

DRAFT FINAL REPORT

To: Don Blakesley, Erie Recycling Coordinator
From: Rick Schlauder
Date: January 19, 2009
Subject: County-wide Green Waste Management System Evaluation

EXECUTIVE SUMMARY

This study sought to determine and document what is currently taking place in Erie County for segregated collection and processing of yard debris and what could be done to enhance the diversion of organic materials throughout the County. The specific activities for this investigation included:

- Development of a survey form and cover letter for the Erie County Recycling Coordinator to distribute to municipalities through email to investigate current programs and interest in a county-coordinated program.
- Two days of site visits to existing municipal green waste management programs, as well as a private nursery that manages tree debris from local landscapers and a private entity that harvests peat and produces mixed blends of organic materials for sale as soil enhancers.
- Compilation of the information from the survey process and site visits, and analysis of the information to determine the best approach for Erie County moving forward with yard debris management.

The County recognizes that these materials may all eventually be banned from disposal and they were taking a proactive approach at evaluating alternative management options.

Table ES-1 shows the results of the surveys and site visits to baseline current collection and processing of yard debris materials. Of the 38 municipalities in Erie County, 27 responded to the survey and an additional site was visited, making a total of 28 municipalities involved in the process.

Table ES-1 Erie County Yard Debris Program Summary

Responses	Number	Interest in a County-coordinated Program?			
		Yes	No	Maybe	No Response
Municipalities that have an existing program	12	12			
Municipalities that do not have an existing program	16	1	12	1	2
Total	28	13	12	1	2

As Table ES-1 indicates, there are 12 municipalities in the County reporting active yard debris recovery programs, while 16 indicate they have no program. Of the 16 with no program, 12 municipalities (75 percent) suggested they had no interest in pursuing a program to segregate the collection and processing of yard debris materials. So while there are active programs, there are opportunities for improvement that exist through expansion of existing programs or initiation of new programs. Additionally, if yard debris items are someday excluded from disposal in landfills, then even the municipalities saying “no” may have to provide alternate outlets for yard debris items.

Yard debris typically makes up approximately nine percent of the total municipal waste stream, or approximately 33,400 tons per year for Erie County. This report will show that currently approximately 3 percent of the municipal waste stream is being diverted through organized yard debris recovery programs. The actual amount that can be recovered in a specific county is a function of socio-economic and geographic factors. Specifically, Erie County geographically is largely a rural county with as much as 75 percent of the county being rural. Therefore, the potential to recover yard debris diminishes as rural homeowners tend to use alternate practices to manage yard debris such as burning, top dressing on gardens and placement into adjacent vacant properties (wood lots or farm fields). In order to elevate the potential for diversion in the rural areas, disposal of yard debris and burning would have to be made prohibitive.

Ultimately, the County can investigate getting more involved in composting through several incremental strategies, including enhancing technical assistance to the existing compost facilities, supporting backyard composting, investigating coordination of windrow turners among sites, developing end markets, and continuing to reach out to private sector organizations to expand their programs as opportunities arise.

INTRODUCTION

The Pennsylvania Department of Environmental Protection (DEP), working through the Solid Waste Association of North America (SWANA), has created a technical assistance program to help Pennsylvania municipalities establish, enhance and improve their recycling and composting programs. MidAtlantic Solid Waste Consultants (MSW Consultants) is an authorized provider of recycling and composting technical assistance as part of this program.

Erie County, located at the Northwest corner of the Commonwealth, disposes of approximately 370,800 tons of municipal waste per year. With the exception of the city of Erie, it is predominantly a suburban and rural county. Residents and businesses in Erie County currently have a range of recycling options available to them. There are six municipalities in Erie County that are mandated by Act 101 to have recycling ordinances requiring the recycling of aluminum, old corrugated cardboard (OCC), high grade office paper, and leaf waste by commercial, institutional and municipal establishments. These communities are required to provide curbside recycling to residential households and also must provide curbside collection of leaf waste (clippings, branches, leaves, brush or shrubs, or leaf waste as defined in Act 101) placed separately at the curb by residents. County-wide, there is a network of ten municipal programs that provide for the collection and processing of yard debris materials.

