

April 9, 2007



Ms. Jeanne Weil
Compliance Officer
New Morgan Borough
75 Grace Blvd, Building D
Morgantown, PA 19543

Dear Jeanne,

This letter summarizes the findings of our evaluation of integrated solid waste management options for New Morgan Borough, Pennsylvania. The evaluation was performed as part of a Recycling Technical Assistance project from the Pennsylvania Department of Environmental Protection (DEP) through the Solid Waste Association of North America (SWANA).

Details of the recycling program options and of our analysis are provided in the sections below.

Executive Summary

New Morgan Borough, located in Berks County, is on the verge of significant growth in population as its major landowner, Arcadia Land Company, begins an ambitious 20-year construction project to build a neo-traditional community to be called Bryn Eyre. Bryn Eyre is envisioned as a “distinctive, exceptionally livable town” in which residential development will be intermingled with commercial businesses and open space. Over 12,000 residential units, along with various commercial, institutional, industrial and public facilities, may be expected in New Morgan Borough by 2026.

With this new development, New Morgan Borough is expected to be a mandated recycling community by 2020. New Morgan Borough requested technical assistance to evaluate its options for creating an integrated waste management system within the Borough and determine the best options available to the community over the next 20 years to coincide with the population growth and character of the development.

Based on population and building projections, estimates of generated, disposed and recycled solid waste were calculated for New Morgan Borough over the next 20 years. The composition of both residential and commercial solid waste was estimated. To determine how other neo-traditional communities handle their solid waste and recycling, information was gathered from three existing communities: Kentlands, I’On, and Celebration via telephone interviews. A summary of Berks County solid waste and recycling services was provided, along with services available from private solid waste companies in the County. Information about pay-as-you-throw systems was provided, as well as other options for recycling collection and processing. The significant impact of large amounts of land-clearing debris and construction waste during the construction phase was discussed, as well as the potential contribution of the Allied Waste Conestoga Landfill to New Morgan Borough’s solid waste system.

R. W. Beck provided the following solid waste and recycling program recommendations to New Morgan Borough:

- Form a partnership with the developers of Bryn Eyre before development begins in order to ensure that both parties embrace the same goals and mutually commit to strive to incorporate these goals in the provision of solid waste services for the new community.
- Prepare for Act 101 mandatory recycling by developing a strong solid waste and recycling ordinance.
- Encourage Bryn Eyre representatives to reinforce the provisions of the ordinance in the Bryn Eyre community covenants and other governing documents.
- Utilize either a contract for solid waste and recyclables collection services, or rely on municipal crews—avoid an open market system, both for single-family residential and for multi-family and commercial.
- Consider a variable-rates, or “pay-as-you-throw” system to reduce waste disposal and encourage recycling.
- Issue a request for qualifications (RFQ) to the private service providers in Berks County outlining the municipality’s needs and intent to create a unique and sustainable solid waste and recycling system.
- Set goals to establish commercial and multi-family solid waste and recycling as soon as the population makes these services feasible.
- Develop a comprehensive promotional and educational campaign for solid waste and recycling services, addressing the demographic that is expected to populate Bryn Eyre.
- Consider developing a municipally owned and operated land-clearing debris processing site for the wood that will be generated during development of Bryn Eyre and the yard trimmings that the community will generate after it is built. Alternatively, contract with a local wood processing company for these services.
- Consider options for developing or contracting with a private company for construction material recycling services.

Background

New Morgan Borough is located in Berks County, which is in the south-central region of Pennsylvania. Currently New Morgan Borough has no integrated solid waste management program and no recycling options. New Morgan Borough is home to the Allied Waste Conestoga Landfill, and few other commercial establishments are located there. The residential population is less than 20.

New Morgan Borough is expected to initiate residential and commercial development by 2008, beginning with Bryn Eyre, a community envisioned as a “distinctive, exceptionally livable town” in which residential development will be intermingled with commercial businesses and open space. It is expected that by the year 2013 New Morgan Borough will reach a population of over 5,000. Based on a 20-year development plan, over 12,000 residential units, along with various commercial, institutional, industrial and public facilities, may be expected by 2026.

While the 2010 expected population will not make New Morgan Borough a “mandatory recycling” community as defined by PA Act 101, it is expected that it will be a mandated community by 2020. The Borough desires to initiate a proactive approach to solid waste management to ensure that the disposal and recycling needs of its future residents are met as the development becomes established and grows in population.

New Morgan Borough is requesting technical assistance to evaluate its options for creating an integrated waste management system within the Borough and determine the best options available to the community over the next 20 years to coincide with the population growth and character of the development. The Borough desires a system that can start small, to suit the population associated with the initial wave of development, and expand as the population expands. The Borough would like to identify the best approach to implementing a sustainable and successful recycling program based on the experiences of other communities, while at the same time maintaining some control over solid waste management programs in the Borough. The Borough is also interested in factoring in the potential contribution of the Conestoga Landfill, currently the largest establishment in New Morgan Borough.

New Morgan Borough – History and Administration

New Morgan Borough was created by Berks County in 1987 from land that was previously part of Caernarvon and Robeson Townships, at the request of the landowner. This 3,500-acre parcel, occupied by only 10 residents at the time, was envisioned as a community that would eventually include a large hotel, golf courses, a monorail train, residential housing, an industrial park, a trash-to-steam facility, and a landfill. The only element of this grand plan that was constructed was the landfill.

Currently there are four landowners in New Morgan Borough: The Borough itself, which owns about 500 acres; the Conestoga Landfill, owned by Allied Waste Services, which occupies 454 acres; a juvenile detention center owned by the Cornell Companies, Inc, occupying 50 acres; and the Arcadia Land Company which owns the remainder of the approximate 3,500 acres. The landfill is located on the western end of the Borough. The land slated for development is in the east. Currently several small manufacturing businesses lease old mining buildings and some small office buildings are operating, but in general economic activity in the Borough is very limited.

New Morgan Borough's growth projections are substantial. Beginning in 2007, the Borough's major landowner, Arcadia Land Company, plans to initiate design and construction of Bryn Eyre, a "neo-traditional" community similar to the planned communities of Kentlands, in Gaithersburg, Maryland; Celebration in Osceola County, Florida and I'On in Mt. Pleasant, South Carolina. These types of communities seek to capture desirable elements of older, traditional towns such as neighborhood interaction, a live/work environment, and other attributes that are often seen as lacking in typical suburban housing developments which are car-dependent and often isolated from recreational, work, and social opportunities.

It is expected that between 2012 and 2017 New Morgan Borough will reach a population of over 5,000 in the new community of Bryn Eyre. Its residential housing units will be a mix of detached single-family, attached single-family and multi-family properties built in neighborhoods of various housing densities. Development will be accomplished in phases, with the overall parcel divided into zones that will be filled in with a particular type of community development in an orderly fashion.

Based on a 20-year development plan, over 12,000 residential units, along with various commercial, institutional, industrial and public facilities, may be expected by 2026. Bryn Eyre will be the only residential development in New Morgan Borough.

Table 1 illustrates the mix of housing types that are projected in New Morgan Borough beginning in 2008 and in five-year increments through 2028. A population projection, based on 2.5 persons per household, is also presented.

Table 1
New Morgan Borough Housing and Population Projections

Building and Population Types	2008	2012	2017	2022	2028
Residential Development:					
Single-Family Detached	30	820	1,825	2,774	3,349
Single-Family Attached	0	367	957	1,535	2,137
Multi-Family Units	0	200	1,806	3,861	7,019
Commercial Development:					
Commercial Sq. Ft.	0	50,000	150,000	500,000	3,270,000
Retail Sq. Ft.	0	54,000	174,000	374,000	1,495,656
Light Industrial/Flex Space Sq. Ft.	0	150,000	350,000	584,000	584,000
Misc. Public Buildings Sq. Ft.	10,000	40,000	50,000	70,000	80,000
Estimated Population	75	3,468	11,470	20,425	31,263

Currently the Borough has few financial resources, except for the host fee that is paid to the Borough by the Conestoga Landfill. It is critical that the Borough develop a public administration base that can develop and provide on an ongoing basis a variety of services generally provided by local governments. One important service is solid waste management, including recycling. New Morgan Borough wants to establish an integrated waste management system that will be sufficient for the needs of its residents, including commercial and industrial businesses and institutions, from the beginning and will grow with the community. The system will need to be easily adaptable to accommodate population growth and increasing diversity in the types of housing units, commercial establishments, and other types of institutions as they are built out. It will also be respectful of the natural environment as expressed in the developer's vision for Bryn Eyre.

