Draft
2023 Solid Waste Management Plan

LAKE COUNTY SOLID WASTE MANAGEMENT DISTRICT

DRAFT
FOR PUBLIC REVIEW:

07/01/2024

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I SOLID WASTE MANAGEMENT DISTRICT INFORMATION

Table i-1. Solid Waste Management District Information

SWMD Name	Lake County Solid Waste District
Member Counties	Lake County
Coordinator's Name (main contact)	Tim Gourley
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Webpage	http://www.lakecountyohio.gov/utilities/solid-waste-division/

Table i-2. Members of the Policy Committee/Board of Trustees

Member Name	Representing
Lake County	
John Hamercheck	**County Commissioners**
Kenneth Filipiak/Matthew Schweikert	**Municipal Corporations**
Chuck Hillier	**Townships**
Dan Lark	**Health District**
VACANT	**Generators**
David Enzerra	**Citizens**
Mary Ellen K. Abel	**Public**

Table i-3. Chairperson of the Policy Committee or Board of Trustees

Name	John Hamercheck
Street Address	105 Main Street
City, State, Zip Code	Painesville, OH 44077
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Fax	
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Table i-4. Board of County Commissioners/Board of Directors

Commissioner Name	County	Chairperson/President
John R. Hamercheck	Lake	President
John Plecnik	Lake	
Richard Regovich	Lake	

Technical Advisory Committee

A technical advisory committee was not utilized for this Plan update.

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CHAPTER 1 INTRODUCTION

A. Brief Introduction to Solid Waste Planning in Ohio

In 1988, Ohio faced a combination of solid waste management problems, including rapidly declining disposal capacity at existing landfills, increasing quantities of waste being generated and disposed, environmental problems at many existing solid waste disposal facilities, and increasing quantities of waste being imported into Ohio from other states. These issues combined with Ohio's outdated and incomplete solid waste regulations caused Ohio's General Assembly to pass House Bill (H.B.) 592. H.B. 592 revised Ohio's outdated solid waste regulatory program and established a comprehensive solid waste planning process.

There are three overriding purposes of this planning process to:

- reduce the amount of waste Ohioans generate and dispose of.
- ensure that Ohio has adequate, protective capacity at landfills to dispose of its waste.
- reduce Ohio's reliance on landfills.

B. Requirements of County and Joint Solid Waste Management Districts

1. Structure

Each of the 88 counties in Ohio must be in a solid waste management district (SWMD**)**. The board of county commissioners form a SWMD through a resolution. A board of county commissioners has the option of forming a single county SWMD or joining with the board(s) of county commissioners from one or more other counties to form a multi-county SWMD. Ohio's 88 counties are organized into 52 SWMDs. Of these, 37 are single county SWMDs and 15 are multi-county.[1]

A SWMD is governed by two bodies. The first is the board of directors which consists of the county commissioners from all counties in the SWMD. The second is a policy committee. The policy committee is responsible for developing a solid waste management plan for the SWMD. The board of directors is responsible for implementing the policy committee's solid waste management plan.[2]

2. Solid Waste Management Plan

In its solid waste management plan, the policy committee must, among other things, demonstrate that the SWMD will have access to at least 10 years of landfill capacity to manage all the SWMD's solid wastes that will be disposed. The solid waste management plan must also show how the SWMD will meet the waste reduction and recycling goals established in Ohio's state solid waste management plan (state plan) and present a budget for implementing the solid waste management plan.

Ohio Revised Code (ORC) 3734.53 and Ohio Administrative Code (OAC) Rule 3745-27-90 specify the contents of a solid waste management plan. Ohio EPA prescribes a format (The District Solid Waste Management Plan Format) that details the information a plan must provide, and the way information is presented. This format is very similar in concept to a permit application for a solid waste landfill.

The policy committee begins by preparing a draft of the solid waste management plan. After completing the draft version, the policy committee submits the draft to Ohio EPA. Ohio EPA reviews the

draft and provides the policy committee with comments. After revising the draft to address Ohio EPA's comments, the policy committee makes the plan available to the public for comment, holds a public hearing, and revises the plan as necessary to address the public's comments.

Next, the policy committee ratifies the plan. This gives the SWMD's communities the opportunity to approve or reject the draft plan. Once the plan is ratified, the policy committee submits the ratified plan to Ohio EPA for review and approval or disapproval. From start to finish, preparing a solid waste management plan can take up to 33 months.

The policy committee submits periodic updates to its solid waste management plan to Ohio EPA. For an approved plan that covers a planning period of between 10 and 14 years, the policy committee must submit a revised plan by the third anniversary Ohio approved the SWMD's current plan. For an approved plan that covers a planning period of 15 or more years, the policy committee must submit a revised plan to Ohio EPA within five years of the date the plan was approved.

C. District Overview

The Lake County Solid Waste Management District is a single county district comprised of Lake County, Ohio. The District is made up of 23 political subdivisions, with the City of Mentor being the largest municipality. The District's original Solid Waste Management Plan was approved by Ohio EPA on September 1, 1992, and the last plan update was approved by Ohio EPA on September 6, 2018, for a 15-year planning period.

Role and Function: The Lake County Solid Waste District is the program administrator and leading resource for information, expertise and programs that support sustainable materials management and reduce the environmental impact of waste. Our work empowers residents, communities and organizations to manage their waste responsibly by reducing, reusing, recycling and composting. The Solid Waste Management District also oversees the disposal of solid waste products. It supports youth educational programs, recycling initiatives and county wide special collections of computers, scrap tires, and household hazardous waste events during the year.

The District's goals are to (1) promote awareness; (2) provide assistance to local jurisdictions, residents, and the private sector; and (3) achieve results of waste reduction.

The District does not own any facilities nor provide any direct services. The District is supported by the Lake County Board of Commissioners, who is also the owner of the Lake County Solid Waste Facility. The operation of the County landfill is contracted to a private company. The solid waste management system (hauling, processing, landfilling, composting, and recycling) is operated exclusively by private companies, and the local residential trash collection hauling system as well as processing and recycling are determined locally by each of the County's municipalities and townships.

Structure: The District's coordinator is also the Director of the County's Solid Waste Division and manager of the Lake County Solid Waste Facility, and the District operates out of one centralized office located adjacent to the landfill and shared with Lake County Solid Waste Division. In addition to sharing county staff, the District utilizes two main partnerships - The Ohio State University Lake County Extension Service and Lake County General Health District – to carry out its educational and programing responsibilities.

The District also has a Lake County Business Waste Reduction Committee (BWRC) to assist in implementing the District Plan. The Business Waste Reduction Committee focuses its work on implementing the District's Waste Reduction Plan for commercial businesses and industries in the district. The purpose of the committee is to a) identify and promote ways commercial industrial, governmental and non-profit establishments in the District can reduce and/or recycle waste and b) facilitate the proactive sharing of information resources and expertise in support of waste minimization efforts across the county, and c) document the results of those activities. The committee has been mostly inactive over the course of the previous planning period, meeting very intermittently in that timeframe. One of the goals of this plan is to re-establish the BWRC as a regularly-meeting body.

Changes and Major Accomplishments: The structure and role of the District has largely remained the same since the District was established in 1989 with the exception of the addition of the BWRC in 1993. The BWRC has been a leader in the State and recognized by the OEPA for its efforts. The District is committed to reinvigorating the committee as it primary means of increasing awareness and recycling success in the commercial/institutional and industrial sectors.

D. Waste Reduction and Recycling Goals

As explained earlier, a SWMD must achieve goals established in the state solid waste management plan. The current state solid waste management plan is the *2020 Solid Waste Management Plan* (2020 State Plan). The 2020 State Plan established ten goals as follows:

1. Recycling Infrastructure | The SWMD shall provide its residents and commercial businesses with access to opportunities to recycle solid waste. At a minimum, the SWMD must provide access to recycling opportunities to 80 percent of its residential population in each county and ensure that commercial generators have access to adequate recycling opportunities.

2. Waste Reduction and Recycling Rates | The SWMD shall reduce and recycling at least 25 percent of the solid waste generated by the residential / commercial sector.

3. Outreach and Education \ Minimum Required Programs | The SWMD shall provide the following required elements: a Web site; a comprehensive resource guide; an inventory of available infrastructure; and a speaker or presenter.

4. Outreach and Education | The SWMD shall provide education, outreach, marketing and technical assistance regarding reduction, recycling, composting, reuse and other alternative waste management methods to identified target audiences using best practices.

5. Industrial Programs and Services | The SWMD shall incorporate a strategic initiative for the industrial sector into its solid waste management plan.

6. Restricted Solid Wastes, Household Hazardous Waste (HHW), and Electronics | The SWMD shall provide strategies for managing scrap tires, yard waste, lead-acid batteries, HHW, and obsolete/end-of-life electronic devices.

7. Economic Incentives | The SWMD shall explore how to incorporate economic incentives into source reduction and recycling programs.

8. Measure Greenhouse Gas Reduction | The SWMD will use U.S. EPA's Waste Reduction Model (WARM) (or an equivalent model) to evaluate the impact of recycling programs on reducing greenhouse gas emissions.

9. Market Development | The SWMD has the option of providing programs to develop markets for recyclable materials and the use of recycled-content materials.

10. Reporting | The SWMD shall report annually to Ohio EPA regarding implementation of the SWMD's solid waste management plan.

All 10 goals are crucial to furthering solid waste reduction and recycling in Ohio. However, the challenges posed by Goals 1 and 2 often mean SWMDs devote more resources to achieving those two goals than to the remaining goals. Thus, Goals 1 and 2 are the primary goals of the state plan.

A SWMD is encouraged to devote resources to achieving both goals but is not required to demonstrate that achieving both. Instead, SWMDs have the option of choosing either Goal 1 or Goal 2 for their solid waste management plans. This gives SWMDs two options for achieving Ohio's solid waste reduction and recycling goals. Many of the programs and services that a SWMD uses to achieve Goal 1 help the SWMD make progress toward achieving Goal 2 and vice versa.

A SWMD's solid waste management plan will provide programs to meet up to eight of the goals. Goal 9 (market development) is an optional goal. Goal 10 requires submitting annual reports to Ohio EPA.

See Chapter 5 and Appendix I for descriptions of the programs the SWMD will use to achieve the ten goals.

CHAPTER 2 DISTRICT PROFILE

Purpose

This chapter provides context for the SWMD's solid waste management plan by providing an overview of general characteristics of the SWMD. Characteristics discussed in this chapter include:

- The communities and political jurisdictions within the SWMD;
- The SWMD's population in the reference year and throughout the planning period;
- The available infrastructure for managing waste and recyclable materials within the SWMD;
- The commercial businesses and institutional entities located within the SWMD;
- The industrial businesses located within the SWMD; and
- Any other characteristics that are unique to the SWMD and affect waste management within the SWMD or provide challenges to the SWMD.

Understanding these characteristics helps the policy committee make decisions about the types of programs that will most effectively address the needs of residents, businesses, and other waste generators within the SWMD's jurisdiction.

Population distribution, density, and change affect the types of recycling opportunities that make sense for a particular community and for the SWMD as a whole.

The make-up of the commercial and industrial sectors within the SWMD influences the types of wastes generated and the types of programs the SWMD provides to assist those sectors with their recycling and waste reduction efforts.

Unique circumstances, such as hosting an amusement park, a large university, or a coal burning power plant present challenges, particularly for providing waste reduction and recycling programs.

The policy committee takes these characteristics in mind when developing its overall waste management strategy.

A. Profile of Political Jurisdictions

1. *Counties in the Solid Waste Management District*

The Solid Waste Management District is a single county district comprised of Lake County, Ohio.

2. County Overview

Lake County is located in the northeast corner of the state along the Lake Erie shore, sandwiched between Cuyahoga County to the west and Ashtabula County to the east. The county is part of the Cleveland-Elyria MSA. According to the U.S. Census Bureau, the County encompasses 228 square miles of land and is the smallest county in Ohio by land area. The District is made up of 23 political subdivisions: 9 cities, 9 villages and 5 townships.

It is a highly diverse county with dense suburban development on the western edge bordering Cuyahoga County and rural farmland with low-density residential development on the eastern end. According to the "Ohio County Profile of Lake County" prepared by the Ohio Department of Development, less than half of the land in the county is developed, mostly with lower density residential uses. Specifically, the land use/land cover is:

- 7.29% Developed, with higher intensity uses (commercial/industrial),
- 40.53% Developed, with lower intensity uses (primarily residential)
- 37.88% Forest, wetlands, and grasslands
- 13.19% Pasture, cropland
- 1.19% Other (barren, open water, etc.)

Interstate 90 and State Route 2 expressways traverse the District east to west, providing businesses and residents easy access to the metropolitan centers of Cleveland, Erie, and beyond (Buffalo, Chicago, etc.). In fact, many people who live in the western portion of the County work in Cleveland or its suburbs. Despite its location adjacent to Cuyahoga County and available land and infrastructure, Lake County is expected to experience stagnated growth into the next couple of decades, leading to even a minor population decline. However, within the County, certain communities are expected to grow while the older built out communities are expected to see population decline.

B. Population

1. Reference Year Population

Table 2-1, "Population of District in the Reference Year" presents the District's population for 2021, which is the same as the population for Lake County - no adjustments were made to the County's population. The source for the reference year population is the Office of Research, Ohio Department of Development. The City of Mentor is the largest municipality in the county, both in terms of population with 20% of the population, and land area with 12.2% of the county.

Table 2-1 Population of District in 2021 (Reference Year)

County		Largest Political Jurisdiction		
Name	**Population**	**Community Name**	**Population**	**Percent of Total County Population**
Lake	232,023	Mentor	47,221	20%

2. *Population Distribution*

Lake County has 9 cities, 9 villages and 5 townships. Overall, the population density in Lake County is approximately 1,019 persons per square mile. Nearly 7 out of 10 people (68.9%) in the county live in a city, where there is an average density of 1,846 persons per square mile (see Table 2-2). Another 26.1% live in rural townships where the population density is significantly less, just 508 persons per square mile. However, attention should be paid to the increasingly suburban nature of some townships, a trend that is happening across the state. For example, Painesville Township has a population density of 1,107 persons per square mile, a density greater than the cities of Willoughby Hills and Kirtland. Conversely, Leroy Township has a population density of just 122. This ongoing trend could have far-reaching effects on waste collection and generation. Approximately 5% of the county's residents live in small villages ranging in population from 216 people (Lakeline Village) to 3,420 people (Madison Village). Figure 2-1 illustrates the population density by census block for Lake County and highlights the concentration of the population in the western half of the county.

Using the SWMD's definition of rural areas (areas with less than 5,000 population), 6.3% of Lake County's residents live in rural areas which make up 20.8% of the County's land area.

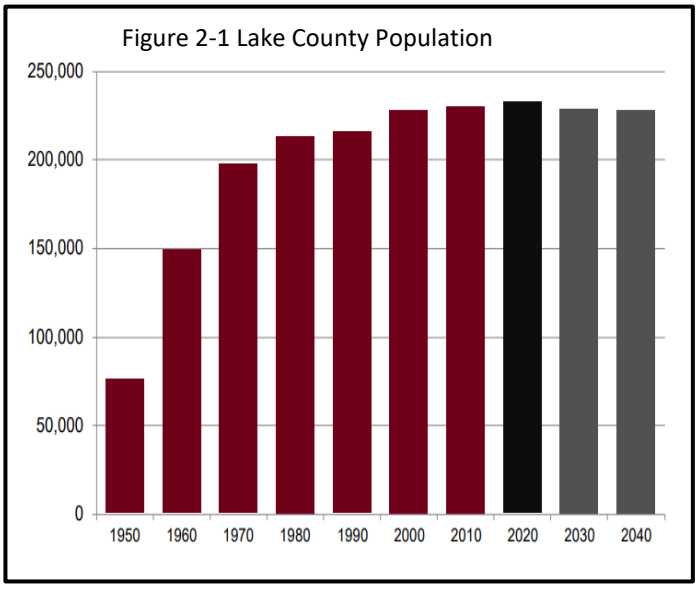
Table 2-2 Population Distribution in Lake County

	Cities	**Villages**	**Unincorporated Townships**
Percent of Population	68.9%	5%	26.1%
Population Density (persons per square mile)	1,803	505	504

3. *Population Change*

Since 2010, Lake County's population has increased by less than 1%, with 1,982 new residents. This trend is generally in line with the state of Ohio's population change of 1.9% in that same period (Ohio Department of Development, Office of Research). When examining recent population trends at the community level, the older built-out municipalities located in the northwestern and north central portions of the county have experienced population declines, while many communities in the eastern and southern parts of the county have grown, see Figure 2-2. For example, Concord Township has grown by 5.5% since 2010 (with an additional 999 residents) and Painesville City has increased by 1,028 residents (5.3%). However, Willoughby, an older city on the west side of the

Figure 2-1 Lake County Population



Source: Ohio Department of Development, Office of Research

county, grew its population by 7.3% in that timeframe, adding 1,630 new residents. In that same timeframe, the unincorporated areas, which had seen substantial growth in the recent past, were stagnant, gaining only 77 residents. These figures represent the unpredictable nature of the period of stagnated growth the county is entering.

Between the 2020 census and 2030, Lake County's population is projected to decline moderately (by 6,102 people, roughly than 2.6%) from 232,603 to 226,501 and then continue to decrease for the next 10 years to 215,440 in 2040. These projections are from the Ohio Department of Development, which does not provide population projections for jurisdictions below the county level. Figure 2-1 illustrates change in population over the next two decades.

4. Implications for Solid Waste Management

While the county as a whole is projected to stagnate and contract slightly, the trend has been for the population to move out from the mature suburbs in the west to the more rural areas of the county to the east and southeast. As the population of the county spreads out into less developed areas, providing recycling programs in an efficient and environmentally friendly manner becomes more of a challenge.

Population affects waste generation rates but factors of population growth such as household income, people per household, and economic activity also contribute, as well as types of housing units. Economic activity and population growth affect household income, and household income impacts per capita waste generation. In addition, studies show that higher income households tend to produce higher amounts of waste. Yet, it is also believed that higher income households tend to achieve higher participation rates of recycling. These complex factors are all simultaneously involved and affect each other because they dynamically occur over time.

C. Profile of Commercial and Institutional Sector

According to Ohio Department of Development's profile for Lake County, there are 6,081 private sector business establishments in the county. Of those, 4,857 are considered service-providing, with such industries as financial services, leisure, and professional services. A further 1,225 are considered goods-producing, such as manufacturing and construction. The U.S. Census Bureau's 2021 economic data reports 728 establishments in retail trade, 277 in the finance and insurance agency, 580 in the health care and social assistance industry, and 488 in the professional, scientific and technical services industry. Yet, similar to the population distribution, the location of businesses and institutional entities varies throughout the county. For example, the city of Mentor is home to the Great Lakes Mall, and another estimated 289 shopping venues making it a regional destination for retail, while numerous other communities have little commercial development.

According to the Ohio Department of Development, major/notable commercial and institutional employers include: Lake County Government; Lake Health; Mentor Exempted Village Schools; and Willoughby-Eastlake City Schools.

Located along Lake Erie with nearly 30 miles of shoreline, the County is also home to numerous state and metropolitan parks and beaches, marinas, wineries and other entities that draw visitors from across the region.

D Profile of Industrial Sector

According to the 2021 Economic Survey of County Business Patterns, there are approximately 540 manufacturing businesses (NAICS code 31-33) and has nearly 20,000 paid employees, the largest out of all NAICS sectors. The fabricated metal product manufacturing sector (NAICS 332) is the largest manufacturing sector (233 establishments, 5000+ employees, 43% of all manufacturing), while the second largest is machinery manufacturing (NAICS 333; 74 establishments, 2900+ employees, 14% of all manufacturing). Although no industrial survey was completed for this Plan update (2021), these establishments undoubtedly produce significant amounts of metal waste.

The manufacturing industry in Lake County is comprised primarily of small to medium sized businesses, with 50% of manufacturing establishments having 9 employees or fewer (Table 2-3), though there are several major corporations in the county. According to the Lake County, major/notable industrial/utility employers include: Avery Dennison Corp; FirstEnergy Corp; Lincoln Electric Holding Inc.; Lubrizol Corp; and STERIS Corp.

Table 2-3 Employment Size of Manufacturing Establishments in Lake County

Range of Employees	Number
All establishments	540
Establishments with 1 to 4 employees	178
Establishments with 5 to 9 employees	92
Establishments with 10 to 19 employees	75
Establishments with 20 to 49 employees	105
Establishments with 50 to 99 employees	42
Establishments with 100 to 249 employees	35
Establishments with 250 to 499 employees	11
Establishments with 500 to 999 employees	0
Source: 2020 Economic Survey, US Census Bureau	

The State of Ohio Department of Development has reported a drop (-5.5%) of manufacturing businesses in the County between 2013 and 2019. However, at the same time, the number of persons employed by manufacturing establishments increased by over 5%, indicating that perhaps the level of manufacturing activity is actually increasing. In addition, and of relevance to waste generation and recycling, construction employment increased by 5% in that timeframe, indicating an uptick in construction activity, which may in turn lead to more waste being generated on jobsites and as a result of demolition.

E. Other Characteristics

The County has several characteristics that make it unique and affect waste generation. For example, Lake County has Lakeland Community College, a popular two-year school located in Kirtland, as well as Lake Erie College, a four-year institution. Lake County also has the Perry Nuclear Power Plant. Given the county's location along Lake Erie, there are a number of nurseries in the county.

CHAPTER 3 WASTE GENERATION

This chapter summarizes the SWMD's historical and projected solid waste generation. The policy committee needs to understand the waste the SWMD will generate before it can make decisions regarding how to manage the waste.

The policy committee calculated how much solid waste was generated for the residential/commercial and industrial sectors. Residential/commercial waste is essentially municipal solid waste and is the waste that is generated by a typical community. Industrial solid waste is generated by manufacturing operations. To calculate how much waste was generated, the policy committee added the quantities of waste disposed of in landfills and reduced/recycled.

The policy committee surveys communities, recycling service providers, collection and processing centers, commercial and industrial businesses, owners and operators of composting facilities, and other entities that recycle to obtain data. Responding to a survey is voluntary. When entities do not respond to surveys, the policy committee gets only a partial picture of recycling activity. How much data the policy committee obtains has a direct effect on the SWMD's waste reduction and recycling and generation rates.

The policy committee obtained disposal data from Ohio EPA. Owners/operators of solid waste facilities submit annual reports to Ohio EPA. In these reports, owners/operators summarize the types, origins, and amounts of waste that were accepted at their facilities. Ohio EPA adjusts the reported disposal data by adding in waste disposed in out-of-state landfills.

The policy committee analyzed historic quantities of waste generated to project future waste generation. The details of this analysis are presented in Appendix G. The policy committee used the projections to make decisions on how best to manage waste and to ensure future access to adequate waste management capacity, including recycling infrastructure and disposal facilities.

Purpose of Chapter 3

This chapter of the solid waste management plan provides a summary of the SWMD's historical and projected solid waste generation. The policy committee needs to understand the waste the SWMD will generate before it can make decisions regarding how to manage the waste. Thus, the policy committee analyzed the amounts and types of waste that were generated within the SWMD in the past and that could be generated in the future.

The SWMD's policy committee calculated how much solid waste was generated for the residential/commercial and industrial sectors. Residential/commercial waste is municipal solid waste and is the waste that is generated by a typical community. Industrial solid waste is generated by manufacturing operations. To calculate how much waste was generated, the policy committee added the quantities of waste disposed of in landfills and reduced/recycled.

The SWMD's policy committee obtained reduction and recycling data by surveying communities, recycling service providers, collection and processing centers, commercial and industrial businesses, owners and operators of composting facilities, and other entities that recycle. Responding to a survey is voluntary, meaning that the policy committee relies upon an entity's ability and willingness to provide data. When entities do not respond to surveys, the policy committee gets only a partial picture of recycling activity. How much data the policy committee obtains has a direct effect on the SWMD's waste reduction and recycling and generation rates.

The policy committee obtained disposal data from Ohio EPA. Owners/operators of solid waste facilities submit annual reports to Ohio EPA. In these reports, owners/operators summarize the types, origins, and amounts of waste that were accepted at their facilities. Ohio EPA adjusts the reported disposal data by adding in waste disposed in out-of-state landfills.

The policy committee analyzed historic quantities of waste generated to project future waste generation. The details of this analysis are presented in Appendix G. The policy committee used the projections to make decisions on how best to manage waste and to ensure future access to adequate waste management capacity, including recycling infrastructure and disposal facilities.

A. Solid Waste Generated in Reference Year

Table 3-1 Solid Waste Generated in the Reference Year

Type of Waste	Quantity Generated (2021)	
	(tons)	%
Residential/ Commercial	341,510	77.8%
Industrial	94,902	21.6%
Excluded*	2,392	0.5%
Total	438,804	100%

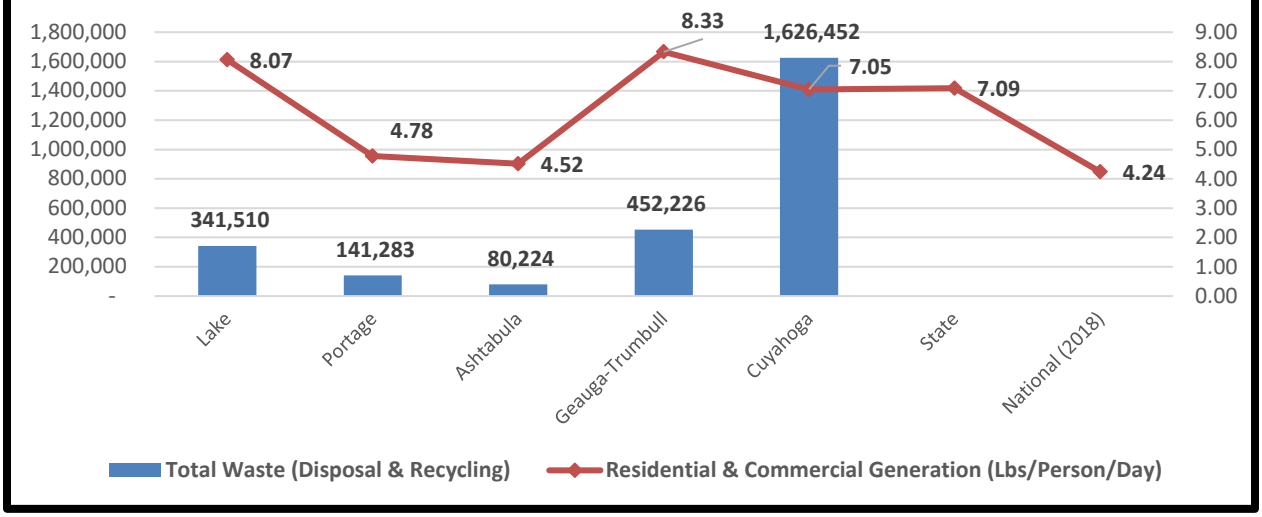
Table 3-1 summarizes the distribution of waste generation within Lake County SWMD for the year 2021.

The SWMD collected recycling and waste disposal data to calculate waste generation. Of the total waste generated within Lake County SWMD, approximately 78% consisted of residential/commercial waste and most of the remaining 21.5% consisted of industrial waste (Table 3-1). The amount of excluded waste disposed was less than 1% for 2021 and is not addressed in this Plan.

1. Residential/Commercial Waste Generated in Reference Year

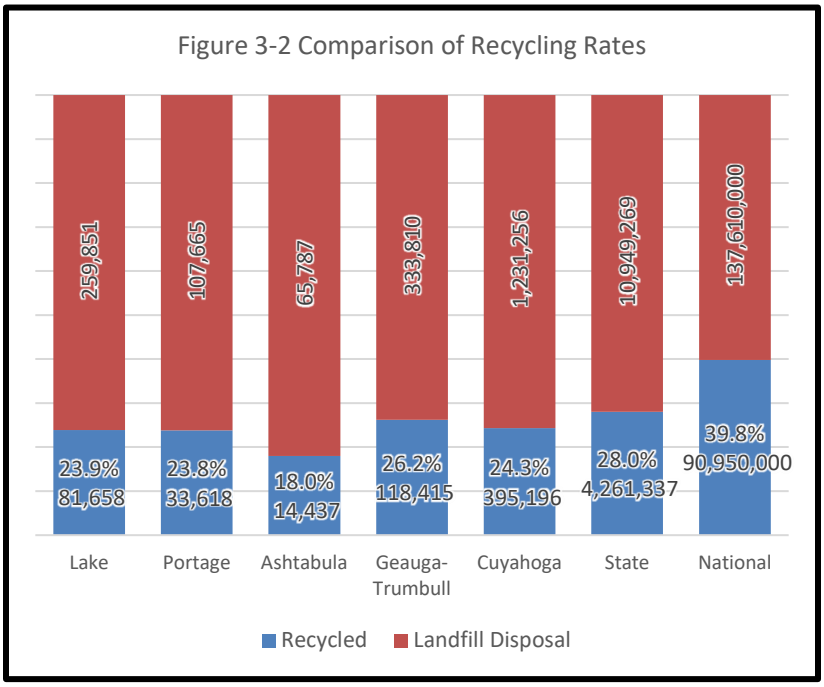
During the reference year, the SWMD generated 341,510 tons of waste in the residential/commercial sector. This amount includes a relatively high rate of yard waste, which is reported as composted materials. Other large waste generators include the Great Lakes Mall, as well as the high number of commercial businesses. Using the 2021 County population estimate of 232,023 people, the amount of waste generated on a per capita basis is calculated to be 8.07 pounds per person per day in 2021. This rate is similar to those in neighboring districts (Geauga-Trumbull, 8.33, Cuyahoga, 7.05), but higher than districts in the general area (Portage, 4.78, Ashtabula, 4.52). It is marginally higher than the state of Ohio (7.09) and nearly double the 2018 national average (4.24) (Figure 3-1.).

Figure 3-1 Regional Comparison of Residential/Commercial Waste Generation Rates



Of the waste generated in the SWMD, approximately 23.9% was recycled and 76.1% was disposed. In comparison to SWMDs in the region, Portage and Cuyahoga Counties have a similar recycling rate. Geauga-Trumbull has a bit higher rate, while Ashtabula County's is substantially lower. The SWMD lags behind the state of Ohio rate, and is well behind the 2018 national rate, see Figure 3-2.

Figure 3-2 Comparison of Recycling Rates



2. Industrial Waste Generated in Reference Year

Industrial waste generation was calculated by adding together the

recycling data obtained through the survey to waste disposal data obtained from landfill and transfer facility annual operating reports. Industrial generation was determined to be 94,902 tons.

There are a number of manufacturing and related industries in the District. One industry, Polychem Corp (recently rebranded as Greenbridge), is a major international producer of plastic poly strapping/strapping machines. They manufacture all of the plastic strapping they sell, and in 2015 reported recycling nearly 57,500 tons of material, 99% of which is plastic. There is also a large printing company (Activities Press) that generates a significant amount of paper waste. While an industrial survey was not conducted in 2021, the district reported that over 57,000 tons of plastic was recycled, indicating the information from the 2015 industrial survey is still valid.

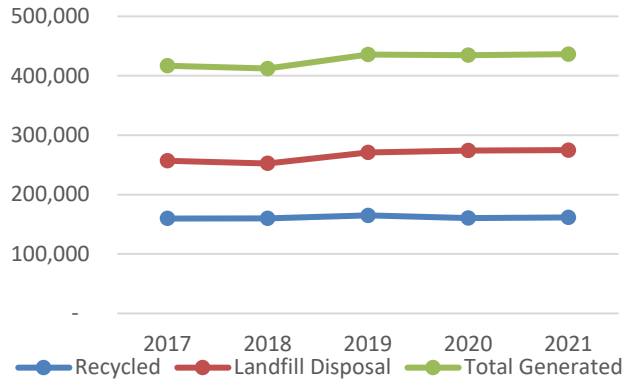
3. Excluded Waste Generated in Reference Year

In the reference year (2021), excluded waste comprised less than 1% of total waste disposed and therefore is not discussed as part of this Plan.

B. Historical Waste Generated

Figure 3-3 "Historical Waste Generation and Management" shows the historical trends of waste recycling, disposal, and generation. Disposal figures showed moderate increases in the late portion of the 2010s but maintained relative consistency after that. For example, total generation was flat from 2017 to 2018. Total generation increased in the next year by over 25,000 tons due to a likewise increase in landfill disposal. Figures for total generation were stable from 2019 to 2020, and 2020 to 2021.

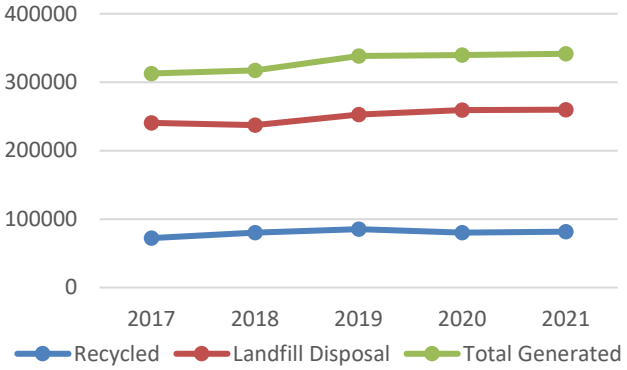
Figure 3-3 Historical Overall Waste Generation and Management (tons)



1. Historical Residential/Commercial Waste Generated

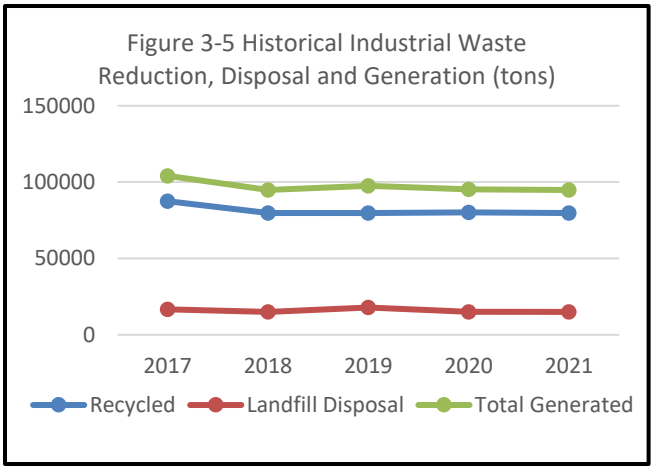
During the period from 2017 to 2021, the population of Lake County grew by roughly .7%. This slight increase in population was mirrored by a similarly slight increase in total waste generated from 2017 to 2018, and again from 2019 to 2021. However, total waste generated jumped between 2018 and 2019, increasing 6.5%. Over the course of 2017 to 2021, overall waste generated increased by 9%. Over the historical period observed, per capita total generation increased from 7.45 pounds per person per day (2017) to 8.07 (2021)

Figure 3-4 Historical Residential/Commercial Waste Reduction, Disposal, and Generation (tons)



2. Historical Industrial Waste Generated

Over the previous five years, total industrial waste generated has fallen 9.7%, from a high of 104,102 tons at the outset (2017) to 94,902 in the reference year (2021). The most precipitous drop occurred from 2017 to 2018, in which an 8.9% year over year drop occurred. Numbers fluctuated slightly thereafter, see Figure 3-5. Despite fluctuations, the ratio of recycled to disposed materials has remained constant, with 84% of materials being recycled in all but 2019, in which only 82% of industrial materials collected were recycled.

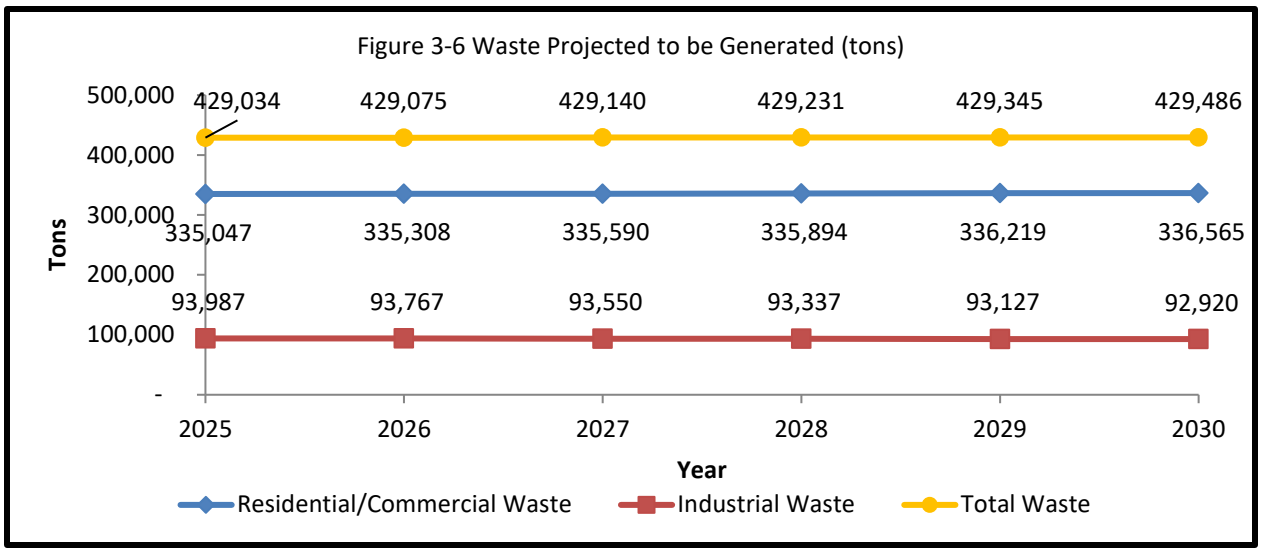


C. Waste Generation Projections

As noted earlier, Lake County, Ohio is in the northeastern area of the state, along Lake Erie, approximately 20 miles east of Cleveland. The County has a number of older cities that are built out in the western and central area, yet at the same time, the communities in the eastern and southern portions of the county have a significant amount of growth potential, especially along the I-90 expressway corridor. However, given the economic slowdown and increase in building costs, along with he projected population declines, waste generation is expected to remain stagnant; see Table 3-2 and Figure 3-6. This projected leveling-off of waste generation is further reinforced by the already high per capita generation rate in the district, which increased 8% (.62 pounds per person, per day) since 2017.

