

September 17, 1999

Mr. Sid Goldstein
Public Works Coordinator/Planner
City of Erie
626 State Street, Room 507C
Erie, PA 16501

Subject: Evaluating the Impact of Implementing a Pay-As-You-Throw Program

Dear Sid:

This letter is to provide the City of Erie with the results of an analysis of the impact implementing a Pay-As-You-Throw program (PAYT) would have on the City's waste/recycling budget, cost to citizens, and municipal waste and recycling generation rates.

The City of Erie currently offers unlimited weekly collection of waste, blue bag recycling with commingled containers collected every other week and newspaper, magazines, cardboard and office paper collected during alternate weeks, and weekly yard waste collection from April through October. Residents pay \$100 per year for this service. The City has asked that R.W. Beck identify potential savings, impacts on the City's waste/recycling budget, and projections for increases in the recycling rate that would result from implementing a PAYT program, and recommended pricing to cover the costs of a PAYT program.

EVALUATING THE IMPACT OF IMPLEMENTING A PAY-AS-YOU-THROW PROGRAM

This report considers the following:

- The City of Erie's Bureau of Refuse and Recycling budget indicates that the revenues generated in the existing waste/recycling program are sufficient to cover expenses incurred in operating the program.
- In its 1998 annual report, the City reported a total recycling rate (residential and commercial) of 36 percent. The recycling rate for residential materials only is 40 percent (19,328.47 tons recycled, 28,855 tons disposed).
- The City currently pays \$31.74 per ton for disposal at Lakeview Landfill, and \$9.95 per ton for processing of recyclables at World Resources. The waste disposal contract is to be rebid in September 1999, so the tipping fee for future years is unknown. The \$9.95 recyclables processing fee will remain the same through 2000
- Residents currently pay \$100 per household annually for municipal waste, recycling and yard waste collection and spring clean-up.

ANALYSIS OF CURRENT REFUSE AND RECYCLING COLLECTION COSTS

The current refuse and recyclables collection program in Erie was examined to determine the average cost per household to collect residential refuse and recyclables. Assuming 38,000 households and total expenses of \$4,006,664 in 1998, the average cost per household was \$105.44. If it is assumed that all program costs are accounted for in the budget, the \$100 fee per household comes close to covering the estimated cost per household.

City customers should, however, know and understand the true costs of operating a program of this type. Ideally, the fees paid by residents should cover the entire operating cost, because other revenues such as interest are variable.

While the budget is fairly complete, some expenses that might be attributed to the refuse and recycling program are not included. If the City were to estimate the true cost to operate the refuse and recycling program, all costs, including indirect/overhead should be factored into the total program cost. Two expense categories that appear to be missing are:

- Building expenses—It is assumed that the Bureau of Refuse and Recycling does not currently have a lease or pay for the space it occupies. However, there is a cost for the use of the space, and this should be included for the purpose of estimating true program cost.
- Composting—The City's composting site is operated by the Bureau of Parks at a budgeted cost of \$145,300 in 1999 which includes three machine operators (\$87,000), benefits (\$34,800), fuel (\$7,000), parts (\$15,000) and utilities (\$1,500). The Bureau of Parks has assumed these costs because the final product is used in 55 City parks and three golf courses.

The budget does include costs for City administrative functions, a cost often overlooked in municipal refuse/recycling budgets.

COMPARISON WITH OTHER MUNICIPAL COLLECTION PROGRAM COSTS

A survey of communities in eastern Pennsylvania has found that the per household fees for refuse and recycling range from \$90 to \$270 per year. Typically, the annual cost per household for contracted collection services ranged from \$90 to \$150. The cost for households in subscription systems (those who subscribe for collection services directly with a hauler of their choice) ranges from \$150 to \$270 per year.