Bryn Eyre: Values and Vision

The values guiding the development of Bryn Eyre encompass a concern for the environment as well as community. The Town will be built on a former industrial site and reclaim this land to productive use, as opposed to developing farmlands or woodlands. The Town developers have embraced the U.S. EPA's Ten Smart Growth Principles, as included in Berks County's 2020 Plan. Sidewalks and bike trails, nature trails, and preserved open space are highlighted in the brochure as important features to be incorporated into the community design to encourage outdoor mobility and recreation. Bryn Eyre will be a community where the environment is important and respected. The model neo-traditional communities of Kentlands, Celebration and I'On, embracing many of the same environmental values, are extremely successful, demonstrating that families desire these attributes and environmental values.

Bryn Eyre Vision: To create a distinctive, exceptionally livable town where a variety of homes, shops and offices radiate from parks and plazas and where pedestrian connections and amenities abound.

These environmental values are a natural tie-in to a sustainable, community-focused solid waste management and recycling system. The environmental benefits of recycling in terms of landfill savings and resource conservation are clear. Recently it has also been shown by the U.S. EPA that recycling can significantly reduce the production of greenhouse gases, and thus have an impact on climate change.¹ Large corporations, led by well-known retailers, are embracing "environmental stewardship" as a guiding principal for their businesses. Wal-Mart in particular has pressed its suppliers to reduce their product packaging and their transport packaging, as a source-reduction measure, and has set ambitious recycling and sustainability goals.

Established communities, with a set infrastructure and demographics that are not easily altered, can find it difficult to change long-standing customs and development patterns to prioritize environmental protection. As a brand new development, Bryn Eyre has a unique opportunity to create an environmentally sustainable lifestyle by choosing the services it provides, in partnership with New Morgan Borough, to meet these environmental values.

New Morgan Borough Solid Waste and Recyclable Material Projections

In order for New Morgan Borough to develop specifications for solid waste and recyclables collection systems, the Borough needs to have estimates of the tonnages of solid waste that will be generated, and the tonnages and composition of recyclable materials that will be generated and potentially recovered. The specifications for collection truck sizes and types, collection

¹ U.S. EPA WasteWise Update: Global Warming is a Waste, September 2002.
<http://www.epa.gov/wastewise/pubs/wwupdate18.pdf>

frequencies, routes, and other characteristics of the solid waste system will be based on such estimates. The tonnage estimates presented in this report are meant to be used as tools to allow the Borough to begin the process of becoming familiar with its solid waste service needs, and to begin to evaluate its options and make choices. More detailed and accurate information will be needed once the Borough is ready to either purchase or lease its own equipment for these purposes, or to enter into contracts for service from private companies.

Every effort was made to obtain the most specific numbers to Berks County and its municipalities in making the assumptions and calculations that follow. Berks County figures compiled or calculated by the PA DEP were used when available. For recyclable materials composition, actual local and regional figures were not available, and this report uses numbers derived from the PA Statewide Recyclables Composition Study (PA DEP, 2003).

Projected Quantities of Residential Solid Waste and Recyclables

Berks County residents generated 4.77 lbs per person per day of solid waste in 2003.² They recycled 0.93 pounds per person per day, which means that the remaining 3.84 pounds per person per day was disposed. These figures result in a 19.5 percent estimated recycling rate for Berks County.

To begin estimating the volume of waste and recyclables for New Morgan Borough and Bryn Eyre residents, the 2012 estimated projections of housing units were used because 2012 is the first year in which any population of significant size will be residing there. The number of housing units is estimated at 1,387 for that year, and, based on an average of 2.5 persons per household in the south central region of Pennsylvania³ the population will be 3,468.

The 2003 generation and recycling figures for Berks County were used to determine New Morgan Borough's estimated 2012 material projections. Since New Morgan Borough is located in Berks County, and since New Morgan Borough has no prior experience with solid waste and recycling, this starting point seemed logical, although there is no way to assess the accuracy of these projections. A 19.5 percent recycling rate may be considered low by 2012, compared to other Pennsylvania municipalities, but since New Morgan Borough will just be getting started this conservative rate was chosen. These estimates assume a 10 percent increase in recycling every five years for the duration of the planning period. This number was chosen because it is believed that, with the correctly designed recycling program that includes a wide range of materials as well as excellent and frequent public education, such increases are achievable. New Morgan Borough has the opportunity to implement such programs from the beginning.

² "2003 PA Waste Generation and Recycling," published by the Pennsylvania Department of Environmental Protection, <http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm>

³ "Pennsylvania Statewide Waste Composition Study", PA Department of Environmental Protection, April 2003.

Table 2 presents the estimated per-capita amounts of generated, disposed and recycled municipal solid waste that may be expected in New Morgan Borough, based on the above assumptions.

Table 2
New Morgan Borough Projections for Generated, Disposed
and Recycled Municipal Solid Waste

	2012	2017	2022	2028
Housing Units	1,387	4,588	8,170	12,505
Population	3,468	11,470	20,425	31,263
MSW Generated (lbs/cap/day) ¹	4.77	4.77	4.77	4.77
MSW Disposed (lbs/cap/day)	3.84	3.36	2.88	2.41
MSW Recycled (lbs/cap/day)	.93	1.41	1.88	2.36
Recycling Rate (percent)	19.5	29.5	39.5	49.5

¹ MSW Generated is held constant for the purposes of estimation, as predicting actual changes in per-capita generation rates is extremely complex and involves many variables. These estimates are for purposes of illustration and should be used for planning purposes only.

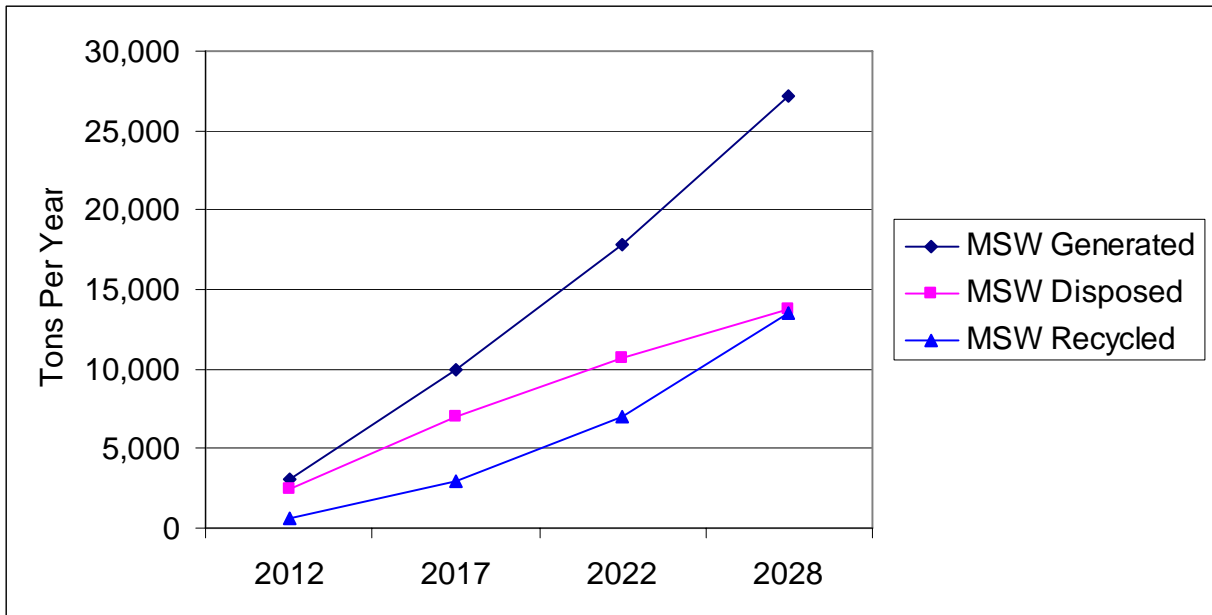
Table 3 presents estimates of the daily and annual tonnages expected to be generated, disposed, and recycled in New Morgan Borough over the planning period, extrapolated from the figures in Table 2.

