December 27, 2006

Anthony J. Giordano
Borough Manager
Archbald Borough
400 Church Street
Archbald, PA 18403

Subject: **Archbald Borough Benchmarking Research**

Dear Mr. Giordano,

The purpose of this letter is to present the results of the MSW Collection Benchmarking Research ("Benchmarking") and cost analyses conducted for Archbald Borough ("the Borough") by R. W. Beck, Inc. ("R. W. Beck").

This project has been completed through a technical assistance program sponsored by PA DEP and SWANA.

Executive Summary

Problem Description

Archbald Borough currently provides weekly curbside collection of recyclables through its Public Works Department to approximately 2,700 households. Regular solid waste collection is performed by a contracted hauler. The Borough would like to implement an efficient and cost-effective yard and leaf waste curbside collection program. According to Act 101, leaf waste is defined to include "leaves, garden residues, shrubbery and tree trimmings, and other similar material".

Initially the Borough had instituted a yard/leaf waste drop-off program at the Borough garage. This program resulted in relatively low citizen participation, and the Borough would like to institute curbside collection to help increase participation, and thus recycling rates. To help the Borough better understand the degree to which solid waste/recycling services are/could be provided to its residents in a cost-effective manner, the Borough requested that R. W. Beck review its current waste and recycling program in order to increase efficiency and reduce costs, as well as identify costs associated with solid waste management programs in similar communities.

Approach

Archbald Borough is interested in developing a leaf and yard waste collection program, in addition to reevaluating its overall operations. This technical assistance project aimed to identify the strengths and weaknesses of various options for collection services, and to provide recommendations to the Borough regarding which types of programs might work best in its community. The following three-part approach was taken to determine the recommended course of action.

- A series of benchmark communities were researched in order to provide comparative data on best practices and costs of services in nearby communities.
- A series of fleet and operational data obtained in prior R. W. Beck studies was analyzed to assess the estimates of costs involved in expanding collection services to include yard and leaf waste.
- R. W. Beck's proprietary route model was used to estimate the costs of implementation and maintenance for each of the three scenarios as currently identified by the Borough (as described in the introduction).

R. W. Beck Observations and Recommendations

Based on our analysis, R. W. Beck has made the following observations and recommendations:

- Contracting out solid waste collection is more cost effective than providing these services through the Public Works Department, mainly due to the expense of updating the Borough's current fleet of vehicles in order to provide additional services.
- Solid waste collection costs for the Borough are reasonable, and benchmark well with both surrounding communities and the communities included in the fleet and operations analysis. R. W. Beck recommends that the Borough extend the hauler contract in lieu of entering into solid waste collection themselves.
- Contracting for yard and leaf waste collection services in concert with a neighboring community will result in economies of scale, and should help to lower the cost of contracting out services. However, based on the estimated additional costs shown in this report, implementation of yard and leaf waste collection can be accomplished most cost-effectively by implementing a nine-week peak collection period method, which is similar to a method currently used by a neighboring community (Clarks Green Borough). R. W. Beck understands that as of the writing of this report, the Borough has submitted an RFP that includes yard waste collection. R. W. Beck strongly recommends that the per-household costs as contained herein be compared to bidder costs prior to agreeing to any contractual terms for collection with a hauler.
- Providing solely a nine-week (or peak) collection period service for yard waste, while being the most cost-effective approach to implementation, is not enough for Archbald Borough to be compliant with Act 101. At a minimum, there must be at least one other collection in the spring of the materials that are defined by Act 101 to constitute leaf waste. R. W. Beck recommends that Archbald Borough apply for a Section 902 (recycling implementation) grant, which if approved would cover up to 90 percent of the additional costs of equipment for the additional season. This will help to defer some of the additional costs associated with providing the additional collection service.
- Recycling collection as implemented by the Borough is fairly cost effective when compared to the budget of a key benchmark community (Olyphant Borough), whose costs of collection were found to be higher than Archbald's estimated costs by $35.58 per household

per year. R. W. Beck recommends that recycling collection continue to be performed by the Public Works Department.

- Since certain neighboring communities offer yard and leaf waste collection free of charge, the Borough needs to consider the possibility that customer satisfaction may be impacted by this knowledge should the Borough charge residents for this service, either through a hauler or through the Public Works Department. Note that the estimated monthly cost per household for the peak collection period scenario is under $4.00 per household per month.

Complete Details are contained in the full report.

Introduction

The Borough indicates that they are considering the following scenarios for solid waste management services:

1) Contracting Out Solid Waste and Yard Waste Collection. This scenario assumes that the Borough continues to provide recyclables collection, and would bundle the yard waste collection and trash collection services, contracting for these services with a private hauler.

2) Public Works Yard/Leaf Waste Program. Under this scenario, the Borough's Department of Public Works would provide curbside collection of leaf/yard waste, and continue to contract with a private hauler for regular solid waste collection.

3) Borough Provides All Services. Under this scenario, the Borough would provide collection of solid waste, yard/leaf waste, and recyclables. The Borough would incur the fixed costs related to purchasing the appropriate number and type of collection vehicles in order to provide these services. It is possible, however, that grant funding may be available for recycling equipment costs.

This letter report details the steps taken to address this evaluation of scenarios. A brief summary of the data collection process and principle assumptions underlying the reported information and recommendations is presented below. The Results section provides a summary of information collected from different communities. In addition, the fleet and operational data obtained from prior R. W. Beck studies is presented, along with the implications of this data relative to the Borough's programs. The results of the route modeling and cost analysis for each of the collection scenarios will be presented, alongside a discussion of the pros and cons of contracting for collection.

Finally, the recommendations section provides observations and recommendations based on the research and analysis.

Data Collection

Data collection consisted of several concurrent processes, including:

- Internet and Telephone Research on Targeted Communities. R. W. Beck identified communities to contact to gather data from, and the Borough identified two specific communities to add to this list. Some of the communities were selected due to their cooperation with R. W. Beck on previous work efforts. A data request form was developed by R. W. Beck and sent to each community. Follow-up calls were made to ensure receipt and complete understanding of the requested items. Each community received up to three reminder calls, as needed. In addition, each community's website was researched by R. W. Beck so that readily available information could be obtained prior to asking for more specific information.
- Research Completed in Prior R. W. Beck Studies. Certain R. W. Beck projects that were deemed likely to contain relevant data or applicable research were analyzed for pertinent data. Primarily this data relates to the fleet and operations costs from a set of targeted communities that was gathered as part of a previous but recent benchmarking project. In some cases information gathered for previous projects pertaining to the targeted communities was also available.
- Route Modeling and Cost Analysis. Using R. W. Beck's proprietary routing model and the responses from the Borough's data request, the estimated total costs for public refuse, recycling, and yard waste collection were developed. Various assumptions were made in each case, which are detailed in the Cost Scenario Results section.

Underlying Assumptions

The results presented herein have been summarized in the context of the following assumptions:

- Data provided to R. W. Beck by target communities is assumed to be accurate to the best of the knowledge of the respective provider(s). R. W. Beck has not independently verified any responses.
- Due to the staggered nature in which the fleet and operations data from a previous R. W. Beck project were compiled, some data represented in this report is from different years. To address this issue, data has been normalized using a growth rate assumption when necessary.
- R. W. Beck's routing model requires the input of certain operational assumptions, such as setout rates and productivity factors. R. W. Beck has not made empirical observations for the Borough, and has used judgment to assign values for these inputs that have been deemed reasonable based on historical observations. To the extent that actual performance deviates significantly from the factors assumed, resulting costs as reported will also be impacted.

Research Results

Community Profiles

The profiles below are intended to provide a complete debriefing of available information for each of the seven responding communities relative to their solid waste management systems. A

complete summary table detailing all of the available statistics by community is also included in this report for easy reference.

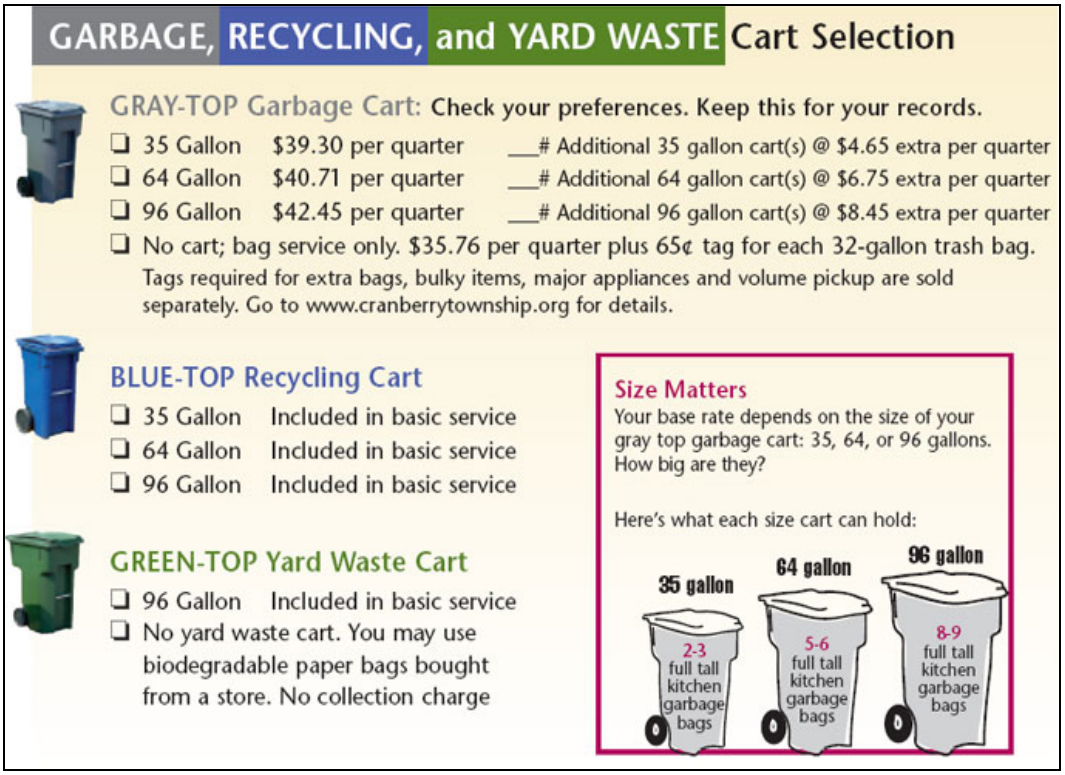
The profiles below are those of the seven communities identified by R. W. Beck. Unfortunately, the two communities identified by the Borough for inclusion were unresponsive to our repeated inquiries. However, the cost data provided by the Borough for these two communities has been utilized to estimate the operating and capital costs of implementing the proposed scenarios for collection wherever applicable, as the Borough believes that these communities are highly comparable to Archbald Borough.