The estimated actual cost calculated for Erie is clearly in the range of what is reported by other Pennsylvania municipalities. It is, however, at the low end of fee scale when compared to other cities that operate a collection system. For example, in a recent study of costs incurred by the City of Scranton, R.W. Beck found that the cost per household to operate a collection program is around \$200 per household annually. Scranton only bills its residents \$120 per household per year, so the City is subsidizing this service at the rate of around \$80 per household annually. The rate of subsidy is actually higher, however, because

Scranton City staff reported that a significant number of residential units are delinquent in paying the fee, resulting in lower revenues.

PAY-AS-YOU-THROW (PAYT)

Also known as unit-based or variable rate pricing, customers in a Pay-As-You-Throw (PAYT) system pay for municipal waste management services per unit of waste collected rather than through a fixed fee. PAYT takes into account variations in waste generation rates by charging residents or households based on the amount of refuse they place at the curb, thereby offering residents an incentive to reduce the amount of waste they generate and dispose of. Well over 100 municipalities in Pennsylvania have implemented some form of a PAYT program. In fact, the City of Wilkes-Barre has operated a PAYT program for a number of years and reports a significant reduction in the cost of waste management services. A representative from Wilkes-Barre reported the reduction to be approximately 50 percent of the cost prior to implementing the program.

POTENTIAL BENEFITS OF PAYT

Municipalities that have implemented PAYT programs have reported a number of benefits, including:

- Waste reduction
- Reduced waste disposal costs (as suggested above by the City of Wilkes-Barre representative)
- Increased waste prevention
- Increased participation in recycling and composting programs
- A more equitable waste management fee structure
- Increased understanding of environmental issues in general

PAYT programs encourage residents to generate less refuse by charging them based on the amount of waste placed out for disposal. Setting costs according to generation encourages residents to become more conscious of disposal habits and to look for opportunities to generate less waste or divert a greater portion of the waste stream through alternative management practices such as recycling and composting. The key is that residents become more conscientious, and thereby more understanding of environmental issues and the impact of their behavior on the environment. PAYT also provides a mechanism that ties the rate paid per household to the level of service, similar to other utilities. Households that generate smaller amounts of refuse pay a lower rate than those generating larger amounts.

POTENTIAL BARRIERS/ISSUES ASSOCIATED WITH PAYT

While there are clearly benefits associated with PAYT programs, there are also potential barriers/issues that must be overcome or addressed to successfully implement this system. These potential barriers/issues include:

- Illegal dumping
- Ensuring full recovery of expenses
- Controlling/covering administrative costs
- Perception of increased cost to residents
- Multi-family housing
- Building public consensus

While communities throughout Pennsylvania have experienced some or all of the barriers/issues identified above, most have been able to take appropriate measures to overcome them. For example, the City of Wilkes-Barre experienced illegal disposal of household refuse in commercial dumpsters. Many businesses placed locks on their dumpsters to combat this problem. Stopping other illegal dumping may require stricter enforcement of existing ordinances and greater penalties for violations. Cost issues can be resolved with careful planning, a clear understanding of total service cost and demonstrating to the public that the program is likely to reduce the cost of service for many households. Including public input early in the process can help to build public consensus and understanding of the real benefits to the residents.

CHALLENGES TO BALANCING THE BUDGET

In every program there are fixed costs that exist regardless of the amount of waste that is disposed. These include municipal salaries, administrative costs, and collection costs. Municipalities have personnel who manage the program—some full time, some as part of a range of duties, so their entire salary and benefits or portion of the salary and benefits attributable to these duties should be assigned to the program. Collection costs are fixed because regardless of the amount of material collected, the collection vehicles must cover the route or routes in the program. Doing this requires some set number of personnel and their associated costs, as well as vehicle costs that include, among other things, maintenance, fuel and insurance.

Variable costs include waste disposal and processing of recyclables, which are largely based on the tonnage of materials disposed and/or processed.

All the costs associated with the program must be factored into the rate system. For instance, the costs associated with recycling and composting collection and processing must be factored into the PAYT rate unless a separate fee is charged for these services. Because they supplement the refuse program it is advisable to keep the fees in the rates charged for the overall program.

