant to franchise agreements with the city. These franchise collectors remit franchise fees to the city, and these fees become a revenue source for code-enforcement activities.

The Sanitation Services and Fleet Management Department is responsible for providing residential solid waste and trash collection within the city, maintenance of the city's fleet, and enforcement of municipal ordinances and state statutes that pertain to code violations.

The most prominent change in city solid waste services to date has been the automation of residential collection services. In the early 1980s, the city implemented an "automated" solid waste collection program, which utilizes hydraulically operated arms to collect waste from city-provided, 90-gallon, wheeled containers that are placed curbside by residential customers on the two assigned collection days per week.

In 1989, the city also switched from front-end loaders and dump trucks to the current method of yard-trash collection, grapples, and shuttles.

The city also provides an unlimited yardwaste collection service. Yardwastes—such as tree limbs, lawn or hedge clippings, and leaves—are collected once weekly from residential customers within the city. The service currently uses 20 city employees. Since these materials cannot be disposed of in the lined areas of the county landfill, they must be collected separately outside of the traditional, automated cart system. As such, the city has developed a "trash service" system in which yardwastes are collected curbside utilizing knuckleboom grappler units historically supported by a shuttle system consisting of trucks and large-volume trailers.

The department also operates a solid waste transfer station where waste from its solid waste collection vehicles is transferred into 75-cubic-yard trailers. This transfer process enables the department to minimize the need for all solid waste collection vehicles to make trips to the Escambia County Landfill, thereby reducing overall wear and tear on waste vehicles and minimizing fuel and labor costs. The current one-way haul distance to the landfill is about 16.5 miles with an approximate travel time of roughly 30 minutes. Operation of the transfer station by the city currently requires the use of eight city employees. Daily throughput of the transfer station appears to average about 250 tons per operating day, assuming a four-day workweek.

Benchmarks

Not unlike other industries, MSW has typical benchmarks or standards for operations and maintenance costs and for the useful life of vehicles, by which an individual community can be measured. At the outset of the study, SCS reviewed data and information provided by city staff to determine whether the city had the appropriate type of equipment to service the needs of its residential customers. Based on our brief review, it appeared that the city's collection fleet had the appropriate type of automated equipment to service its residential solid waste collection program.

However, the average age of the entire fleet was well over eight years, which explains, in large part, the city's higher-than-average operations and maintenance costs compared to the solid waste industry standard, the excessive downtime of current equipment, and the need for additional spare vehicles. Several vehicles used for trash collection have over 10 years of active city operations.

The industry standard for the annual operations and maintenance cost for a side-load collection truck is $25,000–$30,000, including fuel, oil, maintenance, labor, parts, outside repairs, and tires.

A review of the department's records, however, suggests the city's average operations and maintenance cost in fiscal year (FY) 2006 for side-load collection trucks was approximately $35,154, which is higher than the industry standard. This is somewhat expected because the average age of the vehicles used by the department for residential collection is roughly eight years, which again is at the high end of the industry standard for this type of equipment. These data suggest that the city should consider replacing its residential collection units earlier than anticipated to reduce the repair and preventative maintenance costs as these units age.

By comparison, the industry standard for the collection of trash and bulky wastes using trucks, grapples, and trailers is typically between $15,000 and $20,000, including fuel, oil, maintenance, labor, parts, outside repairs, and tires. A brief review of the department's records indicates the average annual operations and maintenance cost for these units is approximately $11,600, which is at the lower end of the industry standard for this type of equipment. However, the average age for the department's fleet is tending toward 10 years, which is at the higher end of the industry standard, with a significant number of trash trailers being nearly 20 years old.

Financial Overview

The city's solid waste system is managed using a separate enterprise fund (the Sanitation Fund). Collection rates were most recently adjusted upwards in FY 2000 from $18 per month to the current rate of $19.85 per month. Although the city requires that all residents subscribe to sanitation service, it is believed by department staff that some residents are free riders, requiring the department to follow up with code enforcement officers to force compliance. This appears to be a tedious and cumbersome process, suggesting the need for the city to investigate the feasibility of implementing a municipal service benefit unit (MSBU) to include all residential units (improved and unimproved) in the city covered by the existing city code. Similar to other municipal and county MSBU programs, the city could

then annually assess a special, non–ad valorem assessment for solid waste collection, which if unpaid would become a property lien, eliminating those free riders who are currently not subscribing to solid waste collection service.

