

## FINAL REPORT

**To:** Andrea Coaxum, Assistant Borough Manager  
**From:** Walt Davenport  
**Date:** October 27, 2009  
**Subject:** Cost of Service and Drop-Off Center Evaluation

## EXECUTIVE SUMMARY

Perkasie Borough, located in Bucks County, offers premium waste management services to its 3,400 households. The Borough provides curbside collection of refuse, recyclables and brush, and also operates a drop-off center for recyclables. It is also noteworthy that Perkasie Borough funds its system via one of Pennsylvania's longest standing pay-as-you-throw (PAYT) programs, charging residents for each bag of waste they dispose, but accepting recyclables, brush, and yard waste including leaves free of charge. As a consequence of this funding structure, the Borough enjoys a 34 percent recycling rate.

At the current time, the Borough has found that revenues from bag sales are not sufficient to cover the cost of their waste management and recycling program. MSW Consultants conducted a system evaluation and cost-of-service study to investigate the funding deficiency. This analysis included site visits and operational observations, as well as analysis of financial and operating data provided by the Borough.

Based on the available data, MSW Consultants found that the Borough is able to provide a full slate of services at a cost that is consistent with the service levels provided. It costs the Borough \$11.23 per household per month for collection and disposal of refuse, collection and processing of recyclables, and operation of the recycling drop-off center. This is a reasonable cost for this level of service.

However, the Borough only recoups \$2.25 to \$3.25 per bag of waste disposed. Almost all remaining items are collected free of charge – including recyclables, brush, and small items of refuse that do not fit in bags. The cost-of-service analysis suggests that a hybrid revenue structure that combines a monthly fixed fee and reduced bag-based charges would provide a more stable foundation for the Borough's PAYT system. The monthly fixed component of the rate could be recouped either on an existing utility bill, or else as a special assessment on property tax bills. Both revenue mechanisms are in use within the Commonwealth for funding waste management and recycling services.

As a final observation, MSW Consultants noted that the Borough could transition from its current system of curbside and drop-off recycling, to strictly curbside single stream recycling, for a modest

---

cost increase. If this transition were made in conjunction with implementation of the new rate schedule, the Borough could establish revenue-sufficient, volume-based prices in a full-service curbside refuse and recycling collection program, while increasing their recycling rate to over 40 percent.

## **INTRODUCTION**

The Pennsylvania Department of Environmental Protection (DEP), working through the Solid Waste Association of North America (SWANA), has created a technical assistance program to help Pennsylvania municipalities establish, enhance and improve their recycling and composting programs. MidAtlantic Solid Waste Consultants (MSW Consultants) is an authorized provider of recycling and composting technical assistance as part of this program.

Perkasie Borough, located at the Southeast corner of the Commonwealth, disposes of approximately 2,500 tons of municipal waste per year. The Borough is located in a more rural area of Bucks County and is mandated by Act 101 to have recycling ordinances in place requiring the recycling of aluminum, old corrugated cardboard (OCC), high grade office paper, and leaf waste by commercial, institutional and municipal establishments. Residents in the Borough currently enjoy municipal collection while businesses have a range of recycling options available to them through private sector providers. The Borough offers curb-side collection of refuse, recycling, and brush. Residents and local businesses also have the opportunity to recycle at the Municipal Recycling Center located at the Public Works Building on 9<sup>th</sup> Street.

This study sought to improve the recycling program by increasing current diversion rates while reducing operating cost. The specific activities for this investigation included:

- ◆ Evaluating the Borough's existing curbside recycling services and its drop-off recycling center, including materials accepted, signage & education, site lighting, traffic patterns, and through-put.
- ◆ Performing a cost-of-service evaluation for each solid waste service that the Borough currently provides, in conjunction with an assessment of the Borough's revenue and rate structure.
- ◆ Analyzing the current waste disposal and processing contracts focusing on rates and terms.

Details of the research and analysis are provided below.

## OVERVIEW OF SYSTEM

Although it encompasses only 3,400 households, Perkasie Borough is a full service provider of waste and recyclable collection, disposal and processing services to its residents. Table 1 summarizes the collection, processing, and disposal services provided, as well as notable parameters of each service.

