March 17, 2010

R·W·BECK
An SAIC Company

Kevin Tobias
Borough Manager
Borough of Wyomissing
22 Reading Boulevard
Wyomissing, PA 19610

Subject: **SWANA Technical Assistance Project**

Dear Mr. Tobias:

This letter report summarizes R. W. Beck's analysis of pay-as-you-throw ("PAYT") programs, and how the Borough of Wyomissing ("Borough" or "Wyomissing") might implement a PAYT program. The Borough of Wyomissing is a relatively small community (approximately 4,226 households with a population of 11,172 at the last Census). The Borough estimates that approximately 3,800 households receive solid waste management services. The Borough has one contracted hauler for municipal garbage collection, J.P. Mascaro & Sons, another for the bi-weekly collection of recyclables, Allied Waste Services, Inc., and another hauler for the collection, transportation and processing of yard waste, Eagle Disposal of Pennsylvania, Inc. The Borough also has a separate recyclables processing contract with Cougle's Recycling, and pays for disposal of MSW separately (at a rate of $66.29 per ton). Residential customers receive weekly collection of garbage, which includes the collection of up to five (5) containers or bags of up to 35-gallons, and one bulk item per week for which the resident has purchased a sticker that costs $15.00 and is purchased through the Borough office. Recyclables are collected every other week, and include the following:

- Plastic containers labeled #1 through #7;
- Mixed paper (including newspapers, etc.);
- Clear, brown and green glass;
- Newspapers, inserts and magazines;
- Shredded paper, mixed paper and junk mail;
- Paper back books;
- Paper bags;
- Corrugated cardboard;
- Paper egg cartons and boxboard;
- Aluminum cans; and
- Steel cans.

The Borough is interested in implementing a PAYT garbage/recycling program in order to provide a financial incentive for customers to reduce the amount of solid waste disposed and

increase recycling efforts, thus reducing the Borough's solid waste disposal costs. At the same time, if the Borough increases recycling tonnage, it will increase its Act 101 Section 904 Performance Grant.

Interestingly, about a quarter of the Borough's population used to be part of Wyomissing Hills (before a merger made Wyomissing Hills part of the Borough of Wyomissing), which had a PAYT program using a flat fee for recycling and a per-bag fee for garbage collection. This merger took place on January 1, 2002.

The report is divided into the following sections, pursuant to the scope of work developed and agreed upon by R. W. Beck and the Borough:

- Executive summary;
- An overview of pay-as-you-throw program options;
- A description of existing PAYT programs;
- Potential benefits and drawbacks of PAYT programs;
- Summary of current Borough program and field observations;
- Summary of PAYT cost benchmarks/cost estimates; and
- Recommendations and conclusions.

This project was performed as part of the Recycling Technical Assistance program sponsored by the Pennsylvania Department of Environmental Protection ("DEP") and the Solid Waste Association of North America ("SWANA").

Executive Summary

The Borough of Wyomissing is interested in reducing the amount of waste disposed (and thus disposal fees paid) per household. The Borough is therefore interested in possibly implementing a PAYT garbage system. After the Borough Manager and its Refuse and Recycling Committee reviewed a memorandum summarizing the different types of PAYT programs (which comprises the PAYT Overview and Benefits and Drawbacks of PAYT Programs sections of this report), the Borough indicated that it would may be interested in implementing the following types of programs:

- Bag or tag/sticker system; or
- Hybrid.

R. W. Beck, in order to estimate reasonable costs associated with such programs, contacted Pennsylvania communities that have implemented these types of programs. Cost ranges for these types of programs, therefore, are also included.

While bag or tag/sticker PAYT programs provide a greater incentive for customers to reduce the amount of waste they dispose, not knowing the amount of waste that will be disposed in the

future after a program is implemented makes it challenging for a community (or a hauler) to set a per-bag (or tag or sticker) program.

However, hybrid programs that allow a base level of service for a base fee but charge customers extra to dispose of trash beyond that level, provide less variability from the revenue standpoint, but also provide less incentive for households to decrease the amount of waste they dispose. This is particularly true when the base level is generous (such as a 95-gallon cart, for example).

When the Borough issues an RFB for solid waste management services (which is expected to be in 2010), it is recommended that the Borough consider requesting bidders submit pricing for implementing a hybrid PAYT program. In addition, it is recommended the Borough consider requesting bidders proposed on an option for all services (as was done in the past) as an alternative to the current system with multiple service providers. Requesting bids for more than one service (bundled services) often allows the service provider to provide services at an overall lower cost, due to economies of scale. Currently, collection is approximately 60 percent of the cost associated with municipal garbage collection (excluding recycling and yard waste). Therefore, a single service provider will likely be able to utilize their trucks, customer services, billing systems, and other services more cost effectively under a bundled system. In addition, bundled services would also have the advantages of allowing the Borough to work with a single contractor thus minimizing internal overhead and administrative costs/burden. If the Borough implements a PAYT system, the Borough should:

- Continue to have a revenue share agreement with the recyclables processor or hauler.
- Implement a hybrid PAYT program with a relatively low level of garbage collection (two bags or 32-gallon trash cans, for example) such that there is adequate incentive to minimize the amount of waste disposed. This will provide the Borough with a more predictable revenue stream, while still providing an incentive for customers to use the program. Customers paying the base rate will be inclined to reduce the amount of waste they dispose versus seek alternative means to manage their waste. This is not to say that a strict PAYT program could not be implemented with success, however.
- Consider providing a PAYT option to customers, as opposed to making the PAYT program mandatory.
- Use the Excel-based model to consider additional scenarios or change specific assumptions.
- Monitor the quantity of waste and recyclables generated to ensure that the per-bag fees are appropriate. These fees may need to be adjusted from time to time.
- Include a weekly collection of recyclables in the RFB, and/or larger recycling containers for customers in order to maximize the amount of material recycled.
- Ensure that the public is fully educated about the new program in advance, and understands the reasoning behind the program.

Pay-As-You-Throw (PAYT) Overview

Pay-as-you-throw (PAYT) is a solid waste management program in which households are charged for solid waste management services based on the volume of waste they produce. Fees charged are sometimes known as variable rate or volume-based fees. Under this type of program, in general, the less waste a household produces, the less the household pays, providing a direct incentive to conserve as with other utilities.

The goals of a typical PAYT system include:

- Raising sufficient revenues to support the program;
- Encouraging municipal solid waste (MSW) reduction through price signals;
- Conveying a better understanding of solid waste management costs to citizens and increase their awareness of the related issues;
- Charging for recycling (but generally less than MSW so as to encourage recycling) and other complementary programs; and
- Keeping the program simple to use and run.

Potential Benefits to PAYT Programs

Increases Recycling and Waste Reduction

Communities generally implement PAYT programs in hope of reducing the quantity of waste disposed. PAYT programs can provide a financial incentive for customers to not only recycle materials that can be collected through curbside and/or drop-off programs, but to also seek out waste reduction and reuse strategies. Therefore, the amount of waste being disposed decreases not only because non-recyclers may now begin recycling, but also because households may recycle more fervently, and are also prone to minimize the amount of waste generated in the first place. In turn, when the amount of disposed solid waste is reduced, the following benefits are realized:

- Reduced solid waste disposal costs;
- Extended landfill life;
- Reduced greenhouse gas emissions (due to decreased methane production and reduced consumption of fossil fuels, as well as reduced GHG emissions due to manufacturing materials from recycled vs. virgin materials); and
- Increased recycling tonnages, which can make recycling programs more cost-effective.