System Expenses

Our review indicated that the city's solid waste system operations were fairly typical of most municipal systems. Costs for fuel, salary, landfill tipping fees, pensions, and equipment maintenance and repair have increased over the past seven years. For example, fuel has risen at an annual rate of 22% over the last seven fiscal years. Similarly, the department's pension costs have increased at an annual rate of 46%, followed by equipment maintenance and repairs at 9.3% annually and salary costs at 5.8% annually over this same reporting period. Landfill fees for the department appeared to remain relatively stable, increasing only 0.5% annually since the last department rate adjustment in FY 2000.

As indicated previously, solid waste collection for residential customers is fully automated, using side-loader collection vehicles. Staff turnover has been historically low, resulting in high labor and benefit costs. Based on our field observations, the city's collection operations and staffing levels for these services appear, however, to be in line with those provided by similarly sized MSW agencies. Finally, the city's administrative cost burden applied to the Sanitation Fund also appears to be comparable to other sister communities and general industry averages.

Measuring the actual cost of solid waste collection and disposal provided by the city required an accounting for all city budgetary resources consumed in providing this service, whether borne directly by the department or paid for elsewhere in the city's budget. Thus, the resources utilized in collecting one container of mixed waste or yardwaste (fixed or variable costs) include not only the direct wages paid and equipment used by the city to pick up and transport these materials, but also overhead costs (indirect costs).

Accounting for all these items provides fully loaded costs, which can then be used to analyze the long-term expenditures for overall planning purposes.

For solid waste rate-modeling purposes, estimates of specific program use, as well as actual tonnages of solid waste collected from waste-disposal-scale records, are typically used to help allocate these types of overhead costs. In the absence of such data, estimates based on industry averages and SCS experiences are oftentimes used to allocate costs and analyze revenue needs.

Rate Model

At the outset of the work effort, SCS developed a rate model based on Microsoft Excel spreadsheets to assist in the evaluation of several feasible rate structures. The model includes the following facets:

- An analysis of operational expenditures (personnel, services and supplies, landfill disposal charges, and administrative service charges)
- Analysis of fleet replacement and financing (vehicle replacement by year)
- Funds analysis (reserve requirements, transfers to General Fund, administra-

tive costs, beginning and ending fund balances)
- Revenue sufficiency analysis (annual revenue projections and rate plan to provide sufficient revenues)

Based on data and information provided by city staff, these individual spreadsheets were linked to develop an overall rate model to evaluate the impact of critical city cost and program revenue areas on different potential rate options.

Briefly, the rate model makes several primary assumptions:

- There will be an estimated beginning cash balance in the Sanitation Fund of $656,000 as of October 1, 2006.
- Vehicle and equipment purchases will be financed with a loan.
- Continued historic levels of overhead transfer payments to the city's General Fund to compensate for administrative and customer billing services provided to the Sanitation Fund.

Additionally, for purposes of preparing projections on future residential program costs and revenues, several escalation rates and assumptions were utilized in the development of the rate model. These were estimated based on historic patterns in the Sanitation Fund, industry averages, or escalation rates used by city agencies for such key cost categories as wage rates (4.0%), benefits (5.0%), interest rates (4.5%), and Consumer Price Index (CPI) (3.4%).

Rate Structures

Using the assumptions noted in the paragraphs above, a rate model was developed that helped project forecasted operating expenses and revenue sufficiency needs for the city's Sanitation Fund over the next five-year, business-planning horizon (FY 2007 to FY 2011). The following financial scenarios were constructed to illustrate possible decision paths for the city during this business-planning period:

- No-rate-increase scenario
- Annual CPI-adjustment scenario
- Full-cost-recovery scenario
- Transfer station–privatization scenario
- Once-a-week collection scenario
- Single-person yard/bulky-waste collection scenario
- Combined-cost-saving opportunities scenario

The no-rate-increase scenario projected that the failure to increase operating revenues in light of increases in the city's labor, benefits, and operating costs could result in a series of negative-net-income operating losses and a steep decline in ending fund balances. In comparison, the annual CPI-adjustment scenario illustrates how this situation could be somewhat mitigated by the city implementing annual rate adjustments in all customer-rate categories based on changes in the CPI, as reported by the Bureau of Labor Statistics (BLS) of the US Department of Labor. The current annual CPI has been reported by BLS as 3.4%.

Four additional rate scenarios were constructed to analyze the rate impact of the cost-saving opportunities discussed in the paragraphs above. The first, the transfer station privatization scenario, projects the financial impacts resulting from replacement of the department's seven sanitation equipment operator II employees with a private waste hauler to deliver the city's solid waste at the transfer station to the county landfill. In addition to these personnel savings, the city would be able to defer the purchase of replacement rolling stock.

