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Recycling Technical Assistance
Project #456
Centre Region COG, Centre County

**Curbside Collection
Contract Review and
Recommendations and
PAYT Options**

February 2009



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Introduction

The Recycling Technical Assistance Program is sponsored in partnership by the Pennsylvania Department of Environmental Protection (DEP) through the Solid Waste Association of North America (SWANA), the Pennsylvania State Association of Township Supervisors (PSATS) and the Department of Community and Economic Development (DCED) Governor's Center for Local Government Services. Qualifying municipalities wishing to enhance their recycling, composting and waste reduction programs are provided with professional support to assist them achieve their goals and objectives.

The Centre Region Council of Governments (COG) requested technical assistance to improve the overall effectiveness of the next residential collection contract and to determine what, if any, Pay As You Throw (PAYT) options could be feasibly incorporated. The nature of the requested assistance was instructional and informational rather than analytical.

As the consultant selected to manage the project, Nestor Resources, Inc. is pleased to submit to the COG our findings and recommendations. This report includes background data, resources and references, as well as explanations and justifications for the consultant's suggestions.

Background

The Centre Region Council of Governments (COG) represents the Borough of State College, and the Townships of Halfmoon, College, Ferguson, Harris, and Patton. The COG consists of numerous agencies that provide service to the member communities. These include Emergency Management, Fire Administration, Parks and Recreation, Planning, Library, and Code Enforcement. Additionally, the Centre COG is responsible for administration of the Regional Refuse Program, which contracts with outside service providers for the curbside collection of waste and recyclables. Only the Townships of College, Ferguson, Harris and Patton participate in this program. The Borough of State College operates its own collection system and the Township of Half Moon chose not to be included.

Two service providers are involved in the Centre Region COG's collection contract. Currently, Veolia Environmental Services is the primary contractor. Veolia supplies labor and equipment to collect waste and subcontracts with the Centre County Solid Waste Authority (CCSWA) for the collection of recyclables. The waste program allows households to place limitless quantities of material at the curb for collection and disposal. It also offers a slight discount to those opting for service with quantity restrictions. Residents have the opportunity to recycle at

curbside every week, on the same day as their scheduled trash pick-up. The material is hand sorted at the curb by the collection crews. Additionally, drop-off sites are available in College, Ferguson and Patton.

CCSWA provides to the COG tonnage reports for materials collected including glass bottles, steel and aluminum cans, plastic bottles, and newspapers, which includes mixed papers. 2,722 tons were reported from the curbside program and 243 tons were reported from the drop-off sites. The reports indicate that the residential program performs above the national averages based on population. Similar results are found in other Pennsylvania college/university communities indicating that demographics have a significant affect on the success of the program.

COG staff meets regularly with the Public Services Committee to review the contract, service issues and performance. The Committee is comprised of member municipalities. The staff is in the process of overhauling the collection contract with the purpose of improving service, decreasing the amount of inevitable price increases and clarifying the contractor's responsibilities.

Project Scope of Work

Task #1: Nestor Resources, Inc. met with the Centre COG and representatives from the Centre County Solid Waste Authority (CCSWA) to establish an awareness of current practices; an understanding of limitations and constraints; and an overall feel for feasible alternatives.

Task #2: Nestor Resources, Inc. reviewed the current collection contract as well as the pending draft bid specifications. The consultant provided commentary on the specifications, their impact on collection costs and enforcement. Comments were provided in a preliminary memo to the COG.

Task #3: Nestor Resources, Inc. reviewed material provided by the COG and CCSWA including; annual reports, performance grant applications and other documentation of disposal and material recovery weights. The consultant compared current recovery/recycling results to those that could be expected, based on national studies, for the types of materials collected in municipalities with similar demographics. The consultant provided projections of potential recovery that could be expected by adding feasible PAYT components to the current unlimited collection system.

Task #4: The consultant met with COG representatives to discuss the findings regarding the current contract, the potential for material recovery and explain the available PAYT options compatible with their system. The discussion focused on ease of administration; performance issues with the contractor; enforcement at the curb; overall costs of implementation; compatibility with an unlimited volume collection system; public acceptance and related issues.

Task # 5: Nestor Resources, Inc. prepared and submitted to the Pennsylvania Department of Environmental Protection (PADEP) for review and comment, a draft project report, which summarizes the consultant's findings and recommendations. Based on the PADEP's input, the consultant finalized the report. Both the COG and the Department will be provided with the report in electronic format. In addition, a hard copy of the document will be provided to the COG.

Summary of Recommendations

The primary objective of this project was to support the COG as it revised its existing collection contract and bid specifications. An important objective was to determine if certain PAYT options might contribute to an increase in recovery of recyclables and encourage household participation. Crucial to the determination was that PAYT options be compatible with the existing system that provided for the collection of an unlimited volume of waste from each home. Lastly, the project was to offer comments regarding whether items specified in the overall curbside collection contract had a negative impact on cost.

Nestor Resources, Inc. provided the COG with commentary on specific areas of the contract that affect service and price. Additionally, the consultant explained the constraints of implementing effective PAYT components in conjunction with an unlimited volume system. The following list highlights some of the areas of the contract that could be improved; suggested corrective actions; and the necessary changes for PAYT options to be reasonably incorporated into program.

- ❑ Perhaps the most basic issue with which the Centre Region COG must contend is the large academic population comprised of a complex mix of racial, ethnic, and social backgrounds. The attitudes and preferences of this sector cannot be ignored. Service expectations, motivational triggers, level of understanding and willingness to pay continue to change along with the population mix. Therefore, the COG's efforts to improve its contract and expand services are of value.
- ❑ Programs that are 6-10 years old result in higher recycling percentages than new ones. However, studies have shown that programs older than 10 years need an additional "shot in the arm" to maintain the highest levels of effectiveness. Therefore, the COG's interest in improving its program is timely.
- ❑ Technological improvements to collection vehicles; routing software; maximization of capital investments and performance initiatives all offer the potential for cost savings. The contract should encourage the contractor to explore routing improvements to reduce the per unit rate.