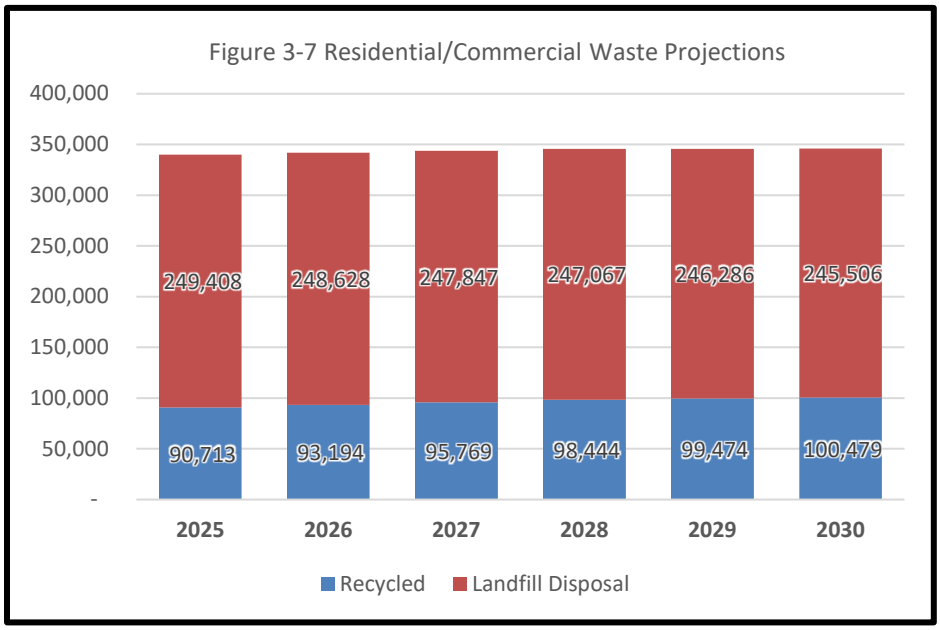
Table 3-2 Waste Generation Projections

Year	Residential Commercial Waste	Industrial Waste	Total
	Waste (tons)	Waste (tons)	Waste (tons)
2025	335,047	93,987	429,034
2026	335,308	93,767	429,075
2027	335,590	93,550	429,140
2028	335,894	93,337	429,231
2029	336,219	93,127	429,345
2030	336,565	92,920	429,486



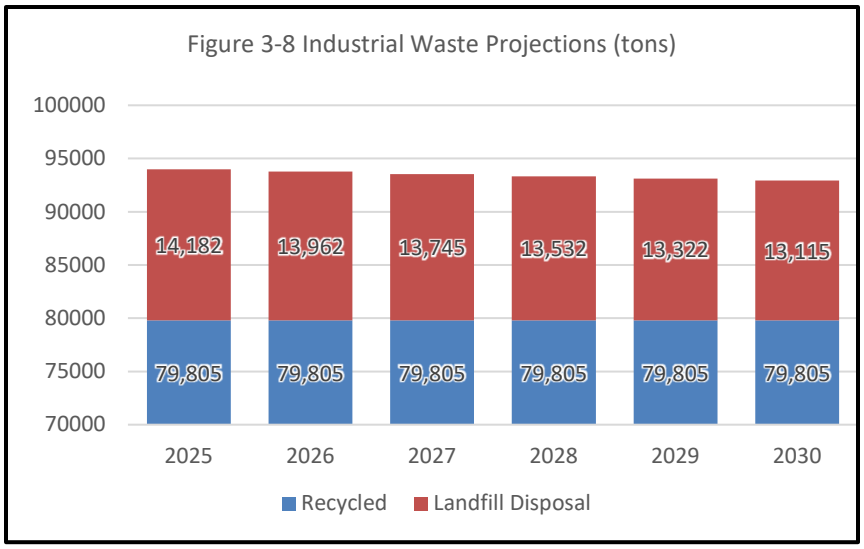
1. Residential/Commercial Waste Projections

Waste generation projections were estimated by analyzing historical trends of waste generation, disposal, and recycling, population trends and planning period program design impacts. The projections also consider economic conditions for the near future. The waste disposal analysis in Appendix D uses the average annual percentage change in residential/commercial per capita waste disposed between 2015 and 2021 (5.94) multiplied by the yearly population projections supplied by the Ohio Department of Development to forecast beyond 2021. The waste reduction analysis in Appendix E projects a 1.2% increase for recycling each year until 2030. This results in the waste generation projections over the 6-year period shown on Table 3-2 and Figure 3-6 with a near-zero (0.2%) average annual increase.



2. Industrial Waste Projections

Waste generation projections for industrial businesses in Lake County involved analyzing historical trends of waste generation, disposal, and recycling and predicted Ohio manufacturing employment for the region. The "2030 Job Outlook for Cleveland-Elyria-Mentor Metropolitan Statistical Area," produced by Ohio Department of Job and Family Services, projected a decline of about 3.1% for "production occupations" in the MSA, though Lake County continues to be attractive to manufacturing businesses. Given the industrial outlook and near-future economic conditions, fluctuations in disposal tonnage and the difficulty in obtaining survey data, the waste disposal analysis in Appendix D shows very slight declines in tonnage in the first six years of the planning period (1.55% annually), and the waste reduction analysis in Appendix F holds industrial waste recovery constant at 79,805 tons for the planning period.



CHAPTER 4 WASTE MANAGEMENT

Purpose of Chapter 4

Chapter 4 summarizes policy committee's strategy for how the SWMD will manage its waste during the planning period.

A SWMD must have access to facilities that can manage the waste the SWMD will generate. This includes landfills, transfer facilities, incinerator/waste-to- energy facilities, compost facilities, and facilities to process recyclable materials.

To ensure that the SWMD has access to facilities, the solid waste management plan identifies the facilities the policy committee expects will take the SWMD's trash, compost, and recyclables. Those facilities must be adequate to manage all the SWMD's solid waste. The SWMD does not have to own or operate the identified facilities. In fact, most solid waste facilities in Ohio are owned and operated by entities other than the SWMD. Further, identified facilities can be any combination of facilities located within and outside of the SWMD (including facilities located in other states).

Although plan needs to show that the SWMD will have access to all types of needed facilities, Ohio law emphasizes access to disposal capacity. The policy committee must demonstrate that the SWMD will have access to enough landfill capacity for all the waste the SWMD will need to dispose of. If there isn't adequate landfill capacity, then the policy committee develops a strategy for obtaining adequate capacity.

Finally, the SWMD can control which landfill and transfer facilities can, and by extension cannot, accept waste that was generated within the SWMD. The SWMD accomplishes this by designating solid waste facilities (often referred to flow control). A SWMD's authority to designate facilities is explained in more detail later in this chapter

A. Waste Management Overview

Chapter 3 provided a summary of how much waste the SWMD generated in the reference year and how much waste the policy committee estimates the SWMD will generate during the planning period. This chapter summarizes the policy committee's strategy for how the SWMD will manage that waste during the planning period.

A SWMD must have access to facilities that can manage the waste the SWMD will generate. This includes landfills, transfer facilities, incinerator/waste-to- energy facilities, compost facilities, and facilities to process recyclable materials. This chapter describes the policy committee's strategy for managing the waste that will be generated within the SWMD during the planning period.

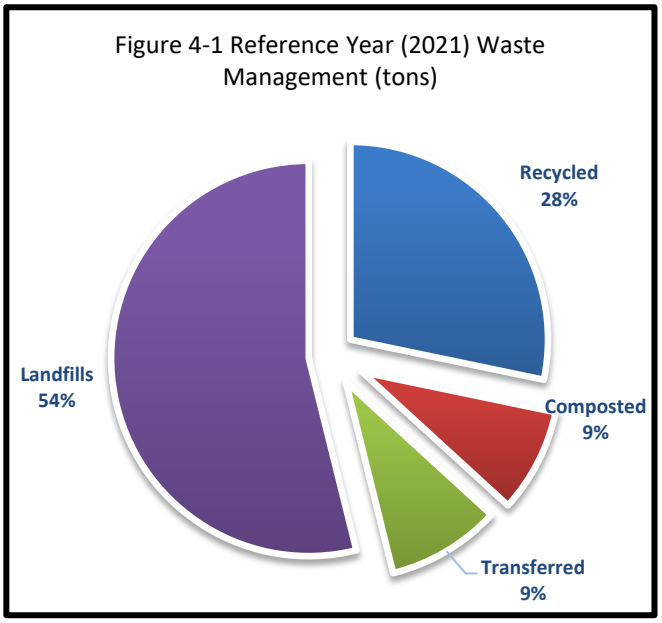
To ensure that the SWMD has access to facilities, the solid waste management plan identifies the facilities the policy committee expects will take the SWMD's trash, compost, and recyclables. Those facilities must

be adequate to manage all of the SWMD's solid waste. The SWMD does not have to own or operate the identified facilities. In fact, most solid waste facilities in Ohio are owned and operated by entities other than the SWMD. Further, identified facilities can be any combination of facilities located within and outside of the SWMD (including facilities located in other states).

Although the policy committee needs to ensure that the SWMD will have access to all types of needed facilities, Ohio law emphasizes access to disposal capacity. In the solid waste management plan, the policy committee must demonstrate that the SWMD will have access to enough landfill capacity for all of the waste the SWMD will need to dispose of. If there isn't adequate landfill capacity, then the policy committee develops a strategy for obtaining adequate capacity. Ohio has more than 40 years of remaining landfill capacity. That is more than enough capacity to dispose of all of Ohio's waste. However, landfills are not distributed equally around the state. Therefore, there is still the potential for a regional shortage of available landfill capacity, particularly if an existing landfill closes. If that happens, then the SWMDs in that region would likely rely on transfer facilities to get waste to an existing landfill instead of building a new landfill.

Finally, the SWMD has the ability to control which landfill and transfer facilities can, and by extension cannot, accept waste that was generated within the SWMD. The SWMD accomplishes this by designating solid waste facilities (often referred to flow control). A SWMD's authority to designate facilities is explained in more detail later in this chapter.

Figure 4-1 Reference Year (2021) Waste Management (tons)



The District has managed waste through a combination of landfills, recycling programs and facilities, transfer stations, and composting facilities. Figure 4-1, "Reference Year Waste Management Methods" depicts how much of the total waste generation (436,412 tons in 2021) was managed by each of the various waste management methods. This distribution has changed slightly since the previous plan's reference year (2015). In that reference year, composted materials made up 12% of all waste, compared to 9% in the current reference year. Additionally, the other three categories increased by 1-2% from 2015.

Compared to other SWMDs, the District has a relatively substantial portion (9%) that was composted. Lake County's unique soils and climate along the Lake Erie shore support more than 100 wholesale nurseries, many of them located in the eastern portion of the County. These businesses contribute to the large amount of composted material that has been reported for many years.

The waste management methods historically used in the District are projected to continue in similar proportions as in the past. Figure 4-2 below shows recycling, composting, and disposal (both landfilled and transferred) for the first six years of the planning period. Recycling and compost tonnages are projected to continue minor year-over-year increases as both practices become more commonplace in the SWMD. Total waste is projected to remain relatively steady, while landfill waste is projected to decrease. This reflects the stagnant nature of population projections, as well as the displacement of landfill waste into recycling and composting programs.

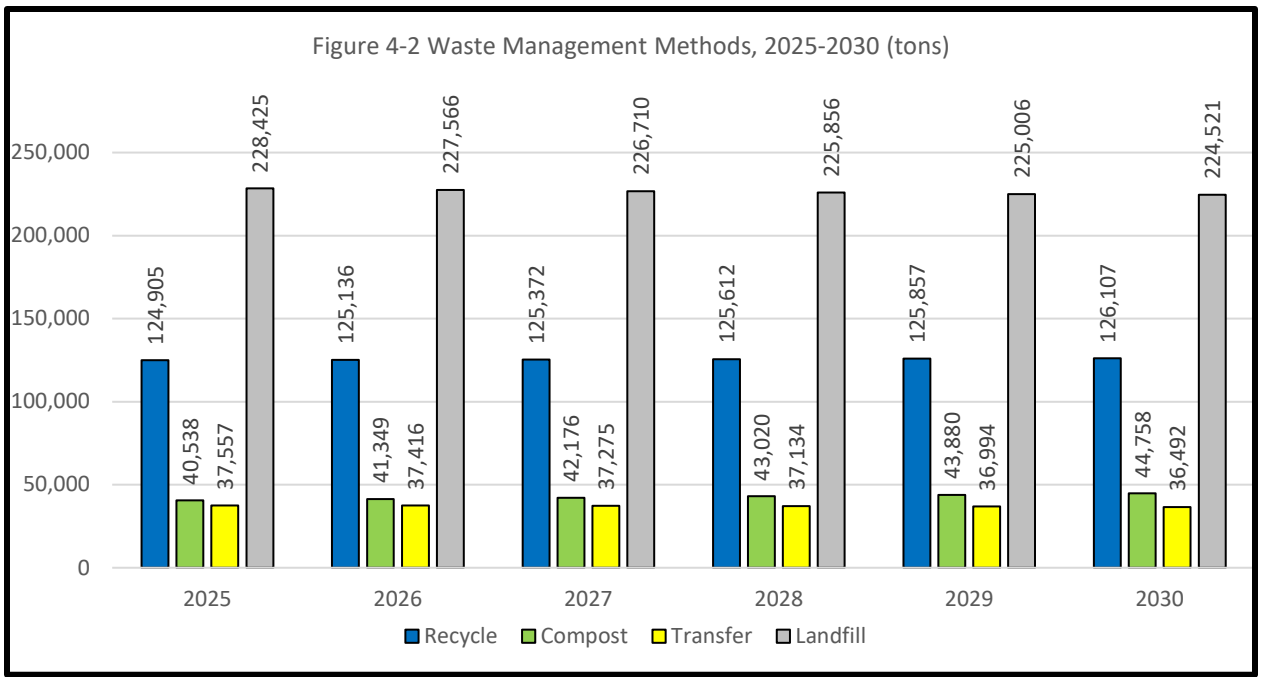


Table 4-1: Methods for Managing Waste

Year	Total Waste	Recycle	Compost [a]	Transfer	Landfill
2025	*431,426*	*124,905*	*40,538*	*37,557*	*228,425*
2026	431,467	*125,136*	*41,349*	*37,416*	*227,566*
2027	431,532	*125,372*	*42,176*	*37,275*	*226,710*
2028	431,623	*125,612*	*43,020*	*37,134*	*225,856*
2029	431,737	*125,857*	*43,880*	*36,994*	*225,006*
2030	431,878	*126,107*	*44,758*	*36,492*	*224,521*

[a] *Compost data includes collections from municipal yard waste collection*

B. Profile of Waste Management Infrastructure

1. *Landfills*

The in-district Lake County Solid Waste Facility landfill (established in 1976) is located in Painesville and Perry Townships and provides the majority of solid waste disposal for the District. The facility accepts municipal solid waste (no industrial waste) and is publicly owned and operated. The entire landfill site includes 400 acres of land, of which 250 acres are presently incorporated in the landfill operation licensed by the Ohio Environmental Protection Agency (OEPA). The landfill is divided into four waste cells, three of which are filled and closed, and the fourth that is in current operation. The site has space for expansion. Lake County applied and was approved for a new permit-to-install (PTI) in 2016. This permit expanded the landfill by 7.4 million cubic yards of airspace extending the life of the landfill by roughly 35 years. The Lake County Landfill receives approximately 800 tons of garbage each day.

The general operation of the landfill is the responsibility of county personnel in the Lake County Solid Waste Division. This includes maintenance of the closed waste cells, compliance reporting to the OEPA, and periodic landfill license renewal. County personnel also operate the truck scales

used to weigh incoming loads for calculation of tipping fees. Most of the waste comes from contract haulers that are billed on a monthly basis; however, operators handle cash receipts from residents and other occasional haulers. While the landfill is publicly available, a large majority of waste received comes from in-county residential customers.

2. Transfer Facilities

There are no transfer facilities in the SWMD.

3. Compost Facilities

There are eleven compost facilities within the SWMD. All are registered with Ohio EPA as either a Class II, III, or IV composting facilities. The locations are shown in Figure 4-3; ownership structure, size of service area and class are listed in Figure 4-4. Class IV facilities accept only yard waste. Class III facilities accept yard waste, agricultural waste and animal waste. Class II facilities accept all of the above, plus food scraps.

Figure 4-3 Inventory of In-District Composting Facilities

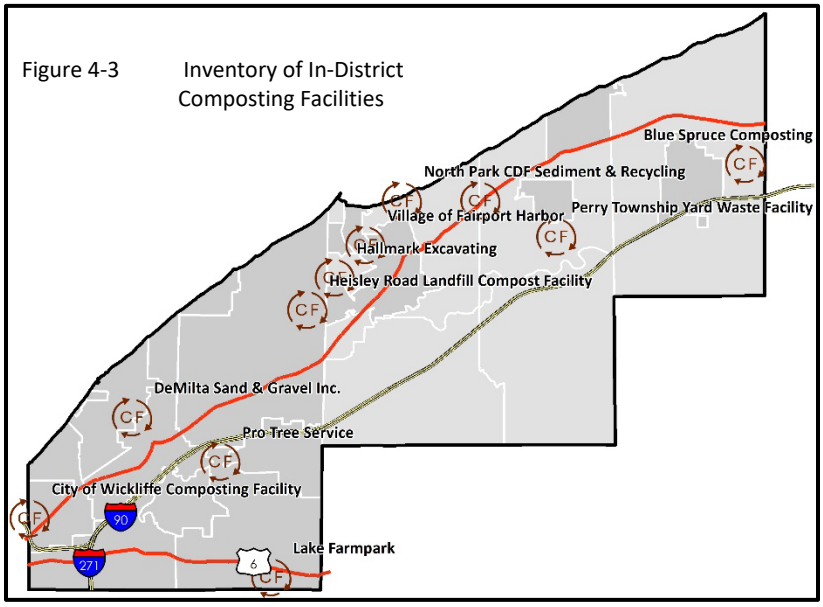


Figure 4-4 Description of In-District Composting Facilities

Facility Name	Class	Ownership	Publicly Accessible	Size of Service Area
Heisley Road Landfill Compost Facility	4	Private	Y	Regional
Lake Metroparks Farmpark	3	Public	Y	Limited
DeMilta Sand & Gravel Inc.	4	Private	N	Regional
Village of Fairport Harbor	4	Village	Y	Local
Pro Tree Service, Inc.	4	Private	N	Local
Perry Township Landfill Yard Waste Fac.	4	Public	Y	Local
McCallister's Landscaping and Supply	4	Private	N	Local
North Park CDF Sediment & Recycling	4	Private	N	Regional
City of Wickliffe Composting Facility	4	City	Y	Local
Hallmark Excavating	4	Private	N	Regional
Blue Spruce Composting	2	Private	Y	Regional

4. Processing Facilities

There are no processing facilities located within the SWMD.

5. Other Waste Management Facilities

There are no other types of waste management facilities located within the SWMD.

6. Waste Collection

Figure 4-5 Profile of Curbside Service in Reference Year

Community	Type of Service	Contracted	Service Provider
Concord Township	Subscription	No	Major Waste Disposal, Universal Disposal, Republic Waste, Esquire Trash Removal, Dumpster Bandit
Eastlake City	Nonsubscription	Yes	Republic Waste
Fairport Harbor Village	Subscription	Yes	Tony Scheiber
Grand River Village	Subscription	Yes	Republic Waste
Kirtland City	Nonsubscription	Yes	Waste Management Of Ohio
Kirtland Hills Village	Nonsubscription	Yes	Waste Management Of Ohio
Lakeline Village	Nonsubscription	Yes	Republic Waste
Leroy Township	Subscription	No	Major Waste Disposal, Universal Disposal, Dumpster Bandit, Republic Waste
Madison Village	Subscription	Yes	Waste Management of Ohio
Madison Township	Subscription	No	Major Waste Disposal, Universal Disposal, Waste Management of Ohio
Mentor City	Subscription	Yes	Waste Management of Ohio
Mentor-on-the-Lake City	Nonsubscription	Yes	Republic Waste
North Perry Village	Subscription	Yes	Waste Management of Ohio
Perry Township	Subscription	No	Major Waste Disposal
Perry Village	Subscription	Yes	Major Waste Disposal
Painesville City	Subscription	Yes	Republic Waste
Painesville Township	Subscription	No	Waste Management of Ohio
Timberlake Village	Nonsubscription	Yes	Republic Waste
Waite Hill Village	Nonsubscription	N/A	Municipal
Wickliffe City	Subscription	Yes	Kimble Services
Willoughby City	Nonsubscription	Yes	Republic Waste
Willoughby Hills City	Nonsubscription	Yes	Republic Waste
Willowick City	Subscription	Yes	Kimble Services

Waste is collected differently by each of the 23 communities (IE Township, Village or City) with the SWMD. There are typically two types of service provided. Some communities elect for a subscription-based service for their residents, meaning each home or business must contact the service provider individually to set up service, stop, and/or pay for service. There are 14 such communities in the SWMD. Conversely, non-subscription service is a type of waste service in which the home or business is already enrolled in the collection service. Regardless of subscription or not, communities may or may not have a contracted service provider that the resident or business must utilize. In the absence of a contracted provider, there may be one or multiple providers in a community from which residents and businesses can choose.

There is third service model utilized in one community in the SWMD. Waite Hill Village utilizes municipal pickup services, a model in which the municipality operates the waste collection services.

C. Solid Waste Facilities Used in the Reference Year

1. *Landfill Facilities*

Landfills used by the SWMD include the Lake County Solid Waste Facility landfill –the only landfill located in the district, plus nine out-of-district but in-state landfills. Lake County Solid Waste Facility took in 86% of all waste disposed by the SWMD. The remaining 14% was spread across ten landfills throughout the state; no waste was deposited at out-of-state landfills. The source of information is Ohio EPA. Table 4-2, "Landfill Facilities Used by the District in the Reference Year" contains the information concerning waste that was disposed of at these facilities.

Table 4-2 Landfill Facilities Used by the District in the Reference Year

Facility Name	Location		Waste Accepted from SWMD (tons)	Percent of all SWMD Waste Disposed	Remaining Capacity (years)
	County	State			
In-District					
Lake County Solid Waste Facility	Lake	Ohio	202,852	86%	23
		Ohio		0%	
Out-of-District					
Countywide RDF - Republic Services	Stark	Ohio	188	0%	62
Wood County Landfill	Wood	Ohio	1	0%	5
Geneva Landfill	Ashtabula	Ohio	26,153	11%	65
Mahoning Landfill	Mahoning	Ohio	107	0%	45
American Landfill, Inc.	Stark	Ohio	326	0%	74
Port Clinton Landfill, Inc	Ottawa	Ohio	< 0	0%	120
Rumpke of Northern Ohio, Inc. Noble Road Landfill	Richland	Ohio	92	0%	16
Lorain County II Landfill LLC	Lorain	Ohio	6,563	3%	16
Kimble Sanitary Landfill	Tuscarawas	Ohio	86	0%	20
Carbon Limestone Landfill LLC	Mahoning	Ohio	29	0%	47
Out-of-State					
None				0%	
	Total		236,398	100%	0

2. *Transfer Facilities*

There were five transfer facilities that accepted waste from the SWMD during the reference year, all located outside the District but within the state. Information for this section was obtained from Ohio EPA. Approximately 14.8% of all landfill waste generated in the SWMD was processed at a transfer facility.

Table 4-3 Transfer Facilities Used by the District in the Reference Year

Facility Name	County	State	Waste Accepted from District (tons)	Percent of all District Waste Transferred	Landfill Where Waste was Taken to be Disposed
In-District					
None		Ohio		0%	
Out-of-District					

Cleveland Transfer /Recycling Station	Cuyahoga	Ohio	9,700	24%	American Landfill
Rumpke Waste, Inc. Broadview Heights Recycling Center	Cuyahoga	Ohio	1,977	5%	Noble Road Landfill
Harvard Road Transfer Station	Cuyahoga	Ohio	2,674	7%	Noble Road Landfill
Kimble Transfer & Recycling Facility - Twinsburg	Stark	Ohio	13,558	33%	Kimble Sanitary Landfill
BFI Glenwillow Transfer Station	Cuyahoga	Ohio	13,005	32%	Lorain County II Landfill LLC, Stark – Republic Waste Services Countywide Recycling & Disposal Facility, Covanta Niagara
Out-of-State					
None				0%	
Total			39,010	100%	0

The transfer facilities listed in Table 4-3 are those identified for purposes of Ohio Revised Code Section 3734.53(A)(13)

Table 4-4 Composting Facilities Used by the District in the Reference Year

Facility Name	Location (County)	Material Composted (tons)	Percent of all Material Composted
In District			
Heisley Road Landfill Compost Facility	Lake	***26,984***	73%
Lake Metroparks Farmpark	Lake	-	0%
DeMilta Sand & Gravel Inc.	Lake	***1,974***	5%
Blue Spruce Composting	Lake	***371***	1%
Hallmark Excavating	Lake	***1,859***	5%
North Park CDF Sediment & Recycling	Lake	-	0%
Village of Fairport Harbor	Lake	-	0%
Pro Tree Service	Lake	-	0%
Perry Township Landfill Yard Waste Facility	Lake	2,077	6%
McCallister's Landscaping and Supply	Lake	6	0%
City of Wickliffe Composting Facility	Lake	3,117	8%
Out-of-District			
Number One Landscape	Medina	16	0%
Kimble Sanitary Landfill	Tuscarawas	72	0%
Abate Landscaping	Geauga	24	0%
Weaver Farms	Ashtabula	428	1%
	Total	36,929	

3. Composting Facilities

There were fifteen composting and yard waste management facilities that provided services within the SWMD in 2021. During 2021, these facilities composted approximately 36,929 tons of material. Eleven of the facilities are located within the SWMD and four facilities are located out-of-District. As noted below in Table 4-2, some of the in-district facilities did not process any compost waste from the SWMD during the planning period.

4. Processing Facilities

The SWMD did not utilize any processing facilities during the reference year.

5. Other Waste Management

The SWMD did not utilize any other waste management facilities during the reference year.

D Use of Solid Waste Facilities During the Planning Period

1. Landfills

The SWMD's lone landfill, the Lake County Solid Waste Facility, handled 86% of all landfill waste generated in the reference year. Lake County Solid Waste Facility is capable of handling projected waste tonnage well past the horizon of this plan, as it was recently expanded. A PTI (permit to install) was issued to the facility in 2016 which allowed expansion of 7.4 million cubic yards. There is space for approximately 5.43 million tons of solid waste in the landfill, equating to approximately 23 years of life remaining in the landfill, per 2021 EPA reports. This capacity is sufficient for the planning period, though the SWMD will need to begin planning for expansion or contingency for the next planning period.

The SWMD's other major destination for waste, Geneva Landfill in neighboring Ashtabula County, has 65 years of remaining life. This facility processes 11% of the 14% of landfill waste generated in the SWMD that is not disposed of at the in-district facility. The other 3% is deposited at Lorain County II Landfill LLC, located in Lorain County. That facility has 16 years of remaining life, meaning the SWMD may be forced to divert some waste towards the end of the planning period if the landfill is not expanded.

There are eight other facilities outside of the SWMD that are utilized by the district to deposit waste. These eight facilities account for less than 1% of the landfill waste generated by the district and have an average remaining lifespan of approximately 48 years.

2. Transfer Facilities

The five transfer facilities utilized by the SWMD as identified in Table 4-2 are projected to continue to be utilized throughout the planning period.

3. Composting Facilities

The SWMD expects to continue utilizing the seven in-district composing facilities that were utilized in the reference year. Further, with the new Class II facility that has become available in the district will provide valuable capacity for food scraps as the first facility of its kind in the SWMD. The district will find ways to utilize this new space for food scraps to increase diversion quantities from landfill to compost facility. Composting will continue to be a priority moving forward, as it diverts enormous quantities of waste from landfills. This not only saves precious space in landfills, but it also provides an environmentally friendly alternative to traditional landfill disposal of organic waste.

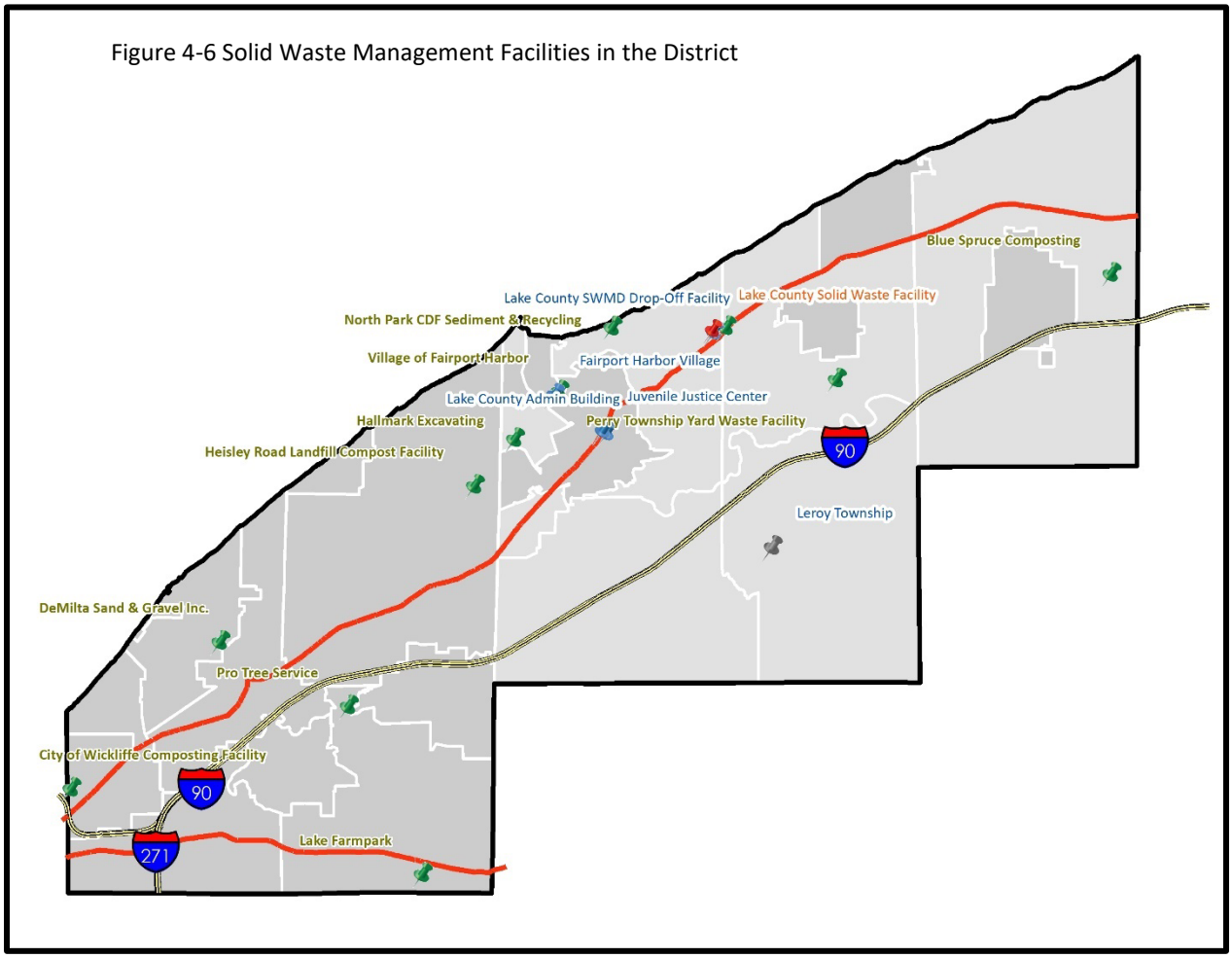
4. Processing Facilities

The SWMD did not utilize any processing facilities in the reference year and does not project to utilize any such facilities in the planning period.

5. Other Waste Management

The SWMD did not utilize any other waste management practices in the reference year and does not intend to utilize other waste management practices during the planning period.

Figure 4-6 Solid Waste Management Facilities in the District



E Siting Strategy

Purpose of the Siting Strategy

If the SWMD will not have access to enough landfills to dispose of all waste the SWMD will need to dispose of. If existing facilities cannot provide that capacity, then the policy committee must develop a plan for obtaining additional disposal capacity.

Although unlikely, the policy committee can decide that it is in the SWMD's best interest to construct a new solid waste landfill facility to secure disposal capacity. In that situation, Ohio law requires the policy committee to develop a strategy for identifying a suitable location for the facility. That requirement is found in Ohio Revised Code Section 3734.53(A)(8). This strategy is referred to as a siting strategy. The policy committee must include its siting strategy in the solid waste management plan. If this solid waste management plan includes a siting strategy, then that strategy is summarized in this chapter and presented in full in Appendix S.

The SWMD is not planning to construct any new landfill facilities, and therefore does not need to develop a siting strategy.

F Designation

Purpose of Designation

Ohio law gives each SWMD the ability to control where waste generated from within the SWMD can be taken. Such control is generally referred to as flow control. In Ohio, SWMDs establish flow control by designating facilities. SWMDs can designate any type of solid waste facility, including recycling, transfer, and landfill facilities.

The policy committee decides whether the board of directors has the authority to designate facilities. The policy committee does this in the solid waste management plan.

Even if the policy committee gives the board of directors the authority to designate facilities, the board decides whether to act on that authority. If it chooses to use its authority to designate facilities, then the board of directors must follow the process that is prescribed in ORC Section 343.014. If it chooses not to designate facilities, then the board of directors doesn't act on its authority.

Once the board of directors designates facilities, the SWMD's can go to only designated facilities can take the SWMD's waste. That means, no one can legally take waste from the SWMD to undesignated facilities, and owners/operators of undesignated facilities cannot legally accept waste from the SWMD. The board of directors can grant a waiver to allow an undesignated facility to take the SWMD's waste.

If the board of directors designates facilities, then the next section will provide a summary of the designation process, and Table 4-6 will list currently designated facilities.

1 Description of the SWMD's Designation Process

The Board of Directors of the Lake County Solid Waste Management District is authorized to establish facility designations in accordance with Section 343.014 of the ORC after this plan has been approved by the Director of the Ohio Environmental Protection Agency.

2 List of Designated Facilities

There are currently no designated facilities in the SWMD.

CHAPTER 5 WASTE REDUCTION AND RECYCLING

Purpose of Chapter 5

As was explained in Chapter 1, a SWMD must have programs and services to achieve reduction and recycling goals established in the state solid waste management plan. A SWMD also ensures that there are programs and services available to meet local needs. The SWMD may directly provide some of these programs and services, may rely on private companies and non-profit organizations to provide programs and services, and may act as an intermediary between the entity providing the program or service and the party receiving the program or service.

Between achieving the goals of the state plan and meeting local needs, the SWMD ensures that a wide variety of stakeholders have access to reduction and recycling programs. These stakeholders include residents, businesses, institutions, schools, and community leaders. These programs and services collectively represent the SWMD's strategy for furthering reduction and recycling in its member counties.

Before deciding upon the programs and services that are necessary and will be provided, the policy committee performed a strategic, in-depth review of the SWMD's existing programs and services, recycling infrastructure, recovery efforts, finances, and overall operations. This review consisted of a series of 12 analyses that allowed the policy committee to obtain a holistic understanding of the SWMD by answering questions such as:

- Is the SWMD adequately serving all waste generating sectors?
- Is the SWMD recovering high volume wastes such as yard waste and cardboard?
- How well is the SWMD's recycling infrastructure being used/how well is it performing?
- What is the SWMD's financial situation and ability to fund programs?

Using what it learned, the policy committee drew conclusions about the SWMD's abilities, strengths and weaknesses, operations, existing programs and services, outstanding needs, available resources, etc. The policy committee then compiled a list of actions the SWMD could take, programs the SWMD could implement, or other things the SWMD could do to address its conclusions. The policy committee used that list to make decisions about the programs and services that will be available in the SWMD during the upcoming planning period.

After deciding on programs and services, the policy committee projected the quantities of recyclable materials that would be collected through those programs and services. This in turn allowed the policy committee to project its waste reduction and recycling rates for both the residential/commercial sector and the industrial sector (See appendix E for the residential/commercial sector and Appendix F for the industrial sector).

A. Solid Waste Management District's Priorities

Figure 5-1 Priority Programs for Planning Period

Priority Program	Priority Area
Multifamily Pilot	Residential Service
Non-Subscription Curbside Recycling	Difficult to Manage Waste
Partnership with Lake County Captains	Large Venue Recycling & Public Outreach
Revamp Surveys	Commercial/Institutional & Industrial Recycling
Evaluate the Move Away from Special Collections	
Reinvigorate the BWRC	
Explore Recycling of Difficult Items	
Pollution Prevention Intern	

B. Program Descriptions

See Appendix I for more Information on the programs found in Figure 5-1.

Residential Recycling Infrastructure

Curbside Recycling Services

Table 5-1 Curbside Recycling Services

ID#	Name of Curbside Service/Community Served	Service Provider	When Service Was /Will be Available
NCS1	Eastlake City	Republic Services	Ongoing
NCS2	Grand River Village	Republic Services	Ongoing
NCS3	Kirtland City	Waste Management	Ongoing
NCS4	Kirtland Hills Village	Waste Management	Ongoing
NCS5	Lakeline Village	Republic Services	Ongoing
NCS6	Mentor-on-the-Lake City	Republic Services	Ongoing
NCS7	Painesville City	Republic Services	Ongoing
NCS8	Timberlake Village	Republic Services	Ongoing
NCS9	Waite Hill Village	Academy Metals/River Valley Paper	Ongoing
NCS10	Willoughby City	Republic Services	Ongoing
NCS11	Willoughby Hills City	Republic Services	Ongoing
SC1	Concord Township	Major Waste Disposal, Universal Disposal, Republic Waste, Esquire Trash Removal, Dumpster Bandit	Ongoing
SC2	Leroy Township	Major Waste Disposal, Universal Disposal, Dumpster Bandit, Republic Waste	Ongoing
SC3	Madison Township	Major Waste Disposal, Universal Disposal, Waste Management of Ohio	Ongoing
SC4	Madison Village	Waste Management of Ohio	Ongoing
SC5	Mentor City	Waste Management of Ohio	Ongoing
SC6	North Perry Village	Waste Management of Ohio	Ongoing
SC7	Painesville Township	Waste Management of Ohio	Ongoing

SC8	Perry Township	Major Waste Disposal	Ongoing
SC9	Perry Village	Major Waste Disposal, Waste Management of Ohio, Tony Schieber Hauling	Ongoing
SC10	Wickliffe City	Kimble Services	Ongoing
SC11	Willowick City	Kimble Services	Ongoing
SC12	Fairport Harbor	Subscription	Ongoing

Curbside recycling services are not financially supported by the District. Each community is responsible for providing their own curbside recycling services. Support from the District comes in the form of regional bid packages and other creative solutions that are cost-effective and within the abilities of the current SWMD staffing and budgetary restrictions.

Drop-off Recycling Locations

Table 5-2 Drop-off Recycling Locations

ID#	Name of Drop-off/Community Served	Service Provider	When Service was/will be Available
FTU1	Fairport Harbor Village - 1380 East Street	Tony Schiber Hauling	Ongoing
FTU2	Lake County SWMD Recycling Drop-Off Facility - 2039 Blasé Nemeth Road, Painesville, OH 44077	Republic Waste Services	Ongoing
FTU3	Lake County Administration Building - 71 N Park Pl, Painesville, OH 44077 - Part of Lake County SWMD Facility Amount	Republic Waste Services	Ongoing
FTU4	Juvenile Justice Center - 53 E Erie Street, Painesville, OH 44077	Republic Waste Services	Ongoing
FTR1	Leroy Township	Tony Schiber Hauling	Ongoing

Drop-off recycling dumpsters were placed at the Lake County Solid Waste Facility in 2017, and are for use by all District residents. They were added with the hope of providing local users, especially those in more rural townships in the eastern portion of the District and near the facility, with an alternative to paid curbside recycling services. Drop-off service was offered in Concord Township until 2019, when it was cancelled. In 2021, drop-off recycling sites were added at the new Lake County Administration Building, as well as the Juvenile Justice Center. These facilities are less than a quarter mile from one another.

Mixed Solid Waste Material Recovery Facility

The District has no such facilities.

Multi-Family Unit Recycling

In the last Plan update, the District identified a gap in curbside recycling pickup in multifamily residential developments. It was found that none of the communities' haulers were offering pickup to these residents. To explore the feasibility of a larger District-wide multifamily curbside recycling program, the District had planned to launch a multifamily pilot program during the previous planning period. Meetings were held in 2018 and 2019 to identify potential partners and develop the finer points of the program.

