



January 25, 2001

Mr. John M. Burdy
Municipal Clerk
Caernarvon Township
P.O. Box 294
3226 Main Street
Morgantown, PA 19543

Subject: Establishing a Recycling Program in Caernarvon Township

Dear John:

This letter is to provide Caernarvon Township with the results of R.W. Beck's study to evaluate options for a recycling program for the Township.

The Township is not mandated to recycle because its population of a little over 2,000 is significantly below the 5,000 threshold in the Municipal Waste Planning, Recycling and Waste Reduction Act (Act 101). Given the state's new goal of 35 percent recycling by 2003, however, the PA Department of Environmental Protection (DEP) is encouraging counties and municipalities to recycle more materials. The Township has determined that it would like to make recycling available to its residents, but is not certain which direction to take.

The Township has requested assistance to determine what programs to implement and how to involve citizens and establish partnerships.

ESTABLISHING A RECYCLING PROGRAM IN CAERNARVON TOWNSHIP

This report is broken down as follows:

- Demographics and materials estimates
- Drop-off recycling options
- Curbside recycling
- Other recycling options
- Public education
- Enforcement
- Grant funding
- Conclusions and Recommendations

The following issues are considered:

- Approaches to drop-off recycling that will maximize the material collected and minimize the efforts of and cost to the municipality.
- Curbside recycling options and Pay-As-You-Throw

- Other recycling options
- Public education efforts that will build enthusiasm among residents for recycling and encourage them to recycle.
- Use of Act 101 Section 902 Recycling Program Grants to fund the Township's recycling efforts.

DEMOGRAPHICS AND MATERIALS ESTIMATES

Caernarvon Township (Township) is a rapidly growing, partially rural municipality in southern Berks County. Lancaster and Chester Counties border the Township to the south. There is one Pennsylvania Turnpike interchange in the Township (Morgantown), and much of the development is around that interchange. The Township's population is projected to be over 2,000 after the 2000 Census. Based on this population, the Township is not mandated to establish a curbside recycling program.

There are, however, features that would make the establishment of either a drop-off or a curbside recycling program an attractive option for the Township. There is a center of population density around Morgantown. This is a more commercial area with outlets that draws not only Township residents but also persons from outlying and other areas.

- Drop-off. It usually makes sense to establish drop-off points in high-traffic areas such as the Morgantown commercial center or outlets. The outlet center is highly visible from the Turnpike and other main roads in the area, and appears to have adequate space for the placement of collection containers if such an arrangement could be made. Because the Township is not mandated to recycle, this may be the most attractive option for the Township.
- Curbside. Most of the population appears to be located around Morgantown, with some of the population spread throughout the rest of the Township. It may be worthwhile to look into curbside recycling for the Township, though there are some issues that may make implementation of a curbside program more difficult.

Because the Township's municipal waste is collected under an individual subscription system, with residents responsible for making their own arrangements for waste collection, the Township does not know the weight or volume of municipal waste generated in the Township. The state's average generation rate, based on municipal waste generated statewide, is 0.8 tons per person per year, and this is the figure used to estimate waste generation in the Township. If it is assumed that the population is approximately 2,000, municipal waste generation would be approximately 1,600 tons per year. It is this figure that is used in Table 1 to estimate the amount of recyclable materials that are potentially available in Caernarvon Township.

It should be noted that this is what is *potentially* available. Recycling rates in rural areas are traditionally lower than in urban and suburban areas, and also in drop-off programs vs. curbside programs. The actual rate at which materials might be collected in a drop-off

TABLE 1
ESTIMATED RECYCLABLE MATERIALS AVAILABLE IN CAERNARVON TOWNSHIP

Material	Percent of MSW¹	Tons in MSW²
Corrugated Paper	10	160
Newsprint	10	160
Glass(Clear and Colored)	9	144
Yard Waste	9	144
Office Paper	6	96
Appliances	4	64
Wood	4	64
Plastic (PET, HDPE only)	3	48
Steel and Bimetallic Cans	2	32
Tires	2	32
Aluminum Cans	1	16
TOTALS	60	960

TABLE 2
PROJECTED TONNAGES FOR CAERNARVON TOWNSHIP RECYCLING DROP-OFF PROGRAM
POTENTIAL BASED ON CRAWFORD COUNTY (WEST MEAD) EXPERIENCE

Estimated Drop-Off (1)		
Low	Medium	High
40.00	60.00	80.00

(1) Estimated annual per capita generation: Low = 40 lbs.; Medium = 60 lbs.; High = 80 lbs.

program would be significantly lower, and would depend on the mix of materials that are collected. Table 2 provides estimates of the amount of material that might be expected in a drop-off program in Caernarvon Township based on the experience of a drop-off program operated by West Mead Township in Crawford County.

