

Update and Revision 2017

Prepared for the
Department of
Planning and Zoning

Warren County Municipal Solid Waste Management Plan



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Warren County

Municipal Solid Waste Management Plan

Update and Revision 2017

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Introduction

Warren County's planning efforts for municipal solid waste management are documented as far back as 1971, when the Warren County Solid Waste Authority was established. The Authority was tasked with implementing a plan on behalf of the municipalities, who at that time were required by law to plan for waste management, rather than the counties. That process identified a lack of adequate disposal capacity.

The primary outcome of the 1971 plan was the permitting, development, and operation of the Grunderville Sanitary Landfill by its owner, the Warren County Solid Waste Authority. Situated within the Allegheny National Forest, Grunderville provided for the waste disposal needs of the County's municipalities for approximately 20 years.

With the enactment of the Municipal Waste Planning, Recycling, and Waste Reduction Act (Act 101 of 1988) the full authority for solid waste planning finally shifted from municipalities directly to counties. In response to Act 101, the Warren County Board of Commissioners assumed this responsibility. In 1990, the Commissioners appointed a Solid Waste Advisory Committee to work with the Planning Director and an outside consultant to assess local waste management practices and disposal capacity needs.

The enactment of Act 101 followed the release of more stringent federal and state landfill design regulations. The requirements and constraints of the new laws were cost prohibitive for Grunderville to continue operations based on the site's limited available capacity. Consequently, like more than a thousand other Pennsylvania municipal dumps, in 1990, Grunderville Sanitary Landfill closed. As owner and operator, the Authority remains responsible for the site under the post closure plan. Monitoring and treatment of contaminated groundwater continues to date. Upon Grunderville's closure, the County was forced to seek disposal capacity elsewhere and still relies on the services of facilities in other counties and states

The mass closing of landfills prompted a twofold purpose for counties in municipal waste planning under Act 101. In addition to disposal capacity assurance for waste generated within the county, municipal solid waste management plans had to provide for waste reduction through recycling 25 percent of the municipal waste stream, or to justify why it could not meet the

State recycling goal. (Currently set as a nonbinding goal of 35 percent by PADEP).

The original Warren County Municipal Solid Waste Management Plan developed under Act 101 was ratified by the municipalities, adopted by the County's Board of Commissioners and in 1992 approved by the Department of Environmental Protection (then the Department of Environmental Resources). The Board of Commissioners delegated their responsibility for implementing the Plan to the Solid Waste Authority.

Purpose of the Project

This project represents the first major overhaul of the Plan's physical document since approval of the 2004 version. The structure and format of the Plan have been revamped to comply with the current Technical Guidance Document 254-2212-504 issued by the Pennsylvania Department of Environmental Protection (PADEP) and published in the Pennsylvania Bulletin on January 2, 2010. These Guidelines for the Development of County Municipal Waste Management Plan Revisions serve to clarify not only the provisions of Act 101, but also a host of court rulings and legal references related to the statutory authority granted to counties for municipal solid waste planning and implementation. For the most part, the legal issues deal with the procurement of disposal and processing capacity, along with flow control mandates that may result from that process.

The 2017 Plan Update adheres to the basic chapter order and subject matter dictated by Act 101 and reinforced by the guidance document. It also has a more user-friendly appearance. From a regulatory perspective, this update is considered non-substantial and does not require ratification by the municipalities.

This 2017 version of the Warren County Municipal Solid Waste Management Plan evaluates the effectiveness of the original 1992 Plan and its subsequent update and revision. The 2016 planning process examined Warren County's ability to implement the Plan's original tenets. Based on those findings, certain components have been adjusted, and programs have been altered to complement the current demographics, economy, and resources of Warren County.

The 2017 Plan outlines the step-wise process from fact finding through analysis to final recommendations. To facilitate implementation the Plan includes a table of recommendations and a timeline for expected implementation of each facet. Some actions are suggested for immediate needs, while others, which require

additional efforts and resources, will be introduced in transitional phases and as funds permit.

Essential Elements of the Plan

To evaluate the current solid waste management practices and behaviors in Warren County and to establish future feasible improvements, the plan considers certain waste management issues and components.

Waste Characterization

One of the first steps in planning for municipal solid waste management is to identify and understand the sources, types, and quantities of generated waste. Since waste generation is typically measured in terms which relate to population and other socio-economic factors, examining local demographic trends is important. National and regional studies and trends are used to analyze the local reported data and to establish benchmarks.

Available Services and Utilization

Examining municipal solid waste collection programs for residential, commercial, institutional, and government entities can reveal where adequate access to services exists as well as where there are service gaps and inadequacies. Identifying service providers for collection, processing, and disposal along with tracking the utilization of those services by local citizens is a good step in revealing where poor waste management habits may exist. It is also valuable to explore services that could be made available based on new technologies or new operations.

Potential for Recovery and Diversion

An intense review of reported recycling and waste diversion activities serves as a foundation to determine future projected recovery of materials. It also establishes the potential for future business development opportunities creating a baseline allows for the development of performance objectives and metrics.

Implementation Strategy

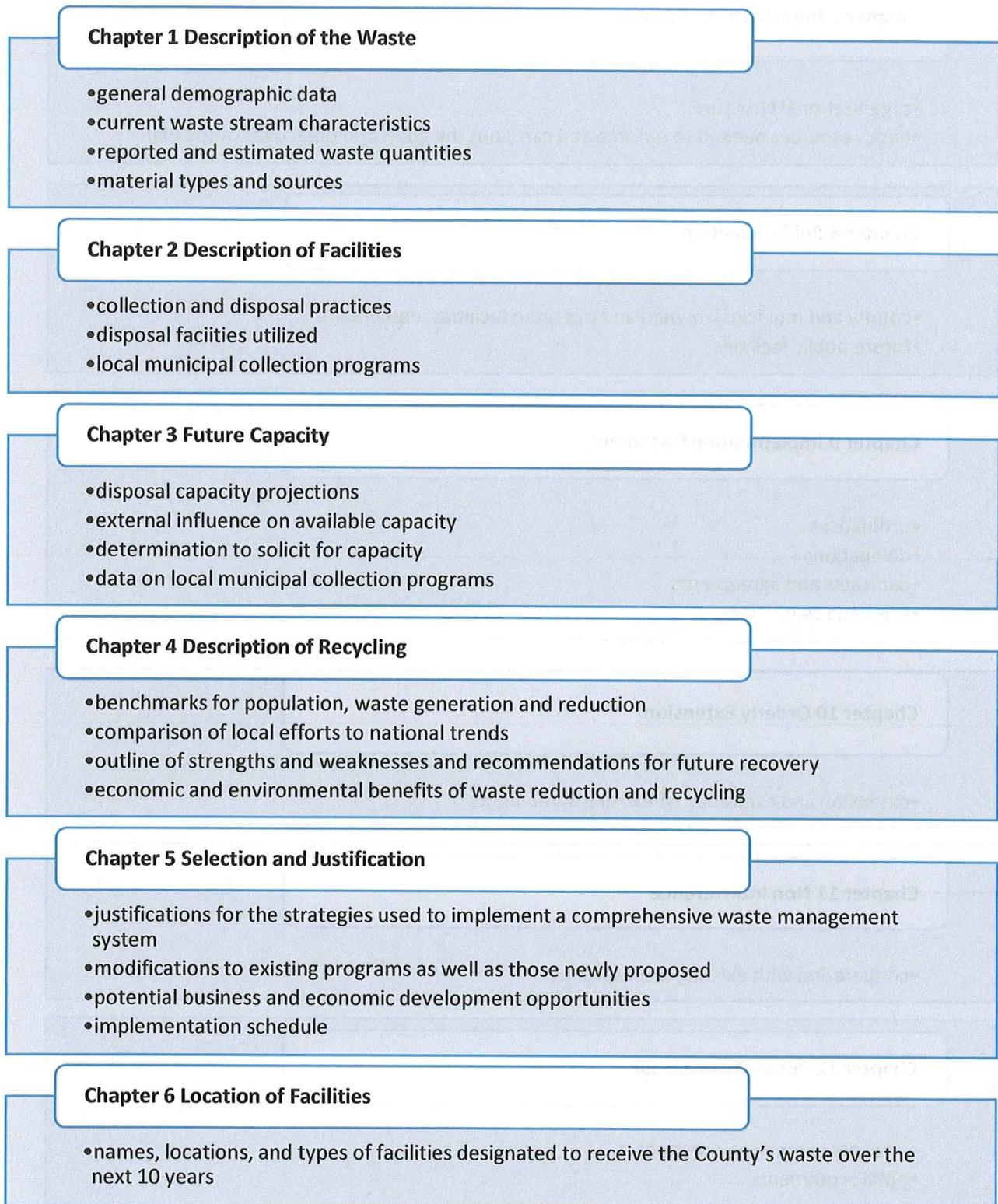
The final component brings the planning process's findings and recommendations together in an action plan. The action plan clearly defines the resources, tools, and timeframe necessary to achieve the goals of a municipal waste management plan.

All of these elements are organized and arranged in a structure called the implementation plan. It serves as the final documentation of the process and as a guide for future requirements.

Plan Organization

The Warren County Municipal Solid Waste Management Plan is comprised of twelve chapters and a number of appendices with supporting documents and information. The outline of the Plan revision is shown in Figure 0-3 Following is a brief description of each chapter and their contents.

Figure 0-3 Plan Contents and Organization



Chapter 7 Implementing Entity

- organizational structure
- basic resources needed to enforce and carry out the goals and objectives of the Plan

Chapter 8 Public Function

- county and municipal owned and operated facilities, equipment
- future public facilities

Chapter 9 Implementing Documents

- ordinances
- delegations
- contracts and agreements
- rules and regulations

Chapter 10 Orderly Extension

- extension and expiration of existing agreements

Chapter 11 Non Interference

- cooperation with existing disposal sites

Chapter 12 Public Participation

- advisory committee meetings
- public comments

Chapter One

1 LOCAL DEMOGRAPHICS AND MUNICIPAL WASTE PROFILE

The development of a municipal solid waste management plan is primarily reliant on good data. Also critical is the knowledge and experience to interpret the data. The overall planning process assumes that municipal and county leaders will utilize well tested assumptions and proven practices. While those basic skills and tools are important, conducting research beyond the recorded waste disposal and recovery figures offers planners and program managers a better perspective on how and why certain policies may fail or thrive. Data sources on economic conditions, history, heritage, the people, and their environment are vital in understanding local practices. The social history and heritage of a community can significantly influence its views and expectations on any number of public issues, including municipal solid waste management.

Current waste management practices can be deep rooted and the degree to which basic services are utilized and factors that could motivate or hinder future change are dependent on many related circumstances. Local data can reveal issues that may require special attention.

Economic factors such as occupation, income, education, and employment play a role in the level and frequency of product purchases and discards. Likewise, these same factors strongly determine an individual's ability and/or willingness to pay for services, including waste management.

Chapter One provides a brief outline of Warren County and its municipalities. It discusses physical, social, economic, and governmental characteristics. Commentary explains how general demographic features can influence municipal waste management. The types of municipal waste are described along with the sources and activities that produce those wastes in Warren County. Current physical and demographic characteristics are included. Historical socio-economic and cultural trends which may have influenced current waste management behaviors and expectations are also discussed. Finally, the chapter offers commentary on other notable trends and conditions.

1.1 OVERVIEW OF WARREN COUNTY

Access via two-lane highways is indicative of the rural nature of Warren County.



Warren County is located in northwestern Pennsylvania adjacent to the state line.

Chautauqua County and Cattaraugus County, both in New York, form the northern border. In Pennsylvania, Erie and Crawford counties represent the western border. Forest and Venango counties are located south and southwest respectively.

The Interstate Highways system does not pass through or near Warren County. Access is primarily via two major US highways, US Route 6, and US Route 62, along with Pennsylvania State Route 27 and State Route 66. For the most part, these routes

are two-lane roads. Nevertheless, the highways are well maintained and capable of supporting the needs of local industries. The collection and transportation of waste and recyclable materials to disposal and processing outlets represents one of the most significant costs in municipal waste management programs. Convenient access and navigable roadways can make a significant difference in the affordability of these services in rural areas.

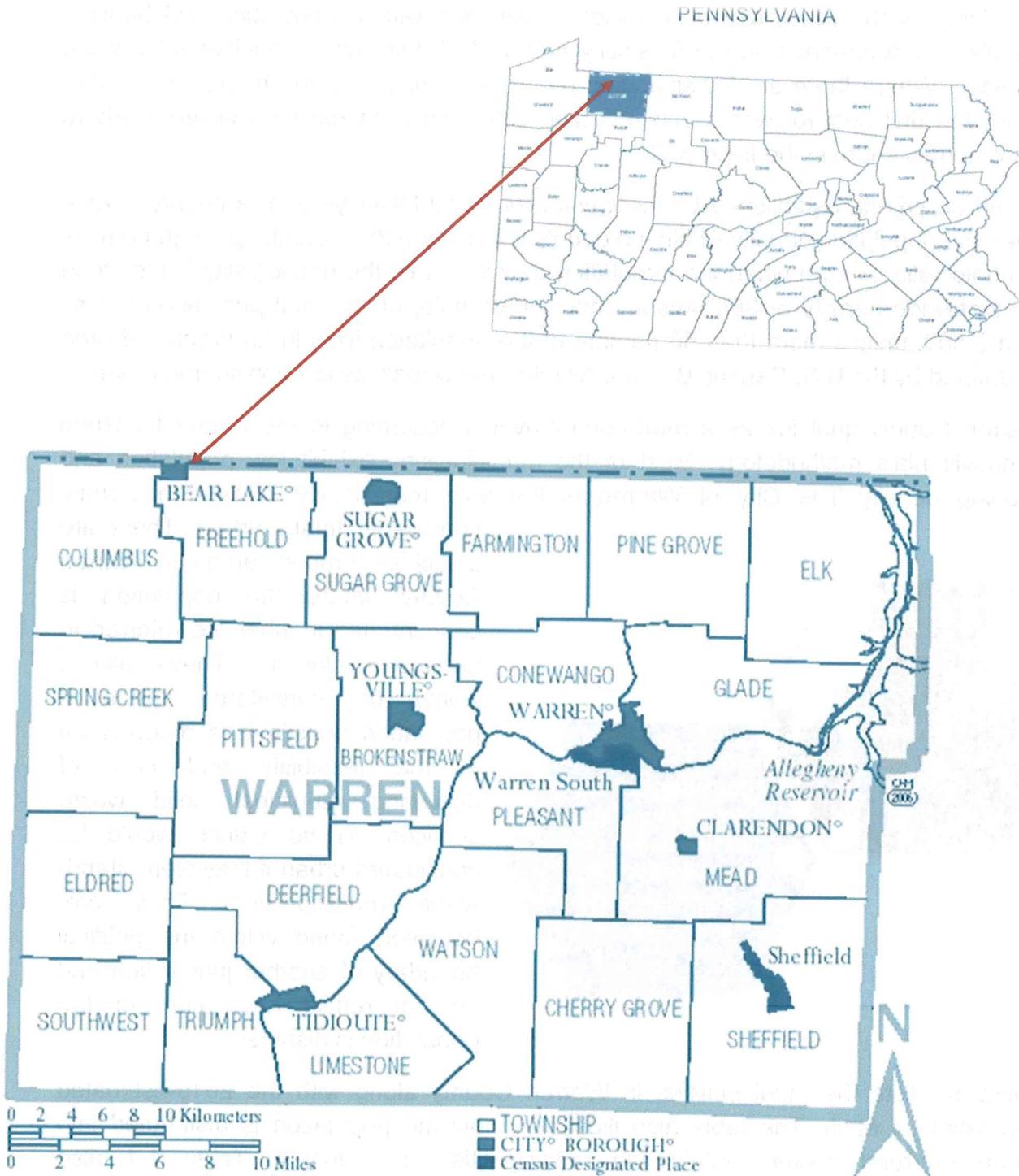
1.1.1 Local Government

To legislate and regulate county affairs in 1953, the Pennsylvania state government passed a law that established nine county classes. The counties that make up each class are determined by the population figures reported by the U.S. Census. Those with the highest populations are ranked with the lowest number. There are two categories of second class counties.

Warren County is a sixth-class county, which includes counties with populations of 45,000 to 89,999. Twenty-four of Pennsylvania's 67 counties fall within this class. Other local sixth-class counties include Clearfield, Elk, McKean, Crawford, and Venango.

A three-member Board of Commissioners, the highest elected officials in Warren County, runs the government. Departments and agencies have specific areas of responsibilities. Local government is made up of twenty-seven municipalities with one city, five boroughs, and twenty-one townships. The municipalities vary in physical size and population. Figure 1-1 shows the location of Warren County in relationship to the state of Pennsylvania. It also indicates the location and boundaries of Warren County's municipalities and their designation as a city, a borough, or a township.

Figure 1-1 Location of Warren County and the Municipalities



1.1.2 Population and Housing

Population is the key driver of municipal waste generation. Population and housing density is a determinant in the feasibility and cost of delivering municipal solid waste services. Where there are fewer homes participating or where the homes are farther apart, the unit cost for waste and recycling collection is higher than in areas where more homes share in the fixed costs.

Based on criteria established by the Center for Rural Pennsylvania, a county is rural when the population density within the county is less than 284 persons per square mile. A municipality is rural when the population density within the municipality is less than the statewide density of 284 persons per square mile, or the total population is less than 2,500, unless more than 50 percent of the population lives in an urbanized area as defined by the U.S. Census Bureau. All other municipalities are considered urban.

Warren County qualifies as a rural county overall according to the Center for Rural Pennsylvania's methodology. Most of the municipalities exhibit low population and housing density. The City of Warren is the sole municipality in Warren County

considered totally urban. There are select geographic areas in Warren County where the population is concentrated in what are referred to as urban clusters. These places would be considered urban if population density is a determinant in the feasibility and cost of delivering municipal solid waste services. These places would be considered urban if they were stand-alone municipalities. They are, however, found within the political boundary of another jurisdiction and do not reflect how most of the population is disbursed.



Population density is a determinant in the feasibility and cost of delivering municipal solid waste services

Table 1-1 lists the municipalities in Warren County along with the 2015-estimated population of each. The table also illustrates how the population is distributed into urban or rural sectors within the municipalities. In addition, Table 1-1 also demonstrates the differences in land mass and population density throughout the County.

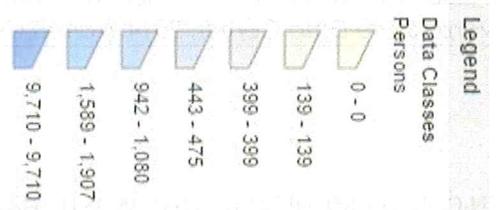
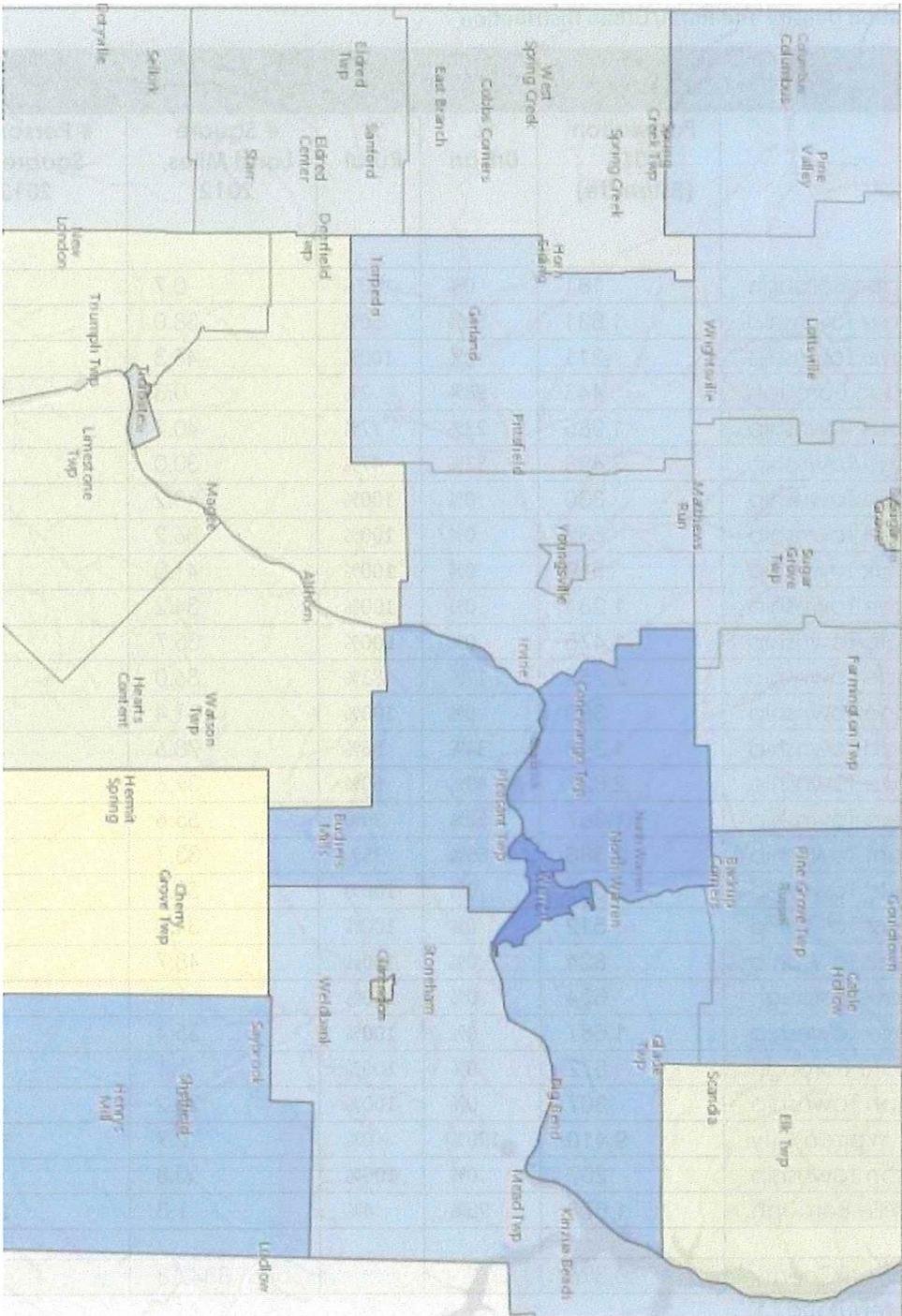
Figure 1-2 illustrates the concentrations of population throughout Warren County.

Table 1-1 Population Density and Rural/Urban Distribution

	POPULATION 1			DENSITY 2	
	Population 2014 (Estimate)	% Urban	% Rural	# Square Land Miles, 2012	# Persons Per Square Mile, 2012
Bear Lake Borough	161	0%	100%	0.7	234.8
Brokenstraw Township	1,831	50%	50%	38.0	48.7
Cherry Grove Township	211	0%	100%	46.3	4.6
Clarendon Borough	443	98%	2%	0.3	1,308.8
Columbus Township	1,985	23%	77%	40.7	49.3
Conewango Township	3,498	53%	47%	30.0	117.4
Deerfield Township	330	0%	100%	43.2	7.8
Eldred Township	632	0%	100%	36.2	17.7
Elk Township	510	0%	100%	41.0	12.5
Farmington Township	1,234	0%	100%	34.2	36.5
Freehold Township	1,475	0%	100%	35.7	41.8
Glade Township	2,252	17%	83%	36.0	63.2
Limestone Township	389	0%	100%	31.4	12.6
Mead Township	1,348	34%	66%	78.6	17.4
Pine Grove Township	2,627	40%	60%	39.6	67.0
Pittsfield Township	1,367	10%	90%	55.6	24.8
Pleasant Township	2,386	65%	35%	33.7	71.6
Sheffield Township	2,063	0%	100%	59.2	35.2
Southwest Township	512	0%	100%	34.0	15.2
Spring Creek Township	824	0%	100%	48.7	17.2
Sugar Grove Borough	604	0%	100%	1.1	542.0
Sugar Grove Township	1,687	0%	100%	35.4	48.0
Tidioute Borough	672	0%	100%	1.1	633.6
Triumph Township	307	0%	100%	28.2	11.0
Warren City	9,410	100%	0%	2.9	3,274.9
Watson Township	267	0%	100%	50.8	5.3
Youngsville Borough	1,678	96%	4%	1.3	1,275.2
Warren County	40,396			884.13	46.5

1. US Census Bureau and Pennsylvania State Data Center American Community Survey 5-year estimates 2011-2015 2., Pennsylvania State Data Center, 2014 Warren County Data Book

Figure 1-2 Concentrations of Population in Warren County



Source Us Census Bureau and Pennsylvania State Data Center 2011-2015 Estimates

1.1.2.1 Population Trends

The US Census Bureau reported the July 1, 2010 population for Warren County was 41,815 people. That is a 4.67 percent decrease from the 2000 US Census recorded the population as 43,863 people. The Pennsylvania State Data Center located in Harrisburg, PA, works in conjunction with the US Census Bureau to gather and compile state, county, and municipal demographic data within the Commonwealth. The Center also issues estimates and projections on population, housing, and related issues.

County Population Projections for Pennsylvania, 2010-2040, published by the Pennsylvania State Data Center projects a continual decline in Warren County's population. An estimated decline of 5.63 percent is forecasted for the years 2010 to 2030 with a cumulative 10 percent decline by 2040. The decline is already evident. The American Community Survey estimates Warren County's 2014 population at 40,703 well below the Data Center's 2020 projection of 40,605.

Table 1-2 shows the Pennsylvania State Data Center's estimated population projections.

Table 1-2 Pennsylvania Population Projections: 2010-2040

	July 1, 2010 Census	July 1, 2020 Projection	July 1, 2030 Projection	July 1, 2040 Projection	% Change 2010-2020	% Change 2010-2030	% Change 2010-2040
Pennsylvania	12,711,308	13,230,170	13,759,594	14,132,588	4.1%	8.2%	11.2%
Warren County	41,815	40,605	39,459	37,535	-2.89%	-5.63%	10.1%

1.1.2.2 Housing Trends

Housing characteristics are useful in determining the appropriate municipal solid waste and recycling collection service for a community. The types and number of structures can influence affordability of the program as well.

Table 1-3 shows the occupied housing units in Warren County. Figure 1-3 shows where the greatest number of Warren County's housing units are located.

Approximately 76 percent of the residential housing units in Warren County are single family detached homes. Similar to single family detached units but categorized separately because of other structural differences, mobile homes represent nearly 12 percent and single family attached homes, commonly called "row houses" or

“duplexes,” account for another 1.25 percent. The other roughly 11 percent of Warren County units include various types of multi-family dwellings that have from 3 to more than 50 units per structure. From service and cost perspective, single-family detached housing units are advantageous because collection commonly is provided at the curb. Where single family housing units are densely clustered in one community, or when a greater number of units are guaranteed to participate from joint municipal programs, the result is lower costs. Because the fixed costs of providing service can be distributed among a greater number of units, homeowners experience lower service rates than if each were to negotiate for those services on their own. Several Warren County communities contract with a single service provider through a competitive bidding process.

Table 1-3 Occupied Housing Units by Municipality

	Occupied Housing Units
Bear Lake Borough	52
Brokenstraw Township	590
Cherry Grove Township	69
Clarendon Borough	139
Columbus Township	593
Conewango Township	1,177
Deerfield Township	104
Eldred Township	203
Elk Township	200
Farmington Township	424
Freehold Township	421
Glade Township	747
Limestone Township	108
Mead Township	538
Pine Grove Township	987
Pittsfield Township	542
Pleasant Township	911
Sheffield Township	672
Southwest Township	163
Spring Creek Township	251
Sugar Grove Borough	172
Sugar Grove Township	567
Tidioute Borough	218
Triumph Township	121
Warren City	2,462
Watson Township	105
Youngsville Borough	577
Warren County	13,113

Source Pennsylvania State Data Center

A popular form of waste collection service in Warren County is private subscription, where residents arrange for services with the hauler of their choice. In the municipalities where private subscription is offered, local ordinances may or may not require resident participation. Even in those that mandate participation, enforcement is



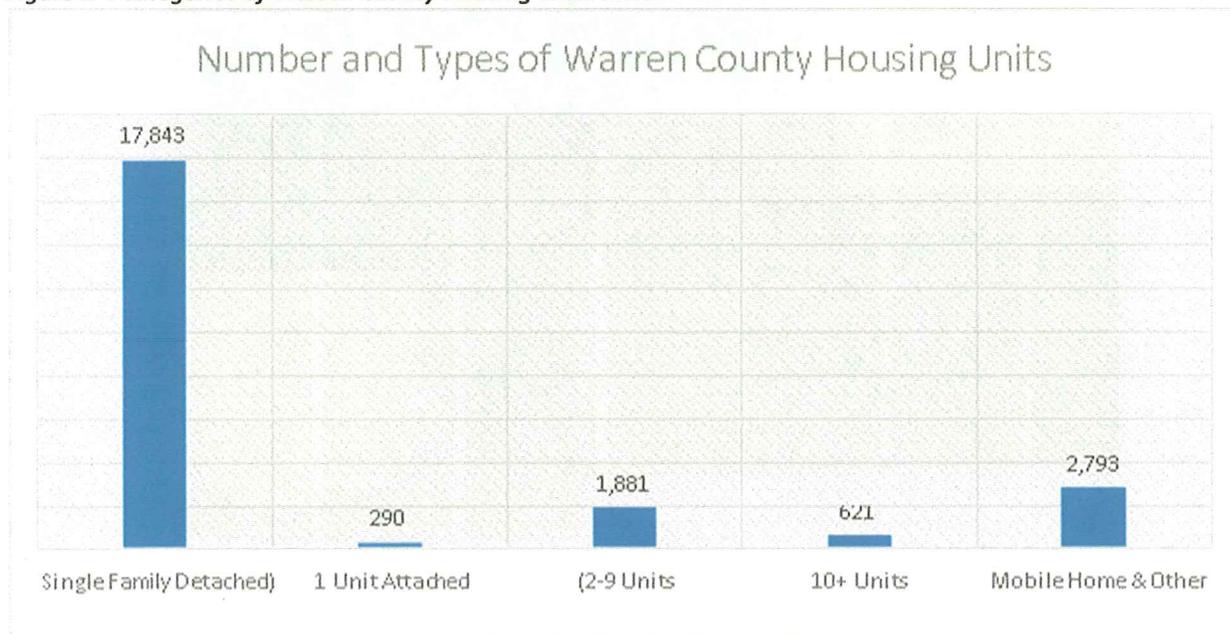
Approximately 76 percent of the residential housing units in Warren County are single family detached homes, where waste collection commonly is provided at the curb.

negligible.

Chapter 2 provides a closer look at the available municipal solid waste infrastructure, reported collection and disposal activity for all types of municipal waste and a variety of undesirable waste management practices.

Figure 1-4 shows the types of housing structures available in Warren County.

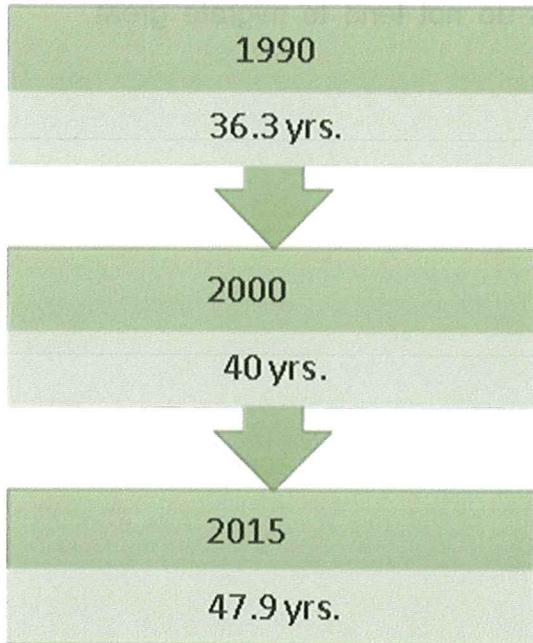
Figure 1-4 Categories of Warren County Housing Units 2014



Source US Census Bureau

1.1.2.3 Occupancy and Mobility

Figure 1-5 Shift in Median Age of Population



One of the primary goals listed in the 2008 Warren County Comprehensive Plan was to retain the younger population. This is a legitimate concern. However, a few key indicators suggest a more accurate goal for Warren County is to attract a younger population. Consider the ongoing shift in the median age. Since 1990, the median age of the population in Warren County has moved upward. The median age for Warren County in 2015 was nearly 8 years greater than the median age in Pennsylvania. Figure 1- 5 shows the pattern.

Approximately, 21 percent of Warren County's 2015 population was over the age of 65.

Another 61.2 percent was between the ages of 18 and 64. Based on the median age, it is likely that a greater portion of that group is in the upper age category. If the median age continues to climb at the same time the overall population decreases, births probably will not exceed the mortality rate.