However, with the COVID-19 pandemic in 2020, all non-essential programs were halted. As such, the pilot program did formally begin. This Plan update recommends re-launching the program during the next planning period.

Other Residential Recycling Programs (list individually below)

None.

Commercial/Institutional Sector Reduction and Recycling Programs

School Recycling

Royal Oak Recycling provides paper recycling containers at schools, churches, and other institutional users across the District. These recycling containers, known as "Paper Retrievers", are ubiquitous in school parking lots across the District. Containers are clearly marked and advertise what is accepted. This service continues to provide a valuable source of recycling, collecting over 1,000 tons of paper products in 2021.

Collection Services (small businesses, government offices, etc.)

Many Lake County employees have the opportunity to participate in a recycling program at the Lake County Government Administration center in Painesville. Currently, only those employees working in Building "A" are eligible due to infrastructure and current contractor offerings. Negotiations are ongoing and the SWMD and County Administration intend to expand the program to all administration employees. With the completion of the new administration building, the program was expanded to collect plastics, paper, and glass products. It now includes all types of recyclables, rather than just carboard as was outlined in the previous Plan update.

Waste Assessments/Waste Audits

The District will work towards developing a program for use by all communities in which haulers track waste generated by each community, to include spot checks and waste audits. This may include refining the bid package support the SWMD provides to all communities in the district to include such language and actions in bids from haulers. The District hopes to launch a Pollution Prevention Intern program during the next planning period to assist with these activities.

Workgroup/Roundtable

The District's Business Waste Reduction Committee (BWRC) will begin meeting regularly during the planning period, and will work to recommend policies and programs to the policy committee that will increase commercial recycling and help cultivate a better relationship between the District and those businesses within the District.

Large Venue Recycling

From 2003 to 2018, the District worked with Minor League Baseball's Lake County Captains – the Cleveland Guardians' High-A affiliate – to host an annual "Go Green" weekend. Taking place at the Captains' Classic Park in Eastlake, the program was designed to educate visitors on recycling and waste

reduction strategies. Each year, the District sponsored a game-day event geared towards recycling, entitled "Go Green with the Captains".

The event was a cost-effective way to reach thousands of people each year in just one day. Added benefits included a partnership with the Captains that led to additional recycling and waste diversion from the Captains organization and Classic Park. However, the contract ended after the 2018 season and was not renewed. To substitute for this lost outreach opportunity, the District gave away reusable bags throughout the year at local events such as farmer's markets. The District gave out over 1,600 reusable bags made from recycled materials during the year.

The District had hopes to re-launch the partnership with the Captains in 2020, utilizing a different model. The past "Go Green with the Captains" event allowed for only a single day of outreach and education. The new program was to include multiple nights throughout the season, and feature numerous giveaways sponsored by the District. Information for the District would be displayed around the stadium and on the video screen. However, the partnership was cancelled due to the COVID-19 pandemic. Plans for the partnership were also cancelled for similar reasons in 2021. The District still hopes to restart the program in a revamped fashion during the planning period, now that the public health emergencies are over.

Award/Recognition

The District intends to re-institute the environmental steward award for Lake County businesses, as outlined in the previous Plan update. Awards and recognition of this manner can help to reinforce and encourage desirable waste reduction and recycling methods. The program as outlined in the previous Plan update was unable to move forward due to the COVID-19 pandemic.

Industrial Sector Reduction and Recycling Programs

Waste Assessments/Waste Audits

The District will continue to build on its existing relationships with large-scale industrial users, such as Lubrizol, Steris, and Avery Dennison. District staff, along with staff from OSU Extension Services will work to curate more reliable industrial waste and recycling data through relationships with industrial users. A new Pollution Prevention Intern will assist with waste audits and assessments for industrial users. The District will also lean on users with proven methods to help educate other users and spread awareness of best practices.

Award/Recognition

The environmental steward award as described above will also be available to industrial businesses.

Restricted/Difficult to Manage Wastes

Yard Waste

Lake County's Yard Waste Management Plan is a community-based program with support from the private sector. Yard waste totals in the District have traditionally been higher than other Districts in the region, in part because of access to compost sites and access to yard waste pickup. Each individual community in the District manages their own yard waste pickup with no financial support from the District.

In addition to the municipal yard waste pickup services, OSU Extension offers the Master Gardener program. This program provides instruction and information to residents who have an interest in gardening and organic waste. It teaches in areas such as composting and yard waste management.

Household Hazardous Waste

The District's Solid Waste Management Plan must include a strategy for managing household hazardous waste (HHW), including lead acid batteries pesticides, automobile products, household cleaners, paint products; and miscellaneous materials such as mercury items, glue, flares, etc. As part of its Household Hazardous Waste (HHW) Management Plan, the District will continue to provide an education program, telephone hotline, as well as its biannual HHW Collection Program which is detailed in Appendix I. A specific objective of the District HHW Plan is to educate residents on HHW. Collection will continue, as it has become more successful during the course of the planning period, with two collection dates during the year.

Scrap Tires

The scrap tire drop-off event was cancelled for 2022 due to costs of the program. The District was not capturing enough waste in relation to the costs of running the program. Collection of scrap tires will continue on-site at the solid waste facility during normal operating hours for a nominal fee. Scrap tires can also be dropped off at many locations that participate in the Liberty Tire collection program. The District may explore OEPA grant funding for scrap tire education and collection.

Electronic Equipment

Electronics waste continues to be fast-growing and difficult to divert. The District made significant gains in electronics recycling during the observation period. In 2017, only 22 tons of electronics waste was collected at one event that was attended by just under 700 vehicles. By 2022, three separate events were held, resulting in 125 tons collected from roughly 3,300 vehicles. This does not include annual collections in Willoughby Hills and Eastlake, which did not report quantities to the District. Additionally, large corporations like Best Buy and Staples accepted most consumer electronics for drop-off to recycle.

Given the success and apparent demand for electronics recycling, the District moved to a year-long rolling collection in 2023. Electronics can now be dropped off at the lake County Solid Waste Facility year-round during normal operating hours.

Appliances

Appliances can be dropped off at the Lake County Solid Waste Facility during normal operating hours, for a nominal fee.

Pharmaceuticals

In conjunction with Lake County Narcotics Agency (LCNA) and the Lake County General Health District, the SWMD collects pharmaceutical waste through the Pharmaceutical Drug Collection and Disposal Program. This program helps to keep potentially environmentally hazardous materials out of waterways and ecosystems. Medications, both prescription and over the counter, and increasingly being found in our waterways due to the widespread practice of flushing medications down the toilet. Flushing

medication is problematic because our wastewater treatment plants are not equipped to remove pharmaceutical contaminants, which then get into our waterways and affect aquatic wildlife. Additionally, the program works by keeping dangerous and addictive medications and narcotics off the street. Drop-off boxes are available at the following locations:

- Eastlake Police Department
- Lake County Sheriff's Office
- Lakeland Community College Police Department
- Madison Township Police Department
- Mentor Police Department
- Willoughby Hills Police Department
- Willoughby Police Department

Economic Incentives

The District will explore a breadth of economic incentives during the planning period through the BWRC.

Data Collection

Robust data is already provided by Ohio EPA regarding all types of waste and recycling. However, the District undertakes additional methods of data collection.

Annual Survey – Community Recycling

OSU Extension conducts an annual survey of local government in the District to collect tonnage information on certain recycling and composting materials, including the ultimate destination of organic matter. The survey also asks about difficult to dispose materials, such as scrap tires and appliances. To support this endeavor the District works with OSU Extension on delivery methods (IE online, paper) and meets annually with community representatives. The District Coordinator will continue to review results of the survey and amend results to account for double counting of tonnages.

Annual Survey – Commercial/Industrial Recycling

The BWRC has previously prepared and administered an annual survey to track commercial and industrial recycling. That practice was suspended in 2015, and has not continued due to the BWRC being dormant/

As part of the District efforts to renew the BWRC, the annual commercial and industrial recycling survey will be relaunched during the planning period. The new survey will be much more streamlined and simpler than previous iterations, with the goal of a more targeted approach. Those businesses that have previously recycled, or are known recyclers, and/or past survey respondents, will be asked to complete a survey to update information every couple of years. Such data will help identify high performers, best practices, and gaps in recycling infrastructure or marketing.

Outreach, Education, Awareness, and Technical Assistance

Web Page

The District maintains a website that meets the requirements of Goal #3 of the 2020 State Plan. The site explains the purpose of the District and its goals for waste reduction. The current Plan is linked to the

page, as is the latest special collection flyer, listing dates for the current year. A link for the community recycling survey, to be completed by each community, is present as well. The main page also provides information of pharmaceutical drug disposal, with instructions for what is accepted (and is not), hours for drop off, and a link to the main program page on the Lake County General Health District page.

Information on the BWRC, its mission, and goals, can be found on the District main page, as well as information on OSU Extension's educational outreach work, and their contact info.

Additional pages provide hours and for the Solid Waste Facility. Links for large waste haulers are provided, as are links to each community webpage in the District. Information on special collections, a list of private recycling drop-off locations, and a list of appropriate items for recycling can also be found on the page.

Resource Guide

The District provides a resource guide, with names and contact info of recycling providers/partners in the area. The guide is updated periodically.

Education Provider

OSU Extension and the District work in tandem to provide educational programming for students in the District. Programs are offered in elementary schools across the District that educate students on topics such as recycling and waste reduction. An OSU Extension program assistant leads programs such as "Plastic Promise" and "What We Waste", designed to teach students about recycling and waste reduction through engaging and fun activities.

Current strategies that will continue through the planning period include:

- Clean and Green Lake County Poster Contest, held concurrently with the Clean and Green Cleanup Program, taking place each spring. Students at schools across the SWMD are encouraged to create a poster with a logo that can be used for marketing materials for the SWMD. Posters should include imagery encouraging recycling and waste cleanup. One winner each is selected from an elementary school, middle school, and high school, with winning posters being placed at the county administration building and also being used in marketing materials for the year. In 2021, 836 entries were received.
- In-class recycling education programs, which are offered to K-3 students as part of OSU Extension's in-class programs. In 2021, programs were offered at 13 schools across five school districts.

Residential Sector

Outreach at Community and Senior Centers

The District and OSU Extension are developing programming geared towards adults. This programming will offer information such as what can (and cannot) be recycled, how to reduce waste, and times and locations of all special collections. Originally intended for launch during the previous planning period, COVID-19 forced cancellation of the events after 2020. The program will begin during the planning period, and evaluated for effectiveness on an ongoing basis.

Commercial/Institutional Sector

The BWRC will re-convene and being offering commercial and industrial recycling surveys on an annual basis. Programs will be developed by BWRC, in conjunction with business leaders, to ensure access to recycling infrastructure and services.

Industrial Sector

The District will re-instate the Environmental Steward Award, which identified those industrial users who exhibit excellent and/or innovative waste reduction strategies within the District. The award program will be administered by the BWRC. Winners will be recognized by the District, and will be used as an example of how other businesses can reduce waste and recycle materials. The BWRC will determine the particulars of the program.

The District will also launch the Pollution Prevention Intern program, which will hire a university student as an intern to assist with industrial waste audits and assessments, among other duties.

See above section on commercial/institutional sector for additional information on the BWRC.

C. Waste Reduction and Recycling Rates

Residential/Commercial Recycling in the District

The District is projected to achieve a residential/commercial waste reduction rate (WRR) of 25.6% in the first year of the planning period, surpassing the Ohio EPA goal of 25%. Percentage of diverted waste is expected to increase during the planning period.

Table 5-3 Residential/Commercial Waste Reduction and Recycling Rate

Year	**Projected Quantity Collected** (tons)	**Residential/ Commercial** WRR[1] **(%)**
2025	85,639	25.6%
2026	86,681	25.9%
2027	87,743	26.1%
2028	88,827	26.4%
2029	89,932	26.7%
2030	91,059	27.1%

[1]*WRR = Waste Reduction and Recycling Rate*

Industrial Recycling in the District

Industrial WRR is projected to increase slightly during the planning period, while projected tonnage is expected to remain constant.

Table 5-4 Industrial Waste Reduction and Recycling Rate

Year	**Projected Quantity Collected** (tons)	**Industrial WRR**[1] (%)
2025	79,805	84.9%
2026	79,805	85.1%
2027	79,805	85.3%
2028	79,805	85.5%
2029	79,805	85.7%
2030	79,805	85.9%

[1]*WRR = Waste Reduction and Recycling Rate*

CHAPTER 6 BUDGET

Purpose of Chapter 6

The budget accounts for how the SWMD will obtain money to pay for operating the SWMD and how the SWMD will spend that money. For revenue, the solid waste management plan identifies the sources of funding the SWMD will use to implement its approved solid waste management plan. The plan also provides estimates of how much revenue the SWMD expects to receive from each source. For expenses, the solid waste management plan identifies the programs the SWMD intends to fund during the planning period and estimates how much the SWMD will spend on each program. The plan must also demonstrate that planned expenses will made in accordance with ten allowable uses that are prescribed in ORC Section 3734.57(G).

Ultimately, the solid waste management plan must demonstrate that the SWMD will have adequate money to implement the approved solid waste management plan. The plan does this by providing annual projections for revenues, expenses and cash balances.

If projections show that the SWMD will not have enough money to pay for all planned expenses or if the SWMD has reason to believe that uncertain circumstances could change its future financial position, then the plan must demonstrate how the SWMD will balance its budget. This can be done by increasing revenues, decreasing expenses, or some combination of both.

This chapter of the solid waste management plan provides an overview of the SWMD's budget. Detailed information about the budget is provided in Appendix O.

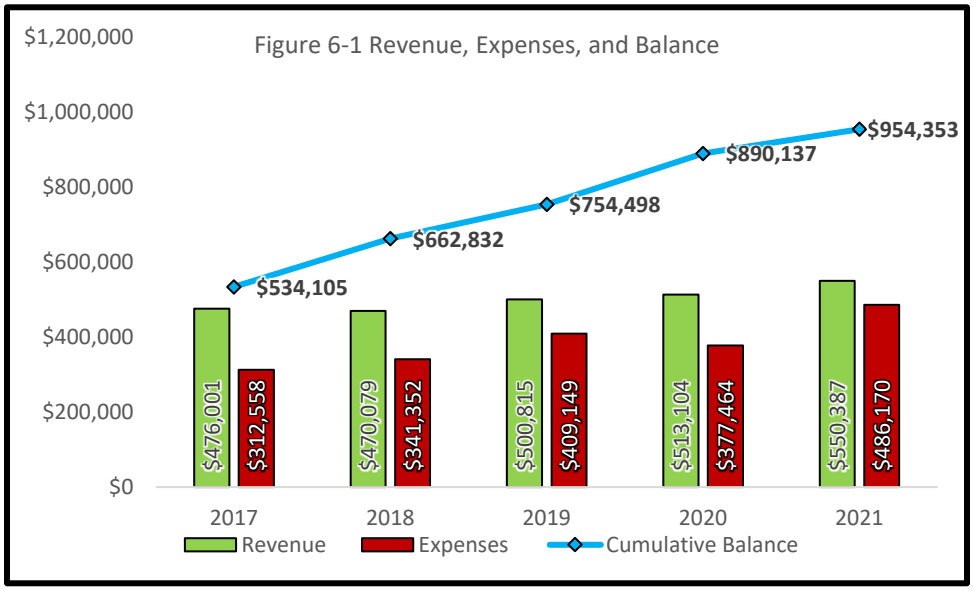
A. Overview of the SWMD's Budget

During the reference year (2021), revenue was $550,387, while expenses were $486,170. This represents a carryover of $64,216. Figure 6-1 provides a visualization of trends in the observation period, leading up to the reference year.

During the observation period, revenues climbed $74,386, an increase of 15.6%. These revenues are derived almost exclusively from disposal fees, with 97% coming from such fees. The other 3% us marked as other revenue, and is from sources such as income from recycling, or returned fees. Disposal fee revenue can be broken into three parts: in-district, out-of-district, and out-of-state. In-district revenue was $405,348, accounting for 76% of disposal fees and 73.6% of total revenue. Out-of-district revenue was $128,288, accounting for 24% of disposal fees and 23.3% of total revenue. There were no out-of-state fees collected during the reference year.

Expenses come from a variety of sources, including special collections, recycling drop-off, and education. During the observation period, expenses climbed 55.5%, far outpacing growth in revenue. Despite this, the District has maintained a positive annual balance, carrying over funds after each year in the observation period. However, annual carryover has decreased 60.7% during the planning period.

Cumulative balance for the district has continued to grow during the observation period. The balance grew by 78.7%, adding $420,218 from 2017 to 2021. This large carryover will help the District withstand record inflation and rising costs, and will give a cushion for adjustments to be made in fees and expenses, if needed.



B. Revenue

Overview of How Solid Waste Management Districts Earn Revenue

SWMDs have multiple options to raise the revenue to finance their solid waste management plans. A SWMD can use just one or as many of these options as needed. Two of the most used options are disposal fees and generation fees. Before a SWMD can collect a generation or disposal fee it must first obtain approval from local communities through a ratification process.

Disposal Fees (See Ohio Revised Code Section 3734.57(B))
Disposal fees are collected on each ton of solid waste that is disposed at landfills in the levying SWMD. There are three components, or tiers, to the fee. The tiers correspond to where waste originated – from within the SWMD (in-district), from other SWMDs (out-of-district), or from other states.

Ohio's law prescribes the following limits on disposal fees:

- The in-district fee must be at least $1.00 and no more than $2.00.
- The out-of-district fee must be at least $2.00 and no more than $4.00; and
- The out-of-state fee must be equal to the in-district fee.

Generation fees (see Ohio Revised Code Section 3734.573)

Generation Fees are collected on each ton of solid waste that is generated within the SWMD and accepted at transfer facilities or landfills l in Ohio. There are no minimum or maximum limits on the per ton amount for generation fees.

Rates and Charges (see Ohio Revised Code Section 343.08)
The board of directors can collect money for a SWMD through what are called rates and charges. The board can require anyone that receives solid waste services from the SWMD to pay for those services.

Contracts (see Ohio Revised Code Sections 343.02 and 343.03)
The board of directors can contract with owners/operators of solid waste facilities or transporters of solid waste to collect generation or disposal fees on behalf of a SWMD.

Other Sources of Revenue
Other sources SWMDs use to earn revenue include:

- Revenue from the sale of recyclable materials.
- User fees (such as fees charged to participate in scrap tire and appliance collections).
- County contributions (such as from the general revenue fund or revenues from publicly operated solid waste facilities (i.e., landfills, transfer facilities)).
- Interest earned on cash balances.
- Grants.
- Debt.
- Bonds.

1. *Disposal Fees*

There is one landfill in the District, the Lake County Solid Waste Facility, which is not owned or operated by the District. Fees are $2.00 per ton of solid waste in-district; $4.00 per ton for solid waste out-of-district, and; $2.00 per ton of solid waste out-of-state. This is the District's primary source of revenue.

2. *Generation Fees*

The District does not have a generation fee, nor to this Plan update propose one. However, this may represent an additional source of revenue, should expenses outstrip costs in the future. Nearby SWMDs such as Lorain County use, or are in the processes of finalizing use of, a generation fee.

3. *Fees Collected via Designation Agreements*

The District does not have or utilize any destination fees.

4. *Other Funding Mechanisms*

Revenue from Selling Recyclable Materials

The District occasionally collects revenue from the sale of recyclables. This revenue is not project during the planning period, as it is typically an unexpected revenue and is thus quite unpredictable.

User Fees

The District charges fees to individuals who drop off certain items and the Solid Waste Facility. These items include tires, large electronics, and appliances. Due to the migration from special collections of tires and electronics to year-round drop-off, these fees may increase in the future.

Summary of Revenue

Table 6-1 Summary of Revenue

Year	Disposal Fees	Generation Fees	Designation Fees	Other Revenue			Total Revenue
				User Fee	Reimbursements	Other	
Reference Year							
2021	$533,637	$0	$0	$16,750	$0	$0	$550,387
Planning Period							
2025	$546,989	$0	$0	$0	$0	$0	$546,989
2026	$549,822	$0	$0	$0	$0	$0	$549,822
2027	$552,711	$0	$0	$0	$0	$0	$552,711
2028	$555,658	$0	$0	$0	$0	$0	$555,658
2029	$558,665	$0	$0	$0	$0	$0	$558,665
2030	$558,665	$0	$0	$0	$0	$0	$558,665

Source of information: CY 2017-2021 financial reports from LCSWMD, Table O-5, and Table O-6
Sample Calculations: Total Revenue = Disposal Fees + Generation Fees + Designation Fees + User Fees + Reimbursements + Other; (2021) $550,387 = $533,637 + $16,750

C. Expenses

Overview of How Solid Waste Management Districts Spend Money

SWMDs can spend revenue on 10 purposes named in law. All uses are directly related to managing solid waste or for dealing with the effects of hosting a solid waste facility. The 10 uses are as follows:

1. Preparing, monitoring, and reviewing implementation of a solid waste management plan.
2. Implementing the approved solid waste management plan.
3. Financial assistance to approved boards of health to enforce Ohio's solid waste laws and regulations.
4. Financial assistance to counties for the added costs of hosting a solid waste facility.
5. Sampling public or private wells on properties adjacent to a solid waste facility.
6. Inspecting solid wastes generated outside of Ohio and disposed within the SWMD.
7. Financial assistance to boards of health for enforcing open burning and open dumping laws, and to law enforcement agencies for enforcing anti-littering laws and ordinances.
8. Financial assistance to approved boards of health for operator certification training.
9. Financial assistance to municipal corporations and townships for the added costs of hosting a solid waste facility that is not a landfill.
10. Financial assistance to communities adjacent to and affected by a publicly owned landfill when those communities are not located within the SWMD.

Typically, most of a SWMD's budget is used to implement the approved solid waste management plan (allowable use 2). Expenses a SWMD can incur include:

- salaries and benefits.
- purchasing and operating equipment (such as collection vehicles and drop-off containers).
- operating facilities (such as recycling centers, solid waste transfer facilities, and composting facilities).
- offering collection programs (such as for yard waste and scrap tires).
- providing outreach and education.
- providing services (such as curbside recycling services).
- paying for community clean-up programs.

Table 6-2 Summary of Expenses

Expense Category	Year						
	Reference	Planning Period					
	2021	2025	2026	2027	2028	2029	2030
Plan Monitoring & Prep	$598	$15,000	$15,000	$30,000	$50,000	$40,000	$15,000
District Administration	$3,351	$3,384	$3,451	$3,520	$3,591	$3,663	$3,736
Recycling Collection							
Drop-Off	$31,674	$34,285	$34,971	$35,670	$36,383	$37,111	$37,853
Multi-Family	$0	$10,000	$15,000	$20,000	$25,000	$30,000	$0
Other	$4,528	$0	$0	$0	$0	$0	$0
Special Collections							
Tire Collection	$27,599	$29,874	$30,472	$31,081	$31,703	$32,337	$32,984
HHW Collection	$173,560	$187,867	$191,624	$195,457	$199,366	$203,353	$207,420
Electronics Collection	$77,340	$83,715	$85,390	$87,098	$88,840	$90,616	$92,429
Education/Awareness							
Education Staff	$82,400	$85,746	$86,603	$87,469	$88,344	$89,227	$90,120
Advertisement/Promotion	$12,836	$13,894	$14,172	$14,455	$14,744	$15,039	$15,340
Pollution Prevention Intern	$0	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000
BWRC/Contracted Services	$0	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500
Health Department Contracted Services	$72,285	$78,244	$79,809	$81,405	$83,033	$84,694	$86,388
Total Expenses	$486,170	$565,509	$579,992	$609,655	$644,504	$649,540	$604,769

Source of Information: Lake County SWMD

Table 6-2 Above demonstrates the projected expenses for the planning period, ending in 2030. Certain assumptions have been made regarding expenses. Due to ongoing inflationary pressures over the last few years, costs were projected to increase at 2% for all expenses through 2030. Therefore, the District will see continually increasing expenses.

D. Budget Summary

Table 6-3 Budget Summary

Year	Revenue	Expenses	Net Difference	Ending Balance
Reference Year				
2021	$550,387	$486,170	$64,216	$954,353
Planning Period				
2025	$544,212	$565,509	($21,297)	$944,177
2026	$546,989	$579,992	($33,003)	$911,174
2027	$549,822	$609,655	($59,834)	$851,341
2028	$552,711	$644,504	($91,793)	$759,548
2029	$555,658	$649,540	($93,882)	$665,666
2030	$558,665	$604,769	($46,104)	$619,562

Source of information: Tables 6-1 and 6-2
Sample Calculations: Ending Balance = (Revenue – Expenses) + Previous Ending Balance; (2026) $1,053,018 = ($546,989 - $528,185) + $1,034,214

Table 6-3 above provides a summary of the budget during the planning period. Revenues will stagnate while expenses increase due to the multifamily pilot program, Pollution Prevention Intern, inflation, and costs for plan updates. Expenses are expected to outstrip revenues each year of the planning period, causing a decrease in the ending balance of the District's finances.

E Alternative Budget

Purpose of an Alternative Budget

The budget that was described earlier in this section represents the policy committee's preferred and anticipated budget. However, there may be circumstances beyond the SWMD's control that make it difficult for the policy committee to confidently project the SWMD's future financial position. In those circumstances, the policy committee may provide an alternative budget. That alternative budget demonstrates how the SWMD would adjust its financial strategy if circumstances significantly change the SWMD's financial position after the solid waste management plan is approved.

The alternative budget presented below is a summary of the policy committee's strategy for addressing uncertainty in the preferred budget. The alternative budget is described in more detail in Section C of Appendix O.

Table 6-4 Alternative Budget Summary

The District does not prepare an alternative budget.

F. Major Facility Project

Purpose of a Budget for a Major Facility Project

SWMDs can own and operate solid waste management facilities. These facilities include landfills, transfer facilities, material recovery facilities, recycling centers, household hazardous waste collection centers, and composting facilities.

Solid waste facilities represent major financial undertakings that can result in substantial capital investments along with ongoing operating costs. Thus, when the policy committee decides that the SWMD will develop a new or make extensive renovations to an existing solid waste management facility, the solid waste management plan provides a specific budget for that facility.

This chapter of the solid waste management plan provides a summary of the SWMD's major facility budget. The full details of the budget are provided in Section D of Appendix O.

There are no major facility projects during the planning period.

APPENDIX A MISCELLANEOUS INFORMATION

Reference Year
Planning Period
Goal Statement
Material Change in Circumstances
Explanations of Differences in Data

A. Reference Year

The reference year for this solid waste management plan is 2021

B. Planning Period (first and last years)

The planning period for this solid waste management plan is: 2025 to 2040

C. Goal Statement

The SWMD will achieve the following Goal(s): Goal 2

D. Explanations of differences between data previously reported and data used in the solid waste management plan

a. Differences in quantities of materials recovered between the annual district report and the solid waste management plan.

1.) There is some discrepancy with curbside recycling tonnage. The 2021 ADR show 6851.45 tons collected through curbside programs. Internal data from the District in 2021 shows 7,096.96 tons collected at curbside. Finally, data from the community survey, conducted by OSU Extension, shows 7,185 tons from curbside recycling. Because the community survey provides data by community, and because it can be updated at any time (even after the ADR submitted), it provides more accurate data. Thus, for the purpose of analyzing curbside services, the number of 7,185 tons is used. However, in order to not confuse the data within the report, the District's internal 7,096.96 is used in calculation of sources of recycled materials, as the data balances with the ADR and the documented tonnage.

2.) The data from the 2017 ADR for recycled materials and the District's own recycling data does not match. The ADR only reports 50,156.43 tons of residential/ commercial recycling. However, data from the District shows 72,258. After reviewing the District's data, OEPA reports, and community

survey data, and because the ADR tonnage is significantly lower than any other data point from this Plan or the last Plan Update, the number 72,258 is used in this report.

b. Differences in financial information reported in quarterly fee reports and the financial data used in the solid waste management plan.

There are no differences between previously reported financial data and data used in this plan.

E. Material Change in Circumstances/Contingencies

The District will use its normal operational procedures to monitor plan implementation and determine whether and when a material change of circumstances that requires a plan amendment has occurred in the District. The Policy Committee, with the assistance of District staff, performs an annual review of the implementation of the District Plan. The meeting schedules of the Policy Committee and the Lake County Board of County Commissioners are frequent, and the meeting agendas are comprehensive enough to allow the Policy Committee and the Board to determine and respond to changing circumstances.

The SWMD continually monitors and evaluates solid waste activities within the District that would indicate significant changes in how the solid waste stream is managed. Circumstances that may result in a material change include, but are not limited to the following:

- The SWMD's fund balance falls below $150,000 (roughly 50% of its current balance). This amount is needed to operate district programs for one year.
- Solid waste generation in the District decreases by 25% or more.
- Changes in strategies for waste reduction or recycling such as, but not limited to, a decrease by 25% in the number of local communities providing curbside recycling programs.
- Private recycling activities decrease by 25% or more.
- Delay of more than one year in Program Implementation.
- Legislative changes.

Should any member of the Board or the District Coordinator believe that a material change of circumstances has occurred, the member or the Director will notify the President of the Board of County Commissioners and place an item on the agenda for the next meeting or schedule a special meeting, as appropriate.

The County Commissioners will review the changed circumstances and, utilizing any of the applicable criteria described above or based on the estimated impact of the change on the projections, timetables, programs, and activities contained in the approved District Plan, will approve or disapprove a resolution to recommend the preparation of a formal Plan Amendment.

The County Commissioners may refer this matter to the Policy Committee for further analysis or for a preliminary recommendation. The County Commissioners will make a determination on whether to request that a Plan Amendment be prepared by the Policy Committee within 90 days after the matter is first placed on its agenda, unless the time period is formally extended by the County Commissioners.

Upon making the determination, the County Commissioners will provide press releases to newspapers of general circulation within the District informing the public of its decision. The Board will also notify the Ohio Environmental Protection Agency.

If a recommendation for a Plan Amendment is adopted, the Policy Committee will prepare the Plan Amendment to address the material change in circumstances. The schedule for the development of the Plan Amendment, and the approval, ratification, and implementation, will be established by the Policy Committee, depending upon the extent of the amendment required to address the change in circumstances.

APPENDIX B RECYCLING INFRASTRUCTURE INVENTORY

A. Curbside Recycling Services, Drop-Off Recycling Locations, and Mixed Solid Waste Materials Recovery Facilities

1. Curbside Recycling Services

Over the years, the District has experienced a number of changes in curbside recycling. In 2005, the District needed to switch its county-wide residential curbside recycling program to a county-wide drop off collection program due to lack of District funds. In subsequent years, the District continued to have frequent conversations with the communities regarding alternate program options. In 2003, the District developed a grant program to assist communities in providing drop-off locations and curbside recycling programs. By 2009, seven (7) of the twenty-three (23) communities had curbside recycling programs in place.

Beginning in 2011, the District's financial support was phased out over a five-year period ending in 2015. Despite the reduced financial District support, many communities continued to establish curbside recycling programs and by 2016 each and every community in the District had an established curbside recycling program.

Because these curbside programs have been instituted by the communities and have been up and running in some communities for several years, the District believes these programs will successfully continue throughout the planning period.

Tables B-1a and B-1b on the following pages highlight the details of the various curbside recycling programs within the District.

Table B-1a Inventory of Non-Subscription Curbside Recycling Services Available in the Reference Year

ID #	Name of Curbside Service	Service Provider	County	How Service is Provided	Collection Frequency	Materials Collected [1]	Type of Collection	PAYT (Y/N)	Weight of Materials Collected from SWMD (tons)	Service will Continue Throughout Planning Period (Y/N)
NCS1	Eastlake City	Republic Services	Lake	Contract btwn City and private hauler	biweekly	paper, cardboard, glass, metal, 1-2 plastic	wheeled carts	N	1,292	Y
NCS2	Grand River Village	Republic Services	Lake	Contract btwn Village and private hauler	biweekly	paper, cardboard, glass, metal, plastic	tote bins	N	54	Y
NCS3	Kirtland City	Waste Management	Lake	Contract btwn City and private hauler	biweekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	377	Y
NCS4	Kirtland Hills Village	Waste Management	Lake	Contract btwn Village and private hauler	weekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	71	Y
NCS5	Lakeline Village	Republic Services	Lake	Contract btwn Village and private hauler	weekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	42	Y
NCS6	Mentor-on-the-Lake City	Republic Services	Lake	Contract btwn City and private hauler	biweekly	paper, cardboard, glass, metal, 1-7 plastic	wheeled carts	N	209	Y
NCS7	Painesville City	Republic Services	Lake	Contract btwn City and private hauler	weekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	875	Y
NCS8	Timberlake Village	Republic Services	Lake	Contract btwn Village and private hauler	biweekly	paper, cardboard, glass, metal, 1-7 plastic	wheeled carts	N	76	Y
NCS9	Waite Hill Village	Academy Metals/ River Valley Paper	Lake	Contract btwn Village and private hauler	biweekly	paper, cardboard, glass, metal, 1-7 plastic	bags	N	Not Reported	Y
NCS10	Willoughby City	Republic Services	Lake	Contract btwn City and private hauler	biweekly	paper, cardboard, glass, metal, 1-6 plastic	wheeled carts	N	858	Y
NCS11	Willoughby Hills City	Republic Services	Lake	Contract btwn City and private hauler	biweekly	paper, cardboard, glass, metal, 1-5 and 7 plastic	wheeled carts	N	5	Y
Total	**11**								**3,859**	

In 2021, 11 of the District's 23 communities provide non-subscription curbside recycling service through three different providers. These communities account for just over 38% of the population in the District. This represents five of the nine villages and six of the nine cities in the District. None of the five Townships offer non-subscription based curbside recycling service. Each of these communities' contracts directly with a private hauler and manages the service, rather than the District doing so. Communities maintain this service on their own, as District funding for curbside recycling service ceased in 2015.

3,859 tons of recycling was collected in non-subscription communities during the reference year, according to the District's 2021 annual data report.

Table B-1b Inventory of Subscription Curbside Recycling Services Available in Reference Year

ID #	Name of Curbside Service	County	How Service is Provided	Collection Frequency	Materials Collected [1]	Type of Collection	PAYT (Y/N)	Tonnage of Materials Collected from SWMD	Service to Continue Throughout Planning Period (Y/N)
SC1	Concord Township	Lake	Contract btwn homeowner and private hauler	weekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	Not Reported	Y
SC2	Leroy Township	Lake	Contract btwn homeowner and private hauler	weekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	78	Y
SC3	Madison Township	Lake	Contract btwn homeowner and private hauler	weekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	Not Reported	Y
SC4	Madison Village	Lake	Contract btwn homeowner and private hauler	biweekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	157	Y
SC5	Mentor City	Lake	Contract btwn homeowner and private hauler	biweekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	1,538	Y
SC6	North Perry Village	Lake	Contract btwn homeowner and private hauler	biweekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	46	Y
SC7	Painesville Township	Lake	Contract btwn homeowner and private hauler	biweekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	Not Reported	Y
SC8	Perry Township	Lake	Contract btwn homeowner and private hauler	biweekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	136	Y
SC9	Perry Village	Lake	Contract btwn homeowner and private hauler	weekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	Not Reported	Y
SC10	Wickliffe City	Lake	Contract btwn homeowner and private hauler	weekly	paper, cardboard, metal, glass, plastic	wheeled carts	N	647	Y
SC11	Willowick City	Lake	Contract btwn homeowner and private hauler	biweekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	599	Y
SC12	Fairport Harbor	Lake	Contract btwn homeowner and private hauler	weekly	paper, cardboard, glass, metal, plastic	wheeled carts	N	125	Y
Total	**12**							**3,327**	

In 2021, 12 of the District's 23 communities provided subscription-based curbside recycling through any number of available haulers servicing the community. All services using this model are established through a contract between each individual subscriber and the provider.

Subscription recycling services collected 3,327 tons of material for the reference year, according to the District's 2021 Annual Data Report.

2. Drop-Off Recycling Locations

Table B-2a Inventory of Full-Time, Urban Drop-off Sites Available in the Reference Year

ID#	Name of Drop-off Site	Service Provider	County	How Service is Provided	Days / Hours Available to the Public	Materials Collected [1]	Drop-off Meets All Minimum Standards (Y/N)	Tonnage of Materials Collected from the SWMD	Service will Continue Throughout Planning Period (Y/N)
FTU1	Fairport Harbor Village - 1380 East Street	Tony Schiber Hauling	Lake	Contract btwn municipality and hauler	Full Time	Cardboard, paper, metal cans, plastic bottles and jugs	Y	Not Reported	Y
FTU2	Lake County SWMD Recycling Drop-Off Facility - 2039 Blasé Nemeth Road, Painesville, OH 44077	Republic Waste Services	Lake	Contract btwn county and hauler	M-F 7am-3:30pm; Sat 9am-1pm	Cardboard, paper, metal cans, plastic bottles and jugs	N	251	Y
FTU3	Lake County Administration Building - 71 N Park Pl, Painesville, OH 44077 - Part of Lake County SWMD Facility Amount	Republic Waste Services	Lake	Contract btwn county and hauler	Full Time	Cardboard, paper, metal cans, plastic bottles and jugs	Y	Not Reported	Y
FTU4	Juvenile Justice Center - 53 E Erie Street, Painesville, OH 44077	Republic Waste Services	Lake	Contract btwn county and hauler	Full Time	Cardboard, paper, metal cans, plastic bottles and jugs	Y	Not Reported	Y
Total								**251**	

Table B-2b Inventory of Part-Time, Urban Drop-off Sites Available in the Reference Year

There were no part-time, urban drop-off sites active during the reference year.

Table B-2c Inventory of Full-Time, Rural Drop-off Sites Available in the Reference Year

ID#	Name of Drop-off Site	Service Provider	County	How Service is Provided	Days and Hours Available to the Public	Materials Collected [(1)]	Drop-off Meets All Minimum Standards? (Y/N)	Tonnage of Materials Collected from the SWMD	Service will Continue Throughout Planning Period (Y/N)
FTR1	Leroy Township	Tony Schiber Hauling	Lake	Contract btwn township and private hauler	Full Time	Paper	Y	78	Y
Total								**78**	

Table B-2d Inventory of Part-Time, Rural Drop-off Sites Available in the Reference Year

There were no part-time, rural drop-off sites active during the reference year.

3. Mixed Solid Waste Material Recovery Facilities

There were no mixed solid waste recovery facilities in the District during the reference year. These facilities are not utilized by the District.

B. Curbside Recycling and Trash Collection Service Providers

B-4 Inventory of Trash Collection and Curbside Recycling Service Providers in the Reference Year

		Trash Collection Services				Curbside Recycling Services		
Name of Provider	Counties Served	PAYT (Y/N)	Residential	Commercial	Industrial	Residential 2	Commercial 2	Industrial 2
Republic Services	Lake	N	X	X		X		
Major Waste Disposal Services	Lake	N	X	X	X	X		
Waste Management	Lake	N	X	X		X		
Tony Scheiber Hauling	Lake	N	X	X	X	X		
Kimble Companies	Lake	N	X	X		X		

There were five waste haulers in the District during the reference year. These haulers provide residential, commercial, and industrial trash collections services, as well as residential curbside recycling programs. None of the haulers offered commercial or industrial curbside recycling services during the reference year.

