

July 6, 1999

Ms. Amy Farkas
Administrative Assistant/Recycling Coordinator
Elizabethtown Borough
600 South Hanover
Elizabethtown, PA 17022

Subject: Evaluating Elizabethtown Borough's PAYT and Recycling Programs

Dear Amy:

This letter is to provide Elizabethtown Borough with the results of R. W. Beck's evaluation of Elizabethtown's Pay-As-You-Throw (PAYT) and recycling programs.

The Borough has expressed concern that it is now experiencing a revenue deficit in its PAYT program because growth in bag sales has declined. Since population has increased by about 10.5 percent since 1990 (from 9,952 in 1990 to around 11,000 today), it was expected that the number of bags sold for waste disposal in the Borough's PAYT program would have increased commensurately, possibly with some adjustment for increased recycling. Because this has not been the case, the Borough believes residents may be exploring alternative means of waste disposal, such as burning, transporting waste outside the Borough, or using commercial dumpsters.

The Borough has also reported concern that increases in the Borough's recycling rate have stalled and that there are problems with enforcement and compliance of recycling in rental housing units.

EVALUATING ELIZABETHTOWN BOROUGH'S PAYT AND RECYCLING PROGRAMS

This report: (1) analyzes waste and recyclables generation and sale of PAYT program bags for four years—1995 through 1998—as a means of assessing potential causes for the stagnation of bag sales, and thus, the revenue deficit in the Borough's waste/recycling program; (2) presents options for addressing the situation; and (3) provides recommendations aimed at resolving this issue. It also discusses options for boosting the Borough's recycling rate and increasing compliance in rental housing units.

THE PAY-AS-YOU-THROW PROGRAM

WASTE GENERATION

Table 1 presents data from 1995 through 1999 for refuse/recycling revenues, number of PAYT bags sold, recycling, municipal solid waste (MSW) disposed, and total waste generation.

TABLE 1
BOROUGH OF ELIZABETHTOWN
1995-1998 - CHANGES TO MUNICIPAL WASTE/RECYCLING STATISTICS

Year	Refuse/Recycling Revenues	Revenues % Change	Bags Sold	Recycling Tonnage	Recycling % Change	MSW Tonnage	MSW Tonnage % Change	Total Waste Generation	Waste Generation % Change	MSW Weight per Bag (lbs.)
1995	304,429	--	121,772	729.6	--	1,806.8	--	2,536.4	--	29.7
1996	355,678	17%	129,338	743.4	2%	2,640.0	46%	3,383.4	33%	40.8
1997	355,211	0%	129,168	869.5	17%	2,367.0	-10%	3,236.5	-4%	36.7
1998	336,746	-5%	122,453	943.0	8%	2,629.0	11%	3,572.0	10%	42.9

% Change	% Change	% Change	% Change	% Change
1995-1998	1995-1998	1995-1998	1995-1998	1995-1998
11%	1%	29%	46%	41%

TABLE 2
BOROUGH OF ELIZABETHTOWN
MUNICIPAL WASTE/RECYCLING STATISTICS BY HOUSEHOLD

Year	Estimated* Population	Estimated** Households	Refuse/Recycling Revenues	Revenues per HH	Bags Sold	Bags Sold per HH	Recycling	Recycling per HH (lbs)	MSW Tonnage	MSW per HH (lbs)	Total Waste Generation	Waste Generation per HH (lbs)	Waste Generation per person (tons)
1995	10,607	3,650	304,429	\$83.41	121,772	33.4	729.6	399.8	1,806.8	990.0	2,536.4	1,389.8	0.24
1996	10,738	3,703	355,678	\$96.06	129,337	34.9	743.4	401.5	2,640.0	1,426.0	3,383.4	1,827.5	0.32
1997	10,869	3,748	355,211	\$94.78	129,168	34.5	869.5	464.0	2,367.0	1,263.1	3,236.5	1,727.1	0.30
1998	11,000	3,793	336,746	\$88.78	122,453	32.3	943.0	497.2	2,629.0	1,386.2	3,572.0	1,883.4	0.32

*Assumes constant increase over period from 1990 through 1998 of 131 persons per year.