Table 3
Total Daily and Annual Tonnages of MSW in New Morgan Borough for Planning Period

		2012	2017	2022	2028
MSW Generated	Tons/Day	8.27	27.36	48.71	74.56
	Tons/Year	3,019	9,985	17,779	27,215
MSW Disposed	Tons/Day	6.65	19.27	29.41	37.67
	Tons/Year	2,430	7,033	10,735	13,750
MSW Recycled	Tons/Day	1.61	8.09	19.20	36.89
	Tons/Year	588.6	2,952	7,008	13,465

Figure 1 provides a graphical representation of the annual tons depicted in Table 2.

Figure 1
Project MSW Generation, Recovery, and Disposal in New Morgan Borough
2012 - 2028



As Figure 1 demonstrates, by 2028 nearly as much waste is expected to be recycled as generated in New Morgan Borough.

Composition of Residential Recyclables

While knowledge of the composition of recovered solid waste materials is not strictly necessary to plan a collection and recycling system, it can be useful to enable the community to evaluate recycling service providers. The value of each recyclable commodity is different, and communities generally need to understand the values so that they can fairly share in any costs and revenues associated with the recycling system. The amount and composition of residential recyclable material is generally determined separately from commercial material tonnages and composition. Tables 4 and 5 present typical composition percentages for residential recyclable materials. These numbers were obtained from the Pennsylvania Recovered Materials Composition Study.⁴ They represent averages from samples sorted at eight material recovery facilities (MRFs) serving various Pennsylvania communities. These numbers present a reasonable estimate for overall planning purposes for New Morgan Borough.

In general, the paper portion of recyclable materials ranges from 50 to 60 percent of the total, and the containers range from 35 to 40 percent, by weight. The materials presented are typical of a two-stream recycling collection system, in which mixed containers are placed in one truck compartment, and paper products are placed in a second compartment. These mixed materials are then sorted and marketed at a materials recovery facility (MRF).

Table 4
Estimated Composition of Residential Recyclable Materials
for New Morgan Borough: Paper Stream

Material Type	Percentage of Total Recovered Paper ¹
Newspapers (ONP)	72.7
Magazines/Catalogs/Glossy	17.1
Other Paper	6.9
Corrugated Containers (OCC)	2.7
Rejects	0.7

¹ By weight

⁴ Pennsylvania Recovered Materials Composition Study, R.W. Beck for PA DEP, February 2005.

Table 5
Estimated Composition of Residential Recyclable Materials
for New Morgan Borough Container Stream

Material Type	Percentage of Total Recovered Containers ¹
Clear Glass	21.9
#1 PET Bottles	12.9
Amber Glass	12.9
#2 HDPE Bottles and Jugs	12.4
Green Glass	11.9
Steel Cans	11.7
Mixed Cullet (broken glass)	9.6
Aluminum Cans	6.4
Aluminum Other	0.4

¹ By weight after removal of contaminants (which are approximately 7.2 percent in the container stream).

Commercial Waste and Recyclables

The estimates of recyclable materials presented in Tables 4 and 5 only consider residential recyclables. Residential materials constitute approximately 60 percent of available recyclable material. Since New Morgan Borough expects its development to include mixed-use communities incorporating commercial buildings and activities, recycling planning should include materials generated from these establishments as well.

By 2012 New Morgan Borough anticipates that 294,000 square feet of commercial, retail and light industrial space will be developed. By 2028, this amount increases to over 5 million square feet. The solid waste and recyclable materials generated within these developed spaces must also be managed and planned for.

Projecting amounts of recyclable materials from a wide range of sizes and types of businesses and institutions, without knowing what these businesses will be, is challenging. However, various sources are available for making planning-level estimates of these material types and tonnages. It should be noted that data should be collected and reviewed during the build out phase, so that projections can be updated, as appropriate.

The PA DEP guidelines for commercial recycling state that commercial office paper generation ranges from 1.5 lbs/employee/day to 2.0 lbs per employee per day for financial businesses. According to DEP, 77 percent of this paper generated is recyclable, and half of that is high-grade paper. Published solid waste generation rates from studies conducted by the Washington State Department of Ecology (1992) and the Santa Barbara County Public Works Department (CA, 1997), found that typical offices generate 1.24 and 1.5 lbs of solid waste per employee per day, respectively. Most of this solid waste is presumably paper.

Since New Morgan Borough does not know how many employees will ultimately be working in these future businesses, nor what types of offices might be established, estimates based on square footage of building space might be more useful.

To assist in understanding the varied results from the studies originally compiled by the California Integrated Waste Management Board, Table 6 presents averages in pounds per 1,000 square feet per day.

Table 6
Adjusted Solid Waste Averages and Ranges for Commercial Business Types¹

Type of Businesses	Average Pounds of SW per 1000 sq. ft. per Day	Range (Pounds per Day)
Commercial, unspecified	9	5 – 13
Commercial, retail	4.25	.20 – 46
Auto Dealer/Repair	34	9 – 59
Department Store	31.2	N/A
Food Stores	59	N/A
Shopping Centers	25	N/A
Supermarket	31.2	N/A

¹ These data ranges are drawn from a variety of studies reference on the web site of the California Integrated Waste Management Board, Waste Analysis Branch, <http://www.ciwmb.ca.gov/WasteChar/WasteGenRates/Commercial.htm>

While the above generation figures may be used for planning purposes, they vary widely. No information is available as to the methodologies or sample sizes for the studies used to develop these estimated ranges. Therefore, these numbers should be used cautiously to estimate actual solid waste generation expected. Similar tables can be found for institutional, industrial, and service establishments at the CIWMB web site.

Management of MSW and Recycling in other Planned Communities

The developers of Bryn Eyre cite the planned communities of Kentlands, in Gaithersburg, MD; Ion in Mt. Pleasant, SC; Celebration in Osceola County, Florida and Verrado in Buckeye, Arizona as some of the models of their type of neo-traditional development. To assist in

defining an integrated waste management system for Bryn Eyre and New Morgan Borough as a whole, R.W. Beck investigated the waste management and recycling systems in Kentlands, Celebration and I'On. Verrado provides no solid waste collection or recycling services for its residents.

Kentlands

Kentlands is a planned community located in Gaithersburg, Maryland. A re-creation of a colonial style village, Kentlands is built on land that was once a farm and incorporates buildings and landscaping from that original use. Development began in 1988. With only a few lots still undeveloped, Kentlands today consists of approximately 1,800 homes in 12 sub-neighborhoods or districts. Kentlands is located on approximately 350 acres and is a part of the City of Gaithersburg. Gaithersburg owns and maintains the streets in Kentlands except for a small number of alleys and private roads.

The residential units include single-family homes (some with "carriage house" accessory apartments), "urban cottages" (smaller single-family homes), townhouses, garage townhouses, rental apartments, and condominium units. Kentlands is also the home to about 1 million square feet of office and commercial development, with more planned.

Kentlands is governed by the Kentlands Citizens Assembly Board of Trustees. The Trustees are assisted by The Kentlands Citizens Assembly, a private, not-for-profit corporation whose membership is comprised of all owners of lots within the community. The Citizens Assembly has the primary function of maintaining the Assembly's common areas and amenities and enforcing the legal documents and rules and regulations.

The Assembly retains a professional managing agent, currently Community Management Corporation (CMC) who is responsible for routine day to-day management operations of the Assembly, such as collecting assessments, paying bills, supervising contractors, maintenance of the common areas of the community and providing administrative and support services for the governing and administrative agencies.

Solid Waste and Recycling in Kentlands

The City of Gaithersburg does not provide garbage collection service to its residents. Individual households or associations must make their own contractual arrangements with the hauler of their choice. CMC, however, administers a contract with Waste Management of Montgomery County for Kentlands solid waste collection and disposal. Trash is collected on Tuesdays and Fridays, in alleys for homes that have them and curbside for those that do not. The only requirement for the type of trash container is that it has a tight-fitting lid. Single-family residences (including town homes) are eligible for this service. Rental apartments and condominiums, as well as commercial establishments must make separate arrangements.

Residential services, including solid waste management as well as maintenance of open spaces and recreational facilities, are included in an annual assessment charge to each dwelling unit.

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The monthly assessment for single-family homes in Kentlands was \$102.55 per month in 2006; in 2007 it was reduced to \$92.45 per month. The solid waste collection portion of the assessment is \$15.65 per month (\$187.80 annually).