The goal for any program is to ensure that revenues are sufficient to cover program-related expenditures. The best way to do this is to ensure that a fixed amount of revenue is generated that covers the fixed costs. Because all or part of

the revenue required to operate the system is raised through a fee attached to a unit that varies with the level of usage, many municipalities have split the costs between a fixed rate and variable rate system. Fewer have assigned all the costs associated with the system to a strict variable rate fee.

Setting appropriate fees can generally be accomplished using historical data, assuming cost and revenue data contained in past budgets is complete and accurate.

MAINTAINING PAYT AND BALANCING THE BUDGET

It can be difficult to balance revenues with expenditures in a classic PAYT program because revenues are solely dependent on the sale of bags or on container size and/or number. If there is a significant decline in sales or container setout for any reason with no corresponding decline in disposal, there is a good probability that the program's costs will outweigh its revenues. This occurred in the PAYT program operated by Elizabethtown Borough in Lancaster County. Raising the cost of bags could only compound this problem--and did in the case of Elizabethtown. This is the reason that a majority of municipalities in Pennsylvania with PAYT programs have opted to implement "hybrid" systems that include a flat fee and variable rate (pre-paid bags).

There are two basic hybrid options used throughout the Commonwealth:

- Residents pay a standard base rate per household that covers fixed collection costs—i.e., administrative and personnel costs and the cost for a collection vehicle to service a given area—and purchase bags or stickers, or use specific containers at a set rate per container. The cost to residents still varies by the amount of waste they dispose, but because the fixed costs are spread equally among households, differences in cost per household are less than that of a classic PAYT system such as that used by Elizabethtown.
- Residents pay a base rate per household that includes a fixed number of bags, stickers or containers, then purchase additional bags or stickers, or use specific containers at a set rate per container. Depending on the number of containers allowed, many residents may be able to manage all their wastes without purchasing additional bags or stickers. Limiting the number of containers allowed during a given collection provides some incentive for residents to recycle, compost, or reduce waste generation as a means of avoiding additional cost for collection and disposal.

There are two additional variations on PAYT that other municipalities have employed. These include:

- Offering more than one container size option.
- Offering price reductions to low and fixed income residents.

Regardless of the PAYT scenario used, the City would need to implement controls that help to ensure proper disposal of wastes generated in the City. Improper disposal is less likely under most hybrid scenarios. If residents are required to pay a fee, even if it is only a partial fee to cover fixed costs and purchase of bags is still required, they are more likely to use the service. However, good enforcement is still necessary to ensure compliance.

IMPLEMENTING A PAYT PROGRAM

When developing a program that will result in a significant change for users it is important to have a solid plan of action. The City of Erie currently offers what is essentially an unlimited service to its residents that includes weekly refuse

collection, weekly recyclables collection (alternating commingled containers and paper), weekly yard waste collection during high generation periods, and extended spring cleanup collection at a cost of \$100 per year, or around \$8.33 per month. Suggestions of changes to this system could be met with strong public opposition, with residents feeling they are getting less service at a greater cost. Therefore, if the City decides to implement a PAYT program it will be imperative to involve the public in the process that ultimately structures the new system.

PLANNING THE PROGRAM

It is always important to give careful consideration to potential new programs before implementing a change. An important part of this process is involving the public to solicit their input on structuring a program. Implementation of any changes will be smoother if there is public consensus in favor of the changes. Make sure the public knows and understands what is happening, how the program will work, and what the benefits of change are for them. Use the media wisely in disseminating information as the process is taking form.

The first action should be the formation of a committee to oversee the planning and implementation of a program change. The committee's roles would include:

- Setting goals
- Defining the system
- Developing a public information strategy
- Overseeing implementation

Also, as discussed above, there are a number of ways to price a variable rate system. These include four specific options shown in Table 1.