**Assumes 2.9 persons per household.

(NOTE: Generation rates are for residential generation only.) The data revealed that while the growth in number of bags sold and revenues have declined, MSW disposed and recycling--and therefore total waste generation--have increased significantly, in fact, more than the population increase would suggest. Total residential waste generation is estimated to have increased by 41 percent, while MSW disposed and recycling tonnage are estimated to have increased by 46 percent and 29 percent respectively. Given such increases, it is unlikely that residents are engaging in activities such as burning or hauling waste out of the Borough to any significant degree, as has been speculated due to the decline in bag sales.

Table 2 presents the same data as Table 1, but estimates revenue, bag sales and generation rates per household. Without exact population data for each year it is difficult to be precise, but it is clear that generation rates per household have increased, while bag sales per household have remained fairly constant. Some specific details:

- Bag sales have ranged from 32.3 per household annually (1998) to 34.9 per household annually (1997). In fact, bag sales per household have declined overall since 1996. The Borough reported that the price of bags increased from \$2.50 in 1995 to \$2.75 in 1996, and some of the decline may be attributable to this increase in cost.
- MSW tonnage (waste disposed) is estimated to have risen by nearly 400 pounds per household annually. It isn't clear how this waste is being disposed, but it should be noted that waste is probably not being burned or taken outside the Borough (at least not in significant amounts).

It is possible that Elizabethtown is experiencing a "Seattle Stomp" scenario. When Seattle, WA implemented a volume based system several years ago using different sized carts, many residents opted to select smaller carts to get a lower waste collection and disposal rate, but disposed approximately the same amount of waste by cramming it into the smaller container. Table 1 indicates that the estimated number of pounds per bag (last column) has risen dramatically, from 29.7 pounds per bag in 1995 to 42.9 pounds per bag in 1998, with the largest increase taking place between 1995 and 1996—the period when the price per bag increased.

- Estimated total waste generation per household has increased by over one half ton between 1995 and 1998. It is unclear why this is happening. On a per capita basis, total waste generation has increased by 33 percent, from 0.24 tons per person annually in 1995 to 0.32 tons in 1998. If leaves, which are not included in the generation rate, are added, the rate increases to 0.25 tons per person annually in 1995, and 0.34 tons in 1998.

While the estimated rates are for residential generation only, and while they indicate a significant increase in generation over the past four years, it should be noted that Elizabethtown Borough's generation rate appears to be below average even after the increase. The Pennsylvania Department of Environmental Protection (DEP) uses 0.8 tons per person annually as the average generation rate per person for all MSW, which

includes commercial and institutional waste. Commercial and institutional wastes are estimated to be approximately 50 percent of the MSW stream. Even if these wastes are estimated at 0.4 tons per person for the Borough, total waste generation would be around 0.72 to 0.74 tons per person annually, or 7 ½ to 10 percent less than Pennsylvania's average generation.

The increase in waste generation reported since 1995 has actually brought Elizabethtown Borough closer to the state average.

ELIZABETHTOWN BOROUGH'S REVENUES AND EXPENDITURES – 1995–1998

Table 3 presents revenue and expenditure data for the Borough's solid waste and recycling program for 1995 through 1998. Revenues have increased by 11 percent since 1995, while expenditures have increased by 15 percent. Considering the growth in MSW disposed since 1995 (46 percent), this increase appears reasonable, if not low. As noted earlier, however, it seems that revenues should have increased as well, as the sale of bags would have been expected to increase with the growth in population and increase in waste generation.