Cranberry Township (Butler County)

Cranberry Township, a community of approximately 24,000 residents in Butler County, used to have subscription-based service, with five different haulers serving residents. In November of 2004 the Township implemented variable-rate pricing and automated collection. Under the subscription service, residents were typically provided with weekly collection of trash and weekly or bi-weekly collection of recyclables, but no yard waste collection. Prices per household varied considerably, from $10.00 to $18.00 per month. Some haulers included bulky waste collection in that fee.

Under the new program, Vogel Disposal, Inc. ("Vogel") provides weekly collection of trash, recyclables (and yard waste (in season – April through November). A wheeled cart is provided for each of these material streams. Residents can select their recycling and trash cart size (35 to 64, or 96-gallon) or they can select a no-cart option for trash (tags are used instead). Household costs range from about $11.92 per month to $14.15 per month, depending on the trash option selected. Residents can also select a non-cart option for yard waste, and can set their yard waste out in biodegradable bags instead. This does not impact the cost of service. Recyclables are processed at a single-stream material recovery facility (MRF) (TC Recycling, LLC in Mars, PA). Because the carts hold more materials than the previous bins, residents can recycle additional materials, including chip board, junk mail, phone books, construction paper, baby wipe containers, and bundled plastic bags. Vogel is required, by contract, to process yard waste, not dispose of it. Vogel constructed their own composting facility (located next to the landfill) to do so. If residents have more trash than will fit in their cart then they must purchase a tag for $0.65 per bag. Bulky items are collected for a fee – $4.00 for a bulky or large item, $10.00 for major appliances, and $15 for a large volume pickup of up to 12 32-gallon bags. Residents are asked to call in advance to schedule their bulky waste collection. The Township bills residents on a quarterly basis, with the water/sewer bill. The Township purchased the carts, receiving 90 percent of the cost of yard waste and recycling carts from DEP grants. The County contributed a significant amount toward the purchase of the garbage carts. Figure 1 provides a summary of the solid waste management services available to residents of the Township.

Figure 1
Cranberry Township Solid Waste Management Service Options



Currently out of 7,594 customers (households), 5,589 (74 percent) have 96-gallon waste carts, 1,384 (18 percent) have 64-gallon waste carts, and 621 (8 percent) have 35-gallon waste carts. Thirty six customers (less than one percent) selected the pay-per-bag option.

Customer service is handled by both Vogel and the Township. The Township handles move-ins, move-outs, cart changes, and entering new customers into a work order system, which is transferred to Vogel. Complaints are handled by Vogel directly, however sometimes customers call the Township directly. The hauler provides the Township with monthly, quarterly, and annual reports that contain tonnage and customer service information.

Cranberry Township's Collection Connection™ residential solid waste program has been selected as a recipient of the 2005 Governor's Award for Environmental Excellence. During just the first quarter of that program, the Township's recovery of recyclable and compostable material jumped from its historic level of 9 percent to 33 percent and then as high as 40 percent during the summer landscaping season. In 2005 the Township obtained a recycling rate of 37 percent overall, including the recycling of yard waste. A major benefit of the program is that, being a mandated community, the program brought the Township into compliance with Act 101 immediately. Another benefit of the program is that the Township's recycling performance grant has tripled due to increased recycling. Also, residents are extremely pleased with the

addition of curbside yard waste collection. They find this to be much more convenient than delivering yard waste to another site. The Township never had much of a problem with illegal dumping, so did not notice a decrease in illegal dumping when the program was implemented.

North Hopewell Township (York County)

North Hopewell Township in York County is a Township spanning 18.6 miles, with a population of approximately 2,507. Before 2003 the Township had an "open" system where residents hired their own trash hauler. In 2002 the Township issued a request for bids for collection services. Penn Waste was the lowest bidder, and has been the hauler ever since 2003. A Township staff person indicates that one small hauler submitted a bid, but it was not the lowest bid. Penn Waste's first contract with the Township ended in 2006. A new contract was issued in 2006. Under the first contract all households had to participate in the program. Under the new contract, households can "opt out" of the program and select another hauler. Households may also, under the new contract, select a Pay-as-You-Throw ("PAYT") "Tag-A-Bag" option, whereby households pay for just the waste they generate. Approximately 50 households (of the 700 or so served by the program) have selected the PAYT option. The hauler handles customer service calls and billing. The hauler does not send customer service reports to the Township, but does submit recycling reports. Township staff indicated that if service were a consistent issue, citizens would likely call the Township offices.

Those served by the "regular" program receive the following services:

- Weekly collection of refuse (up to four bags or cans);
- Weekly collection of recyclables; and
- Collection of up to one bulky item per week.

The cost of these services is $51.75 per household per quarter ($17.25 per month). If the program had been mandatory (e.g., no "opt out" option), the cost would have been $46.50 per quarter per household.

Under the PAYT option, residents pay $4.00 per bag of waste, and receive weekly collection of recyclables. Bags are available for purchase at the Township building or at Penn Waste at a cost of $4.00 per bag (minimum of $80.00 per year). Bulky items set out by those on the PAYT program must have a bag attached.

The Township staff indicates that the residents are happy to have a PAYT option, as many small waste generators are on fixed incomes. They do not see a marked increase in recycling due to the PAYT option. However, Township staff note that residents indicate that illegal dumping and littering has decreased since the Township went to contracted collection. The Township staff are all fairly new, and were not on board before the Township transitioned to contracted collection. A representative of Penn Waste indicates that with regard to rates where the system is "open", prices tend to be in the order of $60.00 or $65.00 per quarter ($20.00 to $21.67 per month) and generally do not include the collection of bulky waste items or recycling.

The City of Pottsville (Schuylkill County)

The City of Pottsville transitioned from an open system to a contracted system in March of 2003. The contract includes approximately 5,000 households of one, two, and three units. While single-family households and dwellings with two units must participate in the contracted collection program, apartments that have three units may choose to hire their own hauler. Waste Management, the contracted hauler, provides weekly collection of trash and recyclables, and provides bulky waste collection the same day as trash collection. Households are allowed one bulk item per month. Residents can set out an unlimited amount of trash and recycling. If desired, residents can rent wheeled carts from Waste Management for $1.50 per month. Residents may set their trash out in their own containers.

The City bills residents on a quarterly basis. Residents are charged $14.80 per month, or $44.40 per quarter. The City Administrator notes that since the inception of the program, recycling has increased by at least 30 percent. Also, because there is currently just one hauler, it is much easier to obtain recycling information from the hauler than previously. Similarly, it is easier for the City to audit routes to see who is not recycling and provide them with information about the City's ordinance, as recycling is all done on one day. Enhanced accountability is also a benefit of contracted collection. It is easier for the City to ensure that collection vehicles are operating safely, as there is only one hauler serving residents. Another significant benefit of contracted collection is that the incidence of littering and illegal dumping has decreased dramatically since the contract has been put in place. This is due to the fact that residents are now able to set out one bulk item per month. Previously, it was commonplace for residents to dump such items on the outskirts of the City, rather than pay a fee to their hauler to collect it. Surrounding townships and boroughs have contacted the City Administrator to let him know that this has been a positive outcome for them. While residents receiving full service (which was the collection of up to five bags per month) save money and have increased service under the new system (previously, Waste Management charged $60.00 per quarter for weekly recycling collection and the collection of five bags of trash per week, versus $44.40 per quarter now – with increased service due to the addition of bulky waste collection), small waste generators may be paying more under the current system, as some may have been paying around $24.00 per quarter for the collection of one trash bag per week previously, and now pay $44.40 per quarter.

The City does the billing and handles customer service calls, however they did not have to increase staffing levels to handle these tasks. The City Administrator notes that they have not had any ongoing issues since the inception of contracted residential waste management; however he advises that communities considering doing the same ensure that they have an accurate unit count before issuing and RFP, such that costs can be better estimated.