This study sought to determine and document what is currently taking place in Erie County for segregated collection and processing of yard debris and what could be done to enhance the diversion of organic materials throughout the County. The specific activities for this investigation included:

- Development of a survey form and cover letter for the Erie County Recycling Coordinator to distribute to municipalities through email to investigate current programs and interest in a county-coordinated program.
- Two days of site visits to existing municipal green waste management programs, as well as a private nursery that manages tree debris from local landscapers and a private entity that harvests peat and produces mixed blends of organic materials for sale as soil enhancers.
- Compilation of the information from the survey process and site visits, and analysis of the information to determine the best approach for Erie County moving forward with yard debris management.

Details of the research and analysis are provided below.

SURVEY PROCESS AND RESULTS

The first step in the project involved surveying each municipality in the county. In addition to determining which municipalities have yard debris recovery programs and which do not, the survey also inquired, for municipalities with systems, about collection methods, means of processing the materials to a usable finished product and the quantities of debris recovered annually. This information is summarized below.

Collection Systems

Table 1 shows the current yard debris collection in place in the municipalities.

Table 1 – Erie County Summary of Yard Debris Collection Methods

Municipalities	Collection Method				Collector		Comments
	Curbside Vacuum	Curbside Bag or Manual	Drop-off Collection	Other Collection	Curbside Municipal	Curbside Contractor	
Albion Borough		L, B and T			L, B and T		
Corry, City of	L						Did not respond but site was visited
Edinboro Borough		L, G, B and T			Leaves	G, B and T	X-mas trees & brush cut in 4 ft length
Erie, City of	L	L, G, B and T			L, G, B and T		
Fairview Township		L and B	L, G, B and T			Yes	
Girard Township			L, G, B and T				Drop-off Fairview Nursery
Harborcreek Township		L	T			Yes	Contractor is Waste Management
Lake City Borough		L	G and B	G, B and T	Yes		Agreement with Girard Borough
Millcreek Township		L, B and T	L, B and T	G		Yes	Grass is bagged as trash
Northeast Borough	L and G			B and T	Yes		Brush and Trees Curbside Chipping
Northeast Township			L, G, B and T				

INDEX OF SYMBOLS Leaves - L, Grass - G, Brush - B and Trees - T

As shown in the Table, the majority of the municipalities collect yard debris at the curbside using manual and bagged collection systems. The two exceptions appear to be only the City of Erie and the City of Corry. Both use vacuum collection systems in the fall for curbside collection of loose leaves.

Bag collection has proved to be a problem in at least two of the municipalities that utilized what they understood to be a biodegradable green plastic bag. Yard debris material delivered in these bags was incorporated directly into the composting windrows without removing the material in the bags. Unfortunately, the bags did not degrade at a rate consistent with the organic materials, nor did it decompose as completely as expected. Therefore, the two programs struggle with cleaning up

contaminated compost product to remove the bags as completely as possible and offer an acceptable end product for household and commercial uses. Pictures of the contaminated compost piles are provided later when each site is described.

To eliminate this problem, both municipalities now have the collectors remove the material from the bags before incorporating into the composting system. This practice is commonly incorporated in all the other municipalities that use bag collection of leaves or other yard debris items. Typically the material is removed from the bags by the collection crew. One exception was Harborcreek Township, which reported PWD staff efforts to debag materials is supplemented by volunteer laborers.

Responsibility of the collection seems to be split fairly evenly between municipal collection and private contractor collection of yard debris materials. However, drop-off is commonly used to supplement curbside leaf collection programs, typically for grass, brush and tree debris where curbside collection of these materials is not provided.

Processing Systems

Table 2 shows how each municipality responding to the survey actually processes the various yard debris items they collect or accept for drop-off.

