



Solid Waste Collection

Planning for the Future

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Kessler Consulting, Inc.

Background

- Independent solid waste planning consultants
- Established in 1988 – *Celebrating 25 years*
- Specialize in optimizing the business and operational efficiency of municipal solid waste systems
- More than 140 public and private sector clients
- Currently involved with five route audit-related projects
- Niche firm helping municipal solid waste systems reach their full potential
- Expertise includes system evaluation and optimization, feasibility studies and program pilots, waste reduction, contracting, and education/outreach
- Developed Florida's state-level strategic plan to achieve 75% recycling goal by 2020.



Assessment Summary

- Very well-run operation
- High level of service to residents
- Very productive drivers; fully manual collection
- One worker per vehicle
- Streamlined vehicle type (front-end loaders)
 - Can be used for residential or commercial service
- Manual collection process is maxed out
 - Drivers are currently meeting the "human fatigue factor" of 6 tons per worker per day
 - Shift to once per week does not necessarily reduce costs without process changes
- \$9.56/month resi. rate is among lowest in State



3



Route Audits

KCI Shadowed three garbage routes:

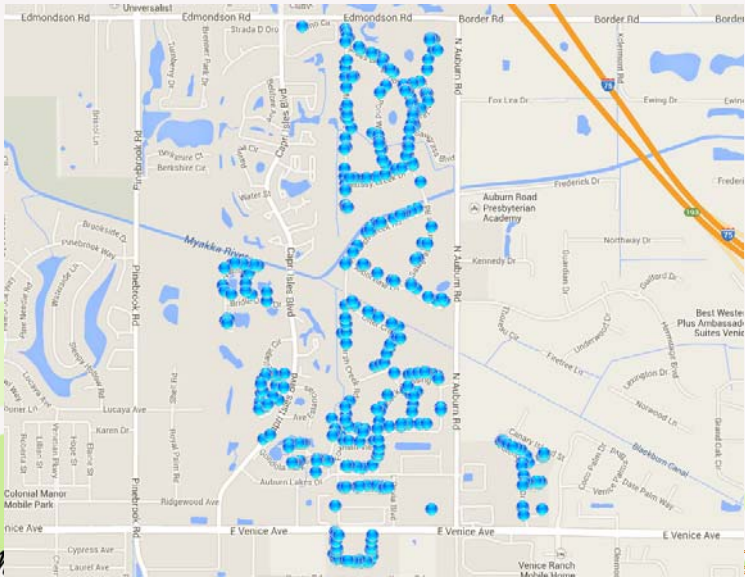
- Embedded with City collection staff
- Used proprietary field data tools to record location and time of all collections
- Collected wide range of operational metrics
 - Homes per hour
 - Pounds per household
 - Homes per mile
 - Participation rate



4



On-Route Data Collection



5

Observed Route Metrics



Day	Lead/Tail	Scheduled Homes	Actual Homes	Participation	Households per Route Hour	Tons Collected	Pounds per Household
Tuesday	Lead	851	439	51.6%	79.8	5.97	27.2
Wednesday	Lead	1,376	673	48.9%	107.7	5.84	17.4
Thursday	Trail	678	358	52.8%	71.6	3.55	19.8



6

Once-per-Week Collection

Objectives:

- Reduced operating expenses
- Reduced rate to residents

Methods to achieve operational savings:

- Reduction in overall operating hours reflected in:
 - Labor
 - Equipment (Vehicles)
 - Other Variable Expenses (i.e., fuel)



7



Existing Achievements

- City offers very low rate: \$9.56 per month (garbage)
- Collection workers have demonstrated productivity of over 100 homes collected per hour (very high for manual collection)
- Asset utilization is high: front-loaders are used for commercial and residential collection, and Division operates on six-day work week



8



Once Weekly Collection - Factors

- Overhead costs will not be reduced; Division will still be responsible for building, facility, and other overhead costs
- KCI's observed manual collection figures nearly meet industry standard "human fatigue factor" of six tons per day per worker for manual collection
- Once-weekly collection would increase participation each collection day (80 to 90 percent), pushing tons collected to over eight tons per route
- KCI's audits occurred during summer months (period of lightest generation in City)
- In its current format, Division would be unable to switch to once/weekly service
- Automation is the way to get to once per week



9



Automation



10



Once/Week Rate Calculation

Assumptions:

- \$50 per cart delivered to curb – 8,918 households
- \$10,000 retro-fit existing trucks with Curotto Can
- \$30,000 per Curotto Can
- Two routes/vehicles would be required (vs. 3 currently)
- Capital costs depreciated over 10-year timeframe:

