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ANDREW YOUNG SCHOOL OF POLICY STUDIES  
FISCAL RESEARCH PROGRAM  
NOVEMBER 7, 2002

**SUBJECT:** Estimated Cost of City of Atlanta Sanitation Service

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## I. Summary

This Research Memorandum presents estimates of the unit cost of selected sanitation services for the City of Atlanta. The Research Memorandum was prepared at the request of Gary Cox, Deputy Chief Operating Officer of the City of Atlanta. Estimates of unit costs are presented in Table 1. The remainder of the Research Memorandum explains how these unit costs were derived and provides some observations.

**TABLE 1: ESTIMATED UNIT COSTS FOR SELECTED SANITATION SERVICES**

Service	Service Unit	Unit Cost
Weekly residential household garbage and twice-monthly yard waste collection and disposal	Billable customers	\$270 per Customer per year
Bulk rubbish removal	Pile of rubbish removed	\$195 per pile
Street Sweeping:	Curb Foot	
• once a year		• \$0.016 per curb foot
• six times a week		• \$4.89 per curb foot
• four times a year		• \$0.06 per curb foot
• once a month		• \$0.19 per curb foot

## II. Estimation for Unit Cost Calculations

### Weekly Household Garbage and Twice Monthly Yard Trimmings Pickup

The estimated cost of garbage and yard waste collection includes the cost for single family service, multi-family (if Herbie-Curbies are used) and night operations less the cost of cart distribution, which recovers its own cost. Salaries, maintenance, cost of unallocated administrative overhead, land fill disposal costs, estimated annual cost of capital and night operations are included. A fee is

estimated using the total number of billed customers, not the total number of Herbie-Curbies. Table 2 contains the details of the calculations.

- Salaries were obtained from the Solid Waste Services (SWS) budget and are allocated across activities as per the SWS division management. Direct salaries, fringe benefits, overtime, and extra help are all included.
- Vehicle maintenance and fuel budgets are from the same source.
- Disposal costs include a major contract and associated administrative costs for disposal at a privately owned landfill plus the costs of processing yard waste and trimmings. Budgeted landfill maintenance and closure costs are also included.
- General City overhead and indirect costs were allocated to activities by Solid Waste Services personnel. Remaining unallocated divisional administrative costs are attributed to the activity of garbage collection and yard trimmings pickup based on the proportionate share of the non-administrative budget. Landfill costs are allocated based on volume records from landfill. Where landfill records failed to provide sufficient detail, the allocations were based on budget shares. Residential garbage collection and yard trimmings pickup currently account for 66.15 percent of the non-administrative budget of \$1,549,431.
- Landfill maintenance and landfill closure costs are allocated to the activity of garbage collection based on its share of the total tonnage deposited (yard trimmings are not taken to land fills; the cost of processing yard trimmings and waste is added at the end). Historically, Solid Waste Services accounts for approximately 75 percent (by weight) of the total waste the city takes to the Live Oak land fill. Residential garbage collection currently accounts for about 80 percent of the total tonnage taken to Live Oak landfill by Solid Waste Services. Consequently, we allocate 75 percent of total land fill costs to Solid Waste Services and then 80 percent of that amount to garbage and yard waste collection. The budgeted 2002 cost of disposal attributed to garbage collection is \$5,764,298. The total budget for processing yard trimmings, \$1,081,093, is also included in disposal costs associated with garbage collection.
- The annual user cost of capital is an estimate of depreciation of capital equipment owned by the city plus foregone interest earnings that could have been earned had the money invested in equipment been deposited in a bank or invested in a low-risk asset. The user cost of capital is estimated for large equipment, cars and pickups, but not for small and miscellaneous equipment. Salvage value (estimated at 7 percent<sup>1</sup> of replacement cost) is used for equipment older than its “useful life”. The user cost of capital is obtained by applying a fixed, straight-line depreciation rate based on the estimated useful life of the equipment. The estimate of forgone interest is based on an interest rate of 4.5 percent applied to the value of “useful” equipment or salvage value.