Recycling services for Kentlands' single-family households are provided through a separate contract with Waste Management, administered by the City of Gaithersburg. The cost of approximately \$55 per year per household is a separate line item on residents' yearly Montgomery County property tax bills (e.g., a non ad-valorem assessment). While recycling is not mandatory, new residents, including residents of Kentlands, receive an 18-gallon bin and information from the City. Compactor trucks collect the material weekly. Alley collection can be problematic for the trucks, and the City insists that neighborhoods desiring alley recycling pick-up first prove that the trucks will fit down the narrow roads.

Additional services provided by the City of Gaithersburg, using their own crews, include monthly bulky item collection; fall and spring loose leaf collection, and holiday tree collection from December 26 through January 31. Kentlands landscaping crews provide additional collection of loose leaves during peak periods as needed.

CMC is not responsible for providing or monitoring waste and recyclables collection to multi-family complexes or commercial entities. Determining the level of services provided to these residents and businesses was beyond the scope of this report; however, since recycling is not mandatory, it is probably limited.

I'On

I'On is a community within the Town of Mt. Pleasant, South Carolina, which is located in Charleston County. The community was established by Ordinance in March, 1997. I'On is located on approximately 243 acres and consists of residential housing units mixed with commercial businesses and public spaces. The streets in I'On are public and owned by the Town of Mt. Pleasant. Each homeowner belongs to the I'On Assembly, which governs the neighborhood's common areas.

The initial plans in 1995 for the I'On community included a fairly urban and diverse village of over 1,200 units, including multi-family homes and rented residences. However, challenges by the Town of Mt. Pleasant eventually resulted in revised plan for approximately 769 single family homes, a village square and locations for civic buildings such as churches and schools. As of July 2006 the community consisted of approximately 550 occupied homes, one church, a number of businesses and the East Cooper Montessori Charter School. The overall density of the neighborhood is about 3.8 units per acre with large amounts of the community's area being allocated to parks, trails, lakes, sidewalks and other common areas. Development in I'On should be finished by 2010. The community will ultimately be home to about 1,800 residents, 40 resident businesses, one school with an enrollment of approximately 150 students, and two churches.

Solid Waste and Recycling in I'On

The Town of Mt. Pleasant provides the household garbage and trash collection for the I'On community. The Town collects household garbage in 90- or 60-gallon roll-out carts (residents choose the size cart they need, with a two-cart maximum per household) on a weekly basis. Bulky household trash is also collected weekly. Garbage is disposed at Charleston County's waste-to-energy facility and bulky trash is sent to the Charleston County landfill. Limbs and brush are collected with the trash; leaves are collected in clear bags that the town sells for \$2 each. These materials are composted by Charleston County at its composting facility adjacent to the solid waste landfill. Households are not charged directly for these services. The cost is paid by property taxes. There is no difference in garbage and trash collection procedures in I'On compared to the rest of Mt. Pleasant. Collection is provided at the curb, not in alleyways, by semi-automated, rear-loading compactor trucks.

Recycling in I'On is part of Charleston County's comprehensive curbside recycling collection program. The County administers a two-stream system in which recyclable containers are collected in an 18-gallon bin and paper products in a paper bag next to the bin. Collection is bi-weekly. I'On is serviced in the same way as the rest of the County. Collection is provided curbside.

A conversation with the Executive Director of the I'On Association revealed that generally residents are satisfied with the level of solid waste and recycling services provided. Although some people would prefer alley service over curbside, she believes that an equal number are happy with curbside. The routes are serviced on time, the trucks are clean, and the impact of the truck traffic on the neighborhood has not been an issue of concern.

Celebration

Celebration is a planned community located in unincorporated Osceola County, Florida. Celebration's developer, The Celebration Company, is a subsidiary of The Walt Disney Company. Begun in 1995, Celebration has created a town of about 9,000 residents occupying approximately 5,000 dwelling units on 4,500 acres. The community incorporates the neo-traditional and environmental values typical of such communities, including expansive front porches on homes, recreational opportunities, special events, and nature preserves. The housing is approximately equal portions single-family and multi-family.

The Celebration Joint Committee (CJC), comprised of representatives from both the Residential Owners Association and the Non-Residential Owners Association, secures services including management, security, communications and accounting. The CJC administers the contract with Capital Consultants Management Corporation, the entity that provides for solid waste and recycling services.

Solid Waste and Recycling in Celebration

About 90 percent of Celebration's homes are accessed by rear alleyways. Very few garages, with the exception of homes that adjoin nature preserves and have no space for alleys, have entrances on the front of the home. The alleys were a challenge to solid waste management from the beginning, since alleyway trash and recycling collection was preferred over curbside for aesthetic reasons. While Osceola County owns the streets in Celebration, the community owns the alleys. Standard-size garbage trucks were found to be too large to service alleys and they damaged curbs and landscaping attempting to do so. In the late 1990's, recognizing that this was a big problem both in terms of costs and aesthetics, the CJC formed a committee to look into alternatives. The committee developed detailed specifications for a garbage truck that could fit into the alleys but found that most of the local collection service providers insisted that the community itself purchase these particular trucks if they wanted them, or accept what was available.

Celebration was fortunate in that a local entrepreneur accepted the risk of fabricating three of these special trucks in return for the contract to collect solid waste and recyclable materials for Celebration. The Town of Celebration signed a five-year contract with his company, Celebration Sanitation, in March, 2006. Celebration Sanitation provides the trash, recycling and yard waste collection as well as special projects such as "cardboard recycling drives" as requested by the community.

The trucks are based on the Freightliner M-2 Business Class chassis. Celebration Sanitation modified the chassis and axles to an 84-inch wheelbase, considerably shorter than a standard garbage truck, so they would fit easily into and around the community's alleys. These chassis were then fitted with 11 cubic yard compactors. The trucks will hold five tons under typical compaction ratios, which results in about 250 households per route. The community is divided into two trash collection routes, with one serviced on Mondays and Thursdays and the other on Tuesdays and Fridays, each with one truck. This is possible in part because the disposal site, the Orange County landfill, is only a 28-mile round trip.

Solid waste is collected in community-mandated 90-gallon rolling containers. Residents are advised, but not required, to keep their containers in their garages on other days. One resident who was interviewed for this report, the Executive Director of Celebration, said that residents are very pleased with the aesthetics of the alley trash collection and consider it a major improvement over past years when collection was moved to curbside to accommodate the larger trucks.

The same trucks collect recyclables and yard waste on Wednesdays, using one truck for each, routing the entire town. The recycling collection is single-stream. Materials are delivered to the Orange County Materials Recovery Facility near Orlando, also a 28-mile round trip. There is a processing fee paid for acceptance of the recyclables, and no revenue is received. Yard waste is delivered to an inert debris landfill on the same site.

Photographs of the modified collection truck are shown in Figure 2.

Figure 2
Celebration Sanitation's Custom-Built Garbage Truck



The solid waste charge for Celebration residents and property owners is billed separately from the assessment for other services. The charge is \$252 per year (\$21 per month), and includes trash and recycling collection, yard waste collection and Christmas tree collection. All services are provided by Celebration Sanitation.

Currently few commercial businesses or multi-family complexes in Celebration receive recycling services. Each condominium or apartment association, of which there are 12, contracts for their own bulk container trash service. The community's architectural standards specify only the type of enclosure that must be built around each dumpster. Currently the twelve associations work with Capital Consultants Management Service, but they are in the process of obtaining their own management company. It is not known whether each of the 12 will hire their own, or if they will all work with the same company.

Celebration Sanitation and Capital Consultants Management Company are currently negotiating a trash and recycling services contract for downtown Celebration stores and restaurants. The standard 8-cubic yard front-loading dumpsters for these businesses will be replaced with smaller, 2- or 4-yard containers, and the small trash trucks will service these accounts with automated rear-loading capability. If this arrangement proves successful, Celebration Sanitation also hopes to work with the condominiums and multi-family apartment complexes to downsize their trash containers and offer them the same services.

Lessons Learned from other Planned Communities

New Morgan Borough has the unique opportunity to take advantage of the learning curve experienced by other neo-traditional developments that have had to adapt their communities' needs to fit the existing solid waste management systems. These adaptations have not always worked to the benefit of the community.