Many communities are also able to provide a higher level of service to their households when they implement a PAYT program due to reduced disposal costs (for example, the addition of bulky waste collection or yard waste collection).

Equitable

Many customers see paying for the amount of waste generated as a more equitable means of paying for services. In other words, households that generate less trash are not "subsidizing" those who generate larger quantities, as is often the case with flat-rate programs. PAYT programs are analogous to paying for utilities based on the amount of electricity or water used by a household each month, or paying for cell phone service based on the minutes used.

Potential Challenges Associated With PAYT Programs

May Be Seen as a Reduction in Service (or Increase in Tax Levels)

Particularly when residents are used to having the cost of solid waste management services paid for through the general property tax, implementing a PAYT program can be seen as a new tax, or as a reduction in the service level provided. It is important that residents understand the amount of money that has traditionally been spent, on a $-per-household basis, on solid waste management services, and are made aware of any cost savings that are expected to be realized.

May Lead to Illegal Disposal of Waste

Many fear that PAYT programs result in illegal disposal of waste. There is anecdotal evidence that this can occur (either by "traditional" means of illegally disposing of waste – in remote roadside areas, or by bringing trash to work or a nearby relative's house for disposal). However, research has indicated that most communities do not see an increase in illegal disposal when they implement PAYT programs. A 1999 Duke University Study, for example, indicated that 48 percent of communities that implemented PAYT programs saw no change in illegal disposal, 19 percent saw an increase, 6 percent experienced a decrease, and 27 percent were unsure of the impact. Monitoring and enforcement activities are critical to ensuring that waste is properly managed. The potential for illegal disposal is greater in communities with significant amounts of open space, and in communities where nearby communities have unlimited collection.

Difficult to Predict Revenues

When communities implement PAYT program, the future program revenue stream is often less predictable. It is important to assume that your waste level will go down – but estimating the amount is more challenging. When communities implement a hybrid program where a base fee covers the cost of certain program elements (such as recycling, education and outreach, and perhaps 12 bags per year), then the uncertainty is mitigated. Similarly, when communities use carts and have households select the cart size they desire, they can know in advance something about households' needs. Of course, households change their cart size from time to time, but the community can limit the number of times households are able to change their cart size. Often communities have to adjust their rates as the PAYT program matures. Letting residents know this in advance can make the adjustment process less contentious.

Increased Administration Efforts

Depending on the type of program implemented, the service provider utilized, and contract terms, as appropriate, implementing a PAYT program can mean increased administrative efforts. Examples include:

- Ordering and distributing bags, tags or stickers;
- Implementing the program;
- Ordering, distributing, and maintaining carts;
- Monitoring and adjusting rates; and
- Conducting enforcement and education activities.

The key to addressing most of the potential barriers is to communicate early and often with stakeholders, including service providers, customers, and staff. Education and outreach efforts are also critical. Monitoring costs and revenues carefully and adjusting as needed is necessary with any system, but especially important when implementing a new PAYT program. Finally, monitoring and enforcement are also key components of program success.

PAYT Approaches

PAYT systems can take many forms and use a variety of approaches. Rate structures and the type and size of containers are often related, and combinations of techniques are often used. A general description, advantages, and disadvantages of general approaches to PAYT systems are provided below.

Bag System – Customers purchase official, specially marked bags at a price that is deemed adequate to cover the cost of service per bag. Customers must use the specially marked bags to set out their waste on collection day. The resident's annual cost is directly proportional to the number of bags purchased and used throughout the year. If a bag system is used for trash, bulky items typically require the purchase of an official tag or sticker that is affixed to the item, or customers are asked to tie one or two bags to the bulky item. If recyclables are collected this way, typically clear or translucent colored bags are used to differentiate them from the waste.

Advantages and disadvantages of a bag system are provided in Table 1.

Table 1
Advantages and Disadvantages of Using Pre-Paid Bags

Advantages	Disadvantages
▪ Customers find bag systems easy to understand. ▪ Offers a stronger waste reduction incentive than subscription systems because fees based on smaller increments of waste ▪ Accounting costs are lower than with subscription systems, since no billing system is needed. ▪ Bag systems have lower distribution, storage, and inventory costs than subscription systems when bags are sold at local retail establishments and municipal offices. ▪ Bag collection tends to be faster and more efficient than non-automated subscription collections. ▪ Bags can be used for a bulk waste system. ▪ Community/hauler does not have to purchase carts for trash.	▪ Greater revenue uncertainly than with subscription system, because the number of bags households purchase can fluctuate significantly. ▪ If bags are sold in municipal offices, extra staff time will be required. ▪ Customers might view a requirement to buy and store bags as an inconvenience. ▪ Bags are more expensive to produce than tags or stickers. ▪ Bags often are incompatible with automated and semi-automated collection equipment. ▪ Animals can tear bags and scatter trash, or bags can tear during lifting. ▪ Unlike containers, bags are not reused, adding to the amount of solid waste entering the waste stream. ▪ Weight of bags due to "stuffing" might be a problem unless weight restrictions are instituted and enforced.

Tag/Sticker – Similar to the bag system, residential customers must purchase tags or stickers at an established price. For the items to be collected, a tag or sticker must be affixed to each trash container, bag, bundle, or other bulky item to be collected.

The benefits and drawbacks of a tag/sticker program are provided in Table 2.

Advantages	Disadvantages
▪ Haulers/municipality can avoid purchasing carts. ▪ Customers often find tag or sticker systems easier to understand than subscription (cart-based) systems. ▪ Offer a stronger waste reduction incentive than subscription systems because fees are based on smaller increments of waste. ▪ Accounting costs are lower than with subscription systems, since no billing system is needed. ▪ Selling tags or stickers at local retail establishments and municipal offices offers lower distribution, storage, and inventory costs than subscription systems. ▪ The cost of producing tags or stickers for sale to customers is lower than for bags. ▪ Can be used for bulky item collection. ▪ Often customers can choose between using bags or trash containers.	▪ Greater revenue uncertainly than with subscription systems, because the number of tags or stickers customers purchase can fluctuate significantly. ▪ Municipality must establish and clearly communicate the weight or volume limits allowable for each sticker or tag. ▪ Tags can be prone to theft. ▪ If tags or stickers are sold in municipal offices, extra staff time will be required. ▪ Customers might view a requirement to buy and store stickers or tags as an inconvenience ▪ Tags and stickers often do not adhere well in rainy, windy or cold weather. ▪ Extra time might be needed at the curb for collectors to enforce size limits. ▪ There may be no incentive for strict enforcement if haulers are paid based on the amount of waste collected. ▪ Tags and stickers are not as noticeable as specially colored or marked bags and may slow down collections.

Wheeled Carts – This approach utilizes standardized two-wheeled trash carts that are lifted mechanically. The carts have hinged lids and are typically sized in the range of 35-96 gallons. Prices for collection services are established based on the size of the cart that is used and the frequency of collection, typically once per week for trash. The use of different colored carts for recyclables collection is also growing. Typically, any out-of-cart set-outs require a pre-paid tag or sticker. Cranberry Township, Butler County, PA. employs such a system (page 12).