Mechanicsburg Borough (Cumberland County)

In Mechanicsburg Borough, all residents are served by Penn Waste; however beginning January 1, 2006 the Borough introduced a PAYT option. Under this program, residents can opt to set refuse out in bags, at a cost of $3.50 per bag (residents may place the bags inside of trash cans).

There is a minimum of $21.00 per quarter (two bags per month). Recycling is provided at no additional charge. Residents using the PAYT option can set out bulky items with a bag attached to it. The non-PAYT option is $13.94 per household per month (or $41.82 per quarter), for unlimited weekly collection of recycling and trash, as well as one bulk item per week. Penn Waste also provides the Borough with a drop-off for cardboard, at no additional cost. This drop-off is open to all residents and businesses who wish to self-haul their cardboard to the drop-off at the Borough building.

As of June 2006, 142 households had signed up for the PAYT option (of approximately 4,200 households served under the Penn Waste contract). All residents may also request an extra recycling bin at no additional charge. The Borough recently conducted a door-to-door campaign, using volunteers, to encourage recycling and promote awareness of the PAYT option. The Borough bills residents quarterly (residents receive a sewer and garbage bill) and receives customer service calls. They email calls to Penn Waste, who responds to the concern. Penn Waste provides the Borough with monthly reports, summarizing activities that addressed customer calls, as well as route observations (e.g., service not provided because a resident set out construction and demolition materials).

The Borough has not seen an increase in recycling based on the monthly reports from Penn Waste, but the program is relatively new, and relatively few households have signed on. The Township believes that in the next contract bid cycle, which will begin on January 1, 2008, there will likely be a larger financial incentive to sign up for the PAYT option, and they may then see an increase in recycling. Similarly, there have been no noticeable changes in open dumping or littering. The Borough reports that they do not have a large problem with illegal dumping, as there are not a lot of open areas.

The greatest benefit of the PAYT program is that it offers residents another option and has not been problematic to implement.

East Manchester Township (York County)

East Manchester Township spans 16.6 square miles, and is a community of approximately 5,078 people, with approximately 1,986 households. Before 2003, each household chose its own hauler. When the community reached a population of 5,000 and thus became a mandated community, DEP suggested to them that they issue an RFP for one hauler to serve the community. The RFP was issued in 2002, and the hauler, Penn Waste, began servicing the Township in 2003. Before the contract was implemented, households typically paid $50 per quarter for weekly collection of trash – up to five bags or containers. Bulky waste collection was provided for an additional fee of $25.00 per pickup. Curbside recycling was not offered. Current options for the Township residents under the Penn Waste contract include the following levels of service:

▪ Basic	3 bags/cans, Unlimited recycling	$44.16/qtr. ($14.72/mo.)
▪ Low	1 bag/can, Unlimited recycling	$39.16/qtr. ($13.05/mo.)
▪ Toter	3 Bags/Unlimited recycling	$50.66/qtr. ($16.89/mo.)
▪ PAYT	$3.50 per bag/Unlimited Recycling	$3.50/bag

Residents may not "opt out" of the program – they must participate. The advantages of the new program include the fact that recycling is now taking place. Previously residents did not recycle at all. Under the new system small waste generators (an estimated 10 percent of Township households select this option) can save on their waste collection and disposal costs by using the PAYT option. Although all households received more services (recycling plus the collection of one bulk item per week at no additional cost), and most save under the contracted collection, some residents initially were disappointed that they could only set out up to three bags of trash. Some residents were also unhappy that they could not select their own hauler. A small hauler used to serve an estimated 75 percent of the Township, as well as other nearby communities, and is no longer in business. Although that hauler did submit a bid, he was not the low bidder.

The Township has seen a decrease in littering since the program began. However, yard debris is not included in the program, and the Township anticipates that it will have to be included at some point in the future. Currently Penn Waste will collect bundled brush, however it must meet certain size criteria, and takes the place of the weekly bulk item.

The only ongoing issue they have with the current hauler is that they tend to break recycling bins. The workers tend to toss the containers after emptying them, and they break. The current hauler was interviewed for this project, and notes that the company is addressing the problem. They are taking steps on the front end, providing an orientation and training program for employees to ensure proper treatment of containers. Overall, residents are happy with the service, and Township officials are pleasantly surprised to see so many residents recycling.

The current hauler does the billing and manages customer calls. They provide the municipality via email with information pertaining to customer service (e.g., if a resident sets out too many items, for example). The hauler also provides the Township with recycling reports.

Westmont Borough (Cambria County)

Westmont Borough in Cambria County has approximately 5,500 residents. The land area of the borough is 2.3 square miles. There are over 2,200 single-family dwellings and approximately 132 multi-family dwellings. In Westmont Borough the definition of a multi-family unit is a building comprised of two to six housing units.

Currently Borough residents receive solid waste collection services under a one-year agreement with Waste Management Services of Pennsylvania Inc. The services provided to the Borough are listed below:

- Weekly collection of refuse (up to four standard 30 gallon containers);
- Monthly collection of recyclables; and
- Annual spring trash collection.

The cost of these services is $145.00 per household per year. Households can opt for backdoor collection for an additional $125 per year.

In 2005 the Borough collected and disposed of 2,508 Tons of MSW and 105 Tons of recyclables.

The City of Johnstown (Cambria County)

The City of Johnstown, home to roughly 9,000 households, contracts with Waste Management, Inc. (WM) for their refuse and recycling collection and disposal/processing. WM provides one collection per week of municipal solid waste (MSW), and biweekly collection of recyclables. WM's contract expires on December 31, 2009.

Johnstown City Ordinance Number 4535 requires all residents of single-family and multi-family dwellings to recycle a specified set of materials. The City's curbside recycling program includes aluminum cans, steel cans, #1 and #2 plastic bottles, and clear/green/brown glass bottles and jars. Currently there are no fibers collected in the curbside system. The City relies on the County drop-off program for the recovery of newspapers, cardboard, office paper, magazines/catalogs, junk mail and phone books. In 2002 WM collected 204 tons of recyclables through the City's curbside recycling program, as well as 312 tons of commercial old corrugated cardboard. An additional 561 tons of recyclable paper and other commingled containers were collected through the County drop-off program. Together, this represents a recycling rate of 5.7 percent of the 18,861 total tons of material generated by Johnstown single-family residences and commercial businesses.

The City charges residents $140.00 annually for these services. Bulky waste is collected for $35.00 per collection. There is no charge for leaf removal services.

The City collects leaves and grass clippings that are swept into the street gutter weekly during street cleaning, or residents can call the City to schedule a bagged leaf collection.

Benchmarking Summary Table

Table 1 provides a summary of the information gathered from the benchmarked communities.

Table 1
Benchmarking Summary

Municipality	Cranberry Township	North Hopewell Township	City of Pottsville	Mechanicsburg Borough	East Manchester Township	Westmont Borough	City of Johnstown
Current Service	Weekly refuse, recyclables, and yard waste (in season) Bulky waste for fee ($4.00, $10.00, or $15.00 depending on volume)	Weekly refuse, recyclables, one bulky item per week	Weekly trash Weekly recycling Bulky waste (one item per month) (City provides yard waste collection)	Weekly trash Weekly recycling Drop-off for cardboard	Weekly trash (up to 3 bags) Weekly recycling	Weekly collection of refuse (up to 4 30-gallon containers) Monthly recycling Annual spring trash collection	Weekly trash collection Bi-weekly recycling
Variable Rates?	Yes, 35-, 64, or 95-gallon carts, plus tag option.	No, but limited to 4 32-gallon bags per week.	No. Unlimited collection.	Yes. $3.50 per bag and per bulky item. Includes recycling.	Yes. One-bag option, three-bag option, or PAYT option ($3.50 per bag)	No	None reported.
Current Costs to Households	$11.92 to $14.15 per month	$17.00 per month	$14.80 per month	$13.94 per month unlimited, or $7.00 or greater per month, bag.	$14.72 per month for basic service.	$145.00 per household per year ($12.08 per month) Backdoor service is an additional $125 per year	$140.00 per year ($11.67 per month) Bulky collection $35.00 No charge for leaf removal
Billing	Township	Hauler	City	Borough	Hauler	N/A	N/A
Customer Service	Township	Hauler	City	Borough	Hauler	N/A	N/A
Total Tons MSW Generated (1)	20,880	2,181	13,528	7,867	4,418	4,785	20,798
Estimated Total Cost/Ton Generated	$61.76	$65.47	$65.64	$89.31	$79.41	$70.65	$60.60

(1) Estimated based on the EPA guidelines of tonnage of waste generated per person per year. Note that estimate does not include yard waste.

R. W. Beck has relied upon the EPA estimate of 0.87 tons of MSW generated per person per year to estimate annual tonnage, which is noted in the table.

As Table1 indicates, most households are paying between $11.00 and $15.00 per month for solid waste management services, including weekly refuse collection, weekly or bi-weekly collection of recyclables and in some cases limited bulky waste collection. In one jurisdiction, North Hopewell Township, residents pay $17.00 per month. In one community, Cranberry Township, seasonal collection of yard waste is included in the $11.92 to $14.15 per month (depending on

cart size collected) fee. Some communities have an additional fee for bulky waste collection. These fees vary considerably, from $3.50 to $35 per collection. By comparison, Archbald Borough's services are approximately $11.67 per month, and include once weekly collection of solid waste, bi-weekly collection of recyclables, and bulky waste is provided for $35.00 per collection.