**Table 1 - Perkasie Borough Waste and Recycling Service Summary**

Services/Activities	Customers Served	Notes	Fee Charged
Volume-based Refuse Collection	3,387 households	One refuse route is operated Mon-Thu to serve all households; customers pay by the bag, but small bulk items are picked up as well	\$3.25 per 40 pound bag; \$2.25 per 20 pound bag; bags sold at several locations
Recyclable Container Recycling Collection	3,387 households	Two recycling routes are operated every Friday	No charge
Fiber Recycling Collection	3,387 households	Newspaper and corrugated cardboard are collected on the 3 <sup>rd</sup> Wednesday of every month	No charge
Residential Brush Collection	3,387 households	Residents can call-in to schedule a pick-up, which is provided on the 1 <sup>st</sup> Wednesday of every month; collection is provided by the public electric utility	No charge
Leaf Vacuum	Entire Borough	Leaf vacuuming is performed once per year during Oct through Dec when leaves accumulate in the right-of-way	No charge
Appliance/Metal Collection	3,387 households	Residents can call-in to schedule a pick-up	\$10 sticker must be affixed to each item
Recycling Center Operations	Entire Borough	Hours of operation are 7:30 am to 8:30 pm M-F and 7:30 am to 4:00 pm on Sat; facility is monitored intermittently by an attendant	No charge

Perkasie Borough clearly provides a high level of service to its residents, collection refuse, recyclables, yard wastes and white goods from the curb, while also providing a drop-off recycling center. It is also noteworthy that the Borough relies on a pure pay-as-you-throw rate structure for refuse collection. Specifically, Borough residents must purchase bags for refuse disposal, while recycling collection is provided for free.

Perkasie Borough currently achieves an impressive recycling rate, due in no small part from its pay-as-you-throw system. This rate is shown in Table 2.

**Table 2 – Perkasie Borough Current Recycling Rate**

Material	Collected Curbside (2008 tons)	Received at Drop-off Center (2008 tons)	Total (2008 tons)	Percent
<b>Refuse</b>	<b>1,855</b>	<b>0</b>	<b>1,855</b>	<b>63.7%</b>
Recycled Materials				
Commingled Containers	132	179	311	10.7%
Newspaper and Cardboard	74	558	632	21.7%
Leaves	112	0	112	3.8%
Yard Waste	Unknown	0	Unknown	N/A
Appliances	Unknown	0	Unknown	N/A
<b>Recycled Materials Subtotal</b>				<b>34.0%</b>
<b>Totals</b>	<b>2,173</b>	<b>737</b>	<b>2,910</b>	<b>100%</b>

In total, the current recycling rate is approximately 36 percent. This is not an exact number, for two reasons. First, the Borough does not know how many tons of yard waste and appliances it recycles each year; so its recycling rate is actually a bit higher than the value of 34 percent shown above. Conversely, the recycling center receives at least some material from non-residential establishments, so the 36 percent rate is slightly overstated for the residential sector. However, the rate is still a high recycling rate for a Pennsylvania municipality of comparable size.

## **RECYCLING DROP-OFF CENTER EVALUATION**

As a first step in the analysis, MSW Consultants visited and evaluated the Borough’s recycling drop-off center. This facility is located behind the Public Works building on 9<sup>th</sup> Street. It is open from 7:00 AM until 8:30 PM Monday through Friday and from 8:00 AM until 4:30 PM on Saturday. The facility is not staffed full time, but an attendant does monitor the facility intermittently during operating hours.

As shown in Table 2 (above), the facility receives approximately 737 tons of commingled containers, newspaper and cardboard. On August 28, 2009 MSW staff observed the recycling center operation and interviewed several residents using the facility.

### **Recyclables Drop-off and Storage**

The drop-off center utilizes two 40 cubic yard open-top roll-off containers supplied by Waste Management (WM) to contain and transport the commingled recyclables. Residents use a moveable stairs to access the top of the container to unload their comingled recyclables from their transport containers or bags. Usually contamination is a problem at unstaffed drop-off facilities, but during the field observations MSW Consultants staff did not observe a problem with contamination (a phone call to the processor also confirmed contamination is not a problem). Because the Borough provides curbside refuse collection and also curbside recycling collection, it appears that only the residents that really are committed to recycling are utilizing the facility.

Materials are stored loose in their roll-off containers, and Borough staff use a backhoe to compact the material to some degree prior to transportation. However, the full open-top boxes are still under-weight for efficient material handling. The Borough has an agreement with WM for transporting commingled containers to material recovery facilities (MRFs) in either Fountainville or Montgomeryville, PA. Waste Management empties about five container loads of the loose commingled recyclables each month.

Figure 1 shows pictures of the open top box for commingled containers, most of which are not crushed or compacted (i.e., lots of air). Although the Borough uses a backhoe to compact the materials somewhat, better compaction of these materials would increase material handling efficiency and reduce transportation costs.

**Figure 1 – 40 Yard Open Top Box for Commingled Containers**



The facility has a 48 foot box trailer to store and transport old corrugated containers (OCC) and old newspapers (ONP). Rapid Recycling provides the trailer and empties it about 14 times per month. Citizens walk into the trailer to deposit their OCC and ONP. Again, observations showed little contamination to the fiber material placed in the trailer. Borough employees also use the backhoe to compact the OCC in the trailer, but the task is difficult because the backhoe does not fit efficiently into the trailer. Pictures of the trailer are shown in Figure 2.