The use of wheeled carts requires a degree of automation in the collection vehicles and methods used:

Semi-automated – This approach uses a hydraulic lifting device which is usually attached to the rear of the collection vehicle, typically a rear-loading garbage truck. The collector wheels the cart from the curbside to the rear of the truck and positions it to be lifted mechanically and emptied into the vehicle's hopper. The collector then returns the cart to the curbside. These lifts can also be used on certain side-loading collection vehicles.

Fully-automated – Fully-automated collection involves the use of a specialized collection vehicle designed for operation by only one person. The vehicle is equipped with a mechanical

articulated arm that is used to empty the cart into the collection vehicle. The driver pulls the vehicle to the curb where the customer has placed the cart. Using controls in the cab, the driver moves the vehicle's collection arm to grasp the cart and empty it into the truck, then replace it on the curbside. Collection performed by one-person fully automated trucks can significantly reduce the cost of collection, although it requires a significant investment in new collection vehicles. It is especially suited for less densely populated areas and areas that have adequate room in the public right-of-way for the collection process.

The advantages and disadvantages of a cart-based PAYT service are provided in Table 3.

Table 3
Advantages and Disadvantages of Cart/Container-Based PAYT Service

Advantages	Disadvantages
▪ Revenues are fairly stable and easier to forecast because customers must "claim" a level of service. ▪ Carts are compatible with semi-automated or automated collection equipment. ▪ In a manual collection system, households already own containers of roughly uniform volume, new containers might not be required. ▪ Containers may be labeled with addresses or unique indicators to assist in enforcement. ▪ There is no need to order and sell/distribute bags, tags and stickers.	▪ Cart systems often have higher implementation costs, including the purchase and distribution of containers. ▪ Customers have a limited incentive to reduce waste. Because customers are usually charged on a subscription basis, there is no incentive not to fill containers already purchased. In addition, no savings are possible below the smallest size trash container. ▪ Billing systems need to track customer's selected subscription level and bill accordingly ▪ Containers will need to be stored, inventoried, distributed and serviced. ▪ A method of collecting and charging for waste beyond subscription levels and for bulk waste collections needs to be established. ▪ At the outset, customers may find it difficult or confusing to select a subscription level ▪ There may be disputes with customers regarding the number of containers set out. ▪ Manual collection with containers usually requires greater time and effort on route than collecting waste in bags. ▪ A cash flow problem may exist due to lag time between paying waste contractor and collecting fees for service based on use.

Weight-Based System – With a weight-based system, customers pay a fee per pound of garbage collected. Garbage containers, possibly tagged with electronic identification, are weighed with on-board scales and the customer is billed accordingly. This system is not known to be in use in

the U.S. at this time, and in the past has only been used as a pilot program. Programs that reward recycling based on the weight of recyclables are in effect throughout the country. Advantages and disadvantages to this type of program are provided in Table 4.

Table 4
Advantages and Disadvantages of a Weight-Based System

Advantages	Disadvantages
▪ Measures more precise increments of waste generation than volume-based systems, providing stronger incentives to recycle or reduce waste. ▪ Fair and easily understood. Favorable customer survey reaction.	▪ Weight-based residential systems have existed only in pilot program form in the U.S. ▪ Requires relatively complicated billing system ▪ Special trucks, labeling of containers require extra expense. ▪ Compatibility between on board scales and computer and other operational systems is required

Hybrid System – This is an approach to PAYT that typically blends rate structures. Some communities charge a fixed base rate to cover the costs associated with the overall provision of collection services (getting the collection vehicles onto the routes and supporting the operations and administration of the services), and establish a unit charge (per bag, per trash container,, etc.) that varies according to the volume of material set out for collection.

Many communities take a similar approach, but include recycling and yard waste collection in the base level of service This provides a financial incentive to the customer to reduce waste set-out by increasing recycling, home composting, as well as through source reduction efforts. Since customers are paying for recycling through the PAYT fee, they are therefore more likely to use the service. Not using the recycling service will result in an incremental cost to dispose of more garbage.

The advantages and disadvantages of a hybrid PAYT system are provided in Table 5.

Table 5
Advantages and Disadvantages of a Hybrid System

Advantages	Disadvantages
▪ Offers communities a transition from the traditional financing system to a variable rate option. ▪ Mitigates revenue risk by recovering some costs through traditional financing method. ▪ Allows time for customers and officials to develop system familiarity. ▪ Doesn't "lock-in" a community to a specific type of system. ▪ Can provide for flexibility, e.g., later replaced or modified into a full subscription, bag, or tag system, under a hand dump, semi-automated, or fully automated system. ▪ Allows time for further planning. ▪ Allows time for data collection. ▪ No new billing system may be needed. ▪ Customers may pay for recycling "by default," which can increase participation.	▪ Customer incentives to reduce waste are truncated at the lowest service level. ▪ Full costs of household waste collected and disposed of may not be explicitly reflected to customers. ▪ If recycling charged separately, customers may not understand why they have to pay two fees for garbage collection/disposal services.

PAYT Communities

Experiences of other communities[1] that implemented PAYT include:

- *Portland, OR* – Increased recycling rate from 7 percent to 35 percent one year after implementing PAYT in 1992;
- *Austin, TX* – Increased recycling rate from 9.8 percent to 28.5 percent between 1991 and 2000;
- *Dover, NH* – Reduced waste by 7,100 tons each year from 1991 to 1999, achieved a 50 percent recycling rate, and saved $322,000 annually;
- *Falmouth, ME* – Increased its recycling rate immediately to 21 percent (a 50 percent increase over prior years), trash volumes decreased by 35 percent, and the community save $88,000.
- *Mount Vernon, IA* – Reduced the amount of solid waste collected by 40 percent between 1990 and 1995.

Details regarding PAYT programs that have been implemented in some Pennsylvania are provided below.

[1] Source: U.S. EPA

Cranberry Township (Butler County) PA

Cranberry Township, a community of approximately 28,000 residents in Butler County, PA had subscription-based service, with five different haulers serving households, until 2004. Under the subscription-based service, households 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 household per month. Some haulers included bulky waste collection in that fee, and some did not.

In November of 2004 the Township implemented variable-rate pricing with contractor-provided (automated and/or semi-automated collection). Under the new program, customers were provided weekly collection of trash, recyclables (and yard waste (in season – April through November). A wheeled cart was provided for each of these material streams. Customers could select their recycling and trash cart size (35, 64, or 96-gallon) or they could select a no-cart option for trash (tags are used instead). Household costs ranged from about $11.92 per month to $14.15 per month, depending on the trash option selected. Households could also select a non-cart option for yard waste, and could set their yard waste out in biodegradable bags instead with no change to the cost of service. If households had more trash than would fit in their cart then they were to purchase a tag for $0.65 per bag. Bulky items were collected for a fee -- $4 for a bulky or large item, $10 for major appliances, and $15 for a large volume pickup of up to 12 32-gallon bags.

