

2014




ILLEGAL DUMPING IN PENNSYLVANIA A Decade of Discovery



Nestor Resources, Inc.

RECOMMENDED
POLICIES AND
PROGRAMS FOR
FUTURE PREVENTION
AND ENFORCEMENT

Back of outside cover



Prepared for
Keep Pennsylvania Beautiful
June 2014

ILLEGAL DUMPING IN PENNSYLVANIA

A DECADE OF DISCOVERY

**RECOMMENDED POLICIES AND PROGRAMS
FOR FUTURE PREVENTION AND ENFORCEMENT**

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ACKNOWLEDGEMENT AND GRATITUDE

As a grassroots organization, Keep Pennsylvania Beautiful attributes its success to the sweat equity of our affiliates, and local volunteers.

Because the Illegal Dumping Surveys occurred over a ten year time span, it is impossible to list the name of every contributor.

Nevertheless, we want to recognize the collective efforts of those who contributed their own time and resources to these efforts and those who subsequently assisted in the remediation of many sites.


A special thank you goes to the waste industry for frequently providing removal and disposal of the material from the cleanups at no cost to the local volunteers.

We also want to thank the Pennsylvania Department of Environmental Protection for their sustained commitment to this project and their belief in our commitment to our mission of empowering Pennsylvanians to make our communities clean & beautiful.



"The activist is not the man who says the river is dirty. The activist is the man who cleans up the river."

Ross Perot
Entrepreneur and Businessman



On behalf of the Keep Pennsylvania Beautiful Board of Directors and Staff, we thank the following for not only their support over the past ten years, but for their continued commitment to a shared vision of a clean and beautiful Pennsylvania. For those who participated in any way, we recognize that your efforts in no way indicate your endorsement of the findings and recommendations of this study.

—SHANNON REITER, PRESIDENT

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SECTION ONE

EXECUTIVE SUMMARY

It is undeniable that Pennsylvania has made great strides in municipal waste management over the last 40 years. The eradication of nearly 1,500 open municipal dumps, followed by the permitting, and construction of safer state of the art disposal facilities has prevented pollution and created a cleaner and healthier environment in which we live. Mandating our most populated municipalities to provide for curbside collection of waste and recyclables helped to foster an extensive infrastructure that continues to expand into other communities as the consumer market demands. Regulating the transportation of municipal waste and establishing safety standards has prevented waste from littering our roadways and has saved lives by removing dangerous vehicles from operation.

In spite of these advancements, there is more to be accomplished. While the majority of Pennsylvanians do the right thing, the behavior of a select segment of the population continues to have a costly impact on us all. This report represents the final stage of the ongoing efforts of Keep Pennsylvania Beautiful (KPB) to identify where and how illegal dumping occurs in Pennsylvania. The purpose of this phase of the project was to document the full extent of illegal dumping in Pennsylvania, beginning with the information gathered by Keep Pennsylvania Beautiful and supplemented by other sources. In addition, based on the conclusions of the analysis, the project provides solutions to remedy the situation.

Much of what has been proposed in this report, is simply common sense. The 18th century German author, political leader, and scientist, Johann Wolfgang van Goethe once said, "If everyone sweeps before his own front door, then the street is clean." That very simplistic view, on a broader scale, applies to each citizen's role in municipal solid waste management, including recycling. To require that each household, business, institution, and government facility has access to an organized program for the collection and processing of the waste and recyclables, which they generate, is reasonable. To ask those who generate waste and recyclables to share in the cost for those services is as fair, as asking citizens to share in the communal need for police and fire service. The study demonstrates how that can be made possible.



CHANGE IS POSSIBLE

- The findings and recommendations of this report should serve as a catalyst for a statewide campaign to reduce illegal dumping and to Keep Pennsylvania Beautiful.

TOOLS AND RESOURCES

The first step in the project was to review the raw data compiled by Keep Pennsylvania Beautiful. The combination of survey and cleanup information in the database offered insight into the categorical similarities in materials found at the sites; historic or recent use of the sites; and the cost in labor and other resources necessary for remediation.

To further support the information gathered and compiled by Keep Pennsylvania Beautiful, Nestor Resources also incorporated a variety of outside sources of information to confirm and validate the local data and to pin point any anomalies that might corrupt or bias the findings. These include but are not limited to:

- Widely accepted and vetted industry reports and studies;
- Documented reports of county level waste generation, disposal and material recovery;
- For comparative purposes, waste generation, disposal and material recovery on the national level;
- Direct project experience in Pennsylvania's counties and municipalities;
- Direct working knowledge and experience in the solid waste and recycling industry;
- Demographic statistics and studies characterizing Pennsylvania's counties and municipalities;
- Public participation and input; and
- Industry stakeholder focus groups.

TABLES, CHARTS AND STATISTICS

It is important to note that volumes of data were gathered by the surveyors. Although getting to this final stage was always the objective of KPBB's efforts, a significant portion of the recordkeeping was done for purposes other than this report. Characteristics and conditions that were considered important by the surveyors, were those which helped track, monitor, and prioritize cleanup efforts. A lot of the records included notes to communicate site hazards, conditions, or personal observations that might be useful in a future cleanup. Comments can be subjective and descriptive rather than concrete and verifiable. Therefore, that information was used in a more generalized aspect, and not a true statistical application. To protect the integrity of this report, considerable attention was paid to segregating the extraneous data, in favor of items that were tangible, less subjective, and more applicable to the purpose of the current project.

RESEARCH AND ANALYSIS

To determine what conditions and circumstances enable illegal dumping activities to occur, as well as to establish future feasible improvements, the raw survey data was compared to other existing factors and conditions. The current solid waste management practices and behaviors in Pennsylvania were considered.

Endless combinations of demographic scenarios were applied in search of potential correlations. Current laws and regulations were reviewed.

When legitimate relationships between items existed, added consideration was given to these unique circumstances. The objective was to determine how they influenced or could be used as predictors of illegal dumping.

The comparisons, at times, failed to demonstrate noteworthy trends or relationships between specific data sets. Once a variety of defined scenarios was applied, if no correlations presented, further efforts were considered unproductive and thus abandoned. Likewise, when certain statistics were immediately obvious and readily led to commonly accepted industry assumptions, continued analysis was deemed to be unnecessary. In addition, when trends between data sets were broadly unremarkable in nature, it was determined that no amount of continued analysis would produce results different than those already known upon first discovery.

Therefore, not every exercise attempted during the project, nor every statistic compiled by KPB is documented in the report as neither are vital to the purpose, conclusions, final goals, and objectives.

KEY FINDINGS

Illegal dumping is not an isolated problem. Active dump sites were identified in every county in Pennsylvania. Certain commonalities were found both in the materials left at dump sites, and also in the conditions and circumstances that facilitate the behavior. The report elaborates on these trends. The similarities identified were based on the results of the surveys, the cleanups, stakeholder focus groups, and a public opinion poll. In addition, the findings were vetted against well-accepted professional assumptions and published studies. Highlights of these findings are shown in Figure 1-1.

SUGGESTED STRATEGIES

To minimize, if not halt, illegal dumping, requires an intricate strategy orchestrated by a variety of stakeholders. Developing the framework for that strategy was the purpose of this study. The findings of the report point to a number of steps that could help Pennsylvania attain this objective. Some are necessary to heighten awareness and understanding. Others are aimed at apprehending illegal dumpers. The majority of the suggestions are designed to eliminate the enabling conditions and circumstances, known to promote illegal dumping activity. Consideration was given to the resources currently available and to those that may be necessary to implement the proposed improvements. Figure 1-2 and 1-3 illustrate the main points of the recommendations. Figure 1-2 provides actions that are designed to prevent illegal dumping, while Figure 1-3 includes enforcement actions to take after illegal dumping has occurred.

FIGURE 1-1 PROJECT DISCOVERIES

COMMON ELEMENTS OF ILLEGAL DUMPING	There are four categories of illegal dumping: inactive legacy sites, active commercial waste dumping, active dumping of household waste, and theft of service.
	Conditions and circumstances foster illegal dumping rather than specific personality profiles.
	Illegal dumping occurs most frequently in areas where the risk of detection and penalties are low.
	Economic conditions and business opportunities lure individuals to dump illegally
	Lack of acceptable disposal or recycling outlets tempts people to dump illegally
	An active illegal dump site attracts others who desire to dump illegally.
	Items frequently found in illegal dump sites include: bulky items like furniture, appliances, and mattresses, construction and demolition waste, and tires.
ACCESS TO SERVICES	Approximately 85% of Pennsylvania’s residents claim to have curbside collection for waste.
	Where curbside is not available, a majority of people would be willing to deliver waste materials to a convenient outlet and pay for the service, if the outlet was made available.
	The cost per home is lower, where there is a universal waste and recycling collection program in a community, than where residents attempt to contract for these services on an individual basis.
	There is less illegal dumping in areas where there is convenient universal access to waste and recycling collection.
ENFORCEMENT AND PENALTIES	Cleaning up illegal dump sites in and of itself does not stop illegal dumping.
	Tangible proof, beyond a reasonable doubt, is necessary for prosecutors to successfully convict an alleged illegal dumper.
	Responsibility for enforcement and actions taken are inconsistent throughout Pennsylvania.
	Disposal bans and restricted access to disposal facilities as a form of enforcement, creates illegal dumping when there are no alternative measures available.
	There is a lack of resources at the local level to provide for adequate enforcement.
	The current penalties for illegal dumping are a poor deterrent because they are disproportionate to the actual cost of legal disposal and to remediate the site.

COST

Investigating illegal dumping crimes is time consuming and labor intensive for state and local governments.

Each illegal dump site costs \$600 per ton for an average total of \$3,000 to remediate.

When individuals place household waste in the receptacles paid for by businesses and individuals, as well as at the drop-off recycling sites of local governments, they are stealing service, and can cause prices to increase to handle this extra volume of waste.

To cover the fixed cost of services, honest residents pay more per home for waste and recycling collection to subsidize the loss of revenue from those who do not pay and dispose of their waste illegally or in undesirable manners.

AWARENESS

The public has a poor understanding of what constitutes illegal dumping.

Elected officials are often unsure of the scenarios and options available to ensure there is cost effective universal access to services in their communities.

Law enforcement and judicial officials may not always be aware of the full impact and cost to the community caused by illegal dumping.

FIGURE 1-2 ACTIONS TO PREVENT AND ENFORCE AGAINST ILLEGAL

RESIDENTIAL ACCESS TO SERVICES	Ensure that all residents have universal access to waste & recycling collection.
	Shift county municipal waste planning from disposal capacity to coordinate and demonstrate how local municipalities will plan for and attain universal access.
	Expand curbside collection to the greatest extent possible.
	Allow for staffed convenient drop-off facilities in lieu of curbside.
	Promote municipal contracts to control costs and universal services.
	Provide for collection of bulk items and appliances at curbside or at convenient facilities.
	Institute a subsidy for waste & recycling collection for eligible low income households.
DETERRENTS TO COMMERCIAL DUMPING	Require proof of disposal with local building, demolition, and prior to local occupancy permits.
	Expand waste transporter authorization to include small contractors, remodelers, and roofers.
	Require waste tire transporters to submit logs.
AWARENESS	Require manifests for loads of tires for transporters, processors and retailers.
	Implement a statewide multi-media education campaign on proper waste management.
	Establish an Environmental Law Training Program for Enforcement Officers and Justices.
	Create a series of seminars for local officials on effective ordinances and collection contracts.
	Institute the use of crime scene tape at illegal dumping sites to signify it is a criminal activity.
	Install barriers at illegal dumping “hot spots” to prevent entry and show it is monitored.

ENFORCEMENT

Expand the use of surveillance cameras at illegal dumping sites throughout Pennsylvania.

Create a Joint Code Enforcement Officer Program to support local governments.

Revoke transporter licenses and authorizations and require forfeiture of equipment for certain violations.

Establish an Environmental Law Court Day or assign a Dedicated District Justice to expedite cases.

Establish an Expert Witness Bureau to assist in the prosecution of suspected illegal dumping.

Establish fines that significantly outweigh the avoided cost of disposal.

Require community service for some illegal dumping offenses.

Dedicate penalties for illegal dumping violations to a cleanup fund.

Amend CDRA to require scrap dealers to report on receipt of certain components from covered devices, and improve and simplify other elements of implementation.

A CALL TO ACTION

A decade has been devoted to discovering the intricacies of what motivates illegal dumping practices in Pennsylvania. Nestor Resources, Inc. and Keep Pennsylvania Beautiful are confident that change is possible. The added conveniences and affordable disposal outlets recommended in the study should eradicate any excuse for improper disposal. We encourage stakeholders at all levels to use the findings and recommendations of this report as a catalyst to launch a statewide campaign to Keep Pennsylvania Beautiful.

FUTURE BENEFITS

This report offers practical cost effective solutions and accountability measures to address a statewide problem. The changes will benefit the majority of the public who already attempt to follow proper waste management practices.

- ✓ *Honest citizens and business owners whose monthly collection rates have been made artificially high to subsidize the ignorance or greed, of those who ignore the law, could finally realize a price break.*
- ✓ *Without the added cost of illegal dumping, local governments could put public works' budgets to better uses such as improving the local infrastructure for stormwater, water, and sewage.*
- ✓ *Instead of removing tires, furniture, appliances, and construction debris illegally dumped on public lands, resources could be dedicated to enhancing parks and expanding recreational services to promote tourism as a vital part of the economy.*
- ✓ *By eliminating the contamination caused from illegally dumped trash, local recycling drop-off collection programs could be more sustainable.*

SECTION TWO

BACKGROUND AND OVERVIEW

When material is irresponsibly discarded by people onto our lands and waterways, rather than using the many options available for appropriate disposal, it is considered illegal dumping. The practice of illegal dumping is a constant and highly visible problem across the nation. Pennsylvania is no exception. Illegal dumping has many faces. It can vary significantly from small bags of household waste tossed out of a car window to unacceptable material placed at a recycling drop-off site. It includes roadside dumping of furnishings and appliances. Larger scale dumping of tires, waste from commercial businesses, and construction and demolition waste frequently occurs in isolated areas. Illegal dumping, as its name implies, is against the law. By failing to deter this behavior or to enforce against reoccurrences, local governments, and citizens will continue to face the costly expense of cleaning up these needless actions.

INTRODUCTION

This document presents the results of an analysis of data collected from surveys of illegal dumping sites and cleanups in Pennsylvania. The study was prepared for Keep Pennsylvania Beautiful by the consulting firm Nestor Resources, Inc. The document outlines the steps from fact finding through analyses to final recommendations. It provides detailed findings, utilizes published and acknowledged sources as references, and provides justifications for the recommendations made.

As an overview, this section provides a brief description of the organization, Keep Pennsylvania Beautiful, its mission and activities. It offers background information on how the data utilized in this study was gathered and compiled. Section Two discusses the goals and objectives of the project and offers an explanation of how the consultant approached the data review and analysis. It also describes the elements contained in the report and the manner in which it is organized.

KEEP PENNSYLVANIA BEAUTIFUL

Keep Pennsylvania Beautiful is the result of two organizations with similar missions joining together to achieve a common vision, a clean and beautiful Pennsylvania. In 2010, PA CleanWays (1990) and Keep Pennsylvania Beautiful (2003) merged to become the new Keep Pennsylvania Beautiful whose mission is empowering Pennsylvanians to make our communities clean and beautiful. Keep Pennsylvania Beautiful is the state affiliate of Keep America Beautiful, Inc., the nation's largest volunteer-based community action and education organization.

Keep Pennsylvania Beautiful's programming focus falls under three categories: Prevent It, Clean It, and Keep It. Their vision is a clean and beautiful Pennsylvania. Keep Pennsylvania Beautiful promotes its mission through its diverse grassroots network of more than 25 affiliates and countless community partners across the state.

Keep Pennsylvania Beautiful also works with more than 300 dedicated adoption coordinators and thousands of community partners through the Great American Cleanup of Pennsylvania and the International Coastal Cleanup of Pennsylvania. With this extensive base of grassroots volunteers and local support, Keep Pennsylvania Beautiful is a leader in addressing illegal dumping and littering not only across the state but across the nation.

For more than 20 years, KPB has worked with community volunteers to clean up forests, parks, roadways, city blocks, greenways, and waterways across Pennsylvania – and to keep them clean. This community based approach led to work with waste haulers, landfill owners, recycling coordinators, municipal and county governments, businesses and corporations, environmental and civic volunteer organizations, the media, and others to plan and implement local cleanups in their communities and counties.

In 2005, PA CleanWays, now Keep Pennsylvania Beautiful, embarked on what became an all-consuming mission to bring the issue of illegal dumping to the forefront in the minds of the public and policy makers. Although the initial task at hand was to identify the locations of illegal dumpsites, the underlying strategy was always to establish the extent of the practice, and the resulting cost of cleanups, which are borne by the citizens of Pennsylvania. The ultimate goal for Keep Pennsylvania Beautiful was to use the findings of its research to motivate Pennsylvanians to implement important changes to deter illegal dumping and promote responsible waste management practices throughout the Commonwealth.

NESTOR RESOURCES, INC.

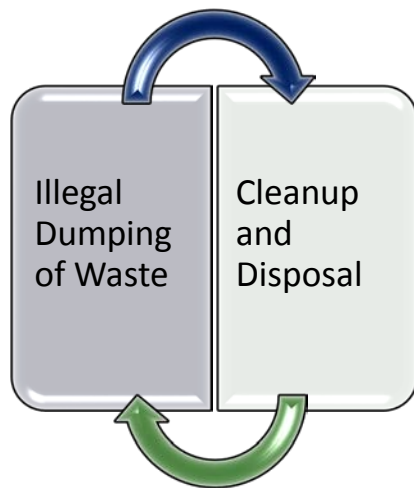
Nestor Resources, Inc. is a woman owned and operated consulting firm, which has been in operation for nearly 20 years. It is well documented that Nestor Resources has and continues to play an integral role in guiding the direction of municipal solid waste management in Pennsylvania. Through both municipal and county level projects, the consultant has assisted elected officials and program managers in over 35% of the counties in Pennsylvania. While this local success is well recognized, more notable is the firm's growing and far-reaching influence throughout the United States.

Michele Nestor, Principal and President, is recognized for her work at the state and national level. Most recently, Ms. Nestor was appointed Chair of the Pennsylvania Department of Environmental Protection's Solid Waste Advisory Committee. She also is the Chair of the Board of Directors of the Pennsylvania Recycling Markets Center. Through Michele Nestor's leadership efforts in national trade organizations and advocacy groups, Nestor Resources plays an active role in forming and influencing national policy.

Nestor Resources is known and respected by the public and private sectors for the ability to communicate the needs of the industry and local governments. The firm has a demonstrated success in leading the industry to implement and invest in new ideas and concepts, even when doubt and reluctance initially prevailed. Determination in that regard has resulted in the growth of recycling opportunities in counties and municipalities without the need for government subsidies.

THE CYCLICAL DILEMMA

- The mere presence of a dump site encourages more dumping.
- Cleaning up the sites signals taking responsibility for managing the material and invites more dumping



LESSONS LEARNED

- Cleanups must occur to reduce the impact on the environment.
- Cleanups are ineffective in and of themselves.
- Cleanups have a lasting effect when mechanisms exist to prevent and deter illegal dumping from occurring.

BACKGROUND

Keep Pennsylvania Beautiful (KPB) recently completed the last of a series of surveys that identified illegal dump sites in each of Pennsylvania's 67 counties. The surveys were part of a comprehensive process to create public awareness of illegal dumping, its prevalence, and its associated issues. They also were intended to serve as the basis for a strategic plan to significantly reduce illegal dumping in Pennsylvania.

The project was not a small task to initiate, and by the completion of its associated reports, it will have covered a ten year span of time. Surveyors recorded the physical locations of thousands of dumping grounds in the Commonwealth. In addition, the field personnel gathered and documented various characteristics of the sites, including but not limited to: general composition of the materials, physical nature of the sites, demographic indicators, and distances to population centers. Other related data regarding the local waste collection and disposal infrastructure was also compiled from municipal and county sources.

The survey information was subsequently entered into a database, which KPB uses to track and monitor not only its own cleanup and collection events and that of its affiliates, but also those conducted independently and reported to KPB by counties and municipalities. This is important to note because, while the surveys set out to document physical evidence, the safety and legal constraints placed on the surveyors only allowed them to estimate quantities of materials that were readily visible. The physical cleanups on the other hand, revealed materials that were buried under the surface rubble and provided accurate weights of what was removed.

Two important lessons were learned from the survey and cleanup efforts. One is that the mere presence of a dump site encourages more dumping. Even more discouraging, that remains true even after the waste, which was once deposited there, has been removed. The presence of waste at a site signals to others that previous dumpers were not detected and therefore the site is "safe." Cleaning up the sites sends the message that others are willing to accept the responsibility for managing the material that the dumpers leave behind.

PURPOSE OF THE PROJECT

It has become obvious to Keep Pennsylvania Beautiful that while cleanups must occur to reduce the impact on the environment, they are ineffective in and of themselves. As part of an integrated waste management program that includes mechanisms to prevent and deter illegal dumping from occurring and which provides resources for active enforcement, cleanups have a more lasting effect. To maximize the time and funds invested in remediating additional already existing sites, KPB realized that it must become more actively involved in decreasing the number of new illegal dumping sites and prevent reoccurrence at those already remediated.

For this to occur KPB recognized that cooperation at all levels of government and from a broad spectrum of stakeholders would be necessary. Minor regulatory changes at the state level could be required.

Enhancements to existing county and/or municipal ordinances or the introduction of new ones could be necessary. Infrastructure improvements and expansions might be advisable. The extent of monetary investment and ongoing costs would have to be considered.



To prevent and deter illegal dumping from occurring requires cooperation at all levels of government and from a broad spectrum of stakeholders

A widespread and well thought-out education campaign would have to result.

If they are to be successful, “political will” and the availability of government funds for new programs at the state and local level, along with the consumer’s “willingness to pay” must always be factored into movements for public policy changes. Therefore, Keep Pennsylvania Beautiful determined that, to be seriously considered, any recommendations aimed at reducing illegal dumping would have to be based in sound research, supported with facts and substantiated with already proven methodologies.

The purpose of this study was to accomplish all of those. Keep Pennsylvania Beautiful commissioned Nestor Resources, Inc. to quantify, compare, and identify traits that foster illegal dumping. The consultant was asked to identify trends, “at risk” conditions and policies that facilitate undesirable disposal practices. Using these common elements as key indicators, the result of this project is a series of recommendations believed to be effective in curtailing this behavior. The benefits that could be derived by each segment of stakeholders if one or more mechanisms were implemented were considered. In addition, before making the final suggestions in this report, Keep Pennsylvania Beautiful and Nestor Resources made every attempt to determine what, if any, unintended collateral impact could occur from each.

STRUCTURE OF THE REPORT

The report is organized into sections. Each section reflects how the available information was initially categorized, and considered independently from the others. The key data from each section was then comparatively analyzed.

SECTION-BY-SECTION HIGHLIGHTS

Following are brief descriptions of the purpose and contents of each section.