Table 2 – Erie County Summary of Processing Methodologies

Municipalities	Processing Method				Comments
	Leaves	Grass	Brush	Trees	
Albion Borough	Composting		Chipping	Chipping	
Corry, City of	Composting				Visited composting operation
Edinboro Borough	Composting				WMI collects and processes
Erie, City of	Composting				Grind and screen material
Fairview Township	Composting	Composting	Chipping	Chipping	
Girard Township	Composting	Composting	Not sure	Not sure	
Harborcreek Township	Composting			Chipping	
Lake City Borough	Composting	Composting	Composting	Composting	
Millcreek Township	Composting		Chip/Grind	Chip/Grind	
Northeast Borough	Composting	Composting	Chipping	Chipping	
Northeast Township	Grinding	Grinding	Chip/Grind	Chip	All ground material is composted

Leaves are commonly composted, though many programs suggested they first grind the leaves as part of the composting operation. Grinding prior to materials being debagged served to break up the bags and also reduce the material size to speed up the decomposition process. Northeast Township for instance reported that they process leaves by grinding, but from a site visit it was observed they also actively compost by placing the material into windrows.

Grinding and chipping are the methods used to process all the brush and tree debris with the exception of Mill Village Borough, which reported these materials are accepted on a limited basis

from residents and placed at the old municipal dump site where it is left unprocessed. After grinding or chipping, the resulting mulch is often available without further processing, or else fashioned into a windrow to allow some decomposition and stabilization of the end product. Raw mulch can be detrimental to plant health if applied as directly after chipping or grinding to a flower or vegetable garden, as the mulch competes for the soil nitrogen. Nitrogen, while being important for plant growth, is also a necessary ingredient in the decomposition process. If the mulch draws up too much of the nitrogen the plants will show the effects of the nitrogen depletion.

Estimated Quantities

Table 3 summarizes the estimated quantities of materials collected and processed by the different programs.

Table 3 Erie County Summary of Material Quantities

Municipalities	Annual Quantity (CY)					Additional Comments
	Leaves	Grass	Brush	Trees	All	
Albion Borough	200		100	250		
Corry, City of	Not reported	Not reported	Not reported	Not reported		No quantity information provided
Edinboro, Borough of	2240	Not reported	Not reported	Not reported		
Erie, City of	7307	160	6041			
Fairview Township	633		5843	7		
Girard Township	Not known	Not known	Not known	Not known		Would like to see waste hauler provide separate yard waste collection
Harborcreek Township	480			16		Plans to implement brush collection
Lake City Borough	250					Did not provide quantity for others
Millcreek Township	906		3,524			
Northeast Borough	2,240	336	672	168		Has a write-up with survey
Northeast Township					2,648	

It should be noted that the quantities are estimates, because it is uncommon for composting and organic processing facilities to have scales to measure the weight of incoming materials. Additionally, not all programs were able to provide estimates, so the data above under-report the quantity of leaves and yard debris that are actually being diverted and composted.

Adding up the quantities reported by each responding municipality with a program gives a total of combined yard debris at 34,021 estimated cubic yards. Using the prescribed DEP conversion factor of one ton equals four cubic yards, this represents 8,505 tons of yard debris materials. Again, this number does not fully encompass all that is being diverted. Materials diverted by the private sector

may not always be accounted for, and some municipalities had no methodology for estimating quantities of materials such as, grass, brush and tree debris.

For instance, Fairview Evergreen Nurseries had a significant amount of yard debris at its site in Fairview Township, but no real idea as to the amount because they were not weighing or measuring volume of incoming loads. Therefore, to get an approximate idea of the amount they may manage on an annual basis, the storage piles were measured and cubic yardage calculated from the estimated dimensions of the piles. After performing the calculations, the value generated was approximately 6,513 cubic yards or 1,628 tons of material on the site. Combining this value with the 8,505 tons reported in the survey, the total estimated tons collected, diverted and processed was 10,133 tons.

When taking the total value diverted from disposal and dividing by the total estimated municipal waste disposed by Erie County, it shows that approximately 3 percent of the total waste stream was diverted by the public and private sector initiatives for yard debris recovery. Again, it is likely that this number under-represents the actual total, since not all private initiatives are accounted for and some municipalities would not provide quantities collected and processed as they were unsure of the actual values.

OVERVIEW OF EXISTING PROGRAMS/FACILITIES

As a result of the survey process and a call to Girard Borough it was determined that there are at least ten operating sites for accepting and processing yard debris and one site that handles other organic materials but would be interested in receiving yard debris. The locations of these sites are shown on the map below, Figure 1.