Because the revenues are used to cover the costs of both waste collection and disposal and collection and processing of recyclables, total waste generation was used in Table 3 to estimate per ton rates for revenues and expenditures. In both cases, the amount per ton has declined significantly—from \$120.02 to \$94.27 per ton for revenues, and \$122.31 to \$100.06 per ton for expenditures. Given the lack of growth in bag sales (1 percent) and the significant growth in waste generation (41 percent), the decline is much greater for revenue versus expenditures. When considered on a surplus/deficit per ton basis, the numbers actually seem much closer—with a \$2.29 per ton revenue deficit in 1995 and surpluses of \$2.17 and \$2.14 respectively for 1996 and 1997—until 1998, when the deficit grew to \$5.79 per ton.

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 based on the tonnage of materials disposed and/or processed.

The goal, of course, 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 at least covers the fixed costs. Revenue to cover variable cost expenditures can be variable as well, as long as the charges are set based on good estimates of the variable costs. This can generally be done using historical data.

TABLE 3
BOROUGH OF ELIZABETHTOWN
REVENUES/EXPENDITURES PER TON – WASTE GENERATED

Year	Refuse/ Recycling Revenues	Revenues % Change	Refuse/ Recycling Expenditures	Expenditures % Change	Total Waste Generation (tons)	Waste Generation % Change	Revenue per ton	Revenue/ ton % Change	Expenditures per ton	Expenditures/ ton % Change	Surplus/ Deficit per ton
1995	304,429	--	310,233	--	2,536.4	--	120.02	--	122.31	--	-2.29
1996	355,678	17%	348,336	12%	3,383.4	33%	105.12	-12%	102.95	-16%	2.17
1997	355,211	0%	348,285	0%	3,236.5	-4%	109.75	4%	107.61	5%	2.14
1998	336,746	-5%	357,414	3%	3,572.0	10%	94.27	-14%	100.06	-7%	-5.79

% Change	% Change	% Change	% Change	% Change
1995-1998	1995-1998	1995-1998	1995-1998	1995-1998
11%	15%	41%	-21%	-18%

MAINTAINING PAYT AND BALANCING THE BUDGET

Elizabethtown Borough has expressed a strong desire to maintain its Pay-As-You-Throw program. It is difficult, however, to balance revenues with expenditures in a classic PAYT program, because revenues are solely dependent on the sale of bags. If there is a significant decline in sales for any reason, with no corresponding decline in disposal, there is a good probability that the program's costs will outweigh its revenues, as has been the case in Elizabethtown. Raising the cost of bags would probably only compound this problem. This is the reason that a majority of municipalities in Pennsylvania with PAYT programs have opted to implement "hybrid" systems. Elizabethtown may wish to consider some type of hybrid system.

There are two basic hybrid options used throughout the Commonwealth. These include:

- Residents pay a standard base rate per household which covers fixed collection costs— i.e., administrative and personnel costs and the cost for a collection vehicle to service a given area—and then 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 in a system such as Elizabethtown's.
- 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.

The difficulty with implementing one of these hybrid options is that it requires establishing a system to invoice residents for the base rate, which is not required under the classic PAYT scenario. The Borough has reported that it would prefer not to be responsible for billing. Most haulers, however, do have that capability. The Borough should explore the current hauler's willingness to invoice residents and how this would affect the price of services.

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

- Some PAYT programs offer more than one container size option. Elizabethtown only offers one size bag, which may be more than most small households and/or active recyclers/composters need on a weekly basis. Some may be opting to hold their bags and only place them out for collection once they are completely full, which may take two or more weeks. If smaller bags were available, some residents would probably opt to purchase them and dispose of waste more frequently, since most people prefer not to store waste for any length of time because of odor and health concerns.

- Some programs also offer price reductions to low and fixed income residents. Elizabethtown does not currently do this. As with the bag size issue, these residents may opt to purchase more bags, rather than overstuff the current ones, if the cost is more affordable.

The Borough has reported that it is not interested in these options, but they are presented here because they have been used successfully in other programs.