As discussed previously, the department could also elect to reduce its automated residential collection service from the current twice-a-week service to once-a-week service. Based on discussions with department staff, the city could provide automated service to its customers with seven daily routes. This would result in projected personnel savings of three employees, future replacement of two automated side-loaders, and ancillary operating, fuel, and maintenance expenses.

Some cost efficiencies could be achieved by the department in its collection of yardwastes and other bulky wastes. The department could employ single-person crews using straight-bodied knuckleboom loaders instead of its current shuttle system.

Based on discussions with department staff, the single-person yard/bulky-waste collection scenario was developed. This change in operating philosophy could result in labor savings (from the current 20 city employees to a projected 12-person work force) and enable the department to defer purchase of 20 trailers, although straight-bodied knuckleboom loaders with 30-cubic-yard capacities would have to be purchased. Finally, a combination of these four cost-saving programs was modeled to form the combined cost-saving opportunities scenario.

Data from these various rate-model scenarios were used to compare on an apples-to-apples basis the projected monthly customer rate impacts and possible budget savings. The city's solid waste system is projected to have annual revenue shortfalls over the next three fiscal years of between $1.3 million and $1.8 million, absent any increases in customer rates or adjustments in levels of service. The city's current monthly customer rate is $19.85, assuming the roughly 19,000 customers based on the most recent route audit. The monthly customer rate needed to eliminate this revenue shortfall in FY 2007 was calculated to be $30.98 for an average of $28.16 from March 2007 to September 2008.

As discussed in the paragraphs above, there are several potentially viable operational changes in the city's collection program that may mitigate the financial impact of increasing personnel costs, operational expenses, and the need for vehicle replacements. Each has its own specific advantages and disadvantages with respect to operating conditions in Pensacola and the anticipated timeline for implementation.

For example, the privatization of the transfer station hauling operations would require the city to develop a request for proposals or bid package for private haulers/vendors. Arrangements would also have to be made to transfer the existing city staff to other vacant positions within the city. On the positive side, the cost savings with the privatization of this city function are projected to be substantial, between $1.32 and $2.12 per month per customer in FY 2008 and FY 2009 respectively. Given the limited daily contact of these employees with the city's solid waste customers, we are of the opinion that there would be limited perception of a reduction in overall customer service levels.

Similarly, the once-a-week garbage collection alternative also may enable the city to minimize rate impacts for its customers. The financial modeling suggests that the city could save between $1.18 and $1.85 for each customer per month in FY 2008 and FY 2009 respectively. This option would enable the city to potentially achieve labor savings and defer replacement of several

automated garbage collection trucks. On the downside, this option would require a substantial public-information and logistical effort, which would take significant staff time to implement. Further, there may be a perception by some customers that service levels are being significantly reduced, although research conducted by SCS and other Florida municipalities strongly suggests that 90-gallon containers can accommodate the solid waste disposal needs of most, if not all, residents. Nevertheless, there may be increased odors if foodwastes are disposed of by residents in the collection containers many days in advance of the single weekly collection day. Further, the city may still have to purchase and provide a few additional rollout containers to some higher-volume customers.

The changes in the yard-trash and bulky-waste pickup to a single-person system also can result in substantial savings to the city, somewhere in the range of $1.43 in FY 2009. Given the volume of yardwaste and bulky waste generated by city customers, this option is anticipated to take substantial staff time for final implementation, since new equipment would have to be purchased by the city, although the labor savings are projected to be substantial. On the downside, it is unlikely the city could continue to provide the same current levels of service. That is, there would be some backlog in daily pickup schedules, and prescheduling of bulky pickups would probably be required. Further, some residents might perceive that their current levels of service had declined.

And finally, if all of these abovementioned program saving opportunities are realized, it is projected that the monthly rate impacts could be reduced by $5.39 in FY 2009.

Implementation

The recommendations provided the city's decision-makers with a menu of financial and operational choices, each with relative advantages and disadvantages. While these recommendations were well-received by the City Council, they also prompted discussion relative to rate increases required for other city services. In April 2007, the Pensacola City Council adopted a solid waste rate increase to $22.20 per month, along with an initial monthly $1.30 fuel charge that would adjusted annually, based on actual fuel costs to the city. The rate resolution also included an annual rate escalator based on changes to the CPI. A two-tiered bulky-waste collection rate was also enacted: $15 for scheduled collection and $35 for unscheduled collection.

To reduce costs, the city council approved the purchase of two single-person grappler units to collect bulky wastes. The city observed operations of these units over the 2006–2007 fiscal year to determine if more of these units should be purchased to collect yard trash. Additional discussions will be held with the City Council on yardwaste volume limits. And finally, the city is moving forward on SCS's recommendations to contract out operations of the city's transfer station. **MSW**

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