Figure 1 – Geographic Location of Sites Processing Yard Debris in Erie County



As the map shows, the facilities are widely spread throughout the county. However, the concentration is in the area north of US Route 90 and the Lake Erie shoreline. This is expected because the concentration of population is in this region of the county. The other facilities south of US Route 90 are situated in municipalities that are not as rural as the majority of the municipalities in this area.

During the course of two days in October 2008, six facilities (the larger composting and organic processing operations) were visited to assess operations and determine opportunities to potentially expand facilities to accommodate receiving yard debris materials from other contiguous municipalities that currently have no system. They are reported in the order they were visited.

Fairview Evergreen Nurseries

Fairview Evergreen Nurseries is a local business with property in Fairview Township. A portion of the property has been delegated as an area to receive yard debris from residents and contractors that want to drop the material off for reuse as an organic soil amendment. Fairview Evergreen owns approximately 3,500 acres total, of which 800 acres are planted with corn, and the end product generated from the yard debris is land applied to enrich the soil with organic matter and nutrients available from the yard debris material.

The site is staffed Mondays and Thursdays from 3 PM to 7 PM for residential drop-off. Additionally, 13 landscapers deliver materials and have 24-hour access to the site, as each has a key to the lock for the gate. Some of Fairview residential curbside-collected leaves are delivered to this site by the Township's contracted hauler, Waste Management. However, the majority goes to the Millfair site discussed below. Girard Township residents also have the availability of using this site for drop-off of yard debris. In fact, in the survey response, Girard Township indicated they have a yard debris management program, but their involvement is limited to paying a portion of the costs associated with staffing the sites on the designated days for residential use.

Previously, the Millfair program lent their grinder to Fairview Nursery to grind larger woody waste items. When a new larger grinder was procured by the Millfair facility, off-site use of the grinder was restricted and the woody waste is transported by truck to the Millfair site and exchanged for mulch.

The pictures below show the raw materials and composted material ready for land application.

Figure 2 – Fairview Evergreen Nurseries



Millfair Compost & Recycling Center

The Millfair Compost & Recycling Center is a joint venture between Millcreek and Fairview Townships that was started in November 2004. The Millfair Compost & Recycling Center addresses the needs of the 63,000 residents of both Townships to have an option on how to dispose of their yard debris. This represents a total of 20,500 households. Residents are allowed to bring their leaf waste in any containers required to transport their material and an attendant will direct them to the correct drop off area. All material needs to be emptied out of any containers. The

facility has logged over 10,000 annual visits to the Center, and a total of 19,008 cubic yards of yard debris material has been dropped off from April 1 to September of 2008. November is the busiest month for leaf drop off. It is anticipated that another 6,000 cubic yards will be brought in during the month of November. Some specifics of the programs are listed below.

- There is no charge to residents for the drop off of their leaf waste.
- Millcreek and Fairview Townships also have a bagged curbside leaf collection program that runs for 6 scheduled weeks per year.
- Since there is no scale at the Center, data is collected based on volume not weight. Volume is calculated according to the table below.

Load	Estimated Quantity
Pick-up truck (6' bed) & Auto trunk	1 cubic yard
Pick-up truck (8' bed)	2 cubic yards
Small trailer (up to 8')	1-2 cubic yards
Pick-up dump truck	3-4 cubic yards
Trailer (8'-12')	3-4 cubic yards
Stake body truck (10' bed)	3-4 cubic yards
Stake body truck (12' bed)	4-5 cubic yards
Single axle dump truck	4-5 cubic yards
Enclosed chipper truck	5-8 cubic yards
Tandem-axle dump truck	15-20 cubic yards
Tri-axle dump truck	25-30 cubic yards

- Over 100 commercial businesses utilize the facility for a fee. The fees are based on the volume of material they bring to the Center. The rates per load are shown below.

Vehicle Type	Tip Fee
Pickup truck	\$10.00
Single axle truck	\$ 20.00
Tri-axle truck	\$40.00
Wood Chips	FREE

- Residents and commercial users are both charged for the purchase of mulch and compost. The Millfair Compost & Recycling Center has leaf compost, screened bark mulch and

unscreened bark mulch available for purchase. Wood chips that are dropped off by tree service companies are free when they are available. The prices per yard are shown below.