**Figure 2 - Rapid Recycling 48 Foot OCC Trailer**



MSW Consultants captured limited data from a number of residents who stopped by to deposit recyclables. Usage data are shown in Table 3.

**Table 3 - Perkasie Borough Summary of Drop-off Center Users**

	OCC & ONP	Commingled
Number of Users	35	21
% of Users	63%	38%
Average Pounds/User	28.5	15.2
Users/Month	3,262	1,957
Tons Month	46.50	14.92

Interviews with residents, although not statistically representative, provided anecdotal insight into their basis for using the recycling center. Recycling center users commented:

- ◆ They did not typically have enough room to store recyclables at their homes between curbside collection pick-ups.
- ◆ They used the recycling center because they were on vacation during their regular curbside collection day.
- ◆ The recycling bins at their house were not large enough to hold recyclables for the week.
- ◆ It is easier to drop off recyclables at the recycling center than take to curb.

Based on a rough estimate, MSW Consultants estimates that one third of the Borough's residents use the recycling center on a weekly basis. This is a significant proportion of residents given the Borough also offers curbside collection that accepts the same materials as are being deposited at the recycling center. Given that the Borough only collects ONP and OCC one day per month at the curb, it is not surprising that newspaper and OCC are the more common materials dropped off at the facility.

## Transportation Costs and Material Revenues

Usually, uncontaminated commingled containers and ONP/OCC can be sold to processors or end markets to create a small revenue stream. The current contract with Rapid Recycling stipulates that the Borough receive a rebate equal to the New York State Yellow Sheet price less \$20 per ton for processing, with a floor price of \$5 per ton. However, the Borough incurs transportation costs with Rapid Recycling to ship the recyclables. Historically, the transportation costs have exceeded any recycled material revenues realized by the Borough. Commingled recyclables from the recycling center cost \$189 per pull, with no charge for processing. Fiber from Recycling Center costs \$125 per haul. All told the Borough incurs a net cost of \$25,000 annually to ship and process recyclables.

## Signage

The Recycling Center has a number of small signs describing the materials accepted at the facility and the facility operations. In general, the signage seems sufficient to direct facility users (many of whom have been using the facility for a long time and know their way around). Figure 3 shows the current signage.

**Figure 3 - Perkasie Borough Recycling Center Signs**



Some users seemed confused about the two plastic garbage cans located at the 40 cubic yard commingled container with the stairs. These two cans shown in the left hand photograph are designed to provide a disposal method for residents who bring their recyclables to the facility in plastic bags. A number of residents thought these trash cans are designed to recycle plastic bags and therefore are bringing their plastics bags to the facility for recycling. While not a significant weight, the Borough nonetheless has to pay disposal charges for these plastic bags.

## Traffic Flow

While the recycling center is not a high traffic area, a steady stream of vehicles was observed to use the facility. It was immediately noticed that there are limited pavement markings or traffic signs to guide motor vehicles within the site boundaries.

During observations there was almost an accident as one car was trying to back out after delivering some recyclables and another pick-up truck was trying to pull into the facility too quickly. MSW Consultants did not inquire about accidents at the facility, but it appears that it would be worth focusing on improved traffic control, especially given the estimated usage of 1,200 vehicles per week. Figure 4 illustrates the congestion associated with five vehicles attempting to drop-off recyclables at the same time.

**Figure 4 - Perkasie Borough Recycling Traffic**



## Summary

In summary, the Borough's drop-off recycling center appears to be regularly used by its residents for the targeted materials that cannot be stored at residential households for curbside collection. As a consequence, there is significant overlap in services provided by the curbside and drop-off program. Operationally, if the Borough opts to continue operating the recycling center, it should:

- ◆ Investigate material densification to improve transportation costs,
- ◆ Clarify signage associated with plastic bags, and
- ◆ Improve pavement markings and signage for traffic flow for safety.

## COST-OF-SERVICE ANALYSIS

The Borough supplied revenue and expenditure reports for its waste management and recycling operations for the time period January 1, 2008 through June 30, 2009 to serve as a basis for a full cost estimate. MSW Consultants performed the following steps to derive the estimated costs for the various services provided by the Borough:

- ◆ Compiled historical and current annual expenditures and revenues;
- ◆ Defined the services, also called "activities," provided by the Borough (see Table 1);
- ◆ Reviewed employee work hours and allocated hours to each activity/service;



- ◆ Reviewed truck hour reports and allocated fleet usage to each activity/service;

Table 4 compiles annual expenditures for waste management and recycling. As shown, labor costs and disposal fees make up the bulk of the system expenses. Note that 2009 expenditures are projected to be lower compared to 2008. This is the result of recent cost-saving measures implemented by the Borough, which included a reduction in the charges for delivery of recyclable materials by the Recycling Processor as well as normal, year to year fluctuations to vehicle maintenance and operating costs.