C. Composting Facilities

Table B-5 Inventory of Composting Facilities Used in the Reference Year

Facility Name	Compost Facility Classification	Publicly Accessible (Y/N)	Location	Food Waste (tons)	Yard Waste (tons)	Total
City of Wickliffe Composting Facility	C4R	Y	1290 East 289th Street, Wickliffe, OH, Lake County	0	3,118	3,118
Heisley Road Landfill Compost Facility	C4R	Y	6011 Heisley Road, Mentor, OH, Lake County	0	26,984	26,984
Perry Township Yard Waste Facility	C4R	Y	4720 Webb Road, Perry, OH, Lake County	0	2,077	2,077
DeMilta sand & gravel inc.	C4R	N	921 Erie Road, Eastlake, OH, Lake County	0	1,974	1,974
Hallmark Excavating	C4R	N	482 Blackbrook Road, Painesville, OH, Lake County	0	1,859	1,859
Number One Landscape	C4R	N	3775 Ridge Rd, Medina, OH, Medina County	0	16	16
Blue Spruce Composting	C2R	N	7551 South Ridge Road, Madison, OH, Lake County	0	371	371
Abate Landscaping	C4R	N	7080 Mulberry Road, Chesterland, OH, Geauga County	0	24	24
Kimble Sanitary Landfill	C4R	Y	3596 Ohio 39, Dover, OH, Tuscarawas County	0	72	72
McCallisters Landscaping & Supply Inc	C4R	N	2519 North Ridge rd., Painesville, OH, Lake County	0	6	6
Weaver Farms	C3R	N	6442 New London Road, Ashtabula, OH, Ashtabula County	0	428	428
Lake Metroparks Farmpark	C3R	Y	8800 Euclid Chardon Road, Kirtland, OH, Lake County	0	0	0
Total				**0**	**36,929**	**36,929**

There were twelve composting facilities utilized by the District during the reference year. Of those, seven were located within the District, while the remaining four were outside of the District, but within the state. Notable is the lack of food waste collected.

D. Other Food Waste and Yard Waste Management Programs

Table B-6: Inventory of "Other" Food and Yard Waste Management Activities in the Reference Year

Facility or Activity Name	Activity Type	Location	Food Waste (tons)	Yard Waste (tons)
Walmart and other haulers (2021 Compost Report)	Commercial	Lake Co	523	0
Total			**523**	**1**

D. Material Handling Facilities Used by the SWMD in the Reference Year

No such facilities were utilized by the District during the reference year.

APPENDIX C POPULATION DATA

A. Reference Year Population

The District's reference year population (2021) was estimated as 232,023. Population data is derived from the Ohio Department of Development's Office of Research. As the District encompasses only the municipalities and townships within Lake County, and none of those political subdivisions extend beyond the county line, the current population is easy to obtain.

Table C-1b Total Reference Year Population

Unadjusted Population	Adjusted Population
232,023	232,023

Source: Ohio Department of Development, Office of Research

B. Population Projections Table C-2 Population Projections

The population of the District is projected to continue a slow but steady decline over the next two decades. Loss of population will accelerate very slowly up to 2040, starting at .18% loss per year in 2022, and increasing to .56% per year in 2039.

Table C-2 Population Projections

Year	Lake County	Total District Population
2021	232,023	232,023
2022	231,602	231,602
2023	231,102	231,102
2024	230,601	230,601
2025	230,101	230,101
2026	229,381	229,381
2027	228,661	228,661
2028	227,941	227,941
2029	227,221	227,221
2030	226,501	226,501
2031	225,510	225,510
2032	224,519	224,519
2033	223,527	223,527
2034	222,536	222,536
2035	221,545	221,545
2036	220,324	220,324
2037	219,103	219,103
2038	217,882	217,882
2039	216,661	216,661

Source: Ohio Department of Development, Office of Research

APPENDIX D DISPOSAL DATA

A. Reference Year Waste Disposed

Table D-1a Waste Disposed in Reference Year - Publicly-Available Landfills (Direct Haul)

	Location		Waste Accepted from the SWMD			
Facility Name	County	State	Residential/ Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)
Lake County Solid Waste Facility	Lake	OH	202,852	0		202,852
Countywide RDF - Republic Services	Stark	OH	170	18	0	188
Wood County Landfill	Wood	OH	1	0	0	1
Geneva Landfill	Ashtabula	OH	17,725	8,081	347	26,153
Mahoning Landfill	Mahoning	OH	0	107	0	107
American Landfill, Inc.	Stark	OH	7	319	0	326
Port Clinton Landfill,Inc.	Ottawa	OH	0	0	0	0
Noble Road Landfill	Richland	OH	92	0	0	92
Lorain County II Landfill LLC	Lorain	OH	20	6,543		6,563
Kimble Sanitary Landfill	Tuscarawas	OH	14	0	72	86
Carbon Limestone Landfill LLC	Mahoning	OH	1	28	0	29
Total			220,882	15,097	419	236,398

[1] *The facilities listed in Table D-1a and identified as able to accept waste from the SWMD (in Appendix M) will constitute those identified for purposes of Ohio Revised Code Section 3734.53(13)(a).*
Sources: 2021 Annual District Report, 2021 Ohio EPA Waste Flow Report

Waste Disposed in Reference Year – Captive Landfills[1]

No captive landfills were utilized by the district during the reference year.

Table D-1c Total Waste Disposed in Landfills (Direct Haul)

Residential/ Commercial (tons)	Industrial (tons)	Excluded (tons)	Total
220,882	15,097	419	236,398

Source: 2021 Ohio EPA Waste Flow Report

Table D-2 Waste Transferred in Reference Year

	Location		Waste Received from the SWMD			
Facility Name	County	State	Residential/Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)
Cleveland Transfer/Recycling Station	Cuyahoga	OH	9,700	0	0	9,700
Broadview Heights Transfer Facility	Cuyahoga	OH	1,977	0	0	1,977
Harvard Road Transfer Station	Cuyahoga	OH	2,674	0	0	2,674
Kimble Transfer & Recycling - Twinsburg	Summit	OH	11,614	0	1,945	13,558
Browning Ferris Industries of Ohio, Inc. - Glenwillow	Cuyahoga	OH	13,005	0	0	13,005
Total			38,970	0	1,945	40,914

[1] *The facilities listed in Table D-2 constitute those identified for purposes of Ohio Revised Code Section 3734.53(13)(a).*
Source: 2021 Ohio EPA Waste Flow Report

Waste Incinerated/Burned for Energy Recovery in Reference Year[1]

There was no waste incinerated or burned for energy recovery in the District during the reference year.

Table D-4 Total Waste Disposed in Reference Year

	Residential/ Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)
Direct Hauled	220,882	15,097	0	235,979
Transferred	38,970	0	0	38,970
Incinerated	0	0	0	0
Total	259,851	15,097	0	274,948
Percent of Total	95%	5%	0%	100%

Source: 2021 Ohio EPA Waste Flow Report

Supplement to Table D-4 Incinerated and Excluded Wastes as Percentages of Total Waste Disposed

	Residential/ Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)
Direct Hauled	220,882	15,097	419	236,398
Transferred	38,970	0	1,945	40,914
Incinerated	0	0	0	0
Total	259,851	15,097	2,364	277,312
Percent of Total	94%	5%	1%	100%

Source: 2021 Ohio EPA Waste Flow Report

B. Historical Waste Analysis

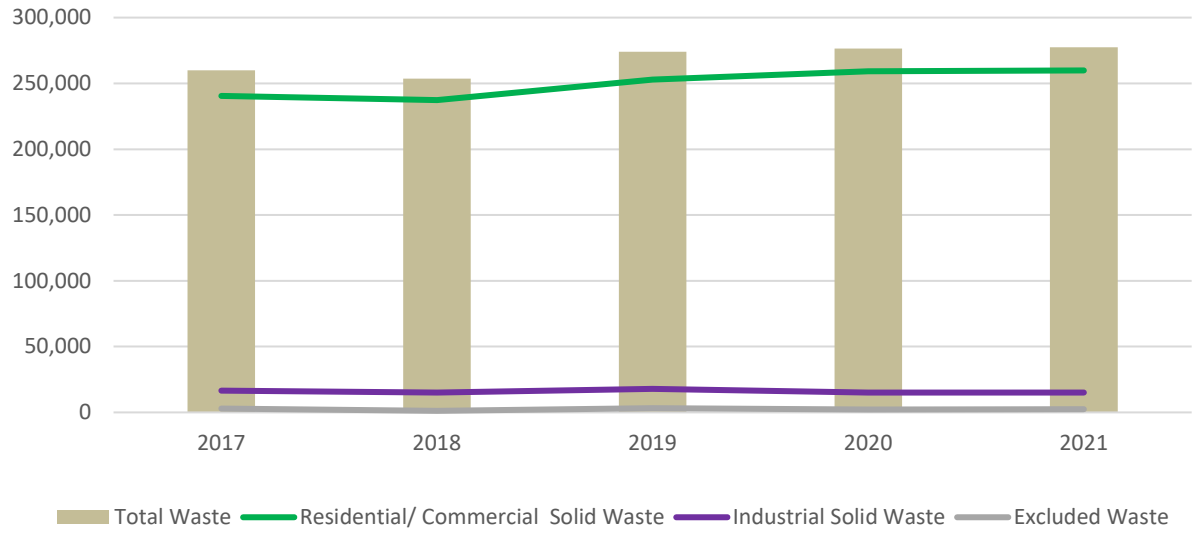
Table D-5 Historical Disposal Data

Year	Population	Residential/ Commercial Solid Waste		Industrial Solid Waste	Excl. Waste	Total Waste
		Rate (ppd)	Weight (tons)	Weight (tons)	Weight (tons)	Weight (tons)
2017	230,117	5.73	240,502	16,610	2,825	259,937
2018	230,514	5.64	237,312	15,095	1,180	253,587
2019	230,149	6.02	252,897	17,880	3,214	273,991
2020	230,149	6.17	259,179	15,068	2,237	276,484
2021	232,023	6.14	259,581	15,097	2,392	277,340

Table D-5A Annual Percentage Change

	Annual Percentage Change			
	Res. /Comm.	Ind.	Excl.	Total
2017	-	-	-	-
2018	-1%	-9%	-58%	-2%
2019	7%	18%	172%	8%
2020	2%	-16%	-30%	1%
2021	0%	0%	7%	0%

Figure D-1 Historical Disposal Data

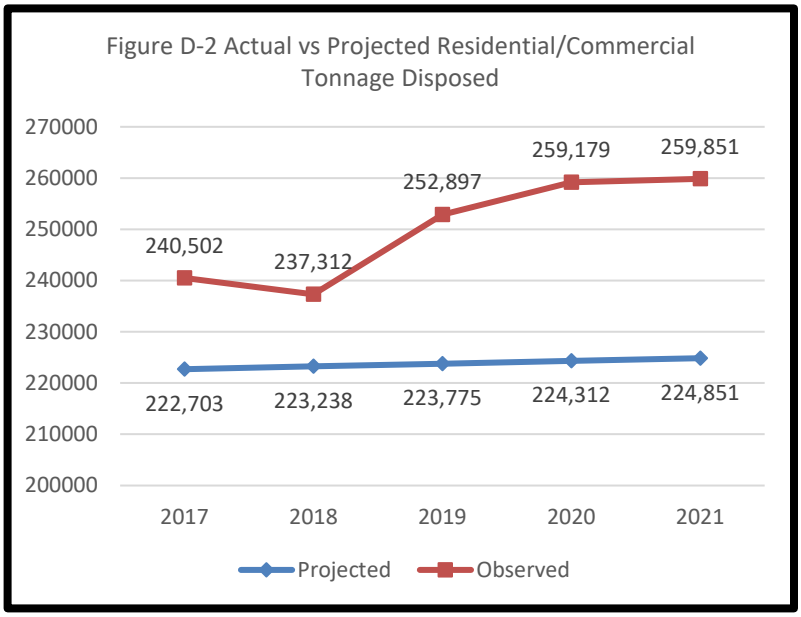


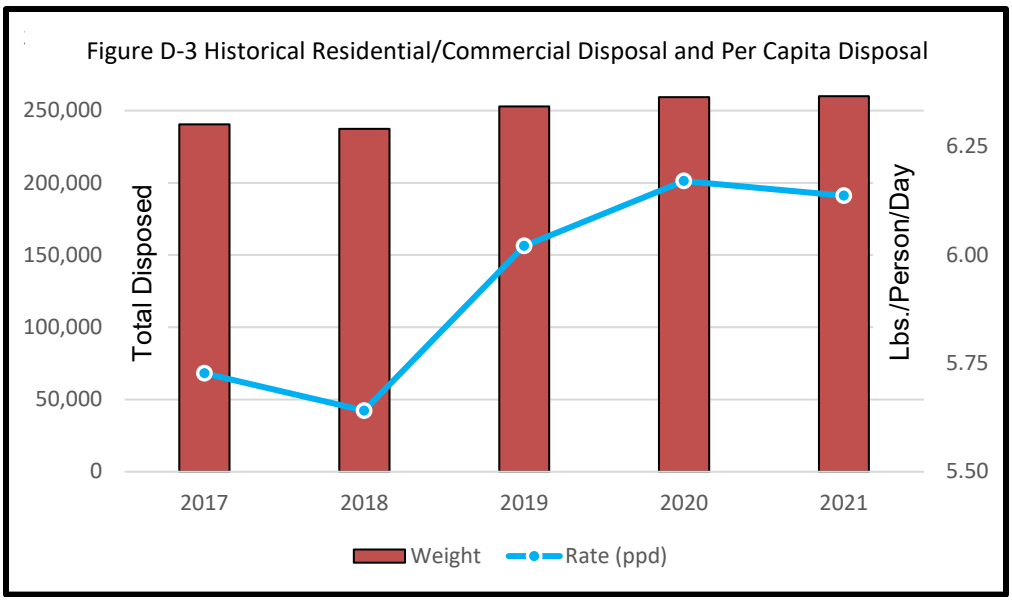
1. Residential/Commercial Waste

Residential/Commercial waste generally increased from 2017 to 2021, from 240,502 tons to 259,851 tons. The bulk of that increase occurred from 2018 to 2019, accounting for 63% of the increase seen in observation period. The District is unsure of the reason for those increases. Increases in residential/commercial waste, along with general population stagnation, has led to increasing per capita disposal rates. The average person in the District generated almost a half-pound more in 2021 than in 2017 (.41 pounds per person/per day increase).

Projections for 2018 from the 2018 SWMD Plan estimated 223,238 tons of waste generated by residential/commercial users. This estimate was roughly 6% (14,074) tons short. Projection deficits increased to 13% (35,000 tons) in 2021, the reference year for this update.

Figure D-2 Actual vs Projected Residential/Commercial Tonnage Disposed

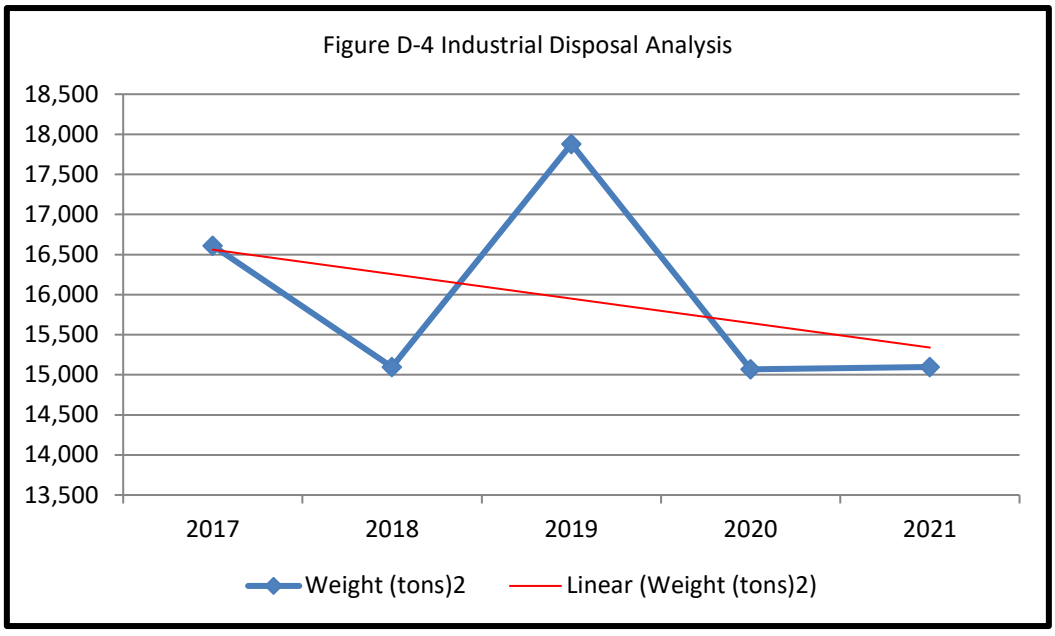




2. Industrial Waste

Industrial waste in the SWMD has generally decreased across the observation period. 2017 to 2018 saw a nearly 1/10th reduction in industrial waste. However, industrial waste spiked 18% in the next year, before reducing 16% from 2019 to 2020. The final observed year-to-year change from 2020 to 2021 showed no meaningful change in industrial waste.

Even when considering the significant increase from 2018 to 2019, the amount of industrial waste dropped from 16,610 in 2017 to 15,097 in 2021, amounting to a 9% overall reduction during the observation period. This contrasts the projections from the 2018 Plan, which maintained a static number of 11,095. Even with this drop, that projected number is far from the actual observed data.



3. Excluded Waste

Excluded waste accounts for a miniscule portion of the total waste, roughly 1%.

C. Disposal Projections

Table D-6 Waste Disposal Projections

Year	Residential/ Commercial Solid Waste	Industrial Solid Waste	Excluded Waste	Total Waste	Waste Transferred (as part of Total Disposal)	Waste Transferred (as part of Total Disposal)
	Weight (tons)	Weight (tons)	Weight (tons)	Weight (tons)	Weight (tons)	Percent
						14.17%
2021	259,851	15,097	2,392	277,340	39,309	
2022	251,035	14,863	2,392	268,290	38,026	
2023	250,493	14,632	2,392	267,517	37,916	
2024	249,950	14,405	2,392	266,748	37,807	
2025	249,408	14,182	2,392	265,982	37,699	
2026	248,628	13,962	2,392	264,981	37,557	
2027	247,847	13,745	2,392	263,984	37,416	
2028	247,067	13,532	2,392	262,991	37,275	
2029	246,286	13,322	2,392	262,000	37,134	
2030	245,506	13,115	2,392	261,013	36,994	
2031	244,432	12,912	2,392	259,735	36,813	
2032	243,357	12,711	2,392	258,461	36,633	
2033	242,283	12,514	2,392	257,189	36,452	
2034	241,209	12,320	2,392	255,921	36,273	
2035	240,134	12,129	2,392	254,655	36,093	
2036	238,811	11,941	2,392	253,143	35,879	
2037	237,487	11,756	2,392	251,635	35,665	
2038	236,164	11,573	2,392	250,129	35,452	
2039	234,840	11,394	2,392	248,626	35,239	

Amount of waste disposed during the planning period is projected to decrease in line with the population of the District. Despite increases in commercial and residential waste during the observation period, it is expected that total waste will reduce during the planning period, especially as recycling programs and compost programs become more popular, available, and accessible. Waste transfers during the planning period will maintain the same ratio of disposed waste as shown on table D-6.

Table D-7 Waste Imports

Year	Tons
2017	23,760
2018	23,134
2019	24,334
2020	28,283
2021	31,804
2022	32,434
2023	34,201
2024	36,530
2025	39,018
2026	41,675
2027	44,513
2028	47,545
2029	50,783
2030	54,241
2031	57,935
2032	61,880
2033	66,094
2034	70,595
2035	75,403
2036	80,538
2037	86,022
2038	91,880
2039	98,137

All imports were accepted at the Lake County Solid Waste Facility
Source: Ohio EPA Facility Data Reports 2017-2021

Waste imports have increased over the previously observed period of 2017-2021 from 23,760 tons to 31,804 tons, an increase of 33% (8,044 tons). Investigation into the trend reveals three primary sources of imported waste: Ashtabula SWMD, Cuyahoga SWMD, and Geauga-Trumbull SWMD. There are seven additional importers over the observation period, but their contributions were small enough they had negligible impact. Of the three major sources, Ashtabula fluctuated but stayed roughly static, Cuyahoga increased very slightly (less than 1,000 tons), and Geauga-Trumbull increased significantly. Geauga-Trumbull SWMD sent 11,489 tons of waste to Lake County Solid Waste Facility in 2017. In 2021, that number nearly doubled, increasing to 20,429 tons. This may represent a trend, as Geauga-Trumbull SWMD has no in-district landfill, instead transporting its waste across the region. Therefore, it may be that the Geauga-Trumbull SWMD is planning on transferring more of its waste to Lake County SWMD. However, when referencing the Geauga-Trumbull SWMD Plan (2019), the amount of waste generated is projected to decrease across their planning period.

As a result of this uncertainty, the District has opted to project waste imports using the 1.98% annual increase from locally generated waste.

APPENDIX E RESIDENTIAL/COMMERCIAL REDUCTION AND RECYCLING DATA

A. Reference Year Recovery Data

Table E-1 Commercial Survey Results

NAICS	Appliances/ "White Goods"	Electronics	Lead-Acid Batteries	Food	Glass	Ferrous Metals	Non-Ferrous Metals	Corrugated Cardboard	All Other Paper	Plastics	Textiles	Wood	Rubber	Commingled Recyclables (Mixed)	Yard Waste	Dry-Cell Batteries	HHW	
42																		
44	5				5		50			5								
45																		
48																		
49																		
51																		
52																		
53																		
54			20					130	1,600									
55																		
56																		
61																		
62			20	95	500	400	200	600	600	100	100	100		400	100	20	30	
71																		
72																		
81																		
92																		
Unadjusted Total	5	0	40	95	505	400	250	730	2,200	105	100	100	0	400	100	20	30	5,080
Adjustments			**2**	95					1,500		100			400		20	30	-2,147
Adjusted Total	**5**	**0**	**38**	**0**	**505**	**400**	**250**	**730**	**700**	**105**	**0**	**100**	**0**	**0**	**100**	**0**	**0**	**2,933**

The commercial recycling survey was offered via electronic means and sent out to every business of records via U.S. Postal Service regular mail. There were 21 responses received from commercial establishments within the District. A large adjustment was made to All Other Paper due to the reported quantity on the commercial survey far exceeding the amount reported by the SWMD. Adjustments were also made to Textiles, Comingled Recyclables, Dry-Cell Batteries, Lead-Acid Batteries, and HHW to account for double counting in the existing SWMD data.

Adjustments were made for the following reasons: Lead Acid Batteries - reduced by 2 tons due to only having 38 tons reported; Food – zeroed out due to being counted on the composting data; All Other Paper – reduced by 1,500 tons to avoid excess tonnage reporting; Textiles – zeroed due to no textiles being reported to the SWMD for the year; Comingled Recyclables – zeroed to avoid excess tonnage; Dry-Cell Batteries – Zeroed as no dry-cell batteries were reported as received by the district during the year; HHW -zeroed as HHW is already counted in the HHW program data.

Data from Other Recycling Facilities

There was no data available for other recycling facilities.

E-3 Data Reported to Ohio EPA by Commercial Businesses

Ohio EPA Data Source	Glass	Plastic	Newspaper	Cardboard	All Other Paper/Mixed Paper	Nonferrous	Ferrous	Wood	Food: Compost	Food: Other	Commingled	Other	
Walmart Recycling in Ohio	0	27	0	1,723	2	9	0	0	0	0	0	71	
Home Depot Corporation	0	0	0	113	0	0	0	109	0	0	0	12	
Target Corporate	0	15	0	526	0	10	0	0	0	0	6	0	
Dollar General Corporation	0	5	0	553	3	0	0	0	0	0	0	0	
Kohls Corporate Office & Headquarters	0	3	0	109	0	0	0	1	0	0	0	0	
Sam's Club	0	0	0	661	1	0	0	150	0	0	0	41	
CVS	0	0	0	44	0	0	0	0	0	0	0	0	
Advance Auto Parts	0	0	0	3	0	0	1	0	0	0	0	49	
National Tire and Battery	0	0	0	0	0	0	1	0	0	0	0	17	
Unadjusted Total	0	51	0	3,732	6	19	2	260	0	0	6	190	4,266
Adjustments													0
Adjusted Total	**0**	**51**	**0**	**3,732**	**6**	**19**	**2**	**260**	**0**	**0**	**6**	**190**	**4,266**

Table E-3 represents in-District recycling data from major national retailers and “big-box” stores as reported to the Ohio EPA. Most businesses reported substantial amounts of cardboard recycling, which made up a majority of the reported recycled materials. Wood was the other sizable, reported material, most likely in the form of shipping pallets.

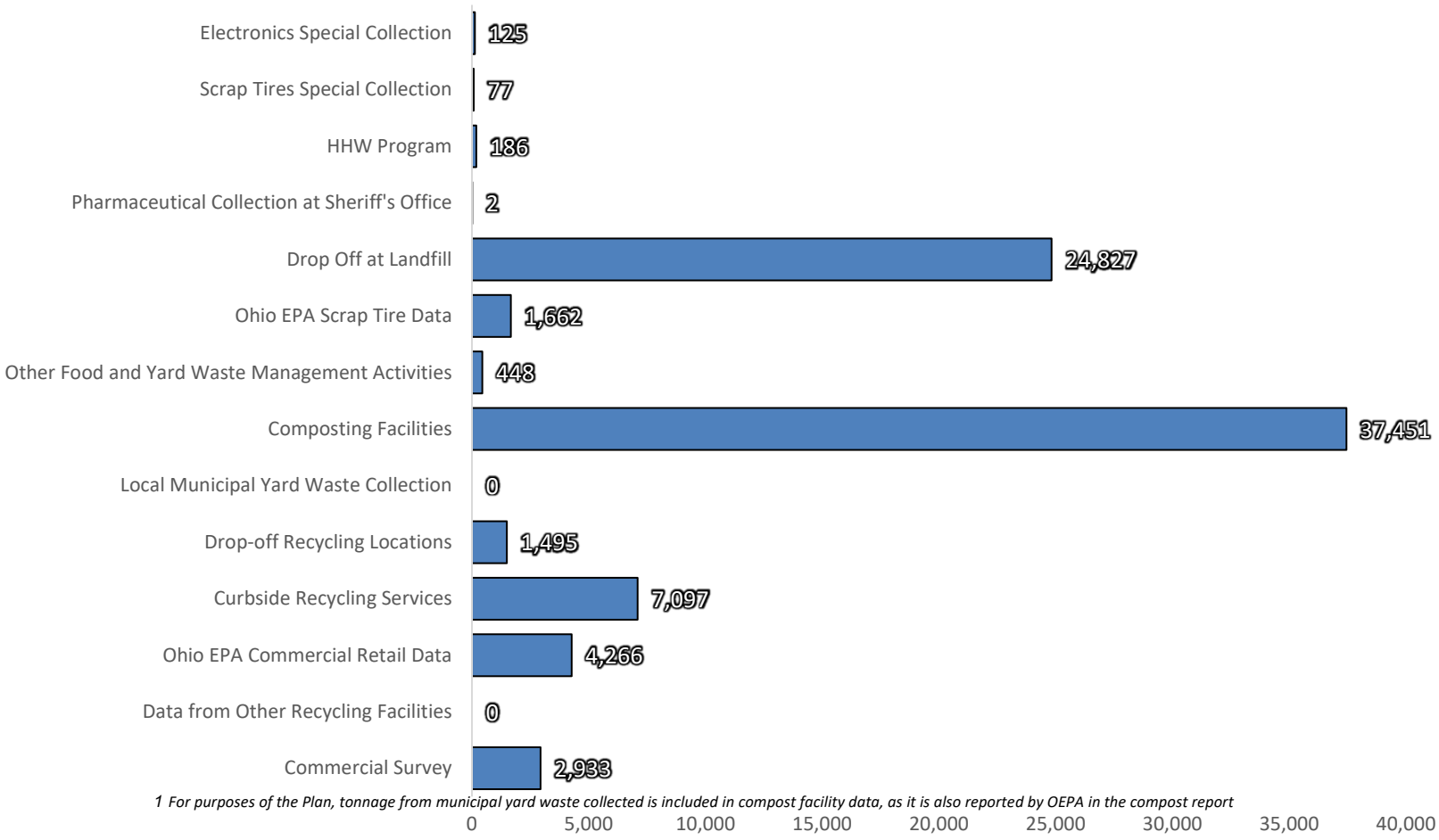
Table E-4 Other Recycling Programs/Other Sources of Data

Other Programs or Sources of Data	Appliances/ "White Goods"	HHW	Used Motor Oil	Electronics	Scrap Tires	Dry Cell Batteries	Lead-Acid Batteries	Food	Glass	Ferrous Metals	Non-Ferrous Metals	Corrugated Cardboard	All Other Paper	Plastics	Textiles	Wood	Rubber	Commingled Recyclables (Mixed)	Yard Waste	Other	*Unadjusted Total*	*Adjustments*	*Adjusted Total*
Curbside Recycling Services	**3**								**1,123**	248		**1,050**	**3,784**	**460**				**429**			7,097		7,097
Drop-off Recycling Locations			1,495				38														1,533	38	1,495
Local Municipal Yard Waste Collections																					0		0
Composting Facilities								523											36,929		37,451		37,451
Other Food and Yard Waste Management Activities								548													548	100	448
Ohio EPA Scrap Tire Data					1,739																1,739	77	1,662
Drop Off at Landfill	148			5	39				419	3,277	1,811	14,711	15	1,773	0	2,689	106	344			25,336	509	24,827
Pharmaceutical Collection at Sheriff's Office																				2	2		2
HHW Program		186					5														191	5	186
Scrap Tires Special Collection					77																77		77
Electronics Special Collection				125																	125		125
Royal Oak Paper Retriever													1,088								1,088		1,088
Unadjusted Total	151	186	1,495	130	1,856	0	43	1,071	1,542	3,525	1,811	15,761	4,887	2,232	0	2,689	106	773	36,929	2	75,188	729	74,459
Adjustments	5				116		43							105		360			100		729		
Adjusted Total	146	186	1,495	130	1,739	0	0	1,071	1,542	3,525	1,811	15,761	4,887	2,127	0	2,329	106	773	36,829	2	74,459		

Other includes the pharmaceutical collection.
Data obtained from the 2021 SWMD Annual District Report, 2021 Ohio EPA Composting Data, 2021 Commercial Survey data, and 2021 Ohio EPA Scrap Tire Data

Table E-4 represents all total recycling tonnage for the District. Adjustments were made for double counting to ensure accurate number. Specifically, composting tonnage required adjustment, as reconciliation of reports from Ohio EPA's composting report and the Annual District Report made clear that municipal yard waste collections had been enumerated in both composting facilities and local municipal yard waste collections. Further adjustments were made for food waste, as that was already accounted for in the compost facility data. Several other minor adjustments were made to ensure all recycling data was accounted for only one time across the OEPA and Commercial Survey data.

Figure E-1 Residential/Commercial Waste Recovered (by source/program)



1 For purposes of the Plan, tonnage from municipal yard waste collected is included in compost facility data, as it is also reported by OEPA in the compost report

Table E-5 Residential/Commercial Material Recovered in Reference Year

Material	Quantity (tons)
Appliances/ "White Goods"	151
Household Hazardous Waste	186
Used Motor Oil	1,495
Electronics	130
Scrap Tires	1,739
Dry Cell Batteries	0
Lead-Acid Batteries	38
Food	1,071
Glass	2,047
Ferrous Metals	3,927
Non-Ferrous Metals	2,080
Corrugated Cardboard	20,224
All Other Paper	5,593
Plastics	2,283
Textiles	0
Wood	2,689
Rubber	106
Commingled Recyclables (Mixed)	779
Yard Waste	36,929
Other (Aggregated)	192
Total	81,658

Table E-5 (left) shows residential/commercial materials recovered through recycling in the reference year. Yard waste is the largest source of materials, with 36,929 tons, representing 45.2%, recycled. Corrugated cardboard is the next most recycled product at 20,224, tons, representing 24.8% of all recycled materials. There are numerous other recycled items which make up the body of recycled materials in the SWMD, with other paper products, wood, ferrous metals, non-ferrous metals, and glass all making up a sizeable portion of remaining items.

Table E-6 Quantities Recovered by Program/Source

Program/Source of R/C Recycling Data	Quantities (Tons)
Commercial Survey	3,028
Data from Other Recycling Facilities	0
Ohio EPA Commercial Retail Data	4,266
Curbside Recycling Services	7,097
Drop-off Recycling Locations	1,495
Local Municipal Yard Waste Collection	0[1]
Composting Facilities	37,451
Other Food / Yard Waste Management Activities	453
Ohio EPA Scrap Tire Data	1,662
Drop Off at Landfill	24,827
Pharmaceutical Collection at Sheriff's Office	2
HHW Program	186
Scrap Tires Special Collection	77
Electronics Special Collection	125
Royal Oak Paper Retriever	1,088
TOTAL	81,658

1 For purposes of the Plan, tonnage from municipal yard waste collected is included in compost facility data, as it is also reported by OEPA in the compost report

Table E-6 (left) represents the origin of recycled materials shown in Table E-5. Materials recycled in the District come from varied sources and programs. Roughly a third (30.4%) are dropped off at the landfill, and slightly less (28.1%) are recycled in composting facilities. 17.7% of recycled materials are collected as part of local municipal yard waste programs. Of note is that nearly 9% of all recycled materials are picked up through curbside recycling services, an amount made more significant when coupled with the fact the District pulled all funding for curbside recycling in 2014.

It should be noted that 14,424 tons of compost is accounted for in municipal yard waste programs across the district.

B. Historical Recovery

Table E-7 Historical Residential/Commercial Recovery by Program/Source

Year	Commercial Survey	Ohio EPA Commercial Retail Data	Curbside Recycling Services	Drop-off Recycling Locations	Composting Facilities	Other Food and Yard Waste Management Activities	Ohio EPA Scrap Tire Data	Drop Off at Landfill	Pharmaceutical Collection at Sheriff's Office	HHW Program	Scrap Tires Special Collection	Electronics Special Collection	Royal Oak Paper Retriever	Totals
2017	21,603	6,790	5,335	499	35,532	0	1,278	185	4	137	39	22	835	72,258
2018	21,819	7,286	5,783	2,026	38,934	26	1,339	1,183	3	184	78	86	1,408	80,154
2019	22,038	7,015	7,952	1,670	41,296	123	1,420	2,566	3	182	47	79	934	85,323
2020	22,258	8,454	7,241	1,692	36,327	20	1,242	1,731	0	204	43	82	1,049	80,343
2021	***2,933***	***4,266***	***7,097***	***1,495***	***37,451***	***448***	***1,662***	***24,827***	***2***	***186***	***77***	***125***	***1,088***	***81,658***

Commercial surveys are only done during plan update years.

Table E-7 shows the historical residential/commercial recovery during the observation period 2017-2021. Recovery held steady during the observation period, with a moderate increase from 2017 to 2018, attributable to increases in landfill drop-offs, recycling drop-offs, and composting. Note that tonnage for composting facilities also includes tonnage of yard waste collected and composted as part of the municipal yard waste program. Increase in drop-offs is due to reduction in drop-off recycling access in neighboring jurisdictions like Cuyahoga County. Of note is the substantial increase in drop-offs at the landfill in 2021. This number can be attributed to the similar reduction in the commercial survey data for 2021, rather than an actual increase in materials accepted.

Table E-7a1 Annual Percent Change in Tons Recovered

2017														
2018	1%	7%	8%	306%	10%	-	5%	539%	-4%	35%	102%	297%	69%	11%
2019	1%	-4%	38%	-18%	6%	381%	6%	117%	-16%	-1%	-40%	-8%	-34%	6%
2020	1%	21%	-9%	1%	-12%	-84%	-12%	-33%	-100%	12%	-9%	3%	12%	-6%
2021	***-87%***	***-50%***	***-2%***	***-12%***	***3%***	***2140%***	***34%***	***1334%***	***-***	***-9%***	***81%***	***53%***	***4%***	***2%***

C. Residential/Commercial Recovery Projections

Table E-8 Residential/Commercial Recovery Projections by Program/Source

Year	Commercial Survey[1]	Ohio EPA Commercial Retail Data[2]	Curbside Recycling Services[3]	Drop-off Recycling Locations[4]	Composting Facilities[5]	Other Food and Yard Waste Management Activities[6]	Ohio EPA Scrap Tire Data[7]	Drop Off at Landfill[8]	Pharmaceutical Collection at Sheriff's Office[9]	HHW Program[10]	Scrap Tires Special Collection[10]	Electronics Special Collection[11]	Royal Oak Paper Retriever	Totals
2021	***2,933***	***4,266***	***7,097***	***1,495***	***37,451***	***448***	***1,662***	***24,827***	***2***	***186***	***77***	***125***	***1,088***	***81,658***
2022	2,962	4,266	7,239	1,495	38,200	470	1,662	24,827	2	190	79	131	1,110	**82,634**
2023	2,992	4,266	7,384	1,495	38,964	480	1,662	24,827	2	194	80	138	1,132	**83,616**
2024	3,022	4,266	7,531	1,495	39,744	489	1,662	24,827	2	197	82	145	1,154	**84,617**
2025	3,052	4,266	7,682	1,495	40,538	499	1,662	24,827	2	201	83	152	1,178	**85,639**
2026	3,083	4,266	7,836	1,495	41,349	509	1,662	24,827	2	205	85	160	1,201	**86,681**
2027	3,113	4,266	7,992	1,495	42,176	519	1,662	24,827	2	209	87	168	1,225	**87,743**
2028	3,144	4,266	8,152	1,495	43,020	530	1,662	24,827	2	214	88	176	1,250	**88,827**
2029	3,176	4,266	8,315	1,495	43,880	540	1,662	24,827	2	218	90	185	1,275	**89,932**
2030	3,208	4,266	8,482	1,495	44,758	551	1,662	24,827	2	222	92	194	1,300	**91,059**
2031	3,208	4,266	8,482	1,495	44,758	551	1,662	24,827	2	222	92	194	1,300	**91,059**
2032	3,208	4,266	8,482	1,495	44,758	551	1,662	24,827	2	222	92	194	1,300	**91,059**
2033	3,208	4,266	8,482	1,495	44,758	551	1,662	24,827	2	222	92	194	1,300	**91,059**
2034	3,208	4,266	8,482	1,495	44,758	551	1,662	24,827	2	222	92	194	1,300	**91,059**
2035	3,208	4,266	8,482	1,495	44,758	551	1,662	24,827	2	222	92	194	1,300	**91,059**
2036	3,208	4,266	8,482	1,495	44,758	551	1,662	24,827	2	222	92	194	1,300	**91,059**
2037	3,208	4,266	8,482	1,495	44,758	551	1,662	24,827	2	222	92	194	1,300	**91,059**
2038	3,208	4,266	8,482	1,495	44,758	551	1,662	24,827	2	222	92	194	1,300	**91,059**
2039	3,208	4,266	8,482	1,495	44,758	551	1,662	24,827	2	222	92	194	1,300	**91,059**

Table E-8 represents the material recovery projections for residential/commercial customers, by program and/or source. Projections increase across the board from the reference year to 2030 by about 1.2% annually, and then held static through 2039. Those annual projections do not represent equal increases across all sources/programs. See below for an explanation of methodology for each program/source.