Product	Price per Yard
Leaf Compost	\$10.00
Screened Bark Mulch	\$ 20.00
Unscreened Bark Mulch	\$17.00
Wood Chips	FREE

There are two wheel loaders, a horizontal grinder, bucket mounted windrow turner and a screener on site. The wheel loaders are used to load the material into the grinding machine, keep the site clean and roadway cleared and to load the purchased material for customers. This allows for a safe and efficient work environment. The safety is important for both the workers at the site and the residents and companies that visit the site.

This is one of the two facilities referenced earlier that had contamination problems due to composting the green biodegradable bags with the contents. The picture on the left below illustrates the problem generated by composting the bags as part of the mix. The bags did not decompose at a rate consistent with the leaves, resulting in a considerable amount of green plastic residue in the compost product making it unattractive for residential or commercial landscaping uses. Currently, the facility is screening the material vigorously to try and remove the scrap bag material and generate a useable compost product. Materials delivered loose and those debagged generate a high quality end product, as pictured below on the right.

This program has received an award for local Government Excellence.

Figure 3 – Millfair Compost & Recycling Center



Corry Peat Products

Corry Peat Products is a private business located just northwest of the City of Corry that harvests peat off the property for sale as peat or blended with other organic materials. The facility had sufficient surface area for its own operations with additional areas that could be used to receive and process yard debris delivered by municipalities or contractors. The facility owner was present for the tour and expressed an interest in providing this service if the need existed.

City of Corry

While the City did not respond to the survey, this processing site was visited and later contacted to remind municipal personal to complete the survey. From the visit, it was determined that they use vacuum equipment to curbside collect loose leaves in the municipality and place the material on property adjacent to the Municipal Garage. The pictures below are of the site and material being processed.

A grinder is used initially to size reduce the leaf and yard debris material, which is then placed into a windrow.

Figure 3 – City of Corry



Northeast Township

Northeast Township operates a facility on property adjacent to the municipal building and a municipal park. This facility not only processes materials collected or dropped off from Township sources, but also is the outlet for materials, especially leaves, collected by Borough of Northeast. The Borough of Northeast uses a curbside vacuum system to collect all leaves and grass throughout the Borough. It also has its own chipper so all brush and tree debris collected from the Borough are already size-reduced when delivered to the Northeast Township composting operation. Based on number of loads and vehicle capacity, the Borough has gone to great extents to quantify the amount of yard debris collected annually.

Like in the City of Corry, materials delivered are first ground then placed into windrows for composting. Pictures of this facility and materials are shown below.

Figure 4 – Northeast Township



City of Erie

The City of Erie (City) collects grass, leaves and tree and shrub trimmings weekly in rigid containers (since replacing green plastic bags), April through October. Additional vacuum collection of leaves is provided from October through November. The material is taken to the City's compost site where it is reduced (through a grinder) and composted in windrows before screening to produce a final product. The City has received State grant funds to procure and enhance the site to accommodate this operation.

The City's composting facility is located adjacent to the City wastewater treatment plant. The City has been operating this facility since the early years of Act 101. Erie initiated this effort in the early 1990s and has continued it up through the present.

The compost site utilizes a variety of equipment for maintaining the site and processing the yard debris materials. Most recently the City purchased a new screen with the hopes of improving the removal of unwanted, non-decomposed plastic bags that have contaminated the compost material and degraded the quality of the material for use in residential and commercial landscaping activities.

Pictures of the site and the material included the material contaminated by the non-degraded plastic bags are shown below.

Figure 5 – City of Erie



Other Municipal Composting Operations

In addition to the processing sites visited and documented above, the following smaller processing sites also function in Erie County.