EXTENT AND IMPACT OF ILLEGAL DUMPING

This component of the report provides compelling data to confirm how widespread illegal dumping is in Pennsylvania. It describes the process used by Keep Pennsylvania Beautiful to identify illegal dumping sites across the Commonwealth. This section includes an overview of the data collected in the surveys, as well. Data from dump site remediation was considered in the study and therefore, the effectiveness of cleanup efforts is included. Other instances of illegal dumping not part of the scope of the KPB study are discussed along with other undesirable disposal practices.

There are many related ramifications from disposing of waste inappropriately that are important to define and quantify in this report. Perfect examples are the direct and indirect costs of cleaning up illegal dumps to local government. This section discusses how honest citizens, who practice proper waste management, are unfairly penalized to cover the costs of those that avoid paying for collection and disposal service. Finally, this section comments on the negative influence on economic development in a region.

MUNICIPAL WASTE MANAGEMENT PRACTICES

The waste management component begins with a very basic description of what municipal solid waste is, how it is generated and the sources of the waste. A generalized overview of the current municipal solid waste infrastructure in Pennsylvania is included. It points out the diverse approaches to municipal waste management implemented throughout the Commonwealth. Issues such as availability of current service offerings, gaps in the infrastructure, and the success of the current system in capturing the expected volumes of material generated are reviewed. National and regional studies and trends are used to analyze local performance.

REGULATORY AND ENFORCEMENT POWERS

To understand what constitutes illegal dumping and how it can repeatedly occur, it is important to review the existing laws, regulations, and agencies with the statutory powers to enforce those rules. The Regulatory and Enforcement Powers component describes the various levels of government provided with powers to enact and enforce laws related to municipal waste management. It offers an overview of existing statutes and the agencies delegated with the associated enforcement responsibility. This section also points out where there is a conspicuous absence of laws, controls, and other mechanisms to ensure and promote proper waste management practices.

DEMOGRAPHIC PROFILE

Understanding what influences the people who live, work, and operate businesses within an area can offer important insight into their current waste management practices. It can also reveal their expectation for and utilization of basic public services. Most importantly, it helps to identify factors that would motivate change. The Demographic Profile section explores a number of socioeconomic indicators for Pennsylvania and the counties. It examines and compares certain data to determine how counties are similar or dissimilar to one another, particularly as it applies to the illegal dumping activities identified for each county. Finally, the chapter offers commentary on notable trends and conditions.

PUBLIC AWARENESS AND PARTICIPATION

The Public Awareness and Participation component is an aggregate of comments and input obtained from a diverse group of stakeholders throughout Pennsylvania. Two methods were used to engage individuals and solicit their opinions. Some participants were contacted via a formal organized phone survey conducted by an independent third party. Others participated in face-to-face focus groups. Those who offered perspectives and opinions on the effectiveness of current laws and regulations, the adequacy of current services, and a vision for the future, included: the public, staff from regulatory agencies, KPB affiliates, representatives from other state nonprofit organizations, county employees, business owners, and private sector representatives from the waste and recycling industry.



Understanding the people who live, work, and operate businesses within an area helps to identify factors that could motivate change.

CONCLUSIONS AND RECOMMENDATIONS

A discussion of the overall findings is included in this section. A number of facts presented in the preceding sections are summarized. This section demonstrates how the climate is conducive for illegal dumping when each scenario or issue occurs in conjunction with one or more of the others. It also uses details and justifications to illustrate the complex dependency of currently existing and future proposed policies, services, and programs. Finally, this section of the report offers the targeted solutions to reduce illegal dumping activity in Pennsylvania. It lists recommended actions specifically for prevention and those for enforcement. When actions are suggested for certain stakeholder groups, they are pointed out as well.

FUTURE LEGACY

It would be easy to assume that this was the final leg of this project for Keep Pennsylvania Beautiful. After ten years of gathering data, the fruits of its labors are now documented with the pages of this report. However, KPB's mission has never been about the past. Rather, its focus is always on the future. Using this information, KPB hopes to ensure that Pennsylvania's legacy includes the availability of cost effective waste management services for all, to create a pollution free environment. This study outlines Keep Pennsylvania Beautiful's ideas for how that can become a reality.

SECTION THREE

EXTENT AND IMPACT OF ILLEGAL DUMPING

A STATEWIDE PROBLEM

No formal study has ever been conducted to accurately quantify the number of homes and businesses in Pennsylvania with or without a waste collection and disposal service provider. However, evidence from state and local enforcement investigations, citizen complaints, and grassroots efforts directed at the problem suggests that improper waste management practices are prevalent.

Undesirable disposal methods create pollution and endanger public health and safety. The presence of illegal dumps in a county or municipality raises significant concerns about property values, and the overall quality of life. Commercial and residential development is often stifled and blight is perpetuated. Tourism is also hampered.

Remote areas provide offenders with opportunities to discard unwanted items discreetly on private and public lands. Therefore, illegal dumping is typically more prevalent in rural areas. However, urban and suburban neighborhoods are far from immune to the effects of such behavior.

Section Three discusses the aggregate results of Keep Pennsylvania Beautiful's Illegal Dumping Surveys. It includes the important findings of the surveys and relevant trends. It offers some insight on the types of materials frequently disposed at the illegal sites and the common sources of those materials. Some narrative on cleanup efforts and the relationships to the survey data are also included.

IDENTIFYING ILLEGAL DUMP SITES IN PENNSYLVANIA

Keep Pennsylvania Beautiful's surveys illustrate that every county in Pennsylvania is plagued by the practice of illegal dumping. Since the onset of the project, KPB identified over 6,000 locations where illegal dumping has occurred and is perpetuated throughout the Commonwealth. This number is but a small indication of the occurrence of illegal dumping and represents only locations which could be seen and accessed from public roadways, without endangering the surveyors. Consequently, the amount of dumping that is suspected to occur in Pennsylvania's more remote areas, on private roads and properties has yet to be catalogued. Nevertheless, the sites, which were identified, provide sufficient evidence to establish certain trends and conclusions about the nature of illegal dumping in Pennsylvania.

Figure 3-1 shows the location and the concentration of the sites at the time of each survey.

FIGURE 3- 1 ILLEGAL DUMP SITES IDENTIFIED BY THE KEEP PENNSYLVANIA BEAUTIFUL’S ILLEGAL DUMPING SURVEY

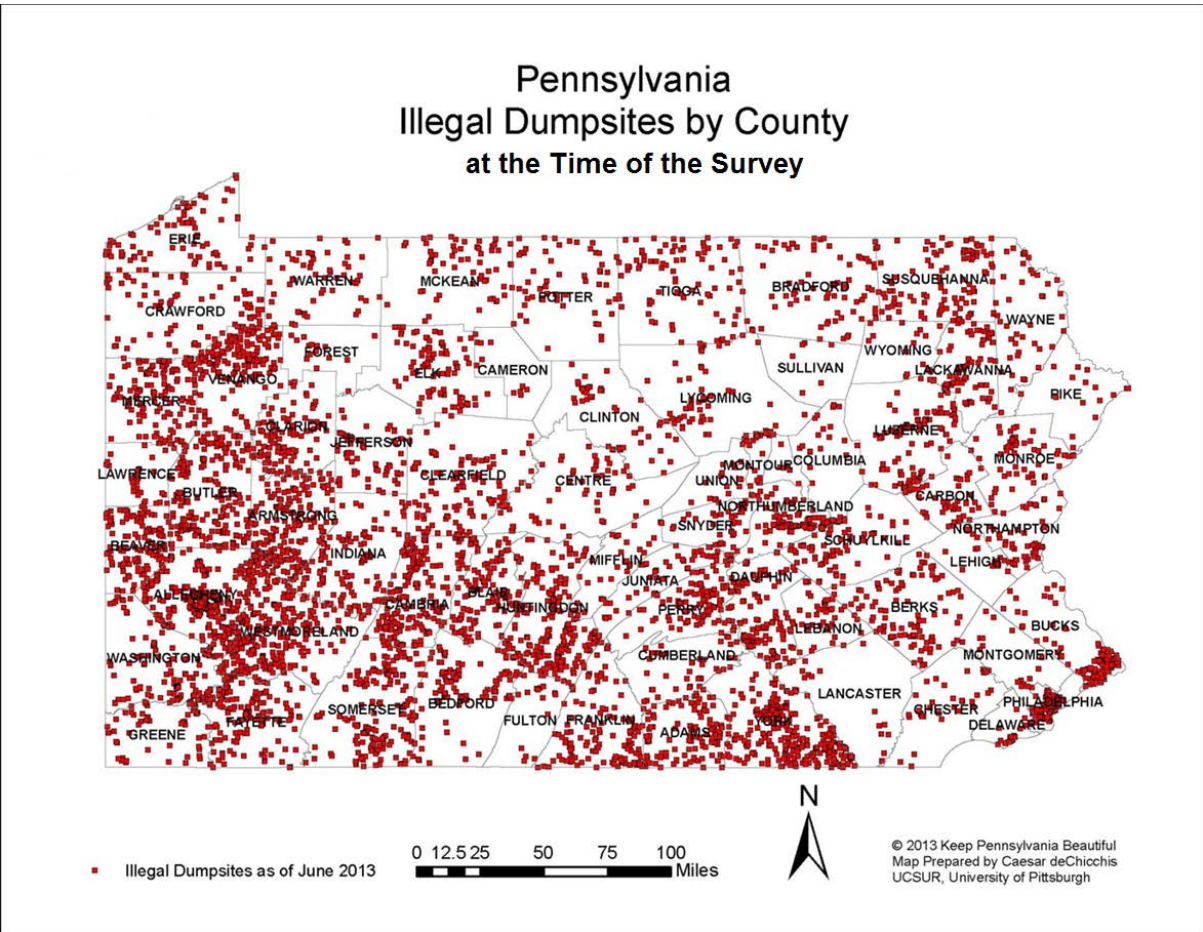


Table 3-1 lists the counties along with the total number of sites identified at the time of that county’s survey. It also provides the number of those sites which were classified as active at the time of the survey.

It should be noted that neither the map, nor the table should be considered an absolute perfect representation of current dump sites in Pennsylvania. Nearly a decade has passed since the surveys were initiated. Many of the early discoveries have since been remediated. New sites have been identified. Nevertheless, because of the cyclical nature of the problem, the data collected in the surveys and shown on the map and in Table 3-1 still accurately illustrate the overall general state of illegal dumping activity in the Commonwealth.

TABLE 3-1 ILLEGAL DUMP SITES IN PENNSYLVANIA BY COUNTY AND YEAR OF SURVEY

County	Year of Survey	Total Sites Identified	Active Sites (At time of Survey)	County	Year of Survey	Total Sites Identified	Active Sites (At time of Survey)
Adams	2009	116	86	Lackawanna	2009	92	76
Allegheny	2005	485	300	Lancaster	2009	16	13
Armstrong	2009	176	125	Lawrence	2008	31	30
Beaver	2010	120	107	Lebanon	2010	43	32
Bedford	2008	128	102	Lehigh	2013	16	15
Berks	2008	100	91	Luzerne	2007	159	100
Blair	2010	116	90	Lycoming	2011	50	41
Bradford	2012	74	48	McKean	2008	73	60
Bucks	2011	123	74	Mercer	2005	143	33
Butler	2007	217	215	Mifflin	2010	31	17
Cambria	2010	203	171	Monroe	2011	61	50
Cameron	2010	6	4	Montgomery	2009	19	18
Carbon	2012	49	48	Montour	2012	7	6
Centre	2009	56	40	Northampton	2013	51	45
Chester	2012	33	31	Northumberland	2006	125	95
Clarion	2009	102	78	Perry	2009	105	53
Clearfield	2010	112	90	Philadelphia	2012	296	287
Clinton	2010	50	31	Pike	2013	15	14
Columbia	2007	39	36	Potter	2011	56	46
Crawford	2008	82	38	Schuylkill	2008	74	69
Cumberland	2005	37	27	Snyder	2009	45	43
Dauphin	2006	138	109	Somerset	2008	210	128
Delaware	2012	26	26	Sullivan	2011	6	4
Elk	2007	79	53	Susquehanna	2013	104	68
Erie	2005	83	48	Tioga	2011	86	66
Fayette	2005	163	99	Union	2010	21	16
Forest	2009	15	14	Venango	2008	174	157
Franklin	2009	128	118	Warren	2009	59	47
Fulton	2008	19	17	Washington	2005	126	54
Greene	2007	49	32	Wayne	2013	43	24
Huntingdon	2010	202	160	Westmoreland	2009	310	260
Indiana	2007	114	72	Wyoming	2013	14	11
Jefferson	2007	67	38	York	2010	274	249
Juniata	2010	49	34				

PROJECT IN MOTION

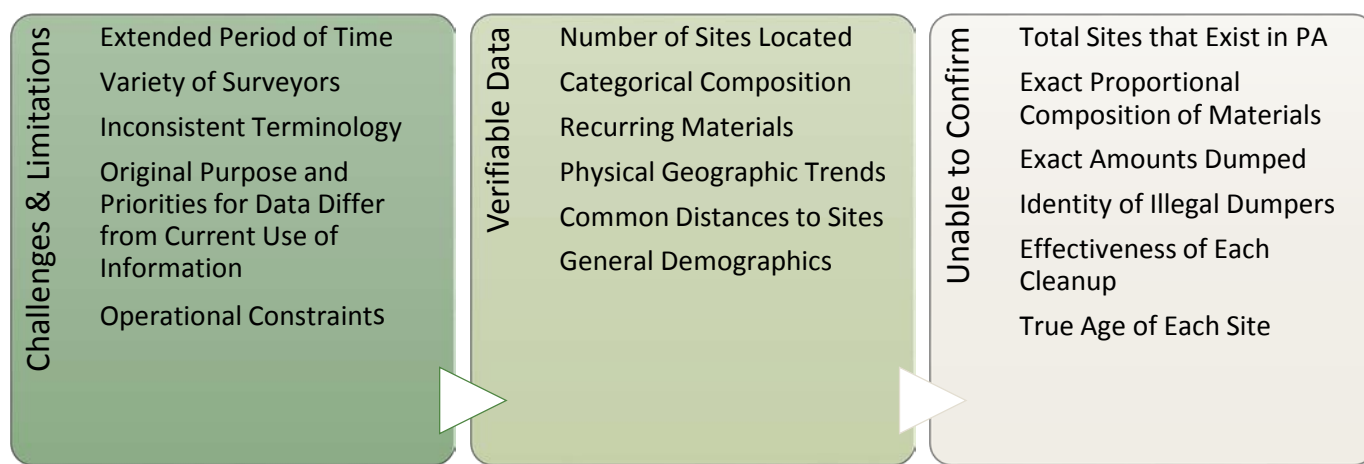
Collecting data in a uniform and consistent fashion over a ten year period presents significant obstacles. The first and foremost challenge is that while the survey is being conducted, life goes on. Things continue to evolve. Given the nature of the work and the geographic area covered, in ten years, it is understandable that different individuals were deployed to conduct the surveys. An often quoted phrase is “Perception is reality.” Considering that premise, it is easy to see how a number of different surveyors could look at similar conditions and document the details with slight variations. Eyewitness accounts of accidents and catastrophes support how two people can see the exact thing, yet interpret, or remember it differently. Thus, care was given in this stage of the project to quote details when it was appropriate and to use generalizations when slight variables appeared in the anecdotal comments.

Location inaccuracies are sometimes pointed out when people review the surveys for each county. However, the time from which the surveys were taken and published allows for considerable deviations. Actions are taken to deal with local conditions that may remediate a site that was previously identified in a survey several years ago. New sites may appear that were not in existence at the time of the survey. Therefore, the maps may differ, but overall, the message remains the same.

A perfect example in the Illegal Dump Surveys of how things evolve is that the purpose and objective of the original surveyors gathering the data was not exactly the current goal of this project. The first thoughts of those who initiated the surveys a decade ago was to eliminate a nuisance. They set out to know the location of sites, which could be remediated. Consequently the information collected is descriptive from a logistical standpoint rather than precise details from a statistical point of view. Access and ability to remove the material was of greater importance than measuring the exact volumes of waste on site. In addition, because only the surface material can be seen, it is virtually impossible to accurately calculate the contents.

Figure 3-2 points out some of the challenges, of first assessing the data, the information which could be used from an analytical standpoint, and the questions that were difficult from the onset to resolve.

FIGURE 3-2 CONDITIONS AND CONSTRAINTS OF THE SURVEY RESULTS

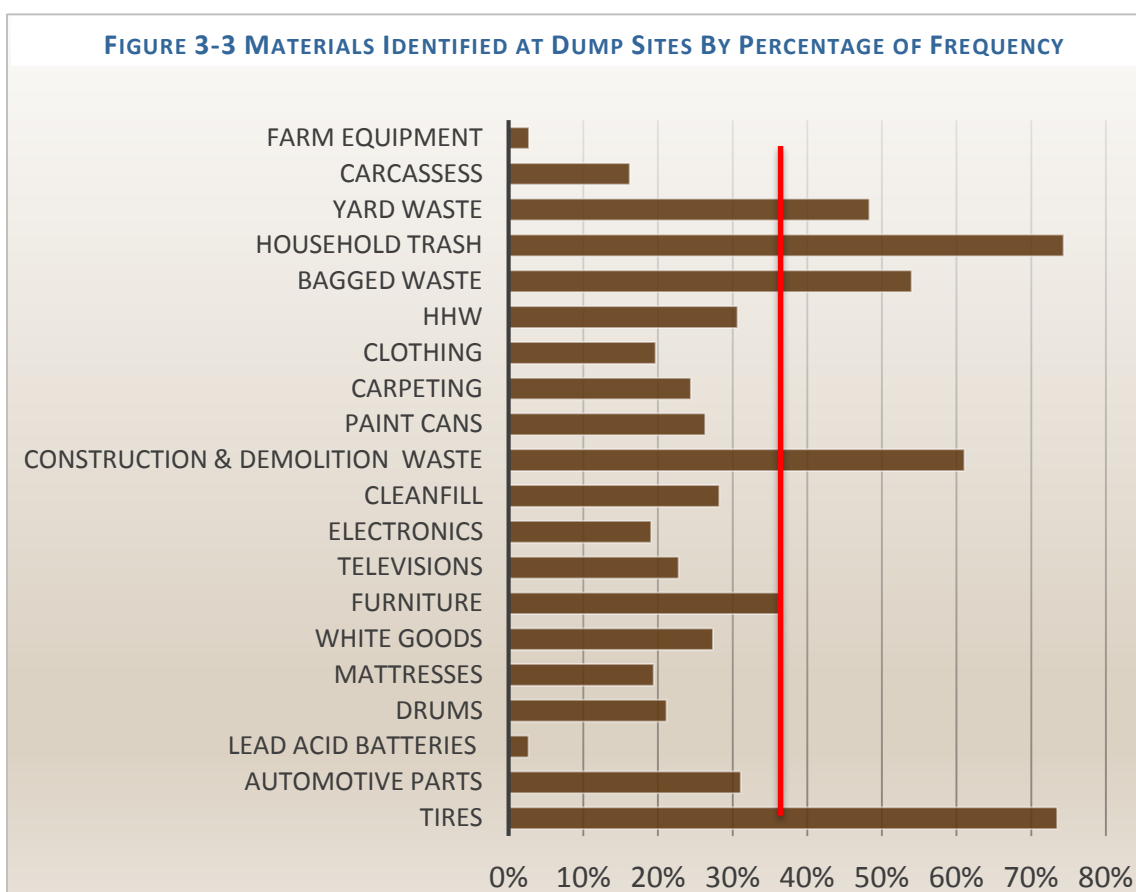


COMMONLY DISCARDED MATERIALS

The field surveyors catalogued a variety of materials at the documented dumpsites. The proportional amount of each and every material in relationship to other materials at the sites was not quantified. However, the repetitive appearance of certain materials at the surveyed sites offers enough proof to suggest certain trends. In addition, KPB does have considerable documentation of the materials which were removed from sites during illegal dump cleanups. This evidence gives a clearer picture of which problem items dominate the sites in volume and weight. It also suggests the sources where they are typically generated and in some instances the suspected handlers.

Figure 3-3 lists the items found repeatedly in dump sites. A few of the items listed should be clarified.

- Bagged waste differs from bags of household trash. The surveyors considered bagged waste to be large contractor bags of materials from building and demolition.
- A number of items listed individually are also considered to originate from home remodeling or building projects. (i.e. carpeting, paint cans, bagged waste)
- Tires, automotive parts, and drums, frequently appeared together in the same sites.
- Farm equipment only accounts for those items found on non-farm properties, not those stored on privately owned farms.
- HHW is household hazardous waste (pesticides, cleaning products, pool chemicals, fertilizers).



THE NATURE OF ILLEGAL DUMPING

Active dumping has as many faces as it has participants. Several types of illegal dump sites were identified and documented by the surveyors. Some are those which our minds conjure up when we think of illegal dumping. Others we may recognize, but have never made the connection that it was also a form of illegal dumping. This report has funneled the many instances of illegal dumping into four common categories, one of which includes old inactive dumps, which we have labeled the legacy sites. The other three are commercial dumping, residential dumping, and theft of service, where individuals place items in the waste or recycling receptacle paid for by another. Figure 3-4 shows these four types of illegal dumping.

FIGURE 3-4 TYPES OF ILLEGAL DUMP SITES



THE LEGACY SITES

The site which we have labeled “legacy sites,” are commonly known to locals in every region of the state where they exist. These legacy sites, many of which were once openly used community dumps, have existed for years. The vast majority of them are no longer active. In time, given sufficient resources, Keep Pennsylvania Beautiful, and similar organizations will have eradicated the greater portion of them.

Of top priority to KPB at this time, is to greatly reduce the ongoing dumping in Pennsylvania. Keep Pennsylvania Beautiful believes that it is important to clarify that the problem of illegal dumping goes beyond these historic dumpsites. That is the focal point of this study.

ACTIVE COMMERCIAL DUMPING

Based on the nature of the materials catalogued during the surveys and confirmed in many of the cleanups, it is safe to say that illegal dumping is practiced by commercial businesses. An example would be automotive service centers. Parts from automobiles, trucks, drums of solvents and used oil, and tires are often found together in illegal dumps. In some instances, businesses actively participate in the dumping and knowingly dispose of their waste in an illegal manner. In other scenarios, honest business people are duped by unscrupulous individuals that operate under the guise of legitimate waste transporters. These operators pocket the money rather than deliver the waste to a permitted facility and pay for disposal.

Finally, residents and small business are often the victims of their own lack of awareness, or quite frankly, they have no desire to know. In these cases, waste that resulted from a service performed, like remodeling or a roof installation, may be hauled away by the service provider with no questions asked regarding how it will be managed. At times, this waste is disposed of improperly to increase the profits of the service provider.

ACTIVE RESIDENTIAL DUMPING

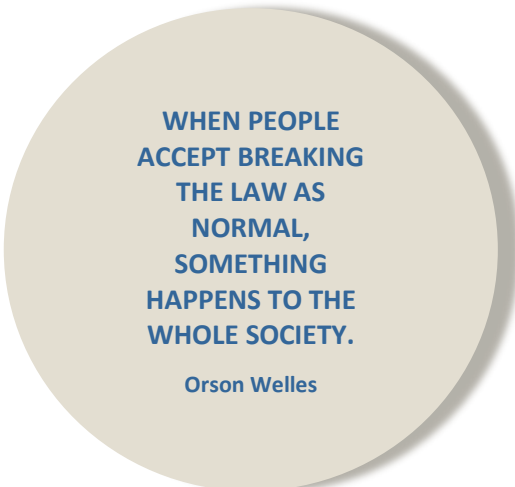
Residents are not always the victims, but more often, also guilty of illegally dumping their own waste. Residents tend to dump household waste randomly. These are the bags of waste that show up along the roadsides, on vacant urban and suburban lots, or any other convenient outlet where the risk of getting caught is perceived to be minimal.