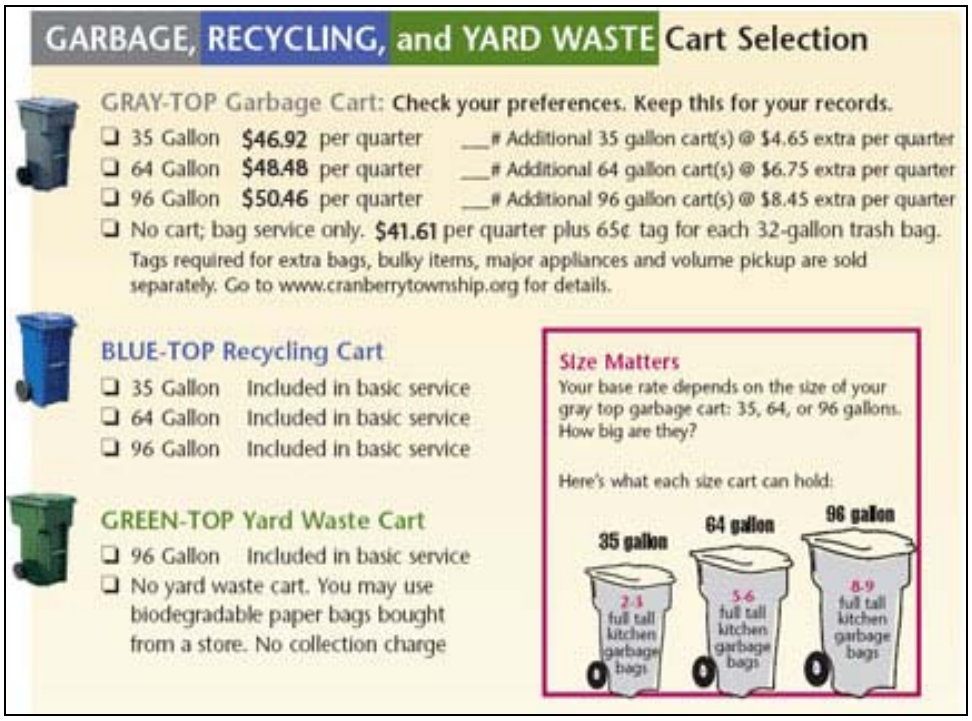
As of November 2009 the Township began receiving service through a contract with Waste Management. The level of service is basically the same as under the original PAYT program, however the season for yard waste collection has been extended through the second full week in December (as opposed to the end of November) in response to customer feedback.

Households can still choose the level of service they desire (based on the size of the wheeled trash cart they select), with varying prices ($15.64 to $16.82 per month) to provide for collection of solid waste, recycling, and yard waste. Bulky waste fees are also the same -- $4 for a bulky or large item, $10 for major appliances, and $15 for a large volume pickup of up to 12 32-gallon bags. Customers can also purchase tags for additional bag set-outs, at a cost of $0.65 each.

The Township bills customers 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 summarizes the current solid waste management options available to residential customers.

Figure 1
Cranberry Township Solid Waste Management Service Options



Out of 8,439 customers, Cranberry Township staff estimate that 6,137 (73 percent) use 96-gallon trash carts, 1,569 (19 percent) use 64-gallon trash carts, and 713 (8 percent) use 35-gallon trash carts. Twenty customers (less than 1 percent) use the pay-per-bag option.

Customer service is handled by both the contractor 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 the contractor. Complaints are handled by the contractor directly, however sometimes customers call the Township directly. The contractor 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 was 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, customers 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) PA

North Hopewell Township in York County, PA is a Township spanning 18.6 miles, with a population of approximately 2,507. Before 2003 the Township had an "open" system where households hired their own trash hauler. In 2002 the Township issued a request for bids for collection services. Penn Waste, Inc. won the bid has been the Township's residential hauler since 2003. Under the first contract all households had to participate in the program. A new contract was issued in 2006. Under the Penn Waste contract, households could "opt out" of the program. Households could also, under the Penn Waste contract, select a "Tag-A-Bag" option, whereby households pay for just the waste they generate.

As of April 1, 2008, the contracted hauler has been York Waste. The service provided is basically the same as it was under Penn Waste, with the exception that households choosing the "Tag-A-Bag" option used to have to purchase a minimum of 20 bags per year ($80.00) and with the new hauler, the minimum amount required is 10 per household per year. Also, under the former program "Tag-a-Bag" customers could set out a bulky item with a bag attached. York Waste requires the customer to call for pricing. Under the "standard level of service" customers receive the following:

- Weekly collection of refuse (up to four bags or containers of 32-gallons each);
- Weekly collection of recyclables; and
- Collection of up to one bulky item per week.

The standard level of services costs $54.75 per quarter, (which is equivalent to $207 per year, or $17.25 per month).

Under the PAYT option, residential customers pay $4.00 per bag of waste, and receive weekly collection of recyclables. Bags are available for purchase at the Township building (or through York Waste, however customers are then charged shipping). As mentioned above, residents must pay extra for bulky items. Rates vary depending on the type of item.

Township staff estimates that approximately 30 households (of about 700 served) use the "Tag-a-Bag" program. Customers are reportedly happy to have a PAYT option, as many small waste generators are on fixed incomes. The Township has not seen a marked increase in recycling due to the PAYT option, however Township staff note that illegal dumping and littering have decreased since the Township implemented contracted collection. Township staff indicates that the Township sells about 400 bags per year.

Mechanicsburg Borough (Cumberland County) PA

All residential customers in Mechanicsburg Borough are served by Penn Waste, Inc. Households can set out up to 128 gallons of trash weekly (up to four 32-gallon trash containers

or bags), one bulk item, and unlimited recycling each week. (The four-container limit is a new provision under the current contract. Previously households could set out unlimited amounts of trash). Yard waste is also collected weekly, from March 3 through October 31rst. If households have additional bagged trash to dispose of, they can purchase specially marked bags at the Borough office for $3.00 each. Households pay $43.32 per quarter (or approximately $14.44 per month) for this service.

Customers can also opt for a per-bag only service, at a cost of $3.00 per bag, with a 16-bag minimum annually (or $48.00 per year). Recycling and yard waste collection are still provided at no additional charge. Customers using the PAYT option must attach a bag to any bulky item set out for collection.

Penn Waste also provides the Borough with two drop-off containers for cardboard, at no additional cost. The drop-off containers are open to all households and businesses who wish to self-haul their cardboard.

Currently, 164 households (out of 3,657 – approximately 4.5 percent) select the PAYT option. A Borough staff member indicates that the Borough has sold approximately 363 additional bags this year to date (approximately three weeks short of a full calendar year). These "additional" bag sales include bags sold to customers that selected the PAYT option who needed more than 16 bags for the year, as well as other households that exceeded their waste limits.

The Borough has seen an increase in recycling based on the monthly reports from Penn Waste.~~,~~ 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 households another option, and has not been problematic to implement.

Summary of Current Borough Program and Field Observations

R. W. Beck observed two (2) of the Borough's residential garbage collection routes and one (1) residential recycling route. Data regarding the customer trends of Wyomissing's existing system were compiled by an R. W. Beck Field Manager by observing actual route operations over the course of three (3) days. A random sampling of routes was developed from route and customer count information provided by the Borough for each of the routes. The Field Manager completed a customized route observation form that recorded key data items such as:

- The number of set outs observed, which was used to compute a set-out rate for each route
- Various set-out types such as uncontained set-outs and multiple containers, which provides insight into the generation tendencies of the Borough households
- The tonnage of each load dumped at the landfill, in order to measure the amount of waste collected per load

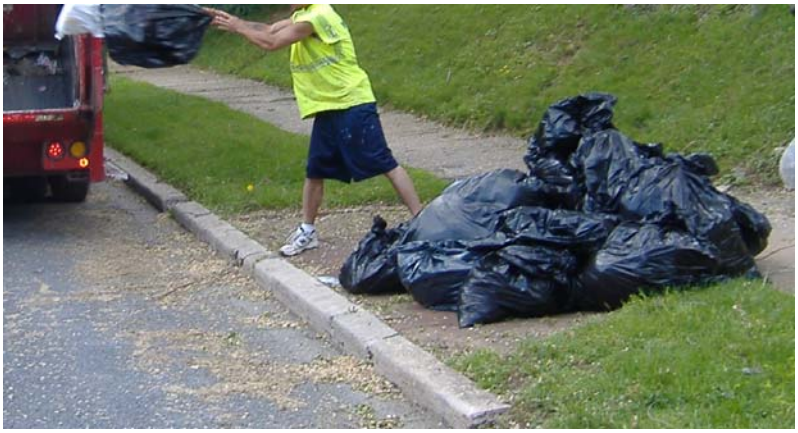
This data has been reviewed by R. W. Beck, and the average metrics for the existing system have been estimated across the route observations. This section provides a brief summary of the field observations.