Mobility can play a role in shifting demographics. The US Census Bureau tracks the movement of residents based on housing occupancy. Owners and renters are tracked separately. Mobility is monitored using a one-year occupancy in the same residence as a marker. Movement is tracked within the County, from another county, from another state, and from another country.

The majority of Warren County's residents tend to remain in their homes, particularly if they are the owners. Renters showed more mobility. For those who did move from one location to another the majority moved within Warren County, or secondly from another county. For homeowners, Watson and Triumph Townships, Clarendon Borough and the City of Warren saw the greatest increase in relocators. For renters, Bear Lake Borough had the greatest number of new residents. The Townships of Limestone, Elk, Pleasant, and Columbus, along with Sugar Grove Borough also had significant turnover for Warren County.

Table 1-4 shows the mobility patterns in Warren County during 2014-2015. Table 1-4 does not show movement out of the County. However, the American Community Survey 2010-2014 indicates Warren County residents do not tend to migrate great distances.

Table 1-4 Mobility Patterns

	Owner Who Moved From							Renters Who Moved from						
	Non Movers	Warren County	Another County	PA State	A Different State	From Abroad	Non Movers	Warren County	Another County	PA State	A Different State	From Abroad		
Bear Lake Borough	126.0	0.0	2.4	0.4	1.1	0.0	22.0	0.0	45.5	0.0	0.0	0.0		
Brokenstraw Township	1,410.0	1.8	0.4	1.6	0.0	0.0	263.0	20.2	3.4	10.3	0.0	0.0		
Cherry Grove Township	128.0	3.9	1.6	0.0	0.0	0.0	29.0	0.0	0.0	0.0	0.0	0.0		
Clarendon Borough	309.0	6.5	0.0	0.0	0.0	0.0	186.0	14.5	1.1	2.7	0.0	0.0		
Columbus Township	1,554.0	0.4	3.7	2.1	2.0	0.0	347.0	4.9	24.2	3.7	0.0	0.0		
Conewango Township	2,837.0	4.4	2.1	0.0	1.0	0.0	515.0	21.0	2.9	2.7	0.0	0.0		
Deerfield Township	215.0	3.3	0.0	0.6	2.3	0.0	45.0	0.0	0.0	0.0	0.0	0.0		
Eldred Township	498.0	1.0	0.6	0.0	0.0	0.0	142.0	0.0	10.6	2.1	0.0	0.0		
Elk Township	431.0	1.6	0.7	0.0	0.0	0.0	11.0	0.0	27.3	0.0	0.0	0.0		
Farmington Township	1,129.0	3.5	0.0	0.0	1.3	0.0	127.0	4.7	0.0	0.0	0.0	2.4		
Freehold Township	1,165.0	2.8	1.3	0.9	0.9	0.0	129.0	17.1	0.0	0.0	0.0	0.0		
Glade Township	1,757.0	4.3	2.1	0.3	0.3	0.0	434.0	7.1	0.0	0.9	4.1	0.0		
Limestone Township	216.0	0.0	0.0	4.2	0.0	0.0	42.0	28.6	0.0	0.0	0.0	0.0		
Mead Township	1,230.0	3.5	1.5	0.0	0.0	0.0	133.0	24.1	12.0	0.0	0.0	0.0		
Pine Grove Township	2,348.0	2.2	0.6	1.1	0.7	0.2	285.0	8.8	0.0	0.0	0.0	0.0		
Pittsfield Township	1,377.0	4.1	1.8	0.7	0.2	0.0	80.0	0.0	0.0	0.0	0.0	0.0		
Pleasant Township	2,046.0	2.2	0.0	0.2	0.2	0.0	223.0	26.9	0.0	0.0	0.0	0.0		
Sheffield Township	1,897.0	4.4	1.3	0.3	0.3	0.0	383.0	11.2	0.0	0.0	0.0	0.0		
Southwest Township	495.0	1.2	2.8	0.8	0.8	0.0	36.0	0.0	13.9	0.0	0.0	0.0		
Spring Creek Township	585.0	0.3	0.5	0.0	0.0	0.0	167.0	11.4	2.4	0.0	0.0	0.0		
Sugar Grove Borough	480.0	1.0	0.8	2.1	1.4	0.0	74.0	24.3	5.4	2.7	0.0	0.0		
Sugar Grove Township	1,368.0	3.8	0.7	1.4	0.5	0.0	299.0	10.0	0.0	13.7	0.0	0.0		
Tridoute Borough	543.0	4.4	1.1	0.4	0.0	0.0	219.0	17.8	6.4	0.0	0.0	0.0		
Triumph Township	275.0	6.9	0.7	0.0	0.0	0.0	27.0	0.0	0.0	0.0	0.0	0.0		
Warren City	5,863.0	7.6	0.0	0.0	0.1	0.0	3,279.0	16.8	3.5	4.8	0.0	0.0		
Watson Township	239.0	2.1	10.5	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0		
Youngsville Borough	1,367.0	0.4	1.5	1.3	0.0	0.0	428.0	13.1	9.6	5.1	0.0	0.0		
	31,888.0	77.6	38.7	21.5	0.7	7,950.0	282.5	168.2	48.7	6.5				

MILLENNIALS, THOSE BORN BETWEEN 1980 AND 2000, CURRENTLY REPRESENT THE LARGEST DEMOGRAPHIC SECTOR BY AGE IN THE UNITED STATES.

FOR WARREN COUNTY TO BOLSTER ITS SHRINKING HEAD COUNT, IT WILL BE IMPORTANT TO CATER TO THIS AGE GROUP.

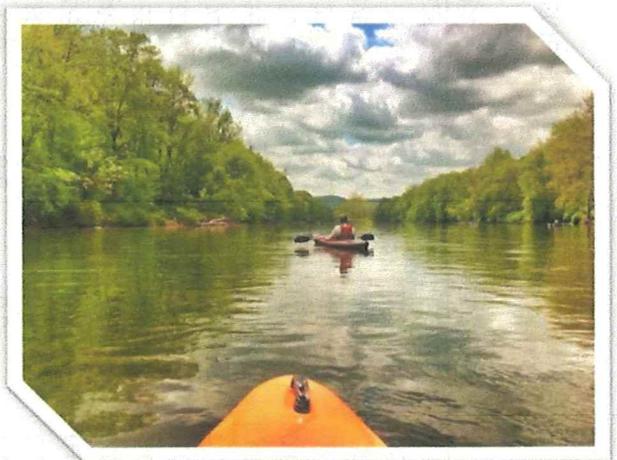
Most move to areas with similar demographics. Outward migrations were primarily to surrounding counties, which includes border counties in New York. However, with equally declining populations in Elk, Venango, Crawford, Erie and McKean counties, outward migration is probably not the greatest contributing factor in Warren County's diminishing youthful population.

The Millennial Generation includes those born from approximately 1980-2000 depending on what source is

cited. By 2025, they will represent over 75 percent of the workforce. Millennials already represent the largest demographic sector by age in the United States. For Warren County to bolster its shrinking head count, it will be important to cater to this segment. Fortunately, Millennials are attracted to issues that improve the overall sustainability of a community. They are drawn to communities with walkability between where they live, work and play. Consequently, the results of downtown revitalizations can be a draw to this group. The Warren County Solid Waste Advisory Committee considered the needs and interests of Millennials when reviewing waste management practices coupled with recycling opportunities.

1.1.3 The Environment

Nature prevails as the most dominant asset in Warren County. Vast acreages of forest lands, substantial waterways, reserves of minerals, as well as diverse and abundant wildlife are common to the County. Historically these elements have and continue to be the source of economic development. The need to protect and conserve them with minimal interference to job creation is an ongoing challenge and a key objective in the most recent version of the Warren County Comprehensive Plan.



1.1.4 Industrial Heritage

Prevailing economic conditions, particularly employment opportunities, influence where people choose to live. The rural nature of the area, along with its bounty of natural resources, might lead one to believe that tourism, recreation, and the hospitality industry in general are major contributors to the local economy. While they do factor into the overall scheme, other interests are more financially significant.

Warren County has always hosted major industrial activity. Extractive industries such as logging, oil and gas and mining were the roots of many substantial fortunes. The legacy of that golden age lives on in the historic structures seen primarily in the City of Warren but sprinkled throughout the County. The economic impact of these activities during the early growth of the area is well documented. The environmental aftermath remains as both a negative indelible imprint and a learning example.

Reminders of a different more prosperous era are certainly interesting. More importantly, those very industries still operate in Warren County, but now with welcomed changes in environmental practices. They provide viable and relatively well-paying occupations for Warren County residents. In addition, the extractive industries rely on a host of other Warren County employers, who provide support services, manufactured goods, and investments. Since 2010, Pennsylvania's news headlines focus on exploration, horizontal drilling and "fracking" in the Marcellus Shale Gas Play. Consequently, conventional oil and gas well operators are often forgotten or mistakenly trivialized. As recently as 2012, according to the Pennsylvania Independent Oil and Gas Association, nearly half of the 2,383 oil and gas wells drilled in the Commonwealth were conventional wells. More than 36 percent of those were drilled in Warren County.

It is hard to imagine that substantial recovery of what we know as the Allegheny National Forest wasn't seen until post World War II; a little more than a century after unregulated cutting of the original virgin growth timbers began. As forests are known to do, from its devastation came promise. Today, the highest quality hardwoods in the United States are found in northcentral and northwest Pennsylvania. Forests cover 447,593 acres of Warren County with a value of standing timber estimated to be \$657 million according to the 2007 Penn State Timber Market Report. The forests also support employers who trade in non-timber related products like botanicals as well as the residues from logging for biomass energy uses.

When Pennsylvanians think of mining "coal" is typically what comes to mind. In places like Warren County, however, non-fuel minerals are more commonly mined. These include aggregates like sand and gravel, and topsoil. Open pit and dredging operations

in Warren County supply these materials throughout the region.

Another extractive industry that operates in Warren County is recycling. Although we don't always think of recycling in the traditional sense of the extractive industries, it is often referred to as "urban mining." Just like its counterparts, recycling recovers valuable commodities from the waste stream and returns them as feedstock for the manufacturing of new products or other beneficial uses. According to the recent *Pennsylvania Recycling Economic Impact Study* prepared for the Pennsylvania Recycling Markets Center, the recycling industry in Pennsylvania employs more than 66,000 people directly and another 110,000 people in downstream activities. In Warren County, it is difficult to determine exactly how many individuals are employed by recycling related activities, because that data is combined with other waste management statistics. There are some documented public and private sector recycling programs, along with some volunteer collections sponsored by civic organizations.



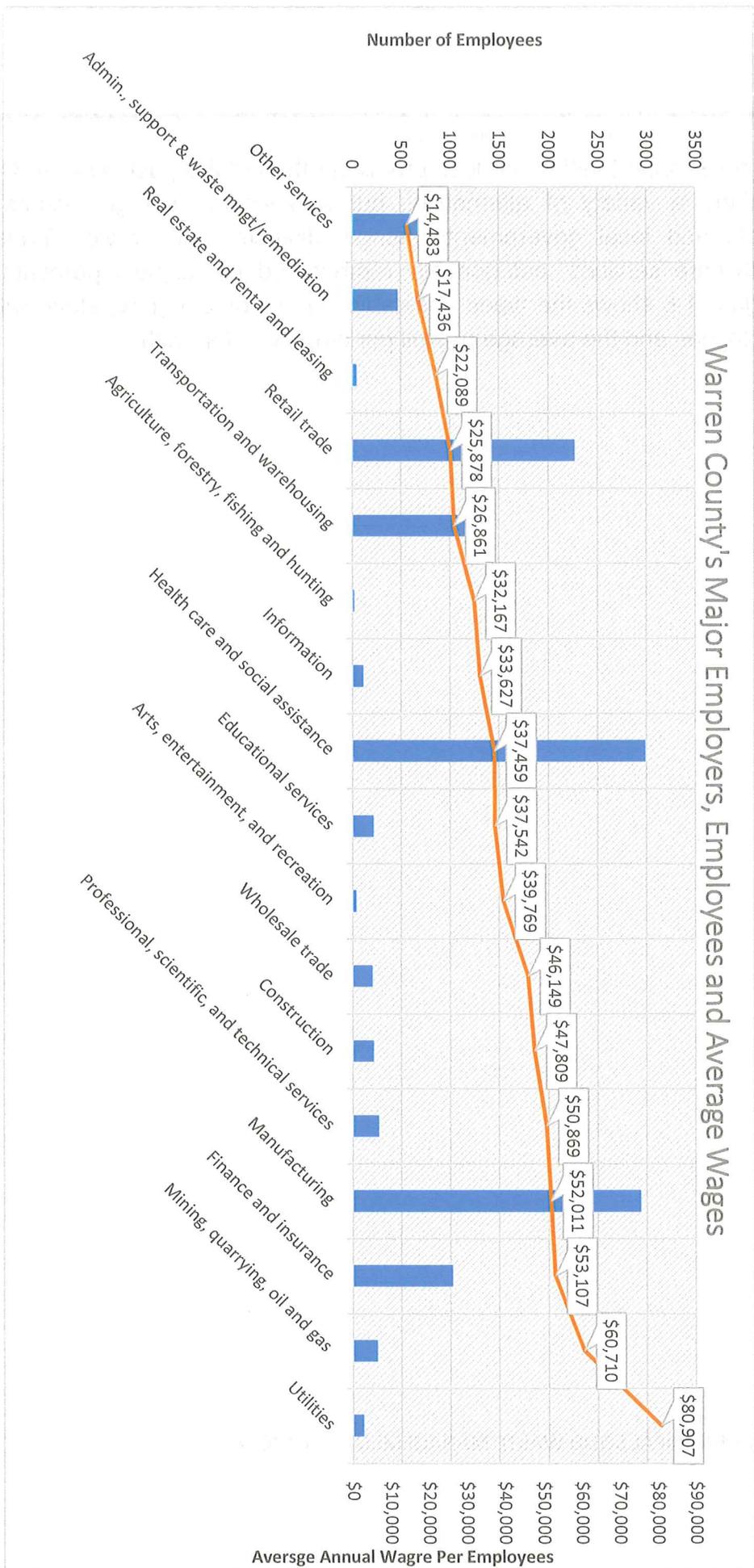
Recycling is often referred to as "urban mining." Just like other extractive industries, recycling recovers valuable commodities and returns them as feedstock for the manufacturing of new products or other beneficial uses.

Despite the historical relevance and continued success, the extractive industries are not the major employers in the County. According to the *Warren County Business Patterns 2015*, manufacturing of all types ranks as one of the highest categories based on number of employees. These blue-collar workers realize some of the highest levels of personal income when compared to other local opportunities. Still, Warren County's unemployment rate during the development of the Plan was greater than Pennsylvania as a whole. These conditions are symptomatic of a shift away from the type of industrialization that once was core to our economy. Global competition, technology and product design are all contributing factors.

1.1.4.1 Transitioning Employment Opportunities

Although blue-collar opportunities are less promising than in the past, Warren County still offers workers a variety of alternatives but with lesser average incomes per employee. State and local governments, school districts, and service industries, including health care services, categorically represented the highest percentage of employees. Figure 1-6 shows the types of establishments by category, along with the number of employees and the average payroll per employee for each.

Figure 1-6 Warren County Business Patterns



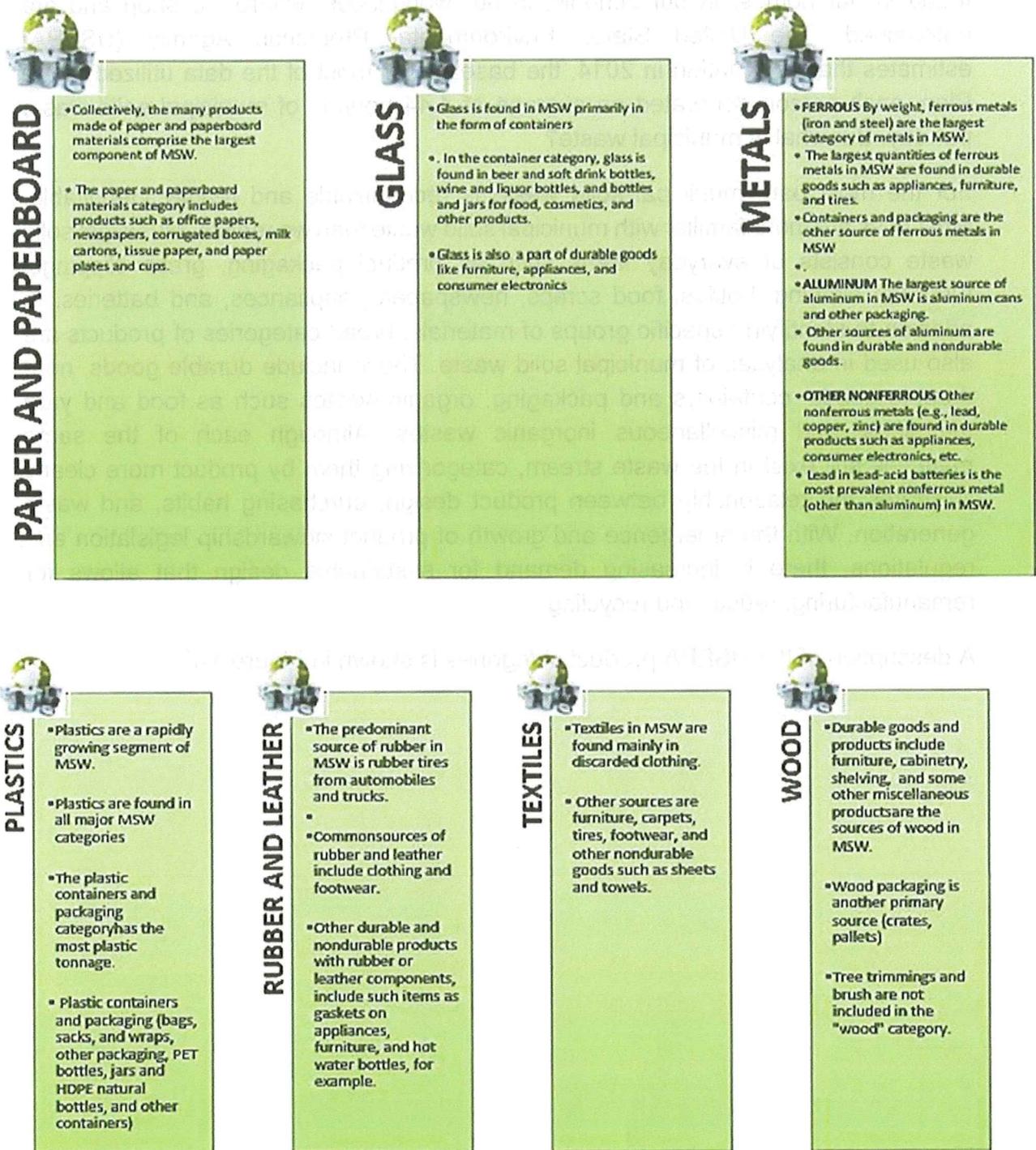
1.2 DEFINING AND IDENTIFYING MUNICIPAL SOLID WASTE

We all generate municipal solid waste. We produce it every day. Municipal waste is found in our homes, in our schools, in our workplaces, where we shop and are entertained. The United States Environmental Protection Agency (USEPA) estimates that as a nation in 2014, the baseline for most of the data utilized in the Plan, each person generated an average of 4.44 pounds of municipal solid waste per day. But what is municipal waste?

For the most part, municipal solid waste is recognizable and readily identifiable. Most of us are more familiar with municipal solid waste than we realize. Municipal solid waste consists of everyday items such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, and batteries. In addition to identifying specific groups of materials, broad categories of products are also used in analyses of municipal solid waste. These include durable goods, non-durable goods, containers and packaging, organic wastes such as food and yard trimmings, and miscellaneous inorganic wastes. Although each of the same materials still exist in the waste stream, categorizing them by product more clearly illustrates the relationship between product design, purchasing habits, and waste generation. With the emergence and growth of product stewardship legislation and regulations, there is increasing demand for sustainable design that allows for remanufacturing, reuse, and recycling.

A description of the USEPA product categories is shown in Figure 1-7

Figure 1-7 USEPA Categories of Products in Municipal Solid Waste



As commonplace as municipal waste can be, it is equally confusing on several levels. Municipal solid waste is regulated by an extensive set of federal, state, and local laws and requirements. Inconsistencies in the scope of materials and categories considered solid waste from state to state and by the federal government can become problematic when attempting to interpret and compare data. Equally complicated is the ability to identify and understand the various sources that generate municipal solid waste are generated.

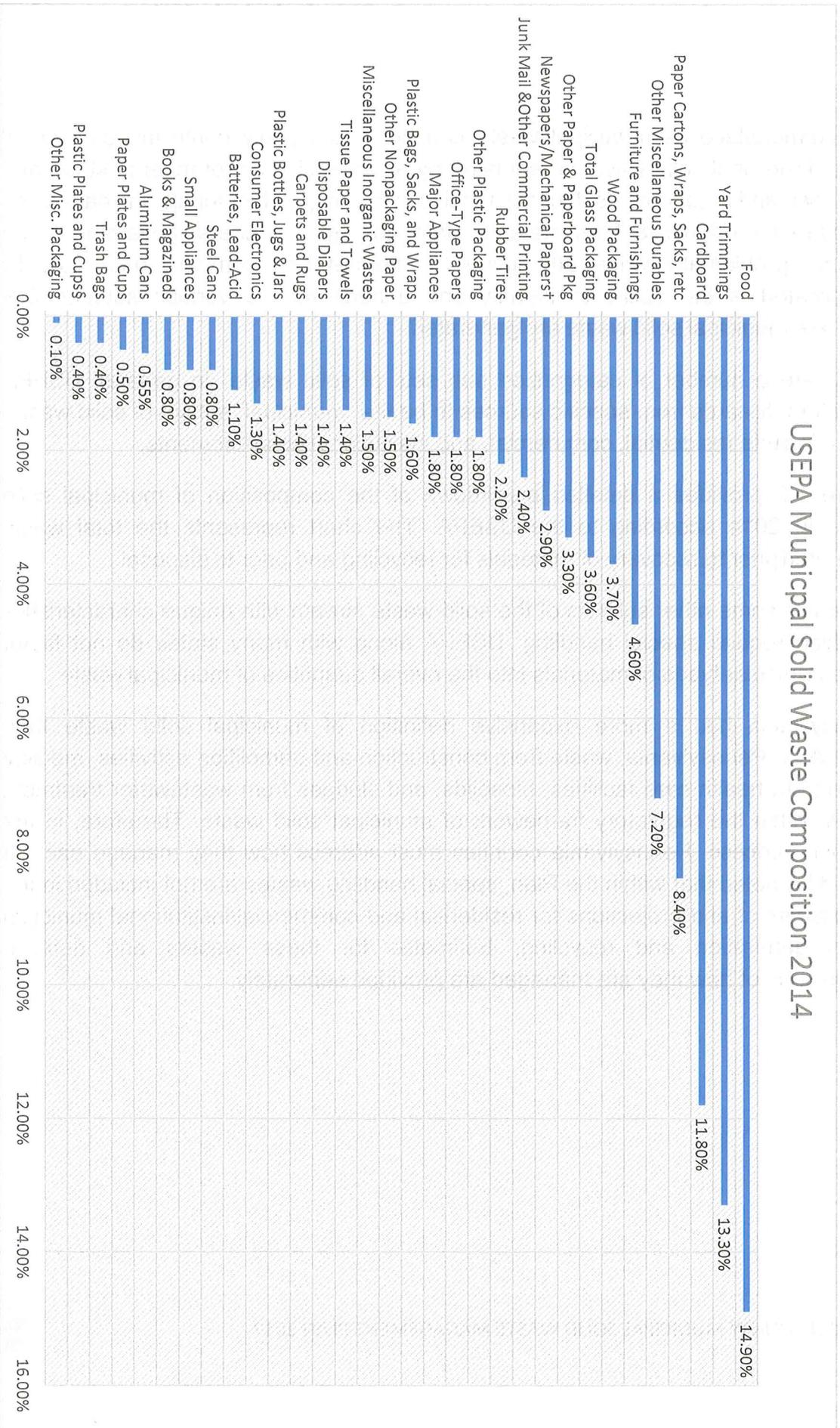
There are a number of categorized sub sets of solid waste. In general, USEPA considers discards from specific sources to be the “municipal” subset of solid waste. These include residential, commercial, and institutional establishments.

Figure 1-8 provides a detailed breakdown of the composition of municipal solid waste in 2014 according to the USEPA. The chart represents the total waste generated prior to recovery of materials for recycling and prior to disposal.

There are some other subsets of the solid waste stream with unique characteristics or which require special handling. USEPA along with many states do not factor these particular types of materials into the overall quantities of municipal waste.

Pennsylvania has a more expansive definition of municipal solid waste than USEPA. In Pennsylvania, waste from construction and demolition activities, medical waste from health care facilities, biosolids, and sludges from wastewater treatment all fall within the regulatory framework of municipal solid waste. Therefore, in the planning process, Pennsylvania counties must address how they manage each. It should be noted that within the Plan, special handling wastes are not included in the discussions of and projections for residential and commercial/institutional municipal waste generation and recycling. Estimates for these wastes and detailed discussions of how they are managed are provided separately.

Figure 1-8 Composition of Municipal Solid Waste Generated in the USA 2014



1.3 NATIONAL PERSPECTIVE ON MUNICIPAL SOLID WASTE

The United States Environmental Protection Agency (USEPA) has collected and analyzed data on waste generation, disposal, and diversion from 1960 through 2014. Until recently, the USEPA reports were published as *“Characterization of Municipal Solid Waste in the United States*, and then *“Generation, Recycling, and Disposal in the United States: Facts and Figures.”* The iteration that coincides with the baseline year for data utilized in analyses during the planning process is titled *“Advancing Sustainable Materials Management: 2014.”*

The Franklin Associates of Kansas were commissioned by the USEPA to conduct this ongoing study and issue a series of publications. Consequently, long time waste industry professionals may commonly refer to the project and reports as “The Franklin Study.” The series focuses on municipal solid waste generated by residential and commercial sources. It is a useful tool to make initial assumptions and to reveal significant differences and/or anomalies in local programs based on national behaviors and performance. It continues to serve as the definitive survey on the characterization and composition of the national waste stream. The wealth of information, which they have accumulated, is useful in establishing historic trends and changes. Because USEPA also documents detailed findings for each year, it is possible to compare local data from specific years to actual performance at the national level.

1.3.1 Evolution of the Waste Stream

Current circumstances and conditions differ from those which existed when the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101) was enacted. The assumptions used at that time to assess and project waste management needs are not necessarily valid in 2014. To understand the foundation for assumptions used to assess local data and programs throughout the current planning process, this section offers a brief discussion of the evolution and nationally documented changes of municipal solid waste.

USEPA has documented through its studies that over the past 50 years the quantities, composition, and recovery of

In areas like Warren County where the population is in decline, a decreased per capita generation rate can make a notable difference in service availability and costs.

municipal solid waste have varied considerably. In contrast, over the past 10 years, the quantity of material generated and discarded has been relatively constant. From 1960 to 1990 the amount of municipal solid waste generated on a per capita basis exceeded the population rate. The total amount of municipal solid waste generated in the United States has approximately tripled over this 50-year period. Part of the increase is directly related to the growth of the population during that same period. However, individual consumer patterns were also a contributing factor.

In 1960, each person in the United States generated approximately 2.68 pounds of municipal solid waste per day. From 1960 to 1990, the per capita rate grew at an accelerated pace to 4.57 pounds per person per day. That pattern has stabilized and in fact appears to be on a downward trend. Since 1990, the per capita rate has slowed, peaking briefly in 2000 at 4.72 pounds per person per day. The current rate is 4.44 pounds per person per day, which is lower than the 1990 rate. In areas like Warren County where the population is in decline, a decreased per capita generation rate can make a notable difference in service availability and costs.

1.3.1.1 Compositional Changes in Municipal Waste Generated, Discarded and Recovered

Perhaps the most significant change in municipal solid waste since 1960 is the make-up of the overall waste stream. Although the basic categories of materials remain similar, the percentage of each material represented in the total waste stream has shifted dramatically. Paper is a perfect example. About 34 percent the municipal solid waste stream in 1960 was paper. In 2014, it has declined to about 26.5 percent. The amount of plastic generated in 1960 was negligible at less than 1 percent of the total municipal solid waste stream. It now represents nearly 13 percent of the total 2014 municipal solid waste stream. Figure 1-6 shows how the composition of the municipal solid waste generated has fluctuated over the years.



The recovery of materials through recycling and composting programs has grown from less than 7 percent of the total municipal solid waste generated in 1960 to about 34 percent in 2014. This trend has been rather constant for the past twenty years.

1.3.2 Impact of Recycling and Composting

The total quantity of municipal solid waste generated has nearly tripled over the past 50 years, due primarily to population growth. The quantity that USEPA labels “discarded” also commonly referred to as “disposed” has only doubled. This variation is because the proportion recovered through recycling and composting programs has grown from less than 7 percent of total municipal solid waste generated in 1960 to about 34 percent in 2014. This trend has been rather constant for the past twenty years. In 1960 all discards were ultimately sent to landfills. With roughly 66 percent of the waste stream discarded in 2014, approximately 20 percent is converted to energy, primarily through combustion. The remaining 80 percent of the discards are disposed in landfills.

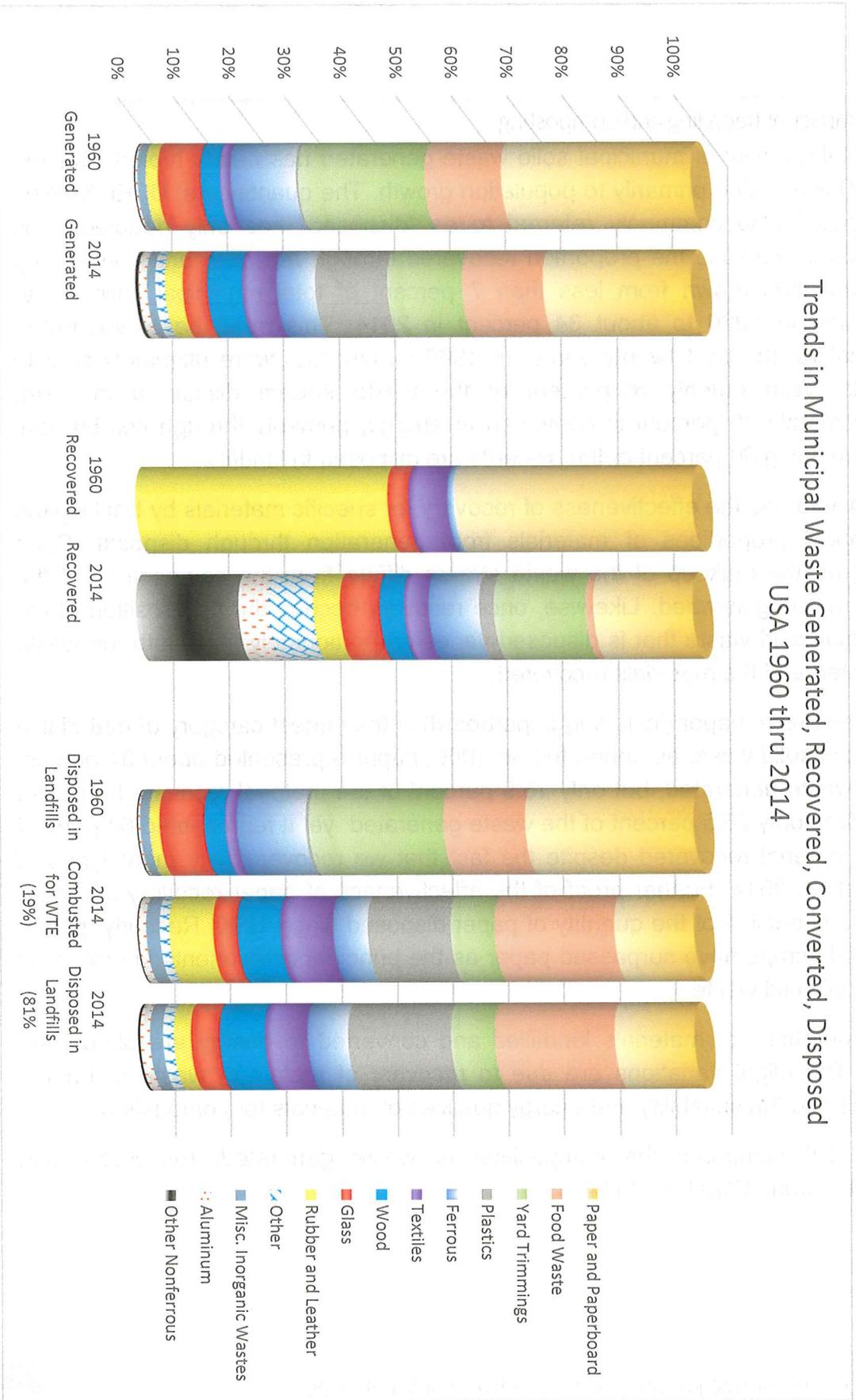
It is easy to see the effectiveness of recovery for specific materials by tracking the categorical proportions of materials from generation through disposal. Once recovered the makeup of the waste stream differs from the composition of the waste that is generated. Likewise, once recovery occurs, the composition of the municipal solid waste that is disposed varies proportionately from both the waste generated and the materials recovered.