Fleet and Operations Data/Research

R. W. Beck collected information pertaining to fleet and operational costs for several communities of varying sizes. This data is presented so that the Borough can obtain a frame of reference from which to gauge its own anticipated costs for recycling program implementation. Data on refuse collection has also been included, and although this information is not immediately applicable to the Borough due to the fact that they currently contract out these services, it does provide an idea of the costs for maintenance and labor were the Borough to provide these services on its own. Note that larger communities are more likely to be able to take advantage of economies of scale and as such, costs are likely to decline on a per-capita basis as the Borough grows. This data is presented as a supplement to the modeling performed by R. W. Beck for solid waste and yard/leaf waste collection and associated cost estimates.

Fleet Research

The following tables summarize key fleet benchmarking statistics by community. Table 2 provides a summary of rear and side-loading vehicles, and Table 3 provides a summary of grapple and recycling vehicles. Data on recycling vehicles collected is relatively limited, and as such this data has been combined with grapple statistics. Grapple trucks are routinely used for yard waste collection. Total tons generated have been estimated for each community using EPA guidelines, and population estimates from the Census. Because original data pertained to different years, cost data has been normalized to 2006 dollars using a 2 percent escalation factor.

Table 2
Summary of Fleet Responses – Rear/Side Loaders

Benchmark Statistic [1], [2]	Respondents							
	Atlanta	Austin	Kissimmee	Lakeland	Panama City	Pensacola	St. Petersburg	Titusville
Number of Active Units	84	78	9	14	9	11	44	9
Number of Spare Units	59	11	3	4	2	5	12	3
Utilization %	49%	73%	100%	N/A	N/A	69%	N/A	75%
Availability %	51%	95%	100%	N/A	N/A	90%	94%	86%
Average Age (yrs)	8.6	3.0	3.0	4.0	3.6	5.4	4.0	6.0
Total Annual Maintenance Cost	$5,230,461	$2,385,751	$196,000	$1,173,000	N/A	$240,618	$2,040,000	N/A
Annual Maintenance Cost/Unit	$36,577	$26,806	$16,333	$65,167	$6,637	$15,039	$36,429	N/A
Annual Maintenance Cost/Hour	N/A	$31	N/A	$34	$2	N/A	$33	$23
Labor Rate (Loaded/Non Loaded)	N/A	$57	N/A	N/A	$31	$61	$80	$53
Est. Annual Tons Generated	368,010	600,519	51,647	78,300	34,800	47,028	216,708	35,376
Households/Customers Served	120,600	163,202	13,474	34,000	14,797	19,400	76,000	17,200
Annual Maintenance Cost/Ton	$14	$4	$4	$15	N/A	$5	$9	N/A
Annual Maintenance Cost/HH	$43	$15	$15	$35	N/A	$12	$27	N/A
HH Served per Vehicle	843	1,834	1,123	1,889	1,345	1,213	1,357	1,433
Year	2006	2006	2006	2006	2005	2005	2005	2005

Footnotes:

[1] Utilization and Availability Factors represent averages.

[2] Per unit costs represent raw data responses from individual entities. Total costs have been summed by vehicle type, where applicable.
In cases of earlier vintage cost data, reported values have been normalized to 2006 levels using a 2% escalation rate assumption.

As Table 2 indicates, among the studied communities, rear and side loaders tend to serve 1,100 to 1,450 households each. In Atlanta this figure was smaller (843 households per vehicle) and in Lakeland, Florida and Austin, Texas, this figure was higher, at 1,889 and 1,834 households per vehicle, respectively. The annual maintenance cost per ton ranged from $4.00 per ton to $15.00 per ton, and the annual maintenance cost per household ranged from $12.00 to $43.00 per household.

Table 3
Summary of Fleet Responses – Grapple/Recycling

Benchmark Statistic [1], [2]	Respondents						
	Atlanta	Austin	Kissimmee	Lakeland	Panama City	Pensacola	Titusville
Number of Active Units	4	35	3	11	2	22	10
Number of Spare Units	4	9	0	1	1	13	2
Utilization %	50%	73%	100%	N/A	N/A	75%	83%
Availability %	50%	95%	100%	N/A	N/A	93%	65%
Average Age (yrs)	8.4	5.0	5.0	5.5	4.0	6.9	5.5
Total Annual Maintenance Cost	$216,527	$756,501	[3]	$415,281	N/A	$127,500	N/A
Annual Maintenance Cost/Unit	$27,066	$17,193	N/A	$34,607	$7,185	$3,643	N/A
Annual Maintenance Cost/Hour	N/A	$17	N/A	$39	$1	N/A	$13
Annual Maintenance Cost/Ton	$0.59	$1.26	N/A	$5.30	N/A	$2.71	N/A
Annual Maintenance Cost/HH	$1.80	$4.64	N/A	$12.21	N/A	$6.57	N/A
HH Served Per Vehicle	15,075	3,709	4,491	2,833	4,932	554	1,433
Labor Rate (Loaded/Non Loaded)	N/A	$57	N/A	N/A	$31	$60	$53
Year	2006	2006	2006	2006	2005	2005	2005

Footnotes:
[1] Utilization and Availability Factors represent averages.
[2] Per unit costs represent raw data responses from individual entities. Total costs have been summed by vehicle type, where applicable In cases of earlier vintage cost data, reported values have been normalized to 2006 levels using a 2% escalation rate assumption.
[3] The City of Kissimmee reported a bundled cost for all services; this cost is shown in the rear/side loaders table.

As Table 3 indicates, grapple and recycling collection vehicles are much less costly to maintain on a dollar-per-ton basis, as well as on a dollar-per-household basis, as fewer of them are required to service the community. In addition, there tends to be less wear and tear on grapple trucks, as they tend not to compact waste as much as refuse trucks. The number of households served per vehicle range widely for these vehicles – from 554 households per vehicle in Pensacola, to 15,075 households per vehicle in Atlanta. Note that Atlanta reported some additional dump trucks that were not included in this calculation that may serve the same function. Overall, the reported Atlanta data for grapple and recycling appears to either be underreporting total fleet, or be low due to a difference in the way the City categorizes its fleet. Nonetheless, Table 3 provides a reasonable range for households served when examining all of the other respondents' information.

Operations Research

The following tables summarize the key operations benchmarking statistics gathered from the benchmarked communities. All needed normalization has been performed as in the Fleet statistics tables to ensure that 2006 dollars are being used.

Table 4
Summary of Operations Responses - Garbage

Benchmark Statistic [1], [2]	Respondents					
	Atlanta	Austin	Kissimmee [3]	Lakeland	Pensacola	St. Petersburg
Households/Customers Served	120,600	156,910	13,474	34,000	19,400	76,000
Number of Daily Routes	36	13-23	7	14	9	32
Frequency	weekly	Daily	2x week	2x week	N/A	N/A
Number of Supervisors	N/A	6	1	2	2	2
Number of Total Employees	N/A	97	10	56	12	49
Number of Routed Employees	72	91	7	42	9	32
Number of Stops per Daily Route	446	750-1000	540-1840	1,210	1,078	1,200
Avg. Route Hours per Day	N/A	9	8	7	N/A	N/A
Scheduled Route Hours per Day	8	9	10	8	10	10
Annual Ops/Admin Cost	N/A	$21,200,000	$3,000,000	$5,177,000	$3,040,396	$5,817,060
Annual Ops/Admin Cost/Ton	N/A	$35	$58	$66	$65	$27
Annual Ops/Admin Cost/HH	N/A	$130	$88	$152	$157	$77
Infrastructure	Semi-automated	Semi-automated	Automated	Manual	Automated	Automated
Year	2006	2006	2006	2006	2005	2005

Footnotes:

[1] Represents combination of rear loader and side loader statistics, where applicable.

[2] Data shown has not been adjusted from responses gathered with the exception of cost data, which has been summed where applicable. In cases of earlier vintage cost data, reported values have been normalized to 2006 levels using a 2% escalation rate assumption.

[3] The City of Kissimmee reported a bundled cost for all collection services, which is the number reflected in this table.

As Table 4 indicates, the number of stops per collection route varies significantly among the communities – from 446 stops per route in Atlanta, to 1,840 stops per route in one Kissimmee route. It should be noted that 1,000 to 1,200 stops per route for automated collection vehicles is fairly typical. Typically, manual routes serve 800 to 1,000 households per route. However various factors have an impact, such as housing density, length of work day, number of workers per vehicle, and frequency of collection (e.g., more frequent collections mean less waste, thus less labor time, per setout). Annual operations/administrative costs per ton ranged from $27 per ton to $66 per ton. On a per-household basis, operation and administrative costs ranged from $77 per household to $157 per household.

If maintenance and administrative/operational costs are combined, the total costs of operating and maintaining the side and rear-load vehicles range from approximately $103 per household to $187 per household. This range should be used as a baseline framework for the total costs involved in operating, maintaining, and administering a fleet of side and rear-load vehicles. Note that capital costs are not included in this calculation.