The most important lesson to be learned from the experience of these three communities is that solid waste and recycling collection should be built into the overall plan for the community from the start. All three communities reported that alley solid waste and recycling collection was the most desirable option for them; however, only in Celebration was that system feasible, and only after 10 years of less-than-optimal service. For communities whose vision rests upon the values of welcoming front porches, pleasing architectural design, outdoor activities and respect for the natural environment, the regular presence of large, noisy diesel trucks collecting solid waste and recyclables does not fit well. In the absence of early planning to ensure a solid waste system that conforms to a community's vision, a community may be forced to accept an existing system that is suited only to the type of suburban development antithetical to how a neo-traditional planned community defines itself.

Related to this overarching lesson, several other observations can be made about solid waste and recycling in these other communities:

- Their governing documents and covenants lack any specific requirements and standards for solid waste and recycling services. The community governing boards and resident associations were therefore limited in their influence over the operation of services that could potentially impact their lives in a negative way. Thus, it is suggested that Bryn Eyre's governing documents and covenants provide some specificity and standards (while still allowing for changes and flexibility) for solid waste and recycling services.
- Two of the three communities required the resident to pay for solid waste and recycling services in their comprehensive assessments, but none offered a Pay-as-you-Throw (PAYT) arrangement where residents can choose to pay less by setting out less trash and recycle more. Bryn Eyre should give serious consideration to implementing a pay-as-you-throw program, as this type of program provides real economic incentive to recycle.
- None of the communities were involved directly in the provision of solid waste and recycling services to the multi-family or commercial sectors. These communities' goal of integrating "live and work" is incomplete in this regard. Bryn Eyre, therefore, should consider integrating solid waste collection services for the residential and commercial sectors, including multi-family complexes. This could result in fewer trucks traveling in the community, and more efficient routing.

Berks County Solid Waste Services

The County of Berks offers its citizens certain solid waste and recycling services; however, they are limited in scope. Residents of Bryn Eyre will have the opportunity to use these services if they choose.

Berks County does not have a solid waste or recycling ordinance. Each municipality in the County has its own ordinance. Berks County has a Municipal Solid Waste Management Plan, the latest revision of which is dated September, 2005. The Plan calls for delegating all solid

waste management and recycling responsibilities to the Berks County Solid Waste Authority, which currently manages electronics recycling programs and shares responsibility with the County for household hazardous waste programs. Berks County has a full-time recycling coordinator, and the Solid Waste Authority also has a full-time staff person. Berks County has one permanent recycling drop-off center plus several mobile centers that serve 12 different locations on fixed schedules. The recyclables are processed and marketed by Cougles Recycling, Inc. in Hamburg, northern Berks County, under an informal agreement without a contract. No tipping fee or processing fee is paid by the County to Cougles, and revenue is not received by the County on a consistent basis.

Solid Waste and Recycling Program Options

Partnership

A vital first step for New Morgan Borough in developing a sustainable solid waste management system is to develop a partnership with the developers of Bryn Eyre.

A strong relationship/partnership with the developer can ensure that both parties are embracing the same goals of an environmental aesthetic, sustainability, adaptability, and a mutual commitment to strive to incorporate these goals in the provision of all services for the new community, including solid waste management. One means of developing this partnership includes scheduling a first session focused on defining mutually-held values, developing overarching shared goals, and relationship-building. This session could be followed by the formation of an ongoing committee to meet regularly as development begins and proceeds. The committee would address emerging issues, develop and fine-tune policy tools to address these issues, track progress and procure technical assistance or other advice as needed.

Such a public/private partnership would foster communication, provide an efficient venue for cooperation on services where mutual effort is needed, and give both parties credibility with state environmental regulators and program enforcers.

Requirements of Act 101 – Mandatory Recycling

Chapter 15, “Recycling and Waste Reduction,” of Act 101, the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988, sets out the requirements for counties and municipalities with regard to establishing and implementing recycling programs. The Act requires municipalities with populations between 5,000 and 10,000 and population densities of greater than 300 persons per square mile to implement residential recycling programs for at least three recyclable materials (out of a list of eight) plus leaf waste within three years of the effective date of the Act, and to require commercial, institutional and municipal establishments to recycle at least four mandated materials. These recycling requirements are to be established by ordinance in counties and municipalities, per Act 101. Communities are also required by Act 101 to establish a comprehensive and sustained public information and education program

concerning recycling program features and requirements which must be activated at least once every six months, and whenever recycling program requirements or features change. Municipalities are required to report their recycling activities to their county, per Section 304 (f), and counties in turn report to the DEP per Section 303 (f). These jurisdictions usually include provisions in their ordinances requiring material generators and/or their recycling service providers to report tonnages from contracted municipal collection, multi-family collection, and commercial collection.

New Morgan Borough will be a mandated recycling community between 2012 and 2017, if growth proceeds as planned. The Borough is interested in establishing a comprehensive solid waste management and recycling system that will be effective and efficient enough to comply with the requirements of Act 101 as a mandated community.

The development of specific ordinance provisions and language for New Morgan Borough is beyond the scope of this report. The Borough should work with its attorneys to draft a solid waste and recycling ordinance that establishes a structure for incorporating mandatory recycling when the Borough reaches that population level. Through its partnership with the developer of Bryn Eyre, New Morgan Borough should also work to ensure that the community's governing documents include specific recycling standards and reference the Borough's ordinance in the appropriate areas.

Solid Waste Program Options

Solid waste collection and disposal is typically handled one of three ways in Pennsylvania municipalities: using an open market system; contracting with a private sector service provider; and establishing a municipally owned and operated collection system. Table 7 below provides a description of each service option and its benefits and drawbacks.

Table 7
Solid Waste Collection Options

Option	Description	Benefits	Drawbacks
Open Market (also called Subscription)	Each household in the municipality makes its own arrangements with a particular service provider and pays directly. Service providers may offer a "menu" of services for different prices.	<ul style="list-style-type: none"> ■ No municipal involvement in waste collection ■ Municipality does not handle any billing or customer service ■ Municipality does not have administrative costs. 	<ul style="list-style-type: none"> ■ Can result in multiple trucks visiting the same area, or even the same street, on the same day. This can cause wear and tear on streets, decrease safety, and add to air and noise pollution ■ Municipality has little control over services offered and enforcement.
Municipal Contract with Private Service Provider	Municipality contracts with one service provider to collect solid waste for all households. Usually service provider is chosen in competitive bid process	<ul style="list-style-type: none"> ■ Only one service provider visits each street on collection day, reducing noise, pollution, truck traffic danger and street wear. ■ Municipality can specify services provided in contract. PA research shows costs per household are usually lower in a contract system. 	<ul style="list-style-type: none"> ■ Municipality must have administrative structure for contract, including payment of contract cost and enforcement of mandatory provisions ■ Municipality may become involved in customer service

Option	Description	Benefits	Drawbacks
Municipally Owned and Operated System	Municipality purchases its own vehicles and uses its own personnel to provide solid waste collection services	<ul style="list-style-type: none"> ■ Provides the greatest control over services offered and easiest enforcement. ■ System can start very small and grow as necessary. 	<ul style="list-style-type: none"> ■ Municipality must expend capital on trucks and equipment ■ Must provide for equipment maintenance ■ Issues can arise with risk to employees ■ Can be more difficult to accurately track and account for costs ■ Can be more costly than private collection, particularly if vehicles are under-utilized.

Pay-as-You-Throw (Volume-Based Fees for Solid Waste Collection)

PAYT is also known as unit pricing or variable rate pricing. Under this type of a system, residents pay for municipal waste management services per unit of waste collected rather than through a fixed fee. Recycling is offered alongside trash disposal at no additional charge. PAYT can be implemented with either a contract for solid waste collection or in a municipally-operated system.

PAYT takes into account variations in waste generation rates by charging households or residents based on the amount of refuse they place at the curb, thereby offering individuals an incentive to reduce the amount of waste they generate and dispose of. It works almost like other public utilities that citizens are familiar with – electric and water, for example, where customers are charged based on the kilowatt-hours or gallons that they actually use. Such a market-based system can encourage reduction in usage of the service, because users who conserve can realize immediate cost savings. All households always have the option of reducing costs by separating and recycling at no charge.

Approximately 213 municipalities in Pennsylvania have implemented some form of a PAYT program.⁵ The advantages of PAYT, as well as some of its disadvantages, are presented in Table 8.

⁵ See the EPA website <http://www.epa.gov/epaoswer/non-hw/payt/states/pa.htm> for community listings.