Based on these estimates, Caernarvon Township might expect a recycling rate of 2.5 percent (low estimate) to 5 percent (high estimates) through a drop-off recycling program. It should be noted, however, that the West Mead model is based on one-day drop-offs in each of the drop-off locations. A permanent site located in a high traffic area may yield more material than the estimates presented above.

¹ Based on a combination of sources including NSWMA and EPA

² Based on projected total MSW figure of 1,600 tons

DROP-OFF RECYCLING OPTIONS

The basic options available to Caernarvon Township are as follows:

- Permanent or temporary drop-off site or sites operated by the Township
- Permanent or temporary drop-off site or sites operated by the private sector
- Permanent drop-off site or sites operated as a joint venture between the Township and private sector
- Permanent or temporary drop-off site sites operated by volunteers or a non-profit organization

While the fourth option—a site or sites operated by volunteers or a non-profit organization—is provided, this is an option that has often been difficult or problematic in other municipalities throughout Pennsylvania. The Township reported that in fact it was the case with a program operated by the school district several years ago. The option is generally attractive only when revenues from recyclables are sufficient to maintain the interest of a non-profit, or as long as the original volunteers remain interested. Many have discovered that recruiting volunteers on an ongoing basis has been difficult. The main focus in this report will be on the first three options.

It should be noted that regardless of the option selected, any drop-off collection site(s) should be:

- Easily accessible to the public
- Convenient to use
- Designed to limit the potential for contamination and/or illegal dumping
- Attractive and well-maintained

Before getting into the specific options, it may help to look into what is involved with regard to volumes of materials expected. Table 3 on the next page illustrates estimated tonnage by material for the materials most likely to be included in a drop-off recycling program at the low, medium, and high diversion estimates. Table 4 estimates the number of pulls required for commingled materials at the medium diversion level—all cans, glass, and plastic containers—for 8 cubic yard and 10 cubic yard containers. Table 5 estimates the number of pulls required for paper products collected separately at the medium diversion level—corrugated cardboard, mixed paper and newsprint. If all materials are collected, the estimated number of pulls is 107 for 8 cubic yard containers, which averages to slightly more than two pulls per week, or 86 for 10 cubic yard containers, which averages to more than one and one half pulls per week. These scenarios are not likely to occur at the time a program is implemented, but if containers are placed at a prominent, convenient site and used by more than Township residents, this is probably not an unreasonable estimate.

TABLE 3
ESTIMATED TONNAGE BY MATERIAL

Material	Percent of Recyclable Materials (1)	Tonnage Available	Estimated Tonnages Collected		
			Low	Medium	High
Corrugated Paper	21.1%	160	8.4	12.7	16.9
Newsprint	35.9%	160	14.4	21.5	28.7
Glass (Clear and Colored)	19.0%	144	7.6	11.4	15.2
Office Paper	4.5%	96	1.8	2.7	3.6
Plastic (PET, HDPE only)	6.2%	48	2.5	3.7	5.0
Steel and Bimetallic Cans	12.3%	32	4.9	7.4	9.8
Aluminum Cans	1.0%	16	0.4	0.6	0.8
TOTALS	100.0%	656	40	60	80

(1) Based on the experience of West Mead Township; percent breakdown for materials actually collected

TABLE 4
ESTIMATED PULLS FOR COMMINGLED MATERIALS (1)

Material	Lbs./cu.yd.	Tons Collected	Lbs. Collected	% by Weight	Cubic Yards	% by cu.yd.
Aluminum	50	0.6	1,200	2.60%	24.0	5.30%
Steel	80	7.4	14,760	31.95%	184.5	40.77%
Glass	500	11.4	22,800	49.35%	45.6	10.08%
Plastics	37.5	3.7	7,440	16.10%	198.4	43.85%
TOTALS		23.1	46,200	100.00%	452.5	100.00%
Estimated pulls based on 8 cubic yard container (2):						56.56
Estimated pulls based on 10 cubic yard container (2):						45.25

(1) Assumes medium level of diversion
(2) Assumes full containers

TABLE 5
ESTIMATED PULLS FOR PAPER PRODUCTS (1)

Material	Lbs./cu.yd.	Tons Collected	Lbs. Collected	Cubic Yards	Estimated Pulls (8 cu. yd) (2)	Estimated Pulls (10 cu. yd) (2)
Newsprint	400	21.5	43,080	107.7	13	11
Corrugated	90	12.7	25,320	281.3	35	28
Office Paper	400	2.7	5,400	13.5	2	1
TOTALS		36.9	73800	402.5	50	40

(1) Assumes medium level of diversion
(2) Assumes full containers

Operation by the Township

This option would involve the Township: (1) establishing a site or sites in the Township; (2) purchasing the necessary equipment; (3) providing personnel to service and maintain the sites; and (4) finding markets for the materials collected.