Table 5
Summary of Operations Responses – Yard Waste

Benchmark Statistic [1], [2]	Respondents				
	Atlanta	Austin [3], [4], [5]	Kissimmee	Lakeland	Pensacola
Households/Customers Served	120,600	157,857	13,474	34,000	19,400
Number of Daily Routes	18	12	2	14	4
Frequency	2x week	Daily	1x week	1x week	N/A
Number of Supervisors	N/A	2	1	N/A	1
Number of Total Employees	N/A	29	10	N/A	12
Number of Routed Employees	36	24	2	N/A	12
Number of Stops per Daily Route	122	2,000-4,000	975-2550	2,420	1,213
Avg. Route Hours per Day	N/A	6	8	9	N/A
Scheduled Route Hours per Day	8	8	10	8	10
Annual Ops/Admin Cost	N/A	$2,550,000	[6]	N/A	$1,589,486
Annual Ops/Admin Cost/Ton	N/A	$4.25	[6]	N/A	$33.80
Annual Ops/Admin Cost/HH	N/A	$15.62	[6]	N/A	$81.93
Infrastructure	Semi-automated	Semi-automated	Automated	Manual	Automated
Year	2006	2006	2006	2006	2005

Footnotes:

[1] Represents combination of rear loader and side loader statistics, where applicable.

[2] Data shown has not been adjusted from responses gathered with the exception of cost data, which has been summed where applicable.

In cases of earlier vintage cost data, reported values have been normalized to 2006 levels using a 2% escalation rate assumption.

[3] The Yard Waste section collects yard trimmings such as bags of leaves and grass clippings, and small branches or limbs.

[4] The Yard Waste section uses the rear loader trucks.

[5] The Yard Waste section is in the PAYT (PAY AS YOU THROW) Division (a separate division from Litter Abatement).

[6] The City of Kissimmee reported a bundled cost for all collection services; this cost is shown in the Garbage operations table.

As Table 5 indicates, stops per route varies significantly among the benchmarked communities – from 122 stops per route in Atlanta, to up to 4,000 stops per route for some of Austin's routes. Note, however, that Austin provides daily collection, so many are actually "drive by's." The annual operational and administrative cost for the collection vehicles ranges from $15.62 per household in Austin, to $81.93 per household in Pensacola. Many communities were unable to provide these statistics for these vehicles, however. Note again that Atlanta appears to be underreporting its operational characteristics when compared to other respondents.

While the data provided in Table 5 is fairly limited, the information presented provides the Borough with a frame of reference for the route requirements, frequency of collection, infrastructure, and costs per household for yard waste operations. The costs per household provided in this Table should be compared to the results of the yard waste scenario cost results presented in the Scenario results section.

Table 6
Summary of Operations Responses - Recycling

Benchmark Statistic [1], [2]	Respondents			
	Atlanta	Austin	Kissimmee	Lakeland
Households/Customers Served	120,600	163,202	13,474	34,000
Number of Daily Routes	16	77	3	5
Frequency	weekly	Weekly (Grapple); Daily (Recycling)	1x week	1x week
Number of Supervisors	N/A	6	1	0
Number of Total Employees	N/A	99	3	6
Number of Routed Employees	16	77	3	5
Number of Stops per Daily Route	629	7077-9577	4,200	N/A
Avg. Route Hours per Day	N/A	7	8	N/A
Scheduled Route Hours per Day	8	8	10	N/A
Annual Ops/Admin Cost	N/A	$6,800,000	[3]	$464,776
Annual Ops/Admin Cost/Ton	N/A	$11.32	[3]	$5.94
Annual Ops/Admin Cost/HH	N/A	$41.67	[3]	$13.67
Infrastructure	Semi-automated	Semi-automated	Automated	Manual
Year	2006	2006	2006	2006

Footnotes:

[1] Represents combination of grapple and recycling statistics, where applicable.

[2] Data shown has not been adjusted from responses gathered with the exception of cost data, which has been summed where applicable. In cases of earlier vintage cost data, reported values have been normalized to 2006 levels using a 2% escalation rate assumption.

[3] The City of Kissimmee reported a bundled cost for all collection services; this cost is shown in the Garbage Operations table.

As Table 6 indicates, only two communities, Austin, Texas and Lakeland, Florida, were able to provide cost data specific to their recycling collection vehicles. In Austin, the operation and administrative costs of the recycling collection vehicles is $11.32 per ton, or $41.67 per household. If maintenance costs are added to this sum, total costs are $12.58 per ton or $46.31 per household. For Lakeland, annual operational and administrative costs are $5.94 per ton, or $13.67 per household. When annual maintenance costs are included, the costs are $11.24 per ton and $14.88 per household. Note that this does not include capital costs.

Fleet and Operations Implications – Archbald Borough

Based on the data provided by the Borough, a forecast of the total charges incurred for solid waste collection to the residents of the Borough is shown below. It assumes a continuance of the contractual arrangement with the current hauler, and an escalation of hauler charges using the March 2006 Blue Chip Economic Indicator inflation rate consensus value assumption of 2.4 percent, and growth rates in the number of households as estimated by the Borough. These

projected costs for refuse collection should be considered carefully when interpreting the results of the refuse routing and cost modeling in the Scenario Results section.

Table 7
Archbald Borough Estimated Annual Solid Waste Collection Costs

Archbald	2006	2007	2008	2009	2010	2011
Cost/Dwelling	$ 180.00	$ 183.60	$ 187.27	$ 191.02	$ 194.84	$ 198.73
Households	2,700	2,720	2,740	2,760	2,780	2,800
Charges	$486,000	$499,392	$513,125	$527,208	$541,649	$556,457

As Table 7 indicates, if the contracted hauler raises rates commensurate with the inflation rate described above, and if the number of households in the Borough expands as indicated above, it would be likely that the Borough's rates will increase to over $190 per household by 2009 and to nearly $500,000 in total costs by 2007. Many factors, however, can have an impact on collection and disposal contract prices, including fuel prices, tip fees, other fees (such as host fees, Growing Greener fees, and recycling fund fees), services provided, contract structure, joint contracting (e.g., with another community), and the level of competition in a market. Note also that a portion of the current cost per dwelling is for the recycling services that the Borough currently provides. Consequently, some of the uncertainties related to contract price also apply to recycling service (fuel costs, services provided, etc).

Table 8 summarizes the current estimated costs of certain equipment used in each responding community, and is presented to give the Borough an idea of the capital costs, as well as operation and maintenance costs, that would be incurred by implementing self service (e.g., the Borough would provide collection) for all or part of its waste management needs. The costs include labor costs for repair of vehicles, fuel, and parts costs for one vehicle. Fuel costs have been escalated using information published by the Energy Information Administration ("EIA").

Table 8
Representative Equipment Costs

Vehicle	Purchase Price	O&M Costs (per year) [1]
Rear Loader	$158,000	$22,152
Automated Side Loader	$170,000	$50,997
Grapple	$128,000	$16,211
Pick-up	$19,000	$2,823
Carts	$50	$1

[1] O&M Cost estimates adjusted from route model assumptions to reflect current fuel cost trends. Data from EIA used to escalate costs.

As shown in Table 8 and in Table 1, there are two key conclusions to draw from the results:

1) The Borough's per-dwelling costs for collection are well in accord with surrounding Townships in Pennsylvania, and are in the same range of costs for communities located outside of the Commonwealth. The annual costs for respondents in Pennsylvania range from $140 to $204, in Johnstown and North Hopewell, respectively. Other larger, out-of-state communities, such as Austin, are more able to take advantage of economies of scale, and consequently have much smaller per-household costs than many of the smaller communities in Pennsylvania. As such, the current solid waste contractual arrangement appears to be more cost-effective than the Borough providing solid waste management services to its residents. Additionally, the Borough should compare any RFP bid costs for yard waste, as well as costs reported by responding communities, to the costs for yard waste in the Scenario results section detailed in a section below prior to making an ultimate yard waste service decision.

2) Expansion of Borough self-services to include refuse collection would involve significant fixed capital costs up front. The cost matrix above is only a guideline, but does not bode well with regard to smaller communities, given the additional maintenance and administration costs associated with developing an expanded fleet.

These points are expanded on in the Observations and Recommendations section beginning on page 30 of this report. Note that vehicle purchase costs would theoretically be amortized over a reasonable financing period of five years.

Summary of Strengths and Weaknesses of Contracting for Collection Services

In an effort to provide a listing of all of the major advantages and disadvantages to contracting service, this sub-section provides a summary of key points both from data retrieved from respondents, economic theory regarding economies of scale, and logistics, billing, and operational factors. Each item will be associated with a "(+)" if it is considered an advantage and a "(-)" if it is considered a disadvantage.