Residents also illegally dump bulky waste like furniture and mattresses, as well as appliances. This occurs, in part, because they don't know what else to do with the items. Sometimes the dumping is fueled by the immediacy in which things must be removed from a dwelling, at the end of a lease, when parents have passed away, or when people, in general, have to relocate. Large items tend to show up where others have successfully left their former possessions.

This type of illegal dumping is undoubtedly premeditated. Unlike small bags of trash, it takes considerable effort to load, transport, and unload bulky waste. The size of the items necessitates the involvement of more than one participant. There appears to be previous knowledge of where to transport the items. The items are rarely dumped far from where they originated.

THEFT OF SERVICE

Often overlooked in discussions and studies of illegal dumping is theft of service. Theft of service is often practiced by those who firmly believe they are against illegal dumping. Not only do people fail to make the correlation between theft of service and illegal dumping, many are surprised to discover that it is, in fact, stealing. Theft of service occurs when waste is deposited in or beside a receptacle owned by another person, business, or organization. Many people believe that the public has open access to any dumpster



**WHEN PEOPLE
ACCEPT BREAKING
THE LAW AS
NORMAL,
SOMETHING
HAPPENS TO THE
WHOLE SOCIETY.**

Orson Welles

regardless of its location. Consequently, people feel free to put materials into commercial dumpsters that belong to local businesses, or to drop-off recycling bins sponsored by local governments or other organizations. A similar behavior includes people, who don't pay for service yet place their waste at the curbs with their neighbor's or in other communities where service is available.

ECONOMIC CONCERNS

A commonly made argument against attempts to increase participation in improved waste management and recycling services is that the cost will be unfair. This notion is typically fueled by those who have managed to avoid paying for proper waste services. Contrary to what the proponents of this argument would have us believe, confirmed evidence shows that the cost of irresponsible waste management is in fact what creates a higher price tag for the whole community. Without doubt, where universal access to waste and recycling collection programs exist, per unit costs per household is lesser than where the same services are available on a voluntary basis.

There are any number of circumstances in which illegal dumping creates unfair costs to others. Keep Pennsylvania Beautiful recently commissioned a study to confirm the actual cleanup costs realized by Pennsylvania communities. In addition, a number of counties shared data related to the costs of illegal dumping directly related to their recycling collection services. Finally, Nestor Resources, Inc. has extensive experience in pricing residential and commercial collection services. Background knowledge gained from a conglomerate of projects is used here to illustrate the impact of illegal dumping on local communities.

COSTS OF CLEANUPS AND REMEDIATION

Cleanup of illegal dumpsites often falls to public works or road crews. The cost to local government to remove these abandoned materials is significant. The remedy can be costlier than the original cost of legally disposing of these materials. In many areas of Pennsylvania, when all factors are considered, (labor, fuel, disposal, equipment, etc.) the cost of remediation can be more than ten times the gate rate at local disposal sites.

Ironically, offenders attempting to avoid waste collection and disposal fees, still pay for their offenses in the end. This is particularly true because offenders do not stray far from their homes or places of business to illegally dump materials. Sometimes, the cost of cleanups result in the form of higher property taxes. Alternatively, because the municipal budget had to pay for cleanups, they experience a lesser amount or lower quality of other public services. These offenders certainly create extra costs for honest citizens. Responsible individuals and businesses that do pay for collection and proper disposal are victimized by this behavior.

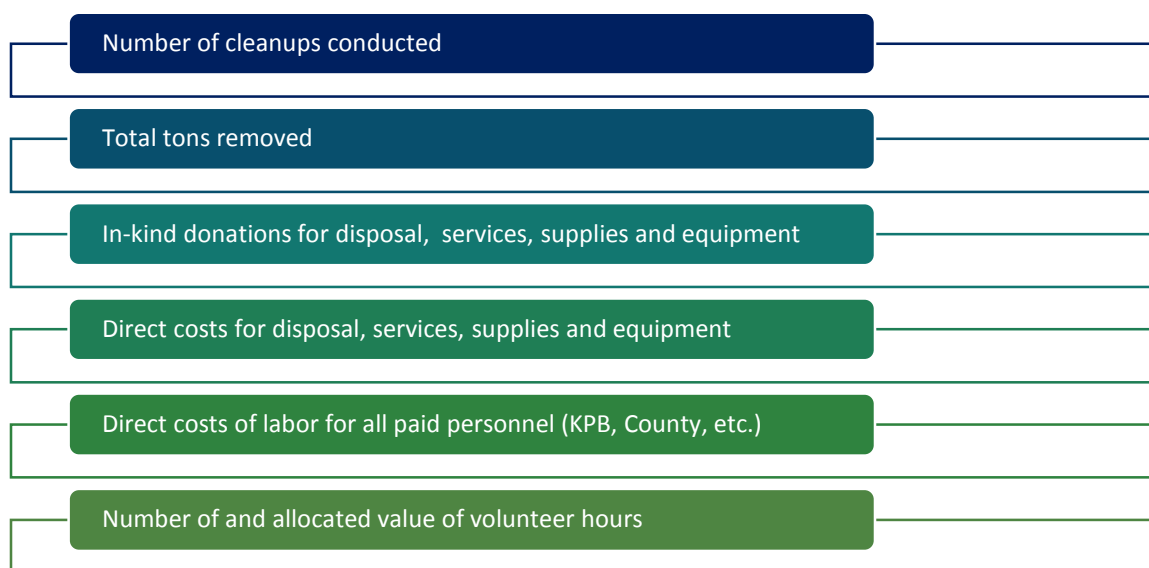
COSTING VALIDATION

In addition to surveying the locations of illegal dumping in Pennsylvania, Keep Pennsylvania Beautiful actively organizes and deploys volunteers to cleanup and remediate sites. Illegal dump sites and accumulated litter are targets of the Great American Cleanup, the International Coastal Cleanup, and regular events orchestrated by KPB and its affiliates. Through these activities, the organization has amassed substantial data on the actual costs of removing waste from illegal dump sites.

Keep Pennsylvania Beautiful does not initiate, conduct, nor pay for every illegal dump site cleanup. So while they had a lot of in-house statistics, those costs had never been compared to what others may experience to assess if they were fair and realistic for the nature of the work. The organization determined that a good way to validate its own assumptions, which are used to estimate the costs of cleaning up a site, would be to compare them to actual costs realized by third parties. To accomplish this, Keep Pennsylvania Beautiful commissioned an outside consulting firm, MSW Consultants, to conduct a comparative costing analysis.

This study involved rigorous assembly of illegal dump clean up data from KPB and from the subset of organizations across Pennsylvania that participated via direct outreach. The years from 2010 through 2012 were used as benchmarks. Based on the aggregate of data assembled from 900 cleanups, it was determined that the statewide average cost per past cleanups was \$619 per ton, with the overall average cost per remediated site at \$2,947.

FIGURE 3-5 DATA USED TO DETERMINE THE COST OF CLEANUPS AND REMEDIATION



COSTS RELATED TO THEFT OF SERVICE

When unauthorized users place material in a commercial 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. Theft of service is prevalent where there are higher numbers of rental units, in college towns, and where businesses are clustered together. In certain circumstances, employees feel that it is their privilege to bring household waste to work and deposit it in the employer's dumpster. Residents don't think twice about putting their waste in their neighbor's container or next to it at the curb.

ABUSES OF DROP-OFF RECYCLING PROGRAMS

Similarly, recycling drop-off collection programs experience contamination issues caused by intentional dumping of waste at the sites and in the containers. This results in cleanup costs for the county or municipality and loss of revenue when the contamination renders the materials unmarketable. Recent documentation provided by counties that monitor and track these costs, such as Lawrence, Mercer and Crawford counties show that the direct cost of removing unwanted materials from the drop-off recycling locations is roughly \$100 per site per month. Rural counties have anywhere from 10 to 20 sites. This does not include the cost of time and labor built into the actual operational costs of the collection route by the contractor or public department responsible for providing these services. When a program is known to have illegal dumping, contractors submit bid rates that are noticeably higher than regular commercial routes for the same material.

In addition to the costs of removing unwanted materials, counties and municipalities experience the loss of revenue, as well. Contamination reduces the value of materials and, in many instances, renders them unmarketable. Some processors charge not only a fee to process the recyclables, but also an added fee for the disposal of residuals. These costs are subtracted from the resale value of the recyclable commodities. With an average rebate for mixed loads of recyclables currently at \$25 per ton, severe contamination, over the course of a year, can result in the loss of tens of thousands of dollars for local governments, if it is not corrected.

Another related, although indirect cost, is the collateral damage experienced by county and municipal officials for the unsightly accumulation of illegally dumped materials at the recycling locations. Programs are frequently damaged and eventually discontinued due to the ongoing abuses of illegal dumpers. Irate municipalities and commercial entities demand removal of the recycling containers. The media can be relentless in pointing out the failure of local officials to eliminate the problem.

For these reasons, there is a growing trend to transition countywide drop-off collection programs to municipal curbside collection programs. New technologies that enable all recyclables to be collected together have made these programs easier and more affordable to implement, not to mention the added convenience to local residents.

COSTS RELATED TO NON-PARTICIPANTS AND DELINQUENT PAYERS

If you live in an area that does not have mandatory waste collection, or in a municipality that does not have a good mechanism to ensure that people pay for the services, it is highly probable that you are paying more because of the negligence of others.

All services have fixed costs. Waste and recycling collection is no exception. Labor, fuel, and health care related costs are the primary expenses for waste transporters. Disposal is more of a variable. To remain profitable, waste haulers must ensure that their fixed costs are covered. Economies of scale can help companies reduce the individual costs per home.

In other words, if the hauler's fixed cost is \$1,000, and five homes participate, then each home is charged \$200. However, for the hauler to drive the same route where 15 homes pay for service, then each home

only pays \$66. When all homes in a municipality are included in a service contract, it has a direct influence on lowering the rate each home has to pay compared to if each home contracted with a different hauling company.

When people opt to dump illegally instead of responsibly managing their waste through traditional garbage collection services, they reduce the number of homes to which those fixed costs can be shared. Therefore, not only are the people who try to do the right thing victimized by the cost of cleaning up illegal dumping, but they also experience higher rates than in municipalities that ensure everybody must participate. As mentioned previously, those trying to avoid the cost of waste disposal, have the effect of cheating themselves as well by paying higher property taxes or through a lack of other services, like improved roadways, parks, and recreational activities.

The same phenomenon occurs in municipal contracts in which communities do not have proper ordinances to ensure that the municipality or the service provider is assured payment. Where contractors suspect a high delinquency rate, they are forced to raise the per unit rate of service to all of the other participants to cover their fixed costs. Municipalities do the same when they are the ones issuing the bills.

Requiring participation in some type of waste and recycling service, regardless of whether it is at the curb or not, would help to correct this situation, and save taxpayers money.

COSTS TO THE ENVIRONMENT

The less visible, but more distressing costs of illegal dumping, include the costs to the environment. The ecological damage resulting from illegal dumping can't be wholly accounted for as a dollar amount. However, the devastation is real. The loss of the natural aesthetic beauty of an area has a detrimental impact on tourism and recreation. Toxins, released from drums, paint cans, automotive parts, refrigerants, etc., are an endangerment to water and soil quality. Illegal dumping sites attract vermin, mosquitoes and become breeding grounds for associated diseases. The prevention of illegal dumping complements other movements afoot to protect the Chesapeake Bay and other watersheds. Considering that pollutants from illegal dumpsites eventually enter the waterways of Pennsylvania, this issue should be included in those policies.

LEARNING FROM THE PAST

Tremendous effort and determination was necessary to arrive at this phase of a multi-year mission. Keep Pennsylvania Beautiful, its affiliates, sponsors, funders and the volunteers who served as foot soldiers have provided Pennsylvanians with undeniable proof of the widespread and ongoing problem of illegal dumping. Failure to heed the evidence simply perpetuates the problem and multiplies the ill effects. By acting to minimize these activities, we can prevent further pollution, protect public safety, and enhance the overall quality of life in our communities.

The sections that follow, describe how current conditions in Pennsylvania may facilitate illegal dumping. Additionally, those that have been shown to be successful as deterrents, are also featured.

Trashing nature: Illegal dumping, theft, vandalism costly for state

Article Courtesy of Kathy Mellott,
Tribune Democrat, Johnstown, PA

Conservationists' ideology of nature's pristine beauty is being overridden by illegal dumping with some of mankind's more unattractive items turning up in this region's state forest.

Old tires, a half-dozen television sets, old bathroom fixtures – just a sampling of the trash illegally dumped over recent weeks in the Rager Mountain Division of the Gallitzin State Forest.

"Our staff spends hundreds of hours cleaning up illegal dump sites, replacing damaged and stolen signs, and rehabilitating infrastructures," said Terry Stemmler, district forester for the sprawling state-owned property. "I have been involved with a conservation agency for 35 years, and this is the worst that I have ever seen the state forests used as dumping sites and the complete disregard of public property," he said.

The most recent dumping appeared to be by someone moving into or out of a residence where some renovation was taking place. "We had six men go out and clean it up," said Chuck Saylor, maintenance supervisor of the forest's Babcock Division. The massive cleanup, which came at a hefty price tag. Not only is it the cost of taking the trash to a landfill, especially the tires, but also the manpower costs, he said.

As of late last week, a pile of 260 old tires had been accumulated at the rear of the maintenance shed along Route 56 in Somerset County, carrying a disposal price of about \$3,000.

All of the cost comes from the district forests budget, said Stemmler, and the removal uses up time which should be spent in proactive work in making the forest a better place. "Our workload is extremely hectic," he said. "The time that the staff has to use to clean up dumps, build and replace signs, pick up tires, etc., could better be used elsewhere."

Prosecution after a dumper or thief is identified is common.

Not only does successful prosecution result in fines and other penalties, but restitution is likely to include the cost of the cleanup, forest officials said.

Despite the increase in illegal dumping, stealing, and vandalism, Stemmler said he is thankful there are far more people who care about the forest than are set to harm it. "It's a small percentage, a few people that are ruining it for the general public," he said.



State workers
cleaning up illegal
dumping in Gallitzin
State Forest

Photo Courtesy of Todd Berkey
The Tribune Democrat
Johnstown, PA

SECTION FOUR

WASTE MANAGEMENT IN PENNSYLVANIA

The average person is more familiar with municipal solid waste management than they realize. In fact, each day, we all make personal choices on how to manage the municipal waste that we produce. Unlike other decisions that affect only ourselves, such as not getting enough sleep or skipping breakfast, the poor choice of illegal dumping has a negative impact on our neighbors, our community, and the environment.

This section discusses the services and outlets available to properly manage municipal waste in Pennsylvania. It describes where disposal/processing outlets exist. An overview is provided of the collection and transportation network. The role of public and private sector service providers is included. The section also explains how services are priced and how local conditions can influence the services that are available. Finally, it points to conditions that foster and/or enable illegal dumping to occur.

THE SOURCE

We live in a material society. Consumerism drives our economy. New makes, models, and styles are continually introduced to incentivize us to try different products, or foods. Eventually, we tire of these purchases in favor of new things. Products become obsolete and foods reach the end of their recommended shelf lives. When we discard these items, they become municipal waste.

Every household, business, and activity within Pennsylvania generates municipal waste to some degree. Certain activities are also common sources of municipal waste. Construction, home remodeling, and roofing projects are good examples. Automotive and landscaping services are some others.

On a daily basis, we each produce about 4.4 pounds of municipal waste. Most of us will discard one or more of the following items each day: newspapers, kitchen scraps, grass clippings, old clothing, cardboard boxes, bottles, cans, appliances, mattresses, furnishings, etc. The cumulative effect, when the overall population of Pennsylvania is considered, amounts to more than 10 million tons of waste each year. If mismanaged, the results would be catastrophic.

PROCESSING AND DISPOSAL OUTLETS

Proper waste management relies on having an adequate amount of outlets for disposal. Currently, and into the foreseeable future, there is no lack of disposal capacity at Pennsylvania facilities.

Table 4-1 shows the disposal and processing facilities in Pennsylvania. They are organized using the geographic regions of the Pennsylvania Department of Environmental Protection and separated into three categories. Landfills are land disposal facilities designed to collect and treat discharges of liquids and gases that result from decomposing waste. Resource Recovery Facilities utilize a combustion process to convert waste to energy. Transfer Stations consolidate small loads of waste for transport to either a landfill or resource recovery facility.

TABLE 4-1 LOCATION OF PENNSYLVANIA PROCESSING & DISPOSAL FACILITIES			
	LANDFILL	RESOURCE RECOVERY	TRANSFER STATION
NORTH CENTRAL REGION			
Bradford	X		
Centre			XX
Clinton	X		
Columbia	Residual Waste Only		XX
Lycoming	X		XX
Northumberland			XX
Potter			XX
Tioga	Construction/Demo Only		XX
Tioga	Residual Waste Only		
NORTH EAST REGION			
Lackawanna	X		
Lehigh			XX
Luzerne			XX
Monroe			XX
Northampton	X		XX
Schuylkill	X		XX
Wayne			XX
NORTH WEST REGION			
Butler	X		XX
Clarion			XX
Crawford	Construction/Demo Only		
Elk	X		
Erie	X		XX
McKean	X		
Mercer			XX
Warren			XX
SOUTH CENTRAL REGION			
Bedford	X		
Berks	X		XX
Blair			XX
Cumberland	X		XX
Dauphin		XXX	XX
Franklin	X		XX
Lancaster	X	XXX	XX
Huntingdon			xx
Lancaster	Construction/Demo Only		
Lebanon	X		
Mifflin	X		XX
York	X	XXX	XX
SOUTH EAST REGION			
Bucks	X	XXX	XX
Chester	X		XX
Delaware		XXX	XX
Montgomery		XXX	XX
Philadelphia			XX
SOUTH WEST REGION			
Allegheny	X		XX
Beaver	X		XX
Beaver	Residual Waste Only		
Cambria	X		
Indiana	X		
Somerset	X		XX
Washington	X		
Westmoreland	X		XX

Pennsylvania is rich with processing/disposal facilities. Finding a proper disposal site for the ultimate disposition of materials generated within Pennsylvania is not a problem. Clearly, the South East and the South West Regions have the highest percentage of counties with some type of facility. The other regions have a number of counties with some type of disposal/processing site as well.

Whether those outlets are located in areas to which consumers are willing to drive is another issue. Likewise, whether consumers find all of those facilities user friendly and affordable is unclear. Conditions such as easy access, clean disposal areas, no minimum charges per load, hours of operation, etc., can promote or hinder consumer use of a full-fledged disposal site. When facilities are not inviting to consumers, illegal dumping becomes an easier option.

Table 4-2 shows the counties that have no disposal or processing facilities.

TABLE 4-2 PENNSYLVANIA COUNTIES WITHOUT DISPOSAL /PROCESSING FACILITIES		
NORTH CENTRAL	NORTH EAST	SOUTH EAST
Cameron	Carbon	None
Clearfield	Pike	
Montour	Susquehanna	
Snyder	Wyoming	
Sullivan		
Union		
NORTH WEST	SOUTH CENTRAL	SOUTH WEST
Forest	Adams	Armstrong
Jefferson	Fulton	Greene
Lawrence	Juniata	
Venango	Perry	

COLLECTION AND TRANSPORTATION INFRASTRUCTURE

A first step in decreasing the occurrence of illegal dumping is to ensure that sufficient services are available for the collection, transportation, and disposition of all of the various municipal waste streams. Understanding the status of the existing system is an important step in determining future needs.

It is commonly thought that those who are frequently seen collecting trash from residential curbsides or from commercial dumpsters are the sole transporters of municipal waste. However, there are far greater numbers of those who transport municipal waste for varieties of other reasons and circumstances. A broad infrastructure of transporters and disposal/processing facilities is necessary to meet the municipal waste management needs of Pennsylvania. Some waste industry operations offer a variety of integrated collection and processing services.

However, there are many others that focus solely on targeted components of municipal waste. Transportation and collection services are primarily private sector operations. However, there are municipal authorities, counties, and municipalities that utilize public employees and equipment to provide a variety of collection services to their local residents.

SERVICE OFFERINGS

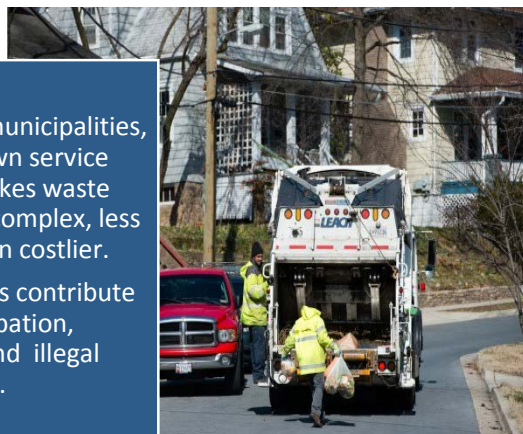
Services that are available to residents and businesses throughout the Commonwealth range from curbside collection to commercial dumpster service and roll-off containers for large volumes. Some transporters also provide dump trucks and/or trailers for construction demolition and remediation projects. Specialty services are also

available for materials that are difficult or potentially dangerous to handle. 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 have been included because household goods are often disposed after they are

collected, rather than salvaged. Some individuals self-haul waste that is generated in their homes or businesses or by the services they provide at other locations. Examples of self-haulers are construction contractors, remodelers, roofers, and landscapers.

2,562 Pennsylvania municipalities, each with their own service requirements, makes waste management more complex, less efficient, and often costlier.

Unclear expectations contribute to poor participation, contamination and illegal dumping.



FRAGMENTED ACCESS TO SERVICE

It is important to note that residents in every Pennsylvania municipality do not have universal access to the full variety of collection and transportation services. With 2,562 autonomous Pennsylvania municipalities, waste management is made unnecessarily more complex and often costlier than in other states. That service specifications change even in communities that are side-by-side is confusing both for the service providers and for the consumers. This often leads to misunderstandings on what the expectations are for proper waste management and can result in poor participation, contamination, and illegal dumping.

RESIDENTIAL OPTIONS

If and how household waste, yard trimmings, appliances, bulky items, and recyclables are collected is dependent on the locale.

COMPREHENSIVE COLLECTION, DISPOSAL, AND RECYCLING

In more densely populated areas, it is common for residents to have the convenience of regular weekly or bi-weekly curbside collection services for all of the materials listed above. For some, waste and recyclables are collected at the curb weekly or bi-weekly and yard waste and bulky waste items are collected seasonally, either at the curb or through a central drop-off location.

LIMITED COLLECTION, DISPOSAL AND RECYCLING

In rural areas, where housing density is lower, it is more common for only household bagged waste to be collected at the curb. Recyclables were traditionally not collected at the curb in rural areas, however, with

new collection and processing technologies, rural curbside recycling is expanding. In municipalities, where recyclables are not collected at the curb, there are no guarantees that a convenient drop-off site for these materials is available. Bulky items and appliances are not normally included in the basic collection services. Seasonal cleanups for bulky items and appliances are offered in a portion of these areas. In others, residents are left with few if any convenient and affordable options.