- ❑ It is common for residential collection contract language to define the residential units that are included in the contract by type or by the number of attached units. The contract should more clearly define which types of households are included and consider requesting rates for dumpster service where curbside collection is prohibitive.
- ❑ Liquidated damages are typically used as a disincentive to undesirable behavior on the part of the contractor. The infraction and the “penalty” should be clearly defined and tied to a specific section of the contract. An escrow account from which penalties would be withdrawn should be established with an upfront deposit by the contractor.
- ❑ Discounts for hardship cases and at the door service for the disabled should be more clearly defined to avoid bidders overestimating the number of homes that must be subsidized by the standard monthly rate.
- ❑ Programs that collect the same basic materials will overtime reach the peak of their recycling rate based on total waste generation. Minor increases in overall tonnage can be realized by the addition of more types of materials, assuming that they are recovered at the same rate as the items in the current program. The recent addition of paperboard to the COG’s program will likely have this affect and provide a boost to the overall recycling rate.
- ❑ Monetary incentives in the form of rebates can provide small incremental increases by encouraging non-participants to start recycling or to ensure that current participants are recycling properly or thoroughly. An indirect form of rebate or reward using a portion of the performance grants or material sales to provide alternative services such as clean-ups, household hazardous waste, yard waste or electronic collections is likely the best option for COG and CCSWA. Centre Region COG should work together with CCSWA to ensure that residents within the jurisdiction of the COG receive and understand the benefits derived from their recycling efforts.
- ❑ When recycling bins fill to at or near capacity, users tend to dispose of the overflow materials. By limiting storage capacity, communities subsequently experience a flat line in curbside tonnage. Centre Region COG’s reported tonnage has minimal fluctuations. The COG should consider a field audit to determine the direct impact of the size of the current bin on recyclables that remain in the waste stream at each home. A gradual transition to larger bins could be made over time, as older bins need to be replaced.
- ❑ When communities attempt to implement two parallel rate structures, one set of consumers ultimately ends up subsidizing the other. This is particularly true when unlimited collection and PAYT programs are offered simultaneously. Therefore, even though there are endless combinations of PAYT rate structures available to communities, fewer choices are compatible with an unlimited volume collection system.

- ❑ Although not initially recognized as such by the COG's Public Service Committee, the low usage alternative is in fact a hybrid form of Pay As You Throw. It offers one of the basic premises of other PAYT programs, which is the availability of lower rates for those who dispose less. Therefore, while concerns about introducing a PAYT program were voiced, in reality, a basis for PAYT already exists in the COG's specifications.
- ❑ Bag sales and lower base rates are not recommended as PAYT options to compliment unlimited collection unless implemented in conjunction with a visible identifier that easily alerts collection crews to the service level commensurate with payment.
- ❑ Universal PAYT programs combined with curbside recycling can have significant impact when introduced into a community previously serviced in an unlimited volume collection system. These programs can add an 8 to 11% increase in recovery. Less impressive results will occur when PAYT is only an option. Centre Region COG's desire to include PAYT components in its unlimited volume collection contract has potential to deliver up to a 2-5% increase in diversion. Results are dependent on the number of homes that opt in to PAYT.
- ❑ The COG's Public Service Committee has determined that eliminating the unlimited volume collection option is not in the best interest of the participating municipalities. To implement low usage or other tiers of service in an equitable fashion, the COG then needs to develop a means to couple service levels with a curbside service indicator.

Centre Region COG Participating Communities

The Townships of College, Ferguson, Harris, and Patton participate in the Centre Region COG's residential curbside collection contract. Combined they represent 12,200 households with a 2007 estimated population of 43,405. According to the Centre County Planning and Community Development Office, the Centre Region exhibits quite different population and housing characteristics from the remainder of Centre County. The presence of the largest concentration of Penn State University's student population significantly affects the demographics in this planning region.

There are a higher percentage of rental and multiple units than seen elsewhere in the area. In spite of the respectable incomes realized by University employees, low wages and unemployment in the student sector mean the Centre Region actually has a high percentage of poverty. One similarity seen in all Centre County planning regions, including Centre Region, is the decrease in number of occupants per unit. These are all contributing factors when considering elements of a municipal solid waste and recycling program.

When incomes are low, monetary incentives, like Pay As You Throw collection, can have a positive impact thru cost saving opportunities attributable to increased recycling diversion. On the other hand, low-income areas also experience greater theft of service when the rate structure is absent sufficient enforcement mechanisms. Avoidance of contract and/or subscription participation can occur when occupants, rather than property owners, have the responsibility for paying directly for collection services. This happens even more frequently in structures with attached units where curbside service is prohibitive. When multi family housing units fall outside of a municipal contract, inadequate service, particularly for recycling, is prevalent.

Perhaps the most basic issue with which the Centre Region COG must contend is the large academic population comprised of a complex mix of racial, ethnic, and social backgrounds. The attitudes and preferences of this sector cannot be ignored. Service expectations, motivational triggers, level of understanding and willingness to pay continue to change along with the population mix. What works with the base population of Centre County could fall short in encouraging this demographic segment to participate and act responsibly. Therefore, the COG's efforts to improve its contract and expand services are of value.

Contract Review and Comments

As part of the Technical Assistance Project, Nestor Resources, Inc. reviewed the Centre Region COG's Bid Specifications for Residential Refuse and Recycling Collection. Based on the consultant's experience with other collection programs, Nestor Resources offered comments for the COG to consider as it updates and revises the existing specifications. The suggestions focused primarily on those issues that typically have impact on costs and/or customer service.

Comments are provided solely for sections that deserve consideration and/or discussion. Included are recommendations and questions posed by the consultant; responses and courses of action proposed by the COG staff; and additional comments and directives resulting from the COG's Public Service Committee.