This is not an attractive option for most small municipalities because personnel resources are generally limited. Unless a municipality has personnel that could be used without adding new persons to carry out this function, the cost to operate a program could be prohibitive. It may be an option for the Township if the choice is to offer a monthly recycling day on Township property, but it may be a burden for the Township to operate a permanent drop-off site.

Operation by the Private Sector

This option would involve the Township contracting with the private sector to provide the service for Township residents, either through a monthly recycling day or a permanent drop-off site or sites.

Table 6 provides estimates for the cost to contract for this service. This is based on the experience in the Tri-County area (Clarion, Forest and Venango Counties) using Tri-County Industries to provide containers and pull them. They are paying \$100 per pull for two 8 cubic yard containers at a site, so it is assumed that the cost would be \$50 per container per pull.

TABLE 6
ESTIMATED COST FOR PRIVATE SECTOR PULLS (1)

Material	Estimated Pulls (8 cu. yd) (2)	Estimated Cost (8 cu.yd) (3)	Estimated Pulls (10 cu. yd) (2)	Estimated Cost (10 cu.yd) (3)
Commingled	57	2,850	46	2,300
Newsprint	13	650	11	550
Corrugated	35	1,750	28	1,400
Office Paper	2	100	1	50
TOTALS	107	\$5,350	86	\$4,300

- (1) Assumes medium level of diversion
- (2) Assumes full containers
- (3) Assumes \$50 per pull

Only experience will determine what the actual cost will be. Depending on usage, Caernarvon Township could contract for collection on a weekly or biweekly basis, similar to what Tri-County has done, or could possibly arrange for collection to be done on-call. The cost for the service will depend on the level of service desired and what the Township is able to negotiate with a hauler. The Township should check into the possibility of revenue—some return—for the materials recycled, though in a drop-off program like this, negotiating revenues is unlikely.

One option that would limit costs considerably would be to collect only commingled containers and newsprint. Corrugated cardboard is a high volume material and as illustrated in Table 6, would require a significant number of pulls in comparison to the other materials—over one third of the total pulls. Table 7 provides estimated costs based on collecting only commingled materials and newsprint.

TABLE 7
ESTIMATED COST FOR PRIVATE SECTOR PULLS (1)
COMMINGLED MATERIALS AND NEWSPRINT ONLY

Material	Estimated Pulls (8 cu. yd) (2)	Estimated Cost (8 cu.yd) (3)	Estimated Pulls (10 cu. yd) (2)	Estimated Cost (10 cu.yd) (3)
Commingled	57	2,850	46	2,300
Newsprint	13	650	11	550
TOTALS	70	\$3,500	57	\$2,850

(1) Assumes medium level of diversion

(2) Assumes full containers

(3) Assumes \$50 per pull

The Township could still offer the option to recycle corrugated cardboard and office paper by negotiating with a local business that already recycles these materials to accept them from the public. This may be an attractive option to a business that receives revenues for the sale of the materials. Other options would include Township management of these materials.

- In one scenario, the Township could provide permanent containers on Township property to collect these materials. The Township could potentially market them to a broker for some revenue, or could deliver them to a facility that would accept them at no cost.
- In another scenario, the Township could offer monthly or quarterly drop-off collection for these materials, and possibly for other difficult to recycle materials. The Township could: (1) manage the programs and market the materials on its own; (2) establish a cooperative effort with another municipality to do this; or (3) contract with the private sector to provide equipment and haul the materials on these days.

Joint Venture Recycling Program

It may be worthwhile for the Township to discuss entering into a joint venture arrangement with a local business to establish a permanent drop-off recycling program. Such an arrangement could prove to be a win-win option for both parties, helping the Township to provide recycling for its residents and potentially for a wider area, and providing marketable materials and a highly visible community service/public relations opportunity for a business.

There may be an option for establishing recycling within the business district in Morgantown, but most of the properties appear to have fairly limited space. A preferable option might be an arrangement with the outlet center located close to the Morgantown exit from the Turnpike. The advantages to such a site are that: (1) it would be in a highly visible, well-traveled, convenient location; (2) it would be in an area that is under constant monitoring, limiting the potential for illegal dumping; (3) there is significantly more space available for vehicles to pull up or park and deliver materials to the site; and (4) there is tremendous potential for a close working relationship with the businesses in the center for marketing and advertising purposes.