NO ACCESS TO COLLECTION, DISPOSAL AND RECYCLING

On private roadways, regardless of whether the area is rural or suburban, and in remote areas, there may be no service available at all. In some instances the private roadway is difficult for a collection vehicle to traverse. In others the cost to service an isolated home on a regular basis may simply be cost prohibitive.

COMMERCIAL OPTIONS

Businesses typically contract directly with the transporter of their choice for waste and recycling collection services. Regardless of whether the business is located in an urban or rural area, there is typically some level of collection service available. So, the willingness to pay is more of a determinant in practicing proper waste management, than true access to service. In densely populated areas and in rural areas that are in close proximity to established commercial collection routes, businesses have access to containerized dumpster service for waste, and in most areas for certain recyclable commodities. In more rural areas, waste container service may be available. Where it is not available, business place waste in bags or cans and are serviced in the same manner as local residents. Some businesses self-haul.



For commercial businesses, the willingness to pay is the determining factor in practicing proper waste management, rather than the availability of service.

MANAGING CONSTRUCTION AND DEMOLITION WASTE

The name itself suggests the different activities that can generate construction and demolition waste, 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.

Unlike municipal solid waste, C&D waste is not consistently collected through an ongoing arrangement with a private garbage hauler or municipality. Much of the construction and demolition 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. Another common method used by homeowners and contractors is illegal dumping.

Construction and demolition material, which does not reach a landfill, is not necessarily improperly managed or disposed. Much of the brick and concrete and other masonry materials are 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. However, the data compiled by Keep Pennsylvania Beautiful shows that the frequency at which construction and demolition waste is dumped illegally constitutes a problem.

RESIDENTIAL RATE STRUCTURES AND PARTICIPATION

Since the manner and circumstances in which waste is collected varies from town to town in Pennsylvania, the cost that each home pays for those services also differs. Of course, a host of other factors influence the cost, and the quality of service, as well. Figure 4-1 provides a quick glimpse of the multitude of issues that can influence the price and performance of waste collection and processing.

COMMUNITY ADMINISTERED COLLECTION PROGRAMS

Some municipalities secure collection services for their residents through a competitive bidding process. This is most common in cities, boroughs, and more densely populated townships. In those communities, a contractual agreement provides one hauler with the exclusive rights to collect residential waste for a fixed period of time. Similar services may be provided by municipal employees and equipment.

Residents are required by ordinance to participate and pay for services included in the program. Recycling, leaf waste, and bulky waste collection may be incorporated into the service agreement. Billing for services may be part of the tax base, the sewer and water bill or the municipality or contractor may bill each residence directly. These types of communitywide collection programs, coupled with the proper ordinance, are the most effective in significantly reducing residential illegal dumping within a jurisdiction. Participation naturally increases because residents feel that they should use the services for which they are paying regardless. An added bonus for contracted areas, all-inclusive of every home, is that they also typically have the lowest consumer rates for the scope of services offered.

MONTHLY SUBSCRIPTION

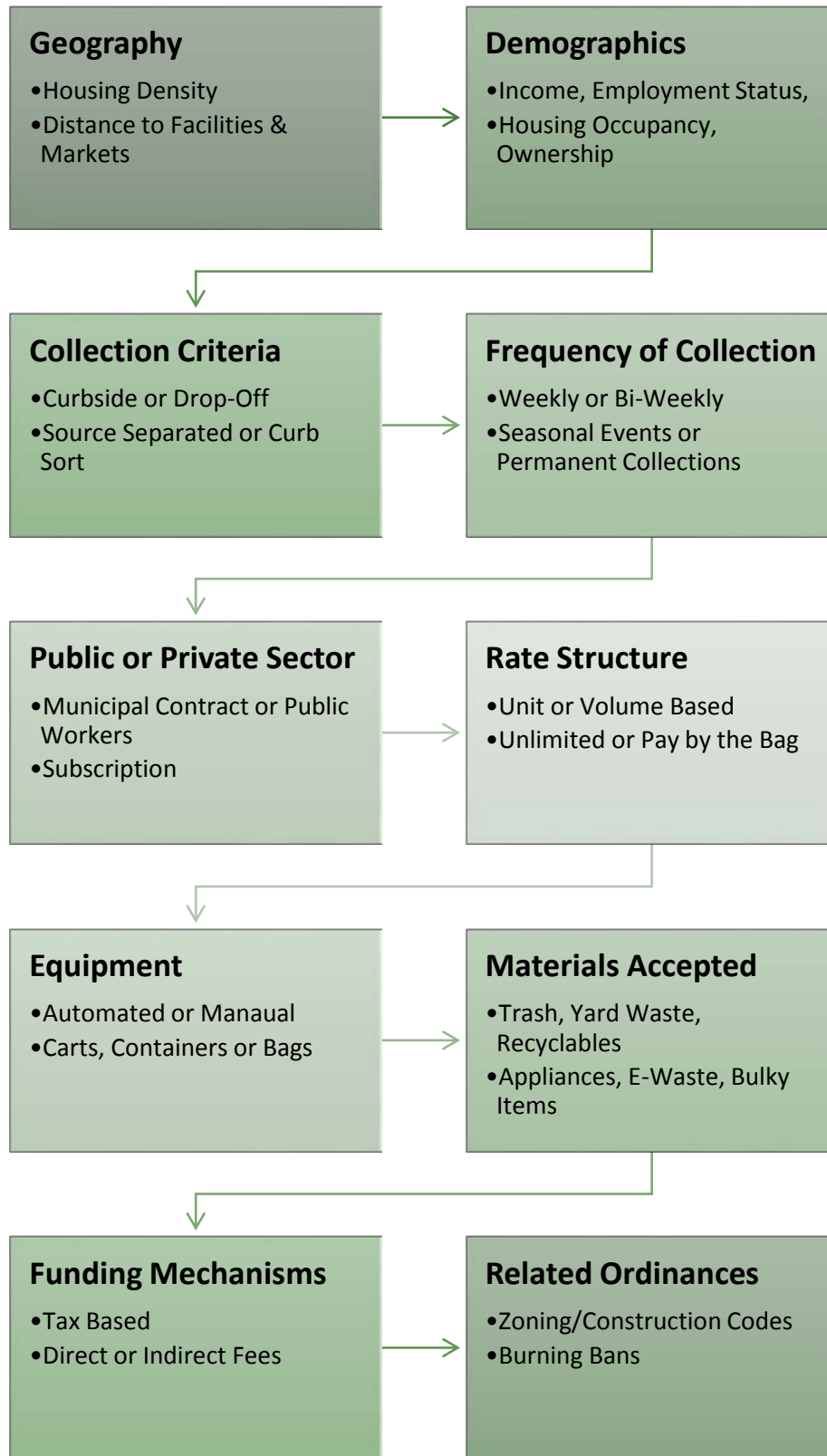
In subscription service areas, residents, commercial and institutional establishments are free to contract directly with the hauler of their choice. They may also self-haul waste or seek other outlets. It has been found that subscription pricing trends higher than the rates do in the municipalities with communitywide inclusive collection programs through a single hauler service agreement or municipally provided services.

In most subscription systems, less services are included but at a higher price. This is normally because in a voluntary participation system the fixed costs for a collection route must be shared among a fewer number of homes than in a collection contract all-inclusive of every home.

PAY-BY-THE-BAG

In contracted areas, both mandatory and voluntary, as well as subscription scenarios, pay by the bag programs may be implemented. In these programs, in lieu of a bill to each household for some base level of service, residents purchase specially printed bags or tags to place at the curb for collection. There are no accountability measures to determine which residents purchase the bags and therefore it is difficult to monitor participation in the program.

FIGURE 4-1 FACTORS IN PROVIDING WASTE COLLECTION SERVICES AND ESTABLISHING COSTS



DRAWBACKS OF VOLUNTARY PROGRAMS

In voluntary programs of any kind, an issue that is often ignored is that because participation is not communitywide, residents and businesses may opt to have no service at all. That decision may be fueled by self-instituted practices of waste minimization, recycling and other environmentally friendly waste management methods. A more realistic answer is that, typically, unwillingness to pay plays a greater role in the avoidance of waste collection than a green lifestyle. In some instances the inability to pay can be a factor.

VOLUNTARY EXCLUSIVE PROGRAMS

There is a trend in south central Pennsylvania where municipalities enter into a contractual agreement with one hauler for the exclusive rights to collect residential waste within the jurisdiction, however, residents are not required to pay or participate.

There are opposing views on the true effectiveness of exclusive yet voluntary programs to entice those who previously opted out of service to participate. Proponents claim that it is a positive step in moving toward a comprehensive inclusive community program. Haulers claim that the same residents that avoided service in the past continue to under the exclusive contract as well. In addition, since the number of participating homes is unknown to the bidder, the costs per home are higher in these areas, than where all households participate.

BAG ONLY PROGRAMS

Nestor Resources has conducted numerous studies for Pennsylvania municipalities that have implemented “bag only” collection programs. Consistently, based on a number of accepted collection operation, recycling and disposal assumptions, it was shown that 30% and at times as high as 50% of the households did not purchase bags/tags. Therefore the manner in which their waste was managed was considered questionable. Evidence of illegal dumping activity in and around the communities supported those suspicions, along with insufficient quantities of recyclables collected to compensate for the differences.

In communities that implemented bag programs as well as charging a universal base collection rate to all homes, or required a minimum purchase of bags per year, participation in waste and recycling collection was much higher than in pure pay by the bag programs.

COMMENTS AND OBSERVATIONS

Waste and recycling collection services are not equitably available to residents in every municipality of Pennsylvania. Circumstances exist that make curbside collection operationally challenging and thus cost prohibitive. In locations where service is unavailable, inconvenient, or cost prohibitive, ensuring that residents and businesses do not resort to illegal dumping or other equally undesirable practices is currently a challenge. In states where it is permitted by the environmental regulations, drop-off collection points for municipal waste, appliances, and bulky items have been shown to be convenient and effective alternatives for both situations. When services are equal, the cost to residents in a municipality with a

single hauler contract tends to be significantly lower than in subscription areas. Likewise, rates where participation is mandatory trend lower than where residents may opt out of having service at all.

Evidence shows that access to universal waste collection offers many conveniences and financial benefits.



Yet, there are municipalities in Pennsylvania that have not acted to improve services and reduce costs for local residents.

During the Illegal Dump Surveys, field personnel contacted local municipalities for information on waste collection service offerings and participation requirements. According to the data compiled by

Keep Pennsylvania Beautiful, areas, where no formalized waste collection programs were implemented by the local government, had greater occurrences of illegal dumping activity than in areas that did.

In spite of the evidence that a communitywide waste collection service program offers many conveniences and financial benefits, there are municipal officials in Pennsylvania who have not yet acted to reduce the local costs. Often the inaction is due to lack of awareness, misperceptions, or political concerns about

pursuing a collection contract alone or jointly with other communities. It is helpful to provide municipal officials with the proper tools and facts to help them make informed decisions and alleviate these fears.

SECTION FIVE

REGULATORY AND ENFORCEMENT SYSTEM

STATUTORY AUTHORITY

A number of government agencies in Pennsylvania have been provided with the statutory authority to promulgate regulations and enforce laws that protect the environment from illegal dumping and pollution. Some of the responsibility for enforcement resides with state officials. In other instances, local county and municipal governments are expected to initiate enforcement actions. Following is a brief outline of those organizations. Figure 5-1 shows the illegal dumping laws associated with these powers.

DEPARTMENTS AND BUREAUS

The Department of Environmental Protection (DEP) has broad powers to protect Pennsylvania's air, land, and water from pollution. It also has the authority to establish regulations from state laws that call for controls and guidelines to ensure public health and safety and a cleaner environment. Within the Department, the Bureau of Waste Management has specific responsibility for oversight of programs and policies related to waste and recycling, as well as permitting, compliance and enforcement. The Office of Water Management has oversight of the state's water resources and has the powers to enforce the Clean Streams Law.

The Department of Conservation and Natural Resources (DCNR) maintains and preserves the 120 state parks and state forest lands. Part of its mission is to foster sustainable communities and working landscapes. Pennsylvania's state parks and forests welcome millions of visitors each year. With close to 3-million acres in the system there are ample opportunities for illegal dumping. The Bureau of State Parks and the Bureau of Forestry are charged with enforcement of laws that prohibit dumping and pollution.

INDEPENDENT COMMISSIONS

The Pennsylvania Fish and Boat Commission is an independent Commonwealth agency with powers to create rules and regulations. Its mission is to protect, conserve, and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities. Similarly the Pennsylvania Game Commission has powers to protect and preserve wildlife habitats and to enact rules and regulations related to those issues. Since illegal dumping occurs on game lands and our waterways, both commissions have enforcement powers for laws that prohibit such activities within their jurisdictions.

LOCAL JURISDICTION

Throughout the Commonwealth of Pennsylvania municipal governments are provided with the authority to establish solid waste ordinances that outline minimum requirements for the storage, handling, and collection of municipal solid waste. Both the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101) and the Pennsylvania Municipal Codes provide broad authority to municipalities for that purpose.

FIGURE 5-1 STATEWIDE RESOURCES RELEGATED TO ENFORCE ILLEGAL DUMPING LAWS AND REGULATIONS

Government Agencies		Regulations	
Department of Environmental Protection	<ul style="list-style-type: none"> •Bureau of Waste Management •Office of Water Management 	Vehicles	<ul style="list-style-type: none"> •PA Code, Title 75, •Chapter 37
Department of Conservation and Natural Resources	<ul style="list-style-type: none"> •Bureau of State Parks •Bureau of Forestry 	Crimes	<ul style="list-style-type: none"> •PA Code, Title 18, •Chapter 65
State Commissions	<ul style="list-style-type: none"> •Game Commission •Fish and Boat Commission 	Environmental Protection	<ul style="list-style-type: none"> •PA Code, Title 25
Law Enforcement	<ul style="list-style-type: none"> •State Police •County Sheriffs •Municipal Police 	Conservation and Natural Resources	<ul style="list-style-type: none"> •PA Code, Title 17, •Chapters 11 & 21
Judicial System	<ul style="list-style-type: none"> •Commonwealth Courts •District Justices and Magistrates 	Fish and Boat	<ul style="list-style-type: none"> •PA Code, Title 30, •Chapter 25
Municipal and County Departments & Agencies	<ul style="list-style-type: none"> •Code Enforcement •Solid Waste & Recycling •Public Works 	Game and Wildlife	<ul style="list-style-type: none"> • PA Code Title 34, •Chapter 25
		Local Ordinances	<ul style="list-style-type: none"> •County and Municipal Code

Typically, municipal ordinances outline the length of time that waste can be accumulated, the types and amounts of waste that can be stored, as well as specifications for storage containers. The manner, methods, and frequencies for collection are normally included. Prohibitions and constraints against open burning may also be outlined in solid waste ordinances, although addressing this issue in a separate document is common.

Counties, on the other hand, commonly regulate how municipal waste is disposed. However, it is not unusual for counties to have solid waste ordinances with more general language than at the municipal level. Counties do have ordinances that prohibit illegal dumping, regulate waste transporters, and otherwise protect public health and safety. In most cases, unless the municipalities have relinquished their authority, counties do not tend to set more stringent requirements than local ordinances.

An example of municipal and county cooperation is where a Joint Code Enforcement Officer is delegated with the authority to enforce county and municipal codes and ordinances.

ENFORCEMENT AND PROSECUTION

The Office of Chief Counsel is responsible for enforcing all laws within the jurisdiction of DEP. To assist DEP's legal counsel, the Bureau of Investigation conducts investigations relating to violations of environmental statutes, laws, and regulations. For illegal dumping cases, the Bureau of Investigation provides assistance in finding the source of the disposed material and/or the person(s) responsible for the offense. The Pennsylvania State Police as well as local police forces have the authority to enforce the State Vehicle Code and the Crimes Code each of which have sections dedicated to littering and illegal dumping.

JUDICIARY SYSTEM

Prosecutions for crimes of illegal dumping are initiated thorough the Pennsylvania District Magisterial System. The magistrate may hear cases regarding violations of municipal code as well. The cases are normally brought to a magisterial hearing for a summary judgment. In other words, the magistrate makes the sole determination of whether or not a crime has been committed. No jury is involved. Depending on the severity, an offense could elevate it to the Court of Common Pleas. The law places the burden of proof on the enforcement agent. Until a magistrate becomes familiar with the far reaching impact of illegal dumping, it may be difficult to associate the offense on a par with other crimes. Consequently, depending upon experience, each magistrate in the system may view the importance or the severity of an illegal dumping offense differently.

PENALTIES

Someone convicted of illegal dumping can be subjected to any or all of a number of penalties provided for in the various laws. The penalties are dependent on the severity of the crime and the subjective nature

FIGURE 5-2 PENALTIES FOR ILLEGAL DUMPING

Incarceration.
<ul style="list-style-type: none">• For repeat offenders, prison sentences may be imposed for not more than 90 days.• The judge can require that a fine and a sentence is an appropriate penalty.
Fines.
<ul style="list-style-type: none">• Amounts vary greatly, depending on the circumstances.• Average fines range between \$300 and are capped at \$1,000.• More serious civil penalties can be as high as \$25,000.• Criminal penalties and fines can reach \$500,000.• Some fines are calculated on each piece of waste disposed illegally.
Property Forfeiture.
<ul style="list-style-type: none">• Vehicle(s) used in committing the illegal dumping can be seized.
Restitution.
<ul style="list-style-type: none">• Defendants could be required to pay for any damages they caused by illegal dumping.
Remediation.
<ul style="list-style-type: none">• Defendants may be required to clean up and repair damages from illegal dumping.

of the justice system. Some of the penalties are monetary. Others actually involve imprisonment or physical efforts to remediate the site. Figure 5-2 illustrates the penalties.

OTHER RELATED LAWS AND REGULATIONS

Certain pieces of legislation may not be directly aimed at illegal dumping. However, many of their requirements have done much to preempt the behavior and circumstances that lead to illegal dumping.

THE SOLID WASTE ACT OF 1980 (ACT 97)

The foundation upon which all other Pennsylvania solid waste legislation and regulation is based is the Solid Waste Act of 1980 (Act 97). The law and subsequent regulations are in keeping with federal policies and guidelines, which developed during the 1970's and 1980's. Act 97 focuses on permitting requirements for disposal facilities and establishes standards for storage, collection, and transportation of solid waste. The law also provides the DEP with statutory authority to pursue investigations, enforce, and prosecute violations of the Solid Waste Act. Monetary fines and penalties resulting from those actions are deposited into the Solid Waste Abatement Fund, which supports enforcement and remediation actions.

THE MUNICIPAL WASTE PLANNING, RECYCLING AND WASTE REDUCTION ACT

The Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101) mandated the implementation of curbside recycling collection programs. Municipalities with populations of 10,000, or those with a population of 5,000 and a population density of 300 people per square mile, were required to comply. Act 101 was amended by Act 140 in 2006. The amendment elevated the responsibilities of mandated communities to provide curbside collection not only for recyclables as originally legislated, but also for municipal waste. Those mandates, as well as a number of other requirements of Act 101, have the effect of negating excuses to practice illegal dumping. Some of the provisions that help to deter illegal dumping require the municipality to:

- Require, through ordinance, that all residents have waste and recycling service.
- Have a program of enforcement that periodically monitors participation, receives complaints and issues warnings for required participants, and provides fines, penalties, or both, in its recycling ordinance.
- Have provisions, participates in a county or multi-municipal program or facilitates a private sector program for the recycling of special materials.
- Sponsor a program, facilitate a program, or support an organization to address illegal dumping and/or littering problems, such as Keep Pennsylvania Beautiful.



Access, convenience, and affordability are key factors in modifying illegal dumping behavior.

Act 101 is a good example of legislation that includes preemptive measures to stop illegal dumping before it occurs.

Other municipalities not originally mandated by Act 101, but that receive more than \$10,000 in recycling performance grants, must comply with these same requirements, to sustain their eligibility for the grants. There are no requirements for how their recyclables are collected (curbside or drop-off).

The law in conjunction with the monetary incentive, has had the effect of expanding curbside waste collection services to a greater portion of Pennsylvania's municipalities. With proximity to the mandated communities, opportunities were created for cost effective expansion of similar services to municipalities not impacted by the law.

Access, convenience, and affordability are key factors in modifying illegal dumping behavior for the majority of citizens. Thus, Act 101 and Act 140 are good examples of legislation that focuses on preventive measures to stop illegal dumping before it occurs.

THE COVERED DEVICE RECYCLING ACT

In 2010, Pennsylvania passed its first Extended Producer Responsibility piece of legislation, the Covered Device Recycling Act (CDRA). Extended Producer Responsibility (EPR) is a policy that extends the responsibility for a product past the point of when a producer ships it to market. In other words, under EPR, a company must be concerned not only with making the product and how it functions, but also with what will become of the product at the end of its useful life. In EPR programs, manufacturers are required to provide for the recovery, recycling and ultimate disposal of their products once discarded by the consumer. EPR has proven to be an effective means of diverting consumer goods from landfills and providing collection outlets for once difficult to recycle items, as well as those commonly found in illegal dump sites.

CDRA requires manufacturers of computers, monitors, and televisions to establish a plan to recover these items, discarded by consumers, along with peripheral equipment such as keyboards and printers. Manufacturers typically establish these plans using third party processors as a conduit for the material recovered from consumers. The recovery can occur through events, curbside collection, or permanent drop-off sites. There is no charge permitted to the consumer at the time of disposal.

The manufacturers' plans must provide service coverage to 85% of the population in Pennsylvania. An additional component of CDRA, not always found in other pieces of EPR legislation, is a ban on disposal. Because the population in Pennsylvania is not equally distributed, yet the ban on disposal is imposed across the state, there are some disparities in the availability of access to free outlets for the CDRA materials and consumer demand to discard these items. Further complicating matters at the present time is the lack of recycling processing capacity for the leaded glass found in old televisions and computer monitors. Unfortunately, based on all of these combined factors, the unintended short term consequences of CDRA implementation has been an increase in illegal dumping of items that were already a known problem.

Those combined conditions are not expected to last. Eventually, the flow of monitors and TV's with leaded glass will subside. However, at the rate which technology changes and new gadgets enter the marketplace, it is expected that other types and greater volumes of electronic waste will require handling. One of the most important changes, which have been suggested, could remedy a significant portion of the illegal

dumping currently attributable to CDRA. Processors and manufacturers have expressed a preference for permanent drop-off sites to make the flow of devices easier to manage logistically and more cost effectively. These types of collection points would expand coverage into the rural areas of Pennsylvania which have been more difficult to service. In the end, it is anticipated that the general intent of CDRA will survive and succeed as another preemptive means to deter illegal dumping.

THE WASTE TIRE RECYCLING ACT

The Waste Tire Recycling Act Small Business and Household Pollution Prevention Program Act, Act 190 of 1996, among other things, provides for the Waste Tire Hauler Authorization Program (WTHP). Similar to the Waste Safety Transportation Program, WTHP requires owners of waste transportation vehicles that transport tires to a processing or disposal facility in the Commonwealth to obtain written authorization from the Department of Environmental Protection (DEP). Act 190 prohibits municipal or residual processing or disposal facilities from accepting waste tires from haulers that do not have a valid authorization. Additionally as amended in 2006, it is unlawful for anyone to provide tires to a waste tire hauler that does not have authorization under WTHP.