Section 3 Tipping Fee Adjustments

That the specifications provide for a set formula on how the per unit increases are to be determined is admirable. That no commitment is provided on the price of disposal is somewhat surprising. Most contracts specify precisely why these fees can be increased. Typically, allowable increases are limited to regulatory or legislative fees or taxes, which might be imposed during the term of the contract. This contract provides an open-ended opportunity for CCSWA to increase prices for any reason. Most transfer stations negotiate these fees with disposal facilities

and in turn with the haulers as part of a contractual arrangement and accept the risk during a residential contract.

COG Response: The CCSWA is a 7-member board appointed by the county commissioners, with each member representing a certain geographic area of the county. This board considers both the interest of their residents as well as the transfer station. Between 2004 and 2008, the CCSWA increased their tipping fee once from \$56 to \$66, which resulted in a \$0.84 increase per household. This increase was due to a change in state legislation that proposed adding \$4 to \$6 per ton on the state fees assessed at landfills. A portion of that increase was also due to the annual CPI increase on their landfill tipping fee that is part of our contract with Waste Management. Rather than raise the rates each year by 1.5% or 2%, CCSWA usually raise it by \$2 or \$3, which enables them to keep the rate stable for about 3 years, sometimes longer. No changes are recommended.

Section 6 Exclusive Use of Vehicles

The need to obtain accurate data regarding tonnage collected by constraining the use of vehicles to the COG routes is understood. However, in some cases, preventing the contractor from maximizing productivity on the collection routes could increase costs. Nestor Resources, Inc. has not analyzed the Centre COG's collection routes and therefore cannot determine the true impact of this requirement. A discussion with potential bidders would confirm whether this is an issue.

COG Response: Exceptions are currently made when requested by the hauler to pick up commercial waste with the residential truck. Examples of these exceptions are pre-schools, small businesses in small neighborhoods, churches, etc. These commercial locations get their refuse picked up by the residential trucks, but are charged based on commercial rates. COG has requested feedback from the haulers regarding this item to determine how big of an issue this is.

COG and Veolia could identify the small commercial, institutional and non-profit entities that are located along the residential routes, which meet our criteria (need to define) for residential curbside collection. COG and hauler could then maintain that list throughout the next contract.

Remarks from Public Service Committee (PSC Meeting): Staff is tasked with identifying the small businesses currently being serviced on the residential route.

Section 7 Quantity of Collection

It is unclear how the contractor's employees can determine or identify units, which are low usage. We suspect that homes receive unlimited collection whether or not they pay the full price. In order to provide good customer service, employees will err on the side of caution and simply take all of the waste placed at the curb. This likely is a disincentive to recycling.

COG Response: COG agrees that the contract should contain mechanisms to identify low usage customers.

Remarks from Public Service Committee (PSC Meeting): The Committee agrees that we should identify low usage customers with label/tag/bag.

Section 10 Collection Days

Allowing the contractor to propose improvements to the collection routes is a positive. Technological improvements to collection vehicles; routing software; maximizing capital investments and performance initiatives all offer the potential for cost savings. The only comment here is that improvements should be encouraged to reduce the per unit rate. The current wording almost discourages any cost saving initiatives that a contractor might have.

COG Response: COG will revise this section to encourage the contractor to propose changes to the collection routes to reduce the per unit rate. Frequency of these changes will need to be kept to a minimum and publicizing route changes will need to be spelled out. COG will review other language examples and provide new language for December's meeting

Section 13 Hours When Collection Shall Be Made

Many communities have rethought the time constraints in their contracts. For the safety of schoolchildren, refuse collectors, and commuters, many contracts now allow collection to begin as early as 5:30 a.m. on major thoroughfares and along busy school bus routes. For this same reason, the early start time gets trucks off the streets before school closes.

COG Response: No community feedback has been received that indicates a need for change. COG has requested feedback from the haulers regarding this item to see if they recommend an earlier start time and no changes were requested at this time.

Section 19 Exclusive Right to Successful Bidder

This section could be open to a great deal of interpretation. Residential collection is "unlimited". Therefore, no quantity of material defines whether a residential dwelling unit should be compelled to use dumpster service. It is more common for residential collection contract language to define the residential units that are included in the contract by type or by the number of attached units. (i.e. single family detached or multi family dwellings of 4 units or less).

Another alternative used by many municipalities is to simply include all residential units regardless of whether they are single family detached or multi family units with any number of units. The specifications then require that the bidders offer dumpster prices in the bid for those units requiring that level of service. Specific

prices could be offered for different sizes/cyds of containers. It prevents price gouging and abuse of the system by proprietors.

COG Response: COG prefers the second method of including all residential units and providing dumpster prices in the bid. Multi-dwelling units are probably one of the biggest areas of complaints and areas for improvements. By pulling them into the contract, it will (1) require more work for COG to prepare for this, (2) will increase the total number of “residences” which will be given to an exclusive hauler, (3) should decrease costs for the dumpster service to those location in the contract and (4) should help us improve recycling at the multi-dwelling units.

Remarks from Public Service Committee (PSC Meeting): Recommendation to put in the contract that “multi dwelling” means 4 units or less and they must use this service. Structures with 5 or more attached units will have the choice. The larger apartment building / condominium complexes fall into commercial and that is a whole other project in itself.

Section 20 Business Office

Is there a reason that the contractor must have a local office? A toll free number staffed adequately would seem sufficient.

COG Response: COG believes a local office should remain for strong customer service. It is in our best interest to have someone local who is familiar with the COG region. Quality of service was the most important service aspect, with 38% of our residents selecting it during the 2008 survey. No action is necessary.

Section 21 On-Site Operations Manager

The requirement for an on-site manager seems like an expensive item. In lieu of an on-site manager, many contracts call for a route or field supervisor who checks in with the municipal administrator of the contract at the completion of the daily routes or at some other specified time. The changes proposed by the COG in that regard are a positive.

It is unclear if the operations manager has any responsibility for any subcontractors.

COG Response: Experience under the current contract has indicated that things handled out of remote locations such as Brockway or Altoona do not give us the necessary focus that we feel is needed. COG feels this expense is worth the improvement in service (administration of service) that we would receive. COG added to section 21 that the on-site manager will be responsible for working and meeting regularly with subcontractors.