1 Commercial survey recovery is projected to increase by 1% annually through the planning period. Because of the low responses for this Plan update, this number is difficult to project. The 2018 Plan update recorded 21,178 tons recovered in the commercial survey, roughly four times what the most recent survey recorded. Therefore, a conservative 1% increase was selected for the planning period.

2 Ohio EPA Commercial Retail and Scrap Tire data is held static throughout the planning period, per OEPA guidance.

3 Curbside recycling services recovery tonnage jumped significantly from the previous Plan. The increase was attributable to the continuation of relatively new services within the District. As the services became more familiar, it is reasonable to expect increase in usage. Projections for recovery from curbside recycling services are 2% annually throughout the planning period. Due to such substantial increases in the observation period, it is expected that additional increases will be minimal, as all of those users who would utilize such services may have been reached. However, use may increase if subscription-based communities switch to a non-subscription recycling model, as encourage by the District and this Plan.

4 Recovery tonnage from drop-off recycling locations increased nearly eightfold over projections from the previous plan. Increase is attributable to collection of used motor oil, which was not recorded in the 2018 update. During the reference year, the District recovered 1,495 tons of used motor oil. The District does not project this number to change due to the widespread availability of curbside recycling pickup.

5 Recovery for composting facilities was projected to increase 2% annually through 2029 (the fifth year of the planning period). Per the 2017 – 2021 SWMD Annual District Reports, yard waste recovery tonnage generally increased annually (there was a drop in 2020, but that may be attributable to disruptions from the COVID-19 Pandemic and associated stay at home orders which resulted in reduced service offerings on-site), and there is no reason to believe composting will drop long-term. As Lake County is a leader in nurseries, wine-making, and other agribusinesses, composting of organic material is expected to remain strong.

6 Recovery from other food and yard waste management activities is projected to increase 2% annually throughout the planning period. Despite relatively small numbers in relation to overall waste, a moderate increase was projected due to the opportunity for increased food waste composting. With the opening of a Class II facility in the district since the last Plan update, there is opportunity for the District to coordinate with that facility and create programs through private haulers and businesses to collect food scraps for diversion from landfill to compost.

7 Scrap Tires Special Collection will continue to increase 2% annually through the fifth year of the planning period (2029). Increases are due to increases in vehicles on the road, and education about recycling tired, as well as increased uses for recycled tires.

8 Drop-off recycling numbers are substantially higher than in the past plan. The difference in the previous plan's estimate and the current estimate is roughly equal to the difference between the previous commercial survey and the current commercial survey. Because of this drastic shift, tonnage for landfill drop-off is held constant.

9 Pharmaceutical recovery tonnage is projected to remain the same, as this number is far too small to reliably predict.

10 Household hazardous waste (HHW) recovery is projected to increase at 2% through the fifth year of the planning period (2029). Tonnage increased each year between 2017 – 2020 before dropping in 2021. The District must continue to educate residents and businesses about disposal of HHW, as well as offering well-advertised drop-off events as they have in the past.

11 Electronics special collection recovery tonnage will continue to increase significantly at 5% annually through the fifth year of the planning period (2029). Electronics usage continues to spread throughout society, and as more of these items become obsolete or break, they will require disposal. There is opportunity for educating and informing residents in the District on the need for proper disposal of electronic waste, thus the large annual increase.

APPENDIX F INDUSTRIAL WASTE REDUCTION AND RECYCLING DATA

A. Reference Year Recovery Data

Table F-1 Industrial Survey Results

NAICS	Food	Glass	Ferrous Metals	Non-Ferrous Metals	Corrugated Cardboard	All Other Paper	Plastics	Textiles	Wood	Rubber	Commingled Recyclables (Mixed)	Ash	Non-Excluded Foundry Sand	Flue Gas Desulfurization	
22															
31															
32															
33			34		0										
Other: 2021 ADR	0	0	9,834	537	10,326	284	57,368	17	1,223	0	181				
Other:															
Other:															
Other:															
Other:															
Unadjusted Total	0	0	9,868	537	10,326	284	57,368	17	1,223	0	181	0	0	0	79,805
Adjustments															0
Adjusted Total	**0**	**0**	**9,868**	**537**	**10,326**	**284**	**57,368**	**17**	**1,223**	**0**	**181**	**0**	**0**	**0**	**79,805**

Table F-1 represents the results of the commercial survey, as well as the data from the 2021 Annual District Report. For the Plan update, an industrial survey was not conducted. Therefore, all data in Table F-1 is a result of either the commercial survey, or was imported from the 2021 Annual District Report. Similar to the data in the 2018 Plan, plastics dominate the industrial data. Corrugated cardboard and ferrous metals also occupy a sizable portion of industrial recovered waste.

Data from Other Recycling Facilities

The District did not report data from any other recycling facilities.

Other Recycling Programs/Other Sources of Data

The District did not report any other recycling programs or other sources of data.

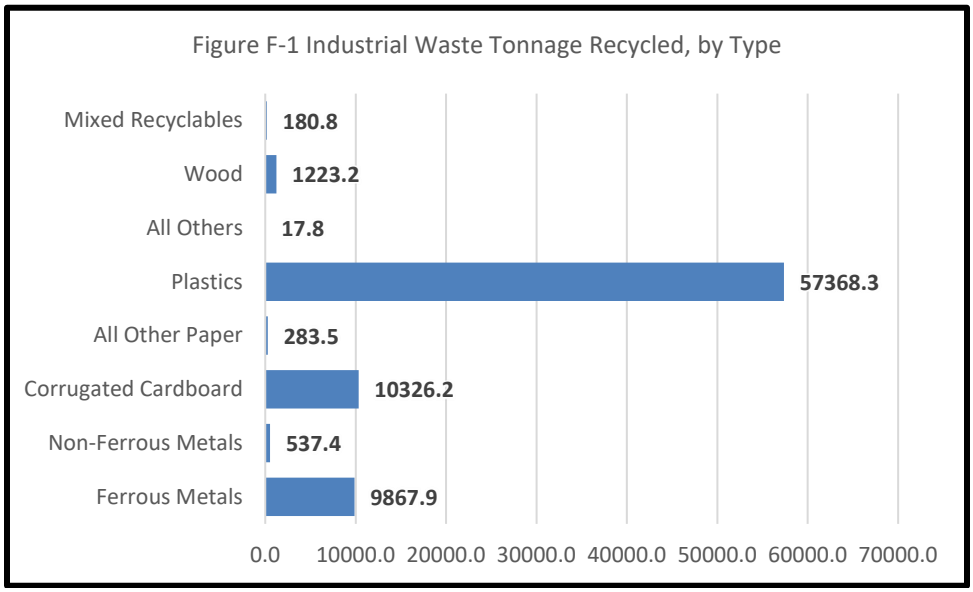
Table F-4 Industrial Waste Reduced/Recycled in Reference Year

Material	**Quantity** (tons)
Glass	0.3
Ferrous Metals	9,867.9
Non-Ferrous Metals	537.4
Corrugated Cardboard	10,326.2
All Other Paper	283.5
Plastics	57,368.3
Textiles	17.0
Wood	1,223.2
Rubber	0.1
Commingled Recyclables (Mixed)	180.8
Ash	0.0
Non-Excluded Foundry Sand	0.0
Flue Gas Desulfurization	0.0
Flue Gas Desulfurization	0.1
Other (Aggregated)	0.3
Total	79,805.1

The District diverted 79,805 tons of waste from the industrial sector. Table F-4 above shows plastics, ferrous metals, and corrugated cardboard as the primary sources of diverted materials. Those materials represent nearly 97% of all recovered materials from the industrial sector. Table F-5 below shows recovery by source/program.

Table F-5 Quantities Recovered by Program/Source

Program/Source of Industrial Recycling Data	**Quantity (Tons)**
Industrial survey	79,805
Data from other recycling facilities	0
None	0
Total	**79,805**



B. Historical Recovery

Data on historical recovery of materials in the industrial sector was gathered solely through the industrial survey. Historical recovery numbers are static in the observation period, except for 2017 to 2018, in which recovered materials dropped about 9%. 2018 and 2019 contain the same data due to recovered industrial tonnage being updated in the 2019 Annual District Report to reflect the 2016 survey results. It is unclear why the same was not done for 2020. The 2021 data reflects the 2016 survey inputs, as well as the applicable data from the commercial survey

Table F-6 Historical Industrial Recovery by Program/Source

Year	Industrial survey	Data from other recycling facilities	None	Totals
2017	87,492	0	0	87,492
2018	79,770	0	0	79,770
2019	79,770	0	0	79,770
2020	80,247	0	0	80,247
2021	79,805	0	0	79,805

C. Industrial Recovery Projections

In order to estimate recovery projections through the planning period, the SWMD consulted research conducted by Ohio Department of Job and Family Services, Bureau of Labor Market Information (BLMI) for employment projections. BLMI updates employment projections every two years for use in long-range economic and employment trends. Lake County is included in the Cleveland-Elyria-Mentor Metropolitan Statistical Area. The "2030 Job Outlook for Cleveland-Elyria-Mentor Metropolitan Statistical Area" indicates manufacturing employment is expected to decrease approximately 3.1% from 2020 to 2030. However, Lake County continues to be attractive to manufacturing businesses.

Given the uncertainty of the future of manufacturing and the difficulty in obtaining data, the District projects the industrial recovery will be the same tonnage as reported for 2021 (79,805 tons), held constant for the planning period.

Table F-7 Industrial Recovery Projections by Program /Source

Year	Industrial survey	Data from other recycling facilities	None	Totals
2021	**79,805**	**0**	**0**	**79,805**
2022	79,805			**79,805**
2023	79,805			**79,805**
2024	79,805			**79,805**
2025	79,805			**79,805**
2026	79,805			**79,805**
2027	79,805			**79,805**
2028	79,805			**79,805**
2029	79,805			**79,805**
2030	79,805			**79,805**
2031	79,805			**79,805**
2032	79,805			**79,805**
2033	79,805			**79,805**
2034	79,805			**79,805**
2035	79,805			**79,805**
2036	79,805			**79,805**
2037	79,805			**79,805**
2038	79,805			**79,805**
2039	79,805			**79,805**

APPENDIX G WASTE GENERATION

A. Historical Year Waste Generated

Table G-1 below provides waste generation data for the observation period 2017-2021. The Generation rate is a representation of waste generated by each person. It is a representation of the amount of residential/commercial waste in relation to total District population, found by dividing the total residential/commercial waste by 365, and then by the total District population. That number is multiplied by 2,000 to convert from tons to pounds. The number is represented in pounds per person, per day. The table shows a sharp increase in per capita waste generation from 2017 to 2021.

Table G-1a Annual Change

Year	Annual % Change (tons)		
	Residential/ Commercial	Industrial	Excluded
2017	-		
2018	23%	-9%	-58%
2019	-3%	3%	172%
2020	-2%	-2%	-30%
2021	***0%***	0%	-100%

Calculation example (2018): 2018 Residential/Commercial annual change = (2018) waste generated – 2017 waste generated) / 2017 waste generated 23% (.23) = (364,844 – 295,838) / 295,838

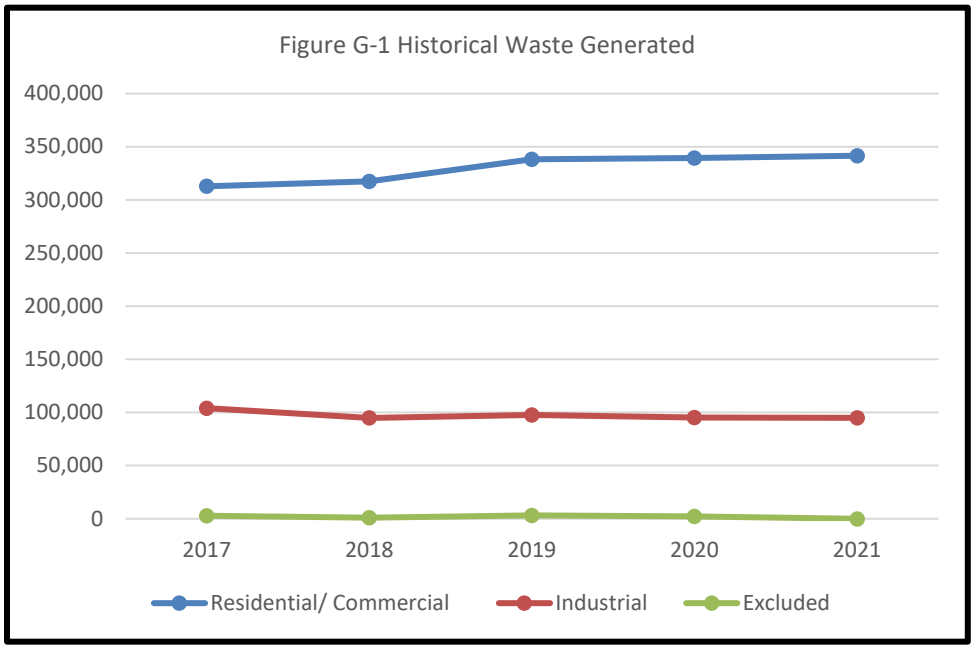
Table G-1 Reference Year and Historical Waste Generated

Year	Population	Residential/ Commercial				Industrial			Excluded	Total (tons)
		Disposed (tons)	Recycled (tons)	Generated (tons)	Per Capita Generated (ppd)	Disposed (tons)	Recycled (tons)	Generated (tons)		
2017	230,117	240,502	72,258	312,760	7.45	16,610	87,492	104,102	2,825	419,687
2018	230,514	237,312	80,154	317,466	7.55	15,095	79,770	94,865	1,180	413,511
2019	230,149	252,897	85,323	338,220	8.05	17,880	79,770	97,650	3,214	439,085
2020	230,149	259,179	80,343	339,522	8.08	15,068	80,247	95,315	2,237	437,074
2021	**232,023**	**259,851**	**81,658**	341,509	8.07	**15,097**	***79,805***	***94,902***	**0**	436,412

Calculation example (2017): Per capita generation rate = ((generated tons / days in the year) / population) x pounds in a ton
7.04 = ((295,838 / 365) / 230,117) x 2,000

1. Residential/Commercial Waste

Residential and commercial waste was generally flat across the observation period. However, in 2019 waste increased 7%, adding an additional 21,000 tons over 2018. An examination of waste data between 201 and 2019 shows the majority of increase coming in the form of disposal, while recycling activities account for roughly 5,000 tons of increase. In 2020 and 2021, tonnage remained relatively flat.



2. Industrial Waste

Industrial waste has trended slightly downward during the planning period. However, the data is mostly self-reported by industrial users, and is thus difficult to verify. Recycling in the industrial sector remains very high.

3. Excluded Waste

Excluded waste has historically been less than 1% of waste, and is thus not addressed in this plan.

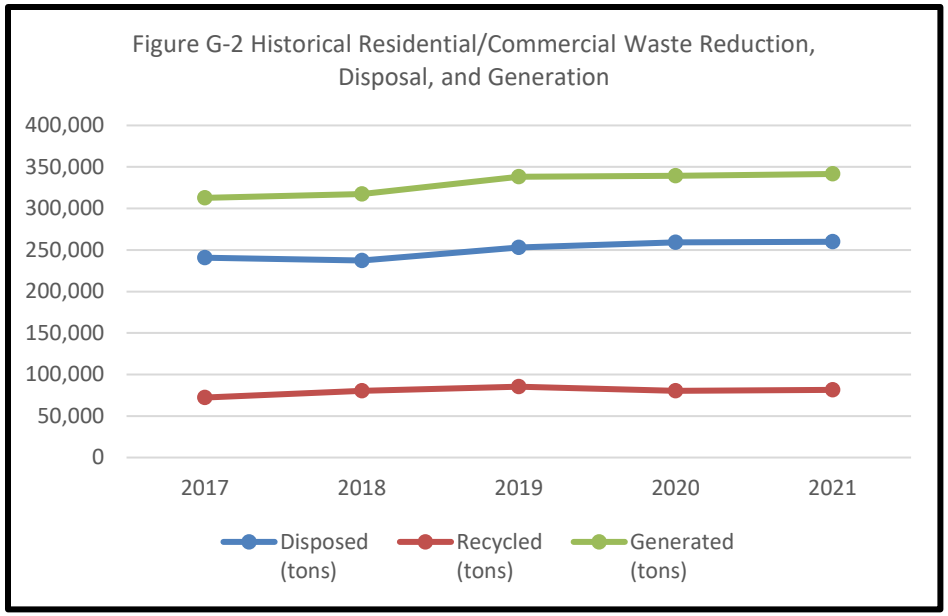


Figure G-2 Historical Residential/Commercial Waste Reduction, Disposal, and Generation
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
2017
2018
2019
2020
2021
Disposed (tons)
Recycled (tons)
Generated (tons)

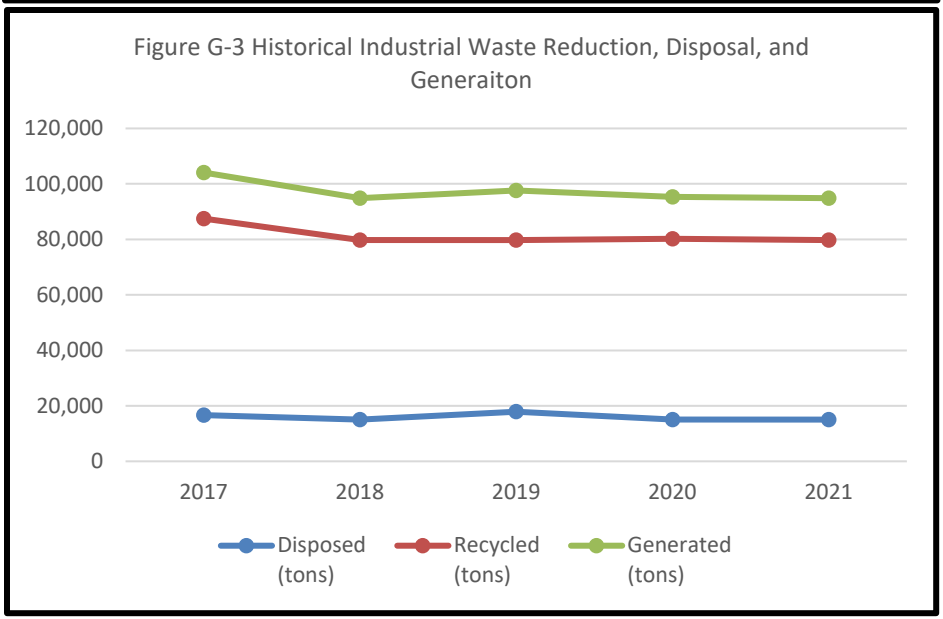


Figure G-3 Historical Industrial Waste Reduction, Disposal, and Generaiton
120,000
100,000
80,000
60,000
40,000
20,000
0
2017
2018
2019
2020
2021
Disposed (tons)
Recycled (tons)
Generated (tons)

B. Generation Projections

Table G-2 Generation Projections

Year	Population	Residential/ Commercial				Industrial			Excluded Waste (tons)	Total (tons)
		Disposal (tons)	Recycle (tons)	Generation (tons)	Per Capita Generation (ppd)	Disposal (tons)	Recycle (tons)	Generation (tons)		
2021	***232,023***	***259,851***	***81,658***	***341,510***	***8.07***	***15,097***	***79,805***	***94,902***	2,392	***438,804***
2022	231,602	251,035	82,634	333,669	***7.89***	14,863	79,805	94,668	2,392	430,729
2023	231,102	250,493	83,616	334,109	***7.92***	14,632	79,805	94,437	2,392	430,938
2024	230,601	249,950	84,617	334,568	***7.95***	14,405	79,805	94,210	2,392	431,170
2025	230,101	249,408	85,639	335,047	***7.98***	14,182	79,805	93,987	2,392	431,426
2026	229,381	248,628	86,681	335,308	***8.01***	13,962	79,805	93,767	2,392	431,467
2027	228,661	247,847	87,743	335,590	***8.04***	13,745	79,805	93,550	2,392	431,532
2028	227,941	247,067	88,827	335,894	***8.07***	13,532	79,805	93,337	2,392	431,623
2029	227,221	246,286	89,932	336,219	***8.11***	13,322	79,805	93,127	2,392	431,737
2030	226,501	245,506	91,059	336,565	***8.14***	13,115	79,805	92,920	2,392	431,878
2031	225,510	244,432	91,059	335,491	***8.15***	12,912	79,805	92,717	2,392	430,600
2032	224,519	243,357	91,059	334,417	***8.16***	12,711	79,805	92,517	2,392	429,325
2033	223,527	242,283	91,059	333,342	***8.17***	12,514	79,805	92,319	2,392	428,054
2034	222,536	241,209	91,059	332,268	***8.18***	12,320	79,805	92,125	2,392	426,785
2035	221,545	240,134	91,059	331,194	***8.19***	12,129	79,805	91,934	2,392	425,520
2036	220,324	238,811	91,059	329,870	***8.20***	11,941	79,805	91,746	2,392	424,008
2037	219,103	237,487	91,059	328,547	***8.22***	11,756	79,805	91,561	2,392	422,499
2038	217,882	236,164	91,059	327,223	***8.23***	11,573	79,805	91,378	2,392	420,993
2039	216,661	234,840	91,059	325,900	***8.24***	11,394	79,805	91,199	2,392	419,490

Table G-2 shows projected waste generation across the planning period. Waste generation is expected to drop slowly during the planning period due to a combination of factors. Population stagnation and contraction is projected in the District, leading to less waste generated due to less people. Additionally, the continued economic slowdown will lead to lower amounts of waste generated overall, as development activities returns to pre-pandemic levels.

C. Waste Composition

Table G-3 Composition of Residential/Commercial Waste

		Year																		
Material	**% of Total Generation[1]**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**
Paper and Paperboard	23.10%	60,026	57,989	57,864	57,739	57,613	57,433	57,253	57,072	56,892	56,712	56,464	56,216	55,967	55,719	55,471	55,165	54,860	54,554	54,248
Glass	4.20%	10,914	10,543	10,521	10,498	10,475	10,442	10,410	10,377	10,344	10,311	10,266	10,221	10,176	10,131	10,086	10,030	9,974	9,919	9,863
Ferrous	6.60%	17,150	16,568	16,533	16,497	16,461	16,409	16,358	16,306	16,255	16,203	16,132	16,062	15,991	15,920	15,849	15,762	15,674	15,587	15,499
Aluminum	1.30%	3,378	3,263	3,256	3,249	3,242	3,232	3,222	3,212	3,202	3,192	3,178	3,164	3,150	3,136	3,122	3,105	3,087	3,070	3,053
Other Nonferrous	0.90%	2,339	2,259	2,254	2,250	2,245	2,238	2,231	2,224	2,217	2,210	2,200	2,190	2,181	2,171	2,161	2,149	2,137	2,125	2,114
Plastics	12.20%	31,702	30,626	30,560	30,494	30,428	30,333	30,237	30,142	30,047	29,952	29,821	29,690	29,559	29,427	29,296	29,135	28,973	28,812	28,651
Rubber and Leather	3.10%	8,055	7,782	7,765	7,748	7,732	7,707	7,683	7,659	7,635	7,611	7,577	7,544	7,511	7,477	7,444	7,403	7,362	7,321	7,280
Textiles	5.80%	15,071	14,560	14,529	14,497	14,466	14,420	14,375	14,330	14,285	14,239	14,177	14,115	14,052	13,990	13,928	13,851	13,774	13,697	13,621
Wood	6.20%	16,111	15,564	15,531	15,497	15,463	15,415	15,367	15,318	15,270	15,221	15,155	15,088	15,022	14,955	14,888	14,806	14,724	14,642	14,560
Other	1.50%	3,898	3,766	3,757	3,749	3,741	3,729	3,718	3,706	3,694	3,683	3,666	3,650	3,634	3,618	3,602	3,582	3,562	3,542	3,523
Food	21.60%	56,128	54,224	54,106	53,989	53,872	53,704	53,535	53,366	53,198	53,029	52,797	52,565	52,333	52,101	51,869	51,583	51,297	51,011	50,726
Yard Trimmings	12.10%	31,442	30,375	30,310	30,244	30,178	30,084	29,990	29,895	29,801	29,706	29,576	29,446	29,316	29,186	29,056	28,896	28,736	28,576	28,416
Misc. inorganic wastes	1.40%	3,638	3,514	3,507	3,499	3,492	3,481	3,470	3,459	3,448	3,437	3,422	3,407	3,392	3,377	3,362	3,343	3,325	3,306	3,288
R/C waste generated		259,851	251,035	250,493	249,950	249,408	248,628	247,847	247,067	246,286	245,506	244,432	243,357	242,283	241,209	240,134	238,811	237,487	236,164	235,840

[1]From Advancing Sustainable Materials Management: 2018 Tables and Figures Assessing Trends in Materials Generation and Management in the United States December 2020

Table G-3 shows the projected waste tonnage by type across the planning period. This table assumes that each waste type will maintain the same ratio as the observation year. Paper and paperboard will continue to comprise a large portion of waste, as will plastics and yard trimmings.

APPENDIX H STRATEGIC EVALUATION

During these analyses, the Policy Committee completed a strategic process of evaluating its reduction and recycling efforts. To do this, the status of the reduction and recycling efforts were evaluated in the context of factors described in Format 4.1.

1. Residential Recycling Infrastructure Analysis

This evaluation of the SWMD's existing residential recycling infrastructure determines whether the needs of the residential sector are being met and if the infrastructure is adequately performing. The residential recycling infrastructure consists of a number of components including curbside programs, drop-off recycling programs, special collection programs, compost facilities, buy-back retailers, reuse centers, thrift stores, and local food banks.

Local curbside recycling programs constitute the primary method for residential recycling. This is in contrast to years prior, when residential curbside recycling was defunded by the District, leaving provision of services to the individual communities. As of 2016, all 18 municipalities and 5 townships offered a curbside recycling program. In 2021, recycling tonnage for curbside service accounted for 9% of residential/commercial diversion. This is a decrease from 11% for the residential/commercial sector in 2015, but could easily be explained by the difficulty in tracking yard waste picked up as part of municipal pickup programs.

Composting accounted for 46% of recycled waste in the reference year, of which local yard waste pickup is included. Because local municipal yard waste is transported to compost sites, it is reasonable to combine these two methods for the sake of comparison. Additionally, it is hard to determine what compost materials are derived from municipal yard waste services in particular.

With this information in mind, the following analysis provides a detailed discussion of the SWMD's role and analyzes the system.

A. Curbside Recycling

A review of residential curbside recycling tonnage between 2017 (the second year in which recycling was available in all 23 communities) and 2021 (after multiple years of available service) exemplifies the manner in which recycling becomes habit once the service is offered for a period of time. From 2017 to 2019, the tonnage of material collected from curbside residential programs tripled, most likely due to residents becoming not only aware of the service and habituated to recycling materials, but also due to education regarding what can be recycled. That number dipped in 2020 before returning to the 2019 tonnage in 2021.

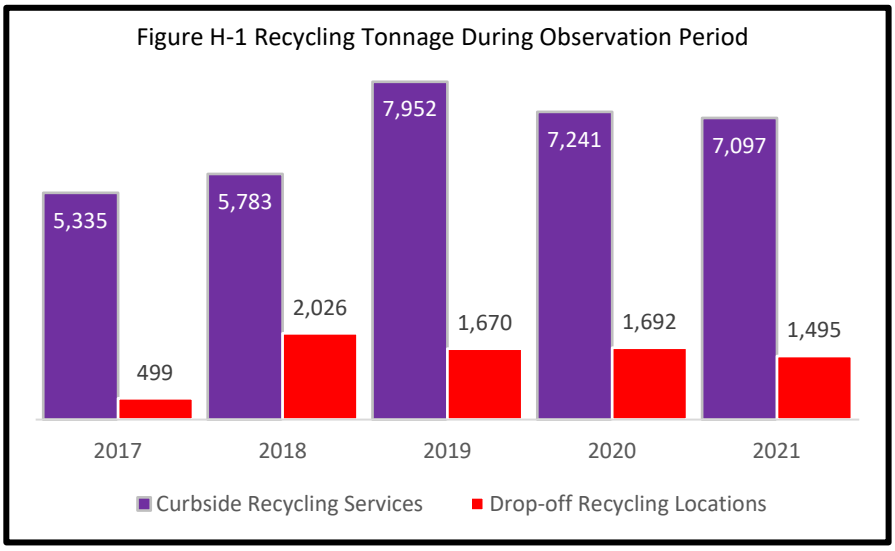
As of 2021, single stream curbside recycling programs are available to all 23 political entities (18 incorporated municipalities and 5 townships). Eleven of the incorporated municipalities have non-subscription curbside service while the five townships and remaining seven municipalities have subscription curbside recycling. Non-subscription services are achieved through contracts between the political subdivision and the hauler. In contrast, subscription curbside recycling requires the homeowner enter into a contract with an available hauler. Some communities have a contract with haulers to offer

exclusive service, while others do not. In this instance residents choose from a handful of haulers. Curbside recycling has virtually replaced the community drop-off sites.

Overall curbside programs are performing well and continue to capture an increasing amount of recyclables. This is in spite of the District ending financial support for curbside recycling in 2014. However, reporting has been an issue, as data from communities is unreliable and/or hard to obtain. The District should work on a system for more accurately capturing curbside recycling tonnage. Figure HX above shows tonnage collected from both curbside pickup and drop-off recycling locations during the observation period. Note that curbside recycling data also include municipal yard waste pickup.

Even without providing financial support, the District should continue to encourage curbside recycling programs. Support can take the form of assisting with locating grants and other funding mechanisms, assistance with educational programs and materials, and guidance on best practices. District support is essential in maintain the momentum that curbside recycling programs have gained.

Subscription and Non-Subscription Services



There are two types of curbside recycling service in the District: subscription and non-subscription. A non-subscription model automatically enrolls residents in a curbside recycling program, most often as part of the exclusive contract between the community and the hauler. These communities are exclusively municipal governments in the District. A subscription model, on the other hand, requires residents independently enroll in curbside recycling. These communities are a mix of municipalities with contracted haulers as well as townships, which operate under a more restrictive and more sparsely funded government model, without contracted haulers.

Table H-1 Curbside Recycling Collection by Program Type

	Number of Communities	Tonnage Collected
Subscription	12	3,859
Non-Subscription	11	3,327
Totals	23	7,186

Comparing the recycling rates of the two models offers important insight into recycling habits of households within the District. By separating data from the two models, we can better understand whether recycling can become habituated through access to the service, or if people will choose to recycle or not regardless. Table H-1 shows the differences in curbside recycling tonnage between subscription and non-subscription programs. On first glance, there is no substantial difference in recycling data between the two models. However, this data does not account for population or occupied single-family detached houses.

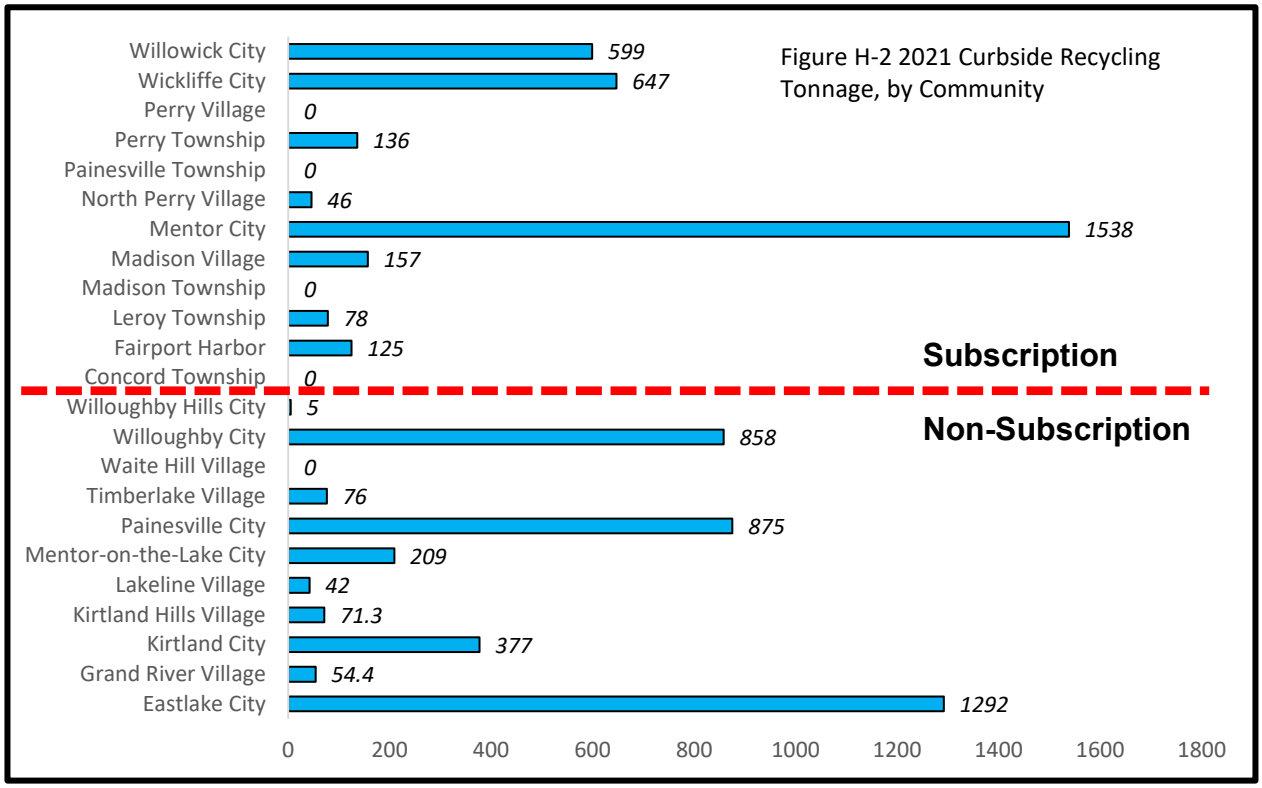
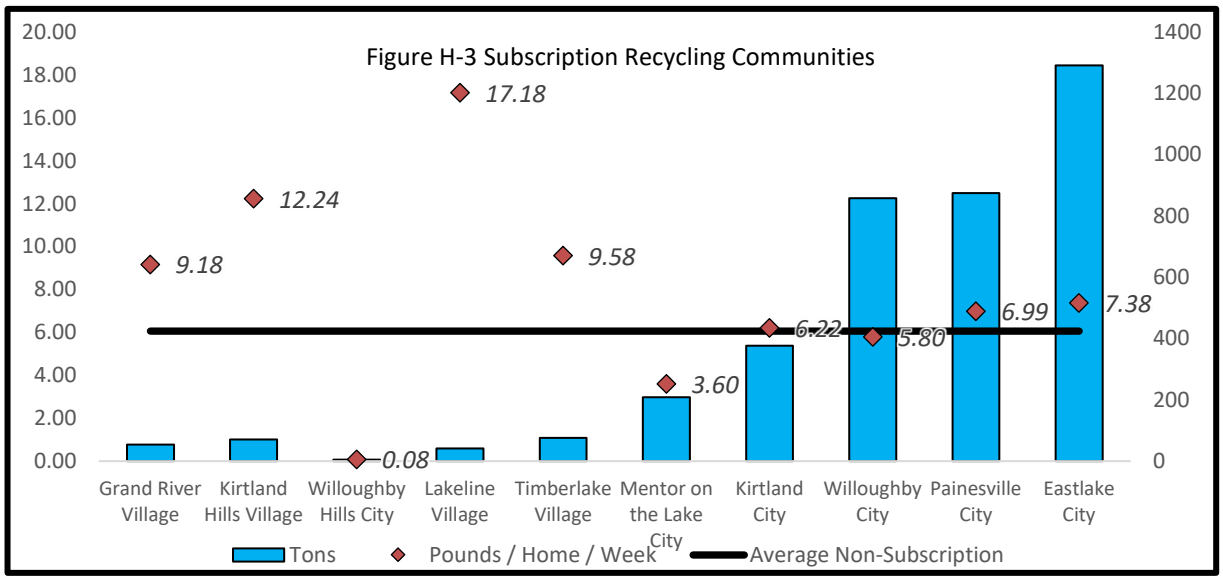
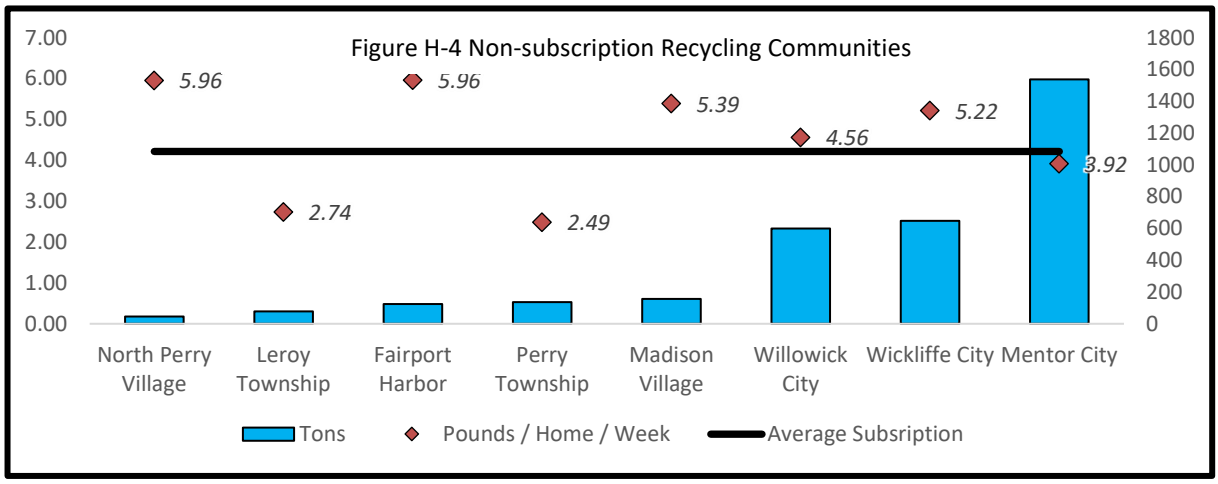


Figure H-2 2021 Curbside Recycling Tonnage, by Community

Table H-2 shows a more in-depth breakout of curbside recycling data. In this instance, each community's tonnage is displayed. Some communities clearly have significant tonnage, such as Mentor (1,538 tons) and Eastlake (1,292 tons). Others have minimal tonnage (Willoughby Hills, 5 tons) while some communities have failed to respond to requests for data (Concord, Painesville, & Madison Townships, and Waite Hill and Perry Villages). Table H-2 also separates subscription from non-subscription curbside recycling services, another crucial point of distinction in analyzing curbside recycling data.

Figures H-3 and H-4 demonstrate the recycling habits for subscription and non-subscription curbside recycling services, respectively. Each figure shows the actual curbside recycling tonnage of respective communities that reported data, along with the average pounds of curbside recycling collected per occupied detached single-family home, per week. Detached single-family homes were utilized as a metric due to properties like condominium associations and apartments not being eligible for curbside recycling service, outside of each development contracting independently with a hauler. Finally, a flat line is present on each figure, representing that pickup model's average pounds of curbside recycling generated per occupied home, per week.