- **Albion Borough:** Residents of Albion Borough can place out yard debris materials (clippings, branches, leaves, brush or shrubs, or leaf waste as defined by Act 101) in clear plastic bags on the same day residential municipal waste is placed at the curb. Borough crews collected the clear bags with the yard debris and deliver it to a municipal staging area where the material is debugged and woody material chipped periodically by municipal employees. Residents then have the opportunity to obtain the processed material for landscaping applications.
- **Girard Township:** Girard Township's yard debris program consists of the residents having the availability of the Fairview Evergreen Nursery composting site in Fairview Township for delivery of drop-off yard debris materials on two specific days per week. For this privilege Girard Township proportionately pays for the costs associated with staffing the site on the two designated days, a shared cost with Fairview Township. In discussions with a representative from Fairview Evergreen Nurseries, it was stated that the potential exists for this site to be relocated to an area of the county that would be less accessible to Girard Township residents.
- **Harborcreek Township:** Harborcreek Township Public Works Department staff collect yard debris from municipal residents in 30 gallon bags, and then place the material in at a composting site positioned behind the municipal building. The material is debugged by PWD and community volunteers and final product from the composting process is sold to the public at a rate of \$20 per cubic yard at the site or \$40 per cubic yard if delivered by the municipality. Residents also have the opportunity to drop-off Christmas trees at the site if they elect to do so.
- **Lake City, Borough of:** The Borough collects clear plastic bags of yard debris, primarily leaves, curbside from the residential units on two Mondays in November and two Mondays

in December. The material collected is delivered, under an agreement, to the Girard Borough composting facility for processing. Girard Borough bills Lake City annually for this service. This is the third year of the agreement with Girard Borough. Christmas trees set out by residents are collected curbside by the Borough waste hauler, Waste Management.

- **Mill Village Borough:** Mill Village Borough collects leaves from residents during the later part of October through the month of November. Leaves are set out by the residents in bags and collected curbside by municipal personal. The material collected is delivered to the Borough's old municipal refuse dump site, debagged and land applied to the top of the old dump. The leaves are left to naturally decompose and enrich the soil cover on the old dump site and further stabilize the soil by enhancing vegetative growth on the cap. Woody debris is accepted for placement at the site after weathers events have generated a greater than normal amount of this material. The woody waste is piled and left untouched to provide habitats for wildlife.
- **Girard Borough:** Girard Borough was surveyed by telephone and reported that while not a mandated municipality, Girard Borough voluntarily began a yard debris recovery program that includes accepting material from the Borough of Lake City. The Borough developed a composting site where materials are received and processed. Materials are first staged at one location, then ground up and transported by truck to a second location for placement of ground material into a windrow. The Borough generally collects material for one windrow per year and based on the windrow dimensions this represents approximately 622 cubic yards per year of material. In 2007 they were able to sell finished material for \$3.00 per cubic yard. The facility is located in the same general area as the Borough Recreation Park and the wastewater treatment plant.

CONCLUSIONS

Generally, this project was successful at evaluating the current yard debris collection and processing system and identifying obstacles to future program expansion. The survey of municipalities achieved a good response rate of 71 percent, and the site visits supplemented the information obtained in the survey.

Of the 27 responding, 16 indicated they have no program and 12 of the 16, or 75 percent of those answering "no", suggested they had no interest in pursuing a program to segregate the collection and processing of yard debris materials. Only four of the 16 municipalities appear to be potential candidates for additional programs. It is not likely that the municipalities replying "no" to the question of their interest in having a program could be cajoled into participating in a system, unless legislation mandates the practice or prohibits the disposal of yard debris materials, or there is a change in the attitude of the municipal leadership.

With 13 of the counties 38 municipalities (34 percent) currently diverting yard debris, there is a fair amount of yard debris recovery activity going on in the county with programs largely being concentrated in the more heavily populated areas. These programs collectively divert approximately one-third of the yard waste generated in the municipal waste stream. Diverting more yard debris would require active participation from the more rural areas of the county where little interest in

recovering yard debris was expressed. Prohibition of burning and disposal of yard debris materials would be required to initiate an interest in the rural areas for organized recovery programs.

There are 10 operating facilities in Erie County for accepting, processing and distributing yard debris/compost. Six of the nine yard debris processing facilities are located north of US Route 90, while three are spread out in the area south of US Route 90, plus the one private operation processing other organic materials. This distribution correlates with the sites being in the areas that are more heavily populated. The larger southern portion of the County while having fewer sites is much more rural, and residents tend to take care of yard debris on-site.