**Table 4 - Perkasie Borough Waste and Recycling Expenses**

Expense Items	2008 Expenditures	2009 Expenditures (est.)
Recycling Wages	\$56,024.78	\$49,925.94
FICA	\$4,286.00	\$3,775.70
Materials and Supplies	\$4,350.69	\$4,177.76
Recycling Costs	\$43,588.33	\$17,721.90
Refuse Wages	\$70,101.20	\$88,216.58
FICA	\$5,362.75	\$6,671.50
Leaf Collection Labor [1]	\$5,979	\$5,979
Bag Purchases	\$7,761.08	\$24,038.00
Fuel	10,901.84	\$5,575.64
Materials & Supplies	\$457.36	\$ 101.76
Repair and Maintenance Services	\$21,734.57	\$12,188.16
Tires	\$705.08	\$2,842.64
Printing and Publications	\$966.00	\$ 290.00
Disposal Fees - Refuse	\$186,844.76	\$168,247.00
Annualized Equipment Cost [2]	\$50,000	\$50,000
Allocated Mgmt & Admin [3]	\$35,000	\$35,000
Other Services	\$120.57	\$ 207.68
<b>Total Expenses</b>	<b>\$504,184.01</b>	<b>\$474,959.26</b>

[1] Estimated by the Borough - not included in financial statements.

[2] Estimated by MSW Consultants - not included in financial statements.

[3] These costs reflect the salaries and benefits of public works staff based on an estimate of the time they devote to waste management and recycling.

There are several notable observations contained in this table:

- ◆ **Disposal Fees:** The Borough disposed of 1,855 tons of refuse at a cost of nearly \$187,000 in 2008, for an average disposal cost of \$100 per ton. Disposal fees are the single largest expense item, shown in Table 4, incurred by the Borough.
- ◆ **Recycling Costs:** The Borough incurred net recycling costs of almost \$44,000. These fees were for the hauling of recyclables from the drop-off center. These costs are not offset by material revenue sales (see Table 5 below).

Table 5 summarizes the revenues currently generated by the Borough's bag and sticker sales, as well as revenues for the sale of materials collected in their curbside and drop-off recycling program.

**Table 5 - Perkasie Borough Waste and Recycling Revenues**

Revenue Items	2008 Revenues	2009 Revenues (est.)
Bag Sales	\$375,752.25	\$421,151.00
Refuse Sticker Sales	\$1,393.00	\$1,420.00
Sale of Recyclable Material	\$12,097.94	\$1,704.02
Sale of White Goods	\$1,340.00	
<b>Total Revenues</b>	<b>\$390,583.19</b>	<b>\$424,275.02</b>

As shown, the system is funded almost entirely by the sale of bags for refuse disposal, since stickers are only used for special collection of appliances and metals. Both bags and stickers are available to residents for purchase at Borough Hall and a number of local merchants. This revenue structure is problematic because it places an inordinate burden for revenue sufficiency on only one of the services offered by the Borough. Stated another way, impacts to revenue generation from the sale of bags (for example, if the Borough were to take steps to increase recycling, it would be expected that bag sales would decrease) impacting the system's financial performance.

On a related note, the Borough reports that approximately 1/3<sup>rd</sup> of the refuse collected (by weight) consists of bulky items (not including appliances and metals) that are too large to fit in bags. These items are collected on the regularly scheduled weekly collection day, but no additional fee is directly recouped by the Borough for this service.

Table 6 summarizes the loss incurred by the Borough's system.

**Table 6 - Perkasie Borough Surplus/Loss Summary**

	2008	2009 Expenditures (est.)
Expenses	\$504,184.01	\$474,959.26
Revenues	\$390,583.19	\$424,275.02
<b>Surplus (Loss)</b>	<b>(\$113,600.82)</b>	<b>(\$50,684.24)</b>

The good news is that the cost-saving measures (including securing lower processing costs for recyclables) undertaken by the Borough and an increase in the bag fees (sticker price remained \$10.00 per sticker) have reduced the annual shortfall. However, the system is still operating at a loss and the bag-based funding mechanism in use still leaves the Borough open to financial risk in the event bag sales decrease. Further, the bag-based system does not generate revenues in close proportion to the services rendered. Residents may set out bulk items outside the bags, and are not always charged for the collection of these wastes. Also, no revenues are directly collected for recycling collections, although these are legitimate system costs.