The entry barriers to become an authorized tire transporter are low. The registration fee is \$50. Therefore, getting on to the registry is not difficult. Although transporters must maintain records of their transactions (point of collection, number of tires, and point of disposal), only general data is submitted once per year at the time of authorization renewal.

It is estimated that each year there is one waste tire discarded for every person in Pennsylvania. In spite of the Waste Tire Recycling Act, tires, particularly large quantities of tires, remain as one of the materials frequently dumped in active illegal disposal sites. The quantities tend to indicate that sources of these tires are commercial and not residential.

The Waste Tire Recycling Act is essentially intended as a preemptive means of preventing illegal dumping. Its effectiveness could be diminished by current implementation practices. What types of inspections occur at automotive service centers and other retail outlets that offer take-back programs for tires or if record keeping of tire shipments are required by the sources of the tires is unclear. How the transporter reports are used once submitted to the DEP is also unclear. Improvements in these areas could be effective in decreasing the illegal dumping of tires.

THE WASTE TRANSPORTATION SAFETY ACT

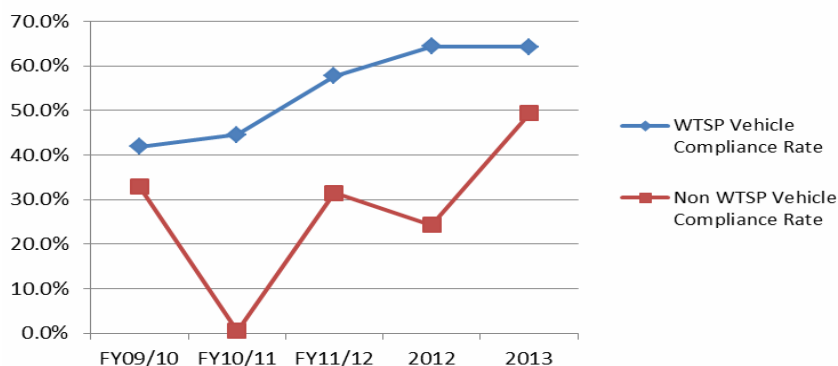
Owners of waste transportation vehicles that regularly transport municipal or residual waste to a processing or disposal facility in the Commonwealth are required to obtain written authorization from PADEP. Municipal or residual waste processing or disposal facilities are prohibited from accepting waste from vehicles that do not have a valid authorization sticker. These requirements were created by the Waste Safety Transportation Program, Act 90, which was enacted in 2002. Act 90 does allow certain processing and/or disposal facilities to accept material from transporters without the Act 90 Authorization. Most of these exemptions are related to facilities where materials are subject to recycling/reuse, beneficial use, or reclamation activities.

There are other Act 90 exemptions, which have more to do with vehicle size than diverting materials from disposal. These three exemptions are; transporters that collect waste in Pennsylvania but utilize an out of state disposal facility; those hauling less than 17,000 lbs.; trailers with a registered gross vehicle weight less than 10,000 lbs.

COMPLIANCE TRENDS

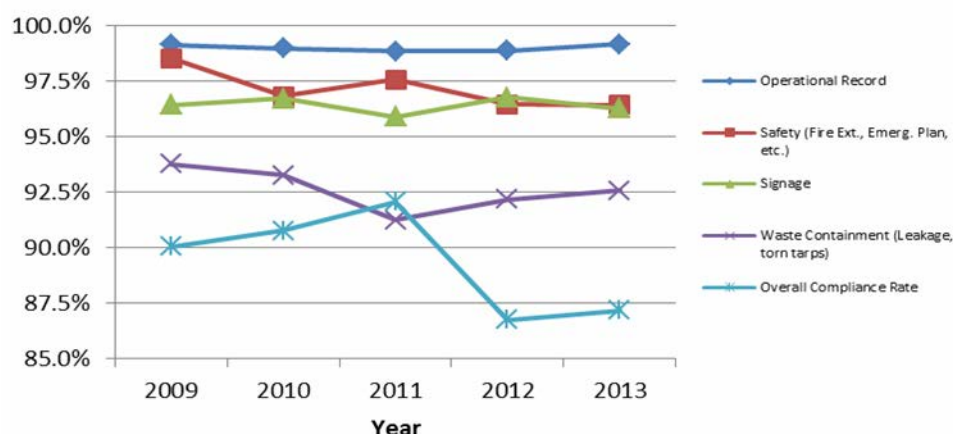
The purpose of Act 90 is certainly more focused on safety issues, than on illegal dumping. However, for transporters, along with the authorization, comes a higher degree of visibility, and thus, greater accountability for all regulations. Both DEP and the Pennsylvania State Police conduct compliance and safety inspections. These include: the Waste Hauler Inspection Program (WHIP), inspections of waste hauling vehicles at municipal waste facilities, and Rural Road Details (RRDs), roving inspections for vehicles hauling waste associated with oil and gas well drilling. DEP inspections verify authorization status and compliance with load containment, safety equipment, signage, and recordkeeping. State Police concentrate on commercial motor vehicle and operator issues. The 2013 Waste Transportation Safety Program Annual Report, claims that based on the State Police inspections, those authorized under the Waste Transporter Safety Program had a higher rate of compliance than other vehicles inspected. Those results are shown in Figure 5 -3.

FIGURE 5-3 PENNSYLVANIA STATE POLICE INSPECTIONS WTSP AND NON-WTSP VEHICLE COMPLIANCE



By far, WHIP represents the majority of the DEP inspections. According to the 2013 Waste Transportation Safety Program Annual Report, of 7,692 inspections, less than 2000 were not WHIP. Since vehicles, which regularly transport municipal or residual waste to a processing or disposal facility in Pennsylvania, must have an authorization, it would seem to indicate that the vast majority represented in the WHIP statistics had Act 90 Authorizations. Figure 5-4 shows the results of the inspections.

FIGURE 5-4 DEP 2013 WASTE VEHICLE INSPECTION COMPLIANCE



As shown by the State Police inspections, WTSP vehicles fare better than non WTSP vehicles. Transporters, exempt from Act 90 authorizations based strictly on vehicle weight, would be included in non WTSP vehicles, and therefore would be included among those attaining lesser compliance than WTSP vehicles, as shown here. Following that logic, the odds are greater that they have a lower compliance record for other regulations as well.

Among those who frequently qualify for these weight exemptions are small construction contractors, remodelers and roofers; those who haul items from attic, garage and basement clean-outs; landlords; as well as landscapers. Coincidentally, construction and demolition waste, shingles, household furnishings and appliances, and yard waste are materials typically found at illegal dumpsites.

LOCAL MONITORING AND CONTROL

In addition to state laws and regulations, there are some county and municipal ordinances and polices worthy of discussion. Rather than discuss the standard language common to the majority of solid waste ordinances in Pennsylvania, only select mechanisms are included based on their effectiveness in curtailing illegal dumping.

TRANSPORTER REGISTRATIONS

At one time, counties and municipalities licensed waste haulers. Their authority to do so was superseded by Act 90. Admittedly, some of the licensing programs were little more than revenue generators. A significant number of them, however, served the purpose of obtaining data on waste and recycling quantities, necessary to comply with DEP reporting requirements. In addition, the local licensing programs were efficient in tracking and monitoring the activities of small local haulers and building contractors.

There is debate among county solicitors, regulatory agencies, and industry legal counsels on whether or not counties and municipalities retain the power to register transporters without imposing any fees, let alone license those who are exempt from Act 90. Nevertheless, many programs that do one or both are currently implemented throughout the state. The enforceability of the programs is weak. Consequently,

of those who transport materials commonly identified in illegal dumps sites, this segment remains less regulated and thus highly vulnerable to the temptations of illegal dumping.

DEMOLITION AND BUILDING PERMITS

Unlike municipal solid waste, construction & demolition waste is not consistently collected and transported by municipalities or through ongoing arrangements with private garbage haulers. Much of it is handled by construction/demolition contractors, or homeowners and businesses that generate the waste. Whether due to lack of awareness, regulations controlling self-haulers 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. Another common method used by homeowners and contractors is illegal dumping.

A proven and effective method, used by counties and municipalities to prevent illegal dumping before it occurs, is to require a partially refundable deposit as part of local building and demolition permits. To obtain the refund, contractors are required to submit a weigh slip from a disposal or recycling facility as proof that the waste was managed properly. Fines and penalties are often added if waste is found to be mismanaged. This can be done without the refundable deposit as well, but it is not as effective. Another method is to prohibit contractors that have been convicted of improper waste management practices to bid on government projects.

PROPERTY OWNERSHIP AND RESPONSIBILITY

The visible accumulation of bulky items and discards on a property may not be illegal dumping. However, it is usually a signal that undesirable waste disposal is practiced. Properties where waste accumulates have a negative impact on property values and can invite vermin and disease.

Properties that are not owner occupied pose a variety of challenges for municipal officials. Remote landlords can be more interested in profit than in property maintenance and repair. In some instances the property owner pays for less than adequate levels of waste collection, creating an undesirable situation for renters. The responsibility to provide for waste and recycling collection services can also be delegated to the tenants, who begin to accumulate waste on site to avoid another bill. Consequently,

UNDER THE RADAR?

- Small construction contractors, remodelers, roofers, landlords, and those who haul items from clean-outs of attics, garages, and basements frequently qualify for exemptions from Waste Transportation Safety Authorization.
- Construction and demolition waste, shingles, household furnishings and appliances, are materials typically found at illegal dumpsites.
- Consequently, many who transport materials common to illegal dumps sites, remain less regulated and highly vulnerable to the temptations of illegal dumping.
- Local licensing programs have been shown to be highly effective in tracking and monitoring the activities of this industry segment.



when they relocate or are evicted, landlords are faced with large quantities of household waste and roomfuls of furniture to remove. All of these scenarios present the temptation and opportunity for illegal dumping, including theft of service in which individuals dispose of their trash in dumpsters paid for by others.

To prevent all of these situations from happening, local ordinances contain a clause stipulating that property owners are directly responsible for providing and paying for adequate waste and recycling collection frequencies and storage capacity. For smaller rental units, when those properties are serviced under a municipal contract, or by municipal employees, the property owner is required by law to pay the service provider or the municipality.

As a means of enforcement in subscription service areas, municipalities may require the property owner to attach a current receipt from their service provider to their property or earned income tax payment. Where waste has accumulated, municipalities have the authority by ordinance to remove the waste and are able to place a lien on the deed for the total cost of remediation, including labor and disposal.

JOINT ENFORCEMENT

Undoubtedly, without enforcement, all of the time and resources to draft and adopt legislation and develop rules and regulations are wasted efforts. A reality faced by many local governments is that enforcement can be costly. With all of the other demands placed on diminishing tax rolls, dedicating a full time employee to monitor littering and illegal dumping is not practical.

A solution to the problem can be borrowed from the practice of regionalization of many other services, like water, sewer, fire, and police. Several counties in Pennsylvania, particularly those with municipal authorities dedicated to solid waste services, implement a joint enforcement program with local municipalities. Statutory powers are given to the enforcement officer either through county ordinance,

the Pennsylvania Municipal Authorities Act, or through intergovernmental agreements or memorandums of understanding between the county and local municipalities.

The joint enforcement concept is not only cost effective, but it has proven to be more efficient. Centralized intelligence and investigation speeds the ability to identify offenders and heightens the likelihood of prosecution with conviction.

Conviction
quality
photos



Can capture
clear license
plate images,
even at night



TOOLS OF THE TRADE

Catching a criminal in the act is one of the most effective pieces of evidence a prosecutor can have. As a deterrent against illegal dumping, the fear of getting caught in the act is powerful. Technological advances in digital photography have replaced the old fashioned “stake-out” of illegal dumping hot spots. The placement of surveillance cameras capable of recording activity, even at night, is a highly effective

preventive tool, when potential offenders are made aware that it is in use within an area. Although surveillance systems can be used for prevention, the standards for evidence and prosecution need to be identified prior to usage, if they are to be used in enforcement.

Keep Pennsylvania Beautiful has developed a surveillance support and training program, which focuses on the use and effectiveness of surveillance cameras. The program provides technical assistance, and training to municipalities, conservation districts, and others throughout Pennsylvania. One of the major features of the program is the ability to obtain the equipment directly from KPB.

A pilot program was launched to assess the equipment and its ability to capture the necessary evidence for prosecution and conviction. Based on the success of that trial, KPB has plans to expand the program based on the availability of funding.

COMMENTS AND OBSERVATIONS

As demonstrated in this section, there are numerous laws that prohibit the act of illegal dumping and provide the legal mechanisms to prosecute offenders. When one considers the number of agencies provided with powers to enforce the existing laws it is evident that a considerable amount of resources are currently necessary to combat the problem. Because the identities of the offenders can be very elusive, investigations have become more time consuming and labor intensive. At all levels of government the number of complaints about illegal dumping reportedly far exceeds the local resources to address each one.

The current approach to illegal dumping has been reactive and punitive, rather than preemptive and preventive. That is to be expected from a regulator's and enforcement agent's perspective. The true effectiveness of that tactic is uncertain. Thus far, it does not appear to have been significant enough of a deterrent to stop or at least reduce the occurrences of illegal dumping throughout the Commonwealth.

To be fair, the actual legal mechanisms may be adequate and might have more of an impact, if the judgments were more consistent and reliable and less random and selective. The fines and penalties allowable under most of the laws are rarely commensurate with the offender's perception of the savings realized from the avoided cost of proper disposal. Consequently, even when convicted, the offender may view a small monetary penalty less as a punishment, and more of an inconvenience.

Keep Pennsylvania Beautiful's data shows that where universal access to service exists, coupled with appropriate ordinances, the incidents of illegal dumping lessen. More attention needs to be paid to preemptive laws and policies that make it easier to do the right thing. By considering more communities for inclusion in Act 101 and Act 140, with allowances for alternative collection methods, a decrease in illegal dumping would be expected.



**“GOOD LAWS MAKE IT
EASIER TO DO RIGHT AND
HARDER TO DO WRONG.”**

WILLIAM EWART GLADSTONE

Current transporter laws have varying degrees of success. Those required to obtain authorization to transport municipal and residual waste appear to have a higher degree of compliance with applicable laws than those who are not authorized. The minimal requirements to haul waste tires coupled with negligible tracking and monitoring presents opportunities to avoid the cost of disposal through illegal dumping.

SECTION SIX

STATE AND COUNTY CHARACTERISTICS

Research has been conducted for years on the complexities of illegal dumping behavior. Scholars and statisticians, over and over again, have come to the same conclusions. The research conducted for this study is no different. It is widely accepted that there is no social, psychological, or economic profile that definitively singles out who will feel free to dump illegally, as opposed to those who will never dump illegally. The problem is more situational and circumstantial than due to any innate behavioral traits. Confronted with similar scenarios, it is difficult to predict who will act appropriately and who will not. However, it is easier to determine the types of circumstances, which result in greater illegal dumping activity. Immediacy of need, convenience, lack of other outlets, and/or no knowledge of outlets that exist are prime examples of situations that may prompt normally law abiding citizens to toss something over the hillside. Financial gain is another temptation. Therefore, to deter illegal dumping, it is more important to be aware of contributing conditions, than it is to understand individuals.

The study focuses heavily on prevailing conditions, policies, and circumstances to reveal key indicators that facilitate illegal dumping. Descriptions of those influencing factors can be found throughout the report. This section looks at other metrics that are indicative of the current effectiveness of waste management policies and infrastructure, as well as avenues for expansion and improvement. These include performance measures for waste generation, disposal, and recycling. The impact of domestic migration and sprawl on the ability to grow the existing infrastructure was also considered.

LOCALLY APPROPRIATE SERVICES AND PUBLIC POLICIES

To be realistic and effective, a variety of solutions are needed to deter illegal dumping. Generic recommendations can be proposed for all of Pennsylvania. However, certain latitudes might be necessary to ensure that programs and policies can be tailored to address the unique characteristics and prevailing conditions of local jurisdictions or regions.

Socio-economic factors such as age, income, education, and current employment status play a role in an individual's buying power, and subsequently the types and number of goods purchased and those discarded. Although, demographics are not absolute predictors of illegal dumping, these same factors do strongly influence an individual's views and expectations on any number of public issues. It can directly impact their ability and/or willingness to pay for services, including waste management. Those factors were used to understand public opinion on policies and services relevant to the study. Section Six, which follows, provides the details of those findings.

DEMOGRAPHIC METRICS AND PROFILING

Pennsylvania has a number of distinct sectors. How those are defined is dependent on a variety of criteria that is not always consistent and may be unique to specific government programs or funding mechanisms.

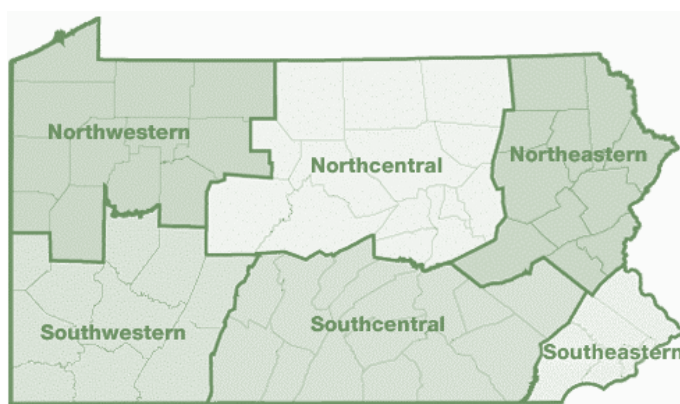
There is no right or wrong way to delineate the boundaries. Of most importance is to understand how the delineation applies to the subject matter that is being considered and how it might affect the outcome of an analysis and the subsequent conclusions.

ADMINISTRATIVELY DEFINED AREAS

In Pennsylvania, the Department of Environmental Protection has the primary responsibility for oversight and enforcement of waste management related issues. The Department has six regional offices, each with their own planning, permitting and compliance enforcement personnel. Figure 6-1 outlines the boundaries of each regional office's jurisdiction. Because of this structure, it is common to categorize and discuss environmental and regulatory issues in Pennsylvania based on the counties assigned to each regional office. That approach is utilized for this project, only when it is important to illustrate specific conditions.

The DEP regions are simply artificial boundaries, which were arbitrarily created and assigned thirty or more years ago for some internal purpose. Each region includes contiguous clusters of counties, but other than proximity there is no other criteria. Consequently, trends based on the regions are not as informative as those based on other multi-faceted conditions. Therefore, other avenues were used to compare and comprehend the available data.

FIGURE 6-1 DEP REGIONS



COUNTY DELINEATIONS

A common assumption prevails that people's opinions, lifestyles, and sense of community are similar or dislike one another based on geographic location. In other words, it might be expected that residents in Indiana, and neighboring Cambria and Armstrong counties should show no differences in the overall expectations of or willingness to pay for community services. Additionally, their income, purchasing habits, and subsequent waste generation and management practices would follow identical patterns. However, decades of research support the opposite idea.

The Center for Rural Pennsylvania has two distinct classifications of counties, urban and rural, similar to the ones used by the U.S. Census Bureau. It also defines school districts by those same labels. Each is solely dependent upon population density, with no other influencing factors. Another measure is used by the White House Office of Management and Budget (OMB) looks at metropolitan statistical areas and focuses on the differences between metro and non-metro, rather than urban and rural. While the terminology is slightly different, it still implies that everything that is not "metro" is "rural" or in their terms "non-metro."

RURAL COUNTIES AND ILLEGAL DUMPING

During this project that broad and general definition and concept of rural America, and in this case rural Pennsylvania, illustrated why previous researchers have been unable to pinpoint specific demographics that identify an illegal dumper.

A number of demographic scenarios were explored. Early analysis pointed to some factors that are still of interest. These include evidence showing that illegal dumpsites were found more frequently where there were renters, mobile homes and otherwise non-owner occupied dwellings. It also showed that illegal dumpsites were identified more often where housing values were lower and where household income was lower. It would have been easy to use any one of those findings as a definitive measure of where illegal dumping will occur. However, the problem with that conclusion is that for each of those demographics, there is a common thread. They all occur at the highest frequencies in what the US Census Bureau and the Center for Rural Pennsylvania identify as rural which coincidentally are remote areas where the risk of detection is low. So, as other studies have found, situations and circumstances play a greater role than personal traits and characteristics.

WHAT IS RURAL?

If illegal dumping occurs in rural areas, it seems reasonable to clearly define what that means. Most uses of the term "rural" reflect a mixture of different ways in which a place (or a group of people) can be described as distinctively rural. The most obvious sense of how rural means areas of sparse populations, either in the small total number of people who live there or in their low density (i.e., ratio of people to available space). A related but distinct idea is that rural places are also geographically isolated, physically removed from other population areas and from major urban centers. Another concept is cultural in which rural is described traditional, slow to change, provincial, and different from that common among urban dwellers. While rural is commonly treated as a single idea, both in research and in everyday conversations, more careful consideration of today's rural communities show that they are multidimensional in nature.

ACCOUNTING FOR DIVERSITY AND CHANGE

A bridge between the urban/rural and metro/non metro methods is one developed by the US Department of Agriculture's Economic Research Service (ERS). This method, known as the Rural Urban Continuum Codes (RUCC), takes the stance that the lines between rural and urban are not clearly drawn on a map. Instead, they make the case that for fifty years, technology, a highly developed transportation infrastructure, employment opportunities, and other conditions have created blurred boundaries where the two traditional urban and rural cultures gradually converge and then once again recede.

The argument made is that people are no longer isolated into remote rural areas. Instead, people who work or commute to a large metropolitan area, have similar beliefs on public policies, and shared expectations for public services. These residents have income, education, and housing value, previously not factored into the demographic delineations based on population alone. Consequently, services from urban centers have been able to expand to a broader market and the resources in people and other commodities from rural and suburban communities help to fuel a regional economy.