Residential Garbage Field Observations

Program Overview

The Borough provides residential garbage collection once per week to residential customers of Wyomissing. Under the current system, households may set out up to five (5) thirty-five (35) gallon trash bags or containers and unlimited number of pre-ticketed bulk items on their scheduled collection day. Figures 2 through 5 in this report present photographs of residential garbage set-outs in Wyomissing.

Figure 2
Residential Garbage Set-out



Set-out Practices

While in the field, the Field Manager recorded several metrics for evaluating set-out practices. The relationship between these metrics generally determines the performance of both the current collection system, as well as the impact of available alternative systems. These metrics include the following;

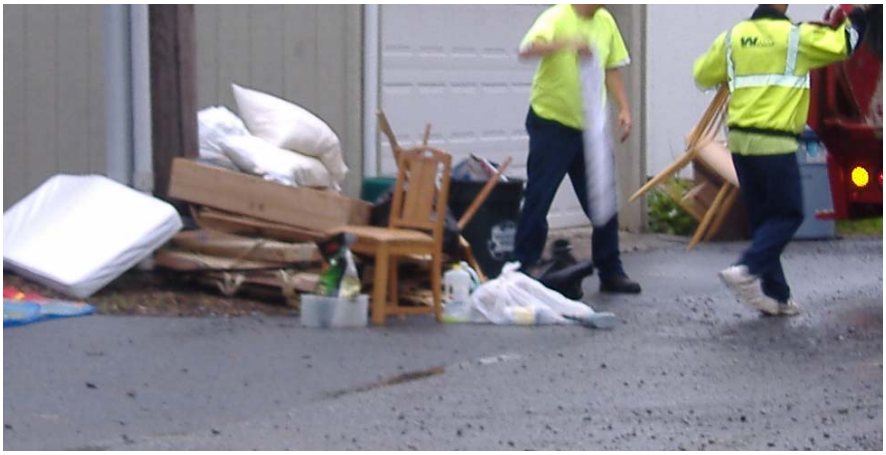
- *Set-out Rate* – The set-out rate refers to the number of customers on a selected route who place a container out for collection, divided by the total customers on that selected route. A typical set-out rate for once a week collection is around 85 percent, the average set-out rate for the two observed routes was 95 percent which is relatively high, but not out of the ordinary.

- *Percent with Multiple Trash Containers* – The percent of set-outs with multiple trash containers is calculated by taking the total number of set-outs with multiple containers and dividing it by the total number of set-outs. On average 50 percent of the set-outs observed had multiple containers. It is important to note that the multiple trash container set-out rate will vary over time due to the amount of waste generated, the collection frequency offered to households, and the number and size of the container permitted for disposal. Figure 3 illustrates an observed stop with multiple containers.

Figure 3
Residential Garbage Set-out - Multiple Containers and Uncontained

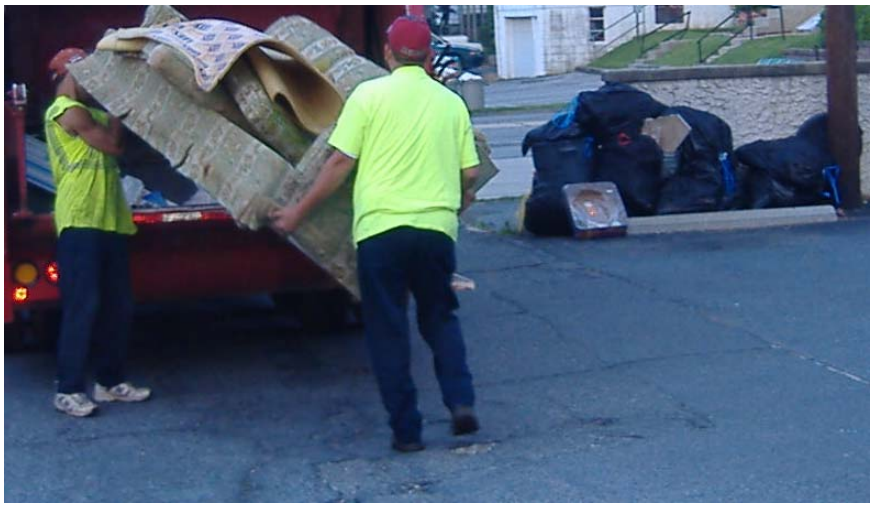
- *Percent with Uncontained Material* – The percentage of uncontained waste is calculated by dividing the number of uncontained set-outs by the total number of set-outs. It is possible that a set-out had both multiple containers set out as well as material set outside of the container. This occurrence would be included in both counts (multiple container and uncontained material). Wyomissing's current uncontained set-out percentage is 27 percent. Figure 4 illustrates an observed stop with uncontained waste.

Figure 4
Residential Garbage Set-out - Uncontained



- *Average Pounds per Set-out* – Average pounds per set-out is calculated by taking the total tonnage per load and dividing it by the number of set-outs collected in that load. The average pounds-per-household value is a key metric in the evaluation of a PAYT system. This metric for Wyomissing was calculated at an average of 59 pounds per set-out. Large set-outs similar to the set-outs illustrated in Figure 5 tend to increase the average pounds per set-out rate.

Figure 5
Residential Garbage Set-out



The information contained in Table 6 summarizes the observations of the set-out observations.

Table 6
Residential Garbage Productivity Summary

	First Field Observation	Second Field Observation	Average
Average set-out rate (%)	95.7	94.7	95.2
Average set-out size per stop (lbs)	62.2	55.3	58.8
Number of set-outs with 1 32-gallon container (%)	50.7	49.5	50.1
Number of set-outs with 2 32-gallon containers (%)	35.3	35.5	35.4
Number of set-outs with 3 or more 32-gallon containers (%)	14.0	15.0	14.5
Number of set-outs with multiple containers (%)	49.3	50.5	49.9
Number of set-outs with uncontained waste (%)	32.2	21.8	27.0

Note that in 2008 the Borough disposed of 5,897 tons of MSW. Assuming 3,800 households received solid waste management services in 2008, this is an average of 1.55 tons of MSW disposed per year per household receiving solid waste management services in the Borough.

During the route observations, R. W. Beck inspected the collection vehicle prior to and upon completion of the route to confirm the vehicle was empty. Based on the route observations conducted by R. W. Beck, the average MSW set-out observed was 58.8 pounds. If this quantity of waste disposed were set out by 95 percent of the 3,800 households receiving solid waste management service over the course of 52 weeks, the Borough would dispose of 5,519 tons of MSW, an average of 1.46 tons of MSW disposed per household. The field observations therefore were slightly lower than the average for 2008. However, during the first six months of 2009 actual waste generated in the Borough was much lower than 2008 tonnages. According to disposed tonnages reported, each household in the first six months of 2009 disposed of .42 tons on average, for an expected annual generation rate of 0.82 tons per household of disposed waste. Therefore, it appears that set-outs were particularly high during the field observations.