Regardless of the PAYT scenario used, the Borough should implement controls that help to ensure proper disposal of wastes generated in the Borough. Under the current system, bans on burning and substantial penalties for illegal dumping (including unauthorized use of commercial dumpsters) are useful tools. 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.

RECYCLING IN ELIZABETHTOWN

Table 4 provides data on the residential recycling rate for Elizabethtown from 1995 through 1998. With the exception of 1996, the Borough has had a residential recycling rate above the previous Pennsylvania goal of 25 percent. It appears, however, that the Borough may have peaked in 1997 at 30.5 percent. The rate for 1998 declined by 1.2 percent to 29.3 percent. The overall recycling rate—which includes both commercial/institutional waste and recyclables—is not presented here because total waste generation data is not available.

TABLE 4
ELIZABETHTOWN BOROUGH RESIDENTIAL RECYCLING RATES – 1995–1998

Year	Recycling Tonnage*	MSW Tonnage Disposed	Total Waste Generation*	Recycling Rate
1995	617.6	1,806.8	2,424.3	25.5%
1996	827.4	2,640.0	3,467.4	23.9%
1997	1,041.0	2,367.0	3,408.0	30.5%
1998	1,090.0	2,629.0	3,719.0	29.3%

*Includes leaf waste.

Anecdotal evidence from throughout Pennsylvania has indicated that other municipalities and counties are having similar experiences with their recycling rates. Some of the decline and/or stagnation may be due to two factors: (1) recycling is no longer new, and residents

sometimes become apathetic without ongoing reinforcement; and (2) over time, plastics have replaced glass in a number of applications, and plastic is significantly lighter than glass. Also, it is difficult to divert significantly more material from residences if a municipality is already collecting newsprint, commingled containers and yard waste. The cost of including additional materials that are only available in small quantities is usually prohibitive.

There are, however, some basic strategies that may help to boost diversion without adding unreasonable cost. These include:

- Better enforcement – Implementing a program that ensures that all residents are recycling the materials that are required may help. Short of hiring a person dedicated to this task (which would be cost prohibitive), this would require adding this duty to the duties of an existing code enforcement officer, however, or enlisting the support of the police.
- Better education – Elizabethtown Borough obviously has a very good public education program, as illustrated by the high recycling rate. No program is perfect, however, and the Borough should review its program and address any problems it discovers. It may also help to examine the frequency of dissemination and educational vehicles used to determine if greater frequency and additional outlets would help.
- Home composting – While the Borough provides information upon request, it should consider actively promoting home composting and grasscycling (leaving grass on the lawn) to help divert greater amounts of material from the waste stream. The Borough could provide training and compost bins to residents at nominal cost by: (1) obtaining a Section 902 grant to purchase home composting containers that can be distributed to residents who wish to compost at home. The Borough could subsidize the 10 percent that is not covered by the grant, or could charge residents for the balance; (2) providing training to residents through the master composter program of the Cooperative Extension; and (3) developing a comprehensive composting and “Let It Lie” (grasscycling) public education program to provide information on management of yard waste at home. Development and printing of these materials is also eligible for a Section 902 grant.

COMMERCIAL REPORTING

While the numbers have grown significantly over the past couple of years, commercial tonnage reported for the Borough has consistently lagged behind residential recycling tonnage. Elizabethtown has a reasonably sized commercial district, and it would not be surprising if the actual tonnage recycled from the commercial sector is greater than residential tonnage.

If the Borough is not already doing so, it should consider focusing on boosting its commercial recycling tonnage. This includes enforcement—ensuring that all commercial entities, particularly the larger businesses in the Borough, are recycling. It also includes reporting—making sure that businesses and institutions in the Borough are reporting their recycling. Boosting the commercial reporting rate will have two significant effects:

- It will boost the Borough’s diversion rate for the purpose of Section 904 Performance Grants, because that rate is based on the residential rate plus an up to one-to-one match of commercial tonnage. A higher diversion rate means greater return to the Borough from the Section 904 grants.
- The Section 904 grant formula has recently been revised to provide an incentive to boost commercial recycling. Any tonnage above the one-to-one match used to figure the diversion rate is eligible for a flat \$10 per ton rate. Prior to this change, commercial tonnages over the one-to-one match were not eligible for reimbursement under this program. This means a \$1,000 return for each additional 100 tons reported.