1. **Economies of Scale (+/-).** Theoretically, whether a community can take advantage of economies of scale depends on its demand for services and its size. Smaller communities are less able to take advantage of reductions in inefficiencies and economies of scale than larger communities. This is due to a relatively large amount of supervision/administrative costs associated with interaction with the contractor, as well as "bargaining power" that is gained by larger jurisdictions. In other words, larger contracts, simply put, are more attractive to contracted haulers. As population begins to increase (and hence demand), the relative supervision costs decrease and as such the economies of scale garnered from contracting out services increases. Large communities tend to be more capable of making the internal changes necessary to provide the services directly (i.e. larger cities are more likely to be internally efficient enough to provide the service themselves and to use peripheral departments, such as billing and vehicle maintenance, more fully such that it makes sense to have such departments).
2. **Leveraging Support of Neighboring Municipalities (+).** There are two main reasons why this factor influences contracting. First, local decision makers can coordinate efforts and share information more readily regarding costs and levels of service among service providers, so that they can make more informed decisions. Also, jurisdictions located next to each other might issue an RFP jointly, such that the hauler would have increased economies of scale, which results in increased bargaining power for the jurisdictions.
3. **Cost Convenience/Bundling (+).** Most contractors offer the customer the opportunity to have the hauler take care of billing and customer service. In addition, multiple services can be incorporated into an RFP with one simple resulting price per household for all services, as noted by the responding Pennsylvania communities above. Extra services can also be offered at a premium. This cost usually covers marginal vehicle maintenance costs and all other variable costs the hauler incurs. If the Borough were to manage customer service for MSW collection themselves, this would also likely necessitate an increase in staffing costs. However, some communities choose to be involved in customer service, if not fully responsible, in order to better monitor quality of service and to implement any fines that should be imposed on the hauler for not performing duties per the contract.
4. **Sustainability (+).** With growth, there are always logistical and routing adjustments that need to be made to adjust for increased demand for services, putting a strain on smaller communities. Consequently, contracting the bulk of waste service is somewhat more sustainable as the Borough grows, since the added collection burden will be on the hauler, and the Borough will not have to make routing adjustments (or potential fleet additions) to account for growth, which, as shown above, can mean some significant fixed costs for a vehicle that may not be fully utilized. This is only a minor advantage in this specific case, as

the growth rate for the Borough is estimated to be only about 20 households per year.

5. **Detailed Recycling Reports (+).** Certain respondents have reported an ease with which they can obtain information on recycling participation, as the hauler has the needed information, particularly if the hauler provides all solid waste management services for the jurisdiction. In addition, one respondent reported increased accountability, meaning that the hauler can be held responsible for poor performance. In some communities the hauler even has a monetary incentive per the collection contract to increase recycling in the community. This can be a win-win for the jurisdictions, as in Pennsylvania the community may increase its Section 904 (Performance Grant) revenues, and pass some of this revenue on to the hauler.

6. **Contractual Stringency (-).** Most hauler contracts are very stringent, and are not subject to changes before the renewal date. Contractual review support is often called for, which can result in additional cost to the jurisdiction. Conversely, services that are handed exclusively by the municipality can change as needed should the community decide that such a change is beneficial (i.e. the municipality is the final authority on changes for a service they themselves provide).

7. **Impact on Local Employees/Economy (-).** Public Works Departments can be hurt by contracting due to a loss of need for staffing, which is typically local. Consequently, this negative economic impact must be considered. In some cases, however, local jurisdictions may be able to reassign laborers to other positions, or reduce the work force through attrition.

8. **Competition Among Haulers (+/-).** Competition among haulers is generally seen as a positive attribute to contracting for services, as private entities will try to win a contract by bidding a lower price, benefiting the jurisdiction. In some locations, however, competition is scarce. When only one incumbent hauler gains control of a certain region, for example, they lose incentive to charge a competitive market price, and price increases generally result.

9. **Decrease in Littering (+).** In general, when a jurisdiction contracts for collection with a hauler, particularly when participating in the collection program is mandatory (e.g., residents do not have an option to self-haul), jurisdictions note that they see a decrease in the amount of litter scattered along the roadway and deposited at remote sites. It should be noted that where participation in the program is mandatory, the hauler can generally provide services at a lower cost, as they do not have to “guess” how many households will opt out of the program, and adjust per-household rates accordingly to cover the costs of servicing the jurisdiction.

These advantages and disadvantages to contracting for solid waste management services should be considered when the Borough makes its decision to provide collection services (either wholly or in part) themselves, or to contract for solid waste management services. Note that not all of these factors are tangible (for example, sustainability cannot easily be measured in dollars), but all of them are critical to making a well-informed decision about contracting.

Cost Scenario Results – Capital and Operating Costs

The following tables summarize the results of the route modeling and cost analysis performed by R. W. Beck for the Borough.

In order to properly calculate the costs associated with each collection system (refuse, recycling, yard waste) R. W. Beck used a proprietary route model. The inputs for the route model are typically driven by field observations of the municipality's current collection systems. Since a route observation was not conducted for the Borough, several of the inputs were derived from average values obtained from previous studies. Though the population and system configuration in previous studies may vary, the outputs of pounds per household related to each of the listed systems are provided on a per-capita basis, allowing R. W. Beck to use overall averages for other communities. Examples of inputs used in calculating routing needs are: number of current routes, number of employees on each truck, household count, hours per collection route, and several other metrics. The outputs are number of routes, pounds per household, number of daily stops per vehicle, and other factors. The numbers and routes calculated using the model should be viewed only as estimates of routing needs. In order to have actual values, a route observation would be required.

Operating and capital costs are shown together, and have been escalated through time using the Blue Chip Economic Indicator Report's March 2006 inflation rate consensus estimate (2.4 percent annually). Other assumptions are described below, under the appropriate scenario result.

Public Refuse Collection Results

Table 9 provides a detailed overview of the modeling results for public refuse collection. Based on the results of the route model, R. W. Beck projects that the Borough would require three collection days with at least two routes per day. Note that the analysis assumes an implementation period that begins in 2007, and as such the amortization of the required capital additions (collection vehicles) also begins in 2007. A 6 percent discount rate has been used to project the cash flow resulting from vehicle financing. Insurance costs are assumed to be governed by governmental policies and are excluded from the analysis. As shown, the cost to the Borough for implementing public collection is significantly higher that the forecasted growth in the cost/dwelling if the Borough retains its private contract, as shown in Table 7.

Household growth projections were provided by the Borough. In addition, the base tonnage generation rate per household of 1.28 tons per household per year was computed from estimates for generation in the Borough, and has been assumed to remain constant. The tonnage generation data provided by Archbald Borough was used in lieu of an EPA-based estimate because of the relatively small size of the Borough and the simple fact that actual compiled data was available. The model results are based on a collection staff of four, and one additional

administrative staff member. R. W. Beck has implemented this scenario after assessing the current Borough vehicle fleet, which would need significant additions should they decide to implement refuse collection.

Table 9
Public Refuse Collection – Summary of Estimated Costs

System Costs [2]	2006	2007	2008	2009	2010	2011
Vehicles [3]	$ -	$ 67,443	$ 67,443	$ 67,443	$ 67,443	$ 67,443
Collection Staff [6]	$ 227,968	$ 233,439	$ 239,042	$ 244,779	$ 250,653	$ 256,669
Admin Staff [1]	$ 42,120	$ 43,131	$ 44,166	$ 45,226	$ 46,311	$ 47,423
Maintenance Costs [2]	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Tires	$ 4,000	$ 4,096	$ 4,194	$ 4,295	$ 4,398	$ 4,504
Fuel	$ 10,000	$ 10,240	$ 10,486	$ 10,737	$ 10,995	$ 11,259
Parts	$ 8,000	$ 8,192	$ 8,389	$ 8,590	$ 8,796	$ 9,007
Labor	$ 20,000	$ 20,480	$ 20,972	$ 21,475	$ 21,990	$ 22,518
Operational Costs [2]	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Disposal Costs	$ 191,475	$ 196,070	$ 200,776	$ 205,595	$ 210,529	$ 215,582
Community Factors	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Tonnage [4]	3,450	3,482	3,507	3,533	3,558	3,584
Households [5]	2,700	2,720	2,740	2,760	2,780	2,800
Total Costs	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Total	$ 503,563	$ 583,091	$ 595,467	$ 608,139	$ 621,116	$ 634,404
Cost/Ton	$ 145.96	$ 167.48	$ 169.78	$ 172.14	$ 174.55	$ 177.01
Cost/HH	**$ 186.50**	**$ 214.37**	**$ 217.32**	**$ 220.34**	**$ 223.42**	**$ 226.57**

[1] Assumes a $15.00/hr base rate plus a 35% benefits multiplier.
[2] Projections based on the Blue Chip CPI of 2.4% per year.
[3] Vehicle cost amortized over a 5 year period with a 6% discount rate; analysis assumes year 2007 implementation.
[4] Tonnage growth based on data provided by the Borough, which results in approximately 1.28 tons per household per year.
[5] Growth rate provided by the Borough.
[6] Based on average salary of staff as provided by the Borough.

As shown, the cost to the Borough for implementing public collection is significantly higher than the forecasted growth in contracted rates as shown in Table 7, attributed mostly to the amortized cost of equipment purchases and the labor costs for staffing the system.

Public Recycling Collection Results

Table 10 summarizes the results of the baseline recycling collection cost estimates.

Using the proprietary routing model and assumptions regarding recycling services, R. W. Beck estimated the annual cost in 2006 of recycling collection in Archbald Borough to be $223,596.

During the initiation of the project, it was requested by the Borough that the Borough of Olyphant (Lackawanna County) be included as a benchmark community. Despite the fact that R.

W. Beck was unable to obtain detailed benchmark information for Olyphant Borough, we were able to obtain a detailed budget for recyclables collection, which was provided by Olyphant Borough to Archbald and subsequently relayed to R. W. Beck.

The Borough of Olyphant has 2,197 households as compared to Archbald's 2,700 households. The total annual budget for recyclables collection in 2006 for Olyphant is reported to be $260,100 (or $118.39 per household per year, which is roughly $9.87 per household per month). This is in line with the $223,596 calculated for Archbald Borough's costs of recycling collection (which would be $82.81 per year per household, or $6.90 per month). Note that $180,000 of Olyphant's budget is set aside for recycling containers. Since Archbald currently has containers, $2,700 was budgeted for replacement recycling containers for 20 percent of the households (i.e. it has been assumed that 20 percent of containers will need to be replaced annually, which is a fairly conservative assumption).