As an example, paper (including paperboard) is the largest category of material in municipal solid waste as generated. In 1960, paper represented about 34 percent of the waste generated, but only 16.9 percent of the material recovered. In 2014 paper was only 26.5 percent of the waste generated, yet it represented 64 percent of the material recovered despite the fact that we recover many more types of materials in 2014. Further proof of the effectiveness of paper recovery shows in the steady decline of the quantity of paper disposed since 1990. Recently, plastic and food scraps have surpassed paper as the principal components in discarded municipal solid waste.

The proportions of materials landfilled and converted to energy are almost the same. The slight variations are due to recovery of metals at waste to energy facilities and the suitability and energy qualities of materials for combustion.

Figure 1-9 compares the composition of waste generated, recovered, and discarded from 1960 thru 2014.

Figure 1-9 Historic Changes in the Composition of Municipal Waste Generated



1.4 MUNICIPAL SOLID WASTE IN WARREN COUNTY

When documented quantities for generation, disposal and recovery for an area are known, population is used to determine how much each person contributes to each category. If only population is known, by assuming a commonly accepted per capita rate one can also estimate total generation, recovery, and disposal. In 2014, the population of the United States was 309.05 million persons. That year an estimated 258.46 million tons of municipal solid waste as defined by the USEPA was generated in the United States. Of the municipal solid waste generated in 2014, the nation discarded 135.9 million tons in landfills and sent another 33.1 million tons to waste to energy facilities. An estimated 89.4 million tons were recovered, establishing for 2014 a national recovery rate of 34.6 percent. This approximates Pennsylvania's current recycling goal of 35 percent. Therefore, the national data is a reasonable standard to use as a measure of Warren County's reported disposal activities and its performance in attaining the state's recycling goals.

The findings of the USEPA over the past 50 years present a reliable snapshot of the average waste generation, recycling, and disposal trends in the United States. It is reasonable to expect that from region to region several demographic variables could cause local statistics to differ somewhat from those reported by USEPA. The source of the material can also influence locally reported results. For instance, waste from strictly residential settings tends to differ slightly in composition from waste generated only by commercial establishments. These variables are identified in the national study to help program managers better interpret their data.

When an in-depth inventory of local municipal solid waste is necessary, a physical sort of the local waste stream is conducted. However, the time and cost to initiate that process is rarely justifiable during the normal planning process.

To examine the current conditions in Warren County, understanding what is common or normal in the majority of communities across the nation, provides a sufficient benchmark for evaluating local data. Comparing the USEPA information to a jurisdiction's reported data can prompt a thorough investigation of previously held assumptions used to develop local programs. Finally, it provides insight into prevailing trends and evolving conditions that could affect future solid waste management capacity needs and the development of treatment and processing methodologies.

In Warren County, when the reported data is not verifiable or deviates grossly from the norm nationally accepted assumptions may override the locally reported results.

When and if this is necessary the assumptions will be clarified in the exercises and analyses performed during the planning process.

1.4.1 Establishing Warren County's Generation, Recovery, and Disposal Rates

According to the Pennsylvania State Data Center and U.S. Census Bureau, Warren County's estimated population in 2014 was 40,944. In 2014, Pennsylvania landfills reported the disposal of 30,336 tons of municipal solid waste originating in Warren County. Another 6,282 tons were recovered in local recycling programs according to the County's reports. Thus, based on the reported data, the estimated amount of municipal waste generated in Warren County in 2014 was 36,618 tons.

As calculated from the reported data, Warren County's per capita generation rate for 2014 was 4.90 pounds per person per day. Materials were recovered for recycling at the rate of 0.84 pounds per person per day. In 2014 Warren County disposed approximately 4.09 pounds per person per day.

1.4.2 Warren County Compared to the National Averages

Figure 1-10 compares the national municipal waste per capita generation, disposal, and recovery rates to those calculated from Warren County's reported disposal and recovery tonnages for 2014. Figure 1-11 shows the expected tons of waste generated, recovered, and disposed compared to those Warren County reported. Although differences exist in the reported data and the calculated estimates, they resemble common anomalies found in rural areas and are likely explainable.

1.4.2.1 Varying from the "Norm"

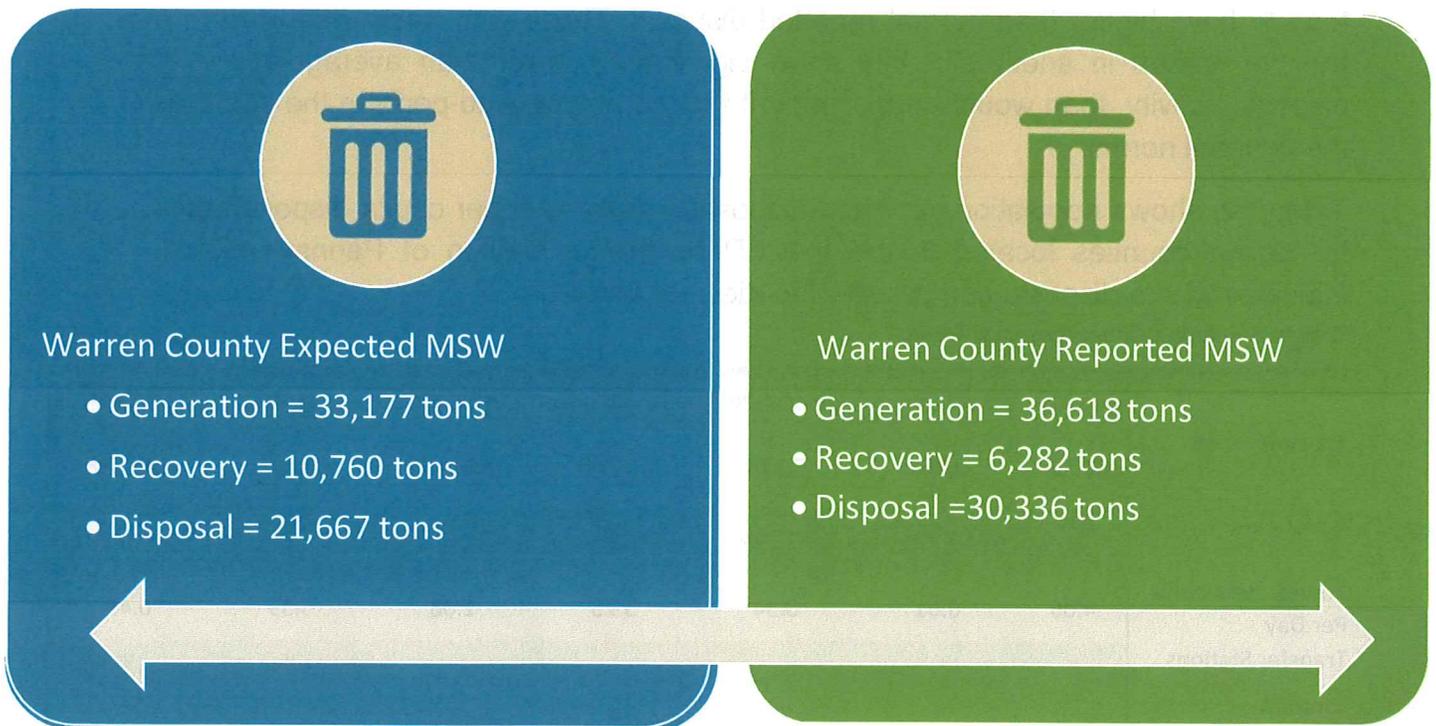
Perhaps the most significant deviation occurs in the reported amount of waste disposed. In 2014, landfills reported 8,666 more tons from Warren County than one would expect if the County were to perform the same as the national norms. Warren County municipalities rely on the good sense of residents to voluntarily subscribe to waste collection services. Voluntary systems rarely result in 100 percent participation. To avoid the cost of collection service, residents find less desirable methods to manage their waste. Some of these, like illegal dumping and open burning, will be discussed in Chapter 2. Where voluntary waste collection prevails lower rather than higher disposal quantities are typically reported.

Warren County does have some degree of transient seasonal population, but not to the extent seen in popular tourist destinations where the number of residents can double for extended months. Therefore, the resulting amount of waste from visitors is not suspected to be enough to create such a large increase.

Figure 1-10 National and Local Reported Generation, Recovery, and Disposal Per Capita Rates 2014



Figure 1-11 Warren County Reported and Estimated Expected Generation, Disposal, and Recovery 2014



A review of reported disposal activity for counties in the PADEP Northwest Region may provide the evidence to explain Warren County's higher than average reported tonnage. The review compared six nearby counties along with Warren County. Based on population, each county's total reported municipal solid waste disposed as defined by PADEP was used to determine a daily disposal rate per person. Three of the seven counties had disposal rates much higher than expected based on their rural nature and compared to the national averages. Two of the counties had exceptionally low quantities of reported waste disposal activity. Two others were within the normal ranges.

Some commonality was found for the counties within each group. The counties where landfills were located all had reported quantities disposed within the expected range of based on national averages. Where no facilities were located, counties had exceptionally low rates of disposal. Counties with transfer stations had disposal rates nearly two and three times the expected amounts. Advanced Disposal operates a transfer station in Pittsfield where a large majority of Warren County's waste is managed. It should be noted that much of Warren county's recyclables are also handled there

The transfer station phenomenon is repeated throughout Pennsylvania. Misreported data is common where collected waste is delivered to a transfer facility, consolidated, and transported to remote landfills for disposal. Those counties with transfer stations tend to have higher than normal reported disposal. Those with waste delivered to a transfer station in another county show significantly lower than average reported disposal activity. than would be expected if that county were to perform the same as the national norms.

Table 1-5 shows population, reported disposal activity, and per capita disposal rates for seven counties located in the PADEP Northwest Region of Pennsylvania. It indicates where disposal and transfer facilities are located.

Table 1-5 Regional County Disposal Trends

	Warren	Crawford	Venango	Elk	McKean	Clarion	Mercer
Tons Disposed	30,337	9,761	3,370	18,500	16,148	38,176	135,218
Population	40,944	87,175	53,529	31,194	42,544	38,821	114,884
Pounds Per Capita Per Day	4.06	0.61	0.34	3.25	2.08	5.39	6.45
Transfer Stations	X					X	X
Landfills				x	x		

1.5 CATEGORIES AND SOURCES OF MUNICIPAL SOLID WASTE

It is natural to assume that wastes are regulated by their chemical and physical characteristics or their potential harm to the environment, instead, regulatory agencies define a waste by who generates it or by where it was generated. Basing laws and regulations on the sources of the waste makes it easier to monitor and enforce proper waste management practices. Establishing waste management requirements into common groups, rather than applying individual criteria per waste, equally simplifies compliance for the generator. As a result, there are items commonly found in industries and households alike that are regulated differently and require different disposal methods for each source.



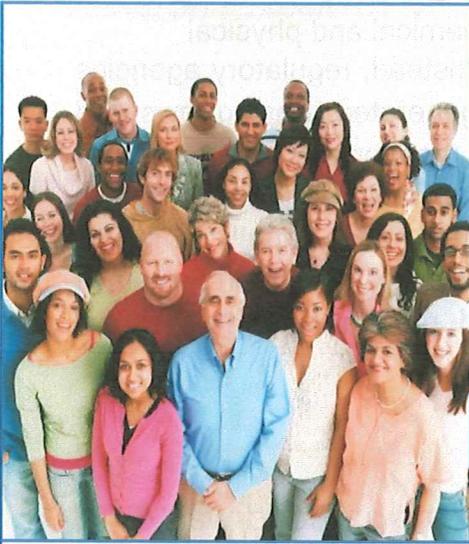
Pennsylvania's municipal solid waste regulations are broader in scope than USEPA's. In addition to the categories of generators, municipal waste is further defined by specific activities and special handling requirements.

Even within the municipal solid waste stream different sources of generators are categorized. While the overall contents of the waste stream remain the same, the proportion of the materials differs depending on which source generated it. The ability to identify the specific sources of the municipal waste generated is of major importance in the planning process. Knowing not only the overall quantities of a material, but also the amounts generated from various sources, enables jurisdictions to target education and recovery programs where they will get the best return on their efforts.

Pennsylvania's municipal solid waste regulations are broader in scope than USEPA. Therefore, not only are there categories of generators, municipal waste is further segmented for specific activities that produce waste or for wastes with special handling requirements.

The purpose of the discussion in Chapter 1 is to clearly describe and identify each source of municipal waste in Warren County. Chapter 1 also illustrates the unique types of waste for planners to consider in Pennsylvania. A more in-depth analysis of each component of the municipal solid waste stream is included in Chapter 4.

1.5.1 Categories of Municipal Waste Generators



Residents are the source of at least 54% of the municipal solid waste generated in a community.

In primarily rural areas like Warren County, the proportion of waste from residential sources can be as high as 72%.

Regardless of the type of home that you occupy, it is considered a source of municipal solid waste. Municipal waste from these sources is categorized as “residential.” single-family detached homes as well as townhouses, condominiums, apartments, mobile home parks, etc., are all considered residential sources.

When businesses, offices, government facilities, and institutions generate municipal waste, it is categorized as “commercial.” For collection and reporting purposes, waste from community events is also included in the commercial category.

1.5.1.1 Residential and Commercial Waste Generation

According to the USEPA individuals who reside within a community are the source of at least 54 percent of municipal solid waste is generated. The proportion of wastes from residential sources in primarily rural areas like Warren County tends to be higher. A waste disposal characterization study conducted for the PADEP in 2003 reported that the statewide ratio of municipal solid waste from residential sources was 64 percent. In Pennsylvania’s rural areas, however, the study found that residents generated as much as 72 percent of the municipal solid waste.

Based on national trends, commercial establishments typically generate 46 percent of the municipal waste stream. According to Pennsylvania’s waste disposal characterization study, the commercial statewide ratio is significantly lower at 36 percent. Not surprisingly, with fewer businesses in Pennsylvania’s rural areas, it can be as low as 28 percent.

1.5.1.1.1 Community Variables

It should be noted that local community demographics influence the proportion of commercial to residential waste. For instance, the City of Warren, a more densely populated area of Warren County, has a noticeably larger commercial sector. There the ratio of commercial municipal solid waste could be closer to 64 percent. On the

other hand, in the townships of Cherry Grove, Watson and Elk, it could be 28 percent or lower.

Some recyclable wastes such as cardboard and office paper come primarily from commercial sources. Others, like newspapers and magazines are primarily generated from residential sources. Understanding the ratio of commercial to residential sources in Warren County is useful in designing cost efficient and realistic collection programs. It also helps in identifying potential sources of recyclable materials.

Chapter 4 includes a detailed analysis of the types of material available for recycling in Warren County and the performance in recovering it is included in.

1.5.1.2 Warren County Commercial Municipal Waste Generators

Identifying the number and nature of commercial establishments is helpful in planning for municipal waste management. According to the US Census Bureau, approximately 603 commercial establishments were located within Warren County in 2014.



The commercial waste stream consists of paper, plastic, glass and metal packaging, as well as other items.

However, each of these materials is distributed in different proportions than in residences.

The retail trade represents the largest portion of these establishments. Health care, hospitality, food, and other service-oriented categories follow in the rankings. Each of these

categories are sources of materials that lend themselves to recovery and, thus, where successful commercial recycling programs could be developed.

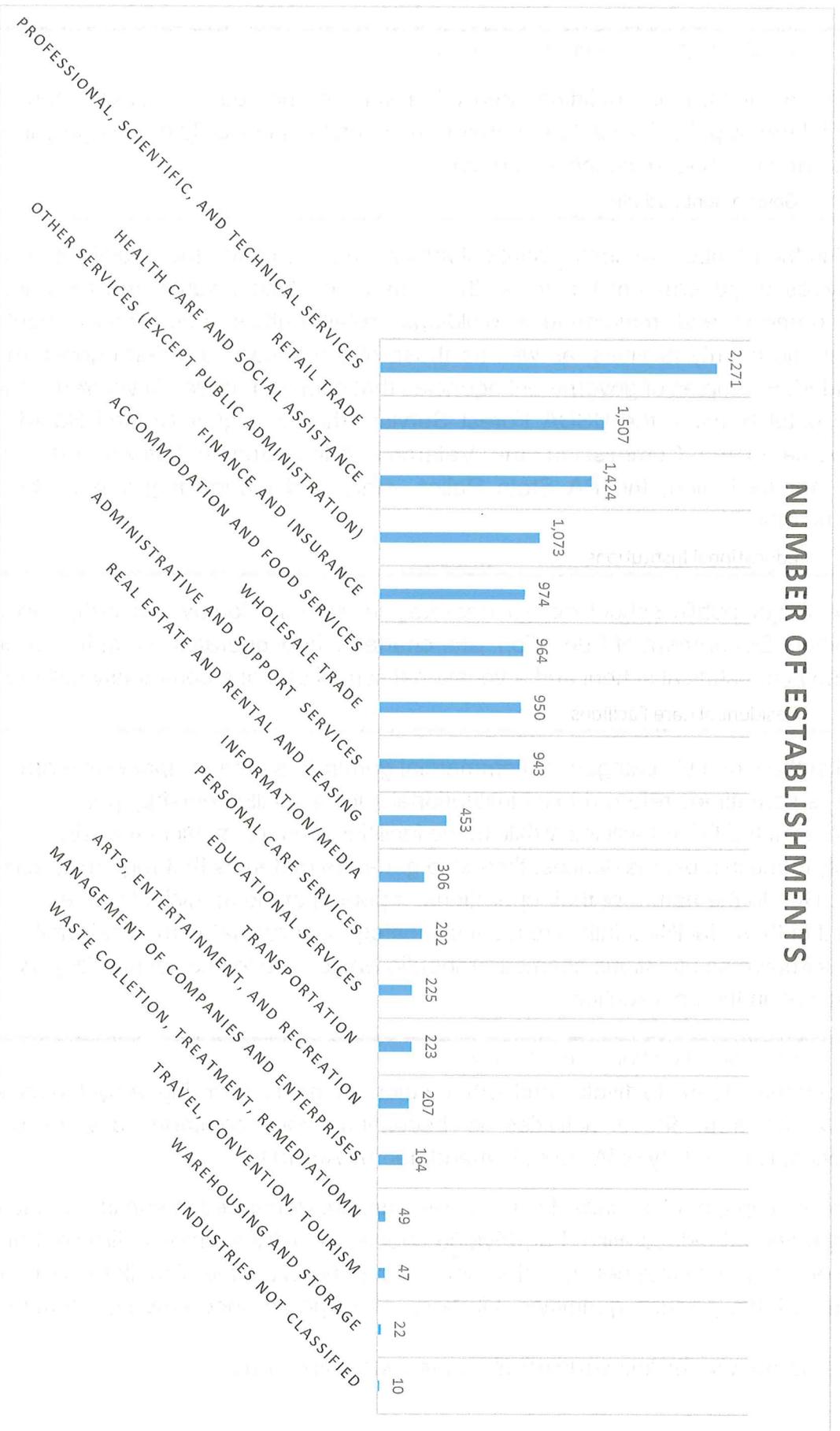
Employers in the categories of agriculture, mining, manufacturing, utilities, construction, and other industrial related operations are not considered commercial waste generators under the federal or state municipal solid waste regulations. Therefore, they have been excluded here.

Overall, the commercial waste stream is relatively similar to residential municipal waste. It consists of paper, plastic, glass and metal packaging, as well as other items. However, each of these materials is distributed in decidedly different proportions than in residences. Differences also exist based on the type of business. For instance, office complexes naturally generate more computer and office paper, while bars and restaurants generate more glass and food scraps.

According to the USEPA, 90 percent of the materials found in the municipal waste stream are recyclable. Chapter 4 examines the materials generated by commercial sources and explores the potential to recover them for recycling in more detail. . Figure 1-12 shows the types of commercial employers that existed in 2014



Figure 1-12 Number of Commercial Establishments in Warren County 2014



Source: US Department of Commerce, US Census Bureau, PA Data Center



1.5.1.3 Select Categories of Commercial Generators

Aside from retailers, office buildings and other service-oriented businesses there are commercial municipal solid waste generators mentioned specifically by category in Act 101. Following is a brief description of each.

1.5.1.3.2 Government Facilities

Included in the numbers of commercial establishments are government facilities. Based on the types of government functions, these may be offices, parks and recreational venues, garages and maintenance buildings, retail outlets, and service centers. Municipal and county facilities, as well as those of the state and federal government, are included. Examples of government agencies that operate facilities in Warren County: the US Postal Service, the USDA Forest Service, the PA Liquor Control Board, the Pennsylvania Game Commission, the Veteran's Administration Offices, the Social Security Administration, the PA State Police, state and federal legislator's, the PA DCNR, and others.

1.5.1.3.3 Educational Institutions

Only one major public school district operates in Warren County. According to the Pennsylvania Department of Education, one charter school operates within the County. There also is a technical school and a vocational school and one community college.

1.5.1.3.4 Residential Care Facilities

Included in the County's category of commercial generators of municipal waste are businesses sometimes referred to as institutional such as skilled nursing, personal care, and assisted living facilities. While these facilities produce municipal waste commonly found in most residences, they also generate materials that require special handling. Due to the nature of their operations, a portion of the municipal waste generated in these facilities falls into a special category of regulated medical waste, previously known as infectious chemotherapeutic waste. These special handling wastes are discussed in the next section.

1.5.1.4 Community Events in Warren County

Sporting events, fairs, festivals, and other celebrations. Recovering recyclables and organic waste from these activities is becoming more common, and in some communities, like the City of Warren, is mandated by Act 101.

Food scraps, cups, bottles, cans, flyers, boxes, etc. are generated in varying quantities by vendors and attendees alike. For daylong events, industry sources estimate that an average of 3 lbs. of waste per attendee per day can be expected. Smaller events and venues may have differing quantities. Likewise, the types of food served, the manner

in which beverages are dispensed and the volume of promotional materials also factor into the equation.

Examples of the types of events in Warren County where municipal waste is generated and where recycling could occur include the Fourth of July Celebration, the Wild Wind Folk Art and Craft Festival and Warren County Winterfest, as well as other smaller local community events.

1.5.2 Unique Types of Municipal Waste

Although an important part of municipal solid waste management, construction & demolition wastes are considered apart from general municipal waste for planning and management purposes. Therefore, they are not factored into the residential or commercial totals analyzed in the Plan. Industrial, mining, and manufacturing activities are also excluded from the definition of municipal solid waste and thus excluded from the figures used in that category during the planning process. Other types of municipal waste require special handling and processing methods. These wastes are generated by select operations and include sewage sludge and regulated medical waste.

1.5.2.1 Solid Waste from Construction and Demolition Activities

Construction and Demolition (C&D) waste is a perfect example of a waste stream that is defined and regulated as a sub-set category of municipal waste in Pennsylvania but viewed differently by USEPA and in other states. Because it is generated under specific circumstances, has unique components, and is collected and managed differently than regular residential or commercial municipal waste, it warrants individual attention in the Plan.

Construction and demolition activities can differ dramatically depending on the specific project or job site. Work may include construction, renovation, and/or demolition and any or all of a number of related activities. The mix and physical characteristics of materials in the waste stream can vary in residential, commercial, or industrial settings, and even on a load-by-load basis. During new construction projects discards tend to include trimmings from dry wall, framing, carpet remnants, etc. Packaging materials such as cardboard boxes, Styrofoam, nylon or plastic strapping, pallets, etc. are among the other materials which are often bound for disposal from new construction activities. Demolition projects tend to generate asphalt, concrete, earth, sand, trees, steel, brick, lumber, roofing materials, flooring, plaster, dry wall, and other similar materials. Typically, demolition loads contain larger quantities of these materials since essentially entire structures are being discarded.

Projecting C&D quantities for the long term is challenging. The amounts of C&D waste from month to month and year to year are less consistent than municipal waste. Construction and demolition projects are vulnerable to weather conditions and the economy. Either can foster or interfere with new development and construction. Two studies were recently conducted in the Northeastern United States, for the purpose of

characterizing the C&D waste stream and calculating a generation rate. The first study was conducted by the Northeast Waste Management Officials' Association (NEWMOA). The Massachusetts Department of Environmental Protection commissioned the second study.

The studies revealed a wide difference in C&D disposal rates from the survey's participating states. These ranged from 0.19 tons per person per year to 0.42 tons per person per year, when variables such as definitions of C&D and materials included were filtered, the generation rate of 0.31 tons per person per year seemed to reflect a reasonable median.

Asphalt, brick, and concrete (ABC) wastes generated from road and bridge projects were not included in their generation rate calculations. These wastes are disproportionately heavier than many of the other C&D components. In addition, much of the material from road and bridge projects is used as clean fill on site. Trees and rocks from land clearing and grubbing were also excluded. In addition, loads from residential accounts, which contained a mixture of regular household municipal waste, and also materials from renovation and remodeling projects, were not factored into the total generation rate either.

Both studies estimate that approximately 75 percent of the total construction and demolition waste generated arrives at a landfill, with approximately 60 percent of the total waste disposed and the other 15 percent put to beneficial use as alternative daily cover for the landfill. The remaining 25 percent of the construction and demolition waste generated is either recycled (12 percent) or combusted for energy recovery (13 percent).

1.5.2.1.1 Warren County Trends in Construction and Demolition Wastes

Minimal new construction has occurred in Warren County over the past several years. No major demolition projects have been initiated by the County and local governments. In 2014 according to the annual facility reports of Pennsylvania landfills, Warren County disposed 921 tons of construction and demolition waste in Pennsylvania landfills. No data was available for construction and demolition waste that might have been disposed in out-of-state facilities. This represents approximately less than 3 percent of all types of Warren County municipal waste reportedly disposed in Pennsylvania facilities.

Determining an accurate construction and demolition waste generation rate is difficult. There are two ways to measure if the reported data is within a reasonable range of expected quantities. One is by using a percent of the waste disposed. The other is to

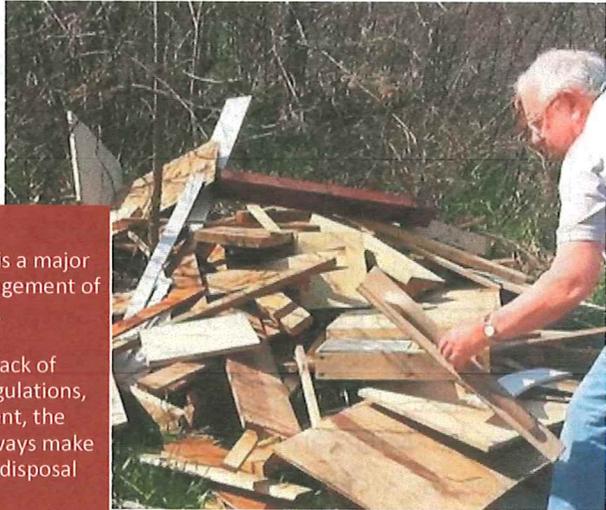
assume a disposal generation rate using accepted data.

According to the Pennsylvania Department of Environmental Protection, 17.5 percent of the material disposed in Pennsylvania landfills can be categorized as construction and demolition waste. Clearly, Warren County falls well below the state average based on the reported data. Although the reported quantities of Warren County municipal waste also demonstrate significant discrepancies from what would be expected, misreporting of C&D waste is not suspected. While Warren County residential and commercial municipal waste is more often handled through a transfer station, C&D waste is hauled directly to a disposal facility. Therefore, the source of the construction and demolition waste is more frequently identified accurately by the hauler and the landfill scale operator.

Another measure to gage the amount of construction and demolition waste generated in Warren County is to calculate the amount expected if the County performed similarly to the NEWMOA and Massachusetts studies. Using the median generation rate of 0.31 tons per person per year derived from the two studies, Warren County would be expected to generate approximately 1,263 tons of construction and demolition waste per year.

Using both methods, the County falls short of the tons that would be expected to be disposed and to be processed. There are legitimate reasons for at least a portion of the discrepancy. An obvious factor is the local state of the economy, which has inhibited new construction and, thus, reduced the amount of construction and demolition waste that might normally be generated.

The cost of disposal is a major factor in the mismanagement of C&D waste. Much of C&D waste is handled by construction/demolition contractors, or homeowners and businesses that generate the waste. Whether due to lack of awareness, weak regulations, and/or enforcement, the material does not always make its way to a proper disposal facility. Some of the material is burned on construction sites and is never accounted. Surveys of illegal dumping sites in Pennsylvania revealed an alarming amount of C&D waste. Those in Warren County are similar.



The cost of disposal is a major factor in the mismanagement of C&D waste.

Whether due to lack of awareness, weak regulations, and/or enforcement, the material does not always make its way to a proper disposal facility.

Finally, Pennsylvania regulations allow for the brick and concrete and other masonry

materials to be utilized as clean fill, similar to the manner in which state highway projects manage this material. Contractors also reuse doors, windows, hardware, etc. in other project applications.

So, although Warren County disposes fewer tons than expected, the data seems reliable based on current circumstances.

1.5.2.2 Special Handling Municipal Waste Streams and Sources

While municipal waste in general consists of commonplace items found in our homes and businesses, there are select types of municipal waste that require specialized handling and treatment. These wastes may have properties or characteristics that may not be appropriate to transport in a conventional collection vehicle or to be disposed of in a municipal waste landfill without additional processing. The composition or amounts may also present risks to the workers providing traditional collection practices. Therefore, these categories of municipal solid waste are controlled and regulated differently.

1.5.2.2.1 Septage and Sewage

Wastewater generated in our homes and businesses is known as sewage or septage depending upon how it is managed. Sewage typically flows through a network of pipelines to wastewater treatment plants (WWTP). These facilities and the infrastructure which connects the source of the wastewater to the treatment plant can be costly to construct. Therefore, facilities are typically built to service households in more densely populated municipalities to reduce the cost per mile of the extensive network of pipelines. Where the cost of connecting wastewater pipelines is prohibitive, on-lot treatment systems must be installed by private homeowners. This wastewater is referred to as septage. Septic systems must be periodically pumped by special service companies. The septage is either land applied or transported to a WWTP for treatment. Multi-family dwellings, such as mobile home parks and residential care facilities, as well as industrial operations may operate private pre-treatment systems, with the sewage being transported for final treatment. Wastewater that is treated at Warren County WWTP's is dewatered sufficiently to become sewage sludge, which is typically disposed in landfills.

In 2014, Pennsylvania landfills reported disposal of approximately 1,131 tons of Warren County sewage sludge. A number of companies transport septage within Warren County. They are regulated and monitored by PADEP. Thus, it is assumed that these materials are managed adequately. These transporters along with the landfills that manage Warren County sewage sludge are included in Chapter 2.

Nine wastewater treatment plants (WWTP) service the needs of Warren County communities. Some of the facilities are restricted to serving a sole community; however others have a broader service area that includes portions of surrounding municipalities.

Table 1-6 lists the wastewater treatment plants in Warren County and the municipalities which are serviced by each.

Table 1-6 Warren County Wastewater Treatment Facilities	
Municipal Wastewater Treatment Facility	Service Area
Grand Valley	Village of Grand Valley
Southwest Warren County Authority	Tidioute
Brokenstraw Valley Area	Brokenstraw Township
Sugar Grove Area Sewer Authority	Sugar Grove Borough Sugar Grove Township
Youngsville Borough	Youngsville
Kinzua-Warren Area Joint Sewer Authority	Mead Township Pleasant Township Clarendon Borough
Farmington Township Municipal Authority	Village of Lander
Sheffield Municipal Authority	Village of Sheffield
City of Warren	City of Warren
North Warren Municipal Authority	Conewango Township Glade Township Pine Township
Source Warren County Comprehensive Plan	

1.5.2.2.2 Regulated Medical Waste

Hospitals and resident care facilities generate significant quantities of municipal waste. One of the most basic functions of these institutions is to temporarily house and feed people in their care. Therefore, much of the waste which is generated resembles that found in the hospitality industry. Obviously, hospitals and other health care facilities offer more complex services than food and board. These medical procedures produce waste, which is required by federal and state regulations to be treated and handled separately from other materials. This waste is identified in Pennsylvania “regulated medical waste,” which is a direct result of medical procedures, treatments, and other activities. Regulated medical waste generated in Warren County is typically transported to commercial treatment facilities.

Although PADEP does require medical waste transporters to report their activity, the Department does not publish a report which provides medical waste data on a per county basis. The medical waste industry is well regulated, and a record of transport and disposal exists, Warren County does not need to take further action on regulated medical waste.