Section 26 Recycling

It is not clear if the contractor may pass on to the customer the \$5 deposit fee for recycling bins obtained from CCSWA.

Although the COG reserves the right to add or delete recyclable materials for collection with a 90-day notice, there is no provision for any price adjustments that might be warranted for those decisions. Particularly, in the instance of adding a material, it might alter route productivity and equipment needs.

COG Response: The contractor may pass on to the customer the \$5 (now \$7) deposit fee for recycling bins that need to be replaced. There is no charge for new residents. COG will adjust the language to include this information and the provision for price adjustments for adding a material for December's meeting

Section 27 Yard Waste

The COG should review the proposed Garden Residue definition to ensure that it is consistent with the DEP's definition of leaf waste. Many of the items labeled as garden residue and thus considered allowable for collection as garbage in the COG's contract may conflict with the Department's interpretation; specifically, these include flower and vegetable stalks, and annual cuttings and clippings.

COG Response: Grass, leaves, and other wastes from lawns and backyard gardens account for an estimated 18% of the annual municipal waste stream. (PADEP statistic). Discussion is needed as to the township's capabilities to collect and/or provide a drop off location for all yard waste, including grass, leaves, brush, and garden residues.

Remarks from Public Service Committee (PSC Meeting): Staff is tasked with working with Public Works to determine how to continue to improve in recycling all yard waste. DEP leaf waste guidelines will be incorporated into contract.

Section 29 Low Usage Rate

Comments and suggestions for this section are provided separately in the analysis of possible PAYT or volume based rate alternatives included in the next section.

Section 30 Hardship Cases

This section does not specify what liability the contractor assumes for these households. Does the COG subsidize the payment or is the service to be provided free of charge? Bidders need to know the potential amount of free service they may be required to provide. The cost is passed along to others in the per unit price.

COG Response: COG does maintain this program and subsidizes the payment. This section will be changed to reflect this information.

Section 31 At the Door Collection

Many contracts provide for this optional service. However, typically, there is a price differential. Those who simply opt for this service pay a premium, while those who have no other choice receive a significant discount or no extra charge. Proof of total disability or immobility is often required to qualify for the discount.

COG Response: COG agrees that a price differential should exist between those electing at the door collection and those who need it. COG will draft language to reflect this information.

Section 34 Liquidated Damages

Liquidated damages are typically used as a disincentive to undesirable behavior on the part of the contractor. The infraction and the “penalty” should be clearly defined and tied to a specific section of the contract. Liquidated damages are easier to impose when the administrator does the billing and can therefore withhold revenue. When the contractor does the billing, many municipalities require the contractor, and sometimes the sub, to deposit monies in an escrow account controlled by the administrator. Deposits range from \$5000 to \$25,000 depending on the size of the contract and service area. During the term of the contract, the contractor is notified of any infractions incurred and damages are withdrawn from the fund. When the fund reaches a certain level, the contractor is required to deposit additional monies. At the end of the contract, the money in the account, including any interest realized, is returned to the contractor. Requiring rebates to customers is not recommended because it could create a situation that encourages false complaints and disputes.

Under such a system, it is fair to provide the contractor with mechanisms to demonstrate a defensible position against any allegations that could result in a “penalty.” The process should require proactive documentation of customer non-compliance, and other issues beyond the control of the contractor.

COG Response: COG has added a section 34.3, Escrow Account, to be reviewed by the Committee. COG staff plans to identify reports that should be necessary to help handle issues proactively. These reports then will be proposed to be added to the contract.

Section 42 Billing and Payment

It is unclear if the contractor is permitted to bill in advance for services. This may be assumed, but clarifying it prevents future arguments.

The specifications mention the responsibility of the contractor to pay the CCSWA for participation in its recycling program, yet there is no mention of payment for disposal. Rather than mention the CCSWA, it might be better to simply state that the contractor is responsible for all costs associated with the collection, processing and disposal of materials assigned under this contract.

The specifications in Section 43 provide for subcontractors to perform any of the duties of the contractor. Therefore, it would seem that arrangements for payments between the contractor and any subs (including, but not limited to CCSWA) are between those parties and not the COG’s concern.

COG Response: COG will define within this section that the contractor is permitted to bill in advance for services. New language will be drafted to state that the contractor is responsible for all costs associated with the collection, processing and disposition of materials assigned under this contract.

Incorporating PAYT Components

During the development of the new residential collection specifications, the COG’s Public Service Committee agreed to explore Pay As You Throw components in lieu of unlimited volume service. Each member was provided with a copy of the *Pay as You Throw Primer for Pennsylvania Communities* developed by Nestor Resources, Inc. The consultant also conducted an informational slide presentation to the Committee that illustrated the principles of PAYT; the constraints of enforcing PAYT with an unlimited volume collection program; and PAYT options that would be best suited to their current system. A condensed version of that presentation follows along with a synopsis of the supporting narrative.



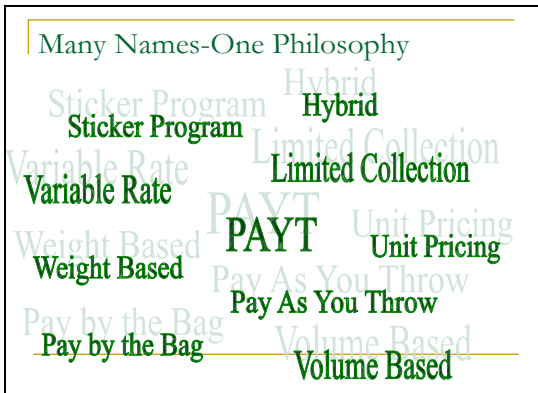
Unlimited Collection

Like many communities in Pennsylvania, the Centre Region COG’s residential contract provides what is commonly referred to as “unlimited collection”. In these systems, each home pays the same regardless of how much - or how little - they throw away and with no consideration or discount for what they recycle. Municipal officials tend to favor unlimited collection because it requires minimal administrative oversight, has a simplified billing system, and has few enforcement

issues. Additionally, unlimited collection is perceived as a "bargain" because residents incur no extra charges. Unfortunately, with unlimited collection, those who dispose less actually subsidize the wasteful habits of others. Therefore, most households, particularly senior citizens, singles, and avid recyclers are paying for more service than they really need or are using.