**TABLE 2. SUMMARY OF COST CALCULATION FOR GARBAGE AND YARD WASTE COLLECTION AND DISPOSAL**

	<b>Total Garbage Collection</b>	<b>% of Total</b>
Salary	\$5,361,027	23.71%
Salary (Fringe)	1,460,344	6.46%
Salary (Ex Help)	70,154	0.31%
Salary (Overtime)	397,448	1.76%
Total Salaries	7,288,972	32.24%
Supplies	600,447	2.66%
Uniforms	89,250	0.39%
Consultant (Professional Services)	0	0.00%
Fuel	361,183	1.60%
Motor Equipment Maintenance	2,682,007	11.86%
Purch. Motor Equipment	274,378	1.21%
Service, Repair, and Maintenance	247,800	1.10%
Rental Lease Motor Equip.	0	0.00%
Debt Service	1,200,000	5.31%
Worker's Comp.	125,163	0.55%
Indirect Cost	873,738	3.86%
Refunds		0.00%
Utilities	20,864	0.09%
(Less Cart Distribution)	(400,487)	-1.77%
Total Direct Costs	13,363,316	59.11%
Landfill Maint., Closure, and Tipping	6,845,391	30.28%
Administrative Attribution	1,024,949	4.53%
User Cost of Capital	694,829	3.07%
Bad Debt Allowance	678,200	3.00%
<b>Total Costs</b>	<b>\$22,606,686</b>	<b>100.00%</b>
Customers	83,908	
Cost Per Customer	\$269	

- For total revenue to cover total cost, it is necessary to make allowance for bad debt. Currently, the city collects 70 percent of the amount it invoices for solid waste services (number provided by City Treasury). However, in determining the bad debt allowance, we assumed a 97 percent collection rate, which implies an \$8.08 per year addition to the fee. If allowance had been made to cover a 30 percent non-collection rate, the addition to the fee would have to be \$112 per year.
- *Fee Calculation.* Cost per customer is based on the current 83,908 billed customers. Total direct and attributed costs amount to \$22,001,039, or \$269 per customer (See Table 2).
- The service level is weekly garbage collection and twice a month yard waste pickup. While our estimate of the cost of providing this service is based on the budgeted amount for these two services, we believe that the budget expenditures plus the addition for items such as the cost of capital provides a reasonable estimate of the cost of providing the stated level of service.

## **Bulk Rubbish Removal**

Bulk rubbish removal refers to the pick-up and disposal of large items that are not collected as part of the normal garbage collection service.

Bulk rubbish removal is budgeted and administered as a component of "Street Cleaning." Street Cleaning includes not only the broom operations, but also manual sweeping, dead animal removal, right-of-way and vacant lot cleaning in addition to bulk rubbish collection. Therefore, we first calculated the expenditures on all cost component for Street Cleaning and then allocated a part of these expenditures to bulk rubbish collection. As with garbage collection, costs for administration, disposal, and cost of capital have been added to the direct budgeted cost. All indirect costs for Street Cleaning were estimated and from that an estimate for bulk rubbish costs was developed.

- The attributed cost of administration for Street Cleaning is based on the calculation that 33.85 percent of total non-administrative costs arise from Street Cleaning operations.
- Street Cleaning is responsible for about 19.5 percent of Solid Waste Services' use of capacity at Live Oak - an attributable cost of \$1,392,764 in the 2002 budget.
- The user cost of capital estimated for all of Street Cleaning's major equipment is \$312,240; the user cost of capital estimated for only rubbish removal is \$252,853.
- Direct cost of Street Cleaning plus the costs attributed for administration, land fill, and user cost of capital is \$10,466,595.
- Bulk rubbish collection direct costs and costs attributed for administration, land fill, and user cost of capital for rubbish collection amounts to \$5,077,506, or 48.5 percent of Street Cleaning costs.
- *Fee Calculation.* The service level is defined as a pile of bulk rubbish picked up and disposed of. There are two estimates of the actual number of piles picked up: the Mayor's Office estimates that there are 500 new piles per week [26,000 new piles per year], while Solid Waste Services estimates that there are 500 piles per month [6000 new piles per year]. These result in cost estimates of \$195 and \$846 per pile, respectively.