Most operations reported having grinding or chipping equipment for reducing the size of incoming material for storage purposes and for accelerating the composition process. Programs with grinding equipment typically used the equipment to also ground incoming leaves.

Only two of the 13 municipalities with programs had windrow turning equipment. The City of Erie has a large self-propelled unit that straddles the windrows to turn and fluff the material, and Millfair had a windrow unit that mounts on the bucket of a front-end loader. More facilities had screens for screening final product and improving the end-product quality for sale or distribution.

RECOMMENDATIONS

Given the prevalence of yard debris collection programs and processing sites in the more suburban areas of the county, and given the lack of interest among rural municipalities to invest in yard debris programs, there are relatively limited opportunities for dramatic improvements to yard debris diversion even if the County gets more actively involved in coordinating processing options. However, we make the following observations of opportunities where the County could incrementally enhance the overall system.

- **County-Provided Technical Assistance:** One particular area where it was evident the County could be of assistance in promoting yard debris recovery was to provide some technical assistance to some of the smaller programs that could improve material management. In several instances, municipal representatives even suggested they would welcome some technical guidance.
- **Backyard Composting:** If more rural municipalities were encouraged to promote yard debris recovery, it might better be done on a backyard composting basis. Here the property owners would be trained on how to set-up and manage home composting systems. In the past, the Master Gardeners of Erie County have promoted this technique, but as State grant funding resources diminished the Master Gardeners could no longer procure containers to distribute and fund the training sessions. The County could be a source of the financial resources for home composting containers and training workshops to reenergize this program. Promotion of backyard composting should not just be limited to municipalities without composting programs. It should include municipalities with organized programs, but as a supplement to municipal composting for homeowners wishing to divert additional organic materials, such as food waste (which is a growing trend both in Pennsylvania and nationally).

-
- **Windrow Turners:** Windrow turners were absent from all but two programs. Windrow turning units have the distinct advantage of more uniformly mixing and turning the composting material than turning by use of a front-loader. They also reduce the labor and equipment hours as they reduce the handling of material. Conversely, there is a capital investment required, as well as transportation of the windrow to the extent there are multiple composting sites. The County may wish to examine the value added to the municipal yard debris composting operations if the County procured a unit and made it available to the municipalities on an as needed basis. This system has been successfully implemented in Cumberland, Lehigh and Lancaster (grinder only) Counties in Pennsylvania. The Cumberland County Solid Waste Authority, for instance, purchased a compost turner, grinder and screening unit which it lends out to cooperating municipalities for a small usage fee. This way, multiple programs benefit from the equipment and with this method reduces the under utilized use of the equipment. If each program independently owned a windrow turner, each would be greatly underutilized. A pull-behind unit would increase the flexibility of the use of the machine and the cost associated with transporting it from site to site.
 - **End Market Development:** The County should evaluate ways that it could stimulate a market or markets for compost end-product that provides an economic incentive to those currently composting yard debris and those who could potentially implement systems. For instance, investigate the value added if material is bagged and determine how the county could assist in facilitating this being incorporated into a marketing program for all compost produced by programs.
 - **Outreach to Private Sector:** The County should also promote the private sector involvement in the process. Fairview Evergreen Nurseries has an abundance of land that could further benefit from the program this entity currently has in place where it accepts yard debris materials dropped off at a single location in the county then processes and land applies the finished product to their agricultural fields to enhance and enrich the soil for crop production. The County should evaluate measures that they could undertake to expand this activity. Expansion could involve assisting in siting additional drop-off locations and coordinating with Fairview Evergreen or others on overseeing the sites and providing resources to develop secure sites. This strategy has been very successfully implemented in Allegheny County, Pennsylvania by a private landscaping and landscape design company.

With the diminishing of State grant funds for recycling and composting programs, and given the County collects a “host fee” from the in-county Lakeview Landfill, the County may have to assume a role of providing some financial assistance to municipalities if expansion of yard debris recovery is desired. In addition to the above recommendations, the County should look at a ways to fairly distribute monies to assist in seeding the expansion of programs or the initiation of new systems.