To determine the potential for an arrangement with a business in the main business district or the outlet center, appropriate Township personnel would need to meet with appropriate business personnel to explore options. Options could range from total management by the municipality to total management by the business, though it seems that a joint arrangement

would probably be the best option for both parties. If an arrangement could be negotiated, it would probably be best to establish a formal agreement to ensure that responsibilities of each party are clearly spelled out and understood. The basic options include:

- The Township purchasing and siting collection containers, and servicing the containers as required, marketing the materials, bearing all costs, but keeping all revenues (if any) from the sale of materials.
- The Township purchasing and siting collection containers, and contracting with a private hauler for the servicing of containers and the marketing of materials.
- The Township purchasing and siting collection containers, and arranging for a local business, the outlet center, or one of the anchor businesses to manage servicing of the containers and marketing materials.
- A local business, the outlet center, or one of the anchor businesses making arrangements for the placement of collection containers and managing all aspects of the program.

The last two would be the preferred options, limiting the cost and personnel time the Township would need to dedicate to managing a recycling program. The fourth option, with a local business, the outlet center or one of the anchor businesses managing all aspects of the program, would obviously result in no cost to the Township, other than what might be required for public education—and public education costs are eligible for grant funding under a Section 902 Recycling Program grant. The same is essentially true for the third option, except that the Township might incur minor costs for the purchase of collection containers, although, as with public education, the containers are eligible for funding under the Section 902 grant program. Most of the 10 percent match required by the Township could probably be borne by the use of in-kind services or might even be covered by a participating business. This would probably be a beneficial option for a local business or the outlet center, which would either need to purchase or lease equipment otherwise.

The third option would probably be the best option for both parties. Township ownership of the containers demonstrates a commitment to recycling, while limiting the financial and personnel commitments that would be required for assuming complete operation of a program. The Township can also receive grant funding to carry out public education efforts, which the outlet center or individual business cannot. The participating business could probably offset at least some of its cost through the marketing of materials. For the outlet center or individual businesses, which may be recycling already, there is greater potential for revenue from the sale of materials like corrugated cardboard and office paper than there would be for the Township managing a very small-scale effort. Even if a business assumes responsibility for site operation, the Township could participate in a visible way by assisting in the monitoring of the site, using Township personnel or working through a local service organization.

The exact cost to the Township for operation of such a site would be a function of the level of participation desired. Most of the cost would and probably should be for public education to ensure the success of the site.

Volunteer or Non-Profit Drop-off Sites

There are drop-off recycling efforts managed by volunteers or non-profits throughout Pennsylvania. While many of these efforts are highly successful, they have often presented problems for the individuals or organizations that run them.

In a recent study conducted for Wilmington Township in Lawrence County, the Township operated a very successful monthly drop-off program. As participation grew, the Township encountered traffic problems with vehicles arriving to drop-off materials, illegal dumping of materials before and after the collection event, and difficulty in having sufficient volunteer help for the events. This was also the case in Peters Township (Washington County) several years ago when the success of the drop-off plastic collection effort overwhelmed the ability of the volunteers and Township to manage it. In Elk County, the Benedictine sisters that managed a long-term recycling effort suddenly notified the County that the program would be discontinued, leaving the County scrambling to find a way to manage the sites that had been operating for several years.

While this is an option for consideration, it is probably the least preferred option for the reasons cited above. Organizations that are eager to participate when the revenue level for materials is high are reluctant to continue when revenues fall or are non-existent. Even a program operated by a Township using volunteers, like those in Wilmington and Peters, may be plagued with problems that often result in greater cost to the municipality, or ill-will among residents if a popular program must be discontinued.

CURBSIDE RECYCLING

While the Township is not mandated to recycle because its population falls significantly below the threshold of 5,000, it is an option the Township may want to consider if residents support it. Curbside recycling could be implemented on its own or as part of a comprehensive waste management program. The latter option may be less desirable for residents who prefer to contract on their own for waste collection as is currently the case, though a Township wide waste and recycling collection program might help to avoid any illegal dumping or burning incidents that may exist.

Implementing an Integrated Waste Collection and Recycling Program

An informal survey conducted nearly two years ago in southwestern Pennsylvania indicates that the total cost for waste collection and recycling is reasonable for most municipalities. Table 8 presents a summary of the results. As is demonstrated, the cost for both waste collection and recycling services was less than \$10 per month, and this cost has not changed substantially since the survey was conducted. One difference is that these municipalities are less rural than Caernarvon Township, and it may cost more for a municipality like Caernarvon to implement such a program. Also, costs tend to be higher in eastern Pennsylvania than in western Pennsylvania. It may be worth exploring, however, if residents are generally paying more than this per month, which is usually the case because individual subscription programs are more inefficient than contracted collection programs that involve an entire municipality. Table 9 illustrates variations in average cost that were observed in a comparison survey conducted for another project approximately three years ago. It may be assumed that the costs have gone up, but from the results it is clear that on average the cost per household for contracted collection is significantly less than for individual subscription programs such as that in Caernarvon Township.