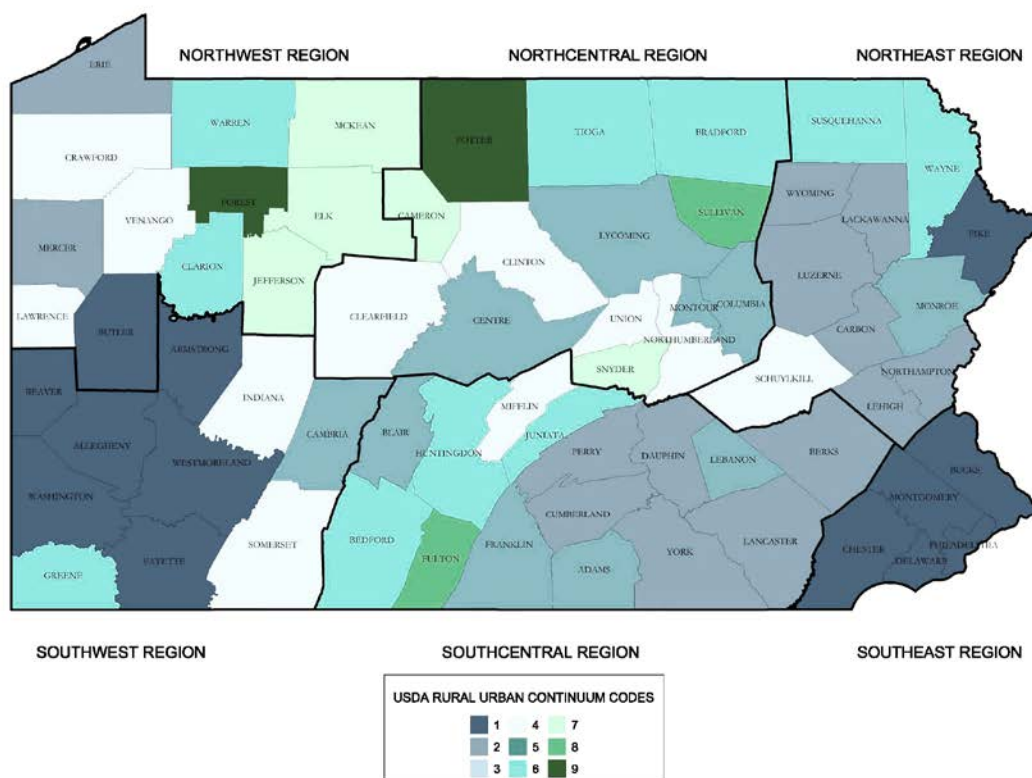
TABLE 6-1 COMPARISON OF USDA AND US CENSUS BUREAU CLASSIFICATIONS OF COUNTIES

US DEPARTMENT OF AGRICULTURE RURAL URBAN CONTINUUM CODES	CENTER FOR RURAL PENNSYLVANIA & US CENSUS BUREAU
METRO COUNTIES	URBAN COUNTIES
CODE 1 WITHIN METRO AREAS OF 1 MILLION POPULATION OR MORE Allegheny, Armstrong, Beaver, Bucks, Butler, Chester, Delaware, Fayette, Montgomery, Philadelphia, Pike, Washington, Westmoreland	Allegheny, Beaver, Berks, Bucks, Chester, Cumberland, Dauphin, Delaware, Erie, Lackawanna, Lancaster, Lehigh, Luzerne, Montgomery, Northampton, Philadelphia, Westmoreland
CODE 2 WITHIN METRO AREAS OF 250,000 TO 1 MILLION POPULATION Berks, Carbon, Cumberland, Dauphin, Erie, Lackawanna, Lancaster, Lehigh, Luzerne, Mercer, Northampton, Perry, Wyoming, York	
CODE 3 WITHIN METRO AREAS OF FEWER THAN 250,000 POPULATION Adams, Blair, Cambria, Centre, Columbia, Franklin, Lebanon, Lycoming, Monroe, Montour	
NON-METRO COUNTIES	RURAL COUNTIES
CODE 4 URBAN POPULATION OF 20,000 OR MORE, ADJACENT TO A METRO AREA Clearfield, Clinton, Crawford, Indiana, Lawrence, Mifflin, Northumberland, Schuylkill, Somerset, Union, Venango	Adams, Armstrong, Blair, Bedford, Bradford, Butler, Cambria, Cameron, Carbon, Centre, Clarion, Clearfield, Clinton, Columbia, Crawford, Elk, Fayette, Forest, Franklin, Fulton, Greene, Huntingdon, Indiana, Jefferson, Juniata, Lawrence, Lebanon, Lycoming, McKean, Mercer, Mifflin, Monroe, Montour, Northumberland, Perry, Potter, Schuylkill, Snyder, Somerset, Sullivan, Susquehanna, Tioga, Union, Venango, Warren, Washington, Wayne, Wyoming, York
CODE 5 URBAN POPULATION OF 20,000 OR MORE, NOT ADJACENT TO A METRO AREA NONE IN PENNSYLVANIA	
CODE 6 URBAN POPULATION OF 2,500 TO 19,999, ADJACENT TO A METRO AREA Bedford, Bradford, Clarion, Greene, Huntingdon, Juniata, Susquehanna, Tioga, Warren, Wayne	
CODE 7 URBAN POPULATION OF 2,500 TO 19,999, NOT ADJACENT TO A METRO AREA Cameron, Elk, Jefferson, McKean, Snyder,	
CODE 8 COMPLETELY RURAL OR LESS THAN 2,500 URBAN POPULATION, ADJACENT TO A METRO AREA Fulton, Sullivan	
CODE 9 COMPLETELY RURAL OR LESS THAN 2,500 URBAN POPULATION, NOT ADJACENT TO A METRO AREA Forest, Potter	

Table 6-1 lists the counties by their traditional urban/rural designations. Based on that interpretation, Pennsylvania could be considered primarily rural in nature, with a few urban clusters. Table 6-1 also shows the counties distributed according to the Rural Urban Continuum Codes. Using the RUCC, it is easier to see which counties have similarities not readily obvious from the more generic definition.

To illustrate how the DEP regions factor into this delineation, Figure 6-2 shows the RUC Codes and how those counties are disbursed throughout the DEP regions. It provides a better view of the diverse demographics within each region rather than allowing for that often used homogenous concept.

FIGURE 6-2 DEP REGION COUNTIES DEFINED BY RURAL URBAN CONTINUUM CODES



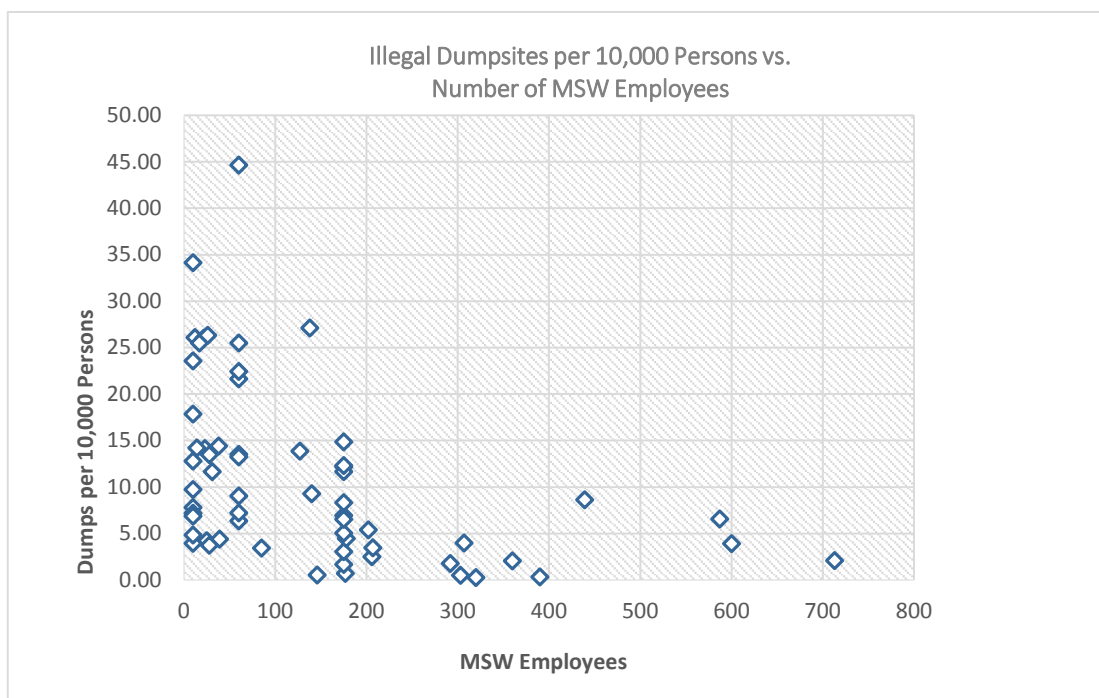
GROWING AVAILABILITY OF SERVICE IN RURAL AREAS

The project favors Rural Urban Continuum Codes viewpoint to explore and recommend solutions to illegal dumping. It follows the natural progression of what is already occurring in the waste management marketplace. The collection infrastructure continues to expand outward as communities mature and the population seeks out new planned residential developments. In addition, the advent of large highly automated recycling processing facilities in metropolitan areas, has created the need for greater volumes of materials from surrounding areas to support the multi-million dollar investments. Therefore, the convenience of affordable curbside recycling is growing in communities where it was once thought to be cost prohibitive. Since access to service is an important factor in preventing illegal dumping, that trend has a great influence on the future programs and policies suggested.

An interesting demographic discovered during the project was that there are fewer illegal dumps in places where the data shows there are more people employed in the waste industry. There are typically more employees involved in the collection of waste and recyclables in any given geographic area than there are at disposal facilities. The correlation could be made that the existence of the waste management employees implies that more service is now available. It also shows that where service is available, the occurrences of illegal dumping decline.

Figure 6-3 illustrates the comparison between the employees and the existence of illegal dumpsites in a county.

FIGURE 6-3 ILLEGAL DUMPSITES VERSUS NUMBER OF MSW EMPLOYEES



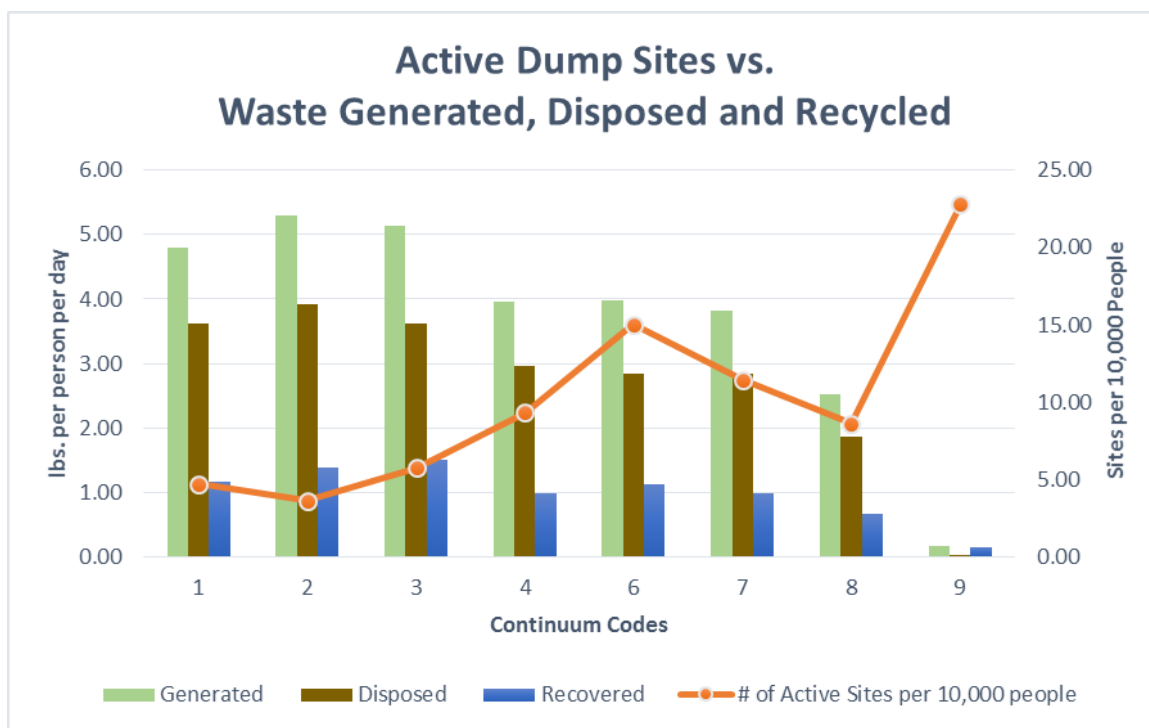
BENCHMARKING

It is beneficial to look at how counties within the RUC Codes measure up to national waste generation, disposal, and recovery. Knowing how the counties within these codes perform is helpful in understanding the effectiveness of the waste management infrastructure, what services need to be developed to capture more materials, and how where those services could be expanded realistically.

Figure 6-4 shows trends in waste generation, disposal, and recycling within the Rural Urban Continuum Codes. Because the Codes have demographic commonalities that the DEP Regions do not, it is easier to see a correlation between generation, disposal and recycling performance and the occurrence of illegal dumping. The data from which Figure 6-4 was derived is shown in greater detail in Table 6-3 through Table

6-8. Each table shows the county by county results delineated by the Rural Urban Continuum Codes. Totals for each county and the RUC Code are included, along with averages for the overall Code.

FIGURE 6-4 REPORTED WASTE MANAGEMENT VS ILLEGAL DUMPING ACTIVITY PER RURAL URBAN CONTINUUM CODE



CALCULATING MUNICIPAL WASTE GENERATION, DISPOSAL AND RECOVERY

To appreciate the information shown in Figure 6-4 and Tables 6-3 through 6-8, it is important to understand how and why the figures were derived, as well as the methods used. The premise of the exercise was to determine how each county performed in relationship to what would be expected based on national waste generation, disposal, and recovery norms. In addition, the comparison is made to pinpoint any gross anomalies in the reported data, and if they exist, to pursue the root cause for them. For example, showing a less than average combined disposal and recovery rate could indicate that material is being mismanaged, if no other logical reasons are evident. To ensure accuracy, the year of the data and the materials included must be similar. The year 2011 was selected because it was the year in which the most recent national data was available at the time the study was done.

The national data is compiled for the United States Environmental Protection Agency (USEPA) by Franklin Associates. The information is part of an ongoing study of municipal waste composition and characteristics that has amassed data and trends since 1960. The full report is published approximately every two years.

USEPA requests that each state report its waste disposal and recycling data in a similar fashion. Pennsylvania adheres to these guidelines for much of its waste and recycling reporting system. The

differences that exist occur in the items included in the definition of municipal waste at the federal and state levels.

Figure 6-4 represents the reported municipal waste disposed based on the county and disposal facility reports for 2011. It also includes the 2011 recycling figures from Re-TRAC, the reporting system in which DEP requires all counties to submit their annual data. The generation rate was calculated from the sum of the disposal and recycling numbers.

EXCLUSIONS

It should be noted that in Figure 6-4, the municipal waste generation, disposal, and recovery figures do not include construction and demolition waste. USEPA does not consider construction and demolition waste in its analysis of municipal solid waste, while Pennsylvania does define it as such, even though it is reported separately. To include it in the Pennsylvania data would have skewed the figures. For this project, construction and demolition waste was calculated separately and the disposal figures are shown as such on Tables 6-3 through 6-8. How those numbers were derived is explained in the next sub-section.

In addition to the differences between municipal and construction and demolition waste, Pennsylvania includes in its overall recycling data, items that are not traditionally collected in residential and commercial recycling programs. The same materials defined in Act 101 as designated source separated recyclables are included in Figure 6-4 and Tables 6-3 through 6-8. These consist of primarily packaging (cans, bottles, jugs, bags, boxes) and printed material like newspapers, magazines, junk mail, office paper, etc. White goods (appliances), tires, lead acid batteries, electronic scrap and others are also incorporated.

Therefore, items more likely to originate in industrial settings and recovered by scrap dealers have been excluded in this analysis. This is not to diminish the value of recovering the other materials. However, since the scope of this study is to look at illegal disposal from a residential and commercial waste perspective, it is unnecessary and inappropriate to include them in this report.

CALCULATING CONSTRUCTION AND DEMOLITION WASTE DISPOSAL

Projecting construction and demolition waste generation, disposal, and recovery rates is difficult. The variables are numerous. Construction and demolition projects are subject to seasonal weather conditions. Swings in the economy can stimulate or deter new development and construction. The amounts of C&D waste from month to month and year to year are less consistent than municipal waste as a whole. For all of these reasons, it becomes easier to understand the difficulties in projecting C&D quantities for the long term.

Even on a load-by-load basis, the volume and weight of C&D materials can fluctuate dramatically based on the mix of materials and physical characteristics. Typically, components from demolition projects include asphalt, concrete, earth, sand, trees, steel, brick, lumber, roofing materials, carpet remnants, dry wall, and other similar materials. Loads bound for disposal resulting from new construction activities might also include packaging materials such as cardboard boxes, Styrofoam, nylon or plastic strapping, pallets, etc.

Since USEPA does not factor C&D waste into its ongoing study, the USEPA points to other sources that have documented construction and demolition waste generation and composition. Those were used to evaluate Pennsylvania's practices. To ensure that the data would correspond to the seasonal conditions, the types of building materials commonly used in structures, and the manner in which materials are managed, two reports conducted in the northeastern United States were used as the benchmarks.

Each approached the topic in a slightly different manner, but both studies came to similar conclusions. Neither study figured asphalt, brick, nor concrete (ABC) wastes generated from road and bridge projects 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. Those same factors would apply with how materials are managed in Pennsylvania.

When variables such as definitions of C&D and materials included were filtered, the average generation rate of the states included was 1.69 pounds per person per day. Although each state differed in the existence of disposal bans or recycling requirements, the disposal results were rather consistent. Approximately seventy percent of the C&D waste (not including the excluded materials) was disposed, and approximately thirty percent was recovered. Because of the difficulty in factoring C&D waste generation, this study focused on disposal. Based on a recovery rate of 30%, the disposal rate of 1.19 pounds per person per day was used as a benchmark for construction and demolition disposal in Pennsylvania.

OBSERVATIONS

Pennsylvania's waste management performance on a regional and categorical code basis, clearly demonstrates the great advancements, which have been made within the Commonwealth. Over the past 40 years, and particularly since the advent of the Municipal Waste Planning, Recycling and Waste Reduction Act in 1988, a multimillion dollar integrated waste management infrastructure was developed. Although its origins were in communities that were required by law to implement collection services, natural market conditions, the desires of consumers, and new sophisticated technology has broadened that service network.

Unfortunately, many of the statistics also reveal where the infrastructure falls short. In many cases services do not exist because there has been no local initiative to address the situation. Sometimes physical and geographical constraints make conventional services impossible or cost prohibitive. However, alternatives do exist. Residents in those underserved areas should have the same opportunities to manage the full spectrum of municipal waste as those in more urban locations. The findings here show where waste and recycling services are strong. That information could be used to design a logical plan to phase in services from the existing operational core outward. Conversely, it could also point out where isolated services should be targeted, based on immediate need and the potential to reduce illegal dumping.

INTERPRETING THE RESULTS IN THE TABLES

Tables 6-3 through 6-8 list the counties included in each RUC Code.

The first set of columns in each table show the following:

- DEP Region for each county
- types of disposal facilities located there
- population
- percentage of all Pa counties within the RUC Code
- total reported tons per year, generated, disposed, and recovered for recycling for each county
- percentage that the RUC Code represents of Pennsylvania's total waste generated, disposed, and recovered for recycling

The second set of columns compares each county to the others in the same RUC Code. It also compares the average of all of the counties to the national rates.

In each table the colored bars represent the following:

- pounds per person per day generated, disposed, and recovered are shown per county
- rank within the RUC Code is shown by the amount of color that fills each cell
- more color indicates a higher rankings compared to other counties in the same Code

Arrows shown at the bottom of the category's column indicate how each RUC Code overall compares to national trends.

- above average (arrow pointing up)
- average (arrow pointing sideways)
- below average (arrow pointing down)

The national pound per person per day averages are shown at the bottom of the columns for comparison.

COMMENTS

Obviously, the tables can only capture what is reported. How much waste is dumped illegally, burned, or transported out of state cannot be predicted with precision. The intent of the exercise was to show where shortfalls may exist for whatever reason. When those shortfalls also correspond to the prevalence of illegal dumping, as evidenced by the efforts of Keep Pennsylvania Beautiful, then greater attention should be paid to the conditions in those areas, which could be influencing those activities and results.

TABLE 6-3 CONTINUUM CODE 1 – 2011 PERFORMANCE BY COUNTY COMPARED TO NATIONAL RATES

County	Rural Urban Continuum Code	DEP Region	2011 Population	Reported MSW Generated tons per year	MSW Disposal Reported tons per year	Reported MSW Recycled tons per year	C&D Disposal Reported tons per year		Reported MSW Generated lbs/pers/day	MSW Disposal Reported lbs/pers/day	Reported MSW Recycled lbs/pers/day	C&D Disposal Reported lbs/pers/day	# of Dumps per 10000 Persons (2010)	# of Dumps per person per square mile
Allegheny	1	SWRO	1,227,442	1,141,881	910,102	231,779	188,809		5.10	4.06	1.03	0.84	2.48	0.18
Armstrong	1	SWRO	68,704	36,884	32,957	3,927	1,966		2.94	2.63	0.31	0.16	18.26	1.18
Beaver	1	SWRO	170,372	201,769	122,123	79,646	2,729		6.49	3.93	2.56	0.09	6.33	0.27
Bucks	1	SERO	626,923	457,549	295,928	161,621	36,345		4.00	2.59	1.41	0.32	1.15	0.07
Butler	1	NWRO	184,698	142,120	107,363	34,757	10,728		4.22	3.19	1.03	0.32	11.22	0.93
Chester	1	SERO	503,662	463,223	331,889	131,334	71,148		5.04	3.61	1.43	0.77	0.60	0.05
Delaware	1	SERO	559,561	552,559	399,282	153,277	1,454		5.41	3.91	1.50	0.01	0.47	0.01
Fayette	1	SWRO	136,139	111,940	85,901	26,039	17,700		4.51	3.46	1.05	0.71	6.79	0.54
Montgomery	1	SERO	805,093	906,998	695,228	211,770	72,375		6.17	4.73	1.44	0.49	0.22	0.01
Philadelphia	1	SERO	1,538,567	1,945,924	1,390,447	555,478	52,235		6.93	4.95	1.98	0.19	1.98	0.03
Pike	1	NERO	57,563	32,304	26,470	5,834	923		3.07	2.52	0.56	0.09	2.19	0.13
Washington	1	SWRO	208,170	158,552	142,711	15,841	28,888		4.17	3.76	0.42	0.76	2.61	0.23
Westmoreland	1	SWRO	364,589	285,500	250,578	34,923	86,766		4.29	3.77	0.52	1.30	6.96	0.74
			6,451,483	6,437,203	4,790,978	1,646,225	572,065		AVG	AVG	AVG	AVG	AVG	AVG
Percent of Counties in Continuum Code	19%	% of PA Total	51%	47%	48%	43%	45%	Code 1 Average	↑ 4.80	↑ 3.62	↓ 1.17	↓ 0.47	4.71	0.34
								USEPA Average	4.40	2.93	1.53	1.19		