As a final step, MSW Consultants allocated projected 2009 system costs into each of the activities performed by the Borough. Table 7 summarizes the results of this exercise.

**Table 7 – Perkasie Borough Waste Management and Recycling Cost Summary**

Cost Center	Residential Refuse Collection & Disposal	Residential Commingled Container Collection	Residential Fiber Collection	Brush Collection	Fall Leaf Collection	Scrap Metal Collection	Drop-off Recycling Center Operations
Total Cost	\$314,259	\$49,218	\$12,557	\$16,863	\$16,470	\$7,884	\$47,049
Tons	1,855	132	74		112		737
Units Served	3,387	3,387	3,387	3,387	3,387	288	3,387
Annual Cost per Unit	\$92.78	\$14.53	\$3.71	\$4.98	\$4.86	N/A	\$13.89
Monthly Cost per Unit	\$7.73	\$1.21	\$0.31	\$0.41	\$0.41		\$1.16

As shown, the majority of the system cost is incurred for refuse collection and disposal. Currently, the Borough provides its refuse and recycling collections with a staff of four equipment operators. Refuse collection is performed with a 3-person crew four days per week. Recycling collection is performed on Fridays with two 2-person crews. Re-allocation of these existing staff should enable a conversion to single stream collection, as described below.

Over \$100,000 of the cost is incurred providing both curbside recycling and a local recycling drop-off center. MSW estimates an average once-per-week single stream curbside recycling route will cost \$130,000 to operate, which suggests that the Borough could significantly expand its curbside recycling services to capture all materials, close down its drop-off center, and incur only a moderate cost increase. Doing so would require refuse collection to shift to a 2-person route, with single stream recyclables also a 2-person route.

On the surface, the cost of \$7.73 per household for weekly refuse collection and disposal is within reasonable regional prices for that service. The combined cost of \$1.52 per household for curbside recycling collection is also within reasonable regional prices although the fiber collection is only monthly, which will be further evaluated in future sections. Although not shown in the table, the total cost per household is \$11.23, also a reasonable amount for the services provided.

While this table informs on the cost for each of the services provided by the Borough, it also highlights the imbalance in the current bag-based revenue structure. This is highlighted in Table 8.

**Table 8 - Full Cost per Unit**

	<b>Refuse Collection Only</b>	<b>All Curbside and Drop-off Services</b>
Total Cost	\$314,259	\$464,303
Refuse Collected (Tons)	1,480	1,480
Estimated Bags/Items Collected [1]	84,599	84,599
<b>Cost per Bag/Item</b>	<b>\$3.71</b>	<b>\$5.49</b>
Households Served	3,387	3,387
<b>Monthly Cost per Household</b>	<b>\$7.73</b>	<b>\$11.23</b>

[1] Assumes the average item is 30 pounds.

As shown, the only way for the Borough to recoup the full costs of its curbside program through the current bag-based system is to increase the cost per bag to \$5.49 and require all materials (including bulky items!) to be placed in bags (compared to the current rates of \$2.25 or \$3.25 per bag, with bulk items collected for free). Yet, the projected monthly cost per household of \$11.23 for curbside refuse and bulk waste collection and disposal, as well as curbside recycling, brush, and appliance collection, is well within the range of expected cost effective levels. This suggests that the Borough should refine their set-out policies and consider alternative revenue mechanisms to better align revenues with actual system costs.

First, the Borough should create a new sticker that must be purchased and affixed to bulky items, other than appliances, set out for disposal. The definition of a bulky item is any object that cannot fit in a bag. This sticker is intended for couches, recliners, dressers, grills, box springs, and other similar items. This bulk item sticker should be differentiated from the appliance sticker. Both stickers – bulky items and appliances – should cost \$10 to reflect the special handling needed to collect the item. Keeping the sticker fee equal will also minimize questions from residents, who will perceive that both bulky items and appliances are oversized items. It should be noted that the Borough actually incurs a higher cost to collect appliances (approximately \$27 per unit, see below) because a different truck has to be deployed. However, the number of appliances is small enough that the total cost to collect these appliances can be recouped with the overall rate structure, rather than with an appliance-specific collection fee.

Table 9 provides one example of a hybrid rate structure that would maintain the Borough's pay-as-you-throw rate philosophy, while enabling full revenue sufficiency.