TABLE 9
TOTAL ESTIMATED COST PER HOUSEHOLD
(PENNSYLVANIA AVERAGES)

Options	Yearly Cost per Household	Quarterly Cost per Household	Monthly Cost per Household
Open System	\$192.00	\$48.00	\$16.00
Municipal Collection	\$140.00	\$35.00	\$11.70
Contract Collection	\$123.00	\$31.50	\$10.50
Drop-off	\$60.00	\$15.00	\$5.00

One concern expressed during a December 20 meeting with the Township is how costs for a contracted program would be paid. The options are:

- Payment by the Township—This would mean that the contracted hauler would invoice the Township and the Township would make payment directly to the hauler. The funds to cover the cost could be (1) taken from tax revenues, or (2) raised through the imposition of a garbage fee paid by residents to the Township.
- Payment by residents—This would mean that the contracted hauler would bill residents directly and residents would pay the hauler. This would probably be the preferred option for the Township as it would have no effect on taxes and would not require the establishment of an infrastructure to collect a garbage fee.

Implementing Curbside Recycling

Another option is to simply implement curbside recycling on its own. East Washington Borough (Washington County) is a small municipality that has chosen to do this. The Borough has contracted with Waste Management to provide monthly curbside collection of commingled recyclables, including aluminum, steel/bimetal, glass, and #1 and #2 plastic containers, newspaper, and glossy paper (magazines and catalogs). The Borough pays for recycling from its general fund, and materials are collected from all properties, including

TABLE 8
RECYCLING/WASTE MANAGEMENT PROGRAM COSTS
(SOUTHWESTERN PENNSYLVANIA MUNICIPALITIES)

Municipality	County	Materials Collected	Collection Frequency	Commingled/ Separate	Municipal/ Contracted/ Individual	Revenue Sharing	Who Pays	Cost/HH Total	Cost/HH Recycling
Freedom Boro	Beaver	Al G1 G2 P1 P2 S	Biweekly	Commingled	Contracted	Set % to municipality	Residents	\$99.96/yr.	Not known
North Sewickley Twp.	Beaver	Al G1 G2 Mag N P1 P2 S	Variable	Commingled	Individual	N/A	Residents	Variable	\$16.00/yr.*
Pine Twp.**	Allegheny	Al G1 G2 Mag N P1 P2 S	Weekly	Commingled	Contracted	N/A	Residents	\$92.40/yr.	Not known
Reserve Twp.	Allegheny	Al G1 G2 P1 P2 S	Biweekly	Commingled	Contracted	5% to municipality	Residents	Approx. \$96.00/yr.	\$1.45/mo.
Sewickley Boro	Allegheny	Al G1 G2 N P1 P2 S	Biweekly	Commingled	Contracted	N/A	Residents	\$94.56/yr.	Not known

*Rate one hauler charges for annual recycling sticker

**Pine is part of a multi-municipal contract with Marshall, McCandless and Hampton

single and multi-family dwelling units, institutions and a handful of local businesses. Residents are instructed to place all containers into the recycling bin provided by the Borough. Newspaper, magazines and catalogs are to be placed in kraft bags, cardboard boxes, or in separate recycling containers and kept separate from the containers. The contract cost is less than \$1.00 per unit per month.

The Borough also conducts two cleanup programs every year, one in early May, and one in early October. Most items are collected, with the exception of tires, building/construction materials, and garbage. Appliances that contain coolants (CFCs, freon, etc.) will be picked up if they are tagged that someone certified to perform this service has removed coolant gas.

Municipal waste collection is managed by individual subscription, with residents contracting individually with a waste hauler to pick up and dispose of their waste. The Borough reports that most residents have unlimited service and are able to dispose of most waste, including bulky items, during their weekly collection. It is not clear how many residents actually have waste collection service, and it is assumed that some do not.

Pay-As-You-Throw

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 125 municipalities in Pennsylvania have implemented some form of a PAYT program. There is more information about PAYT available on the DEP website at www.dep.state.pa.us.

Potential Benefits of PAYT. Municipalities that have implemented PAYT programs have reported a number of benefits, including: (1) waste reduction; (2) reduced waste disposal costs; (3) increased waste prevention; (4) increased participation in recycling and composting programs; (5) a more equitable waste management fee structure; and (6) 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: (1) illegal dumping; (2) ensuring full recovery of expenses; (3) controlling/covering administrative costs; (4) perception of increased cost to residents; and (5) 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.