Low Usage

The Centre Region COG has traditionally included a "low usage" option in its residential collection contract. Rates for this alternative are required to be 25% less than the unlimited volume service. Residents selecting this alternative level of service are limited to one can of garbage per week.



Although not initially recognized as such by the COG’s Public Service Committee, the low usage alternative is in fact a hybrid form of Pay As You Throw. It offers one of the basic premises of other PAYT programs, which is the availability of lower rates for those who dispose less. Therefore, while concerns about introducing a PAYT program were voiced, in reality, a basis for PAYT already exists in the COG’s specifications.

Foundation of PAYT Systems

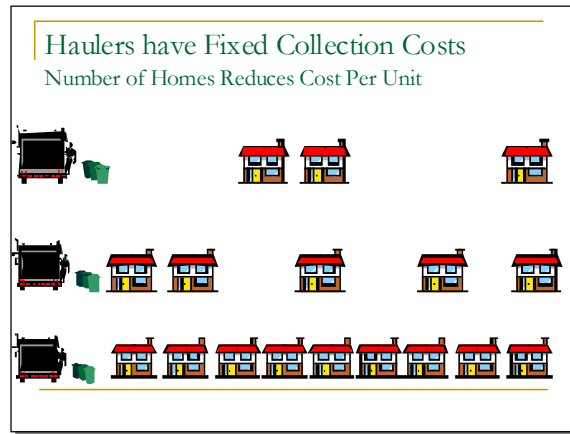
- Integrated Components
- Rate Structure uses Lowest Common Unit
- Dependent on Universal Participation

PAYT Fundamentals

The lowest common unit of measure is typically used to establish rates for PAYT programs. In some communities, it is a bag. In others, it could be a container. In yet others it could be weight. In a variable rate PAYT system fees are based first on the capacity or volume of the container used, and then on the number of containers of each size. Regardless of how rates are established, success is realized when the PAYT program has alternative outlets for materials such as collection of yard waste and recyclables.

The least risk PAYT pricing systems are likely the hybrids. These systems focus on ensuring that all fixed costs in a program have a guaranteed source of revenue. In pure bag or tag systems the number of bags placed at the curb, and thus revenue, are unpredictable. Therefore, bag rates must be inflated to lower the risk of poor cash flow. Hybrids on the other hand assess residents a flat fee that covers not only the costs associated with administration and collection, but also a limited volume of containers or bags that can be placed at the curb for disposal.

The low usage option currently offered in the COG contract falls into the hybrid category of limited base service. In the COG contract, low usage customers are limited to one container equivalent to a 32 gallon garbage can. Although not available in the COG contract, residents in other programs must purchase specially imprinted bags or tags to dispose of additional material.



Probably the most common PAYT hybrid charges multiple fees for solid waste management services. In this dual tiered system, the base fee covers the general administration and operation of the program. This fixed rate fee typically accounts for all of the costs associated with collection, recycling, composting, billing, education, and capital recovery. All customers pay the same base fee, which can be assessed through the tax base, water and sewage bills, or a separate garbage bill.


The second variable fee is set to cover the costs of disposal and therefore differs from customer to customer based on the waste placed at the curb. The disposal component incorporates one or more of the unit based pricing mechanisms discussed previously – bags, containers or weight.

Hybrids are often criticized because there is a limit to how much savings each household can experience, regardless of how much they recycle. Nevertheless, because of the constant cash flow, they often result in the lowest overall net cost for integrated waste management systems.

Addressing Hauler Concerns for PAYT Options

- Simple, Direct, and Understandable Billing
- Visible Service Indicator
- Enforcement/Complaints
- Relatively Scam Proof
- Fair and Equitable to Consumer & Vendor
- Inventory Control & Accessibility
- Capital Outlay





The Contractor's Role

It is important to consider how the components of a PAYT program affect those who must administer the program and deliver the service. Collection crews need easily identifiable markers, tags or volume limits to enable them to enforce service levels. The rate structure must ensure that people are charged for the service they actually use and prohibit customers from cheating. Accessibility as well as maintaining sufficient inventory of tags and bags as well as carts or containers require good planning. Start up costs when carts or containers are involved can also be of concern.

Combining Unlimited Service with a PAYT Option

Universal participation guarantees the easiest to implement PAYT program. That each home has some quantifiable means of attaching a dollar value to the waste disposed is crucial to ensure that payment is commensurate with the level of service provided. When communities attempt to implement two parallel rate structures one set of consumers ultimately ends up subsidizing the other. This is particularly true when unlimited collection and PAYT programs are offered simultaneously. Therefore, even though there are endless combinations of PAYT rate structures available to communities, fewer choices are compatible with an unlimited volume collection system.

With an unlimited volume collection system there is no finite measure that distinguishes cost from one home to another. Thus, it is easier for theft of service


to occur in mixed rate structures. The COG’s low usage option is a perfect example. The consensus is that enforcement of the low usage option by the collection crew is difficult or in part ignored. This is hardly an incentive to recycle as it allows households to pay less while continuing to dispose at the “unlimited” level of service. The root of the problem is a visible means of identifying which homes are restricted to low usage along the route.

During audits of communities that have offered pay by the bag service as an alternative to a monthly fee for unlimited collection, it is not uncommon to find 30% of homes neither pay the unlimited collection fee nor ever buy bags. Likewise, they do not pay for the recycling and or yard waste services, and potentially for the unlimited disposal service that they “share” with a neighbor. Thus, contractors are forced to recoup costs by inflating the monthly fee to those who are paying for the unlimited service.