**Table 9 – Hybrid Pay-as-You-Throw Rate Structure to Achieve Revenue Sufficiency**

Revenue Mechanism	Billing Units [1]	Rate (\$/Unit)	Total Revenue	Notes
Monthly User Fee	3,387	\$7.36	\$299,287	Charged on utility bill or as a special assessment on tax bill
Large Bag Sales	75,535	\$2.25	\$169,953	40 lb bags
Small Bag Sales	25,178	\$1.35	\$33,991	20 lb bags
Bulky Item Stickers	1,855	\$10.00	\$18,552	Unbagged items
<b>Total Revenues</b>	<b>N/A</b>	<b>N/A</b>	<b>\$521,783</b>	

[1] Estimated by MSW Consultants based on reported distribution of bagged set-outs and average incidence of bulky items.

As shown, this hybrid volume-based pricing rate structure would continue to give residents an incentive to recycle rather than dispose of wastes, but would assure that the Borough were being compensated for the fixed costs of the recycling collection program plus part of the refuse collection program. Further, this rate structure would eliminate the current loophole of free collection of unbagged, small bulk items.

Although not shown in the tables above, the cost-of-service analysis also found that the actual cost to collect appliances (not including any revenue from the sale of metal) is \$27.38 per household served. This cost was estimated based on the estimated full cost to provide appliance collection (\$7,884), divided by the estimated number of households serviced annually (288). This full cost exceeds the \$10 cost of the stickers that are currently available. To eliminate confusion among residential customers, the Borough should continue to charge \$10 for collection of any appliance as well as bulky non-appliance items.

## **CURBSIDE VS. DROP-OFF RECYCLING COLLECTION**

Currently Perkasie Borough offers residents once-per-week curbside recycling collection for commingled recyclables, with the recycling pick-ups occurring on Fridays. At the outset of the program five years ago, the Borough supplied each household with eight-gallon recycling buckets. Based on extensive recycling program data available in other municipalities, it is known that eight gallons is insufficient to contain the volume of commingled containers that is generated on a weekly basis by the average residential household. As a consequence, many households have converted to their own recycling containers, including larger trash cans and some plastic bags. Figure 5 illustrates the wide variety of containers currently used by residents to set out their recyclables.

**Figure 5 - Residential Recycling Containers**



To quantify collection productivity of the current system, and to compare the current system with potential alternative recycling collection technologies and strategies, MSW Consultants observed the Borough’s on-route curbside recycling collection practices. Table 10 summarizes the observed productivity levels.

**Table 10 - Perkasie Residential Curbside Recycling**

Route	Number of Pass-bys	Number of Set-outs	Setout Rate	Collection Time (seconds)	Seconds per Stop
16	212	60	28%	2,229	37.2
17	214	103	48%	2,940	28.5
Total	426	163	38%	5,169	31.7

These data show that the Borough achieves average productivity collecting commingled containers (based on the seconds per stop).

Based on the observed setout rate of 38 percent, only 1,300 of the Borough’s 3,387 households are actively setting out recyclables in the curbside recycling program each week. While this set-out rate is based on limited observation, it suggests that opportunities for improvement exist, especially in

---

light of the high diversion at the recycling center. For example, in municipalities that offer weekly collection of a comprehensive roster of recyclable fibers and commingled containers in a volume-based pricing program, set-out rates can reach up to 65 percent and participation rates upwards of 95 percent, thereby increasing avoided disposal costs for refuse.

It should also be noted that MSW Consultants only measured the set-out rate, which is a one-day snapshot of recycling set-outs. The set-out rate should not be confused with the Borough's recycling participation rate, which measures the percentage of households that participate in the program over an annual timeframe. The set-out rate represents the minimum possible participation rate; in actuality, the participation rate overall is most likely significantly higher than the observed set-out rate.

As an alternative to the current mix of curbside and drop-off recycling, the Borough could provide a dedicated, comprehensive weekly curbside single stream recycling program. This program would have the following characteristics:

- ◆ Residents would be allowed to mix commingled containers and fiber together in their recycling bins for set-out (this is called single stream recycling).
- ◆ Additional fibers could be added to the recycling program. Most processors that accept single stream recyclables will also accept magazines, catalogs, junk mail, office paper, paperboard, and most other dry, recyclable paper grades.
- ◆ The Borough would provide 30-gallon bins, or possible 64 gallon carts, to every household.
- ◆ All recyclables would be collected every week from every household.
- ◆ One dedicated rearloader would be needed to collect recyclables, which implies that the Borough would soon have to upgrade its third (spare) truck to a more reliable vehicle.
- ◆ Current staffing would be sufficient to provide the collection service with two person crews. Because refuse quantities would be expected to decrease further, and given collection industry productivity standards, the Borough should perform refuse collection with 2-person crews. This would entail the refuse truck driver exiting the cab to assist with loading bulky waste items. The remaining two collection staff should be deployed on the single stream route.
- ◆ Collected recyclables could be delivered for zero tip fee (with the potential for future revenue, depending on market prices) at one of several local processing facilities.