1.6 SUMMARY

During the planning process, the Solid Waste Advisory Committee determined that assuring proper municipal solid waste management is an important and ongoing responsibility of local governments; The Committee agreed that failure to manage municipal waste properly not only harms the environment, but also jeopardizes public health, safety, and the overall quality of life in Warren County. By overwhelming consensus, the Committee members determined that many components of the waste stream provide opportunities to capture and conserve natural resources. Recommendations and solutions resulting from the Committee's discussion, and the findings of the planning process are provided in detail in Chapter 5.

Chapter Two

2 Local Practices and Existing Services

The Warren County Municipal Solid Waste Management Plan examines how residents and business owners in the County store, collect, and ultimately manage discarded materials. The Plan identifies service providers for collection, processing, and disposal of all types of municipal solid waste. It determines the impact of residual waste, which is the residue remaining from industrial and manufacturing processes. The reported quantities of waste are reviewed and analyzed to determine trends and anomalies. Then strengths and weaknesses of the current system are identified, and the overall effectiveness of County and municipal policies is evaluated. This chapter provides the findings of those exercises, offers commentary, and points to areas where improvements could be implemented.

2.1 THE INFRASTRUCTURE

A broad infrastructure of transporters and disposal/processing facilities is necessary to meet the municipal waste management needs of Warren County. Some waste industry operations offer a variety of integrated collection and processing services. However, there are many others that focus solely on specialized management methods or targeted components of municipal waste. The purpose of a municipal solid waste management plan is to ensure sufficient services are available for the collection, transportation, and disposition of all the various municipal waste streams. Understanding the status of the existing system is an important step in determining future needs

2.1.1 Collecting and Transporting Municipal Waste

Residents and businesses throughout Warren County have access to services ranging from curbside collection to commercial dumpster service. Roll-off containers for large volumes are also available. On a more limited basis, dump trucks and/or trailers can be retained for construction demolition and remediation projects. Specialty services can be arranged for materials that are difficult or potentially dangerous to handle.

Warren County's collection and transportation network for municipal waste is predominantly private sector. Municipalities periodically haul waste from clean-ups or seasonal collections of yard waste. The same is true for recycling services which are discussed in Chapter 4.

2.1.1.1 Statewide Transporter Regulation and Authorization

When we think of waste haulers, our thoughts lean toward those who are frequently seen collecting trash from residential curbsides or from commercial dumpsters. These companies are not, however, the sole transporters of solid waste. For a variety of reasons and circumstances, a far greater number of individuals and organizations transport municipal and residual waste than those we commonly notice.

The Waste Safety Transportation Program, Act 90 of 2002, was enacted to monitor and regulate these activities. Owners of waste transportation vehicles that transport municipal or residual waste to a processing or disposal facility in the Commonwealth are required to obtain written authorization from PADEP. Municipal or residual waste processing or disposal facilities are prohibited from accepting waste from vehicles that do not have a valid authorization sticker.

On its website The Pennsylvania Department of Environmental protection maintains a current list of those with active, expired, and revoked authorizations. The list is updated daily.

2.1.1.1.1 Exemptions

The Act does allow certain processing and/or disposal facilities to accept material from transporters without the Act 90 Authorization. These include:

- Facilities where municipal or residual waste is being land applied through agricultural utilization or land reclamation.
- Facilities that operate under a permit-by-rule.
- Facilities that are not required to obtain a permit under §271.101 (relating to permit requirement).
- Cement kilns burning waste tires as fuel.
- Facilities that process electronic waste and components by sorting, disassembling, or mechanical processing for beneficial use.
- Composting facilities.
- Facilities that process municipal or residual waste for beneficial use under an individual or general permit.

Transporters that collect waste in Pennsylvania but utilize an out of state disposal facility are also exempt, as are those with a registered gross vehicle weight less

than 17,000 lbs., and trailers with a registered gross vehicle weight less than 10,000 lbs.

2.1.1.2 Warren County Transporter Network

Fewer companies advertise residential and commercial waste collection and transportation services in Warren County than do in more populated areas. Each of those who advertise is authorized by the Waste Safety Transportation Program. They include Fitch Disposal, Advanced Disposal, Waste Management, and Casella Waste. All the companies except Fitch Disposal are part of organizations with vertically integrated services. In other words, they own and operate collection, disposal, and recycling divisions. Only Fitch Disposal and Advanced Disposal have operations located within Warren County. Casella Waste operates from McKean County and Waste Management from Erie County.

Discards from household clean-outs and construction and demolition waste represent the types of materials commonly disposed illegally. It is likely that a few small independently owned and operated businesses haul junk and other goods resulting from household clean-outs of basements, attics, garages, etc. These haulers are mentioned because household goods are often disposed after they are collected, rather than salvaged. Conspicuously absent from Waste Transporters authorization list are other type of operations one would expect to find in Warren County. Any number of home remodelers, roofing companies and general contractors may be operating in Warren County. They continue to generate and transport significant volumes of similar materials, yet, their activities are not as transparent. Local policies to deter the mismanagement of household clean-outs and construction and demolition materials should be considered in the planning process.

2.1.1.3 Requirements for Transporters of Special Handling Waste

The Waste Safety Transportation Program does not regulate those who manage special handling wastes, such as septage and regulated medical waste. These transporters operate under separate requirements and conditions.

2.1.1.3.2 Septage Transporters

In Pennsylvania, transporters of residential septage must register with the PADEP. Information for each load of septage that is collected and transported is recorded by each transporter. Although there are no requirements for the report to be submitted to the state agency, the information must be made available upon request to PADEP inspectors. Haulers register with PADEP based on the location of their business, not on their service area. It is common for transporters to cross county lines to provide such services. Therefore, despite the PADEP registration, many counties also require septage transporters to register with the county and report on the activities

conducted within their borders. Warren County does not currently require special reports from septage haulers.

Table 2-1 lists the known septage transporters who are located in Warren County.

<i>Table 2-1 Septage Transporters Located in Warren County</i>	
Company	Address
Keith White Excavating	145 York Ln Warren, PA 16365-8781
Grant's Septic Tank Pumping	1425 Norberg Rd Russell, PA 16345-5129

2.1.1.3.3 Regulated Medical Waste Transporters

Transporters of regulated medical waste (formerly called infectious chemotherapeutic waste) also fall within the ranks of those requiring a license in Pennsylvania. Regulated medical waste transporters have broad and varied service areas. A stipulation of the license is that each transporter must report the origin and ultimate destination of the waste to PADEP. The information is not readily accessible on a per county basis. Warren County is not required to have additional reporting requirements for medical waste transporters. Therefore, the County relies on the PADEP to monitor these activities.

2.1.2 Disposal and Processing Facilities

The geography and rural nature of Western Pennsylvania, Eastern Ohio, and Western New York provided large tracts of affordable land suitable for the development of land disposal facilities. Additionally, a once strong industrial manufacturing presence, which generated large volumes of waste, created a demand for disposal outlets near their operations. Consequently, landfills have and continue to be the primary method of managing waste in this region.

The Grunderville Landfill, owned by the Warren County Solid Waste Authority is located in the County. The site discontinued operations causing Warren County to rely on the disposal services of the region's other landfills. Distance factors into the cost and efficiency of transporting waste for disposal. Therefore, when remote disposal facilities are used, a transfer station can often compensate for the time and miles local transporters would otherwise have to travel.

Transfer stations accommodate small collection vehicles that cannot cost effectively deliver long distance loads. Instead, at the transfer station, these small loads can be consolidated into larger trailers and delivered to remote facilities at a lower cost.

Thus, cost effective access to a greater number of potential disposal sites is possible.

As a result of the 2004 Warren County Municipal Solid Waste Management Plan, the County entered into disposal capacity agreements with four landfills in 2005, which were subsequently designated to receive municipal waste from local transporters.

Most of the disposal sites are within the same proximity to Warren County, an approximate 50-mile radius or an equivalent 60-minute one-way drive time from the City of Warren. The exception is Seneca Landfill, a two-hour drive time. Transporters tend to route their vehicles toward the disposal facility, so the distance and drive time is not always measured in a direct line from point A to point B. Because of the distances, transfer stations are an important part of municipal waste management in Warren County.

Figure 2-1 lists the designated disposal facilities, owners, the county in which each is located, and their operating permit numbers. It also lists the transfer stations known to have accepted Warren County municipal waste during the period of the 2004 Plan.

Figure 2-2 shows the locations of the landfills that were designated to receive municipal solid waste generated in Warren County in the 2004 Warren County Municipal Solid Waste Management Plan. It also includes the transfer stations that receive Warren County municipal waste and shows to which specific facility each transports the waste.

The circular highlighted area of the map shows a 50-mile radius from the City of Warren. The jagged outline is a one-hour one-way drive time from the City of Warren.

Figure 2-1 Disposal Facilities Designated to Accept Warren County Municipal Waste 2005-2015

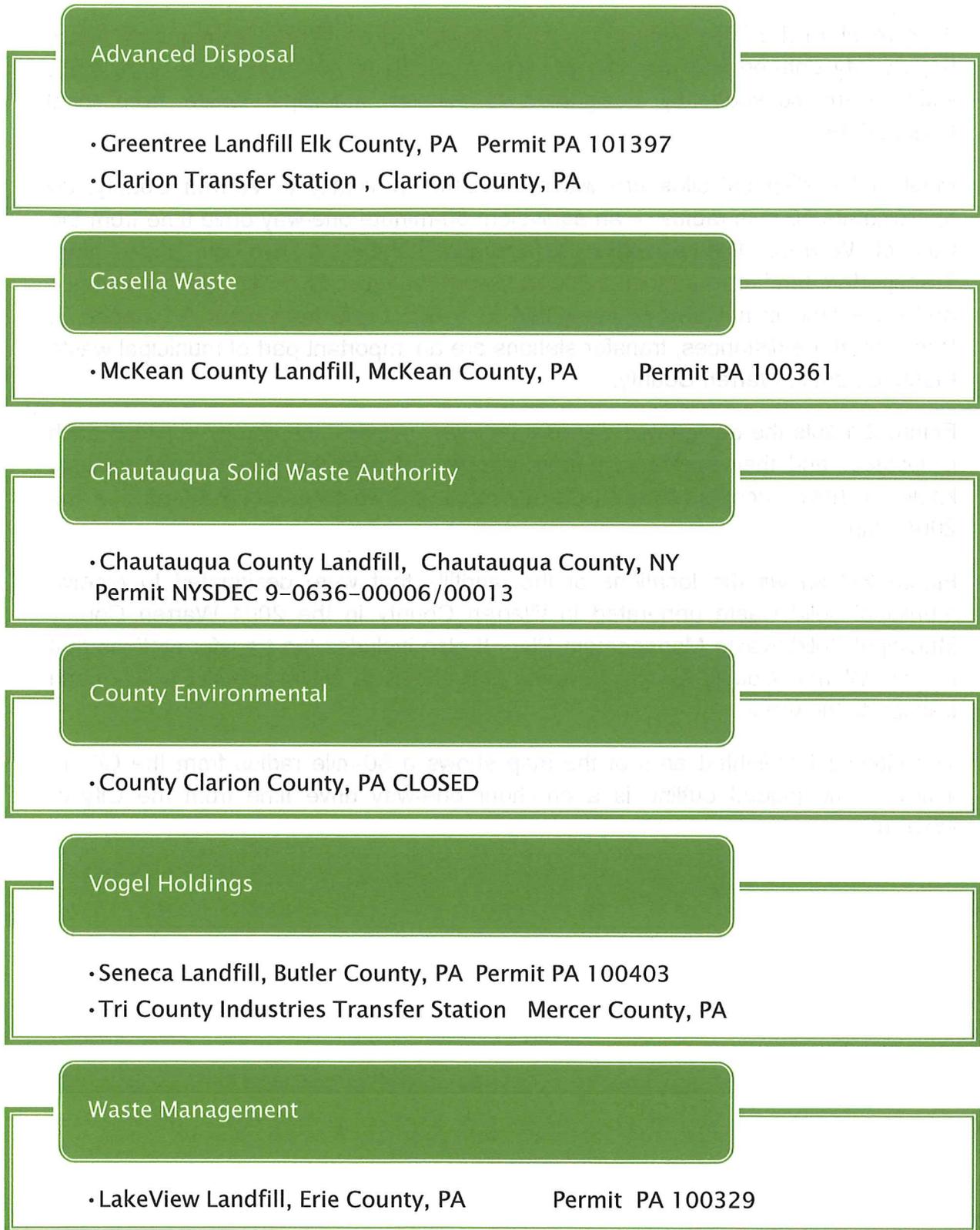
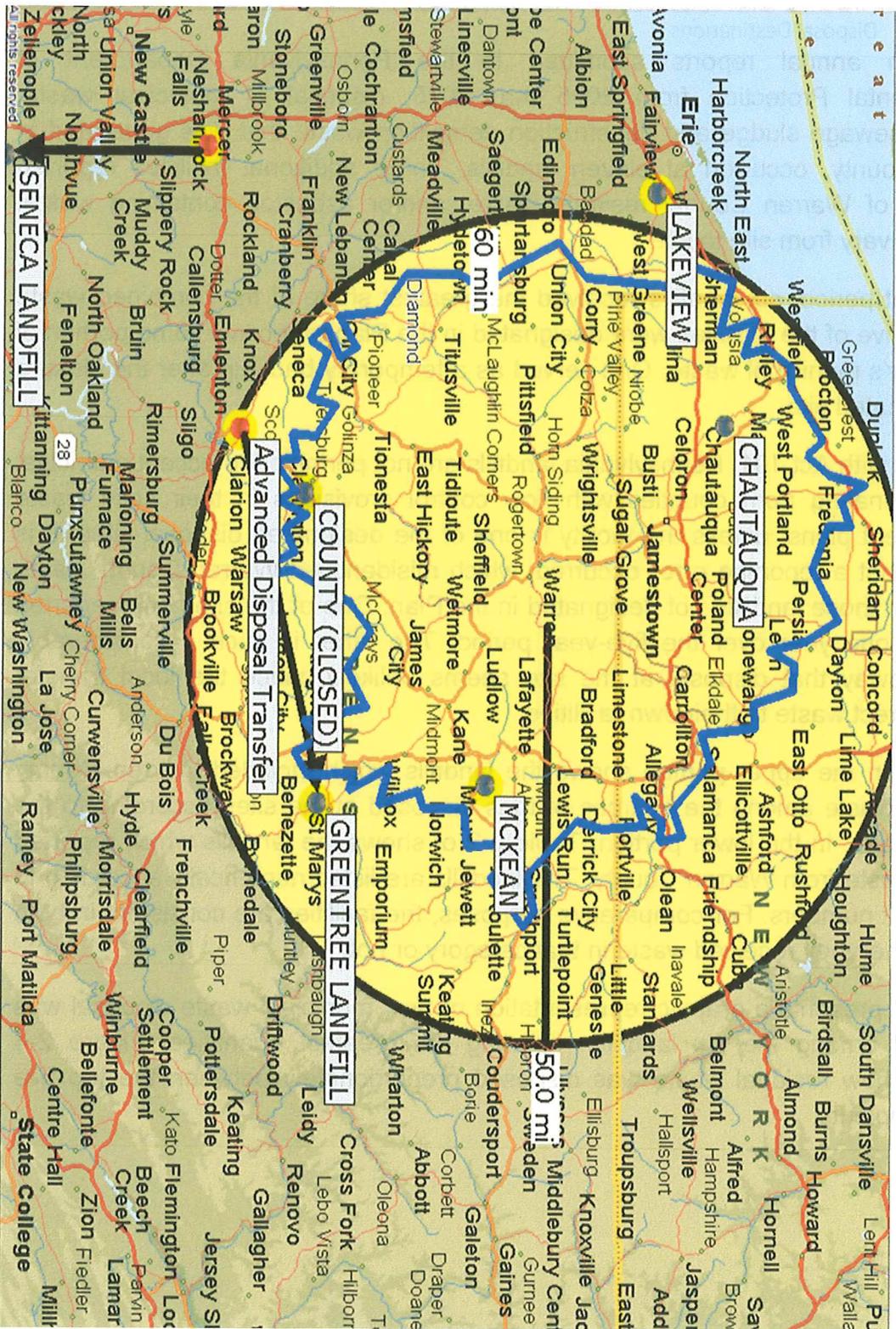


Figure 2-2 Designated Municipal Waste Disposal Facilities 2005-2015 and Local Transfer Stations



2.1.2.1 Disposal Destinations

Based on annual reports submitted to the Pennsylvania Department of Environmental Protection from 2005 thru 2015, disposal of municipal waste, including sewage sludge and construction demolition waste that was generated in Warren County, occurred at eleven landfills. Three additional facilities reported quantities of Warren County residual waste, and/or asbestos containing waste. Quantities vary from site to site.

During that period, six landfills received the greatest share of the combined waste streams. Five of the facilities were designated in the Plan to receive some portion of the County's municipal waste. One served as a temporary back-up after the closure of a designated site.

To comply with Act 101, Pennsylvania landfills are not permitted to accept municipal waste originating from counties with flow control provisions in their solid waste management plans, unless the facility is one of the designated disposal sites. It is probable that a reporting error occurred, which misidentified Warren County waste received at those landfills not designated in the Plan. One of the sites only reported 6 tons in one year over the five-year period. The other is such a considerable distance away that disposal at the site seems unlikely, since the local transfer stations direct waste to their own facilities.

Table 2-2 in the upper portion shows the landfills which included Warren County municipal waste among the sources of tons disposed at the sites according to the facility reports. In the lower portion, Table 2-2 of shows the landfills which reported residual waste from Warren County. The landfills are listed numerically according to their permit numbers. For comparative purposes, the facilities are consistent in both lists, whether they received waste in that category or not.

Figure 2-3 presents a graphic representation of how municipal waste disposal was distributed among the six landfills reporting the greatest quantities. Figure 2-4 illustrates how residual waste was disposed proportionately between the top five landfill recipients.

Table 2-2 Historic Disposal Trends

Warren County Municipal Solid Waste 2005-2015 (Including Sewage Sludge and Construction & Demolition Waste)												
Permit	Disposal/Processing Facility	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
100081	SOUTHERN ALLEGHENIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100277	SANITARY LANDFILL	0.0	0.3	9.0	0.0	20.7	0.0	1.7	0.0	0.0	0.0	0.0
100281	GREENRIDGE RECLAMATION LANDFILL	0.0	0.0	0.2	0.0	380.8	358.6	15.7	1.6	0.0	0.0	0.0
100329	LAKE VIEW LANDFILL	1,053.3	980.2	524.2	694.2	1,235.0	1,484.3	936.1	1,423.9	333.9	1,164.6	0.0
100361	MCKEAN LANDFILL	475.2	49.9	0.0	50.2	1,071.4	1,525.7	1,625.9	1,439.3	911.8	0.0	1,430.1
100585	NORTHWEST SANITARY LANDFILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100620	IMPERIAL LANDFILL	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100933	ALLIANCE SANITARY LANDFILL	0.0	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100955	WAYNE TOWNSHIP LANDFILL	0.0	0.0	6.6	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100963	LYCOMING COUNTY RESOURCE MANAGEMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
101187	COUNTY ENVIRONMENTAL	976.4	275.2	928.8	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
101243	BRADFORD COUNTY LANDFILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3
101397	GREENTREE LANDFILL	3,402.7	15,228.3	22,796.4	32,968.4	30,199.9	30,287.2	29,855.8	27,366.7	30,544.0	31,240.0	31,187.7
NY CHAUTAUQUA COUNTY LANDFILL		25,296.9	17,347.9	16,512.1	5,392.1	3,403.2	2,975.1	13,471.9	11,590.1	1,160.0	0.0	0.0
TOTAL		31,204.5	32,576.2	39,308.5	39,112.9	36,311.0	36,630.9	45,907.1	41,821.6	32,949.7	32,404.6	32,404.6

Warren County Residual Solid Waste 2005-2015 (including asbestos)												
Permit	Disposal/Processing Facility	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
100081	SOUTHERN ALLEGHENIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0
100277	SANITARY LANDFILL	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0
100281	GREENRIDGE RECLAMATION LANDFILL	0.0	0.0	0.0	0.0	0.0	10.9	0.0	0.0	0.0	0.0	0.0
100329	LAKE VIEW LANDFILL	2,389.5	447.3	517.1	2,616.4	1,544.4	2,540.9	2,295.2	1,550.2	243.8	119.7	187.7
100361	MCKEAN LANDFILL	10.7	240.1	0.0	74.0	109.4	10,209.6	277.3	1,014.0	581.2	1,917.7	667.9
100585	NORTHWEST SANITARY LANDFILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	359.4	0.0	0.3
100620	IMPERIAL LANDFILL	0.0	0.0	4.0	0.0	0.0	8.2	0.0	0.0	4.4	0.0	0.0
100933	ALLIANCE SANITARY LANDFILL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100955	WAYNE TOWNSHIP LANDFILL	0.0	0.0	1.1	5.3	0.0	0.0	0.0	0.0	0.3	4.3	0.0
100963	LYCOMING COUNTY RESOURCE MANAGEMENT	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0
101187	COUNTY ENVIRONMENTAL	322.1	902.1	123.5	66.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
101243	BRADFORD COUNTY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
101397	GREENTREE LANDFILL	4,667.2	5,369.0	4,612.6	40,674.1	5,432.7	10,517.1	8,544.6	4,615.8	8,261.8	6,954.6	7,590.3
NY CHAUTAUQUA COUNTY LANDFILL		4,016.7	2,058.5	2,987.3	4,989.8	0.0	374.7	980.7	3,686.7	944.9	0.0	0.0
TOTAL		11,406.2	9,017.5	8,245.6	10,837.7	0.0	23,661.4	12,100.2	10,866.7	10,395.8	8,996.3	8,465.2

Source Pennsylvania Department of Environmental Protection Annual Facility Reports and Warren County

WARREN COUNTY MUNICIPAL SOLID WASTE MANAGEMENT PLAN 2017

Figure 2-3 Trends in Municipal Waste Disposal Destinations

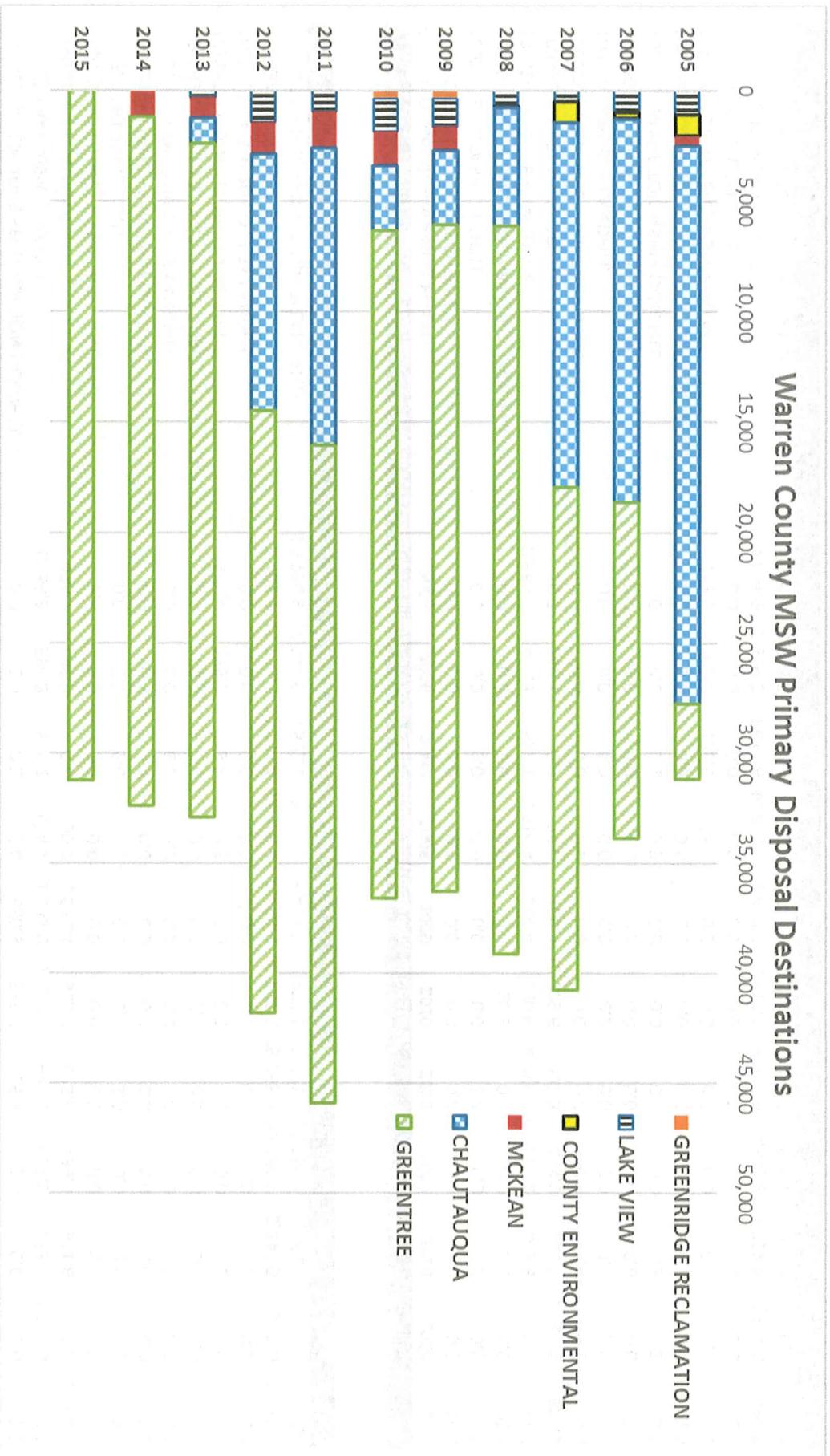
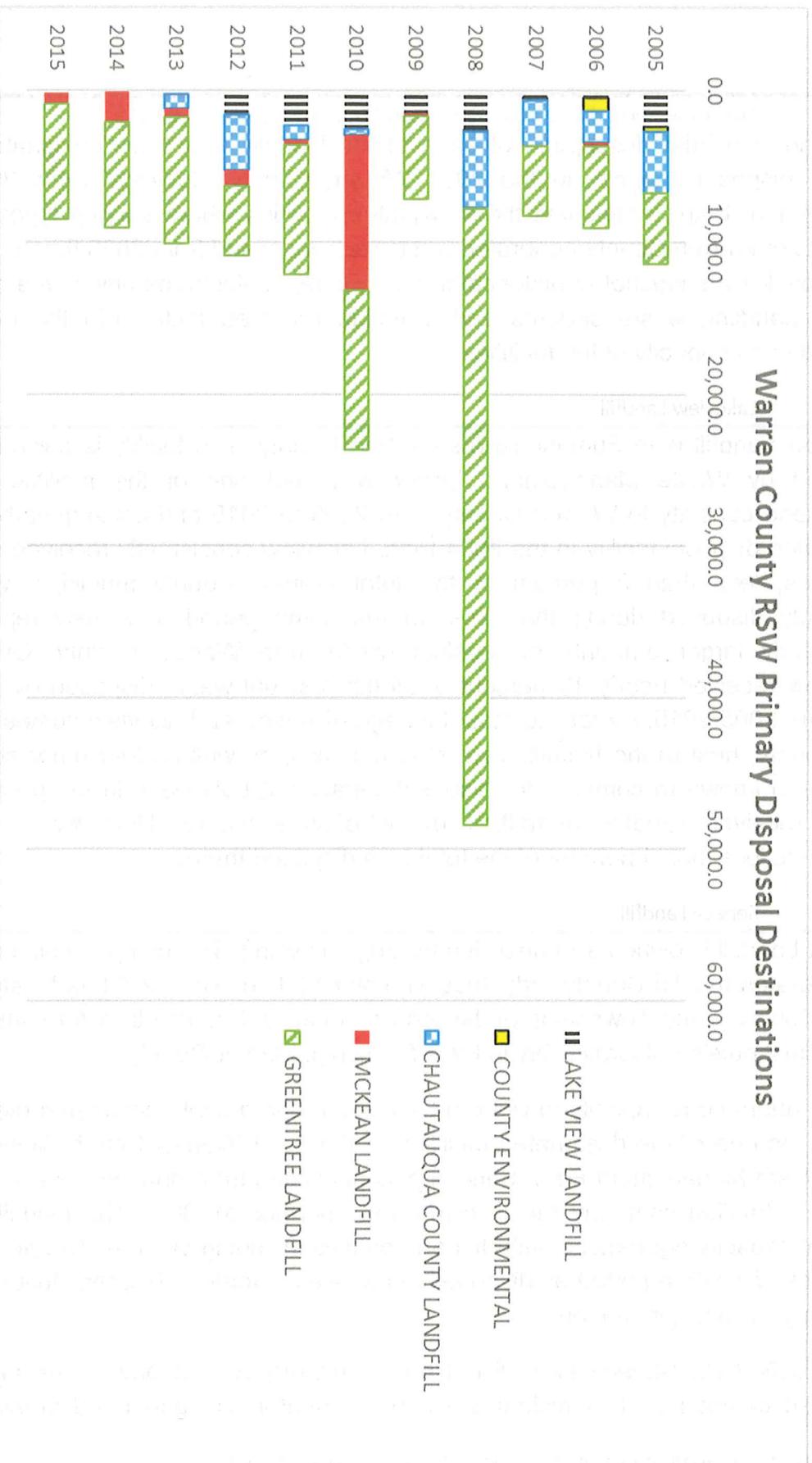


Figure 2-4 Trends in Residual Waste Disposal Destinations



2.1.2.2 Overview and Utilization of Designated Disposal Facilities 2005-2015

Following is a brief description of each of the landfills that were designated to provide disposal capacity in the 2004 Warren County Municipal Solid Waste Management Plan. It indicates the designated facilities where varying types and amounts of Warren County generated waste were disposed from 2008 thru 2015. It also provides a snapshot of historical trends. Finally, it illustrates how some of the special handling waste streams and/or residual wastes factor into the overall operation and capacity of the facilities.

2.1.2.2.1 Lakeview Landfill

Lakeview Landfill is in Summit Township, Erie County. The facility is owned and operated by Waste Management. Lakeview is not one of the facilities that guaranteed capacity to Warren County from 2005 to 2015 and consequently is a designated disposal facility in the 2004 Plan. Lakeview consistently received small quantities, less than 3 percent of the total Warren County municipal waste reportedly disposed during that time. In the same period, Lakeview reported significantly larger amounts of residual waste from Warren County. Overall, Lakeview received nearly 13 percent of all the residual waste disposed over the ten years 2005-2015. By far the most tonnage disposed at Lakeview comes from Erie County, host to the landfill. Ten other counties, as well as four other states, have been known to compete for disposal capacity at Lakeview. In the past, the facility received greater quantities of out-of-state waste. However, it now represents less than 1 percent of the total tons disposed there.

2.1.2.2.2 Seneca Landfill

Seneca Landfill is owned and operated by Vogel Holding. The company also owns and operates the Tri County Industries Transfer Station. The landfill is located in Butler County in the Townships of Jackson and Lancaster. The transfer station is located just outside of Grove City in Pine Township, Mercer County.

Seneca guarantees capacity to Warren County through a contractual agreement. It is listed as one of the designated facilities in the 2004 Warren County Municipal Solid Waste Management Plan. Seneca accepts waste from only one out of state source, a hauling company that it owns and operates in Ohio. The landfill has disposal capacity agreements with fifteen counties including Warren. The greatest quantities of waste reported as disposed at the site originate in Mercer, Butler, and Allegheny counties, in that order.

From 2005-2015, Seneca Landfill did not report disposal of any of the annual combined categories of municipal waste or residual waste generated in Warren

County. Tri-County Industries would be the transporter most likely to deliver Warren County waste to Seneca Landfill. This waste would pass through the Tri County Transfer Station located in Mercer County. The source of any quantities of Warren County waste, which may have been received and consolidated at the facility, could have been misidentified at the landfill as originating from the transfer station's location in Mercer County. This trend is mirrored by other counties whose waste passes through transfer stations.

2.1.2.2.3 County Environmental Landfill

Located in Leeper Township, Clarion County, the County Environmental Landfill closed in 2009. The site had guaranteed disposal capacity to Warren County from 2005-2015 but was unable to fulfill its obligations. Prior to its final year of operation, the landfill reported disposal of just over 900 tons per year of Warren County municipal waste and an average of less than 400 tons of residual waste per year. During the transition to closure, Greenridge Reclamation located in Westmoreland County provided back-up capacity for the waste traditionally disposed at County Environmental. The distance and cost were prohibitive to continue that practice as a long-term solution. Since then the waste previously disposed at County Environmental has been dispersed to other sites designated in the 2004 Warren County Municipal Solid Waste Management Plan

2.1.2.2.4 Greentree Landfill

Advanced Disposal currently owns and operates the Greentree Landfill located in Fox Township, Elk County. Greentree is one of the landfills designated in the 2004 Warren County Municipal Solid Waste Management Plan. The facility has long been one of the largest landfills in the northwest Pennsylvania region. Greentree is currently the predominant disposal destination for municipal waste originating from Warren County. The site received 71 percent of the total reported Warren County municipal waste disposed from 2005-2015. During that time, a major shift occurred in Greentree's operation and the cumulative percentage may misrepresent current conditions.