It should be noted that, based on observations, on average, 51 percent of the households used one 32-gallon container, 35 percent used two 32-gallon containers, and 14 percent of households set out 3 or more 32-gallon containers. The number of containers per set-out is critical factor in estimating PAYT costs.

Residential Recycling Field Observations

Program Overview

The Borough provides recycling collection on a bi-weekly basis to households of the Borough of Wyomissing. Under the current system, households set out recyclable materials in a rigid reusable recycling container and Kraft paper bags on their scheduled collection day. Figures 6 through 9 below provide photographs of residential recycling set-outs in the Borough.

Figure 6
Residential Recycling Set-out

Figure 7
Residential Recycling Set-out

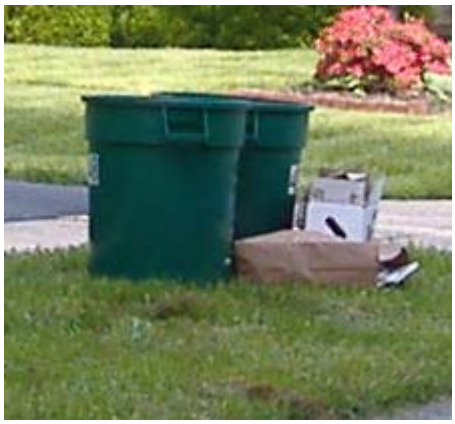


Figure 8
Residential Recycling Set-out

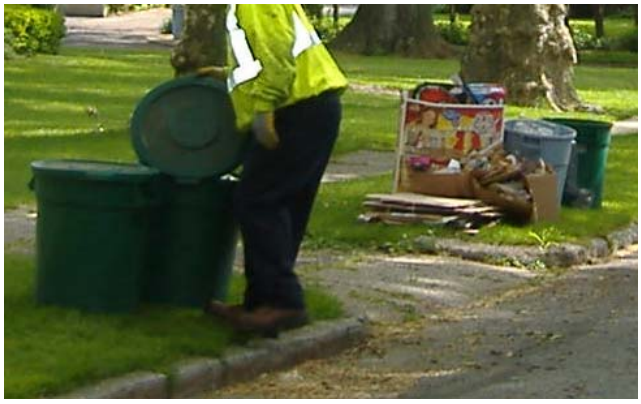
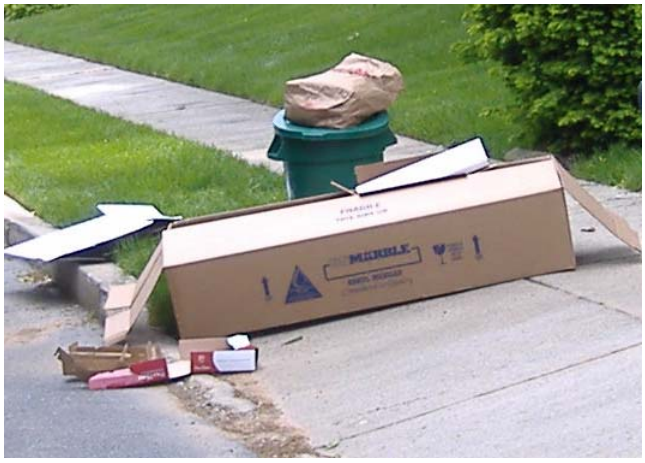


Figure 9
Residential Recycling Set-out



Set-out Practices

The average set-out rate for the observed recycling route was 83 percent and the estimated pounds per set-out was over 26 pounds. For households whom set-out recyclables during the day observations were conducted, the majority of the households set out multiple containers filled with recyclable material. If the Borough chooses to switch to a PAYT system and/or a weekly recyclable collection system, recyclable quantities are likely to increase.

Table 7 provides a summary of residential recycling statistics based on the field observations.

Table 7
Residential Recycling Productivity Summary

Productivity Measure	Average
Average set-out rate (%)	82.8
Average set-out size per stop (lbs)	26.7
Number of set-outs with 1 container (%)	67.5
Number of set-outs with 2 or more containers (%)	32.5

Note: if the average set-outs per stop (26.7 pounds) and 83 percent set-out rate were typical of the households in the Borough, then a household in the Borough on average would recycle 567.2 pounds of recyclables per year. Based on the field observations, the Borough could expect to recycle 1,094.8 tons of recyclables per year. However, during the first six months of the 2009 calendar year the Borough only generated 334.9 tons of recyclables. Assuming the seasonal changes as in 2008, the estimated annual generation for 2009 would be 690.6 tons of recyclables for the calendar year. This indicates that the set-out rate or the average set-out size was relatively high during the observation.

Current Program Costs

R. W. Beck estimated the Borough's 2009 solid waste management costs and tonnage based on historical information provided by the Borough. R. W. Beck also estimated the cost per household, assuming 3,800 households are served in the Borough, and cost per ton. Table 8 provides a summary of expected 2009 costs, under current contract arrangements.

Table 8
Estimated Solid Waste Management Costs for the Borough of Wyomissing

Service	Total Estimated Cost 2009 ($)	Annual Cost per Household ($)	Monthly Cost per Household ($)	2009 Reported Tons	Cost per Ton ($)
Garbage					
Garbage Collection[1]	311,643	82.01	6.83	3,268.4	95.35
Garbage Disposal	216,662	57.02	4.75	3,268.4	66.29
Total Garbage Management Cost	528,306	139.03	11.59	3,268.4	161.64
Recycling					
Recycling Collection/Processing[2]	(7,401.05)	(1.95)	(0.16)	763.68	(9.69)
Yard Waste					
Yard Waste Collection/Processing	53,945	14.20	1.18	468.55	115.13
Totals					
Total Garbage Management Cost	528,306	139.03	11.59	3,268.4	161.64
Total Garbage and Recycling Costs	520,905	137.08	11.42	4,032.1	151.95
Total all SWM Services	574,849	151.28	12.61	4,500.63	267.08

[1] Garbage Collection costs includes bulk waste revenues.
[2] Total Estimated Cost 2009 assumes a $10,000 Recycling Performance Grant from Pennsylvania DEP.

PAYT Benchmark Programs

R. W. Beck identified communities that have the types of PAYT programs that the Borough is considering – prepaid bag, tag and sticker, or hybrid programs. Because the Borough intends to have one or more private contractors provide solid waste management services (collection of recyclables, processing/marketing of recyclables, collection of trash, disposal of trash, and collection/processing of yard waste), it is difficult to know what the actual costs of these services will be until bids are received and/or negotiations are complete. However, it is possible to identify reasonable expectations by examining communities in Pennsylvania that have similar types of programs in place. As discussed earlier, it can be challenging to estimate PAYT programs, particularly in communities where such a program is new, because it is impossible to predict how households' behavior will change due to a new financial incentive to recycle. Further, it is challenging to compare other communities' programs, because there are many variables to consider, including:

- Whether collection of solid waste also includes disposal;
- The extent to which one hauler performs multiple services; (or services are "bundled" – which can provide some economies of scale);
- The size of the community;
- The level of competition for solid waste management services in and around the community;
- The term of the contract;
- Whether customers are used to participating in a recycling program; and
- Whether new equipment/carts are needed.