TABLE 6-4 CONTINUUM CODE 2 – 2011 PERFORMANCE BY COUNTY COMPARED TO NATIONAL RATES

County	Rural Urban Continuum Code	DEP Region	2011 Population	Reported MSW Generated tons per year	MSW Disposal Reported tons per year	Reported MSW Recycled tons per year	C&D Disposal Reported tons per year		Reported MSW Generated lbs/pers/day	MSW Disposal Reported lbs/pers/day	Reported MSW Recycled lbs/pers/day	C&D Disposal Reported lbs/pers/day	# of Dumps per 10000 Persons (2010)	# of Dumps per person per square mile
Berks	2	SCRO	412,547	414,422	310,430	103,992	14,882		5.50	4.12	1.38	0.20	2.21	0.19
Carbon	2	NERO	65,145	41,591	35,973	5,618	1,723		3.50	3.03	0.47	0.14	7.60	0.29
Cumberland	2	SCRO	236,749	240,783	169,503	71,280	51,218		5.57	3.92	1.65	1.19	1.15	0.07
Dauphin	2	SCRO	269,025	255,885	185,450	70,435	42,573		5.21	3.78	1.43	0.87	4.26	0.22
Erie	2	NWRO	280,988	209,743	151,927	57,816	35,841		4.09	2.96	1.13	0.70	1.71	0.14
Lackawanna	2	NERO	214,695	273,959	227,057	46,902	14,086		6.99	5.79	1.20	0.36	3.73	0.17
Lancaster	2	SCRO	523,862	493,347	330,610	162,737	60,588		5.16	3.46	1.70	0.63	0.26	0.02
Lehigh	2	NERO	353,507	420,599	288,113	132,486	15,865		6.52	4.47	2.05	0.25	0.45	0.02
Luzerne	2	NERO	321,087	403,814	231,557	172,257	12,808		6.89	3.95	2.94	0.22	3.27	0.29
Mercer	2	NWRO	116,169	161,966	146,486	15,480	507		7.64	6.91	0.73	0.02	2.75	0.19
Northampton	2	NERO	298,521	276,692	194,563	82,130	33,837		5.08	3.57	1.51	0.62	1.54	0.06
Perry	2	SCRO	45,837	17,001	15,702	1,299	4,169		2.03	1.88	0.16	0.50	11.84	0.65
Wyoming	2	NERO	28,157	23,321	15,702	7,619	1,284		4.54	3.06	1.48	0.25	4.12	0.16
York	2	SCRO	437,040	421,714	306,959	114,756	51,399		5.29	3.85	1.44	0.64	5.98	0.54
			3,603,329	3,654,837	2,610,031	1,044,806	340,780							
Percent of Counties in Continuum Code	21%	% of PA Total	28%	27%	26%	27%	27%	Code 2 Average	↑ 5.29	↑ 3.91	↓ 1.38	↓ 0.47	3.63	0.21
								USEPA Average	4.40	2.93	1.53	1.19		

TABLE 6-5 CONTINUUM CODE 3– 2011 PERFORMANCE BY COUNTY COMPARED TO NATIONAL RATES

County	Rural Urban Continuum Code	DEP Region	2011 Population	Reported MSW Generated tons per year	MSW Disposal Reported tons per year	Reported MSW Recycled tons per year	C&D Disposal Reported tons per year		Reported MSW Generated lbs/pers/day	MSW Disposal Reported lbs/pers/day	Reported MSW Recycled lbs/pers/day	C&D Disposal Reported lbs/pers/day	# of Dumps per 10000 Persons (2010)	# of Dumps per person per square mile
Adams	3	SCRO	101,549	86,284	51,833	34,451	7,672		5	2.80	1.86	0.41	8.46	0.44
Blair	3	SCRO	127,234	134,692	105,372	29,320	7,333		5.80	4.54	1.26	0.32	7.46	0.38
Cambria	3	SWRO	142,624	102,331	89,837	12,494	9,958		3.93	3.45	0.48	0.38	12.05	0.81
Centre	3	NCRO	154,730	226,860	91,739	135,120	162		8.03	3.25	4.79	0.01	2.69	0.31
Columbia	3	NCRO	66,857	69,290	56,362	12,928	6,004		5.68	4.62	1.06	0.49	5.57	0.27
Franklin	3	SCRO	150,891	119,111	98,217	20,895	18,457		4.33	3.57	0.76	0.67	8.68	0.64
Lebanon	3	SCRO	134,389	140,630	86,669	53,962	17,668		5.73	3.53	2.20	0.72	2.60	0.09
Lycoming	3	NCRO	116,678	113,337	85,315	28,022	11,279		5.32	4.01	1.32	0.53	3.54	0.43
Monroe	3	NERO	169,986	146,935	116,524	30,411	13,993		4.74	3.76	0.98	0.45	2.89	0.19
Montour	3	NCRO	18,304	10,627	9,343	1,284	2,243		3.18	2.80	0.38	0.67	3.48	0.04
			1,183,242	1,150,097	791,211	358,887	94,768							
Percent of Counties in Continuum Code	15%	% of PA Total	9%	8%	8%	8%	8%	Code 3 Average	↑ 5.14	↑ 3.63	↓ 1.51	↓ 0.47	5.74	0.36
								USEPA Average	4.40	2.93	1.53	1.19		

TABLE 6-6 CONTINUUM CODE 4– 2011 PERFORMANCE BY COUNTY COMPARED TO NATIONAL RATES

County	Rural Urban Continuum Code	DEP Region	2011 Population	Reported MSW Generated tons per year	MSW Disposal Reported tons per year	Reported MSW Recycled tons per year	C&D Disposal Reported tons per year		Reported MSW Generated lbs/pers/day	MSW Disposal Reported lbs/pers/day	Reported MSW Recycled lbs/pers/day	C&D Disposal Reported lbs/pers/day	# of Dumps per 10000 Persons (2010)	# of Dumps per person per square mile
Clearfield	4	NCRO	81,504	81,297	58,679	22,618	8,964		5.47	3.94	1.52	0.60	10.84	1.24
Clinton	4	NCRO	39,513	42,425	28,602	13,823	6,891		5.88	3.97	1.92	0.96	8.72	0.74
Crawford	4	NWRO	88,107	19,066	12,361	6,705	707		1.19	0.77	0.42	0.04	4.22	0.43
Indiana	4	SWRO	88,560	49,719	40,918	8,801	8,409		3.08	2.53	0.54	0.52	8.87	0.68
Lawrence	4	NWRO	90,399	30,750	19,853	10,897	371		1.86	1.20	0.66	0.02	3.34	0.12
Mifflin	4	SCRO	46,775	50,737	41,570	9,167	149		5.94	4.87	1.07	0.02	3.65	0.15
Northumberland	4	NCRO	94,487	81,297	72,612	8,685	7,777		4.71	4.21	0.50	0.45	10.19	0.48
Schuylkill	4	NERO	147,592	187,843	119,142	68,701	7,593		6.97	4.42	2.55	0.28	4.68	0.36
Somerset	4	SWRO	77,382	52,938	50,238	2,700	9,202		3.75	3.56	0.19	0.65	16.34	1.77
Union	4	NCRO	44,976	31,737	24,093	7,643	2,504		3.87	2.94	0.93	0.31	3.44	0.12
Venango	4	NWRO	54,709	6,857	2,508	4,349	708		0.69	0.25	0.44	0.07	28.38	1.93
			854,004	634,667	470,576	164,091	53,275					AVG	AVG	AVG
Percent of Counties in Continuum Code	16%	% of PA Total	7%	5%	5%	4%	4%	Code 4 Average	↓ 3.95	↑ 2.97	↓ 0.98	↓ 0.36	9.33	0.73
								USEPA Average	4.40	2.93	1.53	1.19		

TABLE 6-7 CONTINUUM CODE 6– 2011 PERFORMANCE BY COUNTY COMPARED TO NATIONAL RATES

County	Rural Urban Continuum Code	DEP Region	2011 Population	Reported MSW Generated tons per year	MSW Disposal Reported tons per year	Reported MSW Recycled tons per year	C&D Disposal Reported tons per year		Reported MSW Generated lbs/pers/day	MSW Disposal Reported lbs/pers/day	Reported MSW Recycled lbs/pers/day	C&D Disposal Reported lbs/pers/day	# of Dumps per 10000 Persons (2010)	# of Dumps per person per square mile
Bedford	6	SCRO	49,396	28,317	25,041	3,276	5,910		3.14	2.78	0.36	0.66	20.00	2.09
Bradford	6	NCRO	63,001	39,384	30,542	8,843	12,712		3.43	2.66	0.77	1.11	7.93	0.90
Clarion	6	NWRO	39,845	44,714	42,666	2,048	156		6.15	5.87	0.28	0.02	19.55	1.17
Greene	6	SWRO	38,424	22,748	22,070	677	12,087		3.24	3.15	0.10	1.72	7.87	0.47
Huntingdon	6	SCRO	46,058	28,814	22,362	6,452	1,046		3.43	2.66	0.77	0.12	33.72	3.07
Juniata	6	SCRO	24,910	30,734	363	30,371	124		6.76	0.08	6.68	0.03	14.10	0.57
Susquehanna	6	NERO	43,061	17,779	16,127	1,652	12,406		2.26	2.05	0.21	1.58	13.93	1.35
Tioga	6	NCRO	42,393	25,783	18,416	7,366	4,381		3.33	2.38	0.95	0.57	16.41	1.85
Warren	6	NWRO	41,480	33,616	28,961	4,655	2,435		4.44	3.83	0.61	0.32	11.97	1.02
Wayne	6	NERO	52,320	34,312	29,042	5,270	9,186		3.59	3.04	0.55	0.96	4.59	0.34
			440,888	306,200	235,590	70,610	60,444							
Percent of Counties in Continuum Code	15%	% of PA Total	3%	2%	2%	2%	5%	Code 6 Average	↓ 3.98	↓ 2.85	↓ 1.13	↓ 0.71	15.01	1.28
								USEPA Average	4.40	2.93	1.53	1.19		

TABLE 6-8 CONTINUUM CODE 7, 8, & 9– 2011 PERFORMANCE BY COUNTY COMPARED TO NATIONAL RATES

County	Rural Urban Continuum Code	DEP Region	2011 Population	Reported MSW Generated tons per year	MSW Disposal Reported tons per year	Reported MSW Recycled tons per year	C&D Disposal Reported tons per year		Reported MSW Generated lbs/pers/day	MSW Disposal Reported lbs/pers/day	Reported MSW Recycled lbs/pers/day	C&D Disposal Reported lbs/pers/day	# of Dumps per 10000 Persons (2010)	# of Dumps per person per square mile
Cameron	7	NCRO	4,989	3,276	3,058	219	299		3.60	3.36	0.24	0.33	7.22	0.30
Elk	7	NWRO	31,784	26,434	18,796	7,638	6,562		4.56	3.24	1.32	1.13	16.57	1.35
Jefferson	7	NWRO	44,934	36,103	23,453	12,650	3,622		4.40	2.86	1.54	0.44	8.57	0.55
McKean	7	NWRO	43,205	19,736	19,084	652	3,934		2.50	2.42	0.08	0.50	13.68	1.34
Snyder	7	NCRO	39,658	29,538	17,032	12,507	1,325		4.08	2.35	1.73	0.18	11.28	0.38
			164,570	115,088	81,422	33,666	15,742							
Percent of Counties in Continuum Code	7%	% of PA Total	1%	1%	1%	1%	1%	Code 7 Average	↓ 3.83	→ 2.93	0.98	0.52	11.46	0.78
								USEPA Average	4.40	2.93	1.53	1.19		
Fulton	8	SCRO	14,780	8,249	5,449	2,800	1,168		3.06	2.02	1.04	0.43	10.92	0.50
Sullivan	8	NCRO	6,477	2,369	2,013	357	1,246		2.00	1.70	0.30	1.05	6.34	0.29
			21,257	10,618	7,462	3,157	2,414							
Percent of Counties in Continuum Code	3%	% of PA Total	0.2%	0.1%	0.07%	0.08%	0.19%	Code 8 Average	↓ 3.50	↓ 2.65	↓ 0.97	↓ 0.64	8.63	0.40
								USEPA Average	4.40	2.93	1.53	1.19		
Forest	9	NWRO	7,745	3	3	0	5		0.00	0.00	0.00	0.00	19.76	0.86
Potter	9	NCRO	17,430	1,027	44	983	1,419		0.32	0.01	0.31	0.45	25.86	2.92
			25,175	1,030	47	983	1,424							
Percent of Counties in Continuum Code	3%	% of PA Total	0.20%	0.01%	0.0005%	0.03%	0.11%	Code 9 Average	↓ 2.40	↓ 1.95	↓ 0.93	↓ 0.63	22.81	1.89
								USEPA Average	4.40	2.93	1.53	1.19		

SECTION SEVEN

STAKEHOLDER VIEWS AND PERCEPTIONS

At one time, government policies were developed and orchestrated in a one way, top-down approach. Since the 1990's, environmental decision making has taken on a more community based method. Included in that universe of "community" are a variety of interested parties, commonly referred to as "stakeholders." People or organizations that are concerned about, affected by, have a vested interest in, or are involved in some way with the issue at hand are defined as stakeholders.

Governments abdicated a portion of their decision making responsibilities for a number of reasons. A sincere desire to improve public policy is the core of stakeholder based environmental decision making. However, there are other benefits. Participation in the decision making process can heighten stakeholder recognition of the government's responsibility to improve basic community services. It can help to clearly define the stakeholder's role and responsibility to take action to ensure that improvements occur. It is also an educational tool and highly effective in helping individuals to gain an understanding of the needs of all stakeholders, and in turn build consensus on future programs and policies.

This section discusses the process used to identify and engage stakeholders throughout the project. It also provides an aggregate summary of the opinions and comments gathered in the variety of stakeholder encounters.

TARGETED INPUT

It was important that the encounters with stakeholders would be productive and that input from various factions would be equitable. Therefore, it was necessary to establish some common grounds for discussion, with slight variations based on the nature of the participants. For instance, DEP enforcement staff may have been asked if they had the tools and resources to be effective. County and municipal participants may have been asked if DEP enforcement was effective, and why. On the other hand, DEP staff may have been asked if county and municipal enforcement existed and if it was effective. County and municipal representatives would have been asked to provide descriptions of their available resources to implement enforcement activities. The cross checks and balances enabled the discussion leaders to evaluate the fairness and validity of each groups' perceptions, comments, and justifications.

In all stakeholder engagements, there was an underlying mission to uncover what the stakeholders knew, felt, needed, believed, and valued in relation to the problem of illegal dumping and waste management practices. Open ended points of discussion were initiated to determine answers to the questions shown in Table 7-1.

TABLE 7-1 VIEWS AND INFORMATION DESIRED FROM STAKEHOLDER PARTICIPATION

What were the stakeholders' main concerns about illegal dumping, waste collection, recycling, and related issues?

Of the ideas discussed, what were the perceived threats and risks for the stakeholders?

Of the ideas discussed, what were the perceived benefits and gains for the stakeholders?

Were there common grounds between the stakeholder groups or were there broad disparities?

What were the differences in the stakeholders' concerns about issues? Could they be resolved?

What part did political will play in the stakeholders' own viewpoints or in those they perceived others would have?

What part did willingness to pay have in the stakeholder's own viewpoints or in those they perceived others would have?

Were the viewpoints and comments based on generally accepted good information? Was it obvious that misinformation or misperceptions existed within the stakeholder group, or factions of the group?

Did they perceive their own views to be the norm, above or below the norm in relationship to others in their group, and/or compared to other groups?

What vested interest (financial or emotional) would they have in any recommendations that could result from the project? Was it potentially positive or negative?

What roles or involvement did the stakeholders perceive or desire for themselves in an initiative to reduce illegal dumping and improve waste management practices?

What information did they want from the discussion leaders or policy makers to help them make informed decisions or comments?

PROJECT STAKEHOLDERS

As shown throughout the report, waste management issues involve numerous stakeholder categories. These include those who generate waste, those who determine the need and arrange for waste management services, and those who provide the services. In addition, it involves those responsible for creating waste management policies, and those who are charged with implementing and enforcing those policies and programs. Finally, it may include organizations and groups that represent the interests of one or more of the collective stakeholder categories.

FIGURE 7-1 CATEGORIES OF STAKEHOLDER PARTICIPANTS

Figure 7-1 shows the types of stakeholders, who participated in this project.

Because of the actual people who participated, the stakeholder categories were not always strictly isolated from one another. In some cases, individuals, based on their employment or affiliations, were technically invited to a particular stakeholder session, but expressed opinions that overlapped between categories. When that occurred, those interest and comments were noted for clarification.



STAKEHOLDER ENGAGEMENT

To reach the diverse group of stakeholders, it was necessary to enlist a number of different mechanisms. The structure used for each group was determined on the location, timing, availability of participants, and the nature of the representative organization.

Focus groups were conducted that included DEP field personnel responsible for enforcement of specific policy areas. DEP program managers were also involved in focus groups. These groups were conducted throughout the state on multiple days.

Mixed groups of enforcement agencies, including the judiciary system, participated in a panel discussion and offered presentations on their responsibilities during a program sponsored by Keep Pennsylvania Beautiful and the Professional Recyclers of Pennsylvania. They offered their perceptions on the effectiveness of current policies and programs. In addition they commented on issues related to prosecution and conviction of illegal dumpers. Opinions were also solicited from e-waste processors,

manufacturers, and trade organizations during a summit organized by the Pennsylvania Recycling Markets Center.

Focus groups were held with county and municipal government officials, managers and recycling coordinators, along with representatives from non-profit organizations. These focus groups were conducted in multiple locations throughout the state.

For this project, waste service providers were included in a focus group through the cooperation of the Pennsylvania Waste Industries Association. The discussion was service, financial, and regulatory oriented.

COMMENTARY FROM THE STAKEHOLDERS' GROUP

Interactions with the stakeholders were documented. The comments were later organized into general points of discussion during each session. For the most part, the comments represent an aggregate of all stakeholders input, regardless of the category. When the topic or comment is very specific to how a current condition or change could affect a certain stakeholder group, it will be noted as such. Because residents participated in a more direct opinion poll, their responses are discussed later in this section apart from the results of the other stakeholders. Following is a breakdown by category of the views and opinions of the participating stakeholders.

UNIVERSAL ACCESS TO AND COST OF SERVICES

- **Household Waste & Recycling Collection**
 - Curbside collection should be expanded to the greatest extent possible
 - Single hauler systems tend to result in lowest prices for the services requested
 - Universal access to collection should allow for convenience centers in lieu of curbside
- **Convenience Centers**
 - Better than seasonal collection events
 - Low volume sites to collect/consolidate recyclables, trash, bulky items, appliances
 - General Permit or Permit by Rule
 - Mixed opinions on ownership restrictions (private/public sector)
 - Could be contracted/franchised to private sector through competitive bidding
- **Flow Control**
 - Artificially inflates costs in border areas (counties/states)
 - Complicates Logistics
- **Fees for Service**
 - Seasonal Cleanup Days
 - Enables municipal officials to ignore the need for weekly collection services
 - Still better than nothing
 - Having a minimum cost per vehicle to dispose at a landfill prompts illegal dumping

- Communities should use a system to assist households with incomes below the poverty level with the cost of waste collection

EDUCATION

Universal Agreement:

- **General Waste Management Practices**
 - Need a professionally designed multi-media statewide campaign
 - Should address availability and participation in services
 - Should address open burning
- **Illegal Dumping**
 - Should use peer pressure and social norm approach
 - Need an outreach program developed for judiciary and law enforcement
 - Seminars for municipal officials re: joint enforcement, ordinances, etc.

RESOURCES AND RESPONSIBILITY FOR ENFORCEMENT

- **Universal Agreement:**
 - More calls received at DEP than staff can manage
 - DEP prefers to transfer residential calls to local government
 - Calls transferred to local government are communicated poorly
 - A triage approach would help define responsibilities
 - DEP handles all large industrial and commercial issues
 - DEP needs to be tougher/more consistent on large illegal dumpers
 - Joint enforcement code officers viewed as effective
 - Very poor enforcement and low interest at the municipal level
 - Disposal facilities should not be enforcement agents
- **Random Agreement:**
 - DEP should handle all illegal dumping issues
 - Divert inspections of authorized haulers to illegal dumping

JUDICIAL SYSTEMS AND PENALTIES

- **Universal Agreement**
 - Issuing citations is generally effective method of creating awareness
 - Making offender remove the illegally disposed material is the “penalty” of choice.
 - Cleanups are favored over monetary penalties because:
 - the incomes of the alleged dumpers are at or below the poverty line
 - civil penalties that were imposed by magistrates were viewed as inconsistent
 - civil penalties were considered too low to be an effective deterrent
 - Cases dismissed too often for lack of indisputable evidence
 - Surveillance cameras provide photographic evidence which lead to convictions
 - Magistrates need to be made aware of economic impact of illegal dumping
 - Monetary penalties should be devoted to cleanup efforts

- **Random Agreement:**
 - Dedicated magistrate assigned to environmental crimes would be more effective
 - Dedicated environmental crimes day would be more effective

LAWS/REGULATIONS ADEQUACY, EFFECTIVENESS, IMPROVEMENTS

Where these topics were discussed there was universal agreement on the comments made. However, each comment may not have been made, as listed here, by every focus group.

- **Illegal Dumping Laws**
 - Fines need to exceed perceived savings of illegal dumping
 - Ensure that use of surveillance cameras is allowable
 - Mechanism to dedicate fines/penalties to support cleanup efforts
- **Waste Transportation Safety Program**
 - Rejecting non-WTSP transporters at disposal facility prompts illegal dumping
 - Revocation of Act 90 authorization does not put hauler out of business
 - Promulgation of regulations for consistent interpretation and enforcement
 - Construction/demolition contractors, roofers, etc. need to be regulated better
- **Waste Tire Transporters**
 - Cheap registration fees create low entrance barrier for irresponsible haulers
 - Ineffective tracking and monitoring system
 - Poor enforcement of tire generators
 - Manifested loads could reduce illegal dumping (Bill of lading)
- **Covered Device Recycling Act**
 - Counties and municipalities experiencing unintended consequences
 - Hold salvage yards accountable for accepting parts of “covered devices”
 - Promulgation of regulations for consistent interpretation and enforcement
 - Landfill ban 100% exceeds requirement for manufacturers’ coverage 85%
 - Curbside collection programs mask their charges and potentially skirt the law
 - Permanent outlets are preferred to events to reduce costs and simplify logistics
- **Municipal Ordinances**
 - Support building permits that require proof of C&D disposal or recycling
 - Support “clean & lien” ordinances to pay for cleanup of accumulated waste
 - Support ordinances requiring payment for collection services
 - Use of community administered collection services should be required
 - Burning of waste should be banned
- **County Ordinances**
 - Need authority at county level to track & monitor all transporters
 - Support demolition permits that require proof of C&D disposal or recycling

Open burning was not among the intended topics for this project. However, it came up repeatedly in the focus group sessions.

- Enforcement agents indicated that more complaints and enforcement issues are due to open burning than illegal dumping
- Enforcement agents had concerns that burning bans would increase dumping
- Ambiguities in laws make it difficult to enforce burning bans

DIRECT OUTREACH TO PENNSYLVANIA RESIDENTS

One method of collecting data was to conduct surveys directly with the stakeholders who would be the end users of any service related recommendations, in other words, the residents of Pennsylvania. Survey questions were developed by Keep Pennsylvania Beautiful and Nestor Resources, Inc., in conjunction with the Center for Survey Research located at the Penn State University campus in Harrisburg, PA. The questions were then incorporated into the Fall 2013 Penn State Poll, which is an omnibus survey covering a variety of socio-economic topics conducted by the Center each year. The purpose of the Penn State Poll is to provide timely and accurate data to agencies, organizations, and researchers with statewide interests and responsibilities. Sponsors of past Penn State Polls have used the results of the survey to track public policy issues, measure general attitudes, awareness, and knowledge of their organizations, and measure satisfaction with organizational services and performance.