Since receiving its original permit, Greentree has reported disposal activity from 65 of the 67 Pennsylvania counties. It also received waste from nine states, with New Jersey delivering the most significant quantities in recent years. The landfill did not have to rely on local waste to be profitable and therefore only a small portion of the landfill's revenue came from the surrounding area.

In 2005 Greentree commanded only 10 percent of Warren County's municipal waste market. Today, it reportedly receives over 96 percent of the municipal waste disposed from Warren County. The same growth trend is reflected in residual waste, which grew from 40 percent in 2005 to approximately 90 percent in 2015.

A determining factor for the gain in local market share is the impact of logistics. Waste is delivered to the landfill by a transportation division of Advanced Disposal (previously Veolia), which operates a transfer station near Shippenville in Clarion County. Local independent haulers and municipalities also utilize the transfer site. Thus, Greentree Landfill's recent residual waste volumes have grown considerably.

2.1.2.2.5 Chautauqua County Landfill

Chautauqua County, New York owns and operates the Chautauqua County Landfills one of the landfills designated in the 2004 Warren County Municipal Solid Waste Management Plan. From 2005-2015, Chautauqua received almost 25 percent of Warren County's municipal solid waste and almost 18 percent of its residual waste. In almost a complete reverse of the results for Greentree Landfill, Chautauqua started in 2005 with 81 percent of the municipal waste disposal share for Warren County. By 2015, that share had decreased to 0 percent, based on reported data. Likewise, in 2015, the landfill had reported 32 percent of the residual waste disposed originating from Warren County. In 2015, no Warren County residual waste quantities were reported.

2.1.2.2.6 Review of Historic Reported Disposal Activity

The shift in disposal destinations as reported is believable. The total amount of Warren County's municipal and residual waste remained relatively consistent, throughout 2005-2015, which is also in keeping with its population trends. The only difference is where the waste was disposed.

The transition illustrates the competitive advantage that vertically integrated service companies have in controlling the market. It also shows why the industry has always been merger and acquisition oriented. With only one remaining transporter in the County, who is not a vertically integrated organization, it clearly demonstrates the impact of that consolidation.

2.1.3 Disposal Methods for Special Handling Waste

Specialized methods of processing and disposal are allowed or required for select portions of the municipal waste stream. These include land application of biosolids, and thermal treatment or incineration of regulated medical waste.

2.1.3.1.1 Management of Sewage Sludge and Residential Septage

Wastewater from the homes and businesses in select areas of Warren County flows directly through a network of pipelines to a wastewater treatment plant. In more rural areas of the County, the wastewater is managed by on lot treatment systems that include a septic tank. The tank must be pumped out periodically by a

registered septage transporter, who delivers the septage to a wastewater treatment facility.

Whether the wastewater came to the plant via pipeline or vehicle, special physical, chemical, and biological processes sanitize the wastewater and remove the solids. The result is sewage sludge, which is ultimately disposed in a landfill. Septage or biosolids (wastewater treated to remove all pathogens) may also be beneficially used by land application at an agricultural or reclamation site.

Warren County wastewater treatment plants have disposed a three-year annual average of 1277 tons of sewage sludge from 2013-2015. Volumes are dependent on the operation and treatment process of the facility. These volumes are included in the quantities of municipal waste previously shown in Table 2-2.

2.1.3.1.2 Regulated Medical Waste

Medical procedures and treatments create wastes that have been contaminated by bodily fluids or tissues. The devices and materials used in the process may also have been exposed to chemicals or radioactive materials. This waste cannot be disposed in a municipal waste landfill without pre-treatment. Most medical waste is transported to off-site treatment facilities where it is sterilized or destroyed through incineration. Warren County healthcare and residential care facilities follow these practices.

2.2 UNDESIRABLE DISPOSAL PRACTICES

A flaw in many of the regulatory guidelines for solid waste management plans is a disproportionate focus on the already well regulated and monitored waste collection and disposal industry while disregarding the habits and practices of residential and commercial generators of municipal waste. Peripheral activities and businesses can generate and/or handle materials that can readily become mismanaged waste. Policies resulting from the planning process must consider the extent to which municipal waste goes uncollected or is disposed illegally. To be effective, plans should ensure that all stakeholders promote and enforce proper waste management practices.

2.2.1 Impact of Voluntary Subscription to Waste Collection Services

In Warren County, utilization of the available waste collection services by residents and businesses overwhelmingly occurs on a voluntary basis. Few municipalities secure these services for their residents through a competitive bidding process. Only three municipalities have mandatory waste collection ordinances. Most communities allow residents to arrange for collection with the service provider of their choice. Generally, no formal mechanisms exist that require residents in those

Key Indicators That Conventional Waste Collection Services Are Underutilized.

- Significant contamination at recycling drop-off sites
- Noticeable accumulation of bulky waste and appliances on vacant and occupied properties
- Local businesses need to request locks from their service providers for their commercial dumpsters.
- Roofers, home remodelers and junk collectors who haul away discards without obvious outlets for the items
- Visible burn barrels,
- Roadside littering
- Numerous and reoccurring illegal dump sites

These scenarios exist to some extent in Warren County.

communities to arrange for these services. Even where there are some type of solid waste or related ordinances in place, residents are rarely held accountable through enforcement actions.

The voluntary nature of much of the residential waste collection infrastructure allows residents in the County to avoid utilizing (i.e. paying for) the available services for proper waste removal and disposal. The same conditions prevail in the commercial sector. Typically, transporters contract directly with commercial and institutional establishments. Requirements for businesses to comply with waste storage and collection codes are loosely enforced in most municipalities. Thus, many residents and commercial businesses have no waste service provider. The lack of regulatory control and monitoring for transporters that are exempt from Act 90 Authorization, particularly roofers, home remodelers and junk collectors, provides the temptation and opportunity to increase profits by avoiding the cost of disposal.

Most often, the absence of collection service signals the presence of undesirable disposal methods and environmental pollution. Some of these individuals and businesses dispose of their waste at the expense of others. They leave it along roadways, in streams, and remote areas. In rural areas like Warren County, there are other signs that residents and businesses may not be utilizing conventional waste collection services.

Undesirable disposal methods create pollution; endanger public health and safety, and lower property values. Ironically, those who fail to pay for proper removal of their waste may subsequently experience increased taxes to cover the expenses of remediating the situation. They certainly create extra costs for honest citizens. Often, responsible individuals and

businesses that do pay for collection and proper disposal are victimized by this behavior.

When unauthorized users place material in another's waste receptacle for disposal, it is considered theft of service. Not only do the offenders avoid payment, their waste can result in price increases for the paying customer due to the need for more frequent service or larger containers.

The elimination of drop-off recycling programs frequently occurs due to contamination and the time and cost of removing unwanted materials. Therefore, by their actions, offenders of the system can destroy the very service designed to provide a cost saving alternative for waste disposal, when utilized properly.

2.2.2 Illegal Dumping Activities in Warren County

Keep Pennsylvania Beautiful has conducted a series of surveys to determine the extent of illegal dumping across the Commonwealth and to provide insight on the causes and circumstances that foster such behavior. The surveys were conducted from 2005 thru 2013 in all of Pennsylvania's 67 counties, including Warren. The individual surveys were published as they occurred. A final comprehensive report that examines the findings, trends and relationships related to illegal dumping was published in 2014.

The survey of Warren County was completed in 2009. Mirroring the trend found across the state, 95 percent of the dumpsites identified in Warren County were in areas considered rural by demographic standards. Overall, surveyors identified 59 readily visible illegal dumping sites in the County. At least 80 percent of the sites were actively used, posing a current and ongoing problem. Sites ranged in size, determined by the estimated volume of waste, from 0.25 to 25 tons each. Overall, estimates

Results of Warren County Illegal Dumping Survey 2009



- 59 sites with high visibility
- 292 total estimated tons at sites
- Average 0.25 to 25 tons per site
- 85% of municipalities had illegal dumping
- 95% of dumpsites in rural areas
- 80% considered ongoing problems

put the total at approximately 292 tons at the surveyed dumps.

The survey indicates that the townships were not the only municipalities plagued by illegal dumping. The findings show 85 percent of all of Warren County's communities had some visible dumping. A closer look paints a better picture. Near the boroughs and cities and along the perimeters of their physical boundaries, dump sites are often noted. This is typically an indicator of local illegal dumping behavior.

Statistics show consistently that when violators are identified, they either live or work within a ten-mile radius of the place where they disposed of material illegally. Interestingly, numerous studies confirm that drop-off sites for recycling and/or other waste collection programs are most effective within a five to ten-mile radius of population centers. The correlation supports the theory that if convenient and affordable services were made available throughout the County, the incidence of illegal dumping would decrease.

It is important to note that in their investigation the survey teams were constrained by certain criteria to protect the safety of the workers and to respect private property. The surveyors traveled only on public roadways. They were not permitted to enter the properties where illegal dumping was identified or to physically disturb the dump sites to investigate the contents. In addition, they could not drive down private lanes or access roads that are often inviting to illegal dumpers. Therefore, it is safe to assume that the number of sites located in the County is merely representative of a problem with a much larger scope.

Studies and surveys show that the mere existence of dumpsites breeds more dumping. An interesting finding is that illegal dumpers view posted warning signs as an invitation to dispose in that area. Of the 59 sites which were identified in the County, three sites were posted. All of the posted sites were active dumping grounds. A significant amount of the waste catalogued consisted of bulky items such as tires, furniture, and appliances. Surveyors consistently found construction & demolition waste and regular household trash among the discarded items.

Unwillingness to pay for collection and disposal services is undeniably a significant reason people dump illegally. However, often a more compelling issue is simply the lack of reasonable and convenient disposal outlets. In communities where curbside collection of waste and recyclables is not mandatory, the incidents of illegal disposal activity increase. The abuse is even more noticeable when such services are unavailable at all. This is also true where normal household waste is collected, but bulk waste and white goods are not.

Figure 2-5 shows the location of the Warren County sites in relationship to population density. Because comprehensive surveillance of the entire land area of the County was not possible for this study, it is suspected that the findings are representative of an even greater problem.

2.2.2.1.1 Cost of Remediation

Groups like Keep Pennsylvania Beautiful periodically organize local volunteers to remediate illegal dumping areas. Because volunteer clean-ups draw positive public attention, often overlooked is the reality that local municipalities bear the ongoing cost for cleaning up illegal dumpsites. Public works or road crews are often dispatched at significant taxpayer's expense to remove and dispose of abandoned waste. Keep Pennsylvania Beautiful has catalogued the costs of its own clean-up efforts. In addition, it has surveyed counties and municipalities to determine the average cost per ton for such efforts. Based on their findings, the cost of collection/transportation and disposal along with the value of the labor and materials is approximately \$700 per ton. For municipalities that do not include the value of other projects that should be addressed by public works crews that instead must deal with this problem.

2.2.2.1.2 Laws and Enforcement

Local magistrates can have a huge influence on reducing the occurrences of illegal dumping. It is essential for these officials to have a greater understanding and appreciation for the severity of the offense in relationship to the costs of clean-ups and the impact on public health and safety.

In areas where violators perceive there is a low risk of discovery and prosecution illegal dumping occurs more frequently and more openly. In areas where enforcement is weak or non-existent, the fear factor has little or no impact on those seeking to abandon their unwanted materials on the others' property. However, when done in conjunction with public acknowledgement of offenders, studies show that strong, consistent enforcement and prosecution for illegal dumping is an effective deterrent. Neither can be accomplished without all the proper mechanisms in place.

Figure 2-6 shows materials commonly found at illegal dumpsites. Figure 2-7 lists the contributing factors to illegal dumping.

2.2.2.1.3 Open Burning

The public in general has little to no awareness of the dangers of open burning. Yet open burning of municipal waste poses a significant health hazard. People burn for a variety of reasons, the motivations and behaviors associated with the burning of waste are relatively consistent, regardless of region. Convenience, habit, and the avoided cost of trash collection rank high on a list of factors that continue to foster the practice. In areas like Western Pennsylvania, with seasonal changes, the burning of leaves is a cultural institution. This makes burning bans commonly contentious issues although burning brush and unattended burn barrels can cause accidental fires, thus posing an immediate as well as a long-term danger to the public health and welfare.

Smoke from any fire can affect the health of a community. The smoke from backyard burning is released close to the ground where people can easily breathe it. Smoke can trigger asthma attacks. People with heart and lung conditions are vulnerable, as are those with other chronic health problems. The increasing volume of plastics and other synthetics in the waste stream release dangerous carcinogenic emissions when combusted. In fact, the toxic emissions released from open burning of trash exceed those for large scale commercial municipal waste incinerators where proper containment and filters are installed.

Many residents support the adoption and enforcement of burning ordinances, although vocal minorities can make the process more difficult. Some communities kick off the implementation of the ordinance with buy-back programs for the barrels. Enacting ordinances requiring mandatory waste collection could effectively eliminate the practice.

2.2.2.1.4 Littering

In surveys, most respondents tend to claim that they find littering unacceptable. Most people recognize the implications of such behavior. Yet, even the most sincere and devoted conservationist has, at a minimum, been tempted to toss a gum wrapper to the ground. For an individual that would never consider dumping garbage over the hillside, these seemingly tiny littering indiscretions often don't equate to the same level of offense. However, the cumulative toll on the environment is just as devastating.

Both motorists and pedestrians litter. The behavior is not necessarily limited by age or gender. However at least one study indicates littering is more predictable in some demographic sectors than others. The American State Litter Scorecard: A Sociopolitical Inquiry into Littering and The Response Role of 50 American States claims that men, youth, rural dwellers, and single persons litter more than women, seniors, urbanites, and married persons. The differences here suggest that those in a traditional caretaker or partnership role, which in and of itself demands respect for

others, may be more inclined to show concern for the local environment. Other prime sources of litter include picnickers, hunters, anglers, campers, motorists, truck drivers and construction workers. This group would support a theory that litterers tend to be transient, have less concern for their temporary location, and simply use the most convenient method of disposal regardless of its impact.

Littering can result from limited availability of waste and recycling receptacles in public places. An intergovernmental anti-litter campaign coupled with targeted distribution of convenient disposal containers could help alleviate the issue.

2.2.3 Assessment of and Recommendations for the Disposal System

Overall, the infrastructure necessary to handle basic municipal solid waste collection and disposal is in place in Warren County. At issue are homes and businesses that avoid utilizing these services to properly handle the waste that they generate. The voluntary nature of most municipal collection programs appears to have fallen short in motivating desirable behaviors. Despite an adequate network for collection, transportation, and disposal, some citizens of Warren County remain reluctant to utilize (i.e. pay for) these services. Strong evidence presented during the planning process demonstrated that irresponsible disposal habits persist in many areas of the County. Key indicators such as ongoing contamination issues at recycling drop-off sites and the identification of numerous active illegal dump sites, confirm the wide spread nature of the problem.

The purpose of a municipal solid waste management plan is to assess the strengths and weaknesses in the system and to follow up with recommendations that include actions needed by the County, the municipalities, the waste and recycling industry, residents, and businesses. Additionally, a plan must provide accountability measures and the mechanisms to ensure the rules and regulations can be enforced. The Solid Waste Advisory Committee examined historical data and physical evidence of municipal waste programs and activities in Warren County. They also shared their personal insight as stakeholders in the system. The review of current waste management trends identified several areas for improvement

The most significant objective at the municipal level is to emphasize that homes must utilize regular waste collection services. Entering into municipal contracts for waste and recycling services is a vital tool in attaining these goals. Municipalities should also revisit local ordinances governing property maintenance, zoning, solid waste, and open burning to ensure their requirements are consistent, they clearly require waste collection services, and that deterrents to non-compliance are substantial.

The responsibility for collection and transportation of municipal waste is traditionally delegated to the local government in borough, township, and city codes. The County,

however, can help to facilitate and coordinate the process and encourage intergovernmental cooperation through organized efforts established by the recommendations in the Plan. In addition, the County should support the need for revisions to local ordinances through development of an updated educational campaign on the benefits of proper waste collection and disposal. Such a campaign could include model ordinances to assist municipalities in making the necessary improvements.

These and other recommendations along with potential methods of implementation are discussed in more detail in Chapter 5.

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Chapter Three

3 County Responsibilities to Provide for Disposal Needs

The disposal trends of Warren County as presented in Chapter 2 show a relatively consistent amount of municipal solid waste disposed in the decade from 2005-2015. The quantities were obtained from a review of the Municipal Waste Landfill and Resource Recovery Quarterly Operations and Recycling Fee Report submitted to PADEP. In addition, the quantities of waste disposed in out of state facilities were obtained from reports sent directly to Warren County. The review included those landfills that reported Warren County as the source of one or more categories of waste disposed at the facilities during that period.

Projecting future disposal needs for Warren County is the next step in the planning process. Estimates are based on the County's disposal trends established from the historic data, possible future changes in the rate of municipal solid waste generated per capita, and projected changes in population.

Under the provisions of the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101), the primary concern for counties is to secure sufficient capacity to manage the future projected quantities of waste. Counties must demonstrate that they have met this requirement as part of the process to review and update existing municipal solid waste management plans. Pennsylvania counties may pursue other endeavors, such as recycling and composting, however, those activities are considered secondary and strictly voluntary under the current law.

This chapter presents Warren County's decision and justification to solicit for added capacity and includes a discussion of the anticipated municipal waste generation and disposal requirement the County through the next decade. Market conditions and outside influences, which could impact the County's access to available permitted capacity, are also included in the narratives

3.1 EXISTING DISPOSAL CAPACITY

In addition to the quarterly disposal and fee data, disposal facilities are required to submit an Annual Operations Report. An important part of this report requires each facility to calculate its "remaining available capacity." This determines the unfilled volume of space measured in cubic yards that is available for disposal in the permitted area of the landfill. The reported capacity does not include the potential for additional space, which may become available through permit approvals or

expansions of areas of the landfill property that are currently not covered in the operating permit.

3.1.1 Market Conditions and Demands on Available Capacity

Future demand on disposal capacity from municipal waste is anticipated to be less than it was projected to be 25 years ago. Municipal waste disposal demands from 1960 thru 1990 grew at an unprecedented rate. The rate at which waste was generated across the nation escalated faster than the rate of population growth during the same period. Current reports show the direction of those rates to have slowed and in fact are reversed.

In 2017, recycling programs across the nation, succeeded in removing an average of 35 percent of the post-consumer waste generated from the landfill. That rate has remained stagnant for at least a decade. Disposal is lesser because of another phenomenon. On a per capita basis, not only do we dispose of less waste, each of us generates less, as well. In areas like Western Pennsylvania and Warren County where population is also declining, lower per capita generation and disposal rates have a greater impact on the projected consumption of remaining available disposal capacity at local landfills.

Obviously, regulatory influences and consumer behavior contributed to reduced quantities of waste reaching our landfills. The most significant changes in waste generation and disposal, however, stem from corporate policies. Businesses and industries are more cognizant of the impact of waste minimization and source reduction practices on their bottom line. Products are produced with lighter materials, fewer non-functional ornamental parts and less packaging. Consequently, there is less waste per purchase and what is discarded weighs less. A perfect example is the replacement of glass food and beverage containers with plastic. More units may be sold in 2017 than in 1988, however, the total weight of the larger number of plastic units are much less than the earlier lower number of glass units.



A number of uncertainties are always present in the waste industry.

Market conditions can shift abruptly and without notice alter the consumption of air space, and its availability to Warren County.

Across the state, PADEP annual facility reports confirm a clear downward trend in tons received for many, if not all, of the landfills in the Commonwealth. While local decreases in waste generation affect the quantities disposed, other market conditions have a more profound effect. Landfills utilized for the disposal of Warren County municipal waste, in some cases, were designed and thus reliant on waste from out-of-state sources. Because of escalating fuel costs, competitive disposal rates in other states, and increasing regulatory fees, Pennsylvania landfills are no longer the primary disposal destinations for this material. In some instances, the decrease in tonnage has been dramatic. Local waste generation and disposal in the rural counties, where most landfills are located, simply cannot fill the void.

These conditions would suggest that the landfills which service the disposal needs of Warren County should have no lack of current or future disposal capacity. While that is true currently, time shows us that market conditions can shift abruptly and without notice. Uncertainties are always present in the waste industry. A transition in ownership at one or more of the landfills could alter the utilization of the air space, and thus, its availability to Warren County. This could be significant if the new owner catered to the needs of the oil and gas industry in the Marcellus Shale Gas Formation or was able to recapture waste from out-of-state generators. Increases in permitted volumes due to windfall contracts, catastrophic events, economic conditions, or company policies can also have an impact.

Therefore, aside from the regulatory requirements of Act 101, it is prudent for the County to have sufficient capacity assurances in place, as a safeguard for its future needs. If the County and municipalities are successful in capturing the municipal waste from Warren County not currently collected and transported to proper disposal facilities, more capacity may be required than the currently reported tonnage would indicate.

3.1.2 Future Disposal Capacity Needs

The USEPA reports on national municipal solid waste generation and disposal rates. In recent years, the generation rate per capita has been about 0.85 tons/person/year. Thus, for projection purposes, the Plan assumes that per capita generation rates will remain unchanged.

However, it should be noted that the reported disposal rate of municipal waste, was only 0.45 tons/person/year, slightly below the national discard rate of 0.525 tons/person/year for the same material. USEPA does not include sewage sludge, construction & demolition waste, or medical waste in its national statistics. Those materials accounted for another 0.04 tons/person/year for Warren County. Thus, it is presumed that some quantities of Warren County waste may be misreported as coming from other counties. For instance, Clarion County has a transfer station which likely accepts Warren County waste.

Table 3-1 presents projected disposal capacity requirements for the years 2016 through 2027. The figures are based on a constant per capita disposal rate with adjustments due to projected population changes. For Warren County, the population is based on the 2010 census figures and extrapolated out using the PA Data Center's projections from 2010 to 2030, adjusted for estimates published in 2015 showing the population at 40,396, lower than previously anticipated.

Table 3-1 Warren County Projections of Municipal Waste (tons per year)

	Population	Municipal	Sewage Sludge	Construction & Demolition	Regulated Medical Waste	TOTAL
2016	40,125	29,693	1,332	1,376	9.63	32,401
2017	39,856	29,493	1,323	1,367	9.57	32,184
2018	39,588	29,295	1,314	1,358	9.50	31,967
2019	39,322	29,098	1,305	1,349	9.44	31,753
2020	39,058	28,903	1,297	1,340	9.37	31,539
2021	38,796	28,709	1,288	1,331	9.31	31,328
2022	38,536	28,517	1,279	1,322	9.25	31,118
2023	38,277	28,325	1,271	1,313	9.19	30,909
2024	38,020	28,135	1,262	1,304	9.12	30,701
2025	38,765	28,686	1,287	1,330	9.30	31,303
2026	38,202	28,269	1,268	1,310	9.17	30,848
2027	37,842	28,003	1,256	1,298	9.08	30,557

3.1.3 Solicitation For Disposal and Processing Capacity

To demonstrate they have provided for their jurisdictions' future municipal waste disposal needs, counties pursue a portion of the "remaining available capacity" calculated in the Annual Operations Report. The process to secure disposal capacity typically occurs in ten-year intervals. Warren County has traditionally attained capacity assurances through a contractual process. Warren's disposal capacity agreements reserved a predetermined portion of the daily and/or annual volume allowed to be accepted for disposal at a facility. The current agreements were negotiated starting in 2005 and are set to expire during the planning process.

The PADEP was notified of the County's intent to solicit proposals from interested disposal and processing facilities. A formal request was posted in the Pennsylvania Bulletin and was advertised in the June 14 through June 17 issues of Waste 360 Newswire, a national industry trade journal. A copy of the published notification is provided in Appendix B.

Results of the solicitation process are provided in Chapter 6.

3.1.4 Control and Direction of Municipal Waste for Disposal

Flow control of the waste commodity is a power offered to local jurisdictions. A series of federal and state court rulings have consistently supported this authority, when implemented under specific circumstances. Where flow control is implemented, governmental laws or policies require or encourage waste materials to be disposed at designated disposal facilities (landfills, transfer stations, or incinerators). Its proponents see it as an effective tool to ensure proper management and funding of their overall solid waste programs. Opponents claim it artificially inflates costs and interferes with free trade and interstate commerce. Thus, it remains a contentious topic and the source of numerous litigations.



Contractual arrangements for disposal capacity, which direct the flow of waste to designated third party facilities, must be secured through a fair open and competitive procurement process.

There are a variety of scenarios included under the umbrella definition of flow control. Public investment in a facility has been a proven and effective tool to ensure proper

municipal waste management and guarantee funding of related solid waste and recycling programs. Therefore, when the government entity has assumed full responsibility for waste management and has a vested interest (ownership and/or

operation) in a landfill, transfer station, and/or waste-to-energy facility, the courts have supported policy mandates, which direct all of the waste to the public facility.

Other forms of flow control are also allowable for jurisdictions like Warren County, which have no direct or indirect stake in an operating facility. By obtaining contractual arrangements for disposal capacity through a fair open and competitive procurement process, the laws allow Warren County to flow control to designated third party facilities, public or private sector. Warren County allows municipal solid waste to be disposed at one or more of the designated facilities with which it has obtained contracts. This type of flow control scenario is often called a “menu plan.”



Chapter 4

4 Recycling Opportunities in Warren County

Rural recycling programs face challenges not found in more urban areas. By nature, rural communities tend to possess characteristics that can be unfavorable to a recycling and processing system. These include low population density, an undeveloped collection infrastructure, poor proximity to material market areas, and lower waste generation rates. Each can present a major hurdle for rural recyclers. When combined, these traits cause programs to continually struggle financially, since adequate material volumes and logistics are the primary cost factors. To complicate things further, weak enforcement of illegal dumping and higher tolerance for open burning are disincentives to increasing the number of resident paid subscriptions necessary to cost effectively expand a curbside collection system. A lower tax base makes it equally difficult to subsidize centralized drop-off collection programs. Despite these challenges, Warren County residents and businesses wishing to recycle have access to outlets that accept these materials. Unfortunately, convenience and level of services differ dramatically from one community to another.

This chapter describes Warren County's collective achievements in recycling. It credits all public and private sector parties fostering the advancement of the County's recycling and waste minimization goals and objectives. The chapter features current performance of the recycling activities and includes a discussion of the program's strengths and weaknesses plus any influencing circumstances. Areas for improvements and initial solutions are offered, as well.

4.1 BENEFICIAL EFFECTS OF RECYCLING

The recovery of materials from our homes, businesses, and factories is vastly important. By reducing further extraction of raw materials, recycling plays a vital role in reducing energy consumption, conserving natural resources, preventing pollution, and reversing climate change. The recycling commodities trade creates jobs and reduces the manufacturing costs. Recognition of how recycling benefits our economy and our environment makes it easier to understand why we should participate in this activity.

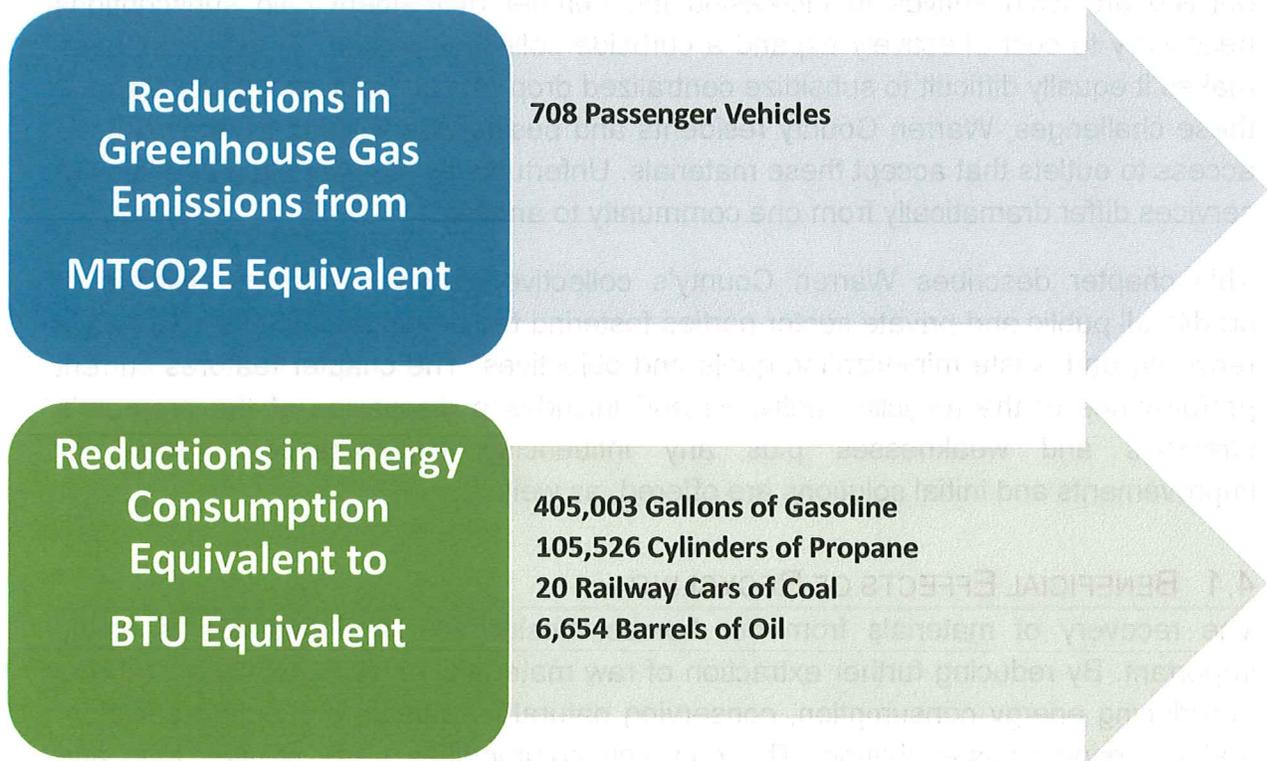
4.1.1 Environmental Impact

Until recently, it has been difficult to measure and quantify the environmental effects of recycling. Because the reward of these benefits is not immediate and direct to the recycler, the gains are often overlooked.

The Waste Reduction Model (WARM) is a tool created by the USEPA. WARM can be used to assess and compare the greenhouse gas (GHG) emissions and energy consumption of a variety of waste management practices. The model calculates emissions in metric tons of carbon dioxide equivalent (MTCO₂E), and energy units (million BTU) based on material types commonly found in municipal solid waste.

Figure 4-1 shows the environmental benefits of recycling using the WARM model based on materials reported by collection programs in Warren County.

Figure 4-1 Environmental Impact of Warren County Recycling Efforts



4.1.2 Economic Impact

The Pennsylvania Recycling Markets Center released a report in June 2017 which demonstrates recycling's contribution to Pennsylvania's economy. More than 60,000 jobs are directly related to recycling industries. Many others are employed by companies who benefit indirectly by supplying goods and services to the primary

material handlers, processors, and manufacturers. Western Pennsylvania is host to a variety of these re-use and re-manufacturing ventures. These include, but are not limited to, facilities that incorporate recycled glass, plastics, fiber and fiberboard, and metals as feedstock in their manufacturing process. The recycled materials are used to create new packaging, insulation, pallets, crates, flooring, and other products. In addition, the savings from replacing virgin materials with recycled feedstock helps these businesses to remain competitive in the marketplace and sustain employment.



Millions of dollars in private and public sector investments have supported the growth of the recycling infrastructure in Warren County.

In addition to manufacturing jobs, the regional economy benefits from employers invested in the supply chain that supports those manufacturers. Millions of dollars in private sector investments have supported the growth of the recycling infrastructure in Warren County. Collecting and processing the materials placed at the curb or at drop-off sites requires expensive equipment, physical labor, heavy fuel consumption, and professional administration. In rural areas where lower volumes of materials are generated and collected, justifying the cost to construct and operate a processing facility is difficult. In these instances, it makes sense for recycling commodities to cross county or state lines. The local economy still benefits drivers, who live and spend in the local area, and are dependent on transporting those materials for an income.

The public sector contributes grants, and local tax dollars to support education programs, provide receptacles for recyclables, and purchase collection and processing equipment. These monies also pay staff salaries to provide technical assistance, customer service, reporting and regulatory compliance.

Of course, user fees represent a direct method of sustaining many of the varied collection services.

4.2 REGULATORY OBLIGATIONS FOR RECYCLING IN PENNSYLVANIA

The Municipal Waste Planning, Recycling and Waste Reduction Act (Act 101), emphasizes the need for counties to develop proper waste management policies and practices along with legal mechanisms to support implementation. In addition, counties must provide for sufficient disposal capacity for the municipal solid waste generated within their boundaries. Conversely, mandates and responsibilities for recycling are placed squarely on those municipalities with specific populations and/or

population densities. This section discusses basic regulatory requirements for municipalities that meet the criteria of Act 101.