OTHER RECYCLING OPTIONS

Yard Waste. Composting or land application of leaf and yard waste has the potential to divert large volumes of waste, though this is generally a less critical issue for rural municipalities. The Township could consider providing for the collection of yard waste through a drop-off program, placing a centrally located dumpster or rolloff container where residents could bring leaves and grass for composting or land application. The material could be hauled away and composted under contract, or the Township may be able to make arrangements with another municipality that has a composting site, if one is available within the area. Another option is to develop an agreement with a local farmer, landscaper, nursery, cemetery or similar business to accept the material for land application or composting. The DEP has guidelines available both for yard waste composting and for land application that would need to govern any of these activities.

Regardless of whether or not the Township decides to implement any collection of yard waste, it should consider promoting home composting by residents. The Township could work with the County Recycling Coordinator and/or County Cooperative Extension office or garden clubs to provide an educational program, and purchase of home compost bins is eligible for funding under Section 902 Recycling Program grants.

Other Materials. There are usually other opportunities throughout a county or region for recycling. Other materials that can be recycled include, but are not limited to, used oil, tires, automotive batteries, textiles, and appliances. There may also be opportunities to partner with other municipalities to sponsor periodic events to collect some of the larger, more difficult to recycle items. The Township should consult with the County Recycling Coordinator to determine what other options exist and provide the information to residents.

PUBLIC EDUCATION

There is no specific “recipe” for public education that is guaranteed to work for every municipality. The variety of programs and vehicles is just about as numerous as the number of recycling programs in the state. Factors to consider include, but are not limited to size, demographics, geographic location, whether the area is urban, suburban or rural, type of program, mix of housing (single/multi-family, permanent vs. transient) proportion of residences to businesses/institutions. What works for a given area is a function of matching the type and size of effort to the target audiences in that area. Caernarvon Township has a small population, is fairly large in area and somewhat rural.

There is a need for a heavy focus on education in the implementation phase of a program in order to promote participation and train program participants about how to recycle. As programs mature, some level of educational efforts must continue, but they can continue at a

more moderate level. The typical citizen will do his or her duty, but usually needs regular reminders about the hows and whys of a program.

Brochures

The Township should develop a recycling brochure that explains how the program works, including when and where, materials collected, preparation of materials, and why the program is important. This should be distributed to all residents of the Township, and the distribution is probably best accomplished by mail. However, it may also be possible to work with a local advertising publication to distribute the materials as an insert or to print the information prominently in the publications. Mailing the brochures would ensure that they are received, though there is still no guarantee that they will be kept.

Reminders

If a monthly drop-off collection option is chosen (or if curbside collection is chosen), it is important that residents be reminded which day is recycling day. Missing recycling day means having to store recyclables for an additional period of time. Some residents may not be willing to do this and may dispose of additional recyclables when storage space is tight or if they prefer not to have these materials sitting around until the next collection.

There are several reminder options that might be considered, some passive and some active. A passive option would be to distribute a recycling calendar that is small enough to be posted on the refrigerator or in another prominent location, but distinctive enough to stand out among all the other materials that tend to be posted as reminders. This could be mailed along with the Township's recycling brochure. A more active option would be use of reusable banners placed in prominent locations. This would involve a one time cost and use of Township personnel once each month to put them out before recycling day and remove them once collection has been completed.

Other options might include working with a local newspaper to provide regular reminders, working with local churches to provide reminders in bulletins, working with local businesses, and working with schools and civic organizations.

The Township could also consider making available promotional items made from recycled materials—preferably something that would be used by residents so it remains in view as a reminder—to serve as constant reminders about the Township's recycling program. The Township could probably arrange for the distribution of these items by local merchants and at recycling events. Promotional items could include a range of products, from inexpensive pens, pencils, rulers, and refrigerator magnets to note pads or even tote bags. Any items purchased are eligible for funding through the Section 902 Recycling Program grants.

Spotlights on the Program

The Township could also engage in other activities that are fun, inexpensive, and bring attention to the recycling program. Some potential activities for consideration might include:

- Creating a recognizable slogan, logo or mascot associated with the recycling program. Having one or more of these things that identify the program would help to increase program visibility. Some municipalities have conducted local contests to ask residents to submit a slogan, a logo, and/or a mascot to be considered, with the winning entry incorporated into future materials used by the municipality. The winner or winners are

usually recognized by the municipality in some way, and given some type of reward for their effort. Prizes could be donated by local businesses or could potentially be funded through Section 902 Recycling Program Grant.