Based on the analysis of the Borough and the comparison of the results to Olyphant Borough, recycling collection appears to be fairly cost effective, and should continue to be provided by the Public Works Department.

Table 10
Public Recycling Collection – Summary of Estimated Costs

System Costs [4]	2006	2007	2008	2009	2010	2011
Vehicles [3]	$ -	$ -	$ -	$ -	$ -	$ -
Collection Staff [6]	$ 170,976	$ 175,079	$ 179,281	$ 183,584	$ 187,990	$ 192,502
Admin Staff [1]	$ 42,120	$ 43,131	$ 44,166	$ 45,226	$ 46,311	$ 47,423
Maintenance Costs [4]	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Tires	$ 1,000	$ 1,024	$ 1,049	$ 1,074	$ 1,100	$ 1,126
Fuel	$ 3,000	$ 3,072	$ 3,146	$ 3,221	$ 3,299	$ 3,378
Parts	$ 2,500	$ 2,560	$ 2,621	$ 2,684	$ 2,749	$ 2,815
Labor	$ 4,000	$ 4,096	$ 4,194	$ 4,295	$ 4,398	$ 4,504
Operational Costs [2]	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Disposal Costs	$ -	$ -	$ -	$ -	$ -	$ -
Community Factors	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Tonnage [5]	596	600	605	609	614	618
Households	2,700	2,720	2,740	2,760	2,780	2,800
Total Costs	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Total	$ 223,596.00	$ 228,962.30	$ 234,457.40	$ 240,084.38	$ 245,846.40	$ 251,746.72
Cost/Ton	$ 375.16	$ 381.34	$ 387.64	$ 394.07	$ 400.62	$ 407.31
Cost/HH	**$ 82.81**	**$ 84.18**	**$ 85.57**	**$ 86.99**	**$ 88.43**	**$ 89.91**

[1] Assumes $15.00/hr base rate plus a 35% benefits multiplier.
[2] Disposal of recycling is currently free.
[3] Assumes prosecution with current fleet.
[4] Projections based on the Blue Chip CPI of 2.4% per year.
[5] Assumes no growth in recycling participation rate.
[6] Based on average salary of staff as provided by the Borough.

As Table 10 shows, the Borough can currently provide collection of recyclables at a relatively cost-effective rate of $82.81 per household per year, or $6.90 per household per month. This rate is expected to increase to $89.91 per household per month by 2011. The rate of adding recyclables collection to the list of services provided by the current hauler is unknown. The Borough might consider issuing its next RFP with that as an option. However, it should be noted that in the event that a community receives funding for recycling equipment through a PA DEP grant, and then ceases to use that equipment, the jurisdiction is responsible for paying back that sum to the PA DEP.

According to a senior PA DEP official, useful life for equipment is defined to be as long as the equipment can be used. Regional DEP staff work with affected grantees to get the old equipment to someone who can use it, or to have it sold through normal municipal procedures for disposition of equipment. Proceeds for the sale are returned to the Recycling Fund in the same proportion that they were granted. In a typical case, this amounts to about 90 percent of the return. This nuance of reimbursing PA DEP for recycling equipment should also be considered

when examining the possibility of abandoning recycling collection in favor of a contracted hauler RFP bid.

Yard Waste Alternatives

Based on the research performed in neighboring communities regarding yard/leaf waste practices, R. W. Beck has identified the following alternatives for implementation.

1) **Borough Provides Periodic Collection in the Peak (Fall) season**. The Borough would institute a nine-week period during October and November for all collection of yard waste. This scenario would add one additional collection day to the current route schedule, whereby Tuesday's route would be collected on the 1st Monday, and Wednesday's route would be collected on the 2nd Monday, and so on until each route has had three opportunities for collection. One additional vehicle purchase will be necessary to implement this scenario. The labor cost advantages of this scenario over having a continuous collection program (see #2 below) are illustrated in Tables 11 and 12 below. This strategy would maximize the recycling benefits obtained from this collection, as the majority of the volume of this type of waste occurs in the same timeframe every year.

2) **Borough Provides Year-Round Collection**. This scenario is identical to #1 above, only the additional collection day would be implemented throughout the entire year. This scenario would provide a continuous opportunity for residents to set out yard and leaf waste, and would most likely result in a higher total amount of recycled tonnage. However, the costs to the Borough must be weighed against the perceived differential in tonnage collected as compared to #1.

3) **Borough Provides Collection Using a Waiting List System.** As evidenced by one community researched, a waiting list system with once-per-month collection is also an option. However, this option is fraught with uncertainty, as there may either be a very strong or very tepid reaction to having to call for service, and potentially having yard waste set out for more than a week. In addition, there would be an added administrative cost associated with maintaining the waiting list. Finally, respondents could potentially be staggered across the three routes, resulting in relatively inefficient collection routes. This high level of uncertainty coupled with added administrative costs make this option difficult to recommend and challenging for which to estimate costs.

4) **Hauler Provides Collection Through a Contract with the Borough.** The incumbent hauler provides this service in other communities; however they have not been forthcoming with their pricing. The costs shown in this report for Options 1 and 2 should be used as baseline estimates should the Borough consider investigating the actual bid costs from the incumbent hauler, or from other haulers. In addition to the general strengths and weaknesses of contracting, a potential advantage of this program is ease and speed of implementation (i.e. planning the logistics of Options 1 and 2, if implemented, could take significant time as compared to a contractual arrangement, particularly if the Borough plans to take on the additional customer service and billing arrangements).

The following Tables represent the estimated total costs for Options 1 and 2. Note that for Option 1, an average cost for 1 package of 5 30-gallon Kraft bags at a cost of $25 per household per year has been assumed to capture the additional operation and distribution cost for the Borough. Option 2 increases the disbursement of Kraft bags to 3 packages of 5 bags. For the nine- week scenario, the added labor hours are based on only the nine weeks, and it is assumed that this additional time can be filled with existing staff. In addition, vehicular maintenance costs have been decreased in the nine-week scenario, as this limited operation is likely to result in considerably less wear and tear on the collection vehicle. Tonnage estimates are derived from a "pounds per household" average obtained from prior empirical R. W. Beck projects. All other escalation assumptions are identical to the refuse and recycling analyses.

Table 11
Public Yard Waste Collection – Nine-Week Scenario
Summary of Estimated Annual Costs

System Costs [2]	2006	2007	2008	2009	2010	2011
Vehicles [3]	$ -	$ 33,721	$ 33,721	$ 33,721	$ 33,721	$ 33,721
Collection Staff [5]	$ 5,918	$ 6,060	$ 6,206	$ 6,355	$ 6,507	$ 6,664
Admin Staff [1]	$ 1,458	$ 1,493	$ 1,529	$ 1,566	$ 1,603	$ 1,642
Maintenance Costs [2]	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Tires	$ 1,000	$ 1,024	$ 1,049	$ 1,074	$ 1,100	$ 1,126
Fuel	$ 519	$ 532	$ 544	$ 558	$ 571	$ 585
Parts	$ 433	$ 443	$ 454	$ 465	$ 476	$ 487
Labor	$ 692	$ 709	$ 726	$ 743	$ 761	$ 779
Operational Costs	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Disposal Costs [7]	$ -	$ -	$ -	$ -	$ -	$ -
Kraft Bag Costs [6]	$ 67,500	$ 68,000	$ 68,500	$ 69,000	$ 69,500	$ 70,000
Community Factors	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Tonnage [4]	2,000	2,015	2,030	2,044	2,059	2,074
Households	2,700	2,720	2,740	2,760	2,780	2,800
Total Costs	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Total	$ 77,520.63	$ 111,982.38	$ 112,728.65	$ 113,480.82	$ 114,239.05	$ 115,003.48
Cost/Ton	$ 38.76	$ 55.58	$ 55.54	$ 55.51	$ 55.48	$ 55.45
Cost/HH	**$ 28.71**	**$ 41.17**	**$ 41.14**	**$ 41.12**	**$ 41.09**	**$ 41.07**

[1] Assumes $15.00/hr base rate plus a 35% benefits multiplier.
[2] Projections based on the Blue Chip CPI of 2.4% per year. Maintenance costs adjusted downward to reflect limited operations.
[3] Vehicle cost amortized over a 5 year period with a 6% discount rate; analysis assumes year 2007 implementation.
[4] Based on average pounds per household obtained in prior empirical R. W. Beck studies. Actual tonnage collected will likely differ from aggregate estimate.
[5] Based on average salary of staff as provided by the Borough. Assumes hours can be filled with current staff.
[6] Kraft Bag Costs are based on one package of 5 30 gallon capacity bags distributed per household each collection season.
[7] Disposal Costs are currently free.

As Table 11 shows, the estimated costs of the Borough providing yard waste collection during peak season only is estimated to be $77,520 per year, or $28.71 per household per year. If spread out over 12 months, this would be $2.40 per month. Note the increase to $41.17 per household per year ($3.43 per month) in Year 1 of implementation as a result of vehicle financing costs.