4.2.1 Act 101 Mandates for Municipal Programs

Act 101 places unique mandates upon municipalities with populations of 10,000 or more, and those with populations of 5,000 or more with a population density of greater than 300 people per square mile. The City of Warren is the sole municipality in Warren County meeting the Act 101 criteria.

The Act establishes requirements for certain services and standards for collection frequency. Under the Act, the City of Warren must implement mandatory residential curbside collection programs for recyclables and leaf waste. The City must also have mechanisms to ensure that commercial, institutional, and government establishments recycle and manage leaf waste accordingly. In addition to the original requirements of Act 101, mandated communities are subject to amendments to the law which resulted from the enactment of Act 140 of 2006.

The Act provides options for how municipalities choose to comply. Municipal employees and equipment can perform the collections or communities can enter into contracts with an outside service provider for these functions. Provisions of the Act are inclusive of commercial, institutional, and municipal establishments that are located within mandated municipalities. These entities must recycle and separate leaf waste for composting. The municipality is not required to ensure the service to commercial establishments; however, they are expected to enforce the mandate.

Figure 4-2 outlines the responsibilities of the municipalities mandated by Act 101.

Figure 4-2 Act 101 Minimum Requirements for Mandated Municipalities

-  An ordinance that requires all residents to have waste and recycling collection service.
-  Curbside collection of residential recyclables must occur at least once per month;
-  An ordinance that requires a commercial recycling program.
-  Collection of three recyclable materials designated in the Act (glass, aluminum, or bi-metal containers, plastics #1 or #2, newspaper, office paper and cardboard)
-  Curbside collection of leaf waste must occur once per month, or alternatively, twice per year collection if a drop-off collection area for leaf waste is accessible between collections.
-  Implementation of a residential and business recycling education program.
-  Implementation of an enforcement program that monitors participation, receives complaints and issues warnings and provides fines, penalties, or both.
-  Participation in a program for the recycling of special materials.
-  Sponsors or facilitates a program to prevent illegal dumping and/or littering problems.
-  Designation of a person or entity as the recycling coordinator.

4.3 WARREN COUNTY RESIDENTIAL RECYCLING PROGRAMS

Act 101 regulatory mandates for recycling in Warren County apply only to the City of Warren. All other Warren County municipalities that offer recycling services do so voluntarily. For the most part, grassroots interest, and local leadership are responsible for the existing collection points for recyclable materials in Warren County. Consequently, availability and convenience vary widely from municipality to municipality. Following in this section is a brief description of the recycling activities reported in 2010, the common baseline year upon which all statistics in the Plan were available and can be compared for analyses.

4.3.1 Curbside Collection Programs

To comply with Act 101 mandates, the City of Warren uses a competitive bidding process, engages a private service contractor to provide curbside recycling to residential housing with up to four attached units within the City limits. Participation by residents is mandatory; however the percentage of homes that comply is unknown. Residents subscribe to waste collection services with the hauler of their choice.

The Borough of Youngsville collects waste and recyclables at the curb using its own equipment and public employees. The Borough's recycling program is not mandated by Act 101. Local ordinances however, do require participation in the program (i.e. payment for services) by residents and businesses.

Quality of Material Matters



Transporting and processing materials that contaminate recyclables is costlier than if the unacceptable items were simply disposed at the start.

In both programs, recyclables are collected in what is commonly called a single stream system, in which all recyclables are placed together in one single container. Residents must recycle glass, aluminum, bi-metal, and plastic food and beverage containers, high grade office paper, and newsprint. In single stream systems, recyclable materials can be more vulnerable to contamination.

Since the Borough is the exclusive provider of services, monitoring participation is somewhat easier than in a multi-hauler subscription system. In the City of Warren, where the recycling service provider is paid from the tax base, but residents are free to choose and pay any waste hauler for collection, greater opportunities exist to abuse the system. Residents tempted to forego the added cost for waste collection can easily misuse the curbside recycling program by intentionally mixing waste

items in with the materials that could be recycled.

Transporting and processing contaminated materials are costlier than if the unacceptable items were simply disposed at the start. Service providers increase their rates in areas where materials are known to be of poor quality. To reduce contamination and potentially lower the cost of its program, the City should take precautions to prevent residents from overriding the system. At a minimum, the City should consider a joint bid for recycling and waste collection. To minimize its financial risk, the City could have the contractor bill households directly.

Youngsville Borough pays for both disposal and for material processing. It should have an even greater vested interest in the quality of the material collected for recycling. If the Borough is paying a processing fee, with no compensation for the value of the materials,

contamination could eventually escalate the cost of recycling enough that it exceeds disposal. Continual education, monitoring of recycling bins and reinforcement are all important to prevent this scenario.



A number of municipalities partner with the County to voluntarily offer a recycling drop-off collection program.

4.3.2 Voluntary Drop-off Recycling Programs

A number of municipalities partner with the County to voluntarily offer a recycling collection program. Unlike the City of Warren and the Borough of Youngsville these municipalities currently do not collect recyclables at the curb. Instead, residents are offered a centralized collection point where they can drop-off the materials to be recycled. Each municipality in the County program pays for half of the cost of collection and processing, maintains the physical sites, and is responsible for the cost of removing unwanted debris and contamination. A private contractor selected through a competitive bidding process services the sites.

The conditions and concerns for material quality at these drop-off sites are similar to those of the City of Warren. With predominantly voluntary waste collection throughout the County and because the sites are unmanned, contamination can be a serious issue. The composition of the materials at some of the drop-off sites suggests certain residents view the program as a convenient solution to avoid paying for conventional waste collection service. In several instances, the level of contamination is significant

and frequent enough to lead local officials to consider permanent closure of their site. Unfortunately, those who avoid paying for waste collection affect the cost of services for others. Due to the fixed costs of operating a collection route, where fewer rural residents subscribe to a waste service the cost per home is greater than where all homes participate. Low route density makes adding curbside recycling collection cost prohibitive. By avoiding proper waste collection services and misusing the drop-off locations, the actions of some residents and visitors can cause the elimination of the only other recycling alternative available.

Figure 4- 3 shows the municipalities that currently host sites in the County’s program.

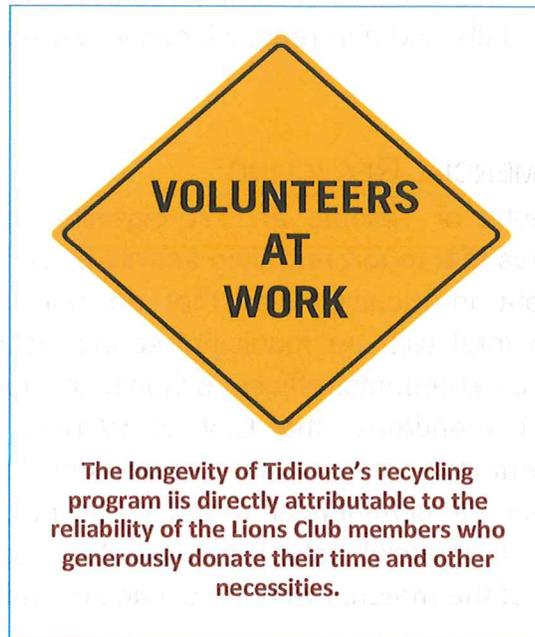
Figure 4-3 Countywide municipal recycling drop-off collection sites



4.3.3 Programs Operated by Non-Profit Organizations

One recycling program is operated by a local civic organization. In Tidioute Borough, the local Lions Club launched the program and continues to sustain it largely through the volunteer efforts of their members, who provide free labor and other resources. The organization sorts and prepares materials for market where the resale value provides revenue to help defray the operating costs.

Labor, collection, and transport represent the most significant expenses for recycling programs. It is important to note this success story is directly attributable to the reliability of the Lions Club members who generously donate their time and other necessities. This includes driving materials to market in their own vehicles when necessary. Although the program benefits from the resale value of the materials processed, it isn't enough to support a normal paid workforce or added operating expenses.



The longevity of Tidioute's recycling program is rare for a system fully dependent on volunteers whose interests can wane over time. It is an admirable program, and one that is applauded. What happens in Tidioute, however, cannot be readily replicated with similar results. Other organizations attempting this type of system would be wise to start slowly and remain small for an extended period to determine if the local volunteer workforce is committed, steadfast, and consistent in their work effort. The same precaution would apply when "forced labor" for community service is to be utilized.

There are other equally important factors, which contribute to the performance of Tidioute's recycling collection program. The value of residents and local businesses taking their materials directly to the recycling center cannot be reinforced enough. This scenario eliminates the funds necessary to support the costlier alternative of transporting materials from remote drop-off collection sites.

Tidioute Borough contracts with a service provider for waste collection through a competitive bidding process. The Tidioute contract offers variable rates to incentivize

residents to generate lesser quantities of waste or opt to recycle more than they dispose. Residents can choose to participate in the low volume program which limits disposal to two bags per week as opposed to the standard 10, bag limit. Pay-by-the-bag programs are effective in increasing the recovery of recyclable materials. Caution should be taken to ensure that such programs do not invite illegal dumping or abuse of the recycling collection program. Tidioute residents are required to participate (i.e. pay for services) via ordinance. The Borough collects payment through the water and sewer utility bills and can readily identify non-participating households. Violators face penalties.

4.4 COMMERCIAL RECYCLING

The Boroughs of Tidioute and Youngsville and the City of Warren are the only municipalities that report recycling activity by commercial establishments. The County collects data in municipalities that do not report and consolidates it under a countywide total with no municipal source identified. Commercial sources include retail stores, restaurants, offices, schools, institutions, and government facilities. Due to Act 101 mandates, the City of Warren requires by ordinance commercial establishments to source separate recyclables from municipal waste. In the remaining municipalities, if commercial recycling occurs, it is on a voluntary basis. In all scenarios, commercial establishments that recycle provide for the collection and processing of the material with the service provider of their choice

The small number of municipalities that report commercial recycling activity is no surprise. The process of gathering and organizing data from local businesses is low on the priority list for municipal staffs that have added functions besides oversight of the recycling program. In non-mandated areas, where no ordinances exist to stipulate recycling and/or reporting requirements, businesses may have no incentive to submit this information. Therefore, it is suspected that more commercial recycling occurs than what has been reported.

There are challenges in motivating small businesses, schools, and rural locations to recycle. For these operations, recycling can be perceived as an added cost. Space constraints for outside recycling containers can be limited in urban settings. Although services are available in more remote locations of the County, due to the lack of route density, the costs are higher than in urban areas. When recycling is a voluntary option, the immediate costs may be considered prohibitive by some business owners. Ironically, if more businesses opted to recycle in a geographic area, prices would be lower.

A cost-effective way to encourage commercial recycling is to provide a centralized convenient drop-off collection site where both residents and businesses can deliver their source separated materials.

4.5 LEAF WASTE COLLECTION

Public works crews in the Borough of Youngsville and the City of Warren provide seasonal leaf waste collection to residential housing units. The City also operates a compost site where residents may drop-off leaves, brush, and other forms of yard waste, other than grass clippings, throughout the year.

4.6 HARD TO MANAGE MATERIALS

Even in areas where curbside collection is available, certain materials in the municipal waste stream require special processing or handling. To facilitate proper management of these items, Warren County periodically sponsors collection events. Other agencies and organizations have hosted similar events. If number of participants in each event is any indication, the public responded to the program favorably. Following is a description of the types of materials that are typically accepted and the benefits of conducting these programs.

4.6.1 Household Hazardous Waste

Most homeowners are unaware that many products which they use on a regular basis pose a danger to the environment if discarded improperly. In fact, these same products would be categorized as hazardous materials if found in an industrial setting. Because they are generated in a residential context, they are classified as Household Hazardous Waste (HHW). Cleaning agents, pool chemicals, paints, herbicides, and pesticides are all considered HHW. Many of these materials may be ignitable and/or poisonous, and therefore, a serious health and safety hazard in homes especially to children and the elderly. They also pose threats to the community in general.



Cleaning agents, pool chemicals, paints, herbicides, and pesticides are all considered HHW.

The Pennsylvania Department of Environmental Protection estimates that each person in Pennsylvania generates an average of four pounds of Household Hazardous Waste

(HHW) each year. With an estimated population of 40,396 Warren County could expect to produce approximately 81 tons of HHW per year.

Individuals faced with eventual removal of these accumulated quantities often encounter significant obstacles and associated costs. Collection events are typically held every other year. Often the need to dispose of HHW is immediate; therefore the County maintains information on other regional commercial outlets that can accept these materials

4.6.2 . Discarded Electronics

Electronic devices all become disposable commodities within extremely short time spans. Current trends show that items such as televisions, computers, and monitors are replaced by newer, better models every few years. For smaller devices like cell phones, digital cameras, etc., this happens as soon as every few months. This planned obsolescence has created a new problem in what to do with the old devices. Lead and other toxic materials are common elements in much of the equipment. Mercury from electronics has been cited as a leading source of mercury in municipal waste. In addition, brominated flame-retardants are commonly added to plastics used in electronics. Therefore, when discarded electronic equipment is disposed, it can pose environmental hazards.

4.6.2.1 Covered Device Recycling Act

Pennsylvania legislators adopted the Covered Device Recovery Act (Act 108 of 2010 or CDRA) as a first step in addressing the growing problem of electronic waste. This piece of legislation provides for extended producer responsibility for discarded electronics, including computers and televisions. The Act establishes a fund to pay for the administration of the program supported by the electronic manufacturers' registration fees. In addition, manufacturers are responsible for covering the cost of covered devices collected under programs which they implement to meet weight-based quotas.

Early implementation of CDRA has been problematic. This is particularly true in rural areas where retailers or processors, which accept the CDRA items directly from consumers on behalf of manufacturers, are few or may not exist. To complicate the issue, beginning in 2013, CDRA also banned the covered devices from disposal. Without legitimate outlets, illegal dumping increased.

Urban areas of the Commonwealth are not exempt from problems. CDRA's quotas are established in part by a manufacturer's current market share. Current sales represent lighter weight devices than were sold twenty years ago and are just now being discarded. Consequently, manufacturers meet their quotas, and thus their obligation to pay for collected devices, yet the flow of units being discarded continues.

To manage the discarded devices customers are forced to pay a recycler or local government's foot the bill to avoid the issues associated with illegal dumping.

Over the last decade, Pennsylvania counties and municipalities have been offering computer and electronics collections as part of HHW collections or separate special events. In addition, electronic refurbishers, dismantlers, and processors have emerged that accept computers and other electronics for recycling. The collection events and the process of recycling materials in a volatile market are costly. The intent of an extended producer responsibility law is to remove the burden of these costs from consumers and local government. To date, CDRA has failed to meet that expectation. Unless circumstances change, or new legislation is passed, counties and municipalities will still need to play a role in the collection of discarded electronics.

4.7 EFFECTIVENESS OF THE RECYCLING PROGRAMS

Unlike municipalities, counties are excluded from the requirements to implement residential and commercial recycling programs. Nevertheless, the counties still have to facilitate the overall growth of recycling and to provide technical support where improvements are needed. A combination of the municipal collection systems, the countywide drop-off network, the non-profit recycling center, and the commercial recycling efforts are factored into the overall results. Each ultimately affects the ability of the County as a whole to attain the state's recycling goals. To understand how they perform individually and collectively is a way to determine where the true strengths and weakness lie.

UNLIKE MUNICIPALITIES, COUNTIES ARE EXCLUDED FROM THE REQUIREMENTS TO IMPLEMENT RESIDENTIAL AND COMMERCIAL RECYCLING PROGRAMS.

A good place to begin evaluating recycling program is to find the common denominators for comparison. Certain materials are commonly collected in residential and commercial recycling programs in Warren County, throughout Pennsylvania and across the United States. These are represented in the core Act 101 materials: glass, metal and plastic food and beverage containers, other plastics, newspapers and magazines, mixed papers, and corrugated cardboard.

A number of other materials were also recycled in Warren County; however, they do not reflect upon the effectiveness of residential and commercial programs. Many of those materials are included in special collection programs and events and are addressed separately in the evaluation.

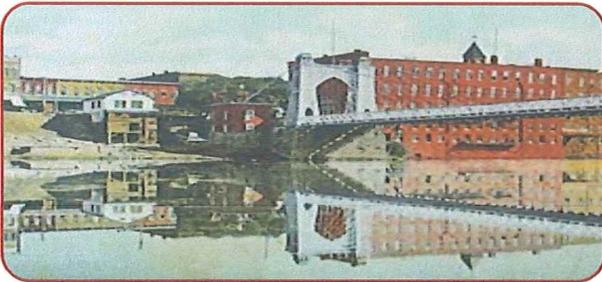
Because they are collected universally, these materials provide sound measurement for benchmarking local performance and comparing it to national norms. Therefore, for the purposes of analyzing and evaluating recycling performance in Warren County, unless otherwise noted specifically, only these Act 101 core materials will be assumed.

4.7.1 Residential and Commercial Achievements

Due to the rural nature of Warren County and based on the findings of the 2005 PADEP Waste Composition Study, no more than approximately 46 percent of the total municipal waste generated in Warren County would be expected to originate from commercial sources. Therefore, 64 percent would be expected to be generated in residential settings. It would be easy to assume that the reported tons of materials recovered for recycling would reflect those same proportions. However, there are many variables that could affect whether or not those assumptions would be accurate.

First, Warren County residential and commercial sources are not mandated to recycle in every municipality. In fact, they are not required to have waste collection in most municipalities. Therefore, while all sources generate waste, only some residential and commercial sources recycle. Each residence generates close to the same volume of

waste per year on average and those that recycle also recover fairly similar amounts. Commercial establishments on the other hand differ in type, size, sales, and the nature of their operation. The amount of waste produced and recovered by each fluctuates greatly.



The City of Warren operates the sole Act 101 mandated curbside recycling collection program in Warren County.

- Twenty three percent of the County's population resides in the City, which collects about 65% of the residential recycling reported countywide.

For 2013, the base year used for data analysis in the Plan, Warren County reported a total of 2851.78 tons of Act 101 recycled materials, from residential and commercial sources, including yard and leaf waste. Materials recovered from residential recycling programs amounted to 63 percent of the reported total in 2013, or approximately 1806 tons. Commercial sources reported another 1,045 tons or 37 percent of the total. The commercial data may not be representative of actual recovery based

on past reports.

The residential and commercial reported totals for the materials being evaluated in the years previous and subsequent to 2013 remain relatively consistent. There are, however, some fluctuations in the 2013 data. Within the evaluated materials included only two are notable. For 2013, there is slightly less commercial cardboard reported and fewer white goods (major appliances). The decrease in reported cardboard is attributable to the retirement of the Recycling Coordinator who normally would secure the data for large chain stores that recycle the largest quantities of the material. It is not an indication that lesser amounts were recovered. For white goods, the data was either not recorded, or possibly municipal collections are not held every year, because this category varies annually. If the 2013 data is adjusted by 500 tons to resemble a five-year average, Warren County's ratio of residential to commercial reported tons shifts to a slightly more balanced division of 54 percent residential compared to 46 percent commercial.

Twenty three percent of the County's population resides in the City of Warren, which operates the sole mandated curbside programs. Materials collected in in the City total 1178 tons and account for about 65 percent of the residential recycling reported countywide in 2013. The City also reported 1041 tons of commercial recycling. This is about 68 percent of all commercial recycling in the County, when a 500-ton adjustment is applied to the County's data for the five-year average.

The Borough of Tidioute, where a manned drop-off collection site operates, had no reported commercial recycling for 2013. Approximately 125 tons of residential recycling was reported, which is nearly 7 percent of the County's residential total. It is suspected that a small portion of Tidioute's residential data may contain material from commercial sources. Tidioute has less than 2 percent of the County's total population.

In the Borough of Youngsville, where a little more than 4 percent of Warren County's population resides public crews collected about 27 tons of residential recycling materials at the curb. That is about 1.5 percent of the County's total. No commercial recycling was reported.

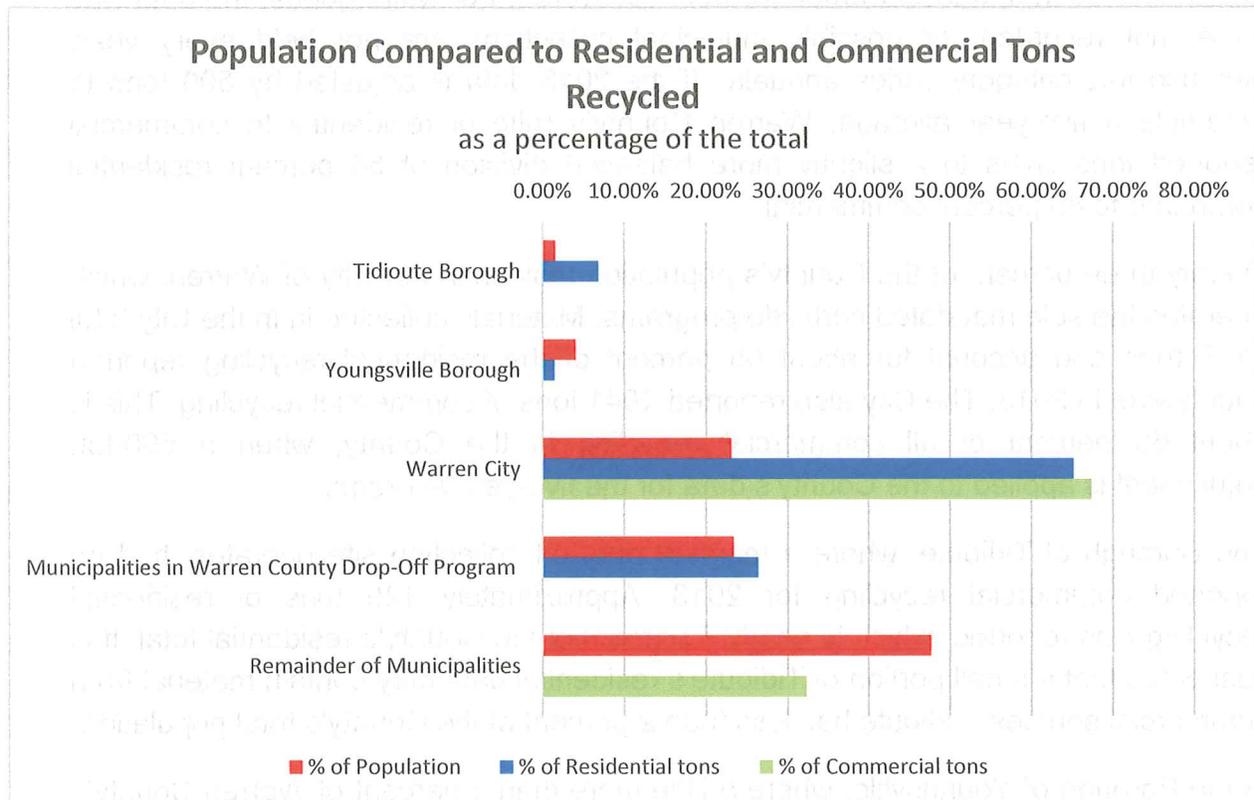
An unmanned drop-off recycling collection program is sponsored by the County and six participating municipalities in which nearly 24 percent of the people in Warren County reside. The drop-off program collected about 26 percent of all residential tons reported for 2013. Reports contained no commercial tonnage.

Commercial recycling reported in 2013 was adjusted to meet the five-year average for the remaining municipalities in Warren County. Those municipalities represent almost 48 percent of the population and typically claim about 32 percent of the commercial

recycling reported per year. These municipalities had no residential recycling activity to report.

Figure 4-4 illustrates by municipality, or groups of municipalities, the percentage of the County's population each represents. It also shows how each source of material in that community, or group of communities, contributes to the overall performance on a percentage basis.

Figure 4-4 Percentage of Municipal Recycling Reported by Source



4.7.2 Measurements for Benchmarking Success

Comparing similar metrics for each municipality that offers a recycling collection program is a step to determine trends in programs that may be succeeding and for ones that may need to be revised. Too often, the total tons collected are the only measure used to judge performance from one program to another. When total tons collected are used, municipalities with higher populations almost always appear to have programs that are more successful than those in municipalities with fewer residents. However, this can be a misconception. Identifying how many tons of material that could have been, but were not, recovered may be a better indicator of success.

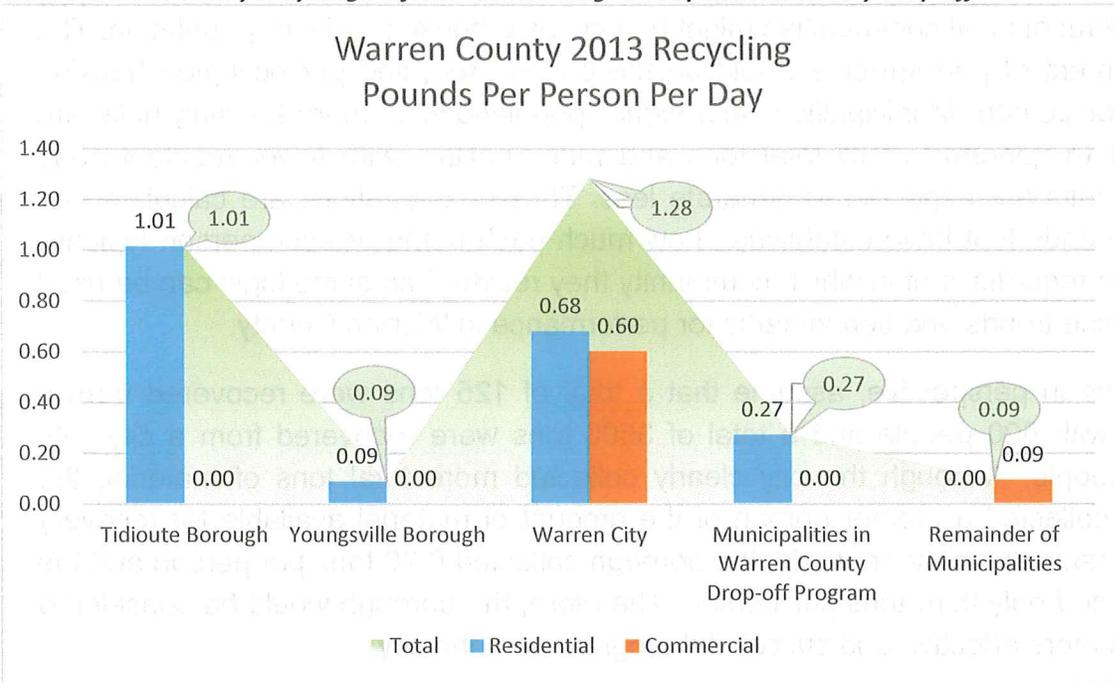
This type of evaluation establishes a common denominator for all municipalities. A similar element in all communities might be occupied housing units or population. The measurement of performance would be the pounds recycled per occupied housing unit or per person. Municipalities with higher populations or more housing units are expected to generate more total tons and municipalities with fewer residents and housing units are expected to generate less. Those expectations are calculated on national trends that have established how much each home or each person typically generates regardless of in which community they reside. The same logic can be used to determine trends and benchmarks for performance in Warren County.

To put this in perspective, assume that a total of 125 tons were recovered from a borough with 600 people and a total of 3500 tons were recovered from a city with 25,000 people. Although the city clearly collected more total tons of material, the borough collected a greater portion of the amount of material available for recovery from its residents. In other words, the borough collected 0.20 tons per person and the city collected only 0.14 tons per person. Therefore, the borough would be considered to have a more effective and successful program than the city.

To compare the performance of Warren County municipal programs, the actual tons collected were converted into a daily per unit measure based on all residents. In other words, the tons of recyclable materials reported were divided by the days in the year and the number of residents. The tons were converted into pounds. Therefore, for Warren County the common unit of measurement used is the number of pounds collected per person per day. For discussion purposes, this could also be referred to as pounds per person per week.

Figure 4-5 shows the recycling performance measured in pounds per person per day. The results of both drop-off and curbside programs are included. Residential and commercial results are shown individually by municipality or groups of municipalities. Along with the combined totals, reviewing the reported data in this fashion creates an equal standard for large and small communities. It provides an accurate and fair view of overall performance in each collection scenario.

Figure 4-5 Warren County Recycling Performance Showing Municipalities in County Drop-off

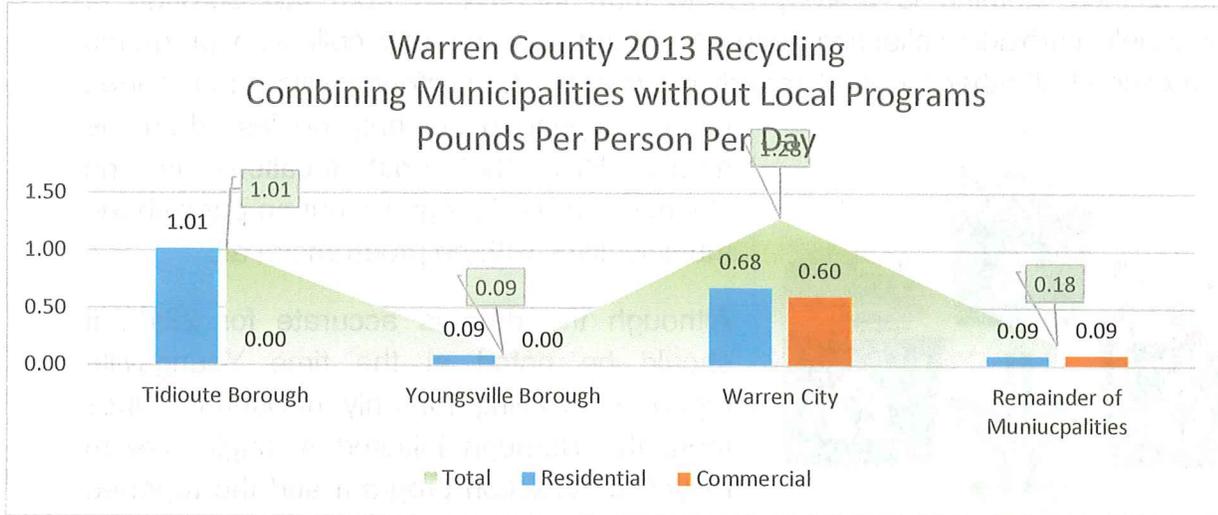


4.7.2.1 Alternative Comparison

Caution should apply when comparing the results of the County sponsored drop-off program to the others shown. The analysis uses only the population of the municipalities where the sites are located. It is safe to assume that residents who live to the sites are more likely to utilize them. It is equally reasonable to expect that residents from surrounding municipalities also share in using the drop-off service. Limiting the population to the municipalities that host the sites artificially inflates the performance of the drop-off collection program. A more realistic way to look at the County’s overall performance is to use the total population of all municipalities except for the Boroughs of Tidioute and Youngsville, and the City of Warren, because they have legitimate access to local programs.

Figure 4-6 shows how the pounds per person per day changes when this assumption is used.

Figure 4-6 Warren County Recycling Performance Showing Municipalities without Local Programs



4.7.2.2 Anomalies in Program Results

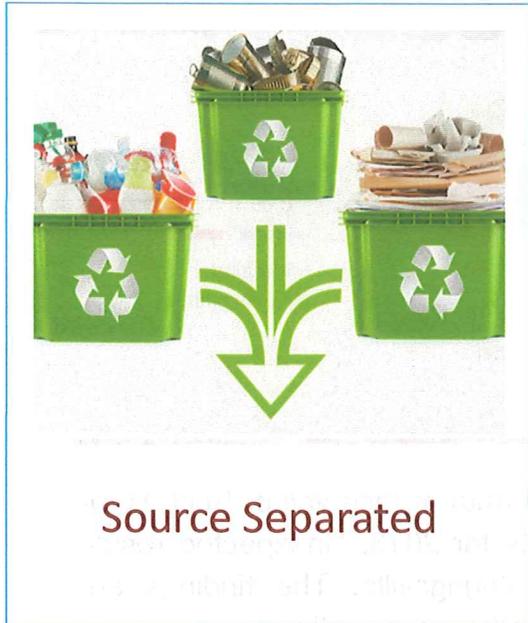
It would be easy, but misleading to take all reported data at face value. Such is the case with the information reported in Warren County for 2013. Unexpected results were reported in the Boroughs of Tidioute and Youngsville. The findings and reasonable explanations for both are provided in the following narratives.

4.7.2.2.1 Borough of Tidioute

The Borough of Tidioute appears to outperform all other residential recycling programs in Warren County. This drop-off program is significantly different in its set-up and operation than others in the County. The reported results could simply mean that residents in the Borough of Tidioute are more diligent about recycling than in other Warren County municipalities. Some evidence suggests the drop-off program in Tidioute may receive materials from small commercial establishments. However, what the reported data and the performance criteria are unable to show, but is more evident on a map, is the location of the Borough is situated on a main roadway convenient to municipalities in a four-county area. Taking the location into consideration along with the reported results, it is easy to see that residents beyond the Borough's boundaries contribute to its success. The recycling center reports significantly more materials recovered than would be generated from all residential and commercial sources in Tidioute based on a population of similar size. For instance, the recovery rate for glass and also plastics is nearly five times greater for each material than the normal recovery rate. Technically, one cannot recover more material than is produced. Therefore, the added recovered material has to come from outside sources. That could explain the high recovery rate per person per day. Whatever the reason, Tidioute's results should be applauded. In fact, it demonstrates that a manned centralized collection point can perform well.