Table 8
 PAYT Advantages and Disadvantages

Advantages	Disadvantages
<ul style="list-style-type: none"> ■ Can yield increases in amount recycled⁶ ■ Can reduce amount municipalities pay for solid waste disposal, due to reduction in solid waste⁷ ■ Has been shown to result in increased waste prevention, or source reduction. ■ More equitable waste management fee structure (use more, pay more) ■ Gives residents a direct incentive to utilize alternative waste management strategies, like recycling and composting that are provided by the municipality. ■ Can fund other recycling services without depending on taxes or disposal tip fees 	<ul style="list-style-type: none"> ■ A perception of increased costs to residents for the same level of service ■ Challenges associated with building public consensus ■ Enforcement of the system with a private contract hauler as collection agent ■ Increases in administrative costs ■ A potential increase in illegal dumping

Types of PAYT Systems

Five major types of PAYT systems exist:

Pre-Paid Bag: In a pre-paid bag system, residents may only dispose of solid waste in special bags sold by the government agency that is responsible for solid waste management and/or the contracted waste hauler. The fee per bag is used to cover some or all waste management costs. Some communities offer a variety of bag sizes and corresponding bag prices.

Pre-Paid Tag or Sticker: With a pre-paid tag or sticker program, only solid waste containers bearing the correct tag or sticker are collected. As with a pre-paid bag system, the tags or stickers are sold by the government agency, haulers, and designated offices or local retailers. The fee per tag or sticker provides for collection and disposal of a specific size of container with a volume and/or weight limit. Some communities also use tag/stickers for bulky items, such as appliances and furniture, and assign a specific number of stickers to a type of item.

⁶ Wilkes-Barre has operated a per-bag system for a number of years and reports a significant reduction in the cost of their waste management services. According to a City representative, cost reductions of approximately 50 percent have been achieved.

⁷ Perkaskie Borough (Bucks County) experienced a 59 percent reduction in the amount of solid waste collected for disposal after implementing a Pay-as-you-Throw program, boosting their recycling rate to about 43 percent.

Subscription/Containers: In a subscription system, households sign up for collection and disposal of a specific number or size of containers for each billing period or setout. Households generating solid waste beyond their subscribed level of service must purchase additional tags, stickers or cans if they want additional materials to be collected. Cranberry Township in Butler County, PA uses a subscription system with different rates for different container sizes:

- 35-gallon trash cart - \$ 37.50 per quarter
- 64-gallon trash cart - \$ 38.85 per quarter
- 96-gallon trash cart - \$ 40.50 per quarter

Residents can choose a recycling cart in any of the three sizes for no additional charge. Choosing the smallest rather than the largest trash cart results in savings of \$12 per year to the household.

Weight-Based System: With a weight-based system, residents pay a fee per pound of solid waste collected. The solid waste is weighed using scales and possibly electronic identification. The calculated amount is then billed to the household. This program can either require residents to use standard, government-supplied cans or allow them to continue using their own cans.

Hybrid System: A hybrid system combines a flat fee with some type of fee per unit. Under this system, residents are charged for a basic level of service and above this level the resident must pay for an additional container or purchase a tag, bag or sticker.

A number of the disadvantages to a PAYT system would not be issues in New Morgan Borough, due to the fact that there is no existing system to change. The most significant objection by the public, that suddenly they are being asked to pay a fee for the same service that they previously were provided “for free,” would not apply in New Morgan Borough. If such a system were instituted from the beginning, many of the barriers could be overcome.

Given the environmental and aesthetic features and values of Bryn Eyre, a container subscription PAYT system would seem to be most compatible in the new Town. Solid waste containers, as opposed to bags, are generally neater and less susceptible to invasion by animals. The Town’s covenants could specify the types, colors, and sizes of the acceptable waste and recycling containers allowed. Rolling carts are available in a wide variety of sizes, shapes and colors (sizes and shapes must match collection vehicles). Some are made with a percentage of recycled plastic. The Town would also wish to ensure that carts sustain wind, cold temperatures and are adequately maneuverable, and might wish to identify recycled-content carts as a way to raise awareness about markets for recyclable materials.

Solid Waste Disposal

In a contract arrangement, usually solid waste disposal is the responsibility of the private service providers. The charges, or tipping fees, are either incorporated in the overall fees charged, or are accounted for and charged separately, depending on the arrangement. The disposal location may be specified in the contract, or the municipality may choose to leave that responsibility to the hauler. Liability for unlawful disposal should be assigned to the contractor, especially if the disposal location is not specified. In a municipally owned and operated collection system, the municipality must identify a disposal site and make arrangements with the operator for the capacity that will be needed to accommodate the waste, usually for a specified length of time.

The Allied Waste Conestoga Landfill, located in New Morgan Borough, is expecting to receive an extension to their operating permit that will allow them to accept solid waste for 16 and a half more years, until 2024.

Recycling Program Options

Collection

Recycling collection options parallel solid waste collection. The collection can be provided by a contracted private service provider or by the municipality. In some areas, private recycling collection companies exist separate from waste haulers, but in Berks County all the recycling service providers are also waste haulers. It is possible to contract out for one service, and keep the other with the municipality, depending upon the priorities and resources of the community. In Berks County the private haulers all indicate that they collect recyclable materials in two streams, with paper separated from mixed containers. Table 9 summarizes the basic solid waste services offered by the companies listed on the Berks County recycling web site. This table presents only a snapshot of the services, based on a subscription-type system – if services were to be requested by an individual household or business. Any of these companies would likely respond to a Request for Qualifications or a Request for Proposals from a municipality interested in contracting with their company, and the services they would offer under these circumstances may differ from what is presented in this table. The service providers were not asked about bulky waste collection or commercial recycling, although some indicated that they also provide these services.

Table 9
Berks County Solid Waste Collection Service Providers

Company	Services Offered		
	Solid Waste Collection	Residential Curbside Recycling	Recyclables Processor Used
Allied Waste	<ul style="list-style-type: none"> ■ Weekly, 28-cu.yd. semi-automated trucks 	<ul style="list-style-type: none"> ■ Every other week, ■ 34-cu.yd trucks ■ Can provide roll carts but residents usually provide their own containers ■ Two-stream system 	<ul style="list-style-type: none"> ■ Cougles Recycling, Inc, Hamburg, Berks County
A.J. Blosenski	<ul style="list-style-type: none"> ■ 90-gallon Toter ■ Weekly collection; ■ Semi-automated trucks 	<ul style="list-style-type: none"> ■ Two-stream system ■ Compactor trucks 	<ul style="list-style-type: none"> ■ Honeybrook, Chester County
J.P. Mascaro	<ul style="list-style-type: none"> ■ At customer's request. Customer provides trash can, no rolling carts 	<ul style="list-style-type: none"> ■ Two-stream system (18 or 22 gallon bin) ■ Small-body 22-cu.yd trucks, ■ No compaction 	<ul style="list-style-type: none"> ■ Cougles, or Bridgeport in Montgomery County
H.R. Guard	<ul style="list-style-type: none"> ■ Once or twice a week collection, depending on contract specifications. ■ Use bags or 32-gallon cans. 	<ul style="list-style-type: none"> ■ Two-stream system ■ Separate vehicle for each stream (25-cy paper, 32-cy containers). ■ Side load some compacting trucks. ■ Some trucks use bio-diesel. 	<ul style="list-style-type: none"> ■ Cougles
Waste Management	<ul style="list-style-type: none"> ■ Will respond to community's needs in bid process. Have rear-loading compactor trucks that can be modified for semi-automated cart pickup. 	<ul style="list-style-type: none"> ■ Two-stream system 	<ul style="list-style-type: none"> ■ Cougles

Dual- and Single-Stream Collection

The two-bin system is the most common collection method in Pennsylvania today, but some communities are switching to “single-stream” recycling collection. With single-stream, all materials are combined in one recycling container, usually a large wheeled cart (up to 95-gallons). Collection is usually provided with automated equipment. Municipalities and private companies utilizing this system report considerable savings in collection costs over two-stream collection. Additionally, keeping all materials in one cart reduces windblown litter and is more aesthetically pleasing. It also usually provides additional space for recyclables, thus encouraging residents to recycle more materials. Some communities have been able to reduce collection costs considerably by moving to every-other-week collection of recyclables. Another benefit of single-stream automated collection of recyclables is a reduction in worker injury, and thus workers’ compensation costs. Also, most automated collection vehicles are serviced with one driver only, as opposed to crews of two or more. These jobs are also considered to be more desirable and less strenuous, therefore drivers tend to stay in their jobs longer, and a broader pool of potential employees are interested in such jobs.