We believe the lower number to be more accurate. Assuming a cost per hour of \$50 for labor and equipment (including indirect costs, fringe benefits, etc.), and 4 person crew, the total cost per day is \$1600. Assuming the crew can pick up 8 piles a day, then the cost per pile would be \$200.

## **Street Sweeping**

As noted above, the service category of Street Cleaning currently contains the services of street sweeping, bulk rubbish removal and other services enumerated above. Street sweeping is assumed

to be performed only on paved streets. Using procedures similar to those used to estimate expenditures on bulk rubbish to estimate the budgeted expenditures for street sweeping to be \$3,743,740.

This expenditure level allows for street sweeping six times a week in Downtown and four times a year in the rest of the City. We estimate that there are currently 18,049,565 feet of paved street frontage in the City of Atlanta.<sup>2</sup> We assume that Downtown accounts for 3 percent of the front footage.<sup>3</sup> Thus, for the year, SWS sweeps 238,976,253 feet of front footage each year.

*Fee Calculation.* Dividing the cost of \$3,743,740 by 238,976,253 feet of front footage results in a cost of sweeping all streets once a year of \$.016 per curb foot.

This estimate does seem reasonable. Assuming a cost of \$50 per hour and an average speed of one mile an hour, the cost of sweeping a foot of road is \$0.01. This does not allow for travel time to the route or the use of trucks to haul the waste.

The service level is 6 times a week in Downtown and four times per year elsewhere. Because of the large difference in frequency, the downtown sweeping area actually accounts for over seventy percent of total milage swept per year. The cost of sweeping Downtown is \$4.89 per curb foot per year for six times a week sweeping. If the service level in the rest of the City was once a month, the cost would be \$0.19 per curb foot per year, or \$28.50 for a lot with a 150 foot frontage.

### **Other Services**

We do not believe the budget amount, net of the cost of the three services discussed above and recycling, can be used to determine the cost of other services that SWS provides. The reduction in the budget was felt in the personal used for these other services. Thus, it would be very difficult to calculate the unit cost for each of these services.

### **III. Observations**

In the course of this research, we made a number of observation that we thought should be brought to your attention.

*Benchmarking.* We looked for studies of garbage and trash collection costs in other cities but were unable to find good, current comprehensive studies. Benchmark studies are useful and we do recommend here and below that the city proceed to develop information for comparisons.

*Bulk Rubbish.* If our estimate that bulk trash removal costs of at least \$195 per pile is correct, then consideration should be given to privatizing the service. Since there is nothing to prevent a resident from contracting with a private hauler, the role of the City in providing this service might be to maintain a list of firms (and their prices) that residents could call to have bulk rubbish hauled away.

We note that the City of Savannah charges for bulk removal by the pile and the time required. However, we do not believe the Atlanta currently has the capacity to implement such a system.

*Sanitation Fee Collection.* Solid Waste Services estimates only a 70 percent fee collection rate (phone call with Gary Donaldson, October 8, 2002). With this being the case, and given the desire to put this service on a break even basis, the collection rate needs to improve. Consideration could be given to the following options:

- Include the sanitation fee with water bills: This option would provide the City of Atlanta with a method of collections enforcement by attaching the sanitation bill with another service that could be discontinued in the event of non-payment. Furthermore, this method of bill collection would reduce sanitation's postage costs. We note that Savannah does use this method.
- Privatize collection: Selling of uncollected sanitation bills would reduce the loss by recovering a portion of the uncollected amount. Furthermore, these revenues would be realized immediately. This would be similar to Fulton County's method for collecting unpaid property taxes; however, the feasibility of using this method for sanitation is uncertain.

*Motor Vehicle Maintenance.* Motor vehicle maintenance costs seem to be extraordinarily high. The allocation spreadsheet supplied by Solid Waste Services indicates maintenance costs are running 6.5 times the cost of fuel. The total 2002 budget allocation is \$4.86 million for vehicle maintenance.