METHODOLOGY AND REPRESENTATIVENESS OF SAMPLE

The final dataset includes cases from 606 adult Pennsylvania residents. The average length of a completed interview was approximately 9 minutes. A total of 7,447 different phone numbers (4,950 landline numbers and 2,497 cell phone numbers) were dialed during the data collection. The margin of error for this survey is plus or minus 4.0 percentage points with the conventional 95% degree of desired confidence. This means that in a sample of 600 households, there is a 95% chance or better that if all telephone households in Pennsylvania are surveyed, the results will not differ from the survey findings by more than 4.0 percentage points.

The survey's outcome rate was calculated through a series of steps. First, separate rates were calculated using the American Association of Public Opinion Research's Cooperation Rate 3 (COOP3) formula. AAPOR sets an industry standard for consistent reporting across the survey research field. The survey cooperation rate for the landline portion of the sample was 72.5%, and the cooperation rate for the cell portion of the sample was 62.1%.

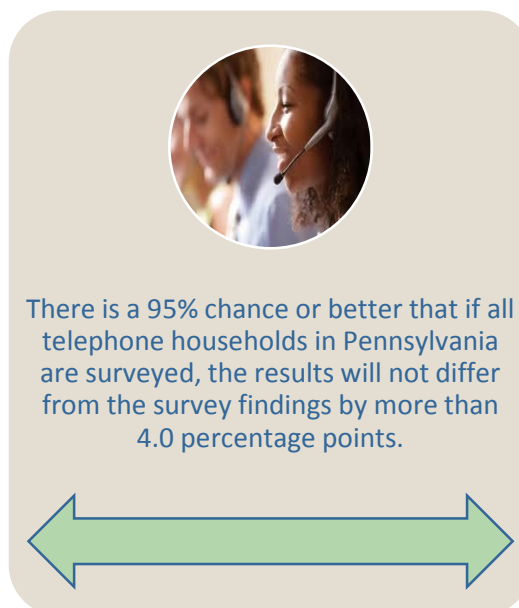
Since households with both landlines and cell phones could be included in both sample frames, the calculation took the overlap into account. Based on telephone estimates from the National Center for Health Statistics, it was estimated that the overall cooperation rate for the Fall 2013 Penn State Poll was 66.6%.

In order to ensure that the results of the Poll were not biased toward any demographic group, the results of the survey were checked against the known occurrences of the demographic characteristics of the population. The data source used to make this comparison was the July 1, 2012 State Population Estimates, U.S. Census Bureau, Population Division. For the Fall 2013 Penn State Poll, cases were weighted as a function of each respondent's age and sex.

The poll was successful in obtaining varying degrees of responses for each question. Some of the questions respondents answered readily. For others there was a degree of doubt in their minds. In addition, participants may have been split on their viewpoints on certain issues. Therefore, for the findings of a particular survey question to be considered conclusive or significant, the Chi squared test was then applied to determine if the results were simply random chance, or if the sample results are strong enough to statistically project to a broader base of the population. The test is applied to point out differences in certain demographic sectors of the respondents.

KEY FINDINGS FROM THE PHONE SURVEY

Following are the highlights of the survey. Along with the questions and responses, included here are descriptions of those responses, where statistical significance could be demonstrated satisfactorily according to the established protocols. Understanding some of the nuances of the responses is important as recommendations for future policies are made.



CURBSIDE COLLECTION

Overall, 86.7% of Pennsylvanians surveyed have curbside trash collection services at their residences.

- Respondents living in the North Central region were much less likely to have curbside trash collection service than those living in other regions (64.0% compared to 81.6% or more in each of the other regions).
- Individuals living in the Southeast and Southwest regions were most likely to have curbside trash collection (92.2% and 93.7% respectively).

BULKY ITEMS, APPLIANCES, TIRES, FURNISHINGS, ETC.

41.5% of respondents cannot throw away any special items with their household waste service.

- 73.5% of respondents in the North Central region report that they cannot throw out special items compared to :
 - Northwest = 56.5%
 - Northeast = 40.2%
 - Southwest= 41%
 - South-central = 48%
 - Southeast = 30.9%

- Older respondents more likely to report that they could not throw out special items with trash

Of respondents who can throw out special items, items accepted for collection vary.

- 49.6% -household furnishings (tables, sofas, mattresses or box springs, etc.)
- 28.7% - large appliances
- 25.4% - roofing/remodeling waste
- 9.7% - tires

50.8% of respondents who can throw out special items can do so at least monthly and many weekly.

- North Central region= 9.4%
- All other regions least = 44.9%

28.0% of respondents who can throw out special items indicated that they call ahead to schedule pickup.

- This number was fairly consistent across all regions

62.1% of respondents in the North Central region can throw away special items only once/ twice a year.

CONVENIENCE CENTERS

87.8% of respondents indicated that they would utilize a convenient location if it were available to take household trash, recyclables, and other materials.

Variables

- **Geography**
 - Northern Tier = 92.1% to 96.5%
 - Southern Area = 83.4% to 84.7%
- **Age**
 - <65 = 92.0%
 - >65 = 70.6%
- **Household Income**
 - No differences

10.8% of all respondents willing to use a convenience center willing to drive more than 15 miles.

Variables

- **Household Income**
 - Of respondents willing to use a convenience center
 - 36.8% who make more than \$75,000 are willing to drive more than 11 miles
 - 24.8% who make less than \$75,000 are willing to drive more than 11 miles

FEES FOR SERVICE

47.4% of respondents indicate that disposal costs of bulky items should be a fee paid by the consumer when the item is returned or collected for disposal.

Variables

- **Geography**
 - Southeast = 35.7%
 - Northwest=26.8%
- **Multi variable**
 - Respondents (under age 24), households with incomes < \$20,000, and those in the Southeast region prefer inclusion of a fee at the time of the original purchase

RECYCLING

Regarding what would increase their recycling habits:

- **Most influential**
 - Having items collected at the curb or end of the driveway
- **Least influential**
 - a mandate to recycle
 - receiving more information about the benefits of recycling

ILLEGAL DUMPING

91.8% believe that fines collected from illegal dumping prosecutions should be used for site cleanup.

Who should be responsible to use those fines for cleaning up illegal dump sites? Respondents indicated:

- Municipalities (35.2%)
- Counties (26.1%)
- State (30.6%)

Variables

- Younger respondents are more likely to prefer that the states be held responsible
- Older respondents were more likely to prefer that municipalities be held responsible
- Higher levels of education were less likely to prefer that the state be held responsible

Respondents viewed the following as appropriate punishment for illegal dumping.

- 69.6% = clean up illegally disposed of waste
- 30.4% = jail time is an appropriate punishment
 - Northwest= 14.3%
 - Other regions =25.2-45.5%
- 50% = community service and fines of varying amounts
 - Women = 62.2%
 - Men = 48.2%

REGULATING SMALL HAULERS AND CONTRACTORS

86.0% believe that building contractors, remodelers, roofers, and junk haulers should be licensed and regulated to ensure proper management of waste material production and collection.

- Women (91.9%) supported requiring regulation and licensure slightly more than men (79.7%).
- Respondents in the Northeast region were most likely to support regulation and licensure (93.3%).

CORRELATIONS AND PARALLELS

For the most part, stakeholders, regardless of category, noted common issues and presented shared solutions to the current policies and programs aimed at illegal dumping. The opinions of residents that participated in the phone survey were strikingly similar in nature to the solutions offered by the other stakeholders. That would indicate that needed changes would be readily received by the vast majority of Pennsylvanians.

Some collective views of the participants implied that a number of existing laws, while well meaning, fall short of their intended goals. In addition, the letter of the law may not always coincide with the resources and will to enforce it. Regulations may omit simple and practical mechanisms to make them more effective. A strong educational campaign could diminish the lack of awareness that exists throughout Pennsylvania on a variety of waste management issues.

Residents use services when they are made available to them in a convenient and affordable manner. Where services are not currently available residents have expressed a need and desire to obtain them. The willingness to pay is greater than was speculated during the development of the survey criteria. Residents support regulating those in high risk profiles (contractors, roofers, etc.) and punishing illegal dumpers to a degree proportionate with the offense.

Final recommendations in this report have incorporated the stakeholder and resident opinions to the greatest extent possible.

SECTION EIGHT

CONCLUSIONS AND RECOMMENDATIONS

In an integrated waste management system, no program is fully successful when implemented without the overlapping components of other programs and services. The administrative, regulatory, enforcement and operational elements, must all complement one another. In reviewing the available data on illegal dumping and related facts and figures, a series of questions were posed, of each scenario, circumstance, fact, or activity. These included:

- Is this the result of an existing waste management program, practice, or policy?
- Is the waste management policy well-enforced?
- Is the public well-informed of the existing waste management program, practice, or policy?
- What component of the waste management program, practice, or policy is missing?
- What component of the waste management program, practice, or policy should be removed?

Throughout the report, the cause and effect of the current policies and programs have been discussed using this approach. Lengthy descriptions and discussions of solutions and justifications were included. Therefore, this section is devoted to the presentation of the final recommendations in a straightforward and direct format. Each recommendation offered in this section resulted from the research and stakeholder involvement.

CRITERIA FOR RECOMMENDED POLICIES AND PROGRAMS

An objective of this project was to determine relationships and trends that were indicative of illegal dumping activity. The ultimate goal of the project, however, was to develop guidelines, programs, and policies that would be effective in modifying behavior and thus minimizing the occurrence of future illegal dumping.

FIGURE 8-1- SCORECARD FOR THE RECOMMENDATIONS



Nestor Resources and Keep Pennsylvania Beautiful also agreed that for the solutions to have any substantial effect, they must meet certain standards. The criteria established for vetting a proposed program or policy included, but were not limited to those shown in Figure 8-1

ROOT CAUSES

The independent research conducted for this study, along with the results of Keep Pennsylvania Beautiful's Illegal Dump Surveys, and the input of the many stakeholders who participated have provided convincing evidence of core conditions that foster illegal dumping in Pennsylvania. Following are brief descriptions of the common contributing factors, which foster illegal dumping, along with steps that could be taken to modify behavior or enforce against and prosecute the violators.

A table of recommendations that provides more elaborate details and actions finalizes the report.

LACK OF AWARENESS

Although illegal dumping is a crime, it is often committed by people who otherwise would not consider themselves criminal in nature. Some people get mixed signals about the existence or remediation of dump sites, believing them to be publically maintained disposal area. A strange sense of entitlement exists for those who believe that the public has access and open use of every dumpster.

Illegal dumping is perpetuated because the general public does not understand the far reaching negative impact that it has. Even those who oppose the activity are not always motivated enough to notify authorities, testify against the offender, or speak out directly to those committing the act. While they detest the activity, they do not always relate it to a direct harm to themselves, their families, or the community.

Sometimes illegal dumping occurs because people simply do not know of existing outlets for the materials. In those instances, immediate need and convenience trumps logic. The same people would take the items to a legal outlet if they were made aware of it.

Education is the frontrunner in every behavior modification campaign. To prevent illegal dumping, Pennsylvania has to do a better job at public education. The issue of illegal dumping should be part of a comprehensive integrated waste management message that includes the benefits of universal access to and utilization of collection services. To be effective, the campaign needs to be consistent, widely distributed, and delivered in multiple media formats. Of greatest importance, the campaign must create social disapproval for illegal dumping and heighten the risk of discovery and sense of shame for the potential violators.

ABILITY TO PAY

There are instances where people simply do not have the resources to pay for proper waste management. Households living below the poverty level can be placed into situations in which they must make difficult choices between their family's immediate needs and obeying the law. Local officials may fear that instituting communitywide waste and recycling collection would be a hardship to these households. There are mechanisms available to protect those with the least ability to pay. That concern may stop them from making decisions that would benefit the majority of residents.

To rectify the problem, and to ensure that low income families can practice the same safe waste management habits as the entire community, some municipalities have instituted safeguards for this

purpose. The programs are typically implemented discreetly to protect the dignity of the recipients and to avoid abuse of the system. Criteria is established in advance, which determines the eligibility for a household. In some programs, local officials negotiate a significant discount fee with their service provider. In others, the municipality compensates the service provider for the difference in rates. Finally, others offer a voucher program that is supported by recycling performance grants or recycling revenues.

FINANCIAL GAIN

The willingness to pay is much different than the ability to pay. A portion of illegal dumpers do so to avoid the cost of disposal for which they have already charged their customers. There are circumstances, where disreputable business people use illegal disposal to cut their operating costs and use it as a competitive edge against honest and responsible businesses. The data gathered by Keep Pennsylvania Beautiful points to some particular categories of operations where the temptation to dump illegally for financial gain seems to be high.

TELLTALE MATERIALS AND SOURCES

Tires, vehicle parts, and oil and solvent drums respectively show up in the same dumping sites. This suggests that automotive repair shops, tire retailers, and/or tire transporters are the sources of these items. Whether they are the direct violators, or whether they are the victims of unscrupulous waste transporters, the incidence of these materials at numerous sites suggests that waste activities surrounding these businesses should be more regulated.

Another troubling category of material that is universally found in illegal dump sites is construction and demolition debris. Shingles, windows, drywall, plaster board, paint cans, carpeting and flooring, bricks, etc. are some examples. The material may be disposed either in loose bulk quantities or contained in large contractor sized bags. Regardless, the quantities of materials that stem from construction and demolition activities are significant enough to warrant targeted enforcement of small contractors, remodelers, and roofers that currently fall outside of the jurisdiction of the Waste Transportation Safety Act (Act 90 of 2002).

Licensing, registration or some other form of tracking and monitoring of these service providers is suggested. Prohibiting individuals or business that have been convicted of illegal dumping from bidding on local government contracts sends a strong signal to potential violators. Local permits for building and for demolition projects which offer a monetary incentive for contractors to comply with requirements to report the amounts of material generated and the locations where it was disposed and recycled are other effective tools in assuring that these items are not mishandled.



Construction and
Demolition



Tires and
Automotive Parts



Furniture and
Appliances

RISK OF DISCOVERY

KPB has documented evidence that the existence of an illegal dump site promotes additional dumping. On the surface it would appear that illegal dumpers have some misdirected logic that justifies dumping where somebody else has already polluted the environment. Additional research and observation would suggest that the behavior stems from a somewhat more complex human trait, the fear and the odds of getting caught. The existence of the dump site suggests that it is a safe haven for dumping without fear of being discovered in the act. Where the risk, or at least the perception of risk of prosecution, is heightened violators are more hesitant to commit the crime.

Surveillance has proven to be an extremely effective step in diminishing the incidents of illegal dumping in an area. Today's technology allows municipalities to remotely observe illegal dumpers in the act 24 hours per day. State of the art infrared cameras capable of withstanding the elements and capturing images at night can be discreetly



Caught in the Act



Visible Reminder that Dumping is a Crime



Criminal Investigation



Prosecution & Conviction

placed at known dumping sites. Images can be transferred live to computers or mobile devices, including cell phones. When positioned to capture vehicle license plates as well as the individual committing the act, the resulting images provide strong and effective tools in prosecutions.

Use of this photographic evidence typically results in convictions. The shock of seeing oneself preserved in a photographic record while committing a crime is usually enough to reform first time offenders. Publicizing the use of the cameras and the successful convictions increases the perceived degree of risk for even seasoned violators.

If surveillance cameras were deployed in every municipality with active dumpsites, followed by publicized arrests and prosecutions, the incidents of illegal dumping should decrease. Another effective method used in conjunction with the cameras is to mark the location where the illegal dumping occurred with crime scene tape. It provides a strong signal to local observers that illegal dumping could result in a criminal offense. To facilitate this process, many counties have utilized the services of a Joint Code Enforcement Officer.

INCONSISTENT ENFORCEMENT AND JUDICIAL PROCESS

A significant amount of illegal dumping is deliberate, premeditated, and intentionally committed as a fraudulent act to gain profit. All of the registration, permitting, and surveillance efforts combined are

worthless if violators are set free without penalty. A key to enforcement is cooperation from all levels of law enforcement and judicial officials. Creating an awareness of the costs, environmental impact, and property damage inflicted is essential in achieving that goal. In addition, making law enforcement officials aware that illegal dumping and accumulation of waste offenses can be sufficient “reasonable cause” to obtain search warrants for the properties of suspected criminals. To utilize enforcement of illegal dumping as a tool to attain other goals of local police departments, could escalate the citations and prosecutions.

Regional mandatory training events to inform and reinforce the importance of their collaboration in the campaign to decrease the occurrences of illegal dumping is suggested.

ACCESS AND OPPORTUNITY

One important finding presented itself consistently in data gathered during the surveys and from outside sources used in the analysis. Distance, whether measured in miles or drive time, influences both good and poor waste management practices. Studies have shown that optimally, people are willing to drive up to ten miles to utilize a drop-off location for discarded items, particularly in rural areas. The studies indicate in both rural and urban areas, people are acceptable of a ten minute minimum drive time to use these sites. The Penn State survey asked individuals a set of questions regarding their current access to services and their willingness to utilize and pay for future services. Eighty-five percent of the participants affirmed a willingness to drive up to ten miles to utilize a facility designed to properly manage these discarded items. Some were willing to drive more than 15 miles to such a site.

CONVENIENCE CENTERS PROVIDE LOW COST UNIVERSAL ACCESS

Curbside Collection Services are not always available or practical for all waste types in some areas of Pennsylvania.

Random or seasonal collection events may not be sufficient when the need to dispose of items is immediate.

Even where curbside collection is present, there are circumstances in which waiting for the scheduled collection is impractical.

All of these situations present a temptation for illegal dumping.

Permanent Convenient Centers can provide a solution.

- Minimal Staffing, Equipment, & Structures
- Accepts Recyclables, Household Waste, Tires, E-Scrap, Appliances, & Bulky Items
- Gated and Surveillance Protected
- Affordable, Customer Friendly Environment



It is no small coincidence then that the illegal dump sites documented by the KPB surveyors were on average within 3.5 miles of the nearest population cluster. Their findings were supported by representatives of state regulatory agencies and law enforcement officials, who confirmed that individuals prosecuted for dumping consistently lived or operated a business within less than 10 miles of where they had discarded materials.

These similarities suggest that providing convenient access to affordable outlets for materials commonly found in illegal dump sites could redirect individuals to utilize proper waste management facilities. Ideally this could be made possible at the municipal level by simply including bulky items like furniture and mattresses as well as major appliances in their residential waste and recycling curbside collection programs. Another successful approach is for municipalities, and in some cases counties, to offer a centrally located and manned collection site with regular weekly operating hours convenient to working individuals. Alternatively, municipalities could offer a seasonal collection event implemented at the curb or at a select site within the municipality.

The advantage of curbside collection is twofold. First, the cost is typically covered by direct user fees incorporated into the monthly waste and recycling collection or water and sewage bill. Sometimes user fees are assessed indirectly and included in the real estate taxes. Since the cost of collection and disposal has already been paid, there is less reason to seek out other options. The second benefit is providing access to collection that is more compatible with the timing of a resident's needs. Relocation, eviction, and death can create situations where items must be removed from a home immediately. These events can prompt illegal dumping by otherwise responsible individuals when options to discard materials are not readily available within close proximity.

SYNOPSIS AND CLOSING

Illegal dumping is a problem that is common to all counties in Pennsylvania. Many opportunities exist to help reduce the number of active sites. Creating a strong community sense that illegal dumpers will be caught, their identities will be publicized, and penalties will be imposed, is a good step toward that goal. Use of electronic surveillance is vital to these efforts. Implementing a building and demolition permitting system, as well as some type of registration network for small contractors and transporters would provide further accountability. Better tracking and monitoring of waste tire transporters is also needed. Developing a network of law enforcement officers, judicial officials who are knowledgeable about the laws, and therefore more confident to prosecute offenders is key in demonstrating that these efforts are serious.

Finally, a strong offensive strategy is necessary. Ensuring that everyone has access to convenient and affordable outlets is crucial. Expanding curbside collection to the greatest extent possible for all types of materials is possible with current technology and should be supported. Establishing convenience centers within close proximity to the population is essential. Centers would accept household waste, recyclables, and hard to manage materials. The Centers could be used in lieu of curbside collection where more practical. The educational component is the key to bring all stakeholders together in theory and action.

A statewide law is needed to ensure for all, regardless of the municipality, universal access to waste & recycling collection and/or outlets



Pennsylvania could realize a reduction in illegal dumping, decreased costs for the majority of residents and improved public health and safety across the state

Those recommendations are shown in Tables 8-2 and 8-3. They are offered with the confidence that they were developed from thorough research, justified with facts, supported by strong stakeholder input and demonstrated ease of ability to implement.

Keep Pennsylvania Beautiful, its affiliates, supporters, and partners have dedicated a decade to this cause. It is now time for others to join in the final step by promoting and championing the changes that need to occur to prevent and minimize illegal dumping and most importantly for current and future generations, to Keep Pennsylvania Beautiful.

FINAL PREEMPTIVE STRATEGIES

FIGURE 8-2 STRATEGIES TO PREVENT ILLEGAL DUMPING

Public Education

- Implement a statewide professional multi-media campaign
- Promote convenience and affordability of proper collection and outlets
- Focus on fraud, theft of service, criminal nature of illegal dumping

Professional Education

- Establish an Environmental Law Enforcement Training Program
- Establish an Environmental Law Training Program for Magistrates
- Conduct a series of seminars for municipal officials on contracts & ordinances

Universal Access

- Expand curbside collection to the greatest extent possible
- Promote municipal contracts to control costs and expand communitywide services
- Include bulk items and appliances in municipal collection contracts
- Institute a system to assist households, with incomes below the poverty level, to pay for waste and recycling collection
- Allow for staffed convenient drop-off facilities in lieu of curbside
- Convenience Centers to accept bulk items, tires, appliances, e-waste
- Provide for on-call service for those who cannot transport themselves
- Offer a trailer rental for bulk items or household attic and basement clean-outs
- Develop a General Permit for acceptance of municipal waste at convenience centers

Construction Demolition Waste

- Require proof of disposal with local building/remodeling permit
- Require proof of disposal to obtain a local occupancy permit
- Require proof of disposal with local demolition permit
- Educate consumers to require proof of disposal from contractors
- Prohibit individuals/companies convicted of illegal dumping from bidding on future contracts
- Licensing or authorization of small contractors, remodelers, roofers
- Counties or municipalities should publish a list of local authorized contractors/transporters

Waste Tires

- Require waste tire transporters to submit logs
- Require manifests for loads of tires
- Educate retailers to obtain proof of disposal from transporter

Electronic Scrap

- Require scrap dealers to report on receipt of certain components from covered devices

FINAL ENFORCEMENT STRATEGIES

FIGURE 8-3 STRATEGIES TO ENFORCE AGAINST ILLEGAL DUMPING

Waste Tire Transporter Registration

- Revocation of license for violations
- Forfeiture of equipment for certain violations

Waste Transporter Authorization

- Expand waste transporter authorization to include small contractors, remodelers, and roofers

Electronic Scrap

- Amend CDRA to require scrap dealers to report on receipt of certain components from covered devices, and improve and simplify other elements of implementation

Surveillance and Investigation

- Expand the use of surveillance cameras throughout Pennsylvania
- Expand the use of crime scene tape at illegal dumping sites
- Create Joint Code Enforcement Officer Program similar to Host Inspectors

Judicial System and Penalties

- Establish an Environmental Law Court Day or Dedicated District Justice
- Establish an Expert Witness Bureau
- Establish fines that significantly outweigh the avoided cost of disposal
- Require community service for some offenses
- Dedicate penalties to a cleanup fund

APPENDIX A

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