R. W. Beck focused on Pennsylvania communities in order to mitigate regional differences in economies. Details concerning the selected communities with bag, tag, and sticker PAYT programs are provided in Table 9 and selected communities' with hybrid PAYT programs are provided in Table 10.

It is interesting to note that all of these communities receive solid waste management services from one hauler. The Borough currently receives solid waste management services with one contracted hauler for municipal garbage collection, another for the bi-weekly collection of recyclables, and another hauler for the collection, transportation and processing of yard waste. When one contractor provides multiple services to the community, it is referred to as "bundling." There are several typical advantages and disadvantages of bundling services. For example, communities that have one contracted hauler for all services, often experience the following disadvantages:

- Competition may become limited over time; and.
- Evaluation of proposals becomes more complex.

Typical advantages of bundling services are:

- The community only has to deal with one contractor, which reduces overhead and administrative cost/burden to the community; and
- Pricing can often be lower, as the service provider enjoys economies of scale which reduces costs over multiple haulers providing the same level of service.

Table 9
Sample Pennsylvania PAYT Bag, Tag, and Sticker Program Details

	Elverson Borough (Chester County)	Penn Township (York County)	West Whiteland Township (Chester County)
Program Description	Weekly collection of pre-paid bags of garbage, up to 4 each week per contractual agreement, plus weekly recycling using hauler-provided cart. Service includes four yard waste collections per year plus Christmas tree collection, and one unlimited bulk collection per year. Weekly recyclables collection also included. Cost of disposal and processing of recyclables included in fee paid by each residential customer per bag.	Weekly collection of pre-paid bags (40-gallon, sold at 13 locations throughout the Township) of garbage and commingled recyclables as well as weekly bulk waste collection – one item. There is also a drop-off recycling center for paper materials and other recyclables. Yard waste collection is provided by the municipality in the spring and fall.	Weekly collection of pre-paid bags of garbage, four bulk waste collections per month, and weekly curbside collection of recyclables. Recyclables include glass containers, plastic containers (#1 - #7), aluminum and steel cans, newspapers, corrugated cardboard, and residential mixed paper.
Number of Households	536	5,700	6,748
Service Provider	Eagle Disposal	York Waste	A.J. Blosenski
Number of Bags, Tags or Stickers Sold per Year	15,500 (An average of 28.9 bags per household per year or 2.4 per month).	Approximately 220,000 – 230,000 per year (an average of approximately 39.5 bags per household per year)	175,000 (An average of 25.9 bags per household per year or 2.2 per month)
Cost of Service to Households	$3.00 per bag. On average, this equals $90.00 per year or $7.50 per week per household.	$3.25 per bag. On average this equals	$2.00 per bag. On average, this equals $51.80 per year or $4.40 per week per household.
Cost of Service to Municipality	Elverson Borough pays the hauler $197,281 annually. This includes all services and is approximately $368.06 per household per year ($30.67 per month). In addition, the Borough pays $0.25 per bag to the retailers (15,500 are sold annually for a total of $3,875).	Total cost of all waste and recycling services is $835,000 per year, which is an average of $146.50 per household per year or $12.20 per household per month.	Unknown
Quantity of Waste Generated per Household	Approximately 15,500 bags are sold per year, which is an average of 30 bags per household per year, or 2.4 bags per household per month. 462.34 tons of waste generated in FY 2008. Approximately 1,725 lbs per household.	3,629 tons in 2008 (0.64 tons per household per year)	Approximately 175,000 bags are sold per year, which is an average of 25.9 bags per household per year, or 2.2 bags per month.
Annual Quantity of Recyclables per Household	88.73 tons of recyclables in FY 2008 from single stream recycling program. Approximately 331 lbs per household.	In 2008 1,573 tons in 2008 of recyclables (approximately .28 tons per household per year, which includes drop-off recyclables such as cardboard, magazines, textiles and electronics.	

Table 10
Sample Pennsylvania Hybrid PAYT Program Details

	East Bradford Township (Chester County)	South Middleton Township (Cumberland County)	Elizabethtown Borough (Lancaster County)
Program Description	Households may set out up to 3 32-gallon bags per week for the base fee. Additional bags can be set out for $1.85 each using a pre-paid sticker program. Service also includes weekly seasonal yard waste collection of one bulky item per month, and weekly collection of recyclables, single-stream with hauler-provided 18-gallon bin (or their own larger container). Includes disposal of trash ($55 per ton at Lanchester Landfill) Also includes recyclables processing.	Households may set out a 96-gallon cart, or pay for solid waste services by the bag using a purchased tag system. Services include weekly collection of garbage and single-stream recyclables. Collection of one bulk item per week per household is also included. Processing of recyclables and disposal of trash is included. Yard waste is provided by the municipality under a separate program.	Households may set out one 32-gallon container or one large bag of garbage per week (weight limit of 40 lbs.), and tag additional 32-gallon set-outs with a prepaid tag that costs $2.00. Weekly curbside recycling is provided. Special yard waste collections are also included – two yard waste collections in the spring that include leaves, and four other leaf collections in the fall – unlimited. Includes processing of single-stream recyclables, no revenue share. Includes one free bulky item per week. White goods are a $12.00 tag, and tires are a $2.00 tag, during two collection events per year. Disposal fee is paid separately to Lancaster County
Number of Households	3,150	5,302	4,200 units (includes some commercial)
Service Provider	Allied Waste	Waste Management, Inc.	Penn Waste, Inc. (Three year contract)
Number of Bags/Tags/Stickers Sold per Year	2008 sold 2,820 stickers at $1.85 each. (An average of 1.1 stickers per household per year) Allied pays for the stickers. The municipality receives 20% of sale for administering the sale of the stickers. Customers can buy through Allied directly or at the municipal building.	NA	25,000 per year – go through almost all each year.

Table 10
Sample Pennsylvania Hybrid PAYT Program Details

	East Bradford Township (Chester County)	South Middleton Township (Cumberland County)	Elizabethtown Borough (Lancaster County)
Cost of Service to Households	$21.43 per month ($257.16 annually) per household is base fee, plus $1.85 per additional 32-gallon bag of trash. Wheeled carts are available for from the hauler for a one-time fee of $70. Each cart counts as 3 bags.	Customers are charged $189.72 per year for cart service, which is $15.81 monthly. Customers may, instead, use the tag system at $3.00 per tag, but must purchase a minimum of 18 tags per year ($54.00 per year, or $4.50 per month). (Note: some households claim that there should be fewer mandatory bags per year, however the Board of Supervisors did not wish to change, based on national averages.) Households may also set out one bulk item per week at no additional cost.	Base level is $160 per household per year ($13.33 per month) with an $8 discount if paid in full by January 1. Additional tags are $2.00 each. Households provide their own recycling containers or purchase their own recycling bins for $5.00 each. Service includes one bulk item per week at no additional charge.
Cost of Service to Municipality	Allied bills directly – the municipality does not bear other costs except for the tire recycling program.	18-gallon recycling bins, approximately $5.00 each. Township does not bill customers, hauler bills directly.	46,000 leaf bags per year for yard waste service at a cost of $11,500. Borough paid $1,616 for 25,000 tags. Municipality does billing. Borough pays the hauler $106.38 per unit per year (retains $53.62 per unit per year to cover additional costs such as administration, purchase of bags, etc.)
Quantity of Waste Generated per Household	3,183.28 tons disposed per year (An average of 1.01 tons per household per year).	Every February WM ships tags to customers - 18 for the year – if they run out they can buy additional in smaller increments.	2,858 residential tons disposed in 2008. (An average of 0.68 tons per hh or 1,361 pounds per hh per year. Use almost entire 25,000 tags each year, which amounts to 6 additional bags per household per year, on average
Annual Quantity of Recyclables per Household	Curbside: 1,157.51 tons of curbside recyclables in 2008 (an average of 0.37 tons or 734.9 pounds per year per household). [Plus 37.88 tons cardboard from OCC drop-off; 2.69 tons of scrap tires; 38 appliances and 77.85 tons of yard waste and Christmas trees.]	1,278.60 tons in 2008 (an average of 0.24 tons per household per year, or 482.3 pounds per household per year)	Recycling: 1,121 tons in 2008 (an average of .27 tons per hh or 534 pounds per hh per year.