As we understand the system, Motor Transport prepares its budget annually at the beginning of the budget cycle. That budget is prorated to all vehicles and then to cost centers. The cost centers and departments are "told" what their vehicle maintenance cost will be. It is necessary that Motor Transport collect all that is budgeted to meet its payroll, etc. Consequently, Sanitation has no control over a cost that amounts to almost 13 percent of the total operating cost.

We suggest consideration be given to the following:

- A. Review industry standards on vehicle maintenance costs.
- B. Consider the possibility of placing some vehicles on competitive private maintenance contracts (reducing the Working Capital Fund by the amount allocated to those vehicles) and assessing cost savings.

*Landfill Costs.* As noted above, SWS accounts for only 75 percent of the tonnage being delivered to Live Oak landfill, the remainder coming from water and sewer or general sources. Yet the Sanitation Fund bears the entire cost in its budget, with actual usage costs to be reimbursed by the Water and Sewer fund or General Fund. We have heard that the General fund charge back does not reflect its landfill usage. If this is true, there may be a subsidy to the General Fund by the Sanitation Fund, and our estimate of the actual cost of providing the services would be too high.

*Garbage Transportation.* Efficiencies in garbage and bulk rubbish transportation may be obtained through the strategic location of garbage transfer stations. Decreasing the time that multi-person crews spend transporting garbage in a full rear-loader garbage truck reduces sanitation labor costs and increases crew efficiency.

*General Government Items.* Certain services and costs such as garbage collection and rubbish removal are logically associated with specific property, while other services, for example, street sweeping, benefit the community as a whole. Thought should be given to transferring services which benefit the community in general to the General Fund.

*Study of Efficiency.* We did not investigate issues of production efficiency. As noted above, we suggest the City consider developing a set of benchmark cities on which to compare its sanitation service costs.

The City should also consider conducting a study of the efficiency of sanitation collection and disposal. Such work could possibly include fairly extensive time and motion studies of crews as they actually perform their duties. Such observations taken in a variety of situations would, for example, be very helpful in refining actual costs of bulk rubbish collection.

We looked into the feasibility of using more advanced garbage trucks that, in effect, allow for a crew size of one, as opposed to the three needed in Atlanta's present system. Time and available information has not permitted a thorough investigation of this issue. We have, however, roughly estimated savings if garbage collection crews (and no crews other than garbage collection) were reduced to one person. Records available to us indicate that there are 128 people assigned to garbage collection crews with a total annual salary of \$4,126,857. Adding twenty-seven percent for fringe benefits brings the cost to \$5,241,108. If this cost were reduced by two-thirds, the savings would be \$3,494,072. This estimate does not allow for any additional costs of switching to new type trucks nor does it allow for any possible changes in the number of customers that can be serviced in a day. This is an option that the City might explore.

*Financial Record Keeping.* The City should consider establishing a cost accounting system for SWS that would allow the City to annually determine its costs of providing each sanitation service. The current accounting system, for example, does not account for the depreciation of equipment.

*Service Units.* As proposed, the fees do not vary with the volume of waste collected; each customer pays the same fee regardless of the volume of garbage or yard waste. Many cities have gone to a scheme that allows the fee to vary by the volume of waste. One option used by several cities is to require customers to use specially marked bags that are purchased at local stores. The purchase price of the bags includes the sanitation fee which pays for the cost of collecting the trash.

Given the City's investment in Herbie-Curbies, this option may not be feasible for garbage collection. But rather than basing the garbage collection fees on the number of customers, the City could base it on the number of Herbie-Curbies. Some customers have multiple Herbie-Curbies, and the actual cost of collecting and disposing of trash probably varies with the number of Herbie-

Curbies at each pickup site. However, currently, the number of Herbie-Curbies is not known. So consideration should be given to counting the number of Herbie-Curbies at each pickup site.

Likewise, yard waste fees do not vary with the volume of yard waste. The City could consider adopting a system in which the fee is based on the volume of collections, e.g., through the use of specially marked trash bags.

#### NOTES

1. Based on Kelley's Blue Book values of used cars.
2. This is an estimate based on a commercial GIS map.
3. SWS is presently confirming downtown route mileage. Pending the report from SWS, we have estimated that Downtown is approximately 3 percent of the total City curb mileage.