Unless the Borough has already dedicated a significant amount of time to ensuring that all commercial and institutional tonnages are being reported, the Borough should consider looking at improving reporting from these sectors.

COMPLIANCE IN MULTIFAMILY FACILITIES

The Borough has reported that it is home to the second highest number of rental housing units in Lancaster County. Residents in buildings with four or less units (approximately 130 buildings) are included in the Borough’s curbside recycling program, but with absentee landlords who don’t share information on recycling with their tenants, the Borough is finding that compliance is poor.

It may be beneficial to provide information directly to the tenants, many, if not most, of whom would be happy to participate in the curbside recycling program. It may also help to create an incentive program to encourage landlords to promote recycling by their tenants, if there is something the Borough could offer that would be beneficial to landlords. The Borough could also work directly with landlords to develop materials specific to these types of complexes.

The Borough’s recycling ordinance requires waste and recycling collection from larger complexes—four or more—to be managed through private contracts. Landlords are required to contract with a hauler who must collect both waste and recyclables. The Borough has noted that compliance in these complexes is poor as well.

It would be difficult, if not impossible, to enforce recycling by individual residents of large complexes. However, the Borough could actively enforce its ordinance by visiting these complexes to ensure that the service is being provided in such a way that makes it convenient for residents to recycle. In addition, the Borough could work with the

management entities for these complexes to provide educational materials for residents, and consider strengthening the provision in its ordinance that landlords must distribute educational materials to encourage residents to recycle.

Development and printing of educational materials aimed at promoting recycling in multifamily complexes is eligible for Section 902 grant funding, and the Borough could apply for funding with landlords to provide the 10 percent match.

CONCLUSIONS

- While growth in the number of bags sold for the Borough's PAYT program has declined, residential waste generation and recycling have grown significantly.
- The estimated waste generation and recycling rates have grown more than the estimated growth in population would suggest.
- Growth in program revenues has stalled as growth in bag sales has declined, while expenditures have continued to grow.
- The Borough has reported that it wishes to continue with its PAYT program.
- There are variations or "hybrid" PAYT systems that would probably address the Borough's budgetary concerns.
- Elizabethtown's recycling rate appears to have topped out in 1997 and declined in 1998.
- There are strategies available that may help boost the Borough's recycling rate at little cost.

RECOMMENDATIONS

- Elizabethtown Borough should consider changes to its PAYT program that ensure sufficient revenue to pay for program-related expenditures. Establishing a "hybrid" program that guarantees coverage of fixed costs and maintains variability with regard to payment for volume of waste generated is preferable to increasing the cost per bag under the current program.
- The Borough should consider the following as methods for boosting its recycling rate:
 - Improving overall enforcement.
 - Improving and/or expanding public education.
 - Actively promoting a home composting and grasscycling program.
 - Improving commercial and institutional reporting.
 - Actively working with landlords to educate residents in rental housing units about the importance of recycling and requirements for multifamily facilities.

- Enacting an education requirement for managers of complexes with more than four units in the Borough's recycling ordinance.
- Actively enforcing recycling requirements for multifamily complexes of all sizes and imposing appropriate penalties for non-compliance.

While there has been concern over problems within its solid waste and recycling program, the Borough is essentially a model for many municipalities throughout the Commonwealth, given the success of its PAYT program and its consistently high recycling rate. With some fine-tuning, the program could balance its budget and improve its diversion and waste reduction rates, which would ensure its success for many years to come.

Sincerely,

Sandra L. Strauss
Environmental Analyst

cc: Kathleen Kilbane, SWANA
Carl Hursh, DEP
Debbie Miller, R.W. Beck