It is immediately clear that non-subscription curbside recycling service generates far higher amounts of recycling per occupied home, to the tune of over a pound and a half of difference. Subscription service generates only 4.22 pounds, while non-subscription generates 5.87 pounds. It should be noted the second, third, and fourth largest communities are not enumerated in the subscription data, as they did not report. Those communities account for nearly 16,000 additional detached single-family homes and roughly 50,000 residents.

There is somewhat of a trend regarding tonnage and smaller communities. Under both models, smaller communities, or those with less tonnage overall, have recycling rates well above the average. For example, Lakeline Village recovers an average of 17.18 pounds per home per week of recycling. However, the overall average is clearly set by the highest-tonnage communities. Other than Wickliffe, the three largest producers of curbside recycling are within .5 pounds per home per week for both models.

The major takeaway from comparing the models is quite simple. When residents are automatically enrolled in curbside recycling programs, there are significantly higher rates of recycling. District staff and the policy committee should explore ways in which to convert subscription communities to non-subscription recycling service. One method of achieving this is to encourage and facilitate joint contracts between multiple jurisdictions and haulers, as has been done with some success in the Delaware-Knox-Marion-Morrow (DKMM) Solid Waste Management District. In Lorain County, 12 jurisdictions have created a consortium to achieve better pricing from haulers. The District in Lake County could potentially build the framework for such a program, if there was demand for it. These are just two examples of successful systems to help communities migrate to non-subscription services.

With the wide array of data available through the American Community Survey, and the ease of conducting simple regression analysis, other variables can easily be explored in addition to those discussed above.

Two additional variables were collected from the American Community Survey and utilized to try to understand the variations in recycling data: mean income and educational attainment. Asking the question "are recycling model, education, or income indicative of recycling habits?", a multiple regression analysis was conducted. Analysis showed moderate correlation between the variables of income, education, and pickup model ($R = .4627$, $R^2 = .2141$). The Multiple R value indicated a moderate linear relationship between the variables provided and the pounds / home / week for each community. However, neither of the two variables, income ($p = .75$) or education ($p = .77$), were found to be statistically significant predictors of pounds per home per week of recycling, while the model of recycling was a stronger, though still not statistically significant, indicator ($p = .14$).

While the analysis was somewhat inconclusive, it provides a baseline for carrying out future research into recycling habits and rates in communities. Further data is needed to establish correlations, which is beyond the scope of this plan.

Collections Methods

Studies across the country have shown that wheeled carts typically lead to higher recovery rates. This is due to their ease of use and size; wheeled carts are quite simple much easier to move than bins, which must be picked up or dragged.

Of the 23 communities in the District, all but two utilize wheeled carts. Those two communities are small, representing a tiny fraction of the population. One of the communities utilizes tote bins, while the other, an extremely wealthy community, collects bagged materials. Because of the lack of data for the two communities, analysis of recycling rates is not possible.

Frequency

Nine of the 23 communities in the District had weekly pickup, while the remaining twelve utilized bi-weekly collection.

Contamination

Contamination is all too common in curbside recycling. Defined roughly as the comingling of recyclable with non-recyclable materials, too much contamination can lead to entire truckloads of collected recyclables being condemned to the landfill.

A solution to help combat contamination is single-stream recycling. In earlier times, recyclables were collected separately. Often paper goods were strapped together, and glass and plastic were separated. To decrease contamination and increase recycling rates while reducing costs, single-stream recycling was introduced, and has become the dominant form of curbside collection. While simpler, single-stream recycling requires educating the public on what can and cannot be recycled, due to the ease of placing any item into the recycling bin. The District should focus efforts on a simple and focused education campaign to help inform residents on acceptable materials for recycling. Many districts use simple flyers or magnets that state which types of plastics can be recycled, based on the number on each container.

Some districts have opted for random audits of wheeled bins on recycle pickup day, tagging those that are non-compliant. Tags inform residents of the rules for recycling, such as materials accepted and not accepted. This method helps to reach a larger mass of people without requiring time-consuming individual interactions with residents. Another method of reducing contamination requires providers take the lead on educating residents by informing them when their recyclables are contaminated, and properly advising them on what can and cannot be recycled.

Strategies to Improve Recycling Tonnage Collected

The greatest challenge the District faces in making improvements to the overall residential diversion rate is its lack of direct authority over the local residential collection systems. Therefore, the District must maximize its role as educator, motivator and mediator to encourage more effective curbside collection programs. The District must foster the cooperation and buy-in from all stakeholders, including elected officials, service directors, residents, and service providers. Clearly, the District's experience so far is that non subscription service achieves higher results.

A more complete analysis of each community's recycling rate would be possible if more information about each program was provided to the District. For example, the amount of waste disposed by each community is not currently reported. This type of information, if collected, could help identify how the communities differ in their waste generation and recycling rates.

While each municipality negotiates its own contract with its selected hauler, there are some contracting best practices the District can encourage that support recycling, such as requirements for reporting the total amount of waste disposed, the number of households participating in the recycling service, directly reporting recovered quantifies and materials to the District, and the distribution of educational materials on a regular basis.

In addition, studies have investigated the effect of household size, age composition, education levels and other economic factors on household waste generation. Johnstone and Labonne provide a concise literature review of the economics of solid waste generation. Their analysis finds a strong correlation between waste generation and per-capita income, and that urban populations tend to have higher disposal rates than nonurban populations.[1] These types of comparisons could be conducted for the Lake County SWMD's communities if the relevant information was collected.

Other options to explore with municipalities include education about the implementation of Pay-As-You-Throw collection, variable rate structures and other features that may bring about a change in behavior. Moving forward the District plans to develop a strategy to regularly engage and inform local decision makers and service managers to create greater awareness of new trends and opportunities in residential collection programs, share ideas, improve social media outreach, and discuss options for banding together to improve contract negotiations.

The U.S. EPA developed the 2021 *National Recycling Strategy* to assist communities with improving recycling rates and lowering landfill usage. Five objectives were published as part of the strategy focused on improving recycled commodities markets, increasing collection, reducing contamination, enhancing policies & programs, and standardizing measurements. As the US EPA works to implement strategies to achieve these objectives, the availability of programs, data, and even funding should improve.

2. Drop-off Recycling

With the addition of Fairport Harbor in 2016, every community in the District now has access to curbside recycling service. Provision of curbside services reduces the need for drop-off sites, as residents no longer need to bring their recyclables to a site. As such, the number of drop-off facilities declined from 18 sites in 2011 to 5 in 2021. While this does not appear to have had a negative impact on the amount of residential recycling overall, only 38.1% of the county's population has non-subscription service, where paying for curbside recycling is not a choice. Considering the rest of the County where subscription service is a choice, the District understands that there are households that do not want to pay for (or cannot afford) the subscription service. Continuing to provide a full-scale drop-off location is important to the District. Drop-off sites will continue to occupy an important space within the overall recycling infrastructure within the district, albeit diminished from a decade ago. Sites should continually be evaluated for effectiveness and use by residents, and relocated as needed.

1. Multi-family Units

As noted earlier, curbside recycling service is limited to eligible housing units, which means that a large number of the District's households (e.g., those living in apartment units) do not have easy access to recycling, even with the five drop-off locations. An analysis of the diverse types of housing units in each community in the District reveals that 6,762 of the District's 109,387 housing units are apartments in large apartment buildings (defined as a building with 20 or more apartment units in the building). And over 92% of these large apartment complexes are concentrated in just six of the District's communities, see Table H-2. Apartment dwellers are an untapped opportunity to increase recycling, and represent a significant opportunity to increase diversion rates while reducing landfill usage. It is up to the property management companies to establish a collection program, but there is little incentive for the companies

[1] Johnstone, Nick and Julien Labonne; 2004; "Generation of Household Solid Waste in OECD Countries: An Empirical Analysis Using Macroeconomic Data," Land Economics 80[4]: 529-538.

to do so. Therefore, the District must take an educational approach and help facilitate establishment or recycling services in multifamily residential development. This is a challenge the District will pursue as outlined in Appendix I.

Table H-2 Municipalities with Large Apartment Complexes

City	Total Housing Units	Units In Structures with 20 or More Units			
		20 to 49 Units per Structure	*50+ Units per Structure*	*Total Units in 20+ Unit Structures*	Percent of Units in 20+ Unit Structures
Willoughby Hills	5,350	48	2,539	2587	48.4%
Willoughby	12,073	506	1,187	1693	14.0%
Painesville	8,328	380	365	745	8.9%
Mentor	20,792	181	440	621	3.0%
Willowick	6,412	33	565	598	9.3%
Eastlake	8,610	227	291	518	6.0%
Subtotal 6 Cities	61565	1375	5387	6762	11.0%
All Others in County	47,822	282	269	551	1.2%
Total	109387	1657	5656	7313	6.7%

In order to develop a successful program that results in increased recycling, the District has investigated similar programs currently provided by other SWMDs, including Hamilton County and Butler County. In Hamilton County, the HCSWMD requires participants (open to condominium associations and apartment property managers) to sign a Memorandum of Understanding that establishes key requirements, The HCSWMD provides technical assistance, pays the first six months of the recycling contract, provides education materials for residents and promotes on the District's website the fact that the property participates in the program. According to Hamilton County SWMD's materials, over 50 properties participate in the program. Butler County SWMD's program has been operating since 2013, funded by a grant form OEPA, and had 12 apartment complexes participating at the time its best practices sheet was prepared. Butler County has a number of apartment complexes in Oxford, home of Miami University. Some considerations include Butler County SWMD's experience that fliers are more cost effective than magnets and the need to work with each property manager to identify the most convenient resources and infrastructure to ensure success at each property.

B. Conclusion

The District should continue to encourage and support residential curbside recycling programs through contract and negotiation support to the communities. Because each community now offers curbside recycling, the District should work towards three ends; increasing participation, decreasing contamination, and encouraging communities shift from subscription to non-subscription services.

Increasing participation also includes increasing access to curbside services. Residents of multifamily developments currently have limited access to curbside recycling, based on their property manager's willingness to pay for such service through their private hauler. The multifamily pilot program will explore this underserved sector and determine if additional District guidance is needed.

Decreasing contamination will require cooperation between communities, haulers, the District, and OSU Extension. There are also useful non-profit partners who assist in actions such as waste audits, such as The Recycling Partnership. Audits can be as simple as walking parts of a route and visually inspecting recycling containers for obvious contamination. OSU Extension could provide educational materials to tag contaminated recycling carts, and even provide a sort of thumbs up for compliant carts. Decreasing contamination will result in not just cheaper curbside recycling services, but also in more efficient recycling.

Encouraging communities switch to non-subscription service is less straightforward. Haulers typically charge more for the service if they must include curbside recycling pickup. In addition, more rural communities like townships may be unwilling, or unable, to enter into a contract with haulers.

3. Commercial/Institutional Sector Analysis

Table H-3 Commercial Recycling by Source, 2021

Source	Tons
Commercial Survey	2,933
Data from Other Recycling Facilities	0
Ohio EPA Commercial Retail Data	4,266
Total Commercial Recycling	**7,199**

As shown in Table H-4, there were an estimated 7,199 tons recycled from commercial recycling activities.

Commercial recycling was the second largest source of recycling tonnage in the last Plan update. However, it is now fourth, behind curbside recycling service, local municipal yard waste collection, and composting. In fact, commercial recycling tonnage (reported from the commercial survey and OEPA data) dropped from 27,908 in 2015 to 7,199 in 2021. The drop is due in large part to the paltry data received in the commercial survey, which dropped from 21,178 in 2015 to 2,933 in 2021. Given the large commercial and retail footprint in the District, the reported recycling numbers are extremely low. Finding ways to increase recycling efforts and improve reporting data are two of the District's highest priorities for the commercial/institutional sector.

This evaluation of the SWMD's existing commercial/institutional sector determines if existing programs are adequate to serve the sector, if there are needs that are not being met, and if the SWMD can do more to address this sector. The commercial/institutional sector within the SWMD consists of the following (non-exhaustive list): commercial businesses, schools and colleges, government agencies, office buildings, stadiums and other large event venues, hospitals and non-profit organizations.

Lake County is situated along the Lake Erie shore, sandwiched between Cuyahoga County to the west and Ashtabula County to the east, and is part of the Cleveland-Elyria MSA. It is a highly diverse county with dense suburban development on the western edge bordering Cuyahoga County and rural farmland with low-density residential development on the eastern end. According to the "Ohio County Profile of Lake County" prepared by Office of Research, less than half of the land in the county is developed, mostly with lower density residential uses. Specifically, the land use/land cover is:

- 7.29% Developed, with higher intensity uses (commercial/industrial),
- 40.53% Developed, with lower intensity uses (primarily residential)
- 36.88% Forest, wetlands, and grasslands
- 13.18% Pasture, cropland

The city of Painesville, the county seat, and Mentor, the county's largest city, are located in the central part of the county. However, most of the older built-out communities are located in the western portion

of the county between Interstate 90 and Lake Erie. Most of the commercial development, including the Great Lakes Mall area, is located along the State Route 2 and US Route 20 corridors, though there are clusters of concentrated commercial businesses/institutions, and retail throughout the county. In addition to these commercial areas, the County is home to a private four-year college, a public community college, hospitals, numerous local and county government facilities and over dozens of nurseries. According to Lake County Economic Development, major/notable commercial and institutional employers include Lake Health, Steris, Avery Dennison, Lubrizol, Lincoln Electric, Willoughby-Eastlake Schools, and Mentor Schools.

Located along Lake Erie, the County is also home to numerous state and metropolitan parks and beaches, marinas, wineries and other entities that draw visitors from across the region. Commercial businesses and non-profits contract with private service providers for recycling services.

The Lake County Business Waste Reduction Committee (BWRC) oversees the District's industrial and commercial sources of education and recycling information and out-reach/educational programs. Yet, working with the business community remains a challenge, and in recent years the BWRC has not been as active as it has been in the past, except for its annual sponsorship of the "Go Green with the Captains" event. This sponsorship ended in 2018, and the planned launch of a new partnership with the team was cancelled in 2020 and 2021 due to the COVID-19 Pandemic.

A. Retail Recycling

Retail trade in lake County generated over $850 million in GDP while employing 14,000+ employees (nearly 12% of Lake County employment) in 2022. There are over 16 million square feet of retail floor area in Lake County, of which 5.7 million square feet is in the city of Mentor. However, retail business continues to evolve in the wake of the COVID-19 pandemic. Even prior to the pandemic, retail brick & mortar locations were experiencing the fallout of changing tastes and shopping styles as a result of web-based shopping. COVID-19, while leading to a surge in retail spending, continued the trend of retail business consolidation and repositioning. It is expected that the retail space will continue to evolve as the global and national economy changes, and consumer habits shift. Regardless of the causality, the impact that these changes will have on waste generation and recycling rates is unknown. The explosion of online ordering during and after the pandemic continues to be examined, but may have led to substantial increases in residential waste generation, especially for items like corrugated carboard shipping boxes.

The Great Lakes Mall contains 2 department stores and an entertainment center, along with other big box retailers such as Dick's Sporting Goods, Best Buy, and At Home. The mall and its cluster of retail stores surrounding it has more than 1.3 million square feet and is the epicenter of retail activity in Lake County. This location also has the greatest number of businesses (300), of which 36.3% (109) are retailers. They include the mall anchors (Dillard's and J.C. Penney's), big box retail in nearby open-air centers (TJ Maxx, Burlington Coat Factory, Marshall's, etc.), mid-box "category" merchants (At Home, Petco, Michael's, Best Buy, etc.), and numerous specialty stores, most of which are national chains.

Information on recycling by retailers and similar commercial businesses is obtained primarily from the District's Commercial Survey efforts and the state's statewide survey. However, available data doesn't provide a complete picture of how much material is actually recycled. That means there is more recycling going on than is being reported. The commercial survey participation rate for 2021 data was lower than in previous years. There are numerous challenges in working to increase data reporting and capture a true picture of commercial recycling. To increase survey responses, the district could engage in any of the following:

- Build relationships with local chambers of commerce. These organizations often have up-to-date member rolls, of which the overwhelming majority are new and/or small businesses. These businesses are the least likely to report on the survey.
- Ensure the district website has robust information about the purpose of the survey, with clear instruction for completion.
- Build relationships with large business that produce significant waste, allowing them to help the District create outreach and education materials.
- Provide education materials on best practices for recycling, both in practice and for tracking data.
- District should embrace modern technologies to help track and capture data, including digital platforms, web-based systems, and mobile applications.

B. Ohio EPA Commercial Retail Data

Over the last decade, Ohio EPA has increased its outreach to commercial and industrial businesses encouraging them to participate in the statewide survey to report their recycling activities. Lake County has a number of major retailers who participate in the survey, though the annual number of participants is still far below the number of large corporations in the District. However, as evident in Table H-5, there are a few retailers whose participation in the survey has not been consistent, and also a handful who have participated every year. These inconsistencies have led to wild swings tonnage reported, with the 2021 survey being 21% lower than 2020.

Table H-4 Ohio EPA Commercial Survey Data, Since 2010

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Aldi Inc Hinckley Division				*268*	*286*		*483*	*728*	*534*	*581*	*816*	
Big Lots Corporation			*52*	*69*	*69*	*76*	*74*		*73*			
Dollar General Corporation			*214*	*214*	*264*	*286*	*323*	*619*	*444*	*439*	*549*	*561*
Home Depot Corporation		*274*	*267*	*245*	*409*	*242*	*245*	*258*	*211*	*284*	*278*	*235*
JC Penney Distribution Center				*66*		*64*						
Kohl's Corporate			*138*	*140*	*179*	*212*	*156*	*185*	*162*	*195*	*152*	*112*
Lowe's Companies, Inc.	*185*	*582*	*539*	*209*	*328*	*500*	*389*	*76*	*296*	*299*		
Michaels Corporation					*35*							
Target Corporation		*349*	*384*	*461*	*667*	*542*	*543*	*380*	*416*	*454*	*805*	*557*
Walmart Recycling in Ohio	*1826*	*2211*	*1659*	*785*	*2219*	*2365*	*2560*	*2056*	*1936*	*1915*	*2053*	*1832*
Sam's Club								*805*	*518*	*833*	*731*	*854*
CVS								*63*			*43*	*44*
Advance Auto Parts												*53*
National Tire and Battery												*18*
Meijer Corporation											*827*	
Kroger										*467*		
Family Dollar/Dollar Tree								*223*				
Save-A-Lot										*25*	*62*	
United States Postal Service									*249*	*137*		
Walgreens											*8*	
TOTAL	**2011**	**3416**	**3253**	**2457**	**4456**	**4287**	**4773**	**5172**	**4590**	**5000**	**5428**	**4266**
Percent Change Annually		70%	-5%	-24%	81%	-4%	11%	8%	-11%	9%	9%	-21%

According to the Ohio Council of Retail Merchants, "The retail industry is committed to improving sustainability by reducing [its] environmental footprint through the recycling of a wide variety of materials and products" and members of the organization are encouraged to participate in the statewide recycling survey.

Meijer is a large-scale retailer that has consistently participated in the statewide recycling survey and recently opened its first Lake County storefront in Mentor. Home improvement chains like Home Depot, Lowe's, and Menard's are also seeing strong sales and adding stores. This all indicates that there is likely to be increased reporting by these large-scale chains in Lake County. The BRWC is reinstituting its Environmental Steward Award program and could recognize these companies on its website in the hopes of encouraging other retails to participate.

C. Tourism

Another industry that plays a role in contributing to the amount of per-capita waste disposal is tourism. Tourism to Lake County, fueled by being on the shores of Lake Erie, and having a number of tourist destinations, may increase the amount of municipal solid waste generated. Visitors' purchasing and consumption habits are likely different between vacation and home, and individuals also may be unfamiliar with local practices and discard materials they might otherwise choose to recycle. Tourism may be one explanation for such a seemingly high per-capita disposal rate in Lake County. To date, the District has not focused on obtaining recycling data from major tourist destinations, with the exception of the Lake County Metroparks, which contract with Royal Oak recycling to provide a collection container at Veteran's Park (collected 21 tons of paper in 2022, most recent year for which reliable data is available). This is an area where the District and the BWRC could partner with the Lake County Visitors Bureau to increase awareness at hotels, parks and other popular destinations on the importance of recycling.

Lake County is highly regarded in agricultural circles. Replete with some of the most fertile soil anywhere, the region earned the distinction as the hotbed of nursery activity and winemaking. This rich soil has led to an award-winning wine industry, making Lake County an emerging tourism destination. Agricultural tourism and related specialty shopping and dining are areas where the more rural townships and villages are seeing expanded opportunities. For example, over 20 wineries between Madison and Geneva (Ashtabula County) draw visitors for tours and tastings, with around a dozen of those in Lake County.

D. Food Management

While retailers are being shaken up with changes as noted above, restaurant sales in the District have grown at a pace slightly faster than inflation since the end of the recession. In Lake County few food service businesses report their efforts to donate or compost food. This is an area that the District believes warrants greater analysis.

Research indicates that one-third of food mass (tons) grown for human consumption is wasted. And once food is discarded, only 5% is currently recovered or reused. Food waste is the largest single item in the MSW stream. Plus, burying food in a landfill prohibits the reuse of important nutrients, such as phosphorous, that are essential and non-substitutable for food production and human growth but are finite on earth.

The infrastructure for waste management of organics is not well developed in the Lake County SWMD, though it continues to improve. In the last couple of years, the first Class II composting facility in the District opened, filling a hole in the waste management toolbox that will provide an option for composting food scraps. Research shows that a food waste management system that is more sustainable from a social, economic, and environmental standpoint can be efficient economically. Alternative food waste disposal programs include source reduction, donation, composting, and recycling of cooking oil.

As of 2021, eight states have some sort of law requiring reprocessing of food, thus diverting it from landfills. While this approach is extreme, there is evidence to show that when such restrictions are imposed, they spur innovation and food waste reduction. For example, a supermarket chain in New England gained notoriety in 2021 for diverting 100% of their food waste to reprocessing facilities for an entire year. Food waste, including spoiled and outdated items, were sent to processing facilities where it was removed from packaging and mixed with materials like manure to make a range of products such as fuels and fertilizers[2]. This type of program could be successful in urbanized areas of the District, where restaurants and grocery stores are concentrated. The District is interested in further studying best practices for establishing a food collection system for restaurants – either for food surplus that is suitable for consumption and can be donated and/or for management of food scraps.

E. Schools, Churches and Other Institutions

There are 13 school districts in Lake County, Lake Erie College, Lakeland Community College and other learning centers, technical, vocational and private schools, as well as a number of other institutional uses such as churches and fraternal orders. Recycling activities at each of these facilities is on the onus of the entity to subscribe with a private sector service provider. The SWMD provides technical assistance when approached by the schools.

Royal Oak Recycling provides collection of paper recyclables throughout the District including schools for students, teachers, and administrators within all of the Lake County public school systems. The company provides annual tonnage reports to the District and in 2021, 297 tons of recyclables were collected. Paper Retriever bins found in many parking lots throughout the County promote the recycling services offered.

Since 2015, the number of sites had decreased, though the tonnage was stable. In 2015, 1090 tons of paper products were collected from the Paper Retriever bins, compared to 1088 tons in 2021. However, the number of sites has been reduced from 107 in 2015 to 85 in 2021. The reduction in sites from 2015 to 2021 was most apparent in schools (19 less sites in 2022), churches (5 less in 2022).

F. Government Agencies, Office Buildings

Currently, the District does not obtain data directly from private haulers regarding services provided to businesses and local governments, except for data received from Royal Oak Recycling, who collected 80 tons of paper products from government office sites in 2021. This is an area for the District to investigate. Based on a review of available local recycling contracts, a number of municipalities with non-subscription service have a requirement in their contract for the provider to supply and service recycling containers at the respective City or Village Hall. However, data on tonnage collected at these government facility sites was not reported separately to the communities. The District, in its efforts to assist local communities with contract negotiations, can include a requirement for both the collection and reporting of recyclables at City/Village Hall.

Lake County Board of County Commissioners completed construction of a new County administration building adjacent to the existing one. As part of this expansion, the District expanded the variety of materials collected in drop-off containers located on-site. The County also placed containers on-site at the Juvenile Justice Center across the street.

[2] Povich, E.S. July 8, 2021. Waste Not? Some States Are Sending Less Food to Landfills. *Stateline*

G. Conclusions

There are gaps which can be filled and improvements made in the commercial/institutional sector. The commercial survey has seen significant declines in completion rates over the last couple of Plan updates, indicating a disconnect between commercial entities and the District. To improve commercial surveys, the District should create dialogue and partnership with the commercial sector, understand their needs and limitations in recycling, and revamp the survey.

In addition, there is an opportunity to take the lead in commercial composting. With a Class II facility in District, there is an opportunity to pilot a commercial food waste composting program. This would be a public-private partnership involving the businesses, haulers, the District, OSU Extension, the Ohio EPA, and Blue Spruce Composting. There is also a gap in recycling waste from grocers, which can be explored through dialogue with the major grocers in the District.

4. Industrial Sector Analysis

This evaluation of the SWMD's industrial sector determines if existing programs are adequate to serve the sector, if there are needs that are not being met, and if the SWMD can do more to address the industrial sector.

Table H-5 Manufacturing Establishments by Employment - Lake County

Range of Employees	Number
All establishments	540
Establishments with 1 to 9 employees	270
Establishments with 10 to 49 employees	180
Establishments with 50 to 99 employees	42
Establishments with 100 to 249 employees	35
Establishments with 250 to 499 employees	11
Establishments with 500 to 999 employees	0

Source: 2021 American Community Survey, US Census Bureau

According to the 2021 Economic Survey of County Business Patterns, there are approximately 540 manufacturing businesses (NAICS code 31-33) and has nearly 20,000 paid employees, the largest out of all NAICS sectors. The fabricated metal product manufacturing sector (NAICS 332) is the largest manufacturing sector (233 establishments, 5000+ employees, 43% of all manufacturing), while the second largest is machinery manufacturing (NAICS 333; 74 establishments, 2900+ employees, 14% of all manufacturing). Although no industrial survey was completed for this Plan update, these establishments undoubtedly produce significant amounts of metal waste.

The State of Ohio Department of Development has reported a drop (-5.5%) of manufacturing businesses in the County between 2013 and 2019. However, at the same time, the number of persons employed by manufacturing establishments increased by over 5%, indicating that perhaps the level of manufacturing activity is actually increasing. In addition, and of relevance to waste generation and recycling, construction employment increased by 5% in that timeframe, indicating an uptick in construction activity, which may in turn lead to more waste being generated on jobsites and as a result of demolition.

There are several major corporations in Lake County. According to the Ohio Development Services Agency, major/notable industrial/utility employers include Lubrizol Corp; ABB Inc.; Avery Dennison Corp; FirstEnergy Corp; Lincoln Electric Holding Inc.; and STERIS Corp. However, the manufacturing industry in Lake County is comprised primarily of small to medium sized businesses, with 47% of manufacturing establishments having 9 employees or fewer (Table H-6).

5. Business Waste Reduction Committee

The Lake County Business Waste Reduction Committee (BWRC) oversees the District's industrial and commercial sources education and recycling information and out-reach/educational programs. In the past, this committee would meet throughout the year to review results of an annual survey, strategize effort for ways to improve outreach to all businesses and develop new business recycling opportunities. Working with the industrial business community remains a challenge mostly because reporting is voluntary. Because industrial businesses are known to be large consumers of recycled materials, this represents an opportunity for fruitful collaboration.

There are opportunities to increase the BWRC's efforts to assist this sector however there would be limitations on time available of SWMD staff, and would likely require additional staff resources. For example, the Cuyahoga County SWMD has a "Business Specialist" on staff to develop and conduct seminars three times a year as a way of reaching out to businesses in the District. The focus of the program is to help businesses understand the benefits of recycling, including how proper recycling methods can save them money. Ideas for topics that the Lake County BWRC can use for designing outreach efforts to both commercial and industrial businesses include:

- how easy it is to implement zero waste events in the workplace,
- hands-on waste audits and how to interpret waste audits,
- finding the proper recycling container size and placement,
- recycling prompts, and
- negotiating waste and recycling contracts.

A. Conclusions

The Industrial sector is a substantial recycler in terms of percentage of waste recycled. The District can lean into this and dialogue with industrial users to find their methods and policies for recycling. Developing relationships with industrial users, especially the major employers, can help the District to collect better recycling data as well.

6. Residential/Commercial Waste Composition Analysis

Waste composition is community specific and changes over time due to the same factors that make communities unique. For example, residential housing type (e.g., single-family versus multifamily), socioeconomic status (e.g., income, race, and education), development patterns and density (e.g., urban versus rural), the proximity to the closest waste management facilities, and climate and seasonal factors all affect waste volume and composition.

This evaluation looks at the wastes that typically make up the largest portions of the residential/commercial waste stream and determines whether the SWMD currently has or should have programs to address those wastes.

Municipal solid waste (MSW), also referred to as residential/commercial waste, includes common items that are discarded after being used, such as packaging, food, grass clippings, newspapers, computers, tires, and appliances. According to US EPA's "Advancing Sustainable Materials Management: Facts and Figures 2018" materials that typically make up the largest portions of the residential/commercial waste stream have changed over time and are currently paper and paperboard (23.1%), food (21.6%), yard trimmings (12.1%), and plastics (12.2%).

The SWMD generated 341,509 tons of municipal solid waste in 2021. Applying the US EPA waste generation estimates to the SWMD's waste generation gives an approximation of materials generated, see Table H-6. This evaluation looks at the availability of and need for programs to recover the three other largest categories: paper, food and plastics.

Table H-6 Estimated Waste Generated by Material

Material	US EPA % Generated		Estimated Lake County Tons Generated	
	With Yard Waste	Without Yard Waste	With Yard Waste	Without Yard Waste
Paper	23.10%	26.28%	78,889	80,043
Food	21.60%	24.57%	73,766	74,846
Yard Trimmings	12.10%		41,323	
Plastics	12.20%	13.88%	41,664	42,274
Rubber, Leather & Textiles	8.90%	10.13%	30,394	30,839
Metals	8.80%	10.01%	30,053	30,493
Wood	6.20%	7.05%	21,174	21,484
Glass	4.20%	4.78%	14,343	14,553
Other	2.90%	3.30%	9,904	10,049
Total	100.00%	100.00%	341,509	304,581

Source: US EPA's "Advancing Sustainable Materials Management: Facts and Figures 2018." Calculations by District.

The SWMD disposed 259,851 tons of municipal solid waste in 2021. About 81,658 tons were recycled and composted, which leaves a large amount of material still being landfilled. In fact, the ratio of recycled and composted materials to landfilled materials actually decreased from the previous-Plan's reference year (2015) to the current reference year (2021), from 28.4% recycled to 23.9% in 2021. Applying the US EPA waste disposal estimates to the SWMD's waste landfilled gives an approximation of types of materials landfilled. As shown in Table H-6 food waste, plastics, and paper/paperboard are the three largest categories of materials being landfilled in the United States. Table H-7 applies the average composition of materials landfilled to the SWMD's disposed tonnage to estimate the composition of materials landfilled in 2021.

Table H-7 U.S. EPA Estimated Waste Disposal by Material

Material	US EPA % Landfilled	Lake County SWMD (Tons)	
		Est. Quantities Landfilled	Actual Tons Recovered
Food	24.10%	62,624	1070.7
Plastics	18.50%	48,072	2,283
Paper and Paperboard	11.80%	30,662	25,816
Rubber, Leather & Textiles	11.10%	28,843	105.7
Metals	9.50%	24,686	6,007
Wood	8.30%	21,568	2,689
Yard Trimmings	7.20%	18,709	36,929
Glass	5.20%	13,512	2,047
Other	4.30%	11,174	4,711
Total	100%	259,851	81,658

Source: U.S. EPA Advancing Sustainable Materials Management: 2018 Fact Sheet, and Table E-5

Yet studies show that regions can vary significantly on waste generation and disposal. Without a District specific waste characterization, it is impossible to know how closely the District mirrors the USA average. Therefore, the purpose of this exercise is simply to demonstrate how much of each type of material could be ending up in a landfill. This helps the District determine if existing programs need to be adjusted or new programs initiated. Not surprising, the three types of materials most likely to end up in landfills are food, plastics and paper.

Commentary on the District's programs for Paper and Food include:

A. Paper

In 2021, paper and cardboard comprised 31.6% of recycled tonnage for the Residential/Commercial sector. This is not surprising, because paper is one of the common suite of materials accepted by all service providers through curbside and drop off collections. Single-family households have curbside recycling. Schools, institutions, offices and commercial businesses have opportunities through Royal Oak Recycling, which currently has over 80 sites in Lake County. Yet it is assumed that gaps still exist in collection services to these entities.

Waste minimization and recycling are two available options to manage paper waste. Waste minimization stops the waste before it starts, and recycling is separating the materials from the waste stream and using them as virgin feedstock to manufacture new products. Waste minimization is a management method that has had little promotion by the SWMD. Recycling of paper comes down to available collection methods.

B. Food

The SWMD reports indicate that food makes just over 1% of the recycled tonnage. According to hypothetical estimates from Table H-7, the District could have about 62,624 tons of food disposed in landfills.

Food waste is a difficult stream to manage in large part because of the collection methods and monitoring of composting and technology approaches. Options to manage food waste include waste minimization, donation, composting, and technologies (anaerobic digesters, in-vessel technologies, etc.). Waste minimization is a management method that has had little promotion by the SWMD. Teaching about making better use of food through storage, portion size, recipe suggestions for leftovers can help prevent food waste. The SWMD provides limited outreach to the residential/commercial sector regarding the available options to manage food waste. The District could explore education options with the OSU Extension.

Table H-8 Difference in Recovery

Material	U.S. Recycle Rate	Estimated SWMD Recycle Rate	Difference
Paper	66.5%	32.7%	-33.8%
Food	4.1%	1.5%	-2.6%
Yard Trimmings	63.0%	89.4%	26.4%
Plastics	4.5%	5.5%	1.0%
Rubber, Leather & Textiles	6.1%	0.3%	-5.8%
Metals	12.6%	20.0%	7.4%
Wood	4.5%	12.7%	8.2%
Glass	4.4%	14.3%	9.9%
Other	1.4%	47.6%	46.2%

Source: U.S. EPA Advancing Sustainable Materials Management: 2018 Fact Sheet, and Table E-5

C. Conclusions

The District does well in recycling waste, with 23.9% of all waste generated being diverted to recycling. This is roughly on par with the U.S. recycling rate of 23.6%. In examining individual materials, the District lags behind the national average in rubber, leather, & textiles recycling, but performs well in paper products, glass, and ferrous & non-ferrous metals recycling. That said, Table H-7 demonstrates the

estimated amount of waste going into landfills that could potentially be diverted to recycling or compost. Opportunity exists to divert additional plastics, glass, and metal.

Items cannot be diverted, however, without reliable tracking and weighing of waste. Communities and the District rely on haulers to implement modern technologies on trucks, such as digitizing routes to records more neighborhood-level weights and data, and on-board weight systems to weigh waste loads from individual homes and/or businesses.

7. Economic Incentive Analysis

By definition, economic incentives encourage increased participation in recycling programs. In accordance with Goal 7 of the 2020 State Solid Waste Management Plan, the SWMD is required to explore how to incorporate economic incentives into source reduction and recycling programs.

In the past, the SWMD had various incentive programs, but the last grant program aimed at assisting local communities in curbside and drop-off recycling ended in 2014. This analysis evaluates the feasibility of implementing new incentives. One recognized benefit of the Lake County Solid Waste Management District providing grants to local communities for curbside recycling was the requirement that the local communities provide timely data on recycling amounts and details on the types of materials recycled. With the total elimination of the grant program, it has become much harder to obtain this information.

Research shows that common flat-rate fee system for waste collection and disposal does not provide any incentive for waste generators to reduce waste generation. Two programs that can contribute to improved performance improvement include (1) unit pricing, also known as Pay as You Throw (PAYT), which charges for waste disposal services by volume or usage, and (2) recycling rewards programs, which provide cash or other economic incentives for recycling.

The Policy Committee recognizes the need to provide incentives to improve recycling in areas where there currently are little to no intrinsic benefits, such as with multi-family properties. The multi-family pilot program (discussed in greater detail in Appendix I) seeks to incentivize recycling programs at the numerous large-scale multi-family developments that are concentrated in limited locations in the District. The District believes that developing such an incentive program is likely to increase the quantities of materials recycled in the most efficient and environmentally friendly way.

A. Conclusions

The District offers little to no incentive to recycle. Reviving the BWRC can change that, while helping to build meaningful relationships with the private sector. BWRC can lead the charge in developing low-cost incentive programs for businesses and industrial users, while also gaining insight into how those users view recycling and waste reduction.

8. Restricted and Difficult to Manage Waste Streams Analysis

Goal 6 of the 2020 State Solid Waste Management Plan requires SWMDs to provide strategies for managing scrap tires, yard waste, lead-acid batteries, household hazardous waste (HHW), and obsolete/end-of-life electronic devices. This analysis evaluates the existing programs offered for managing restricted wastes and difficult to manage wastes.

There are strategies and alternative management options to address all of the wastes (scrap tires, yard waste, lead acid batteries, HHW, and obsolete/end-of-life electronic devices) required by Goal 5 available for SWMD residents. The District has been providing special collection programs and community-based programs for these types of waste materials for numerous years, though the quantities of each have fluctuated somewhat. In addition, the OSU Lake County Extension maintains an extensive online list of recyclers and other web-based information including the benefits of recycling, and hazards of improper handling.

A. Household Hazardous Waste

The District currently conducts a biannual HHW Collection Program (which is explained in detail in Appendix I) the cost of which, based on a comparison to other Districts, is not out of line.

B. Scrap Tires and Appliances

The Lake County Solid Waste Facility accepts scrap tires and appliances during normal business hours for a small fee. Additionally, scrap tire and lead-acid batteries are directed to retailer take-back outlets within the SWMD through the online directory. Based on the number of facilities where scrap tires can be taken, the District does not believe additional efforts are necessary. The District previously hosted a single-day scrap tire collection at the County Fairgrounds in partnership with Ohio State University Extension, where residents could recycle up to six unmounted personal vehicle tires free of charge (and additional tires, or larger tires, for a nominal fee).

C. Electronic Equipment

As there is an ever-increasing supply of electronics, there is a continual need to find ways to dispose of them. The District provides free collection of nearly all types of consumer electronics, including microwaves, vacuums, and computers, at biannual collections held at the Lake County Fairgrounds. The electronics are recycled by a certified electronics recycling firm contracted by the District, who provides a credit to the District for hard drives that are recovered. While electronics collections are expensive programs for other SWMDs, Lake County SWMD's program is not because of the arrangements the District has with the contractor. Electronics recycling services have expanded since the last Plan update with remarkable success, and based on conversations with the contractor, the program will continue to be cost effective due an increase in the types of materials for which the District will receive credits.

Electronics, as well as appliance, are accepted for recycling at Best Buy locations, including the one in the District in Mentor. Any individual can bring in up to three items per day for recycling. Some items, like appliances, have a recycling fee. However, many items can be dropped off free of charge.

While the District will continue all of these programs during the planning period, there are opportunities for improvement, including conducting an assessment of the fees charged to drop off (such as comparing them to surrounding SWMDs, contract negotiations with the vendor, alternative handling processes, and additional education and outreach.

