

Solid Waste Case Study

The City of Carrollton's Solid Waste Division provides collection of household trash, recycling, bulk, brush, and yard waste for City residential units. Such services are provided to each single-family household for \$16.95 per month. Services are provided to multi-family units at a charge of \$8.00 per unit per month after construction is complete. Charges are included on the customers' water bills by the City's Utility Customer Service Division.

Review of City records and customer information disclosed the following information:

- The City collected \$1,053,997.06 in apartment revenue during the prior fiscal year.
- The Planning Department indicated that there were 11,760 apartment units located in the City. A visual inspection of the various apartment complexes confirmed that there were 11,760 completed units in the City and an additional 640 units were under construction.
- All drivers were permitted to go home when their routes were completed but were paid for the greater of 10 hours per work-day or the actual numbers of hours worked.
- Automated residential collection was divided into 12 routes per week. Each driver collects approximately 85 houses per hour. The number of houses serviced per route were as follows: 940, 770, 790, 957, 774, 787, 929, 709, 773, 768, 777, 793.

After considering this information, please write a memo to Daniel Bryan, Utility Customer Service Manager, describing any areas of operational concern, the methodology you used to investigate those concerns, and provide suggestions to improve the Division's operations.

Operational Concerns

Based on the provided information, I've listed the following areas of concern:

1. Loss of Revenue for Apartment Services:

- The revenue collected from apartments was **\$1,053,997.06** for the prior fiscal year.
- The City has **11,760 completed apartment units** with a monthly service fee of **\$8.00 per unit**.
- The expected revenue should be **\$1,128,960** annually ($11,760 \text{ units} \times \$8.00 \times 12 \text{ months}$).
- The deficit of approximately **\$74,962.94** suggests that not all apartment units are being billed, or there may be inconsistencies in revenue collection.

2. Collection Routes and Driver Pay Structure:

- Drivers are compensated for the greater of **10 hours per workday** or actual hours worked.
- Given an average collection rate of **85 houses per hour**, each route's collection time can be estimated:

Route	Houses Served	Estimated Time (Hours)
1	940	11.06
2	770	9.06
3	790	9.29
4	957	11.26
5	774	9.11
6	787	9.26
7	929	10.93
8	709	8.34
9	773	9.10
10	768	9.04
11	777	9.15
12	793	9.33

- Current routes have an imbalance in workload.
- The largest route (957) is 34.9% larger than the smallest route (709).
- The majority of routes fall below 10 hours, yet drivers are paid for a full 10 hour day, which may be causing unnecessary payroll expenses.

3. Growing Demand Due to New Construction:

- **640 additional units** are under construction and will require solid waste services upon completion.
- The existing workforce and route structure should be evaluated for capacity to accommodate the increased demand.

Methodology for Investigation

To analyze these concerns, I took the following steps::

1. Billing Verification:

- Compared expected annual revenue against reported revenue.
- Identified a shortfall in apartment service billing, suggesting potential underbilling or unpaid services.

2. Route Efficiency Analysis:

- Estimated collection time for each route based on average houses serviced per hour.
- Compared estimated hours worked against the minimum 10 hour pay policy.
- Identified routes where drivers might be paid for hours not worked.

3. Capacity Assessment:

- Considered upcoming new units and their impact on collection demand.
- Reviewed existing workforce efficiency to determine if additional resources will be required.

Recommendations for Improvement

1. Address Billing Disparities:

- Conduct an audit of apartment unit billing to verify that all completed units are included.
- Introduce an automated billing system to reduce human error.
- Work with the Utility Customer Service to adjust discrepancies and recover lost revenue.

2. Optimize Route Efficiency:

- Consider modifying routes to equalize the workload and maximize efficiency.
- Evaluate GPS tracking and real time data collection to assess actual hours worked.
- Aim to reduce workload disparity between routes within a slight deviation.
- Adjust pay structure to reflect actual work hours rather than a guaranteed 10 hour minimum.

3. Plan for Growth:

- Develop a strategy to incorporate new apartment units into billing and collection schedules.
- Assess whether additional trucks or personnel will be needed when new developments are completed, and the cost to accommodate the added service.

By adopting these recommendations, the Solid Waste Division can strengthen financial responsibility, enhance labor efficiency, and effectively plan for future growth.

Best Regards,

Nathan Batoba