4.7.2.2.2 Youngsville Borough Curbside Recycling Collection

At first glance, nothing is more puzzling than the results from the Borough of Youngsville's curbside collection program. Mandated curbside collection programs tend to exceed all other forms of recycling systems. Yet in Youngsville, the reported



results appear to not only be less than the municipalities that host locations in the County's drop-off program, but on par with the municipalities with no programs at all.

Although the data is accurate for 2013, it should be noted at the time Youngsville reported recycling for only newsprint. Since then, the Borough initiated a single stream recycling collection program and the reported recovery rates have grown to twice those in 2013. While the recovery is still lower than might be expected for a community with a similar population, the increase is impressive. The results are an indication that other Warren County municipalities may benefit by transitioning to curbside collection, if the housing and population density are conducive to control costs. Recovery of Targeted Materials



In addition to tracking and monitoring the overall total amount of tons collected, successful recycling programs also take into consideration the results for each individual commodity that currently is or that could be recovered. Understanding the types and amounts of each material available for recycling in the waste stream helps program managers determine where efforts should be directed to attain the best results. The USEPA has been tracking and monitoring the individual components of the municipal solid waste stream since 1960. The agency identifies national trends in municipal solid

waste generation, recycling, and disposal as a whole and for each material in its composition.

Because raw data can be interpreted differently to demonstrate any number of findings, the USEPA requires states to utilize certain standards in reporting recycling performance. These requirements are largely based on the findings of the USEPA's ongoing study. Pennsylvania utilizes these criteria in its annual reporting requirements. However, in working with information from counties and municipalities across the state, it is common for data to be gathered, organized, and in many cases manipulated before it is reported in the fashion required by PADEP. Therefore, a comparison to national trends is a vital exercise in identifying anomalies. These often reveal a host of issues, from misreporting to actual program strengths and weaknesses.

4.7.3 Reported Overall Achievements

Information for Warren County's recycling performance for 2013 was obtained from the PADEP's ReTRAC software reporting system. Recycling activities in Warren County are traditionally tracked and monitored by the Warren County Recycling Coordinator. The PADEP requires County Recycling Coordinators to utilize the system to comply with their annual reporting

The sources of the data are local municipal programs, commercial establishments, recycling transporters and processors, and information from large national retailers provided by PADEP. Descriptions of individual municipal and county programs were offered earlier in this chapter along with discussions on the level of effectiveness of various models. A review of the reported data helps us understand the attainments of the existing programs. In addition, it identifies potential shortfalls and the degree of effort which may remain to meet state and local goals.

Materials reported from industrial concerns and other extraneous materials that are not commonly collected in residential and commercial recycling programs sometimes need to be filtered out of the data before an accurate analysis can be performed. Gathering and documenting this data may be beneficial in illustrating the broad impact of recycling in an area. However, those figures play no part in the success of a residential curbside or drop-off recycling collection program. In fact, including those other sources and materials in an evaluation of a municipal recycling program distorts the data and skews the results. In addition, it can lead program managers into poor decisions.

4.7.3.1 Adjustments to Source Separated and Mixed Recyclable Materials Reports

How materials are collected and processed influences the format in which the recycling data is reported. A portion of the materials in Warren County were reported with individual weights. These materials were collected separately and processed and weighed by material type. This source separated collection system is the predominant

method used at the recycling center operated by the Lions Club in the Borough of Tidioute. Individuals bring their materials to the center pre-sorted.

Another recycling collection and processing program popular in Warren County is single stream where wider varieties of plastics are mixed in the recycling collection bin with the glass and metals for collection, along with all forms of paper and cardboard. When larger bins, typically wheeled carts, are provided to residents for curbside collection under the single stream type of system greater quantities of materials are recovered.

Providing an individual weight for each material is more complicated, if not impossible, on in-bound single stream loads. Waste composition and characterization studies of single stream system, however, provide relatively consistent data. This can be applied to adjust the County's reported figures to reflect the individual materials found in the single stream mix. In addition, the collection and processing methods, along with the types of materials accepted by local transporters and recycling processors, were taken into consideration in the adjustments applied to the Warren County reported data. Table 4-1 shows the reported recycling after such an adjustment to the single stream mix was applied

4.7.4 Attainment of State Recycling Goals

In 1988, upon the enactment of Act 101, a requirement was established by law for Pennsylvania to attain a recycling rate of 25 percent of the waste generated in the Commonwealth. PADEP subsequently increased the goal to 35 percent. The state's goal is close to the national recovery rate for all municipal waste generated in the United States for 2013, which is 34 percent. Table 4-1 demonstrates how Warren County measures up to the nation's and the state's goals.

In reviewing Table 4-1 one will notice that each material has an individual recovery rate that may be greater or lesser than the overall rate of 34 percent for all materials combined. As an example, all plastic packaging (#1 thru #7) is recovered at the rate of 14.59 percent. Newsprint on the other hand is recovered at 66.9 percent. To determine the national rate and the state's goal, the cumulative total recovery of all tons of materials, which are typically accepted in municipal recycling programs, is used.

When materials are disposed, they are not typically weighed individually. Disposal facilities report on the weights of broad categories of waste, but not on each component. Waste sorts can be conducted to determine the specific local waste composition. However, a sufficient and less costly alternative is to apply the national rates established by USEPA to local population data provided by the US Census Bureau assuming that performance would be similar to the national average. It was

this method, which was used to calculate Warren County's generation and disposal figures for each material. The reported recycling quantities for each material are then compared to the estimated expected results.

Table 4-1 compares the local data to the nationally reported figures to demonstrate the County's success in attaining the recycling goals of the Commonwealth. Table 4-1 also shows the results of the Act 101 core materials recovered in Warren County. Other items reported locally are included as well.

Figure 4-7 provides a stepwise guide to assist readers in understanding and comparing the information that is presented in Table 4-1.

4.7.4.1 Understanding the Ratings

The last column in Table 4-1 shows a percentage rating for each material. It does not represent the percentage of the total materials recovered, or what is often known as the "recycling rate." The indicators of how Warren County's performance compares to the national averages are:

- Average (100 percent),
- Above average (more than 100 percent) or
- Below average (less than 100 percent)

It is worth noting that for some of the materials shown on the table, substantial quantities may be recycled through other means and not reported. For example, considerable amounts of corrugated cardboard and white goods are normally recycled directly by commercial entities. It is safe to assume that at least a portion of these materials go unreported.

Figure 4-7 Guide to the Data and Column Categories in Table 4-1



Table 4-1 Warren County Recycling Performance Compared to the National Averages per USEPA

<i>Materials and Products</i>	Predicted Generation	2013 % of Total MSW Generated	Expected Total Tons Recovered	Predicted Recycling Rate	Warren Reported Adjusted for Single Stream Recycling	Warren % of Expected Recovery Achieved
	tons	percent	tons	percent	tons	percent
Traditional Recycled Materials						
<i>Glass Containers</i>	1,199	3.64%	408	34.02%	224	54.97%
<i>Aluminum Cans</i>	164	0.50%	91	55.12%	69	75.96%
<i>Bi-Metal Cans</i>	242	0.74%	171	70.59%	31	18.31%
<i>Plastic #1 Through #7</i>	1,811	5.50%	264	14.59%	211	79.93%
<i>Plastic #1 and #2</i>	474	1.44%	145	30.60%	109	74.86%
<i>Newsprint</i>	1,043	3.17%	698	66.96%	357	51.16%
<i>Other Paper Nondurables</i>	2,840	8.63%	1,173	41.31%	336	28.61%
<i>Corrugated Boxes</i>	3,892	11.83%	3,444	88.49%	826	23.97%
<i>Other Paper / Paperboard Packaging</i>	1,102	3.35%	306	27.73%	22	7.11%
<i>Other Miscellaneous Non-Durables</i>	470	1.43%	17	3.62%	0	0.00%
	13,237	40.23%	6,717	51%	2185	31.54%
Other Recycled Materials						
<i>Furniture</i>	1,505	4.57%	1	0.09%	0	0.00%
<i>Rubber Tires</i>	618	1.88%	250	40.46%	0	0.00%
<i>Batteries, Lead-Acid</i>	373	1.13%	369	98.46%	0	0.00%
<i>Major Appliances</i>	579	1.76%	339	58.61%	0	0.00%
<i>Consumer Electronics</i>	407	1.24%	164	40.45%	0	0.00%
<i>Yard Waste</i>	4,429	13.46%	2,668	60.23%	765	28.67%
<i>Wood Waste (Packaging)</i>	1,219	3.70%	320	26.25%	0	0.00%
<i>Food Waste</i>	4,800	14.58%	238	4.96%	0	0.00%
<i>Clothing / Textiles</i>	1,606	4.88%	237	14.76%	0	0.00%
<i>Carpeting</i>	495	1.5%	31	6.26%	0	0.00%
<i>Small Appliances</i>	253	0.77%	16	6.32%	0	0.00%
<i>Steel Drums</i>	69	0.21%	54	78.26%	0	0.00%
<i>Other Miscellaneous Durables</i>	2,448	7.44%	31	1.25%	0	0.00%
<i>Total Other Recyclables</i>	18,801	57.12%	4,718	25.09%	765	16.21%
<i>Subtotal for Recycled Items</i>	31563	95.90%	11,290	35.77%	2,838	25.14%
<i>Non-Recycled Materials</i>	1,348	4.10%	0	0	0	
<i>Total</i>	32,911	100%	11,303	34.34%	2,838	25.11%

4.8 FINDINGS AND SUGGESTED ACTIONS

The 2013 data, which is shown in Table 4-1, indicates for each of the materials reported Warren County recovers less than the national averages. Consequently, Warren County's overall recovery rate, based on all materials generated and recycled, is 25.11 percent of the national recovery rate of approximately 34 percent. This means that Warren County's recycling rate is approximately 8 percent, significantly less than the state recycling goal for all municipal solid waste. However, when the evaluation is limited to the list of Act 101 core recyclable materials included in residential and commercial recycling programs, Warren County fares somewhat better. For the Act 101 materials, the County has a recovery rate of 16 percent. In fact, for many of the Act 101 materials Warren County's results come close to the average expected recovery. For a rural area with few mandates to recycle, minimal curbside collection, and limited access to drop-off collection sites Warren County's results are common. That shouldn't be interpreted as an excuse not to strive for improvements. Warren County and the municipalities have many options available to them that would enhance services and increase recovery.

Warren County's 16% recycling rate for Act 101 materials is significantly less than the 35% state recycling goal for all municipal solid waste.

For a rural area with few mandates to recycle, minimal curbside collection, and limited access to drop-off collection sites Warren County's results are common.

4.8.1 Opportunities for Program Improvement

Currently, 47 percent of Warren County's population does not have convenient access to a recycling outlet. Its recovery rate for material is low. Solutions are possible given finances and the political will to act. Alternatives exist that are compatible with the varied demographics of the County's municipalities. The demonstrated success of existing programs shows that expansion of similar services could have a positive impact.

Following are some observations with explanations offered for unusual or lower than average performance. The narratives point out those areas where future changes could have the greatest impact.

4.8.1.1 Increasing Container Recovery

To be successful, residential curbside and drop-off recycling programs need to target the materials that represent the largest quantities recoverable from our homes. It makes sense that glass bottles and jars, aluminum and bi-metal food and beverage cans, and plastic containers are among those listed in Act 101 for inclusion in mandated collection programs. Residential sources generate over 80 percent of all these materials in the overall municipal waste stream. Examining the recovery rate for the same items is a good first step in determining the effectiveness of local programs.

Warren County currently captures about one third of the materials, which might be expected in a municipal program. A disproportionate percentage of those materials are reported by the Borough of Tidioute and the City of Warren. The results are not surprising and can be directly linked to the convenient and direct access to recycling outlets in these communities that is lacking for the majority of Warren County's population.

4.8.1.1.1 Curbside Collection

The potential for improvement through implementation of a curbside collection program is shown in the increased recovery in the ongoing programs of the Borough of Youngsville and the City of Warren. The growth of curbside collection programs could substantially increase the recovery of materials. Municipalities with the highest population density are the best candidates. In addition, groups of municipalities, which together could represent a higher population and housing density than each could individually, are another good choice.

Unfortunately, in rural areas like Warren County, the distance between homes and the overall travel time to material processing facilities can make curbside collection costlier in some municipalities. The good news is alternatives exist.

4.8.1.1.2 Expansion of Recycling Drop-off Collection Points

The County's recycling drop-off collection program clearly demonstrates that residents will recycle when given the opportunity. Since the County shares in the

Potential to Expand Curbside Recycling



The best candidates for curbside recycling collection are municipalities with the highest housing density or groups of municipalities, which together represent a greater density than each does individually.

operating costs with the host municipalities for the sites, the system is affordable. More municipalities could easily join and offer a convenient method of recycling to their residents.

The reported data suggests that location and convenience significantly affect the results. If one uses the population of the host municipalities for the sites as a basis for calculation, the recovery rate per person is significantly higher than when the population of all municipalities that potentially could use the sites is a factor. The population of the County, excluding the communities with their own programs, is compared to the recovery at the County's collection points, performance of the whole program on a per capita basis appears low. However, Expanding the number of municipalities who participate in the County's drop-off recycling collection program would be a logical improvement. This approach would take the burden off currently participating municipal sites. At the current locations, the volume of material often exceeds site capacity and is greater than the local population could generate.

4.8.1.1.3 Centralized Convenience Center

Another equally successful way to provide access to recycling for an even greater number of people and businesses is to offer a "convenience center." As the name implies, these centers are convenient centralized operations, typically situated along major thoroughfares that people travel to work, to school, to shop, etc. The Borough of Tidioute's success teaches us that location is an important factor in attracting the greatest amount of materials from a broad universe of the population. Convenience centers can collect more than bottles, cans, and paper. These facilities are perfect locations to launch collections for many hard to manage items such as white goods, electronics, tires, and many others. A County operated facility would be able to manage materials from the greatest number of municipalities and leverage its service area to better compete for available grant funding.

4.8.1.1.4 Revamping the County's Drop-off System in Conjunction with a Convenience Center.

By decreasing or closing remote drop-off points, the County's explicit cost of collecting materials from the sites could be eliminated or significantly reduced. Replacing the remote sites with a centralized drop-off point convenient to where residents work and frequent for other activities, would not increase the implicit costs of collection, which fall to the participants. The implicit costs include the participant's time, fuel, along with the wear and tear on the vehicle, etc.

Other advantages include cleaner and higher quality materials to market if the site were operated under supervised collection and materials were source separated. Supplemental revenue might be generated by the improved condition of the materials. In addition, a greater variety of items could be collected.

In 2013, the County captured about 25 percent of the items like tires, discarded electronics, major appliances, etc. Recently, the County increased the frequency of electronic waste collection events. The successful results of those events are an indicator that Warren County residents desire similar services for other materials.

4.9 SUMMARY AND CONCLUSIONS

The review of recycling statistics and practices during the planning process confirmed Warren County residents respond to recycling opportunities when they are convenient and affordable. The review also exposed the need to enhance local programs for better material recovery. The most important necessity identified was for residents and businesses to participate in integrated waste management services that include recycling.

The current findings are insufficient to provide vital answers to many questions regarding the best avenue to provide better recycling services. A multitude of variables and nuances affect the cost and effectiveness of waste and recycling collection and processing systems. What works in one location may be inappropriate for another. Acting without thoroughly investing many scenarios is a common cause for failure. Volatile commodity markets, an evolving waste stream, and uncertainties in grant funding are all signals to proceed slowly and cautiously with new endeavors. A comprehensive review of historic recovery data, material sources, collection costs and other operating expenditures should occur before determining the proper course of action for the County. To achieve the suggested improvements, Chapter 5, offers an actionable plan along with a timeline for implementation.

The County Board of Supervisors has the honor to acknowledge the efforts of the Warren County Department of Public Works and the Warren County Department of Health in their efforts to improve the County's solid waste management program. The County Board of Supervisors is pleased to have the opportunity to work with you on this important project.

2. BACKGROUND INFORMATION

The County Board of Supervisors is pleased to have the opportunity to work with you on this important project. The County Board of Supervisors is pleased to have the opportunity to work with you on this important project. The County Board of Supervisors is pleased to have the opportunity to work with you on this important project.

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Chapter 5

5 Groundwork for Future Improvements

The purpose of any plan is to examine the conditions at a chosen point in time to determine the contributing factors and effects. In this process, strengths and weaknesses, which make the difference between success and failure, can be identified and evaluated. This fundamental approach is as much a part of any business plan as it is to the planning process for municipal solid waste management. Understanding existing circumstances, allows governments to more easily envision the programs and the services required to protect the environment and ensure the future health and safety of the community. It is also an opportunity to understand the expectations of local residents.

Plans are futuristic in nature. Unforeseen events and circumstances can alter even the most carefully orchestrated agendas. Just as the current planning process demonstrated, many of the views and assumptions widely accepted when plans are developed may shift or may be no longer valid. New technologies and services unavailable now, could present better solutions and opportunities during the plan's implementation. Therefore, the Warren County Municipal Solid Waste Management Plan is meant to be a fluid and dynamic policy document. It allows for shifts in the implementation timeline. It anticipates the need for further investigations and studies to determine the feasibility of some of the suggestions before definitive action is taken. It is open to new opportunities that remain true to the Plan's original goals and objectives

Chapter 5 presents the recommendations of the Solid Waste Advisory Committee. Justifications for their decisions, which have been discussed throughout the Plan, are reinforced here. An anticipated schedule for accomplishing these objectives and the supporting tasks is included.

5.1 KEY INDICATORS AND INFLUENCING CIRCUMSTANCES

The meetings and interaction of the Solid Waste Advisory Committee brought numerous issues and conditions to the table. The consistency of comments and experiences offered by the Committee helped to define desirable traits of successful programs. In addition, deeper lingering problems surfaced. The Committee members offered informed opinions on desired services consistent

with the financial realities of County and municipal budgets. The group considered potential remedies to illegal dumping, poor recycling participation and low material recovery. Figure 5-1 illustrates how the Committee perceived Warren County’s current state of solid waste management and the common elements at the source of the issues. The final recommendations proposed for implementation during the Plan’s time period were derived from these lists.

Figure 5-1 Municipal Waste and Recycling Issues Reviewed & Evaluated in SWAC Meetings

Prevailing Conditions	Illegal Dumping
	Littering
	Open Burning
	Insufficient Public Education and Awareness
	Contamination at Recycling Drop-Off Sites
	Poor Participation in Recycling
	Low Route Density
	Difficulty Disposing of Bulky Waste, Appliances, Home Remodeling Waste
	Cost of E-Scrap Management
	Poor Public Awareness and Perceptions
	Inaccurate and Missing Data
Poor Monetary Return on Recycling Commodities	
Contributing Factors	Lax Enforcement and Prosecution
	Lack of Magistrate Cooperation
	Inconsistent Laws & Ordinances
	Voluntary Waste Collection Service
	Lack of Municipal Collection Contracts
	Inequity of Recycling Service
	Inconsistent Collections for Bulky Waste & Appliances, Home Remodeling Waste
	Cost Of Providing Drop-off Service
	Proximity of Recycling Processors & Markets
	Lack of a Recycling Coordinator
	Poor Reporting and Data Management Policies and Procedures
	Political Will
	Willingness to Pay

5.2 FUTURE PRIORITIES AND TARGETED IMPROVEMENTS

Local information and input from the Solid Waste Advisory Committee, guidelines from the Pennsylvania Department of Environmental Protection, the findings of published studies, national statistics and commonly accepted analytical practices were used during the planning process. The exchange of opinions, comparison of data and identification of trends all contributed to the final recommendations to improve municipal solid waste and recycling practices in Warren County. In short, these include:

- Adopting a new Solid Waste and Recycling Ordinance that establishes reporting requirements for transporters of municipal waste and recyclables and continues the use of designated disposal facilities.
- Commission a study to determine the best option or combination of options to cost effectively increase recycling opportunities to the majority of Warren County residents, institutions, and businesses.
- Hire a Recycling Coordinator to ensure enforcement and implementation of the Plan, perform the administrative reporting functions to comply with Act 101, and to conduct outreach and educational programs throughout the County.
- Expanding the number of special collection events for Household Hazardous Waste, Electronic Discards, and other bulk items.

5.2.1 Solid Waste & Recycling Ordinance

Warren County adopted the Municipal Solid Waste Management Ordinance, Ordinance 2 of 1992, to support the goals and objectives of the County's first Plan developed under Act 101. Court rulings, new legislation, and differing interpretations of Act 101 have since changed the outlook on many items in the County's 1992 Ordinance. Things like transporter licensing, forms of flow control, and certain funding mechanisms no longer apply. With numerous sections to amend, the recommendation is to repeal Ordinance 2 of 1992 and replace it with a modern ordinance that meets current criteria in state and federal laws.

5.2.2 Public Education, Data Management, and Plan Administration

Changing attitudes and influencing behavior are proven to have a more profound and lasting effect than penalties and enforcement. The same is true in attempts to incentivize people to recycle.

Education serves as the foundation of behavioral change. It is most effective when conducted on multiple levels within a community. Traditional approaches to remediate the issues of illegal dumping, roadside littering, and contaminating recyclables focused primarily on clean-ups and had minimal impact on recurrence. Connecting with civic and chamber groups, local governments and the media is a way to initially gain support and acceptance of a program's goals.

To achieve these education and outreach objectives requires a full time equivalent employee

The retirement of the previous Recycling Coordinator shifted those responsibilities to the Department of Planning and Zoning. Without additional staff simply to perform the administrative, reporting and enforcement duties, implementing the Warren County Municipal Solid Waste Management Plan could be a noticeable challenge. To provide an adequate education campaign would be prohibitive without dedicated personnel.

A priority recommendation is for the appointment of a Recycling Coordinator before the end of 2018.

5.2.3 Equitable, Convenient and Affordable Access to Recycling Opportunities

Numerous concerns prompted the recommendation that Warren County facilitate equal opportunities for all residents to recycle. The discussions spawned ideas for a variety of viable options that independently or in conjunction with one another would increase recycling participation and material recovery.

An illegal dump survey conducted in Warren County confirms that some of the most common items found in illegal dump sites are white goods (appliances), household furnishings, mattresses, and tires. Although some municipalities address the collection of large items as part of their regular curbside collection programs or seasonal clean-ups, the prevalence of subscription collection service leaves many households dependent on the willingness of their service provider to accept these materials.

During the planning process, discussions focused on mechanisms to address the needs where no curbside service is available, and for those with no mechanism to transport bulky items and white goods to a collection event. When curbside service is available, it may come with a premium price. In addition, the timing and nature of seasonal cleanups are not always conducive to the real-life needs of residents whose circumstances dictate immediate removal of the materials.

The demand for convenient outlets for household hazardous waste and scrap electronics is quite similar to the issues surrounding bulky waste and discarded appliances. Location, operating hours, frequency, and timing influence the effectiveness of the collection system. The inconsistency and lag time for seasonal collection events illustrate the need for a more permanent mechanism to facilitate proper and reliable management of these materials.

Another issue surfaced which the Committee agrees is equally attributable to the voluntary system of subscription service. The ongoing contamination in unmanned municipal recycling drop-off sites often occurs from individuals trying to avoid the cost of waste collection and disposal. In addition, the volume of material deposited at the available sites often exceeds the storage capacity. Overflowing material contributes to contamination, as well.

Studies show that when convenient and affordable outlets and collection systems are readily available to accept a wide variety of materials, the incidence of illegal dumping decreases.

Potential solutions include but are not limited to expanding the number of municipalities with access to curbside recycling, adding more municipal drop-off sites, developing a centralized convenience center, or a combination of these and other possibilities. None of the options are without extenuating complications or conflicting outcomes. The variables and nuances affecting the cost and performance differ from location to location.

Rather than make costly and ill-informed decisions, the recommendation is to complete a thorough investigation and evaluation of all reasonable options. Findings and conclusions resulting from the study should be considered prior to the initiation of any future programs or services. The study should outline an extended schedule for services and programs that may be beneficial to introduce in phases. This is particularly true for those that could require significant investments in property, equipment, or added labor.

5.2.4 Summary

The four initiatives proposed for the Warren County Municipal Solid Waste Management Plan are designed to improve the overall quality of life in the area. The recommended actions are designed to build strong County and municipal relationships. If implemented within the allotted time frames, the County should realize a noticeable decrease in illegal dumping and littering. Better data management and reporting mechanisms will allow the County to make informed decisions as the new opportunities and issues are presented.

5.3 RECOMMENDED TIMELINE

The Plan Revisions suggests specific actions, which the County and the municipalities could take to improve existing solid waste management practices and programs. In order to maximize those efforts, the County must first determine the options, which are financially reasonable to support and feasible to operate with available resources. It must then identify those with the greatest benefits and anticipated results. Finally, the County will have to assess the compatibility of the anticipated programs with support from local government and public acceptance.

Based on the need for this comprehensive evaluation the suggested timeline for implementing the recommendations and revisions shown in Figure 5-12 is brief. It assumes that once finalized the study will provide a clearer picture of what can be accomplished and the efforts necessary to meet specific milestones.

Table 5-2 Warren County Municipal Solid Waste Plan Implementation

2017

- Adopt new Solid Waste and Recycling Ordinance

2018

- Appoint a New Recycling Coordinator
- Initiate Study on Feasibility of Recycling Options
- Investigate Funding Mechanisms for Potential Recycling Programs
- Inventory and Assess Condition of Current Equipment

2019

- Secure Funding to Launch Phase I of Recycling Improvement Initiative
- Initiate Pilot Program(s) to Test Performance
- Purchase and/or Repurpose Equipment to Suit Program(s)
- Explore Cooperative Marketing of Materials

2020-2024

- Report on Pilot Program to Evaluate Performance and Financial Sustainability
- Continue Incremental Expansion of Recommended Recycling Programs and Services
- Develop Strategic Marketing Plan for Services

2024

- Initiate Plan Revision Process
- Review New Program Performance and Recommend Improvements
- Evaluate Return on Investment and Long-Term Potential

2025-2027

- Solicit for Processing and Disposal Capacity Agreements
- Secure New Disposal Capacity Agreements
- Develop and Adopt Plan Revisions

Implementation is subject to change depending on economical and operational feasibility of proposed programs.

Warren County Municipal Solid Waste Management Plan 2017

5.11

Warren County Municipal Solid Waste Management Plan 2017

5.12

Warren County Municipal Solid Waste Management Plan 2017

5.13

Warren County Municipal Solid Waste Management Plan 2017

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Warren County Municipal Solid Waste Management Plan 2017

5.15

Warren County Municipal Solid Waste Management Plan 2017

5.16

Warren County Municipal Solid Waste Management Plan 2017

Chapter 6

6 Guaranteed Disposal Outlets

The need for counties to secure sufficient disposal capacity to directly manage the volumes of municipal waste generated within their jurisdictions can be a concern. Places like Warren County, where no county owned disposal or processing facility currently operates, are more vulnerable to market fluctuations. Guaranteeing the availability of and access to future disposal outlets outweighs all other responsibilities delegated to counties by the Municipal Waste Planning, Recycling, and Waste Reduction Act (Act 101 of 1988). Capacity assurances are a primary component of Warren County's Municipal Solid Waste Management Plan. The process to acquire these agreements was designed to provide equal opportunities to Pennsylvania disposal and processing facilities as well as those located beyond the borders of the Commonwealth. In addition, the selection criteria were established to prevent discrimination against or favoritism to any facility or organization.

This chapter describes the process Warren County used to procure disposal and processing capacity. It outlines the criteria used to evaluate the proposals submitted from disposal and processing facilities. It identifies those designated to contract with Warren County for future capacity. Lastly, it discusses the factors impacting waste flow control and the County's decision regarding this policy.

6.1.1 Determining Disposal Capacity Requirements

To calculate Warren County's disposal capacity needs for the next decade, a number of indicators were used. The assumptions and the calculations are included in Chapter 3. Also included are any necessary adjustments to the raw data used to calculate the estimated capacity requirements. The capacity projections in and of themselves showed no indication of pending capacity deficits. However, the pending expiration of the current disposal agreements and the need to protect the county against any unforeseen capacity shortfalls that could occur in the region within the next decade prompted, in part, the need to solicit for capacity as part of the current planning process.

6.2 VIEWS ON FLOW CONTROL

Warren County traditionally utilizes some form of flow control as part of its overall municipal solid waste management scheme. During previous planning exercises over the years, the feasibility of dedicating all of the County's waste to a single facility was once a reality. Upon the closure of the Grunderville Landfill owned and once operated by the Warren County Solid Waste Authority, revisiting that idea has been consistently rejected. Allowing for multiple disposal options is considered more favorable. Some constraints are still imposed on haulers collecting Warren County municipal waste. A menu plan restricts haulers to use those sites that met the selection criteria and entered into disposal agreements with Warren County.

Although government controls of any kind are rarely welcomed by businesses, tolerance for the menu system continues in Warren County because it has yet to conflict with the natural choices made by local transporters. Flow control to a sole facility, exclusive of all others, dictates the destination and the cost of disposal. In contrast, with numerous disposal options normal market conditions could prevail in Warren County. Factors such as price, proximity, convenience, access, and site conditions all influenced the flow of waste. In the menu plan, haulers could opt to use some of the facilities for economic reasons and others for convenience. In addition, vertical integration of collection and disposal operations, creation of new ventures, and expansion of business relationships could develop.

Waste management is an industry in constant change. Mergers and acquisitions are common for hauling operations and disposal facilities. Just as some companies disappear, other small independent operations enter the market. The desire of companies with an investment in both collection and disposal operations to direct waste to their own facilities is understandable. Equally within reason, is for an independent transporter to seek out the disposal option that provides the best competitive advantage. Therefore, at any given time a noticeable, but explainable shift in waste flow can occur. In the menu system, as companies grow, there is freedom to redistribute and redirect routes to new disposal sites.

Warren County continues to favor a modified waste flow control scheme. The reasons to maintain the system seem equally justifiable in 2017, as in 1990. The scheme will utilize an ordinance and reporting process to ensure compliance. Disposal options will be limited, to those qualified facilities that have accepted the terms and conditions of the disposal capacity agreement. An adequate array of disposal destinations is within reach by direct and long-haul transport. To accommodate future needs, provisions and mechanisms were devised to add more facilities when appropriate during implementation of the Plan.

6.2.1 Public Notification of Request for Capacity

To seek and acquire disposal capacity for the period 2016-2026, the Warren County Department of Planning and Zoning on behalf of the Board of County Commissioners, issued a Request for Proposals. To ensure that all interested parties would be aware of the opportunity to provide capacity to the County, a public notification was posted in the Pennsylvania Bulletin. Additionally, a display advertisement was published in Waste 360 a widely circulated trade publication in the waste industry. The actual solicitation is provided in Appendix B. Both in-state and out-of-state disposal or processing facilities, interested in making capacity available to the County were invited to submit offers. The Request for Proposals outlining the specifications, contract terms and conditions is provided in Appendix B.

6.2.2 Review and Evaluation of Proposals

Warren County took all possible steps to ensure fair and open market conditions would continue to prevail. Advertising and outreach covered national, regional, and local interests. It is reasonable to conclude that all interested parties submitted proposals.

Warren County took all possible steps to ensure fair and open market conditions would continue to prevail for transporters of municipal waste.

Advertising and outreach to the waste industry covered national, regional, and local interests.

It is reasonable to conclude that all interested parties submitted proposals.

Facilities were expected to adhere to clearly defined proposal submission guidelines, which specified the format and content required for administrative completeness and technical merit review. The selection process was non-biased. All facilities and disposal processes were given equal consideration and opportunity. The potential need to make inquiries regarding the content of the proposals, ask for supplemental documentation, or

request further clarifications were built into the technical review process.

Five organizations submitted proposals for eight landfills, which they own and/or operate. Although publicized nationally, only one out-of-state facility responded to the request. Proposals were expected to meet specific submission guidelines, which were used to assess administrative completeness and to adhere to the provided detailed

criteria for the technical merit review. The technical review of the proposals is provided in Appendix C.

6.3 RECOMMENDATIONS FOR DISPOSAL FACILITY DESIGNATION

The review and evaluation of the proposals found that all of the sites were qualified to become designated disposal facilities in the Warren County Municipal Solid Waste Management Plan. Each provided adequate documentation of professional experience, state of the art design standards, financial backing, and the necessary regulatory permits and approvals. In summary, the Warren County Board of Commissioners will execute and enter into disposal capacity agreements with the facilities shown in Figure 6-1. The figure is arranged in alphabetical order by the owner/operator with each corresponding facility listed below.