To prevent this many communities require those opting out of the monthly fee scenario to purchase a minimum number of bags at the beginning of each year. While this alleviates some of the problem, the price for the bags often reflects the cost of disposal, but does not cover the cost of the recycling and yard waste service, which negates the fair and equitable premise of PAYT. This typically results in higher monthly fees to the other consumers. Additionally, it still does not provide a mechanism for the collection crew to easily identify at the curb those households, which have opted for this limited service.

Rejected PAYT Options
for use with an Unlimited Collection System

<p>Bags/Tags for Low Use</p> <ul style="list-style-type: none"> ■ Allows people to cheat the system ■ Encourages shared services 	<p>Lower Base Rate</p> <ul style="list-style-type: none"> ■ Allows people to cheat the system ■ Difficult to enforce at the curb
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Therefore, bag sales and lower base rates are not recommended as PAYT options to compliment unlimited collection unless implemented in conjunction with other mechanisms. Specifically, a visible identifier is recommended that easily alerts collection crews to the service level commensurate with payment.

Curbside Visibility

As indicated previously, universal participation in a PAYT program offers the easiest form of enforcement, whether through a base fee that limits the number of containers or through a straightforward pay by the bag system. In these instances, the lowest common unit is applied and multiplied to determine user rates. Therefore, collection crews readily know they are accepting the amount of waste for which the user has paid.


The COG’s Public Service Committee has determined that eliminating the unlimited volume collection option is not in the best interest of the participating municipalities. To implement low usage or other tiers of service in an equitable fashion, the COG then needs to develop a means to couple service levels with a curbside service indicator. Following are a few examples to increase visibility of service levels for collection crews when unlimited service remains part of the rate structure in conjunction with PAYT components.

Curbside License

Some communities provide reflective stickers or metal tags that can be affixed to mailboxes or to the garbage container. The sticker/tag is provided upon annual or quarterly payment. Communities typically change the color of the identifier with each payment cycle. This method is sometimes used for a per can basis. In that scenario, users purchase a tag or “license” for each container (not bag) placed at the curb. In other instances, the stickers or tags are simply indicative of whether the home subscribes to unlimited or restricted service. The restricted service can be tailored to the community. It can be similar to the COG’s low usage option, which limits service to one container, or whatever number determined by the contract. It could also indicate that the user is a pay by the bag customer, in which case the user would receive the curbside reflective “license” and then would be required to purchase bags/tags per unit disposed.

**Variable Rate Options
to Compliment Unlimited Collection**

<p>Mail Box or Container License</p> <ul style="list-style-type: none"> ■ Customers provided with metal tag or adhesive sticker that identifies service level 	<p>Dual Color Cart System</p> <ul style="list-style-type: none"> ■ Color of Cart or Lid identifies service level <ul style="list-style-type: none"> ■ Unlimited Red ■ Limited Use Blue
<p>Base Fee with Cart & Bag/Tag System</p> <ul style="list-style-type: none"> ■ All customers pay a base fee ■ Unlimited customers pay slightly more but get a cart for identity ■ Low use pay less but must buy tags/bags for disposal 	



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Carts or Containers

The use of wheeled carts has become popular with collection service providers. In non-contracted or subscription service areas, many companies supply these carts to their customers for the sole purpose of identifying subscribing homes to the collection crew. The same principle can be applied to distinguish unlimited from limited service consumers. Although this is a more capital intensive method, consumer acceptance tends to run higher than with other methods.

In a structure with somewhat of a reverse logic, unlimited customers are normally provided with the cart rather than those opting for a more restricted service. Because unlimited service allows the customer to fill the cart and have overflow material collected, one might question this reasoning. However, to provide only restricted service users with the cart allows them to cheat the system by simply neglecting to place the cart at the curb when they have extra waste. This same concept can be used with traditional garbage containers without wheels that are provided by the municipality or contractor.

Another application for wheeled carts or traditional containers as a visible indicator is to supply all users in the system with a color-coded receptacle. Two or more colors could be used to signify the service level. To control inventory and reduce costs, the lids could be different colors while maintaining a similar color for each cart or container.

Redefining Unlimited

Although provision of unlimited volume collection is perceived to be essential, many communities discover that waste generation tends to have some regularity from home to home. Random roadside audits can provide a glimpse into the volume of material placed for collection and disposal. This information can be used to establish a program that, although not “unlimited”, still provides for ample quantities of waste collection and disposal for the average home. By setting base user fees that include collection of a designated number of containers, municipalities can accomplish two things. The limit can provide a minor incentive to recycle depending on the number of containers allowable. Collection crews can easily see when homes attempt to exceed the limit and can reject the excess waste. Alternatively, consumers could purchase tags to alert crews to remove the excess material. Unlike the combination of unlimited and PAYT options, in this system a baseline service is provided to all consumers. Therefore, this type of structure is more easily managed on route sheets and routing software that allow drivers to indicate overages.

Performance and Recovery

Nestor Resources reviewed the Centre Region COG’s residential recycling program. Reports provided by the CCSWA for curbside and drop-off collection materials for 2007 were included in the analysis. The reported

Table 1 Centre Region COG Residential Recycling as Reported by Centre County Solid Waste Authority