- The Township could institute a “Recycling Household of the Month” program, with selected households featured in a local paper or similar publication, perhaps a Township newsletter. Specific criteria would need to be developed to determine who might be selected for this recognition, and households could be nominated from within the community (self or by neighbors) or selected through a procedure established by the Township. Criteria should include measures that indicate that a given household is doing more than just delivering materials to a drop-off locations or placing recyclables at the curb on a monthly basis, and could potentially include: home composting; buying recycled; recycling or reuse of materials other than those collected at the curb; use of less hazardous products; and creative uses of materials or activity in the community. Awards could be solicited through local businesses.
- The Township could bring attention to its recycling efforts by developing a visual method of showing progress. Preparing a sign that could be placed in a highly visible location (similar to United Way) showing progress toward the goal (a thermometer, a recycling truck traveling to a materials recovery facility, etc.) will help residents to see where they are in relation to the goal and encourage them to recycle more to meet the goal.
- Some type of recycling display could be developed that can be used during community events, and rotated among schools, churches, and businesses. This display could be used as part of any presentations made by Township officials or a recycling committee.

Ongoing Education

Sometimes residents forget or do not completely understand which materials are acceptable and which are not, or exactly how to prepare materials. In either case, friendly reminders may help to set these residents on the right track. This could be done through production of a new brochure that is distributed annually or through joint efforts with a local publication to include ongoing recycling information for residents.

Education in the Schools

Educating students in grades K-12 may be a very effective way of reaching Township residents both now and for the future. Students often become the strongest advocates of recycling, and will ensure that recycling is happening in their homes. The DEP has recycling curriculum materials available, and the County Recycling Coordinator usually has resources available to assist with education in the schools as well.

ENFORCEMENT

Enforcement should not be an issue with regard to recycling if the Township decides to implement a drop-off recycling program. If the Township were to implement a curbside recycling program, or a joint waste collection and recycling program, enforcement would be an issue if the Township were to decide to make these collections mandatory. In these cases, the Township would need to adopt a comprehensive solid waste and recycling ordinance with appropriate rules and regulations to guarantee that it has the authority to enforce any requirements it might have and the ability to take action against offenders.

If the Township decides to implement a drop-off recycling program, however, it may want to review any current solid waste ordinances to ensure that the Township has the authority to take action in the event of illegal dumping. Wilmington Township (Lawrence County) found that some residents were leaving materials at the collection site before and after the event, and sometimes they would leave trash or unacceptable materials. In some cases when the site was especially busy, residents would pull in, dump materials, and drive off. For Wilmington Township, it was suggested that having visible law enforcement officials available, or simply more volunteers, might help. Illegal dumping can also become a problem at permanent drop-off sites when residents do not take the time to load materials into the collection containers, or use the sites as a place to dump garbage.

It is important to have language in a local ordinance that allows the Township to take action if necessary for such offenders. Such language is useful even if there is no recycling program. However, the effectiveness of any prohibitions concerning illegal dumping requires the cooperation of (1) law enforcement personnel in responding to calls and tracking down illegal dumpers, and (2) the court system in prosecuting these offenders. Individuals and haulers will continue to dump if it is clear that they will not be punished for the activity.

The County Recycling Coordinator should be able to provide samples of appropriate ordinances if an ordinance is needed.

GRANT FUNDING

A number of recycling options and educational programs and materials have been described throughout this report. All of the equipment and materials described, plus staff time and expenses (with the exception of postage, which can be used at match) in planning/preparing/purchasing the equipment, materials and programs, is eligible for funding by a Section 902 Recycling Program grant. These grants will pay for up to 90 percent of eligible costs. Fundable materials, containers and activities described throughout this report include:

- Recycling planning and implementation efforts, including public education
- All public education printed materials for a recycling program, including: brochures; recycling calendar (perhaps a magnet); banners; promotional items; visual display of progress toward recycling goal (similar to United Way); recycling display in public place
- Promotion and implementation of a slogan, logo and/or mascot contest
- Incentive programs to encourage household participation, such as rewards for "Recycling Household of the Month"
- Recycling equipment, including: containers to collect materials through a drop-off program; bins for a curbside recycling program; containers for drop-off collection of yard waste; home composting bins
- Planning for and implementing educational programs in the schools
- Purchasing equipment to implement or expand recycling in the schools

Application forms for Section 902 grants are available from the DEP Southcentral Regional Office in Harrisburg. DEP requests that applicants schedule pre-application meetings to discuss proposals prior to submitting applications to ensure that applicants are submitting

applications that include only fundable activities and equipment and to avoid duplication of efforts.

The Township is also eligible for funding through the Section 904 Performance Grant program, which rewards municipalities based on tonnage recycled and waste diversion rate. Under this program, municipalities can receive \$5.00/ton for every ton of residential waste recycled and for every ton of commercial waste up to the amount of residential waste recycled, plus \$1.00 additional for every percentage point of diversion. In addition, municipalities receive \$10.00 for every ton of commercial recyclables above the 1:1 ratio with residential materials. The state uses a standard generation rate of 0.8 tons/person/year to determine the recycling rate.