PAYT Scenarios

Using information obtained in the benchmark research, along with examining the Borough's waste generation and recycling patterns, R. W. Beck developed potential scenarios for PAYT programs.

Bag, Tag or Sticker Program

If the Borough implemented a bag, tag or sticker program with no base level of service, the Borough would have to estimate the number of bags of trash each household, on average, would generate on an annual basis and allocate total program costs over that amount. Assumptions could be made regarding changes in behavior that would occur due to the implementation of the PAYT program (e.g., that recycling would increase by a certain percentage, for example). However, some communities indicate that other behaviors also occur, such as residents taking trash to work or relatives' houses for disposal. This type of activity is more difficult to predict, and leads to inequities, as the paying households basically subsidize the cost of the programs for the non-paying households.

R. W. Beck developed an Excel-based model to estimate the cost associated with the solid waste management programs, currently, and apply them on a per-household basis, making the assumptions that:

- Recycling tonnages would increase by 10 and 20 percent as specified in the scenario;
- The amount of solid waste generated disposed would decrease by the amount that recycling increases (not a conservative assumption, but thought to be realistic because of the decline in waste generation in 2009); and
- As observed in the garbage routes, 50.1 percent of the households would generate just one bag of garbage per week, 34.5 percent of the households would generate two bags per week, and 14.5 percent would generate 3 bags per week,

The last assumption is thought to be a rather conservative assumption, as most households will generate additional bags of waste at specific times during the year, such as the holidays.

If the Borough were to spend a total of $575 thousand per year, and disposed waste generated is as described above on a per-household basis, the Borough would have to charge $2.00 per bag in order to recoup its costs. As mentioned previously, if the Borough issues a RFB with PAYT program it is likely that costs will decrease due cost efficiencies. In addition, it is possible that the Borough could manage the yard waste collection program separately and charge a per-bag fee for yard waste, however because it is such a small fraction of overall solid waste management costs, this is not expected to have a significant impact on per-bag fees.

Hybrid Program

R. W. Beck used the cost model to develop two hybrid scenarios. In Scenario 1, residential customers receive a base level of service of two 32-gallon bags or one cart. A per-bag (or tag or sticker) fee of $2.00 per bag is assumed to be charged for additional bags generated. In Scenario 2, an annual base fee is charged for one 32-gallon bag, and customers are charged a $2.00 per-bag fee for additional waste generated.

Table 11 summarizes the PAYT scenarios developed using the cost model.

Table 11
PAYT Cost Estimate Scenarios

	Pay-per-Bag	Hybrid Scenario 1	Hybrid Scenario 2
Description of Scenario	Customers pay a fee for each bag of garbage disposed. The fees collected cover the costs of all solid waste management programs (recycling, yard waste, and garbage).	Customers pay an annual base fee and receive recycling, yard waste, and up to 2 bags (or 1 64-gallon cart) of garbage collection. Additional bags of garbage are at a per-bag fee.	Customers pay an annual base fee and receive recycling, yard waste, and one bag or small garbage container (35-gallons) of trash collection per week. A per-bag fee is charged for additional bags.
Annual Base Fee per Household ($)	NA	149.65	148.85
Monthly Base Fee per Household ($)	NA	12.47	12.40
Per-Bag Fee ($)	2.00	2.00	2.00
Total Bags Assumed to be Sold per Year	310,391	551	2,448
Assumption Regarding Recycling Quantities	Recycling increases by 20%	Recycling increases by 10%	Recycling increases by 20%
Assumptions Regarding Trash Disposal Quantities	Trash quantities decline by the amount of recycling increased.	Trash quantities decline by the amount of recycling increased.	Trash quantities decline by the amount of recycling increased.

The cost estimate model will be provided to the Borough so that the Borough manager and/or the Refuse and Recycling Committee can use the model with their own assumptions.

When running the model, it was assumed that the total costs of the current program would need to be recouped. It is possible that in the future the Borough may be able to obtain solid waste management services for a lower cost. Typically services provided by a single private hauler are more cost-effective than they would if several different haulers each provided a different service (as is currently the case in the Borough), due to economies of scale. In addition, services provided by a single hauler with clearly defined set-out limits typically are more cost-effective due to routing efficiencies and other cost savings.

Conclusions and Recommendations

It is recommended that the Borough's next RFB for solid waste management services includes a PAYT option. While it is difficult to predict costs and changes in waste generation/waste reduction behaviors, there are many best management practices that the Borough can employ, including:

- The Borough has already adopted a revenue share arrangement with its recycling processor. It is recommended that this practice be continued.
- It is recommended that the Borough implement a hybrid PAYT program with a relatively low level of garbage collection (one or two bags or trash containers, for example) such that there is adequate incentive to minimize the amount of waste disposed. This will provide the Borough with a more predictable revenue stream, while still providing an incentive for customers to use the program (because they are paying the base rate anyway, as opposed to finding alternative means to manage their waste) and reduce the amount of waste they dispose. This is not to say that a strict PAYT program could not be implemented with success, however.
- The Borough can use the Excel-based model to consider additional scenarios.
- The Borough might consider bidding with an adjacent community for services. Often small communities that band together can gain leverage when bidding for services.
- The Borough might consider conducting more in-depth set-out studies to gain a more thorough understanding of the number of households that are likely to set out more than one bag per week.
- The Borough should consider having a PAYT option for households, as is done in Mechanicsburg Borough and North Hopewell Township, to introduce PAYT into the Borough. This allows the community to see how the program operates, and to better understand the benefits of the program, without being "forced" to change, which can be particularly beneficial in communities that may be resistant to change. It should be noted that only a relatively small portion of the population in these communities, however, tend to select the PAYT option.
- Once the PAYT system is implemented, the Borough should carefully monitor the quantity of waste and recyclables generated to ensure that the per-bag fees are appropriate. These fees may need to be adjusted from time to time.
- In order to maximize recycling, the Borough might consider including a weekly collection of recyclables in their RFB, and/or larger recycling containers for residential customers.
- Per the Borough's request, the model was developed assuming that revenue shares and Performance Grants received are inline with 2009 grants and revenue shares received. This may not be the case, and the fees may therefore need to be adjusted accordingly.

- If the Borough implements a PAYT program, it should be preceded by public meetings and education and outreach efforts so that the community is well aware of the program.

R. W. Beck appreciates the opportunity to work with the Borough, and hopes these findings are helpful to the Borough. Please do not hesitate to contact me if you have further questions.

Sincerely,

R. W. BECK, INC.

Veronica Roof
Project Manager