Table 12
Public Yard Waste Collection – Year-Round Scenario
Summary of Estimated Costs

System Costs [2]	2006	2007	2008	2009	2010	2011
Vehicles [3]	$ -	$ 33,721	$ 33,721	$ 33,721	$ 33,721	$ 33,721
Collection Staff [4]	$ 34,195	$ 35,016	$ 35,856	$ 36,717	$ 37,598	$ 38,500
Admin Staff [1]	$ 11,398	$ 11,672	$ 11,952	$ 12,239	$ 12,533	$ 12,833
Maintenance Costs [2]	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Tires	$ 1,000	$ 1,024	$ 1,049	$ 1,074	$ 1,100	$ 1,126
Fuel	$ 3,000	$ 3,072	$ 3,146	$ 3,221	$ 3,299	$ 3,378
Parts	$ 2,500	$ 2,560	$ 2,621	$ 2,684	$ 2,749	$ 2,815
Labor	$ 4,000	$ 4,096	$ 4,194	$ 4,295	$ 4,398	$ 4,504
Operational Costs	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Disposal Costs	$ -	$ -	$ -	$ -	$ -	$ -
Kraft Bag Costs [6]	$ 202,500	$ 204,000	$ 205,500	$ 207,000	$ 208,500	$ 210,000
Community Factors	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Tonnage [5]	2,000	2,015	2,030	2,044	2,059	2,074
Households	2,700	2,720	2,740	2,760	2,780	2,800
Total Costs	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Total	$ 258,593.60	$ 295,161.10	$ 298,039.66	$ 300,951.30	$ 303,896.82	$ 306,877.03
Cost/Ton	$ 129.30	$ 146.50	$ 146.84	$ 147.20	$ 147.58	$ 147.96
Cost/HH	**$ 95.78**	**$ 108.52**	**$ 108.77**	**$ 109.04**	**$ 109.32**	**$ 109.60**

[1] Assumes $15.00/hr base rate plus a 35% benefits multiplier.
[2] Projections based on the Blue Chip CPI of 2.4% per year.
[3] Vehicle cost amortized over a 5 year period with a 6% discount rate; analysis assumes year 2007 implementation.
[4] Based on an additional 8 hours worked per week continually.
[5] Based on average pounds per household obtained in prior empirical R. W. Beck studies. Actual tonnage collected will likely differ from aggregate estimate.
[6] Kraft Bag Costs are based on three packages of 5 30 gallon capacity bags distributed annually.

As Table 12 shows, the annual cost of providing year-round collection of yard waste is expected to cost the Borough $258,594, or $95.78 per household per year. On a monthly basis, this would

be $7.98 per household. Note the increase to $108.52 per household per year ($9.04 per month) in Year 1 of implementation as a result of vehicle financing costs.

Based on these results, a year-round collection program is considerably more costly to implement than a peak-season-only program, for relatively fewer tons of waste being diverted. Notice that the anticipated growth of the Borough is expected to place somewhat of a downward pressure on the per-household costs over time for the nine-week scenario, and that the monthly cost to each household, were the Borough to charge a fee for this collection would be under $4 per month, assuming the fee is collected unilaterally regardless of participation.

Ultimately, the costs for the nine- week scenario presented in this report should be compared against the RFP bids the Borough is set to receive for this type of collection prior to making a decision to implement the nine-week scenario. R. W. Beck understands that the Borough has currently issued an RFP for refuse and yard waste collection, so this comparison should be made against all bids on a per-household basis.

Supplemental Research – Incumbent Hauler and Contracting Communities

R. W. Beck additionally contacted the incumbent hauler, as well as several of the current communities who are reported to contract out recycling services with the incumbent hauler. This was done to ensure availability of a leaf and yard waste collection service offering, inquire about the methods and costs of implementation for some additional communities with regard to yard and leaf waste, and to gauge the interest of other local communities in close proximity to the Borough in combining their efforts to jointly contract for collection services. The following summarizes this research.

- The incumbent hauler currently does offer yard waste collection and recyclables collection services. A representative of the hauling company was unwilling to provide detailed cost information, however.
- The city of Carbondale (Lackawanna County), as well as Clarks Summit Borough (Lackawanna County), would be open to discussion with the Borough on collaborating on yard waste collection. The City of Carbondale currently provides free leaf collection service every other week. Similarly, Clarks Summit Borough provides yard waste collection at no additional cost to residents nine months out of the year (e.g., excluding winter). Clarks Summit's system is a call-in process, whereby a resident calls in and is placed on a collection list, and pickup is guaranteed to occur at least once per month. While Clarks Summit Borough indicated that this collection is fairly low priority, they are open to discussion, and the current waste contract expires in two years, leaving them available for a joint effort with the Borough at that time.
- Clarks Green Borough (Lackawanna County), another contacted community, provides yard waste collection to households during the peak volume period each year. Each household is allotted 10 leaf bags in the month of October, with collection occurring in the October – November timeframe. Bundled yard waste is collected every Friday.

Observations and Recommendations

R. W. Beck has studied the data provided by the Borough, the study participants that responded to our inquiries, and other supplemental information gathered independently. In addition, R. W. Beck has performed detailed route modeling and associated cost estimation to ensure that all relevant variables and associated costs are aligned with traits of the Borough. Based on this research, we offer the following observations and recommendations:

1) Based on the anticipated low tolerance for incurring large fixed costs amortized over the upcoming five-year period related to fleet purchases, continuance of refuse collection with the incumbent hauler is more advantageous than self (Borough) collection. The fundamental weighing of factors for the Borough centers on the inability to take advantage of economies of scale (and conversely, underutilization of capital and labor), and additional administrative costs. Based on the research performed and the results of the route model, as well as an analysis of the current fleet makeup data provided by the Borough, the costs of the contracted collection are lower than the estimated costs of self-hauling. Consequently, the Borough should continue the contractual arrangement with the incumbent hauler in lieu of self collection for refuse.

2) Recycling collection as conducted by the Borough is relatively cost effective and should continue. Given that the Borough accomplishes collection already, has the necessary fleet, and can provide the service at a cost-effective level, this service should continue through the Public Works Department.

3) If the Borough implements yard waste collection, it should be implemented on a nine-week staggered basis. Yard waste collection would necessitate a vehicle purchase, but assuming that all households in the Borough are charged for the service, will only result in one more collection day for nine weeks in the year at a cost that is well under $4 per household per month. The results of the costs analyses reported here should be compared to the resulting RFP bids for this service as part of the Borough's recent RFP issuance. Notwithstanding the fact that this scenario is the most cost-effective approach, one season is not enough service for Archbald Borough to be compliant with Act 101. At a minimum, there must be at least one other collection in the spring of the materials that are defined by Act 101 to constitute leaf waste. R. W. Beck recommends that Archbald Borough apply for a Section 902 (recycling implementation) grant, which, if approved, would cover up to 90 percent of the additional costs of equipment. This will help to defer some of the additional cost burden involved in offering the additional level of service.

4) Contracting in concert with a neighboring municipality for *any* service is advantageous based on available data and research. The combination of more than one community produces leverage when creating a contractual agreement between the service provider and the customer. The hauler is also more able to provide volume discounts, allowing all parties to take advantage of economies of scale. Furthermore, the fleet and operations data clearly shows lower marginal cost of service when the customer base is larger. In an effort to facilitate dialogue between the Borough and other communities, R. W. Beck has

done some preliminary inquiries and identified some communities that are potential candidates for joint action (please refer back to the Supplemental Research section).

5) The Borough's overall collection costs for contractual services have been benchmarked to be in line with other communities. However, this does not mean that there should be no negotiation in further contract extensions. Negotiations should place an emphasis on predetermined escalations deemed reasonable by the Borough. Assuming that the data inputs, including the Borough's anticipated growth rate and the general rate of inflation, are fairly representative of current and future conditions, the overall per-household rate for refuse collection for the Borough is well within the range of other benchmarked communities. However, the Borough should make certain that the escalation rates in any newly drafted contract are in line with the forecast for household growth, and that they do not fall outside of the general range as reported for the benchmarked communities in this report. This will help ensure an equitable cost burden for the Borough residents.

6) Some communities offer yard and leaf waste collection at no additional cost to their residents. Consequently, any collection decision made by the Borough should examine not only the cost implications, but also the customer satisfaction implications of charging for the service. No economic decision comes without some collateral impacts. While offering a free service may not be economically feasible for the Borough given its current fleet makeup, an effort should be made to examine the impact of customer satisfaction and recycling participation rates were there to be free service provided to all customers. Note, however, that surrounding jurisdictions may be able to provide yard waste collection services more cost-effectively through a contract than they currently do via self-hauling. It would not be unusual, however, for a community to be unable to discern the costs associated with providing this service.

In summary, R. W. Beck recommends implementation of Scenario 2 with the nine-week collection period, with the caveat that the per-household bid costs solicited in the current RFP should be compared against the analyses contained herein for comparison purposes; the lower of the two options should be considered (i.e. if bids are significantly lower in cost that the total cost estimates for the nine-week scenario, this should be carefully considered before making any implementation decisions).

Future conditions may deviate significantly from those assumed in this report. The intention of this research effort is to provide a due diligence review of the pertinent issues and to recommend a course of action based on current estimated costs. R. W. Beck recommends that the Borough fully consider the potential strengths and weaknesses described within this report, along with considerations for long-term sustainability, particularly with regard to contractual negotiations with the next hauler.

Should you have any questions or concerns regarding the data, research methods, theoretical delineation, or recommendations presented in this report, please do not hesitate to contact us at your convenience.

Sincerely,

R. W. BECK, INC.

Brian Holt
Analyst/Project Manager

Navid Nowakhtar
Economist