For example, if the Township recycled 40 tons of residential material and 80 tons of commercial materials, it could combine 40 tons of the commercial materials with the residential, and use the 80 tons to determine a recycling rate. If the Township generates 1,600 of waste based on the 0.8 tons/person/year generation rate, the calculated recycling rate would be 5 percent. The Township would receive \$10.00 per ton for the 100 tons--\$5.00 per ton flat rate, plus \$1.00 for each percentage point of diversion, which is \$5.00 for 5 percent diversion. For the 40 tons of commercial material that could not be counted toward the recycling rate, the Township would receive a flat \$10.00 per ton. Based on these numbers, Caernarvon Township would receive a Performance Grant of \$1,200--\$800 for the first 80 tons of residential and commercial materials, and \$400 for the additional commercial materials.

Table 10 provides estimates for what the Township could expect to receive from this grant program based only on materials recovered through a drop-off recycling program at the high, medium and low diversion levels. The Township could recover significantly more if it is able to document commercial recycling totals as well.

TABLE 10
ESTIMATED PERFORMANCE GRANT AWARDS

Level of Diversion	Tonnage (1)	Diversion Rate (2)	Estimated Award (3)
Low Diversion Rate (1)	40.0	2.5%	\$300.00
Medium Diversion Rate (2)	60.0	3.8%	\$525.00
High Diversion Rate (3)	80.0	5.0%	\$800.00

(1) Based on estimates provided in Table 2; no commercial materials considered

(2) Diversion rates based on average overall generation of 0.8 tons/person/year

(3) Based on \$5 per ton plus \$1.00 for every percent diversion

CONCLUSIONS

- The Township has expressed interest in implementing some type of recycling program. The Township's population is significantly less than the 5,000 threshold that triggers mandatory recycling efforts, so recycling is not required.
- The Township has some positive features that may make drop-off recycling viable and successful. There are multiple options for implementing drop-off recycling.
- Curbside recycling may be an attractive option in coordination with the implementation of curbside waste collection, particularly if this would reduce any illegal dumping and ensure

a higher level of recycling. A Pay-As-You-Throw program may be the best approach if curbside waste collection and recycling are considered.

- Implementation of any recycling efforts should involve a comprehensive and sustained public education program.
- Legal enforcement will be important to address any illegal dumping activities that may arise from the implementation of a drop-off recycling program. Implementing some type of illegal dumping enforcement program should probably be done regardless of whether or not the Township implements recycling if one doesn't already exist.
- Grant funding is available to pay for the cost of any recycling planning and implementation undertaken by the Township.

RECOMMENDATIONS

- The Township should consider implementing a permanent drop-off collection program for its residents.
 - The preferred option, if available, is to enter into a joint venture with a local business, the outlet center or an anchor business at the outlet center to establish a permanent site, with the Township purchasing all necessary equipment in consultation with the outlet center or business, and the outlet center or business maintaining the site (possibly with assistance from the Township). If the outlet center or business is willing to maintain the site, the Township should allow that entity to keep the revenues from materials and only require that the tonnage of materials recycled be reported to the Township quarterly.
 - If the local business or outlet center option is not available, the Township should explore other options with the private sector to provide viable, cost-effective recycling.
- The Township should explore the possibility of establishing curbside waste collection and recycling, particularly the potential for implementing a Pay-As-You-Throw program.
- If the Township does not implement a recycling program, it should consult with the County Recycling Coordinator to provide information to residents about any recycling opportunities in the County or region.
- If the Township decides to implement either a drop-off or curbside recycling program, it should:
 - Plan for and implement a comprehensive recycling public education program.
 - Review its ordinances to ensure that any necessary enforcement language/ mechanisms are in place, and if needed, adopt appropriate language/mechanisms.
 - Apply for Section 902 grant funding for all eligible activities and equipment.
 - Work with the County Recycling Coordinator to obtain information about other recycling opportunities in the County.
- The Township should work closely with the County Recycling Coordinator to design and implement whatever option it chooses.

Many municipalities in the state have chosen to implement some type of recycling program, even though they are not mandated to do so. There are certainly favorable conditions in Caernarvon Township that could make recycling viable and cost-effective. Even if the Township chooses not to implement recycling, there are options available to the Township to educate its residents about recycling opportunities throughout Berks County and the region, and the Township should obtain this information by contacting and working with the County Recycling Coordinator.

Sincerely,
R.W. BECK, INC.

Sandra L. Strauss
Environmental Analyst

cc: Kathleen Kilbane, SWANA
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