TABLE 1
PRICING OPTIONS

System	Rate
Proportional (linear)	Flat rate per container
Variable container	Different rates for different size containers
Two-tiered	Flat fee (usually charged on a monthly basis) and flat rate per container
Multi-tiered	Flat fee (usually charged on a monthly basis) and different rates for different size containers

Proportional Rate System

This is the simplest and purest form of PAYT and involves the household paying a flat price for each container of waste they place out for collection. This is the system used by Elizabethtown Borough as described above.

Variable Container Rate

Under this system, a different rate is charged for different size containers. Like the proportional rate, the entire cost of the service is made up through the revenue generated on the container prices. While this system and the proportional rate system create strong incentives for residents to reduce waste, they both require that communities carefully set their rates to ensure revenue stability.

Two-Tiered Rate System

In the two-tiered rate system households are assessed both a fixed fee and a per container fee. The fixed fee ensures that revenue is generated for the fixed costs while the per container fee is used to cover variable costs. Some communities use this two-tiered approach as a transition to the purer forms of PAYT described above.

Multi-Tiered Rate System

In this hybrid of all the systems described above, households pay a fixed fee plus variable fees for different size containers. This is the system used by the City of Wilkes-Barre, where tax dollars are used to pay for fixed costs and two sizes of bags are available for purchase in local retail outlets. Residents that generate smaller amounts of waste have the opportunity to pay less by purchasing smaller bags and setting materials out on a weekly basis.

SELECTING THE PREFERRED SYSTEM

Regardless of whether or not the City of Erie decides to implement a PAYT program, collection of refuse will not functionally change. The amount of refuse collected from each household may decrease, but refuse trucks will still need to drive past each residence on a weekly basis. The most important consideration is how best to structure the fees to ensure sufficient revenues to fund the operation.

It is here where a citizens committee will need to consider the goals of the change and evaluate the costs and benefits of the different options. Ultimately, the City would want a program that will be generally acceptable to the public at large.

To help with this evaluation, this report provides some preliminary cost estimates for different PAYT programs. Regardless of the form of pricing, the City needs to generate at least the approximately \$4,000,000 that it costs to operate the program now, which includes refuse, recycling and yard waste collection and spring cleanup. Table 2 presents the estimated fees for each rate structure scenario.

All scenarios illustrated in Table 2 are designed to generate the full amount of revenue—between \$4.0-\$4.1 million—required to operate the collection services based on current annual costs. Some adjustment would be required to accommodate the additional cost if the Bureau of Refuse and Recycling were to become responsible for the costs to operate the City's composting site.

In the first two scenarios the total program cost is paid through the fees charged for the bags. The assumption in the proportional example is that each household

(approximately 38,000 residential units) will use two 30-gallon bags per week, though what is more likely is that some households will use less than two bags per week, and some will use more. These variations are why a PAYT program is difficult to administer. Two bags per household per week, however, is a reasonable average to use for these projections.

TABLE 2
ESTIMATED FEES FOR DIFFERENT RATE STRUCTURES

Rate Structure	Assumptions	Fees
Proportional (linear)	2 30-gallon bags per household per week	\$1.05 per bag (\$109.20/HH/year)
Variable Containers	25 percent of households—15-gallon bag per week	\$1.05 per bag (\$54.60/HH/year)
	75 percent of households—2 30-gallon bags per week	\$1.20 per bag (\$124.80/HH/year)
Two-Tiered System	\$85 per household per year flat fee	\$3.23 million generated through flat fee
	2 30-gallon bags per household per week	\$.22 per bag Approx. \$108/HH/year
Multi-Tiered System	\$85 per household per year flat fee	\$3.23 million generated through flat fee
	25 percent of households—15-gallon bag per week	\$.16 per bag Approx. \$93.50/HH/year
	75 percent of households—2 30-gallon bags per week	\$.27 per bag Approx. \$113/HH/year

NOTE: The costs per bag presented above are estimated based on the City's program costs. If the bags are sold through local retailers, they will probably include a set markup per bag to cover their handling costs.