D. Mattress Disposal

The District has done research on methods for mattress disposal, and developing a public/private partnership could improve the ability to recycle difficult to manage materials. One example is the city of

Boulder, Colorado, which contracts with the nonprofit Eco-Cycle to operate the Boulder County Recycling Center, which processes 52,000 tons of materials per year. Eco-Cycle also runs the Center for Hard-to-Recycle Materials (CHaRM), which opened in 2001 as one of the first facilities in the nation to collect electronics and other unusual materials such as plastic bags, yoga mats, and now mattresses and box springs. Eco-Cycle is partnering with Spring Back Colorado in Denver to disassemble the old mattresses and box springs and sell the springs as scrap metal and the soft materials to businesses to make carpet pads. A startup that operates out of Spring Back Colorado's facilities creates dog beds from recycled latex foam mattresses. Other facilities around the nation offer similar recycling services. However, none are located in Ohio, nor are they located in Kentucky, Pennsylvania, West Virginia, or Indiana. The nearest facilities are in Michigan. The District should work with Ohio EPA to encourage mattress recycling facilities be sited in Ohio.

E. Conclusions

The District manages HHW, scrap tires, and electronics waste quite well, and has good turnout for their collections events. Disposal methods for these materials are well-known throughout the District, and that knowledge is reinforced well through materials from the District, OSU Extension, and the General Health District. Electronics waste will continue to increase with the increased proliferation of electronic devices into our everyday lives. There may be need for additional collection events, and there is opportunity to be had in establishing strong relationships with large electronics waste collectors such as Best Buy.

Given the success of these programs, the District can begin to explore even more difficult to manage sources of waste, such as mattresses. Programs and non-profit entities exist to assist in recycling mattresses, and the District can reach out to those entities for assistance in understanding how to better dispose of mattresses.

9. Diversion Analysis

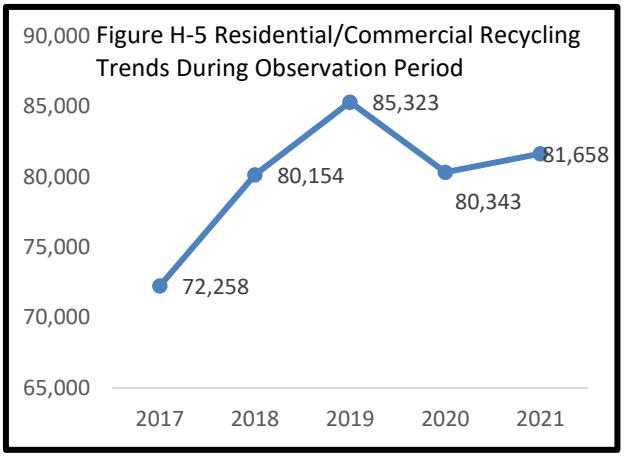


Figure H-5 Residential/Commercial Recycling Trends During Observation Period

This analysis evaluates the quantities of waste reduced/recycled in 2021 and four prior years. Waste diversion is defined as the amount of waste recycled and the amount of waste diverted from entering the waste stream through source reduction activities. Waste diversion activities include waste minimization (also called source reduction), reuse, recycling, and composting. The diversion analysis examines the diversion programs, infrastructure, rate and trends, and materials. Residential/commercial diversion in the SWMD trends upward generally. However, that upward trend is the result of a strong increase in 2018. The increase in 2018 was enough to account for a strong overall increase across the observation period, despite a reduction in 2020.

The material categories reported as most recycled in 2010 include yard waste (45.2%), cardboard (24.8%), other paper (6.8%), and ferrous metals (4.8%). Based on the District's data, the majority of cardboard and paper are collected from commercial businesses.

While the SWMD is achieving increased overall diversion tonnage, there are more materials being landfilled that could potentially be reduced or recycled to increase the diversion rate. Also, current

opportunities for waste minimization and reuse are largely unexploited for the residential/commercial sectors. Reuse infrastructure heavily falls on non-profits and their development of reuse centers. The District does promote Goodwill and the Salvation Army as options for reuse; however now with the website improvements, options for and the benefits of reuse can be promoted more extensively. Potential opportunities to consider include compiling a resource guide to donating as well as assisting in the development of reuse centers.

A. Conclusions

The District does a good job of tracking diversion, but its recycling rates narrowly missed Goal #1 of the 2020 State Plan by roughly 1%. Diversion from landfills does not always involve recycling – often times reuse is more feasible for residents, especially for difficult to recycle items like clothing and furniture. Reuse also offers a cost-free disposal method that might even offer tax benefits in the form of write-offs. There is a gap in the District's understanding of this diversion stream, and there is opportunity to engage with entities like Habitat for Humanity ReStore and Goodwill to better track the reuse stream.

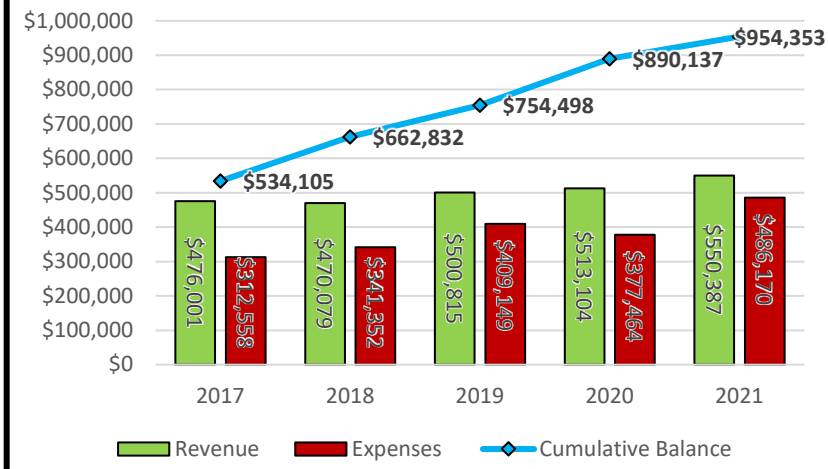
10. Special Program Needs Analysis

Ohio Revised Code 3734.57(G) gives SWMDs the authority to fund a number of activities that are not related to achieving the goals of the state solid waste management plan. In addition, there are other programs that SWMDs fund that are not addressed in either the state plan or law. The SWMD does not fund any activities or programs that fall into this category.

11. Financial Analysis

This analysis evaluates the SWMD's financial position at present and during the planning period. Figure H-6 shows financial information for the planning period and reference year. The District has been building its balance sheet since the early 2010's, sitting at $951,323 in 2021.

Figure H-6 Revenue, Expenses, and Balance

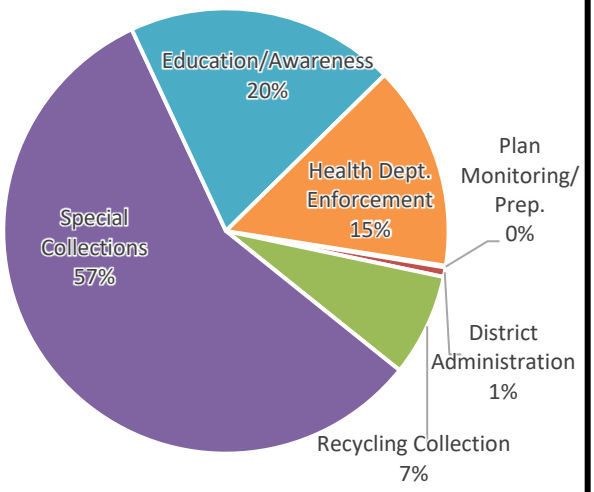


Since 2017, revenues have remained relatively consistent, increasing by only about $75,000 by 2021. Expenses, however, rose sharply in 2021. The increase of about $110,000, or 29% over 2020, coincided with a period of substantial inflation and increases in costs resulting from the COVID-19 pandemic. Increased costs in 2021 led to a reduction in the revenue from $134,640 to only $64,217. At present, the District has no intention of increasing their fees. However, if costs continue to increase, they may be required to do so in order to remain solvent.

Current fees are set by the District, with bounds set by Ohio Revised Code. In-district fees are $2.00 per ton, $4.00 per ton out of district, and an additional $2.00 for out of state tonnage. In 2021, 97% of revenues were derived from disposal fees.

Figure H-7 notes the breakdown of District expenses. Special collections, such as electronics collections and scrap tire collections, account for over half of all District expenses. These events are expensive because the District must contract with independent providers to staff and haul the materials. Next is education and awareness, accounting for one fifth of expenses. These costs cover the contract with Ohio State University extension, which includes a staff member, as well as costs for educational materials. The remaining ~23% encompasses enforcement through the health department, costs of administering recycling drop-off sites, and the costs for running the District. Note that District administration costs are incredibly low, as the County funds the SWMD Coordinator position.

Figure H-7 District Expenses for Reference Year



12. Regional Analysis

The purpose of the regional analysis is to consider regional opportunities for collaboration and partnerships, and to consider how the policy committee's decisions may impact other stakeholders in the region.

Collaboration is a process where people or organizations come together to solve problems with a common goal. Through the process of sharing differing perspectives, experiences and resources we can expand opportunity and improve performance. Collaboration enables decision makers to realize several benefits, including mutual respect for agency/jurisdictional authority, unified efforts, collective support with mutually beneficial financial outcomes. Geographically differing economic challenges, program performance, constituent demands and emerging technologies, issues faced by all Ohio's MSWDs, dictate that regional concepts be explored.

Jurisdictional collaboration is not new. Medical, public safety, utilities, water/sewer, entertainment entities have all capitalized upon the beneficial dynamics of regionalization. Solid waste managers are similarly familiar as RCRA's Sub- Title D lined landfill mandates (late 1980's) and their subsequent waste reduction and recycling goals were all catalyst for the formation of Ohio's MSWD (HB 592) and similar governing agencies across the US. As such, by joining forces and economies of scale, communities have been able to explore best available technologies while implementing projects that individually would have been too expensive to develop for a single entity. Urban, rural plus small and large communities have benefited as costs and volume responsibilities are spread over a larger population of participants while educational, management and purchasing power are shared.

The SWMD already partners with The Ohio State University Lake County Extension Service and Lake County General Health District to carry out its educational and programing responsibilities. The District also partners with other SWMDs to bid cost effective services for HHW collection and with the Lake County Narcotics Agency on the pharmaceutical drug collection and disposal program. Additional stakeholders

in the region that may have a key interest and involvement in SWMD programs, problems, and solutions include:

- Chambers of Commerce in Lake County
- Neighboring SWMD's (Ashtabula, Geauga-Trumbull, Cuyahoga, Portage, Summit and Lorain)
- Lake County Soil and Water Conservation District
- Neighboring Soil and Water Conservation Districts
- The Lake County Visitors Bureau
- Lake County Metroparks
- Lake County Mayors and Managers Association
- Private service providers (Waste Management, Republic Waste, Major Waste Disposal, Universal Disposal, Kimble, etc.)
- Non-profit organizations

Regional partnerships could help with costs and provide more opportunities for programs. A partnership opportunity explored could be coordination between the District's Business Waste Recovery Committee and local Chambers of Commerce.

Collaboration among Local Communities

Although the District is responsible for developing a solid waste management plan, local government officials are the ones responsible for creating policies that reinforce proper waste management practices within the community. It is not uncommon for such programs to be developed independently, without the benefit of the shared experiences of neighboring communities of the pitfalls or mistakes experienced. And, in some cases, the goals and requirements of the Lake County Solid Waste Management Plan are not taken into account. The District understands that to achieve these goals and objectives a network of informed elected officials is necessary.

To achieve this goal, the District recognizes the need to expand its efforts to bring local communities together share information, and hopefully collaborate on joint efforts to maximize grant-funded opportunities. Discussions and shared resources over time could provide elected officials and their representatives with the tools and understanding to implement sound waste management practices within their communities. Speakers can be invited to the conference meetings to present topics that reflect those issues considered by the local communities to have the greatest impact on solid waste and recycling performance in the County. Although the Service Directors would be the desired participants, communities would be encouraged to select additional representatives to participate in these sessions as well. Individual assistance would also be provided on an as needed basis.

13. Data Collection Analysis

Unlike other centralized urban services, such as metered water, gas, or electricity, solid waste and residential recycling materials can be difficult to track. Waste disposal and recovered materials volumes are weighed and recorded at the facilities where the trucks transporting them are unloaded. Then the tonnage from all facilities within the District is aggregated to determine the total disposal volume of waste generated. In addition, the SWMD conducts regular surveys to understand/track recycling efforts. Additional recycling data is obtained from Ohio EPA. Collecting recycling data has historically been time consuming and challenging to obtain. Yet much more data is needed in order to truly be instrumental in improving the District's planning and programming efforts.

Indeed, one of the major hurdles preventing the District from rigorously evaluating the pros and cons of any of the collection systems is the lack of universal reporting requirements and protocols. Reliable data and statistics are difficult to obtain as there a number of businesses, and some service providers (and sometimes even municipalities) who fail to report or choose not to participate in surveys, etc. The problem of missing data is complicated further by misreporting and the lack of consistency in reporting. It is suspected that the numerous sources of the reported data inadvertently skew the results. The accuracy of the formulas utilized to calculate tonnages from the individual municipalities and for the types of materials collected vary from company to company. And even at the Lake County Solid Waste Facility, there are haulers misreporting the origin of the materials, which has caused spikes in data related to industrial tonnage and out-of-district tonnage.

This analysis evaluates the SWMDs current data collection efforts and identifies ways to improve. Waste is generated by three sectors: residential, commercial and industrial. Waste source reduced, recycled, composted, incinerated, and disposed are measured to establish a baseline and determine waste generation, and measure recycling rates. Collecting data is challenging due to a variety of factors and takes considerable time and effort to gather and analyze. Regardless, the primary objective of the SWMD is to divert materials from landfills, therefore an accurate measurement of diversion from landfills is needed. The data collection process for each sector is described below.

A. Residential

The SWMD gathers data from Ohio EPA annual published data. In addition, OSU Extension conducts surveys of local government to collect tonnage information on leaves, grass, newspaper, chipboard, plastics #1 and #2, glass and metals. The District also relies on local communities to report recycling data. Data collection and data tracking at a more refined community and neighborhood level is one area where the District can improve. To be useful in documenting changes in recycling efforts over time, data should be obtained on a regular basis directly from the haulers and should include data on a number of metrics including the number of homes participating in each community's recycling program, total amount of waste disposed, and recovered quantifies and materials. By collecting reliable data from haulers, information can be gathered and analyzed at the haul route and even street or neighborhood level. Such rich data can be cross-referenced with socio-economic data to better understand waste generation and recycling rates.

B. Commercial and Industrial

The SWMD gathers data from Ohio EPA annual published data, including the Ohio Recycles Survey, a collaborative statewide recycling survey effort promoted by Ohio's solid waste management districts, the Ohio Council of Retail Merchants, the Ohio Chamber of Commerce, the Ohio Manufacturers' Association, and the Ohio Environmental Protection Agency (Ohio EPA).

In addition, as part of the required Plan Update and annual reporting, the SWMD gathers data by surveying commercial sector businesses. As part of the Plan Update, the District engages the services of the consultant assisting with the plan update to work with the OSU Extension in conducting a comprehensive survey of businesses. That survey has achieved consistently poorer results across plan updates, with the most recent survey garnering roughly twenty responses.

In 2021 the SWMD mailed over 1,400 surveys (along with a cover letter and a postage-paid return envelope) to commercial entities District to gather data on 2021 recycling efforts. The District received responses from roughly 20 responses, which is considerably lower than both the 2015 and 2010 updates,

which received 151 and 461 responses. Issues and challenges encountered with the 2021 survey effort include:

- Low participation rates
- SWMD time commitment
- Method of delivery (IE standard USPS mail rather than e-mail)
- Lack of user understanding of purpose and necessity of survey
- Cost

C. What can be Improved?

Motivating more stakeholders to provide vital information, resolving the issue of accuracy, and streamlining the way data is reviewed and managed could lead to better informed decision making and the development of more effective programs, both for the District and also Lake County communities and businesses.

Digitization of weight and route-tracking systems is not a new phenomenon, and should be encouraged in local haulers. By mapping routes, the weight of a route can be extrapolated, providing neighborhood-level data on waste generation and recycling rates. Technology for on-board weight calculation systems is also not new, and should also be encouraged in local haulers. Such technology would provide household-level data on waste and recycling that can not only be used for analysis by the District, but could also be provided to the homeowner, giving them insight into their impact through waste generation and recycling.

Such technology makes it possible to verify the households and businesses that tend to recycle more, which means they can be awarded with economic or other incentives (e.g., cash-back programs). The effectiveness of unit-pricing programs can be increased using similar technology, thanks to more accurate automated monitoring that identifies specific users that discard recyclables improperly and assesses fines accordingly. Technology of this sort could allow for use of PAYT systems to reward low-waste households.

D. Documenting Materials Donated For Reuse.

One activity that is not well documented in the District is the amount of material donated for reuse. For example, Planet Aid has a number of collection bins throughout the District where residents can drop off unwanted clothing for donation. Planet Aid is a non-profit organization dedicated to improving the lives of people in developing countries. Their objectives include development, relief aid, and protecting the environment. Planet Aid was founded in 1997 and has since then collected and resold used clothing as a means to raise funds for development projects overseas, such as schools, health programs or HIV/AIDS prevention in Africa, Asia and Central America. This is only one example of the many different types of material donation programs available in the District. While these programs are listed in the District's Comprehensive Resource Guide compiled and maintained by OSU Extension, this information is not quantified and documented as material kept out of the landfills.

14. Education/Outreach Analysis

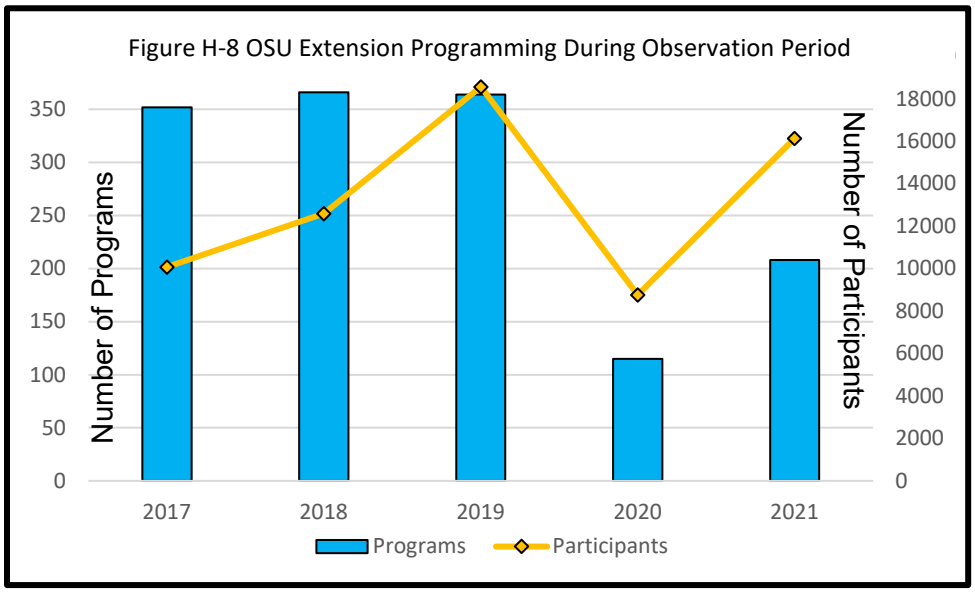
The following analysis evaluates the District's existing education, outreach, and technical assistance efforts to determine:

- If the programs address all five target audiences (residents, schools, industries, institutions and commercial businesses, and communities and elected officials)
- Effectiveness and adequacy of programs
- Strategy for incorporating Goal #4 of the 2020 State Plan into the programs.

A full listing of educational outreach programs can be found in Appendix "L".

Recycling and waste reduction education is handled primarily through the District's partnership with Ohio State University Extension (OSU Extension). OSU Extension conducts educational sessions and presentations in classrooms throughout the District. Additionally, they provide educational materials to all residents regarding ways to reduce waste and increase recycling.

In 2021, OSU Extension reached 16,131 people through 208 events consisting of 5 different programs. OSU Extension visited 12 schools in five districts to connect with students and teach them about recycling. Two events were held by OSU Extension, and six special collections were hosted by the office. This is a marked increase over 2020, which saw programs significantly reduced due to the COVID-19 pandemic and subsequent health emergency. The 16,131 participants are only about 2,400 less than peak numbers in 2019, and is 4,000 higher than 2018.



15. Processing Capacity Analysis

Residential and commercial curbside collection and drop-off materials are processed at one of four privately owned facilities in the region: Waste Management (Akron), Allied Waste Services (Glenwillow), Kimble Recycling (Twinsburg) and Green Innovations (Solon). Waste Management's facility in Akron, Ohio is a clean MRF that accepts both single-stream and multi-stream recyclables. In 2015, Waste Management accepted recyclables from 9 of the District's communities, while Allied Waste Services processed materials from 8, Kimble from two and Green Innovations from one. Given the number of facilities in the area, and past practices, the District anticipates that recyclable materials collected will be taken to these facilities during the planning period and does not see an issue with processing capacity.

APPENDIX I ACTIONS, PRIORITIES, AND PROGRAM DESCRIPTIONS

A. Actions and Priorities

1. Potential Actions

Based on the conclusions and findings in Appendix H, the Policy Committee has compiled a list of actions that the SWMD could take to address any issues or gaps in service, if the District has the necessary capacity and resources to do so. There is nothing in this plan that binds the District to the potential actions, priorities, and programs below.

- Improve curbside recycling services and diversion.
  - Encourage communities to move to contract-based hauler services on a non-subscription basis for residents.
  - Implement a multi-family recycling program to give apartment residents an easy recycling option.
- Reduce recycling contamination.
  - Implement a curbside auditing program in conjunction with communities, haulers, and OSU Extension to better track contamination and educate residents.
- Improve retail and commercial recycling rates.
  - Explore commercial recycling programs with larger communities such as Mentor and Willoughby.
- Continue to offer effective drop-off recycling services.
  - Institute SOPs for independent drop-off recycling services, such as Royal Oak Paper Retrievers, to collect accurate data.
  - Develop a framework for evaluating effectiveness of current recycling drop-off sites and siting new ones.
  - Work with rural communities like Leroy and Madison Townships to offer complete drop-off sites.
- Improve data-gathering practices.
  - Cultivate relationships with industrial users, especially large-scale operations like Avery Dennison, Lubrizol, and Steris to understand how to efficiently collect data from them.
  - Develop educational programs for businesses to understand how to fill out the commercial survey, and why it needs to be done.
  - Work with organizations like Habitat For Humanity ReStore, Goodwill, and Salvation Army to better understand that facet of waste diversion.
  - Work with communities and haulers to begin exploring and implement high-tech services such as on-truck weight and enhanced route tracking that can offer tonnage for routes. Help communities bid for services, potentially on a District-wide basis.
- Incentivize residents and businesses to recycle.
  - Engage the BWRC to suggest effective incentive programs to drive commercial and industrial recycling.
  - Explore the feasibility of PAYT collection and develop a pilot program in conjunction with haulers and communities.
- Increase waste diversion rates.
  - Work with haulers to identify ways to recycle Styrofoam materials.

  - Engage recycling providers to implement a mattress recycling program.
  - Work with haulers and OSU Extension to understand why plastic diversion rates are so low.
  - Work with haulers and providers to identify recycling streams for rubber, leather, and/or textiles to increase their diversion rates.
  - Engage with Ohio EPA to develop programs for recycling items like Styrofoam, mattresses, and textiles.
- Further reduce electronic waste
  - Evaluate the change from electronics drop-off events to year-round collection at the Lake County Solid Waste Facility to determine if further changes are needed.
  - Partner with Best Buy, Staples, and other large entities collecting electronics to accurately track tonnage. Leverage relationships with those entities to increase awareness and diversion of electronics waste.
- Increase educational outreach.
  - Restart the partnership with the Lake County Captains in some form.
  - Evaluate materials produced in conjunction with OSU Extension regarding recycling to determine with additional materials are needed to educate residents and business on what can and cannot be recycled.
  - Work with OSU Extension to provide education and information in local libraries and senior centers.
  - Evaluate educational outreach at local schools to ensure all demographic groups within the District are being reached and educated.
  - Work with OSU Extension to develop non-English materials targeting non-English speakers present in the District, such as Spanish, Mandarin, and Hindi.
- Continue to remain fiscally responsible.
  - Explore grant programs from Ohio EPA and U.S. EPA and apply for applicable grants that can help the District offer additional services.
  - Evaluate programs and implement changes that help the District remain financially viable.
  - Advocate for additional funding and justify funding requests with results-driven data and programs.

2. Priorities

After evaluating the list of actions, the Policy Committee identified priorities for implementation for this planning period. Based on the most supported and highest priority issues, identified priorities include the following:

a) Restart the multi-family recycling pilot program as outlined in the previous Plan update.
b) Work with communities that do not offer non-subscription curbside recycling, and are not contracted with a hauler or haulers, to move towards contracted non-subscription service.
c) Launch the Pollution Prevention Intern program, where the District hires an undergraduate intern from a local university program, to help with administering programs and tracking progress.
d) Restart the partnership between the District and the Lake County Captains.
e) Revamp the commercial and industrial survey programs to ensure accurate and complete information is collected.
f) Continue special collections, such as HHW, and evaluate the move from special collection to full-time collection of electronics waste and scrap tires.

g) Reinvigorate the BWRC with targeted efforts to connect with local businesses, chambers of commerce, and industry organizations. Build on successes of the previous Plan update and leverage the BWRC's business outreach to improve data collection and surveying.
h) Engage the Ohio EPA and haulers to determine feasibility of recycling materials like mattresses, Styrofoam, and textiles.

B. Programs

Residential Recycling Infrastructure

Curbside Recycling Services

Non-Subscription Curbside Recycling

ID	Name	Start Date	End Date	Tons Recycled (2021)	Goal(s)
NCS1	Eastlake City	Ongoing	Ongoing		1 & 2
NCS2	Grand River Village	Ongoing	Ongoing		1 & 2
NCS3	Kirtland City	Ongoing	Ongoing		1 & 2
NCS4	Kirtland Hills Village	Ongoing	Ongoing		1 & 2
NCS5	Lakeline Village	Ongoing	Ongoing		1 & 2
NCS6	Mentor-on-the-Lake City	Ongoing	Ongoing		1 & 2
NCS7	Painesville City	Ongoing	Ongoing		1 & 2
NCS8	Timberlake Village	Ongoing	Ongoing		1 & 2
NCS9	Waite Hill Village	Ongoing	Ongoing		1 & 2
NCS10	Willoughby City	Ongoing	Ongoing		1 & 2
NCS11	Willoughby Hills City	Ongoing	Ongoing		1 & 2

Eleven of the twenty-three communities in the District offer non-subscription curbside recycling services. Under this model, homeowners are automatically enrolled in curbside recycling services as part of their normal garbage services. Often times, these communities bid for services from haulers and enter into a contract for exclusive service.

Subscription Curbside Recycling

ID	Name	Start Date	End Date	Tons Recycled (2021)	Goal(s)
SC1	Concord Township	Ongoing	Ongoing		1 & 2
SC2	Leroy Township	Ongoing	Ongoing		1 & 2
SC3	Madison Township	Ongoing	Ongoing		1 & 2
SC4	Madison Village	Ongoing	Ongoing		1 & 2
SC5	Mentor City	Ongoing	Ongoing		1 & 2
SC6	North Perry Village	Ongoing	Ongoing		1 & 2
SC7	Painesville Township	Ongoing	Ongoing		1 & 2
SC8	Perry Township	Ongoing	Ongoing		1 & 2
SC9	Perry Village	Ongoing	Ongoing		1 & 2
SC10	Wickliffe City	Ongoing	Ongoing		1 & 2
SC11	Willowick City	Ongoing	Ongoing		1 & 2
SC12	Fairport Harbor Village	Ongoing	Ongoing		1 & 2

Twelve of the twenty-three communities in the District offer subscription-based curbside recycling services. Under this model, homeowners are responsible for enrolling in curbside recycling pickup on

their own, rather than being automatically enrolled as is the case with non-subscription services. Communities utilizing this model may or may not enter into a contract with a specific private hauler. If there is no contract, homeowners must determine available haulers and enter into a private contract with said hauler. This is typically found in rural areas like townships.

Drop-off Recycling Locations

Full-Time, Urban Drop-offs

ID	Name	Start Date	End Date	Goal(s)
FTU1	Fairport Harbor Village – 1380 East Street	Ongoing	Ongoing	1 &2
FTU2	Lake County SWMD Drop Off	Ongoing	Ongoing	1 & 2
FTU3	Lake County Administration Building	Ongoing	Ongoing	1 & 2
FTU4	Juvenile Justice Center	Ongoing	Ongoing	1 & 2

The four full-time urban drop-off sites operate on the east end of the county. While they are intended to serve all residents of the District, the siting of drop-off collection points is geared more towards those individuals who may not have access to curbside recycling services, or who may not pay for the services. Additionally, the drop-off sites at the Juvenile Justice Center and Lake County Administration Building are focused more on county employees, serving to help meet the county's recycling program goals.

Recycling is currently handled by Republic Waste. Materials collected include cardboard, paper, plastic #1 and #2 containers, and steel/aluminum cans. Glass was previously collected, but the hauler has indicated glass is no longer a recyclable material.

Drop-off containers at the Lake County SWMD are only accessible during hours in which the facility is operating. User must cross the scale and stop at the scale house before proceeding. Educational materials pertaining to what can and cannot be recycled is provided to all users via the scale house. The District hopes these materials help to reduce recycling contamination.

Part-Time, Urban Drop-offs

ID	Name	Start Date	End Date	Goal(s)
PTU1				

There are no part-time urban drop-offs within the District.

Full-Time, Rural Drop-offs

ID	Name	Start Date	End Date	Goal(s)
FTR1	Leroy Township	Ongoing	Ongoing	1 & 2

There is only one full-time rural drop-off site in the District. This site serves some of the most rural areas in the District. However, the site collects only paper products, and does not accept other recyclable materials typically accepted by other sites.

Part-Time, Rural Drop-offs

ID	Name	Start Date	End Date	Goal(s)
PTR1				

There are no part-time rural drop-offs within the District.

Mixed solid waste materials recovery facility

Name	Start Date	End Date	Goal

There are no mixed solid waste materials recovery facilities within the District.

Multi-Family Unit Recycling

Name	Start Date	End Date	Goal
Multi-family pilot program	01/01/2025	12/31/2029	1, 2, 4, & 7

The District intends to restart the multi-family curbside recycling pilot program. This program was originally outlined in the previous Plan update, and was slated to kick off at the beginning of that planning period. Meetings were held and the program was outlined in 2018 and 2019. However, prior to the actual launch of the program, the COVID-19 pandemic forced a freeze of all non-essential services, including the pilot program. Now that the public health emergency for COVID-19 has ended, the District will attempt to launch the program again in 2025 for this Plan's planning period.

The multi-family curbside recycling pilot program will create recycling opportunities for an underserved market, that being residential apartment residents, who lack access to curbside recycling services. The program is anticipated to entail the following:

- The program will provide a financial incentive to entice the target properties to participate, with the expectation that the property managers will realize a savings on trash collection and therefore will continue the recycling program after the initial period ends.
- District staff and the Business Waste Reduction Committee will spearhead outreach efforts to make property management firms aware of the program. This outreach effort will include acquiring lists of apartment properties in the three cities in the District with the highest concentrations of apartment complexes (Mentor, Willoughby and Willoughby Hills). For example, the District has already acquired a list of apartments from the city of Mentor. The list includes contact information and the number of units in each complex.
- The target audience for establishing the program is large-scale multi-family complexes where the concentration of units makes it feasible to establish a recycling program. The real target audience for behavioral changes is residents.
- The District will work with the property management firm to figure out the logistics of how to execute the recycling program on site – where to locate bins, etc.
- The District will enter into a memorandum of understanding with property management firms who contract with a private recycling hauler with a commitment of two years. The property management firm will be reimbursed financially by the District for 6 months' worth of the cost, up to $5,000.

- The District will develop and provide recycling outreach and educational materials to distribute to residents. These materials will explain proper recycling habits. The District will also provide an electronic version of the education materials that can be emailed by the property manager to residents as a reminder a couple of months after the program begins.
- All communication efforts will have the logo of the apartment complex and the SWMD.
- The District will recognize the apartment complexes that participate in the program on its website.
- The District will measure success by requiring property managers to report quantities collected to the District and the District will keep track of recycling trends, the number of multi-family complexes that participate in the program, and how many continue to provide recycling after the expiration of the MOU.
- The District expects to start off with two participants in the first year and increase the number of participants (and therefore the financial commitment) each year for the duration of the pilot program depending on interest of property owners.

Other Residential Recycling Programs (list individually below)

Name	Start Date	End Date	Goal
Contracting assistance	Ongoing	Ongoing	1, 2, & 4

The SWMD is available to provide assistance to all communities with recycling programs through development of creative solutions, preparation of bid packages, and assistance with contract negotiations with haulers. This is provided at no cost to either the District or the communities, but is dependent on existing District staff having available time.

Commercial/Institutional Sector Reduction and Recycling Programs

School Recycling

Name	Start Date	End Date	Goal
Royal Oak Paper Retriever	Ongoing	Ongoing	1 & 2

Royal Oak provides paper recycling collection to primarily institutional users across the District by way of "Paper Retriever" collection bids. Institutional users are comprised of schools, government offices, churches, and the like. Some commercial sites are also served.

Entities contract directly with Royal Oak to provide their recycling bins; the District is not financially responsible for this program. These bins are placed in conspicuous areas and are brightly colored so as to be noticeable, and are primarily used by on-site employees such as teachers, visitors like students and parents, and the local community.

In 2021, Royal Oak reported 1,088 tons of paper collected from all bins across the District. Locations include:

- 26 schools
- 18 houses of worship
- 17 commercial locations
- 8 government offices

- 7 non-profit organizations
- 5 libraries
- 4 located at community centers, residential developments, parks, or senior centers.

Collection Services (small businesses, government offices, etc.)

Name	Start Date	End Date	Goal
Lake County Government Administration Building Recycling Program	Ongoing	Ongoing	1 & 2

Lake County employees working in the newly-bult county administration building in Painesville City participate in this recycling program. The District is contracted with Republic Waste to provide a recycling container on site at the administration building.
When the new administration building was completed in 2022, many county offices were consolidated from other sites across the county. This allowed expansion of the program to other employees and departments. Expansion of the building also allowed for collection of additional materials outside of only paper products. The expanded program collects paper as well as plastics and steel/aluminum.

Large Venue Recycling

Name	Start Date	End Date	Goal
Lake County Captains Baseball Outreach Program	01/01/2025	Ongoing	1, 2, & 4

While there are no large venue recycling programs, the District previously contracted with the Lake County Captains, the High-A minor league affiliate of Major League Baseball's Cleveland Guardians. That partnership, dubbed "Go Green with the Captains" was part an annual "Go Green" weekend hosted by the Captains. This was an efficient way to reach thousands of people with minimal effort and spending, though it was confined to a single weekend.

The District sponsored the event, providing marketing materials around the stadium, and advertisements for the District. A table is staffed by District personnel, where visitors can learn about recycling practices and methods, spin a prize wheel, and win items like baseball cards. These cards had District and recycling infrastructure info on the back. Also included in the sponsorship of the event is radio time for advertising, and the opportunity to discuss the event and recycling with the game announcer during the game.

Part of the festivities also included a recycling contractor. This contractor providing recycling bins throughout the stadium and collected them. Unfortunately, tonnage is not available.

The District hopes to restart some form of partnership with the Captains during the planning period. The exact form of partnership is not certain at this point. The District has discussed an ongoing annual partnership with the Captains that allows for information to be provided year-round.

Waste Assessments/Waste Audits

Name	Start Date	End Date	Goal
No programs available			

Contracting Assistance

Name	Start Date	End Date	Goal
Municipal Assistance	Ongoing	Ongoing	1

The District Coordinator assists communities with bid packages for waste and recycling pickup. Assistance is non-monetary, and is restricted by available staff hours. Most communities receive assistance in the form of bid packages, where the District offers advice and expertise in selecting a hauler.

Workgroup/Roundtable

Name	Start Date	End Date	Goal
Business Waste Reduction Committee (BWRC)	Ongoing	Ongoing	1, 2, 4, & 5

The BWRC is an existing body that was established well over twenty years ago with a focus on implementing the SWMD Plan. Its purpose is to identify and promote methods by which commercial, industrial, governmental, and non-profit establishments can recycle or reduce waste. The BWRC is also intended to facilitate the proactive sharing of information, resources, and expertise in support of waste minimization efforts across the District.

One of the previous Plan update's goals was to re-establish the BWRC as a functioning advocacy body for the District. Like so many other goals and programs, the COVID-19 Pandemic forced the District to scuttle BWRC meetings in favor of critical programs. Do help the BWRC re-establish itself as a working body, the District and existing BWRC members will work to recruit new members. These members will be pulled from across the District and across professions and business types and have an interest in reducing waste and increasing recycling.

The BWRC is instrumental is ensuring fruitful relationships and effective communication with businesses and non-residential entities within the District. BWRC activities can support the commercial and industrial surveys, help obtain better recycling information, and build partnerships to help educate the community on the benefits of recycling and waste reduction.

The strategic objectives of the BWRC are as follows:

- Promote the successes achieved by the Lake County business community regarding sector wide waste reduction, reuse, and recycling.
- Provide value-added services that support the waste minimization efforts of commercial, industrial, governmental and non-profit organizations.
- Achieve significant, yearly increases in the number of retail, commercial, educational and industrial organizations that report their waste reduction and recycling data to the district.

With these objective in mind, BWRC responsibilities include 1) identifying specific roles of BWRC members and support organizations (e.g., the Ohio State University Extension, Lake County), 2) prioritizing short and long term areas of focus, 3) creating strategies, action plans and metrics to achieve desired results, and 4) identifying and communicating any additional resource needs that may be required to achieve and sustain progress.

Action Plan for Accomplishing Strategic Objectives

For Objective 1:

- Develop a business recognition program for waste reduction leadership – this includes reinstituting an Environmental Steward Award for exemplary Lake County businesses.
- Contact Lake County Chambers of Commerce for outreach opportunities.
- Include business/industry content for the District's social media/website outreach plan.

For Objective 2:

- Update recycler resource listing for industry/business use and promote listing on website/social media.
- Promote the State's waste exchanges and research options for hard to dispose of items.
- Continue sponsorship relationship with the Lake County Captains in an updated format.

For Objective 3:

- Develop an on-line survey form.
- Conduct personal meetings with targeted businesses to document tonnages.
- Network within the business communities for contacts from large generators/employers to secure tonnage recycled.

Award/Recognition

Name	Start Date	End Date	Goal
Environmental Steward Award	2025	Ongoing	1, 2. 4, & 5

Because research shows that recognition is critical, desirable behavior can be better achieved through programs that recognize and award desirable behavior, especially in the waste-reduction realm. To help achieve this recognition and drive desirable recycling behavior in the District, the Environmental Steward Award was outlined in the last Plan update and was intended to re-launch during the planning period. It was dependent on the re-establishment of the BWRC as a functioning body, as they were slated to develop the program standards and guidelines. Since the BWRC was not relaunched due to the COVID-19 Pandemic, the Environmental Steward Award program was not started.

The purpose of the Environmental Steward Award is to recognize those businesses that perform well in regard to recycling and waste reduction, promote best practices within their industry, and motive others to reduce waste and increase recycling. The BWRC will work to determine the application and award criteria for the program, methods of outreach to increase awareness of the programs' existence, and other logistical points.