Carts:	\$445,900
Retro-fit:	\$20,000
Curotto Can:	\$60,000
Total Invest.	\$525,000
Annually:	\$52,500
Annual/HH:	\$5.89 per year
Monthly/HH:	\$0.49 in additional costs



11



Once/Week Rate Calculation

Operational Savings:

- One Truck/Employee Eliminated
- 40 hours per week operating costs of above vehicle (conservative estimate: \$75 per hour total operating cost)

Op. Cost per Hour:	\$75
Annual Hours:	2,080
Annual Op. Cost:	\$156,000
Annual per HH:	\$17.49 per year
Monthly per HH:	\$1.46 savings

Additional Monthly Operational Costs: \$0.49

Monthly Operational Savings: (\$1.46)

Net Monthly Savings per Resident: (\$0.97)



12



Rate Reduction: Eliminating Holidays

Holidays Currently Collected with Overtime Funds:

- MLK Day
- Presidents Day
- Veterans Day
- Memorial Day
- Labor Day
- Friday after Thanksgiving
- Christmas Eve

(7 Holidays Total)



13



Rate Reduction: Eliminating Holidays

Holiday Services: Garbage, Recycling, Yard Waste

- 7 trucks/routes per day
- Total for all holidays: 49 route days
- Total Hours 392 (8 hour days × 49 days)
 - Median Driver Salary: \$17.98/hr.; OT: \$26.97/hr.
 - Typical Operating Cost per Hour: \$75
 - Operating Cost per Hour with OT: \$84

Savings:

Total operating cost (Savings) of seven holidays: \$32,928

Less makeup expense (3 workers on trail days): -\$12,600

\$20,328 Annually

÷ 8,918 Households

\$2.28 Annually

\$0.19 Monthly



14



Further Benefits of Automation

For the Operation

- Improved safety
- Reduced employee injuries
- Improved collection efficiency
- Increased productivity
- Preserves aging workforce
- Cleaner neighborhoods
- Reduced rodent problems
- Helps to limit overages

For the Residents

- Convenient and easy
- Safer & more maneuverable
- Higher capacity containers
- Hinged lids contain odors
- Reduced rodent problems
- Cleaner neighborhoods
- Eliminates container costs



15

Accidents & Injuries in Venice

- Division averaged \$21,132 per year in worker's compensation claims across 29 accidents over the past five years
- Most common injuries are hands, feet, knees, ankles, shoulders, wrists, and lumbar areas
- Injury causes: pushing/pulling, lifting, falling, twisting, slipping, tripping, cuts from sharp objects
- All of these injuries are endemic to manual waste collection
- This represents 29 reasons for improvement

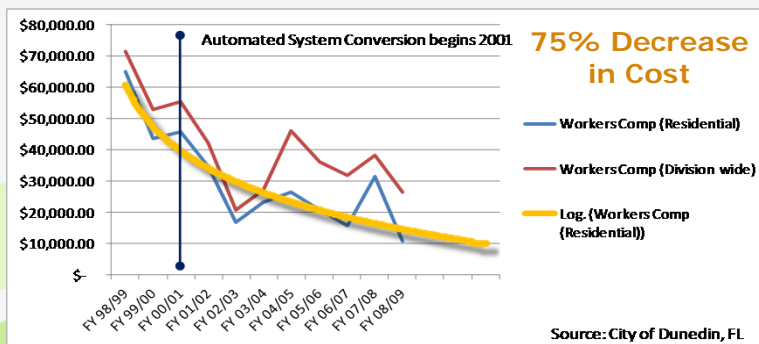
About \$0.20 per month per household!



16

Automated Collection – Safety

- Automated collection provides the safest work environment for solid waste collectors
- Eliminates safety issues associated with manual pickups



17



Recent Example of Once/Week Rates

- Hillsborough County Once vs. Twice per Week
- Below are proposed rates by awarded vendors for the two frequency options (per household)

Svc.	Manual/Auto	Republic	WM	WSI
2-1-1	Automated	\$ 4.75	\$ 5.97	\$ 10.09
1-1-1	Automated	\$ 4.04	\$ 5.77	\$ 9.36
Diff:		\$ (0.71)	\$ (0.20)	\$ (0.73)

- Average savings per household: \$0.55 per month



18



Recommendation

- To realize operational savings, City should automate
- Survey should address use of roll carts
- City should highlight benefits of automation



Thank You!

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