In the two-tiered and multi-tiered scenarios, the fixed fee of \$85 per household per year will be used to generate the approximately \$3.2 million required to cover all program costs other than disposal. The variable costs—tipping fees for waste disposal--are paid through the revenues generated by the per bag fees.

The cost per bag in each case has been rounded up to the next cent to accommodate the cost to purchase and distribute the bags through local retail outlets. Of course, the fees presented in this table are estimates, and the City would need to refine them once a preferred system and container or containers are selected.

If the City has had problems with delinquent payments or non-payments in the past, it may be preferable to include all costs in the price of the bags to ensure collecting the full costs associated with the services. However, because residents are accustomed to paying a fee for refuse services, using a two-tiered or multi-tiered system will probably be the preferred option.

ADDITIONAL CONSIDERATIONS

The fee structure presented above is designed to cover all costs associated with the program as it exists now, which includes weekly refuse collection, weekly recycling (alternating commingled containers and paper), weekly collection of yard waste during the months of heavy generation, and weekly spring cleanup pickups for three months in the spring. The only difference is that residents would be required to purchase special bags for disposal.

One difficult area to manage using a PAYT program will be collection of waste from multi-family dwellings. If residents of such complexes share dumpsters, it would be difficult to prevent individual tenants from using other bags. These complexes will probably need to be treated like commercial facilities, with a fee set per unit that is approximately equal to the cost estimated for single family dwellings.

CONCLUSIONS

- The City of Erie operates a comprehensive, aggressive refuse and recycling program.
- The \$100 annual fee currently charged per household covers most, but not all, of the actual cost to operate the current refuse/recycling program. The actual per household cost to the City to operate its program is \$105-106 per household annually, and would be slightly higher if costs attributable to operation of the City's composting site become a responsibility of the Bureau of Refuse and Recycling.
- Implementing a Pay-As-You-Throw program would result in a fairer fee system, with customer fees based on actual use of services, similar to other utilities.
- Based on current program costs as illustrated in the Bureau of Refuse and Recycling budget, some residents could experience significant savings, while others would experience some increase in cost. The greatest increase projected, however, is approximately \$25 per household.
- Given the City's already high residential recycling rate (approximately 40 percent including yard waste, approximately 25 percent without including yard waste), it is unlikely that diversion will be increased appreciably by implementing a PAYT program. A PAYT program may result in reduced waste generation.
- Given the high level of service offered, it may be that residential customers will view PAYT as an attempt to reduce services and increase costs.

RECOMMENDATIONS

- The City of Erie's current comprehensive and aggressive refuse and recycling program is working well at a reasonable cost to residents, and there is no reason to change. The City should, however, review the customer fee with respect to the City's actual cost to operate the refuse and recycling program

and make an adjustment to ensure that revenues from the fee to residents covers program costs.

- Based on the analysis of the current budget and potential costs to City residents, the City may want to look into the potential for implementing a PAYT program as a means of distributing program costs more fairly among residents based on actual use of services. Should the City choose to do this, citizens should be incorporated into this process because: (1) the current cost to residents is low and implementation of PAYT will result in greater cost to some residents; and (2) some residents may view PAYT as an attempt to reduce services and increase costs.
- If the City were to decide to implement a PAYT program, strong citizen involvement should be built into the process to ensure that citizen concerns are addressed.

A number of Pennsylvania municipalities have found PAYT to be a useful tool in reducing waste, controlling costs, and boosting recycling rates. The current system operating in the City of Erie is comprehensive and aggressive, but there is always room for improvement. PAYT may provide further incentive for City residents to reduce waste generation. The greatest hurdle, if the City were ever to decide to implement PAYT, will be avoiding the view that PAYT is an attempt to reduce services and increase costs. It is a decision that will require significant attention to citizen concerns and consideration of citizen inputs to ensure that it is accepted and embraced by City residents.

Sincerely,

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Environmental Analyst

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