MSW Consultants has utilized its proprietary routing model to verify that one daily route operating four days per week would be sufficient to collect all recyclables from the curb on a weekly basis. The total cost of a dedicated curbside route would be approximately \$130,000 annually based on current borough full cost estimates. Table 11 summarizes the cost impacts of implementing weekly single stream recycling.

**Table 11 – Cost Impact of Single Stream Recycling Implementation**

	<b>Current Cost</b>	<b>Projected Cost</b>	<b>Net Cost Impact</b>
Weekly Commingled Container Curbside Collection	\$49,218	\$0	(\$49,218)
Monthly Curbside Fiber Collection	\$12,557	\$0	(\$12,557)
Recycling Center Operations	\$47,049	\$3,961 [1]	(\$43,088)
Weekly Single Stream Curbside Collection	\$0	\$130,000	\$130,000
Carts Provided by Borough	\$0	\$21,135 [2]	\$21,135
<b>Totals</b>	<b>\$108,824</b>	<b>\$155,096</b>	<b>\$46,272</b>

[1] Reflects allocated management and administrative costs that would not “go away.”

[2] Assumes the purchase of 3,400 64 gallon carts at \$48 each; purchase price financed over 10 years at 5% municipal loan. Note that it may be possible to obtain grant funding for the carts through DEP, which would reduce this cost by 90 percent.

As shown in this table, the incremental costs to convert to weekly, single stream recycling is relatively minimal, even including the purchase of carts financed over their 10 year useful life. It is important to note that the increased costs would be expected to increase the Borough’s recycling rate for third reasons. First, those residents who currently recycle will have significantly more storage space in the 64-gallon containers to place their containers and paper recyclables. Second, residents who currently use the drop-off center, and those who might not participate fully, will have a simpler program. Third, the addition of other recyclables paper to the program will increase the recycling rate by at least 10 percent (studies have shown that single stream recycling programs typically increase recycling set-outs by 10 to 20 percent). Such an increase would boost the Borough’s recycling rate. Table 12 summarizes the project increase in the Borough’s recycling rate under a single stream program. As shown, the overall recycling rate in the Borough would be expected to increase to over 45 percent.

**Table 12 – Recycling Rate Impacts of Converting to Curbside Single Stream Collection**

<b>Material</b>	<b>Current System (tons)</b>	<b>New System (tons)</b>	<b>New Percent</b>
Refuse	1,855	1,670	54.70%
Commingled Containers, Curb	132	0	0.00%
Commingled Container, Drop-off	179	0	0.00%
Newspaper and Cardboard, Curb	74	0	0.00%
Newspaper and Cardboard, Drop-off	558	0	0.00%
Single Stream, Curb	0	1,129	40.70%
Leaves	112	112	4.60%
Yard Waste	Unknown	Unknown	N/A
Appliances	Unknown	Unknown	N/A
<b>Totals</b>	<b>2,910</b>	<b>2,910</b>	<b>100%</b>



---

In conclusion, the Borough should seriously consider conversion to a single stream recycling collection program as a replacement to its current, overlapping system of curbside and drop-off recycling collection. Doing so would slightly increase system expense, but if this change were done in conjunction with adopting a hybrid rate structure, it could be portrayed as a break-even approach and will result in higher recycling rates. Conversely, the Borough likely should not proceed with single stream recycling unless it is also willing to edify its revenue structure with both a monthly user fee and per-bag and per-item disposal charges.

## WASTE DISPOSAL CONTRACT ANALYSIS

As a final consideration, MSW Consultants reviewed the Borough's procurement strategy, invitation for bid (IFB) document, and resulting contracts with private companies for the hauling and processing of recyclables. Based on our analysis of the Borough's recycling collection programs, and on the suggestions for future system improvements, MSW Consultants makes the following recommendations for future procurement of recyclables hauling and processing:

- ◆ **Separate the Services:** While on the surface it seems intuitive to procure hauling and processing jointly, in practice the companies that provide the most cost-effective hauling solutions are different from the companies that offer processing or brokering of materials. In the future, the Borough should structure the IFB to enable hauling companies to bid on container rental and hauling separately from the processing, and vice versa.
- ◆ **Align Contract Terms to Each Service:** An additional benefit to separating the hauling from the processing is that this will allow pricing and contract terms to more logically align with the market. Hauling services require a fixed investment in container(s) and truck(s) and the associated capital depreciation, and longer term contracts are appropriate. Recyclables processing prices on the spot market are extremely variable and prone to fluctuation. Longer term contracts are not likely to encourage the most favorable bids unless there is a fair and responsive mechanism to govern the pricing (see below).
- ◆ **Tie Pricing to Appropriate Indices:** The market dynamics that influence the cost to haul include the local cost of labor (drivers), equipment costs (usually fixed from the outset of the contract) and operating costs, which fluctuate with the economy. Fuel plays a particularly important role in determining haul costs. Rather than asking for five years of prices to be included in the bids, the Borough should establish a formula for setting annual price increases or decreases, tied to published indices such as the Consumer Price Index (CPI) or one of the subsets of CPI related to equipment and/or fuel costs. Similarly, for recyclables processing, the Borough may want to tie prices to one of several published indices for all recycled material prices (as it currently does for newspaper and cardboard). It should not be unexpected for processing bids to charge a processing fee in times of low prices for recycled materials; conversely, rebates might be expected in times of solid pricing.
- ◆ **Explore Processing Options and Align Processing Needs to Collection Methods:** This analysis identified alternative collection and material handling strategies to be considered – especially converting to single stream collection at both the curb and at the recycling center. Prior to changing over to single stream collection, the Borough should seek bids from

---

processors, brokers, and end markets for receiving recyclable materials in all the ways in which the Borough collects and handles materials. Specifically, the Borough should provide estimated annual material quantities to be delivered, and should seek pricing terms (rebate or processing fee; floor price & ceiling price; recycled material indices used to track pricing) for the following quantified material streams:

- Commingled containers delivered in compacting collection trucks or compactor units;
- Commingled containers delivered loose in roll-off boxes;
- Mixed newspaper and corrugated cardboard delivered in compacting collection trucks or compactor units;
- Mixed newspaper and corrugated cardboard delivered loose in trailers;
- Single stream recyclables (commingled containers, newspaper, corrugated cardboard, and other mixed papers) delivered in compacting collection trucks or compactor units; and
- Single stream recyclables (commingled containers, newspaper, corrugated cardboard, and other mixed papers) delivered loose in roll-off boxes or trailers.

The Borough should be able to adapt the existing IFB template to accommodate these refinements for future hauling and processing needs.

## CONCLUSIONS AND RECOMMENDATIONS

Perkasie Borough provides a high level of refuse and recycling collection services to its residential customers. These services are provided at a reasonable cost, and recycling rates are above the mean within Pennsylvania. On the surface, the Borough should be commended for its waste management and recycling program.

Yet, the Borough's current pay-as-you-throw rate structure has generated revenue shortfalls and imbalances. Specifically, the bag and sticker fees being charges are not sufficient to cover the cost of the system.

The Borough appears to have a number of options for optimizing its system, balancing its revenue structure, and increasing recycling rates. MSW Consultants broadly identifies the following options for consideration by the Borough:

- ◆ **Option 1 - Implement Hybrid Volume-Based Rates:** Should the Borough opt to maintain the status quo in the way in which it provides service, it is strongly recommended that the Borough shift from pure to hybrid volume-based pricing. This simply means that the Borough should charge both a fixed monthly fee to all residential customers (via a utility bill or else as a special assessment on the property tax bill), and also retain the bag and sticker fees for disposal of individual bagged wastes and small bulky items. Recommended rates for these bags and fees were offered within the body of this analysis.
- ◆ **Option 2 - Implement Single Stream Recycling and Convert or Close the Drop-off Center:** Converting to optimized single stream recycling would eliminate the current overlap in recycling services, would improve customer service, and would increase the Borough's recycling rate. Because the Borough already provides some curbside recycling service, the incremental cost to make this conversion is estimated to be less than \$50,000 annually. The conversion

---

would require investment in 3,400 recycling carts at a cost of \$165,000, but it is possible that Act 101, Section 902 grant funding may be available to offset some of this cost (as much as 90 percent). The conversion would also require the Borough to upgrade its spare rearload truck, and possible install tippers (semi-automated loading system) on one or two of its fleet.

- ◆ **Option 3 – Convert Drop-off Center:** Once the single stream curbside program is in place, the Borough should consider how (or whether) to convert its drop-off center to target other materials that are underserved or un-served in its curbside programs. Candidates include yard waste drop-off, electronics, and household hazardous wastes.
- ◆ **Option 4 – Convert Drop-off Center to Single Stream:** As a final observation, if the Borough opts to maintain its current collection and drop-off systems operating in parallel, it would be worth exploring single stream containers at the drop-off center. If local processors will accept single stream material, either for free or possible for small payment, then the Borough could significantly decrease its transportation costs by installing a compactor for mixed paper and commingled containers. This solution would also reduce operating cost for the Borough as employees would not have to clean-up windblown recyclables or try to compact the materials with a backhoe to reduce the container movements. This option was not explored in this report, but could be readily investigated by the Borough.