The community usually specifies the size and color of the cart. Municipalities that use single-stream along with pay-as-you-throw may allow smaller garbage carts to provide financial incentive to residents to use their recycling cart to capacity.

Keeping recycling contained and neat using a two-stream system is more difficult, but can be done if the recycling bins are sized large enough to keep materials contained. The size of the bins required will also depend upon the frequency of collection.

Scheduling

Recyclables are commonly collected weekly with a two-bin system, but some use a biweekly collection schedule, as mentioned above. The most convenient system for residents is weekly collection of both solid waste and recyclables, on the same day. For smaller households, where less waste and recyclables are expected to be generated, public education materials can be used to encourage these residents to only set their bins out when full to maximize the amount of material collected per stop.

Vehicles

A large variety of recycling trucks are available for residential collection, ranging from compartmentalized trucks with over-the-top loading to side and rear load compactors that are very similar to, or the same as, garbage trucks. With a two-stream collection system, usually the collection is manual. Semi-automated or fully-automated collection can be used when rolling carts are used for collection. The carts attach to the truck and are mechanically lifted and dumped.

Most waste and recycling haulers in Berks County use compacting, manually-loaded trucks for recycling collection, as illustrated in the Table 9, above. If the Town of Celebration’s

experience is applicable to Bryn Eyre, most of these trucks will be too large for alley collection. In fact, all of the neo-traditional communities interviewed, except for Celebration, were forced to accommodate the vehicles available in these areas, because there was no other choice.

By issuing a Request for Qualifications (RFQ) that outlines basic standards and requirements for New Morgan Borough's envisioned solid waste and recycling system, the Borough would gather information on how the haulers would meet the Borough's needs. By 2010, the Borough's population and number of housing units should be large enough to generate interest from the haulers.

Alternative Fuels

The use of alternative fuels for solid waste and recycling vehicles is not widespread in Berks County. However, this technology may become more popular as fuel costs continue to increase and air pollution associated climate change impacts become more widely recognized. Only one hauler indicated any experience with alternative fuels. However, the use of these technologies fits in with the goals and environmental values of New Morgan Borough and Bryn Eyre. The Borough and the developer should encourage their solid waste service providers, as well as any other vendors, to use alternative fuels and alternative fuel vehicles through specifications in bid documents. The Pennsylvania Alternative Fuel Locator web site lists the locations of both public and private fueling stations for various types of alternative fuel vehicles in the southeastern Pennsylvania region.⁸ No interviews were conducted with these facilities to verify their services.

Recyclables Processing

Once collected from households, recyclable materials must be delivered to a material recovery facility (MRF, pronounced "MURF") to be processed and marketed to intermediary processors, brokers, or end-users. Some communities build and operate their own MRFs, and some build MRFs and hire private-sector companies to operate them. Each of these options has its pros and cons; however, in Berks County adequate recycling processing capacity does exist.

While there are several MRFs in the south-central and southeastern regions of Pennsylvania, virtually all of the recycling haulers utilize Cougles Recycling in Hamburg, Berks County. Cougles accepts a wide variety of household and commercial materials for recycling, including mixed paper and all plastic bottles. Their facility is located approximately 32 miles northwest of New Morgan Borough.

Generally, a contracted recycling hauler will initiate the business relationship with the processor, and the contract between the hauler and the municipality includes any consideration due to the municipality, or any fees to be paid, from the processing arrangement. However, when the municipality contracts only with the hauler, the relationship between the hauler and

⁸ www.afdcm2.nrel.gov/locator

processor is not revealed to the municipality. Some municipalities find this arrangement satisfactory, preferring to keep an arms length from the processing details or just to keep things simple. It is possible, and actually encouraged by the PA DEP, for the municipality and processor to negotiate a separate agreement for the handling of that jurisdiction's materials. The benefits of this approach can include better reporting by the processor on materials quality and quantity; an opportunity to realize some revenue from the sale of the municipality's recyclables, and a general education about the fate of recyclable materials that can be helpful when educating audiences as diverse as elected officials and garden clubs.

The Allied Waste Conestoga Landfill facility has expressed an interest in building an on-site transfer facility for recyclables. Allied Waste operates a MRF in King of Prussia, Pennsylvania, 32 miles from New Morgan Borough. Sixty-five percent of the waste disposed at the Conestoga landfill arrives in Allied Waste tractor-trailers from the east, and the company could use these empty trailers to haul recyclables to King of Prussia. The company would build the facility itself, open it up to business from any municipality, and charge a tip fee to use it.

If New Morgan Borough were to use a recyclables transfer facility at the Conestoga Landfill, it would relieve the transportation burden of hauling recyclables 32 miles in the other direction. However, the issues of accurate record-keeping, reporting tonnages to the Borough, feedback on the quality of recyclables, and knowledge of the ultimate fate of the recyclables would need to be addressed before making such a commitment. A sustainable recycling program ideally should keep accurate records of each type of material recycled, so that recycling and waste diversion rates as an indicator of the community's progress can be calculated, and improvements to programs can be targeted where needed. It is also important to receive and act upon information regarding material quality in order to fine-tune educational programs. Although it can be time-consuming, a sustainable recycling community should also know where its materials are marketed and the types of products into which they are re-manufactured.

Under the Allied Waste scenario, it would be beneficial for New Morgan Borough to negotiate for a portion of the revenue from its recyclables, possibly in return for a processing fee charged by Allied Waste to accept them. The details of processing fees and revenue sharing arrangements are complex, and it is beyond the scope of this study to provide guidance at this beginning planning stage. Many communities prefer to receive a share of the revenues from their recyclables, as it demonstrates that the materials are actually being recycled to value-added markets.

Commercial and Multi-Family Recycling

Most local jurisdictions in Pennsylvania leave the collection of waste materials from commercial establishments to private-sector haulers. Generally this service is provided on an open-market basis, with companies free to compete for customers. Exceptions to this rule generally occur only in downtown areas, where smaller commercial establishments may be provided with trash and recycling services by City crews or the City or Town's trash and

recycling contractor, or when an improvement district is organized to coordinate such service. Businesses generally, but not always, pay a fee for this service.

While this system promotes competition and provides freedom to commercial entities to hire the hauler of their choice, it has not typically motivated commercial businesses to establish or promote recycling programs. Even in mandated communities commercial businesses do not always comply, and most communities lack the resources to fully enforce these requirements.

In the planned communities of Kentlands, I'On and Celebration, discussed earlier in this report, commercial and multi-family recycling is limited. Recycling was not a high priority when these communities were first established. However, New Morgan Borough is in a position to develop a commercial and multi-family solid waste and recycling system that provides incentives for compliance and backs these up with enforcement measures when recycling becomes mandatory. New Morgan Borough's solid waste and recycling ordinance and Bryn Eyre's governing documents should be unambiguous in their requirement that commercial businesses and multi-family complexes establish recycling programs. A communal drop-off site could serve this purpose as an addition to curbside or alley service and an option for multi-family residents and businesses. Any requirements and standards should ensure that waste container types and locations are specified to allow room for recycling containers; that such enclosures or areas be functional and attractive, and that the types of vehicles used for material collection and transport are appropriate for the setting.

Recycling Education and Promotion

Successful recycling programs require participation by most residents and businesses. Therefore, public information and education campaigns and promotion of recycling should be provided regularly. The messages and media chosen should resonate with the particular demographic groups residing in the community and should utilize best practices that have been developed by superior recycling programs over the years. Many sources exist for identifying appropriate educational strategies and materials. The "Recycle Guys," a group of animated characters originally developed by the State of South Carolina, are available to individual communities. However, these animated characters may not appeal to all of the diverse types of residents expected in Bryn Eyre, and further targeted research should be conducted to determine the best mix of messages and media to reach and motivate the various populations.

Some communities rely on their contracted recycling service provider to also provide the community education. Many service providers are willing to do this; however, their level of expertise and commitment will vary. Municipalities that choose to design and conduct their own public education campaigns often are more aware of, and responsive to, their own community's needs.

Special Materials

The typical recyclable materials, mostly packaging wastes such as containers as well as paper, are generated by established residential populations. These material projections can be used to

calculate recycling truck collection capacity, material recovery facility processing capacities, and other parameters of a recycling collection system. However, certain discarded materials, specifically drywall, unpainted wood, construction waste, and yard waste (land clearing debris) should be discussed as part of a strategy to manage the discards generated during the active development phase of the community.