2007 Curbside Collection Quantities in Tons													
	January	February	March	April	May	June	July	August	September	October	November	December	Total Tons
Curbside													
ONP	141.17	114.68	124.79	125.4	146.1	128.04	125.1	137.69	129.84	148.91	149.18	146.98	1617.83
Glass	66.53	48.5	52.92	50.19	58.05	56.11	60.94	58.2	56.78	60.3	63.54	58.1	690.16
Plastic	15.88	13.99	14.34	13.7	15.58	15.69	15.15	15.49	15.59	16.21	15.81	14.67	182.1
BiMetal	21.62	17.85	18.43	18.25	20.13	20.16	17.79	19.78	18.46	19.99	20.74	18.63	231.83
TOTALS	245.2	195.02	210.48	207.54	239.86	220	218.98	231.16	220.67	245.41	249.27	238.38	2721.92
2007 Drop-off Collection Quantities in Tons:													
College Township													
ONP						5.15	4.5	4.605	5.725	5.185	4.535	5.4825	35.1825
Glass						3.585	2.7	3.775	2.41	3.605	3.4625	4.215	23.7525
Plastic						.0435	.508	.4875	.32	.3275	.3725	.365	2.815
BiMetal						.43	.34	.3325	.24	.26	.24	.3325	2.175
ONP - 2 Compartment						4.1675	2.655	3.52	3.03	3.93	3.045	3.6	23.9475
TOTALS						13.376	10.703	12.72	11.725	13.3075	11.655	13.995	87.8725
Ferguson Township													
ONP						4.23	4.27	4.045	3.5325	4.425	3.6075	3.905	28.015
Glass						2.84	3.215	2.69	2.91	3.075	3.14	2.575	20.445
Plastic						.255	.333	.255	.2475	.2675	.2555	.205	1.8175
BiMetal						.2175	.255	.165	.21	.275	.225	.18125	1.53
						7.5425	8.073	7.155	6.9	8.0425	7.228	6.86625	51.8075
Patton Township													
ONP						.2775	.173	.18	.3925	.285	.2175	.2525	1.7775
Glass						.04	.055	.035	.34	.12	.095	.16	.845
Plastic						.025	.02	.015	.04	.025	.03	.03	0.185
BiMetal						.015	.005	.01	.01	.01	.01	.01	0.07
TOTALS						0.3575	0.253	0.24	0.7825	0.44	0.3525	0.4525	2.8775
												Total Drop-off Tonnage:	
												ONP	88.9225
												Glass	45.0425
												Plastic	4.8175
												BiMetal	3.775
													142.5575
												Total Overall Tonnage:	2864.4775

figures were compared to national data to determine if the participating COG municipalities performed at the same degree as other similar population centers. CCSWA does not isolate the curbside recovery from each COG member municipality. Neither does it directly distinguish between the Centre Region COG’s contracted municipalities, College, Ferguson, Harris and Patton Townships, from those with subscription service. Therefore, in order to determine the recovery of materials from College, Ferguson, Harris and Patton Townships, the consultant had to sort through daily reports for 2007 to find those loads associated with the COG’s contractor. Additionally, because the focus of the project was the performance of residential collection, loads from commercial sources were eliminated.

Recovery of clear, green and brown glass jars and bottles, newspaper, bimetal cans and plastics bottles were included in the CCSWA 2007 reports for loads from College, Ferguson, Harris and Patton Townships. Additionally, drop-off collection of these materials was also reported for College, Ferguson and Patton Townships for the last 7 months of 2007. An overall total of nearly 2865 tons were reported. Table 1 shows the breakdown by commodity on a monthly basis for curbside and drop-off collections. Drop-off results are also shown on a site-by-site basis. It should be noted that CCSWA does not weigh the individual commodities but rather uses a formula to distribute the overall weights of trailer loads. Therefore, the data presented is based on CCSWA’s estimates.

Local Performance vs. National Trends

Table 2 below presents an analysis of the Centre Region COG contracted residential recycling collection quantities as compared to national figures based on the U.S. Environmental Protection Agency. *Municipal Solid Waste in the United States: 2006 Facts and Figures* prepared by the Franklin Associates. The Franklin Study is a periodic review of the national recycling activities that is conducted for and issued by the USEPA. Data for 2006 is the most recent currently available. The first column in the table lists categories of materials in municipal solid waste (MSW) that are included in the curbside program. The next column entitled "Expected Residential Recovery" presents the expected quantity of the material to be recovered in the townships analyzed if it were recycled at the same rate as it is nationwide. The comparison is based on population.

Table 2 College, Ferguson, Harris and Patton Townships Recovery Performance

Material	Expected Residential Recovery	Reported Combined Total Residential Recovery	Reported Curbside Recovery	Reported Drop-off Recovery Annualized	Percent of Expected Recovery
	Tons Per Year				
Glass Containers	295	767	690	77	260%
Bi Metal	195	238	232	6	122%
Plastic #1 and #2	143	190	182	8	133%
Newspaper	1340	1770	1618	152	132%

The column entitled "Reported Total Combined Residential Recovery" presents the reported recovery of the various materials as reported for the curbside and drop-off programs. The next two columns presents the reported recovery from each program with the drop-off program figures extrapolated to an entire year based on the 7 months of data reported. The final column presents the total results as a percentage of the expected recovery rate based on the national norm.

As shown, the quantity of material collected exceeds the national average rate for each material. To clarify, the chart shows that the Centre Region COG recovers 1.22 times the amount of Bi-Metal cans than communities with similar populations. It does not mean that the COG has a 122% recycling rate for Bi-Metal. Although the COG communities exceed the national average when only population is considered, compared to the results from other Pennsylvania municipalities that host colleges and universities, the results for bimetal, plastic and newspaper are not particularly unusual. However, the results for glass containers are notable when compared to residential collection in other similar locations. Such anomalies are often indicators that materials are filtering into the system from sources other than the base residential population. Sometimes it results from co-collecting small commercial sources on the residential route. This does occur in the Centre Region COG contracted area. Weekend transient population could be a likely source of additional tonnage, although it is not evidenced in the other materials.

A Boost for the Recycling Rate

As shown in Table 1 a consistent flow of recovery is reported from the curbside collection program in 2007. Variations are slight. Expected spikes in seasonal recovery are not apparent. The minor differences could be attributed to the fluctuations in the number of weeks in each month. A review of previous year's data shows similar results.

There are factors that could affect the constant in material recovery. According to the *Nationwide Diversion Study* conducted for the Reach Foundation programs that have operated 6-10 years result in higher recycling percentages Programs seem to take some time to "ramp up." However, the evidence seems to indicate that programs older than 10 years may need an additional "shot in the arm" to maintain the highest levels of effectiveness. Mature recycling programs tend to eventually peak. Increases in the recovery of eligible materials are negligible. Even the best programs have less than 100% participation. Those that do participate often do not recycle all eligible materials or do not recycle all of the time. For many, motivation wanes over time. The recycling message and its delivery need to be refreshed occasionally to remain effective. Limited storage capacity can also play an important role.