Figure 6-1 Warren County Designated Disposal Facilities 2014-2023



6.3.1 Unforeseen Opportunities and Circumstances

The basic concept of a Plan is to provide for known and anticipated needs while remaining flexible enough to allow and adjust for unpredictable changes and events. Warren County currently has secured sufficient disposal capacity. However, it is not beyond reason to consider a future need to utilize a disposal or processing facility that is not presently included in the Plan. New opportunities and/or technologies could result in the development of facilities that did not exist during Plan development. The dynamics of consolidation and acquisition cause shifts in disposal facility utilization. The waste industry attracts a breed of

entrepreneurs who are known to periodically enter and exit the business. This influences the number and identities of local market participants. It is prudent to consider that landfills, transfer stations, and hauling companies currently identified in the revised Plan may cease to exist either by reaching capacity or from unforeseen market conditions.

The Warren County Department of Planning and Zoning in conjunction with the Warren County Recycling Coordinator will manage the process of incorporating any additional disposal/processing facilities into the Plan. A simple and direct process will expedite the processing and determination of approval for facility inclusion requests. Adding one or more facilities to a plan is not considered a substantial Plan revision. Therefore, it does not require review and ratification by each of the municipalities. This allows the County to respond to requests quickly and with lower costs than with a full-scale revision.

To maintain the same fair, open, and competitive process used to select the initial disposal sites, all facilities must meet the same criteria as those responding to the initial Request for Proposals for Disposal Capacity. Without exception, these include the technical qualifications, compliance history, managerial experience, and permitted status. A copy of the Request for Proposals is in Appendix B. It includes the contractual agreement, for the facility to review and execute.

Haulers, transfer stations, disposal facilities, and municipalities may initiate the petitioning process. Requests must be submitted on official forms made available by the Warren County Department of Planning and Zoning. The Processing/Disposal Facility Petition for Designation in the Warren County Municipal Solid Waste Management Plan can be found in Appendix D. Once the petitioner submits the form, the County will notify the PADEP that a Plan revision may be forthcoming.

It will be the responsibility of the Petitioner or the Facility to cover any costs that the County may incur by to revise the Plan. The costs shall be established by the County based on but not limited to the following expenses: staff, legal and consulting time, reproduction, postage, distribution to municipalities, and other related items.

The first step in the process is to identify the waste management goals and objectives for the community. This involves a thorough assessment of the current waste management practices and the needs of the community. Once the goals are established, the next step is to develop a comprehensive waste management plan that outlines the strategies and actions to be taken to achieve these goals.

The plan should address all aspects of waste management, including waste generation, collection, transportation, and disposal. It should also consider the environmental and social impacts of waste management and the role of the community in reducing waste. The plan should be flexible and adaptable to changing circumstances and should be reviewed and updated regularly to ensure its effectiveness.

Once the plan is developed, the next step is to implement it. This involves working with the community to raise awareness of the plan and its goals, and to encourage participation in waste management activities. It also involves working with the private sector and other stakeholders to ensure that the plan is supported and funded.

Monitoring and evaluation are essential components of the waste management plan. This involves tracking progress against the plan's objectives and identifying areas for improvement. It also involves assessing the environmental and social impacts of the plan and making adjustments as needed to ensure that the plan is achieving its goals.

Successful waste management requires the active participation of the community. This involves providing education and training to the community on waste management practices, and encouraging the community to take responsibility for their own waste. It also involves working with the community to identify and address the barriers to waste management.

Chapter 7

7 Enforcement and Oversight of Programs and Policies

Considerable effort and focus is required to implement the Warren County Municipal Solid Waste Management Plan. In addition to the locally established goals and objectives of the Plan, the Municipal Waste Planning, Recycling and Waste Reduction Act (Act 101 of 1988) also assigns a multitude of duties to counties. These include items such as regulatory compliance, reporting, and grant administration. As the highest-ranking elected officials in county government, the responsibility to administer the policies and programs recommended in the Plan falls to the Warren County Board of Commissioners. A provision of Act 101 allows another individual, agency, department, or similar entity to assume these responsibilities on the Board of Commissioners behalf. Act 101 includes a funding mechanism to support a staff position assigned to these activities in each county.

Chapter 7 identifies how the responsibilities for implementing the Warren County Municipal Waste Management Plan are assigned. It explains current and future anticipated staffing needs and other resources necessary to fulfill the Plan's recommendations.

7.1 DELEGATION OF RESPONSIBILITIES

The Warren County Department of Planning and Zoning is the County agent assigned to develop and implement the Municipal Solid Waste Management Plan. The Department will be responsible for ensuring that the recommendations resulting from the planning process are put into action and in turn, enforced. In this role, the Department assumes all duties, responsibilities, and powers provided to the County in Act 101.

Successful Plan implementation is reliant on the continued involvement of all stakeholders. The strong relationships already established through the Department's interaction with local government provide a perfect environment to foster support and growth of improved integrated waste management policies throughout the County.

Communication with and education of local municipal officials is a key factor in attaining those goals. County programs and services must be designed to complement and support local efforts. The environment with municipal officials the Department developed for direct networking developed will be beneficial in distributing vital information, promoting municipal waste related campaigns, and conducting informational and educational forums. Likewise, the development of universal educational tools and materials that could be used by the municipalities would facilitate more successful campaigns to promote proper waste management practices throughout the County.

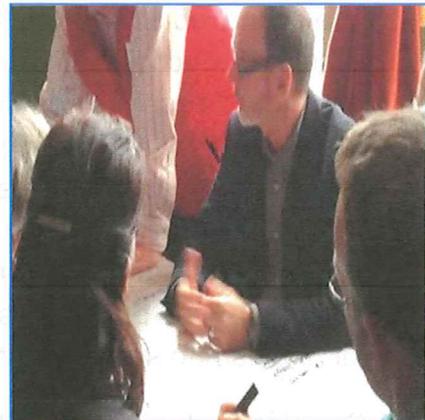
In addition to its role with municipal governments, the Department of Planning and Zoning maintains a good working relationship with private sector providers of waste and recycling related services. Open communication is essential for obtaining reports and the valuable data generated by the transporters, disposal, and processing facilities.

7.1.1 Department Staffing and Responsibilities

The Department of Planning and Zoning includes an Executive Director, an Administrative Assistant, a Zoning Officer, and a Grants Administrator. The schedules of these individuals are fully consumed by various planning, community development, and housing programs. Additional staff will be required to fulfill the added duties associated with solid waste and recycling related programs in Warren County.

7.1.1.1 Department Director

Direct responsibility for the operation of the Warren County Department of Planning and Zoning falls to the Executive Director. The Director is responsible for the staff and oversees the day-to-day services and operations, including all administrative and financial activities. Regular communication between the Director



The strong relationships between the Department of Planning and Zoning and local government will help to foster support for improved integrated waste management policies throughout the County.

and the Board of County Commissioners is expected. The Director delegates various assignments, and projects to the staff.

7.1.1.2 Recycling Coordinator

The Recycling Coordinator, a full-time staff position, has remained vacant throughout the planning process. Previously, the responsibilities of the Recycling Coordinator were delegated to an employee of the Warren County Solid Waste Authority, who has since retired. When the position is filled, the employee is expected to be incorporated into the Department of Planning and Zoning.

This Recycling Coordinator has a wide spectrum of responsibilities. Each serves to ensure that the guidelines and recommendations set forth in the Plan are implemented according to schedule,

7.1.1.2.1 Regulatory Liaison

The Recycling Coordinator is the County's main point of contact with the Pennsylvania Department of Environmental Protection, Bureau of Waste Management. Developing a good working relationship and open communications with the Department's Northwest Regional Recycling Coordinator is important.

Ultimately responsible for regulatory compliance, the Recycling Coordinator must stay informed on pending legislative initiatives and DEP policy changes that could affect the County and the municipalities. The Recycling Coordinator is expected to communicate in a timely fashion to the Department Director and the Board of Commissioners news of regulatory changes that could affect the County's programs.

7.1.1.2.2 Data Management

Tracking and monitoring of waste and recycling related activities and reporting to PADEP is another important function of the Recycling Coordinator. Compiling the necessary data to submit for various grant applications also falls to this individual. Organization and attention to detail are necessary for the Coordinator to maximize grant opportunities and to identify program strengths and weaknesses.

7.1.1.2.3 Community Relations and Education

As the official representative of Warren County on all solid waste and recycling related issues, the Recycling Coordinator strives to address all questions, and resolve complaints. Fostering good working relationships with municipal officials, the public, and the private sector is a high priority. The Recycling Coordinator

promotes recycling programs through a variety of outreach efforts, including participation in community and civic functions and in the media.

7.1.1.2.4 Technical Assistance

Similar to the services the Department of Planning and Zoning provides to the municipalities on storm water, sewage, zoning, and other related issues, the Recycling Coordinator serves as a valuable source of information and guidance to elected officials. This professional support is offered for a variety of municipal solid waste and recycling concerns.

7.1.1.2.5 Professional Growth and Understanding

Attending and participating in professional development seminars, webinars, and trade association meetings is a benefit not only to the Recycling Coordinator but to the County as well, reading and reviewing industry related articles and publications is also useful. With greater competition for funding and other sources of revenue on the horizon, a Recycling Coordinator knowledgeable in industry trends, new technology, and applications positions Warren County to offer the best mix of services to its residents and businesses.

Networking with regional peers and colleagues to exchange notes on successful endeavors or to provide support to one another in solving common issues should be encouraged. The Recycling Coordinator should be expected to participate in trade organizations such as the *Professional Recyclers of Pennsylvania*, the *Keystone Chapter of the Solid Waste Association of North America*, *Keep Pennsylvania Beautiful*, and others. Attendance at conferences would allow the Recycling Coordinator to discover new trends and issues that could impact local programs.

7.1.1.2.6 Enforcement

For the most part, the role of the Recycling Coordinator is to foster positive perspectives about recycling and proper waste management practices. However, often the Coordinator must use stronger measures to attain the goals of the Plan. The Coordinator interacts with individuals, businesses, transporters, and disposal and processing facilities to inform them of their responsibility to comply with the Plan. In addition, the Plan provides the Recycling Coordinator with mechanisms to deal with those who don't. The Recycling Coordinator must work together with local law enforcement officials, code enforcement officers, and the judicial system to prosecute and convict violators of the County's solid waste ordinance and the Plan's requirements. Documents which offer the Coordinator guidelines to do so are found in Chapter 9.

7.2 FUTURE PROGRAM PERSONNEL

Warren County is preparing for a developmental study to assess the feasibility of expanding recycling services through a County operation. The labor force and supervisory requirements are still unknown. Both are expected to be sourced from another County agency, which could help to reduce costs.

7.3 FINANCIAL SUPPORT FOR THE RECYCLING PROGRAM

Operating funds for County sponsored municipal waste and recycling programs are primarily allocated from the General Fund. Outside funding comes from a variety of Act 101 Section 900 grants. Act 101 includes a mechanism to support counties and municipalities for their recycling efforts. The Section 902 Equipment and Implementation Grants are competitive, and applicants are eligible to submit requests every other grant round, which typically occur once per year. If awarded, the grants provide for 90 percent of the costs of equipment and program development expenses requested with a current cap of \$250,000. The Section 904 Performance Grant provides a monetary reward per ton of material recycled. Local governments must submit documentation to verify the tons reported.

Consulting and legal fees for planning and feasibility studies are reimbursable up to 80 percent under the Section 901 Planning Grants. The County has also benefitted from the Recycling Technical Assistance program sponsored by the PADEP

At times, the County has supplemented the available grant funding to support special collection events and other programs. County tax dollars also support half of the Recycling Coordinator's salary and expenses and the remainder is funded by Section 903 Grants.

2.2. FUTURE PROGRAM ENHANCEMENTS

The future program enhancements are intended to provide a more comprehensive and integrated approach to solid waste management. The program will be expanded to include a range of services, including recycling, composting, and energy recovery. The program will also be expanded to include a range of services, including recycling, composting, and energy recovery.

2.3. FINANCIAL SUPPORT FOR THE SOLID WASTE PROGRAM

The financial support for the solid waste program is provided by the County of Warren. The program is funded through a combination of local, state, and federal sources. The program is funded through a combination of local, state, and federal sources. The program is funded through a combination of local, state, and federal sources. The program is funded through a combination of local, state, and federal sources.

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Chapter 8

8 Public Sector Functions and Operations

Incorporated into the Municipal Waste Planning, Recycling and Waste Reduction Act (Act 101) is language that clearly calls for utilization of the private sector to the greatest extent possible. The purpose was to avoid duplication of efforts, prevent an unfair competitive advantage for grant funded programs, and to avoid redirecting recyclable materials away from existing outlets. The law also established the Recycling Fund to finance the purchase of recycling collection and processing equipment for local governments where private services were not available.

This chapter summarizes the operational role of local government in municipal solid waste management. It describes the functions and assets of both County and municipal entities. Future plans are also identified.

8.1 CURRENT BALANCE OF ROLES AND RESPONSIBILITIES

Warren County has a healthy balance of public and private sector municipal solid waste management services. Waste collection and disposal is primarily a function of private businesses. To minor extent municipal concerns periodically haul municipal waste. Recycling is a little more diverse. A perfect demonstration of how public/private partnerships work is local recycling collection programs. Although the programs are designed and sponsored by the public sector, with a few minor exceptions, private contractors hired by either county or municipal governments perform the physical act of servicing residents at the curb, at drop-off locations, or at special collection events. Processing of recyclables and yard waste is also a shared arena. The bulk of recyclables collected in the County are processed by private companies. Some volunteer programs do gather, sort, and prepare materials to be shipped to brokers.

8.1.1 County Services

Warren County employees are currently not engaged in the physical collection or processing of municipal waste or recyclable materials. The County uses a competitive procurement process to secure private contractors to service all County sponsored programs.

8.1.2 Municipal Services

The only Warren County municipality that utilizes public works crews to collect and transport recyclables is Youngsville Borough. In some communities, municipal public workers collect leaves, leaf waste and yard debris. These materials are delivered to local compost sites where the material essentially remains in static piles.

Of all the municipalities, only Tidioute Borough operates a recycling center. The facility is run by the Lion's Club and staffed by the municipality's residents who volunteer their time.

The equipment for these programs was purchased with a combination of Act 101, Section 902 grants and local funds.

8.2 FUTURE PROGRAMS AND FACILITIES

Planning process findings led to recommendations for a study to determine the potential to establish a County owned and operated convenience center. The center would serve as a practical outlet for electronic discards, bulky waste items, appliances, and /or other designated recyclables. The study will also explore the need for the convenience center to accept bagged residential waste as a means to reduce illegal dumping in Warren County.

If the study determines the operation could succeed, the County will develop and expand the services as financially feasible. The purpose of developing a convenience center is solely to complement existing services and to provide the underserved residents of Warren County an alternative to illegal dumping. It is likely that the private sector will still play a role in transporting and processing materials collected at the potential site.

If the operation is considered feasible, the project may have potential for economic development, and may be eligible for a variety of funding mechanisms and sources. The recommendations in Chapter 5 offer a more detailed description of the convenience center concept and the related activities and operations that could evolve.

Chapter 9

9 Laws, Regulations, and Contracts to Support Plan Implementation

Act 101 shifted the responsibility for developing and implementing municipal solid waste management plans from the municipalities to the counties. The law gives counties the ability to establish standards for proper waste storage, collection, transportation, and disposal of municipal waste. Counties have authority over those who generate waste, as well as those engaged in the business of municipal solid waste management.

This chapter outlines the tools and mechanisms that were developed to ensure compliance with the provisions of the 2017 Warren County Municipal Solid Waste Management Plan. During the ten-year period of the plan, as circumstances present themselves, changes may be necessary. It should be noted that the County is not precluded from amending, modifying, or repealing any of the items referenced here, provided such changes comply with Act 101 and the conditions of the approved Plan.

The clarity of local policies and the ability to enforce them is made easier when local ordinances, contracts and other legal documents have been adopted.

Such tools empower the county's implementing entity to enforce these policies.

9.1 THE NEED AND PURPOSE OF LEGAL MECHANISMS

Act 101 does provide counties with specific powers and duties. However, the clarity of local policies and the ability to enforce them is made easier when local ordinances, contracts and other legal documents have been adopted. Such tools empower the County's implementing entity to enforce these policies. Residents, businesses, and service providers understand their roles and responsibilities in municipal solid waste management when they are provided with clear guidelines. Such documents are vital in deterring illegal dumping and in resolving conflicts and

disputes regarding solid waste issues. The Solid Waste Advisory Committee expressed the need to not only have effective tools and mechanisms to enforce the goals and objectives set forth in the Plan, but also for local justices to consistently prosecute violators.

9.2 RELEVANT DOCUMENTS

As part of the planning process, a variety of documents were drafted to support the resulting goals and objectives. The remainder of this chapter consists of a detailed section for each document. The actual documents are provided in the Appendix and each section provides the exact location of its corresponding document.

It should be noted that the County is not precluded from amending, modifying, or repealing any of the items referenced here as circumstances present themselves, provided such changes comply with Act 101 and the conditions of the approved Plan. Other forms, informational tools, and guidelines may be developed. None of these will impact the legal documents included in this document. They will, however, serve to strengthen and inform about those policies.

9.2.1 Request for Proposals for Disposal Capacity Agreement

To fulfill its primary responsibility under Act 101, the County issued a Request for Proposals for Disposal Capacity. The solicitation was posted in a national trade publication and the PA Bulletin. The Request for Proposals established a fair, open, and competitive procurement process. It outlined specific eligibility criteria for inclusion of a facility in the Plan. It also provided a universal contractual agreement to be executed by the facility and the County. The Request for Proposal and the published solicitation are included in Appendix B.

9.2.2 Executed Disposal Capacity Agreements

The original, printed, fully executed contract from each facility guaranteeing disposal capacity to Warren County is retained on file at the Warren County Courthouse. Appendix G includes copies of these contracts. Digital versions of the agreements were provided to the Department of Environmental Protection.

9.2.3 Petition to Add A Future Disposal Facility

Unforeseen opportunities and circumstances will occur throughout the implementation period of the Plan. Technological advancements could present processes and/or facilities that are not currently available. Mergers and acquisitions could prompt industry requests to divert waste to facilities that do not have capacity agreements with the County. To accommodate such situations, the

Plan provides a mechanism to add facilities. Future facilities will be subject to the same criteria set forth in the original Request for Proposals. In addition, each facility will be required to execute the same disposal capacity agreement as those landfills currently designated in the Plan. The local municipalities and the PADEP must be notified of the inclusion of a new facility. Appendix D includes the Petition to add a Processing/Disposal Facility in the Plan. The requirements for completing that process are also described.

9.2.4 County Municipal Solid Waste Ordinance

Warren County adopted the Municipal Solid Waste Management Ordinance, Ordinance 2 of 1992, to support the goals and objectives of the County's first Plan developed under Act 101. The planning process identified a need to update and revise several provisions of Ordinance 2 of 1992. Much of the content was similar to that found in county solid waste ordinances throughout the Commonwealth. While deemed appropriate at the time, subsequent court rulings have rescinded or ruled that counties never had statutory authority to impose certain conditions. Fees for licensing and plan implementation are among those.

Because Ordinance 2 of 1992 required extensive changes, it was repealed. A replacement ordinance was drafted that provides a comprehensive set of standards for the collection and transportation of municipal solid waste and recyclables throughout the County.

Transporters of municipal solid waste are still subject to flow control. All transporters will be required to report their activities. Transporter reporting facilitates the County's annual reporting requirements to PADEP. By more thoroughly tracking and monitoring the activities of those engaged in handling and transporting recyclables, the County increases its opportunities to obtain Act 101, Section 904 Performance Grants. The current ordinance is in Appendix E

9.2.5 Delegation Agreement

Past versions of the Warren County Municipal Solid Waste Management Plan assigned some responsibilities for implementation to the Warren County Solid Waste Authority through a delegation agreement. The Authority's administrative assistant, who fulfilled the duties of the Recycling Coordinator, recently retired. Due to the pending finalization of the closure plan for the Grunderville Landfill, the Authority's responsibilities for the facility are greatly reduced and hiring a replacement for the administrative position is unnecessary. The position of Recycling Coordinator and all associated responsibilities will be absorbed into the

Warren County Department of Planning and Zoning. Since the Plan will be administered by the County the previous delegation agreement is unnecessary and rescinded.

9.2.6 Rules and Regulations

Ordinance 2 of 1992 provided the Warren County Solid Waste Authority with powers to adopt and enforce rules and regulations to complement the objectives of the Plan. Similar to the Ordinance, many of those provisions are outdated and no longer enforceable under current laws. With repeal of Ordinance 2 of 1992, the rules and regulations have been incorporated into the newly adopted ordinance located in Appendix E.

9.2.7 Motion to Adopt the Plan Revisions

At the culmination of the planning process, the Warren County Board of Commissioners adopted the revised Plan in the form of a motion contained in Appendix H.

Chapter 10

10 Impact of the Plan's Recommendations and Policies

The planning process for the 2017 Warren County Municipal Solid Waste Management Plan included a review of previous decisions and philosophies. The goals, objectives and recommendations were scrutinized to determine if they remained appropriate based on current circumstances, anticipated resources, and future expectations.

Although past efforts were applauded, there was consensus that additional programs could remedy issues like illegal dumping. County leadership launched an initiative to explore the potential to repurpose existing properties and resources to expand the solid waste and recycling infrastructure. As a follow-up to the 2017 Plan, a study will examine the types of services, the feasibility of making each available, the funds required, and the possible sources of revenue to support the operation.

An implementation schedule recommends action plans for the County and municipalities. Beginning with the study, it outlines a phased approach to anticipated improvements. It suggests a smooth transition for all stakeholders in each of the recommended phases.

10.1.1 Development of a Centralized Convenience Center

The single most important need the planning process identified was providing outlets for hard to dispose of items. A review of illegal dumping activities and the contents of those dump sites prompted the Committee to suggest the need for a centralized drop-off point. This Convenience Center would also provide supervised collection of recyclables and address the need to deal with the consequences of the disposal bans created by the Covered Device Recycling Act. The study will determine the volume of materials expected to be managed at the Convenience Center, the necessary equipment, and the size and conceptual layout of the facility. A pilot program, if successful, will establish how the program can add services systematically on an as needed basis.

Appendix

Warren County Municipal Solid Waste Management Plan 2017

The purpose of this appendix is to provide additional information regarding the waste management plan. This information is intended to provide a more detailed understanding of the plan and its implementation. The information is organized into several sections, each addressing a different aspect of the plan.

In addition to the information provided in the main body of the plan, this appendix includes a detailed description of the waste management process. This process involves the collection, transportation, and disposal of waste. The information provided in this section is intended to provide a more detailed understanding of the process and its implementation.

The information provided in this appendix is intended to provide a more detailed understanding of the waste management plan and its implementation. This information is organized into several sections, each addressing a different aspect of the plan.

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Chapter 11

11 Access to Shared Resources

The need to secure disposal capacity is not unique to Pennsylvania. Local jurisdictions throughout the nation share the same requirements for developing municipal solid waste management plans. There was a time when government agencies believed the disposal needs of some counties and municipalities were in jeopardy. Rural counties often lacked a sufficient and sustainable volume of waste needed to justify the considerable investment required to meet the stricter operating regulations and design criteria of current state of the art facilities. Many closed their former operations.

Private sector investors face those same constraints. They opt for fewer but much larger capacity facilities to reduce development costs but are reliant on the economies of scale to cover the total expenditures. Unless they are designed to serve highly concentrated population areas, the intent of the operation is to draw the necessary volumes of waste from a regional waste shed. In extreme circumstances, where a facility is necessary to address the needs of surrounding rural counties, it is often necessary to attract waste from remote counties and other states to maintain a financially sustainable operation.

These same issues apply to the processing and marketing of recyclable commodities. Material volumes and optimal logistics influence finances.

Because favorable market conditions are dependent on the cooperation of all participants, it is prudent for Warren County to protect its need for municipal solid waste capacity, without interfering with the needs of other counties. In keeping with the premise of Act 101, it is also advisable to use the resources of the private sector to the greatest extent possible in the development of recycling programs.

11.1 THE REGIONAL NETWORK

Currently, there are no municipal waste disposal facilities located within Warren County. To meet its disposal capacity needs, the County is reliant on the availability of facilities in other jurisdictions. As part of the process to develop the Warren County Municipal Solid Waste Management Plan, a variety of facilities made contractual commitments guaranteeing disposal capacity to the County.

These facilities are located in the greater Western Pennsylvania area, and in New York.

Other Pennsylvania counties experience these same circumstances. Therefore, many forms of waste flow naturally through a network of transporters and facilities with no local, state, or national boundaries. Each facility has entered into long term agreements, which share a secured portion of their capacity with one or more counties or businesses.

The scenario is similar for privately operated material recovery facilities that process and market recyclable commodities collected within the County. Recyclables from other counties and states are also transported to the facilities that Warren County and its municipalities utilize for processing.

11.1.1 Mutual Respect for Commitments

The lack of interference by other counties and states in the normal operation of disposal facilities located within their jurisdictions is vital to the disposal needs of Warren County. Likewise, it is important for Warren County to understand and respect that these facilities must honor their contractual obligations with other parties. Therefore, the County supports the need for facility operators to design, finance, and construct reasonable expansions to meet these various capacity commitments. The County will not interfere with the normal operational and regulatory process involved with such expansions, nor prevent it from generating the necessary profits to support those projects, provided the facility complies with the provisions of the Warren County Municipal Solid Waste Management Plans.

Chapter 12

12 Community Involvement in the Planning Process

We all generate and need to dispose of municipal waste. Our familiarity with the issue fuels strong opinions regarding municipal waste management. Our viewpoints reflect personal perspectives based on environmental, economic, political, and social influences.

Most individuals and businesses believe the way they manage municipal waste is the norm. Frequently grounded in local culture and long-standing tradition, when people perceive these practices are threatened, the result is often public outcry.

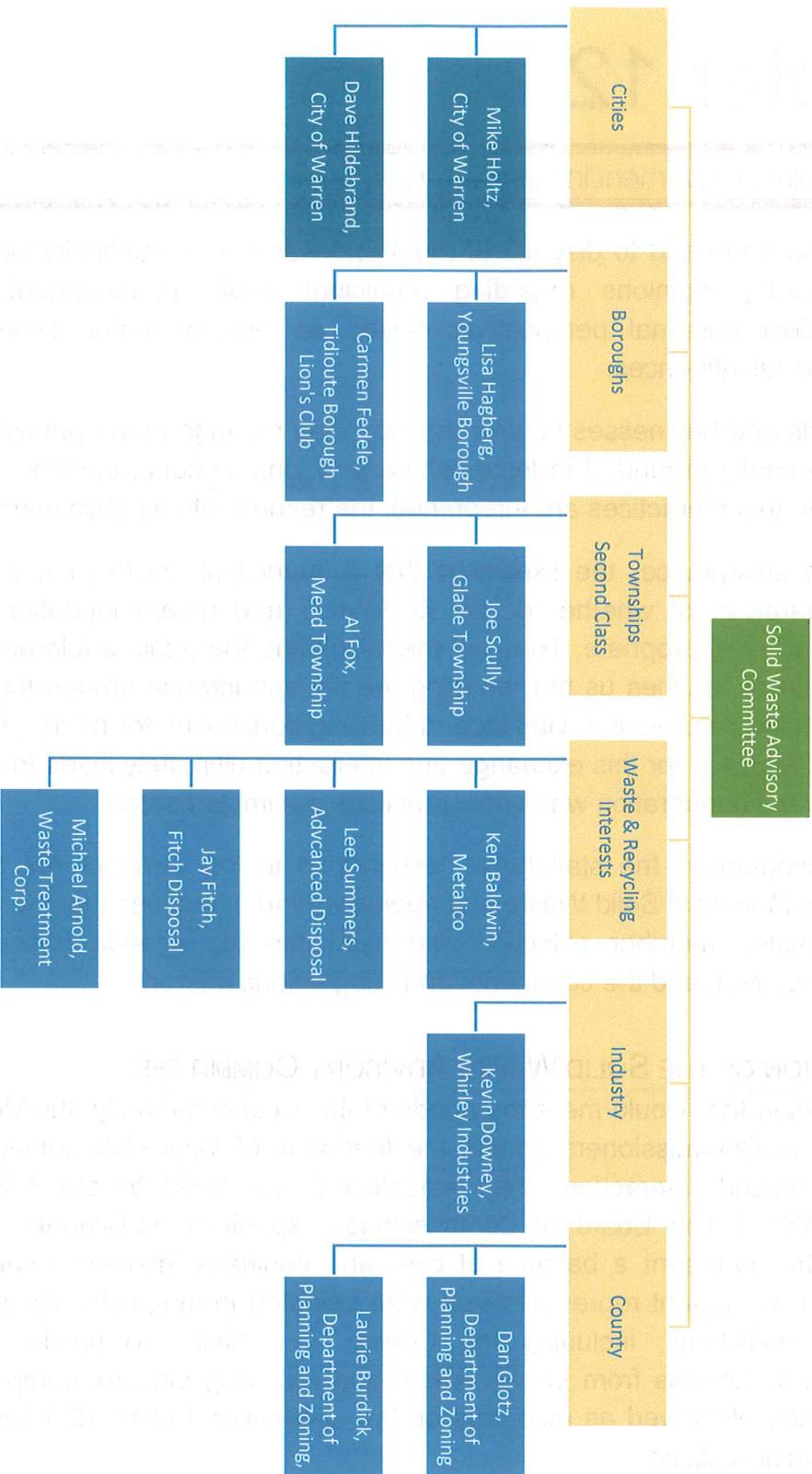
Without public acceptance, the likelihood that a municipal waste plan will fail increases, regardless of whether or not its visions and recommendations are legitimately good or appropriate. To avoid miscalculating the public's tolerance for change, experience teaches us that bringing the various interest groups together during the planning process is a vital step in building consensus for future policies and programs. Allowing for this exchange and interaction ultimately leads to better understanding and cooperation when new practices are implemented.

Chapter 12 summarizes the stakeholder experience in the development of the Warren County Municipal Solid Waste Management Plan. It outlines the criteria for advisory committee member selection and highlights the agenda topics, the information presented, and the comments and suggestions offered.

12.1 FORMATION OF THE SOLID WASTE ADVISORY COMMITTEE

To develop a Plan that would meet the needs of the local community, the Warren County Board of Commissioners sought the feedback of local stakeholders. To facilitate this valued interaction, they established the Solid Waste Advisory Committee (SWAC) The Board of Commissioners appointed individuals to the Committee, who represent a balance of civic and business interests within the County. Local government representatives were selected from specific classes of the political jurisdictions, including the County. In addition to public sector representation, individuals from private waste and recycling industry companies, and local industry all served as members on the committee. Figure 12-1 lists the members and their affiliations.

Figure 12-1 Warren County Solid Waste Advisory Committee



12.2 COMMITTEE INTERACTION

A series of meetings were scheduled periodically during the development of the Plan and facilitated by the Warren County Planning Director and the Project Consultant. Roundtable discussions allowed committee members to express their views and opinions. Although attendance per meeting per member varied, a sufficient number of participants consistently were present to provide a valid assessment of the topic.

12.2.1 Presentations and Discussions

Each meeting focused on related elements. For instance, disposal practices, illegal dumping, and future capacity might have been included on the same agenda. Most meetings began with the Project Consultant presenting findings resulting from local data analysis. The Project Consultant then led a discussion and addressed comments and questions from the group. The discussions were always directed to consider national trends and their effect on local circumstances. Topics included County demographics, national and local trends in municipal waste composition, generation, recovery, and disposal, and infrastructure strengths and weaknesses. During the discussions, many issues surfaced that deserved further investigation. Many of these items became the focus for final recommendations in the Plan.

12.2.2 Meeting Records

Appendix F includes recorded minutes of the Solid Waste Advisory Committee meetings and comments received from municipalities, PADEP, and the general public during the review process, along with the County's responses.

12.2.3 Committee Viewpoints

The SWAC meetings were interactive. All of the members participated freely and openly. The Committee made observations and expressed their concerns on certain prevailing conditions, specifically intolerance for illegal dumping, littering and open burning. Much consensus building occurred.

The SWAC spent considerable time discussing and considering options to improve recycling opportunities throughout the County. Members agreed that a centralized outlet for hard to manage items, such as electronic waste, HHW and bulky waste would benefit the County. The comments and concerns of the SWAC were given

serious consideration and to the fullest extent possible they have been incorporated into the final recommendations included in Chapter 5.

The following table provides a summary of the comments received from the public and the responses to those comments. The comments and responses are listed in the order in which they were received.

3.2.3.1. Process and Discussion

The following table provides a summary of the comments received from the public and the responses to those comments. The comments and responses are listed in the order in which they were received.

3.2.3.2. Measure Records

The following table provides a summary of the comments received from the public and the responses to those comments. The comments and responses are listed in the order in which they were received.

3.2.3.3. Creative Wastings

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