Bryn Eyre will begin generating these materials as soon as land clearing and construction commence. These materials will be generated on an ongoing basis as development proceeds during the next twenty years. Although this may not always be the case, it can be assumed, for planning purposes, that the relative quantities of these materials remain constant over the 20-year period. The remainder of the solid waste, and the recyclable materials, will be added to these initial waste materials as residents move in and certain development zones become stable, functional communities. The challenge is to manage both ongoing waste streams for maximum recovery and recycling.

Land-Clearing Debris

A significant amount of land clearing debris, which includes stumps, trees, logs, brushy waste and limbs, will be generated as active development of Bryn Eyre proceeds. It would be difficult to calculate how much of this material will need to be managed, but Pennsylvania's statewide waste composition report found that in a typical suburban, south-central Pennsylvania community, yard waste makes up 5.2 percent of the residential waste stream. It may be possible that amounts double that, or even greater, will be generated in New Morgan Borough.

New Morgan Borough has an opportunity for recycling and re-use of much of the brush and limbs by grinding it for use as mulch. Many Pennsylvania communities have established their own permitted yard waste mulch and compost facilities. New Morgan Borough could product its own wood mulch and compost to be stockpiled and then used as-needed for landscaping purposes around new buildings and public spaces. If the development schedule did not permit this, the mulch could be sold or donated to the public, landscape contractors, or public institutions in other municipalities.

If the Borough chose to utilize available private-sector processing capacity for land-clearing debris, Zwicky Processing and Recycling, Inc. is a permitted facility with operations in Berks County. Zwicky can work with municipalities to place collection containers at drop-sites and will haul the material to its facilities. It is not known what fees are charged, or what arrangements might be made to toll-process the material for reclamation by the generating municipality.

The Conestoga landfill is not interested in establishing a yard waste or compost operation at its site, due to concerns about potential odors and community resistance.

Construction Waste

Construction material generation in Berks County has been declining for the past ten years, according to the Berks County Solid Waste Management Plan Update of 2005. Therefore, the infrastructure to recover and recycle these materials is limited. Most material currently is disposed at special Construction and Demolition (C&D) landfills. The Conestoga landfill reports that it grinds much of this type of waste and uses it as alternative daily cover for its solid waste.

The cumulative impact of drywall, unpainted wood, and miscellaneous construction/demolition materials on the waste stream can be significant. Table 3 shows that for a representative established community in south central Pennsylvania, these materials account for approximately 3.4 percent of the residential waste stream. These materials are often found in even greater amounts in the commercial waste stream.

For a community like New Morgan Borough, in the process of building entire housing neighborhoods and commercial districts over a 20-year period, the generation of these materials can be expected to be double or triple these amounts. Establishing protocols for the collection and recycling of as much of this material as possible should be a high priority for New Morgan Borough. These protocols will involve ordinances and regulations that require such materials to be separated and recycled, guidelines as to how this can be done cost-effectively, and arrangements with local processors and markets for these materials. New Morgan Borough should provide the legal framework, at a minimum, for this recovery and recycling to occur. It will be a challenge to the developers of Bryn Eyre and the Borough to develop programs to recover these materials. With the lack of infrastructure, a facility developed by the Borough may be the only option.

One potential arrangement for recovery of construction material involves assessing to the developer or builders a permit fee that is rebated after they show they've recycled. The City of San Jose, California has pioneered this approach. The San Jose program entails the developer placing a significant deposit (as part of the permitting process) on construction and demolition projects. After the developer has donated C&D debris for reuse or delivered it to a C&D recycling facility for recycling, the developer is refunded his deposit. See the following web site for more information: <http://www.sjrecycles.org/business/cddd.htm>

In discussions with the developer, the Borough could stress how such "green building" activity as recycling fits in with the vision for Bryn Eyre and the concern for the environment that is a recognized value for both the developer and the Borough. If a construction waste recycling facility were developed in partnership between the developer and the Borough, there is the possibility that the developer might be able to show some cost savings by recycling.

Recommendations

New Morgan Borough has an unusual opportunity: To create an optimal solid waste and recycling system for a community that is not yet built. While certain constraints do exist in terms of the number and types of service providers in and around Berks County, in many ways the Borough is free of the existing conditions that may hamper the development of a sustainable system designed to meet the community's needs. R.W. Beck recommends that New Morgan Borough take the following steps to begin the process of making this vision a reality.

- Develop a strong relationship/partnership with the developer of the Bryn Eyre community. The partnership would begin with a relationship-building meeting that focuses on common goals, and would be sustained in the form of a committee that met regularly as development proceeded. Such a public/private partnership would foster communication, provide an efficient venue for cooperation on services where mutual effort is needed, and give both parties credibility with state environmental regulators and program enforcers. Such a relationship could result in, at a minimum:
 - Design ideas to incorporate adequate space for recycling and solid waste containers at multi-family and commercial properties that could potentially be written into building codes/ordinances;
 - Establish population or building thresholds which will trigger particular action steps, such as mandatory recycling for multi-family residents. These will reflect the mandatory recycling requirements in Act 101, but may also go further or be more stringent.
 - Ensure that planning for the recovery and recycling of land-clearing debris and construction material generated during build-out occurs well in advance of demolition and construction activities.
- Prepare for Act 101 mandatory recycling by developing a strong solid waste and recycling ordinance.
- Reinforce the provisions of the ordinance in the Bryn Eyre community covenants and other governing documents.
- Utilize either a contract for service or municipal ownership of the solid waste and recycling system; avoid an open market system, both for single-family residential and for multi-family and commercial.
- Consider a variable-rates, or "pay-as-you-throw" system to reduce waste disposal and encourage recycling.
- Issue a request for qualifications (RFQ) to the private service providers in Berks County outlining the municipality's needs and intent to create a unique and sustainable solid waste

and recycling system. The responses will allow the Borough to establish benchmarks for the types of services and ranges of costs possible within this framework. Specific items to be included might be: smaller trucks for solid waste and recycling collection in alleys and on narrow streets; alternative fuel vehicles; multi-family collection; commercial collection for downtown-type areas or dense small-business areas; provision of solid waste and recycling containers of a type favored by the Borough and the developers (such as wheeled carts of different sizes for a PAYT program); and accurate reporting and accounting for solid waste and recycling tonnages. The Borough should acknowledge, however, that the current size of the development, and its lack of population until 2012, may limit the range of services that the private sector will invest in.

- Set goals to establish commercial and multi-family solid waste and recycling as soon as the population makes these services feasible. Lay the foundation for the provision of these services in a sustainable manner by writing specifications and standards into the community governing documents. In some communities, for example, multi-family dwellings have a “recyclables chute” that delivers recyclable materials to a specific container. Because there is a chute on each floor, residents may find it more convenient to recycle in this manner. Such a system could be made mandatory in buildings of certain size.
- Develop a comprehensive promotional and educational campaign for solid waste and recycling services, addressing the demographic that is expected to populate Bryn Eyre.
- Consider developing a municipally owned and operated land-clearing debris processing site for the wood that will be generated during development of Bryn Eyre, and the yard trimmings that the community will generate after it is built. Alternatively, contract with a local wood processing company for these services. These materials would provide a local source of mulch and compost for community landscaping.
- Consider options for developing or contracting with a private company for construction material recycling services. While the amount of this material in Berks County has been declining for a decade, the development of Bryn Eyre will introduce a significant amount of construction materials into the waste stream, over a predictable period of time and in a concentrated location. Recycling could be accomplished by requiring it as a condition of receiving a building permit, as long as a recovery facility was located close by. Recovering and recycling these materials as opposed to disposing them, or using them as alternative landfill cover, would fit with Bryn Eyre’s environmental commitment.

Ms. Jeanne Weil
New Morgan Borough
April 9, 2007
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We hope that these findings are useful to you. We appreciate the opportunity to work with New Morgan Borough on this challenging and interesting project. If you have any questions or concerns, please feel free to contact me at 828-231-1873.

Sincerely,

R. W. BECK, INC.

A handwritten signature in black ink that reads "Sandi M. Childs". The signature is written in a cursive style with a large initial 'S' and a stylized 'z' at the end.

Sandi M. Childs
Consultant

SMC:ls