Outreach and Education

Centre County has a long-standing history of providing stellar recycling services. It was at the forefront of developing comprehensive programs for both residents and commercial establishments. The residential program still uses the same basic format and principles, which contributed to its success. Therein lays both a positive and a challenge.

The Centre Region COG experiences a transition of residents from outside the area on an ongoing basis. Many of these individuals come from more urban/suburban areas where recycling practices differ. They have been exposed to single stream recycling, which requires minimal preparation and no separation of bottles, cans, or paper. Additionally, they may have participated in programs that collect a wider variety of materials.

It is more difficult to motivate these individuals to recycle “correctly”, if at all, than it was to reach those at the inception of the Centre Region program. Convenience plays an important role in their overall complicated lifestyles. The benefits need to outweigh the perceived hassle. If CCSWA and the Centre Region COG want to show net increases in recovery, they might want to revisit the outreach materials currently provided in the curbside program. Communications should be on target with today’s consumers. Rebranding could attract new participants and bring back “old timers” who have fallen off. It is a tactic often used in retail sales with positive returns. Therefore, while the elements of the program will remain the same, the COG’s packaging might need redesigned. Promoting the benefits of PAYT is a perfect launch pad for this initiative.

Diverse Materials

As evidenced in the Franklin Study, there is a predictable level of recovery for each commodity. Therefore, programs that collect the same basic materials will overtime reach the peak of their recycling rate based on total waste generation. Minor increases in overall tonnage can be realized by the addition of more types of materials, assuming that they are recovered at the same rate as the items in the current program. The recent addition of paperboard to the COG’s program will likely have this affect and provide a boost to the overall recycling rate.

Monetary Incentives

Small incremental increases can be realized by encouraging non-participants to start recycling or to ensure that current participants are recycling properly or thoroughly. Monetary incentives in various forms have been proven effective in renewing interest. These can be in the form of savings, penalties, rebates or rewards.

Universal PAYT programs combined with curbside recycling can have significant impact on recovery when introduced into a community previously serviced in an

unlimited volume collection system. These programs can add an 8 to 11% increase in recovery according to the Reach Foundation. Less impressive results will occur when PAYT is an option. Nevertheless, it can provide renewed interest in a mature program when consumers associate the savings of disposing less with recycling more. Centre Region COG's desire to include PAYT components in its unlimited volume collection contract will likely deliver lesser results than if the program had universal participation. However, a 4-5% increase in diversion is possible.

Convenience plays an important role in whether or not an individual opts to recycle or not. Technology offers recyclers in many communities the opportunity of zero sorting and ease in delivery to the curb. There has been a trend over the past decade for municipalities to transition from multi sort programs to single stream collection. However, automated collection, wheeled carts and single stream processing all come with an initially high price tag. Research commissioned by the London based Department of Environment, Food and Rural Affairs (DEFRA) revealed that rebates and rewards were an effective means to increase participation and recovery when changes in infrastructure were cost prohibitive. DEFRA's research showed that reward programs can increase recovery by 1-2%.

Awards can be delivered randomly by periodically spot-checking trash receptacles and recycling bins and rewarding participants that recycle correctly. Some communities offer gift cards for merchandise or for dining and entertainment. Winners are publicized to increase interest in the program. Rewards should be affordable and the frequency of awards determined by the community's budget. Local merchants often donate to the program for publicity and goodwill. In other programs, rewards are based on the weight of recyclables per home. These weight based programs require on-board scales and sophisticated software systems. Thus, they tend to add as much as \$2 per month per home to the cost of waste collection.

Rebate programs are another successful means to renew interest in recycling. Municipalities often return all or a portion of their performance grants or material sales back to the participants by proportionately discounting the monthly fee for waste and recycling. Others actually issue an annual check to each household.

Another form of rebate or reward, although not as direct, is to use a portion of the performance grants or material sales to provide alternative services such as clean-ups, household hazardous waste, yard waste or electronic collections. This is likely the best option for COG and CCSWA and one currently in practice. Of course, to be effective participants must be made aware that these free services are dependent on the level of recycling in the community. Centre Region COG should work together with CCSWA to ensure that residents within the jurisdiction of the COG receive and understand the benefits derived from their recycling efforts.

Capacity

Field observations conducted by Nestor Resources during similar projects have shown that when recycling bins fill to at or near capacity, users tend to dispose of the overflow materials. By limiting storage capacity, communities could subsequently experience a flat line in curbside tonnage. Centre Region COG provides a 14-gallon recycling bin to residents. Replacement bins can be obtained for a fee of \$7. Although extra bins are provided at no additional cost, it is not advertised. More and more communities are switching to 20-30 gallon bins to accommodate a greater volume of material and thus an increase in recovery. The COG should consider a field audit to determine the direct impact of the size of the current bin on recyclables that remain in the waste stream at each home. A gradual transition to larger bins could be made over time as older bins need to be replaced.

Summary

The Technical Assistance Project confirmed that the current recovery of materials in the Centre Region COG's residential recycling program is on par for what is expected in a college/university town. However, as COG anticipated, there are indications that with subtle changes, greater recovery could be attained. Additionally, the project revealed some contractual specifications that could have a negative impact on recovery as well as cost. Nestor Resources, Inc. provided commentary on the COG's contract and performance. The consultant offered recommendations to minimize future contract price increases. Nestor Resources, Inc. identified the PAYT components most likely to be compatible and implementable with an unlimited volume collection system. Lastly, the consultant provided a variety of other mechanisms that individually offer only small incremental increases, but when combined could have a more significant effect. By integrating the sum of the recommendations resulting from the Technical Assistance Project, the Centre Region COG should experience a positive return on future municipal waste management activities.



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