The program will consist of difference categories based on size and type of business. Categories of award will include general reduction of waste, innovation in waste reduction, overall program, and special projects. Awards will be a plaque or similar item and will be given to businesses at a regular session of the County Commissioners meetings. A resolution or other gesture will be utilized to recognize those businesses that are awarded as leaders and trend-setters in waste reduction. Social media such as Twitter or Instagram may also be utilized to recognize winners.

The District intends to include business leaders in the discussions and selection of awardees as well, though those logistics will be worked out by the BWRC. By including the business community in the decision-making process, the District hopes to entice behavioral change.
Other Programs (list individually with a table and description)

Name	Start Date	End Date	Goal
No programs available			

Industrial Sector Reduction and Recycling Programs

Waste Assessments/Waste Audits

Name	Start Date	End Date	Goal
Waste Audits	2025	Ongoing	2, 4, & 5

The District will explore providing free waste audits upon request to industrial users. Audits will be conducted by the Pollution Prevention Intern. The purpose of these audits is to help industrial users implement best practices in waste reduction. District staff will help identify areas for improvement, and connect the user with other industrial businesses that have been shown to lead the way in waste reduction.

Collection Services

Name	Start Date	End Date	Goal
No programs available			

Contracting Assistance

Name	Start Date	End Date	Goal
Recycling Contracting Assistance	2025	Ongoing	5

The District will offer assistance to industrial users who wish to procure recycling pickup. Current municipal waste haulers to not offer industrial recycling pickup service, leaving users to their own devices. By assisting industrial businesses with finding industrial recycling haulers, the District can increase waste diversion begin to set a standard throughout the District for recycling.

Workgroup/Roundtable

Name	Start Date	End Date	Goal
See BWRC under Commercial/Institutional Sector Reduction and Recycling Programs	Ongoing	Ongoing	1,2, 4, & 5

Award/Recognition

Name	Start Date	End Date	Goal
Environmental Steward Award	2025	Ongoing	1, 2, 4 & 5

Because research shows that recognition is critical, desirable behavior can be better achieved through programs that recognize and award desirable behavior, especially in the waste-reduction realm. To help achieve this recognition and drive desirable recycling behavior in the District, the Environmental Steward Award was outlined in the last Plan update and was intended to re-launch during the planning period. It was dependent on the re-establishment of the BWRC as a functioning body, as they were slated to develop the program standards and guidelines. Since the BWRC was not relaunched due to the COVID-19 Pandemic, the Environmental Steward Award program was not started.

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The District intends to include business leaders in the discussions and selection of awardees as well, though those logistics will be worked out by the BWRC. By including the business community in the decision-making process, the District hopes to entice behavioral change.

Other Programs

Name	Start Date	End Date	Goal
No programs available			

Restricted/Difficult to Manage Wastes

Yard Waste

Name	Start Date	End Date	Goal
Yard Waste Collection from Municipalities / Private Haulers	Ongoing	Ongoing	1, 2, & 6

Twelve facilities accepted compostable materials from the District in 2021, of which eight were located within the District. Two of those facilities, the City of Wickliffe Compost Facility and the Perry Township Yard Waste Facility, are run by local governments while one, Lake Metroparks Farm Park, is run by a county agency. A substantial amount of yard waste comes from one of two sources; either form municipal yard waste pickup programs or from local nurseries.

Each community within the district manages its own yard waste pickup program, tailored to the needs of their individual residents and unique characteristics. These programs are completely funded locally, receiving no District monetary support. Examples of yard waste collection services within the District include:

- Wickliffe has their hauler, Kimble, provide yard waste bins.
- Willoughby Hills, Willowick, Eastlake, and Willoughby residents place their yard waste in brown lawn bags for pickup by the contracted hauler, from April through November.
- Mentor picks up yard waste via their service department from April through December.
- Painesville Township offers curbside yard waste pickup once a year, and curbside leaf pickup twice a year. They also have yard waste drop-off twice a week, April through December.
- Madison Township offers once weekly drop off.

Some communities collect yard waste on their own, by way of municipal collection or contract with a private hauler other than their trash hauler. Others opt to have yard waste collected by their contracted hauler. In 2021, local yard waste programs collected 2,979 tons of leaves, 2,867 tons of brush, 1,564 tons of grass, 14,424 tons of combined yard wastes, and 23 tons of Christmas trees. These tonnages only represent that which was reported by communities, as not all communities reported.

Name	Start Date	End Date	Goal
Master Gardeners Program	Ongoing	Ongoing	1, 2, 4, & 6

The Ohio State University Extension Office manages the Master Gardener Volunteer Program. This program originated in Seattle in 1972, first being offered by Washington State University Extension. The program has been part of Ohio State University Extension's services since the 1970s. It provides education to Ohio residents in gardening and horticulture free of charge through volunteers and dedicated Ohio State University staff. The program instructs participants on topics such as appropriate composting techniques, which helps to reduce landfilled waste by encouraging reuse of materials like food scraps. The program also works closely with area nurseries, assisting them with funding applications and offering technical advice to reduce their waste and encourage more sustainable practices.

The Master Gardener program has many facets to serve and educate residents. A helpline is active to answer questions from April through October, on Tuesday mornings from 9AM to 11AM. Residents can also leave messages or send an email to receive answers to their questions outside of those hours. Master Gardener volunteers also maintain a vegetable garden at the Lake County Juvenile Justice Center as part of a rehabilitation program with incarcerated youth. Volunteers also educate the public through events at Lake Metroparks facilities, such as Earth Day and Bug Day celebrations.

The District and OSU Extension are actively seeking additional locations for volunteer gardens, including at the NEOCAP (Northeast Ohio Community Alternative Program), which houses low-risk offenders and help rehabilitate them for reintegration into the general public.

Household Hazardous Waste

Name	Start Date	End Date	Goal
HHW Program	Ongoing	Ongoing	2 & 6

The District's Solid Waste Management Plan must include a strategy for managing hazardous household waste (HHW). According to the Ohio EPA, household hazardous waste is defined as being made up of the following five categories of commonly found hazardous products in the home: pesticides & herbicides, automobile products, household cleaners, paint products, and miscellaneous materials such as mercury

items, glue, etc. These materials are identified as HHW because they have one or more of the following properties: they are corrosive, toxic, reactive, or flammable.

The HHW program has typically consisted of two drop-off events. These events are held at the County Fairgrounds, a central location for all residents within the District. Throughout the observation period, tonnage collected at these events have increased, from 135 tons in 2017 to 186 tons in 2021. The District intends to continue these special collections during the planning period.

The District provides a public education and information program on household hazardous waste. The target audience for this public education and information program consists of both school - age children and adults in Lake County. The number of people reached on an annual basis through direct contact is estimated to be over 6,000. This information is assimilated into the communities through newspaper articles, HHW brochures and fliers, classroom and group organization presentations, as well as the numerous telephone calls from interested residents throughout the County.

OSU Extension is available to answer questions regarding HHW. Residents can call and speak to a member of the team during normal business hours, or they can leave a message for callback. This provides residents with a live person to answer questions that would be hard to answer through complicated telephone prompts or messages.

Scrap Tires

Name	Start Date	End Date	Goal
Scrap Tire Special Collection Program	Ongoing	2022	2 & 6

Prior to this Plan update, and during the reference year, an annual scrap tire collection event was held at the Lake County Fairgrounds. An outside contractor was retained to take the lead in running the collection, under supervision from, and with support of, SWMD staff. The contractor would supply sufficient staffing to collect tires, and would haul and dispose of them. In 2021, 77 tons of scrap tires were collected at the event. Up to six passenger tires could be dropped off free of charge.

Unfortunately, several issues continually arose with the annual collection. The District reported issues with finding a reliable contractor who could provide sufficient staffing. During collections over the last couple of years, the District was forced to provide additional staffing, as the contractor could not provide enough workers to efficiently run the collection. Further, there were issues with contractor removing the scrap tires in a timely manner. An additional problem was abuse of the program by commercial and high-volume disposers who were looking to take advantage of free drop off. District staff reported at least one commercial user who dropped off many loads of tires throughout the day, avoiding charges by spreading their load. Other users would come through multiple times a day, sometimes circling the block and coming right back with additional tires.

Because of these issues, the District moved to a rolling collection at the Solid Waste Facility in 2023. Tires can now be dropped off any time the facility is open, for a small fee. Preliminary data shows no significant drop in the tonnage of tires collected.

Electronic Equipment

Name	Start Date	End Date	Goal
Electronics Collection	Ongoing	2022	2 & 6

During the reference year, electronics collection events were held on three occasions at the Lake County Fairgrounds. Each event collected certain types of electronics waste; the first event was reserved for computers and electronics, the second TVs and CRTs (cathode-ray tube, or traditional tube monitors), and the third for all types of electronics waste. Over the three collections, 125 tons of electronics waste was collected.

Due to logistical and contractor-related challenges, the District transitioned to a year-round collection of electronics waste at the Solid Waste Facility. Electronics waste can be dropped off any time during normal operating hours, mostly free of charge. Eligible items include most household electronics, TVs ($5 each), computers, and printers. Hard drives are removed from computers and sent to a facility where the data can be professionally erased.

Name	Start Date	End Date	Goal
Local Electronics Collection	Ongoing	Ongoing	2 & 6

The cities of Eastlake and Willoughby Hills offer electronics drop-off for local residents. Each city hosts drop-off at their respective facilities. Tonnage of waste collected was not reported during the reference year.

Lead-Acid Batteries

Name	Start Date	End Date	Goal
See HHW Program	Ongoing	Ongoing	2 & 6

Appliances

Name	Start Date	End Date	Goal
Drop-off at Landfill	Ongoing	Ongoing	1, 2, & 6

The District allows drop-off of appliances at the Solid Waste Facility during normal operating hours, for a $5 fee per appliance. Tonnages have fluctuated during the observation period, from 129 tons in 2017 to 148 tons in 2021, with numbers as low as 66 tons in 2019.

Pharmaceuticals

Name	Start Date	End Date	Goal
Pharmaceutical Drug Collection and Disposal Program	Ongoing	Ongoing	6

The SWMD and the Lake County General Health District jointly administer the Pharmaceutical Drug Collection and Disposal Program. The program provides secure and anonymous drop boxes throughout the District for use in disposing of any and all pharmaceutical products. Boxes are available Monday

through Friday from 7:00 AM to 8:00 PM, Saturday from 9:00 AM to 5:00 PM, and Sunday from 1:00 PM to 5:00 PM (except at Lakeland Community College).

This program addresses the criminal, social, and environmental impacts of improperly kept and disposed medications. The ability of residents to safely dispose of controlled substances and narcotics removes access to dangerous and addicting substances. Further, it keeps seemingly inert compounds out of our waterways and ecosystems. The program is funded through the Lake Erie Protection Fund, and collects approximately two tons of pharmaceuticals annually.

All materials are collected by the Lake County Narcotics Agency, the sheriff's drug crimes division. Narcotics and other controlled substances are safely incinerated.

Collections bins can be found in the following locations:

- Eastlake Police Department
- Madison Township Police Department
- Mentor Police Department
- Willoughby Hills Police Department
- Willoughby Police Department
- Lakeland Community College Police Department
- Lake County Sheriff's Office

Other Material Specific Programs

Food Waste

Name	Start Date	End Date	Goal
No programs available			

Glass

Name	Start Date	End Date	Goal
No programs available			

Funding/Grants

Incentive Based Grants

Name	Start Date	End Date	Goal
No programs available			

Improvement Grants

Name	Start Date	End Date	Goal
No programs available			

Economic Incentives

Volume-Based Billing/Pay-As-You-Throw Trash Collection Services

Name	Start Date	End Date	Goal
No programs available			

Financial Award Programs (e.g., Recycle Bank, "Get Caught Recycling")

Name	Start Date	End Date	Goal
No programs available			

Market Development Programs

Name	Start Date	End Date	Goal
No programs available			

Feasibility Studies

Name	Start Date	End Date	Goal
No programs available			

Facilities

Materials Recovery Facilities/Recycling Centers

Name	Start Date	End Date	Goal

The District has no materials recovery facilities or recycling centers.

Landfills

Name	Start Date	End Date	Goal

The District has no directly operated landfills.

Closed Facility Maintenance (Closure/Post-Closure Care)

Name	Start Date	End Date	Goal

The District has no closed facilities.

Transfer Facilities

Name	Start Date	End Date	Goal

The District has no transfer facilities.

Composting Facilities

Name	Start Date	End Date	Goal

The District does not operate any composting facilities.

Data Collection

Name	Start Date	End Date	Goal
Plan Update Commercial Recycling Survey	Ongoing	Ongoing	4

As part of the Plan Update, the District mailed postcards to existing businesses within the District boundaries in 2021. The postcard contained information for online completion of the commercial recycling survey. The purpose of the survey is to gather information on recycling practices of individual businesses that may not have reported to the Ohio EPA.

There were challenges with the 2021 survey, namely the lack of participation from businesses. Less than 30 responses were received, providing very little insight into the recycling habits of the District's businesses. Additionally, with such minimal staffing, the District has a tough time devoting the requisite time and attention to crafting the survey and ensuring it is distributed to all businesses, and to the right people at those businesses.

That said, strides were made in the survey delivery over previous Plan updates. Most significantly was the transition to an online survey. This delivery method reduced postage due to reduced weight and lack of return postage required. It also allowed for a more streamlined process with more room for comprehensive or complex questions.

To help increase data collection, the District should build relationships with local chambers of commerce, which would provide better access to local business listings. This relationship-building would also facilitate contacts between the District and local business leaders, who could help develop better outreach methods that would drive higher completion rates. Additionally, the District and Policy Committee should develop contacts at major commercial waste generators throughout the District. These contacts could help develop better survey and commercial education practices. In some cases, these contacts might have access to better resources which could benefit the District. For example, a contact at Meijer might have knowledge of best practices from another jurisdiction, or access to educational materials created by Meijer for internal use. Methods such as this are relatively low effort, yet will yield stronger survey results and thus better accounting of actual recycling data.

Name	Start Date	End Date	Goal
Annual Community Survey	Ongoing	Ongoing	4

Once annually, OSU Extension conducts a survey of all communities within the District. This survey is paid for by OSU Extension as part of the District's contract, and therefore does not create additional costs. Sent to each jurisdiction's administrative offices, the survey gathers information from communities on tonnages for the following:

- Glass
- Plastics
- Chipboard
- Metals
- Newspaper/magazines/paper
- Yard waste (leaves, brush, and grass)

This data is useful in tracking how much each community contributes to waste generation, and allows for even more comprehensive data analysis by the District. In this way, both the District and individual communities can better understand their individual generation rates and recycling rates, and can potentially develop policies to address deficiencies. However, in the past, not every community has responded to the survey.

For this Plan Update, the District should work to capture data from all communities. Currently, data is requested via email. As with the commercial survey, the District and OSU Extension will work to build strong contacts with each community. Preferably with professional staff rather than elected officials, as professional staff tend to be much more permanent. These relationships exist with some communities, but not all. Specifically, the larger communities are easier to obtain data from.

The District and OSU Extension will develop enhanced practices for gathering survey data, such as an electronic survey hosted on a platform like SurveyMonkey.

Health department support (Allowable Use 3)

Name	Start Date	End Date	Goal
Lake County General Health District	Ongoing	Ongoing	1, 2, 3, & 6

The District has on ongoing contract with the Lake County General Health District. During the 15-year planning period, the Lake County General Health District (LCGHD) will undertake enforcement responsibility and sampling activities related to solid waste management in Lake County. These activities will be funded by the District in accordance with ORC 3734.57, ORC 3734.572, and ORC 3734.573.
It is noted that LCGHD activities associated with the household hazardous waste program are limited to directing calls received from residents to either the District Coordinator or OSU Extension for assistance. The activities to be conducted by the Health District are described in a May 2003 agreement between the Health District and the Lake County Commissioners.

Basically, the Lake County General Health District performs licensing, inspection, rule enforcement, complaint investigation and technical assistance for:

- All active landfills
- All closed landfills
- Residual Wastes (complaints only)
- Demolition Wastes (complaints only at present)
- Construction Wastes (complaints only at present)
- Composting Sites
- Open dumping (complaints)
- Household Hazardous Waste (questions only)
- Tire Facilities
- Tire Transporters

The Lake County General Health District staff monitors compliance with landfill (closed and open) methane gas migration plans; performs off-site, surface and ground water monitoring; attends training events and meetings; performs public education; reviews and comments on State rule changes; responds to solid waste spills; and participates in Policy Committee meetings.

County Assistance

Name	Start Date	End Date	Goal

The District will receive no county assistance during the planning period.

Open Dumping/Litter Enforcement

Name	Start Date	End Date	Goal

The District has no open dumping or litter enforcement programs planned.

Open dump/tire dump cleanup

Name	Start Date	End Date	Goal

The District has no open dump or tire dump cleanup programs planned.

Litter law enforcement (boards of health and sheriff offices) (allowable use 7)

Name	Start Date	End Date	Goal

The District has no litter law enforcement programs planned.

Municipal Corporation/Township Assistance

Name	Start Date	End Date	Goal

The District has no municipal corporation or township assistance programs planned.

Disaster debris/disaster assistance

Name	Start Date	End Date	Goal
Disaster Debris Program	Ongoing	Ongoing	6

Severe weather can lead to an influx of debris for the SWMD. Such debris can include organic materials like tree branches, as well as building materials. During particularly impactful weather events, debris volumes can become problematic for community haulers. During such times, the District Coordinator shall act as the debris manager. Duties of the debris manager include coordinating with affected communities on debris cleanup, financing of debris cleanup, and scheduling of resources for cleanup. The debris manager shall coordinate with communities on sharing of resources and materials to support cleanup efforts.

Closed Facility Maintenance/Post-Closure Care

Name	Start Date	End Date	Goal

The District has no closed facilities.

Facility Ownership/Operations

Name	Start Date	End Date	Goal

The District does not own any facilities.

Waste-to-energy projects

Name	Start Date	End Date	Goal

The District has no waste-to-energy programs planned.

APPENDIX J REFERENCE YEAR OPPORTUNITY TO RECYCLE AND DEMONSTRATION OF ACHIEVING GOAL 1

1. Residential Sector Opportunity to Recycle

Table J-1 Demonstration of Residential Opportunity to Recycle

ID #	Lake County	2021	
	Name of Community (City, Village, Township)	Community Population	Population Credit
Non-subscription curbside			
NCS1	Eastlake City	17,499	17,499
NCS2	Grand River Village	394	394
NCS3	Kirtland City	6,917	6,917
NCS4	Kirtland Hills Village	687	687
NCS5	Lakeline Village	216	216
NCS6	Mentor-on-the-Lake City	7,092	7,092
NCS7	Painesville City	20,591	20,591
NCS8	Timberlake Village	621	621
NCS9	Waite Hill Village	534	534
NCS10	Willoughby City	23,898	23,898
NCS11	Willoughby Hills City	9,970	9,970
Subscription curbside			
SC1	Concord Township	19,200	4800
SC2	Leroy Township	3,118	780
SC3	Madison Township	15,030	3758
SC4	Madison Village	3,420	855
SC5	Mentor City	47,221	11805
SC6	North Perry Village	912	228
SC7	Painesville Township	16,889	4222
SC8	Perry Township	6,333	1583
SC9	Perry Village	1,598	400
SC10	Wickliffe City	12,646	3162
SC11	Willowick City	14,145	3536
SC12	Fairport Harbor	3,092	773
Full-time, urban drop-off			
FTU1	Fairport Harbor Village - 1380 East Street	3092	5000
FTU2	Lake County SWMD Recycling Drop-Off Facility - 2039 Blasé Nemeth Road, Painesville, OH 44077	20591	5000
FTU3	Lake County Administration Building - 71 N Park Pl, Painesville, OH 44077 - Part of Lake County SWMD Facility Amount	20591	5000
FTU4	Juvenile Justice Center - 53 E Erie Street, Painesville, OH 44077	20591	5000
Part-time, urban drop-off			
PTU1	NONE		
Full-time, rural drop-off			
FTR1	Leroy Township	3,118	2500
Part-time, rural drop-off			
Mixed municipal waste material recovery facility			
Total County Population			232,023
Total Population Credit			146,820
Percent of Population			**63%**

Though the District is committed to achieving Goal #2 of the 2020 Ohio EPA Solid Waste Management Plan, metrics as set forth in Goal #1 remain important. With the reduction of percentage in the 2020 State Plan update from 90% to 80%, the District is closer to meeting that goal. This is made possible by the fact that curbside recycling is offered in each of the 23 communities within the District. Despite twelve of those communities having access to subscription service, it is a major achievement to see 100% curbside recycling without District funding. To assist those without default access to curbside recycling due to non-subscription services, the District has free drop-off sites placed around the District. These sites are concentrated in the eastern half of the District in order to better serve rural residents who reside in the District's five townships.

The District must continue to support communities' curbside recycling programs. To increase the proportion of the population served by curbside recycling, the District should encourage those communities on subscription curbside to migrate to non-subscription curbside as a service to their residents, and to help in meeting Goal #1.

Table J-2 Population Credit for Drop-offs Evaluated Using the Weight of Material Collected Method

This table is not used by the District.

Table J-3 Population Credit for Drop-offs Evaluated Using the Survey Method

This method is not used by the District.

APPENDIX K WASTE REDUCTION AND RECYCLING RATES AND DEMONSTRATION OF ACHIEVING GOAL 2

The purpose of Appendix K is to demonstrate the SWMD's progress towards achieving the waste reduction and recycling rates established in Goal #2 of the 2020 State Solid Waste Management Plan. The Lake County SWMD has opted to achieve Goal #2 in this Plan update and will demonstrate in this appendix how the District has achieved proscribed recycling rates, and how it expects to continue to achieve those rates throughout the planning period.

Goal #2 of the State Plan requires the District reduce and recycle at least 25% of solid waste generated by the residential / commercial sector, and 66% of industrial solid waste, in the reference year (2021). The District's Plan must demonstrate this metric will be met throughout the planning period.

Table K-1 below demonstrates the projections for waste generation, recycling, and recycling rates in the District during the planning period. Also included are projected population for the District and per capita recycling rate, in pounds per day. During the planning period, the population is expected to stagnate and then drop by about 5.5%. As a result of this, overall disposal numbers are expected to decrease, while recycling is projected to increase. This increase is projected due to the ongoing presence of recycling in the District, and the public's habituation to these services. As climate change looms large in policy rooms and living rooms alike, recycling is ultimately the simplest thing everyday Americans can do to mitigate its affects. Further aiding the projected increase is the District's encouragement of communities to move to non-subscription curbside recycling, which has been shown even within the District to increase recycling rates.

These increases in recycling, along with decreases in both population and total waste generated will lead to increasing recycling rates and per capita rates during this planning period. Recycling rates are projected to increase from 23.91% in 2021 to around 27% by the end of the planning period. Per capita recycling rates will increase from the 1.93 in 2021 to over 2.2 at the end of the planning period. These number meet and surpass the required 25% recycling rate needed to achieve Goal #2 of the State Plan.

Waste recycling rate is calculated by simply dividing the amount recycled by the total waste generated. That number is a ratio, which becomes a percentage with multiplied by 100. Per capita recycling is calculated by converting recycling tonnage to pounds by multiplying by 2,000. That number is divided by 365 to provide a pounds per day value. To obtain the per capita (or per person) value, the number is divided by the current year population. The answer is in pounds per person per day.

Table K-1 Annual Rate of Waste Reduction: Residential/Commercial Solid Waste

Year	Population	Recycled	Disposed	Total Generated	Waste Reduction & Recycling Rate (%)	Per Capita Waste Reduction & Recycling Rate (ppd)
2021	***232,023***	***81,658***	***259,851***	***341,510***	***23.91%***	***1.93***
2022	231,602	82,634	251,035	333,669	24.77%	1.96
2023	231,102	83,616	250,493	334,109	25.03%	1.98
2024	230,601	84,617	249,950	334,568	25.29%	2.01
2025	230,101	85,639	249,408	335,047	25.56%	2.04
2026	229,381	86,681	248,628	335,308	25.85%	2.07
2027	228,661	87,743	247,847	335,590	26.15%	2.10
2028	227,941	88,827	247,067	335,894	26.44%	2.14
2029	227,221	89,932	246,286	336,219	26.75%	2.17
2030	226,501	91,059	245,506	336,565	27.06%	2.20
2031	225,510	91,059	244,432	335,491	27.14%	2.21
2032	224,519	91,059	243,357	334,417	27.23%	2.22
2033	223,527	91,059	242,283	333,342	27.32%	2.23
2034	222,536	91,059	241,209	332,268	27.41%	2.24
2035	221,545	91,059	240,134	331,194	27.49%	2.25
2036	220,324	91,059	238,811	329,870	27.60%	2.26
2037	219,103	91,059	237,487	328,547	27.72%	2.28
2038	217,882	91,059	236,164	327,223	27.83%	2.29
2039	216,661	91,059	234,840	325,900	27.94%	2.30

Sources of Information: *Tables C-2, E-8, and G-2*
Sample Calculations: *Total Generated = Recycled + Disposed; (2021) 90,813 + 259,680 = 350,492*
*Waste Reduction & Recycling Rate = Recycled / Total Generated; (2021) 25.91 = (90,813 / 350,492) * 100*
*Per Capita Waste Reduction & Recycling Rate = ((Recycled * 2000[converts from tons to pounds] / 365 [days in a year]) / Population; (2021) 2.14 = ((90,813 * 2000) / 365) / 232,023*

Table K-2 shows the annual rate of waste reduction for industrial solid waste. Industrial solid waste recycling is quite high in the District in the reference year. It is significantly higher than the 2017 statewide average of 55.2% as published in the 2020 State Plan. Industrial solid waste recycling will continue to be high, and is projected to increase slightly, even as waste generated remains constant. This is due to emerging technologies in recycling, which is especially relevant to industrial and manufacturing users who may be able to find ways to recycle harsh chemicals and unique metals that have become increasingly important, such as lithium.

Waste reduction rates are calculated by simply dividing the amount of waste recycled by the total waste. The answer is a ratio, which is then multiplied by 100 to convert to a percentage.

Table K-2 Annual Rate of Waste Reduction: Industrial Solid Waste

Year	Waste Reduced and Recycled (tons)	Waste Disposed (tons)	Non-Recyclable Waste	Waste Generated (tons)	Waste Reduction and Recycling Rate (percent)
2021	***79,805***	***15,097***		***94,902***	***84.09%***
2022	79,805	14,863		94,668	84.30%
2023	79,805	14,632		94,437	84.51%
2024	79,805	14,405		94,210	84.71%
2025	79,805	14,182		93,987	84.91%
2026	79,805	13,962		93,767	85.11%
2027	79,805	13,745		93,550	85.31%
2028	79,805	13,532		93,337	85.50%
2029	79,805	13,322		93,127	85.69%
2030	79,805	13,115		92,920	85.89%
2031	79,805	12,912		92,717	86.07%
2032	79,805	12,711		92,517	86.26%
2033	79,805	12,514		92,319	86.44%
2034	79,805	12,320		92,125	86.63%
2035	79,805	12,129		91,934	86.81%
2036	79,805	11,941		91,746	86.98%
2037	79,805	11,756		91,561	87.16%
2038	79,805	11,573		91,378	87.33%
2039	79,805	11,394		91,199	87.51%

Sources of Information: Tables F-7 and G-2
Sample Calculations: Waste Generated = Waste Recycled + Waste Disposed; (2021) 94,902 = 15,097 + 17,805
*Recycling Rate = (Waste Recycled / Waste Generated) * 100; (2021) 84.09 = (79,805 / 94,902) * 100*

K-3 Annual Rate of Waste Reduction: Total Solid Waste

Year	Waste Reduced and Recycled (tons)	Waste Disposed (tons)	Waste Generated (tons)	Waste Reduction and Recycling Rate (percent)
2021	***161,463***	***274,948***	***436,412***	***37.00%***
2022	162,439	265,898	428,337	37.92%
2023	163,421	265,125	428,546	38.13%
2024	164,422	264,356	428,778	38.35%
2025	165,444	263,590	429,034	38.56%
2026	166,486	262,589	429,075	38.80%
2027	167,548	261,592	429,140	39.04%
2028	168,632	260,599	429,231	39.29%
2029	169,737	259,608	429,345	39.53%
2030	170,865	258,621	429,486	39.78%
2031	170,865	257,343	428,208	39.90%
2032	170,865	256,069	426,933	40.02%
2033	170,865	254,797	425,662	40.14%
2034	170,865	253,529	424,393	40.26%
2035	170,865	252,263	423,128	40.38%
2036	170,865	250,751	421,616	40.53%
2037	170,865	249,243	420,107	40.67%
2038	170,865	247,737	418,601	40.82%
2039	170,865	246,234	417,098	40.97%

Sources of Information: Tables K-1 and K-2
Sample Calculations: Waste Generated = Waste Reduced + Waste Disposed; (2021) 445,394 = 170,618 + 274,777
*Waste Reduction and Recycling Rate = (Waste Recycled / Waste Generated) * 100; (2021) 38.31 = (170,618 / 445,394) * 100*

The District has an overall recycling rate of 37%. This is set to increase to about 40% by the end of the planning period.

APPENDIX L MINIMUM REQUIRED EDUCATION PROGRAMS: OUTREACH AND MARKETING PLAN AND GENERAL EDUCATION REQUIREMENTS

The 2020 State Plan requires each SWMD comply with minimum public education and outreach requirements to advance Goal #3 and Goal #4 as shown below.

Goal #3 – requires the District have a website, comprehensive resource guide, an inventory of available infrastructure, and a speaker or presenter.

Goal #4 – Stipulates the District provides outreach, marketing, and technical assistance regarding reduction, recycling, composting, reuse, and other alternative waste management methods to target audiences using best practices.

A. Minimum Required Education Programs

In accordance with Goal 3 of the 2020 State Plan, the District is required to provide four minimum education programs including: (1) a website, (2) a comprehensive resource list, (3) an inventory of available infrastructure, and (4) a speaker or presenter. The District met these requirements in the reference year.

Web Page

Name	Start Date	End Date	Goal
Lake County Solid Waste District Webpage	Ongoing	Ongoing	3

The district maintains a webpage within the Lake County Department of Utilities. There are several sub-pages that provide information regarding waste pickup, recycling, materials handling, infrastructure, and contact info for the District and its various communities. Programs outlined include the pharmaceutical disposal program, which lists the types of medications than can be disposed of, locations for disposal, and hours of operation. The website also lists special collection events and provides a link to a downloadable flyer of dates, times, and locations. Also on the webpage is information on the Business Waste Reduction Committee (BWRC), which is slated for re-invigoration in this plan. The webpage is updated periodically by the District Coordinator, either as needed or on an annual basis.

The webpage also provides contact info for OSU Extension, as well as educational materials. The District page offers a direct web link to the OSU Extension web page for Lake County, which offers a host of educational materials and information related to programs like the Master Gardener program.

The page also provides information on open hours and days for the Lake County Solid Waste Facility.

Name	Start Date	End Date	Goal
Lake County General Health District Webpage	Ongoing	Ongoing	3

The Lake County General Health District provides information on their webpage relating to solid waste and special collections. The Health District webpage is well-rounded and provides links to EPA information on topics such as HHW and C&DD. Also provided is the annual special collections flyer from the SWMD listing dates, times, and accepted materials for all special collections. Most importantly, the Health District website provides detailed information on the pharmaceutical disposal program, including locations of all boxes and times during which they can be utilized, as well as information on household sharps (hypodermic needles) disposal.

Name	Start Date	End Date	Goal
Local Jurisdiction webpages	Ongoing	Ongoing	3

Nearly every community has a dedicated webpage containing information on the services provided by that community. Large communities have more robust webpages, but all provide basic information on government services provided. Most also provide information on trash and recycling service.

Infrastructure Inventory

Name	Start Date	End Date	Goal
Lake County Solid Waste District Inventory	Ongoing	Ongoing	3

The Lake County Solid Waste ***Division*** (not to be confused with the Solid Waste Management District) is responsible for maintaining and operating the Solid Waste Facility as a separate entity from the District. The Solid Waste Division maintains an inventory of infrastructure as part of the Plan. The websites also provide an inventory that includes the landfill, community websites, and service providers. The Lake County Department of Utilities is responsible for maintaining and updating inventories.

Resource Guide

Name	Start Date	End Date	Goal
Lake County Solid Waste District Resource Guide	Ongoing	Ongoing	3

The District provides a link to a 16-page PDF outlining a host of recycling options in the area. This includes drop-off locations that are run independently of the District and may also include options for disposing of unique materials such as CDs/DVDs, bubble wrap, fluorescent light bulbs, and used motor oil. The exhaustive list can be found at the following URL:

https://www.lakecountyohio.gov/utilities/wp-content/uploads/sites/28/2021/04/RECYCLING-OPTIONS-2020.pdf

This list is updated annually to ensure accuracy of the information. Many local jurisdictions also provide a link to the document on their website.

Speaker/Presenter

Name	Start Date	End Date	Goal
The Ohio State University Extension	Ongoing	Ongoing	3 & 4

The District contracts with OSU Extension for education programming. OSU provides a Program Assistant under the terms of the contract who is responsible for preparing and leading monthly programs and activities to help students learn about litter prevents, waste reduction, recycling, and composting. The program assistant attends numerous special events and provides literature and information. Further, the program assistant also tabulates annual recycling data from communities across the district.

During the reference year 2021, the OSU program assistant reached 16,131 participants across 208 events with 15 unique programs. They visited 13 schools in 5 school districts, speaking to K-4 students. The program assistant led sessions such as "How Long Does Trash last", "What We Waste", and "Plastic Promise". Additional events outside of schools included:

- Lake County Retired Teachers
- Clean and Green Logo Contest (8 elementary schools, 2 middle schools, and 6 high schools)
- Auburn Career Center STEAM Camp
- Salvation Army Day Camp (x2)
- Mentor Lagoons Beach Cleanup

Current strategies and programming that will continue throughout the planning period include:

- In-Classroom Recycling Education Programs – Offered to K-4 students, OSU Extension provides monthly in-classroom programs about recycling topics from October to May annually. Programs include Recycle Bingo, Green Jeopardy, and Fantastic Plastic, where students understand the impact of recycling plastic by making plastic bookbag tags.
- Speaker at Local Events – The Program Assistant will continue to be available to speak as needed at special events throughout the District.
- Clean and Green Lake County Poster Contest – Annual contest sponsored by the District for all school-aged students in the District area.
- Fiber Collection Assistance – OSU Extension office provides assistance with fiber collection programs at county and local governments, public and private schools, and religious and non-profit organizations.

OSU Extension's program assistant also attended the three electronics collections, the scrap tire collection, and the two HHW collections.

These programs, and others like it, are expected to continue during the planning period. Programs will be continually evaluated by the District and OSU Extension for effectiveness, to ensure goals are being met.

B. Outreach and Marketing Plan

As prescribed in the 2020 State Plan, each District will provide education, outreach, marketing, and technical assistance regarding education and reuse through an outreach and marketing plan. The outreach and marketing plan must contain the following components:

1. Five target audiences (residents, schools, industries, institutions & commercial businesses, and communities & elected officials)
2. Follow basic best practices when developing and selecting outreach programs, as outlined in Goal 4 of the 2020 State Plan
3. An outreach priority (in this case, multi-family residences), and provide education and outreach programs to all appropriate audiences in the context of the priority using social marketing principles and tools

The following section describes the programs the District will provide, which were developed based on the strategic analyses described in Appendix H. The ultimate goal of the District's efforts is to get more people to participate in recycling programs, thereby reducing landfilled waste and increasing the life of the solid waste facility. To do this, the District will emphasize changing residents' and businesses' behaviors so they aren't just aware of the recycling resources available within the District but will also actively participate in the programs in order to help the district achieve its overarching goals.

Residential Sector

As of 2016, every community in the District has access to curbside recycling service, either through subscription or non-subscription services. In addition, there are five drop-off sites across the District, as well as private paper collection bins throughout the area. Because of this access, the goal of the District in its marketing campaign has shifted to recycling awareness to make residents aware of the program and its benefits. Marketing is also intended to educate the public on what can and cannot be recycled, and how recycling benefits the District as a whole.

Measurable Outcomes | The District has the ability to obtain tonnage data from communities and haulers, and can obtain subscriber data from subscription-based communities. For the residential sector, this data can be used to measure curbside and drop-off usage. The district can also measure engagement in social media posts and special programs.

Needs of the Audience | There has been a substantial shift in how to reach audiences over the last decade. Radio and TV messaging has waned in its effectiveness due to the prevalence of ad-free subscription-based services. Social media and websites are a much more effective method of reaching large audiences, and have relatively low in monetary and time investment. Updating social media and the District webpage with consistent and clear messaging is a great way to engage residential audiences and help influence positive recycling behavior.

Consistent Messaging | Any posting on social media, and any advertisement for the District in general, should utilize uniform branding unique to the District. This will help users identify the materials or advertisement as official District messaging and avoid confusion. All messaging and advertisements, especially those on social media, should be simple and direct. Messaging should be utilized over and over to reinforce positive change in recycling behavior.

Behavioral Change | The District's focus on education and awareness continues to be a focal point of messaging, as all communities have now adopted some form of curbside recycling. The District will continue to print and distribute flyers and magnets advertising recycling infrastructure and collection programs.

Results Evaluation | The District has the ability to obtain tonnages from various programs to understand changes in usage.

Name	Start Date	End Date	Goal
Lake County Captains Baseball Outreach Program	2023	Ongoing	1, 2, & 4

The District previously partnered with the Lake County Captains, the High-A Minor League Baseball affiliate of the Cleveland Guardians. The Captains play their home games at Classic Park, located in Eastlake. Previous partnership activities saw the District staff an informational booth during a specified weekend at Classic Park during Captains home games, where District staff provided informational materials on recycling, waste reduction, and special collections. The partnership in that form ended in 2018, and was replaced in 2019 with a reusable shopping bag giveaway.

Moving forward, the District intends to restart the outreach partnership with the Captains. This was previously a cost-effective way to reach many people and is a valuable tool in waste reduction and recycling education. The program had been on track to restart in 2020 but was cancelled in 2020 and 2021 due to COVID-19.

To support this program, the District will work with OSU Extension on an outreach plan for the event. The District will also work with OSU Extension on educational materials to be distributed during the event. Materials will inform people on uncomplicated ways to reduce waste in their everyday lives, and show methods of waste reduction that are effective. Materials will also educate on the effectiveness if recycling in reducing waste, while demonstrating the accessible nature of recycling facilities and programs.

As with the previous Plan update, the District and OSU Extension will develop a recycling questionnaire to be given to residents who visit the District booth. The questionnaire will ask questions such as:

1. Community of residence (to understand if recycling is subscription-based)
2. If they do or do not use residential recycling service
    A. What are their barriers to use?
    B. What would convince them to use it?
3. If they do use the service, why?
    A. How often?
    B. If they recycle regularly, what motivates them to do so?
    C. Do they know what is and is not acceptable to recycle?
    D. Do they recycle everything that is accepted through their service?
    E. Do they recycling things that aren't accepted?

Results will be analyzed in an attempt to correlate answers on with changes in recycling tonnage in the District, and to better understand recycling habits of residents. Additionally, marketing and educational materials will be revamped or redirected in response to any trends gleaned from the data in order to specifically target barriers and impediments to recycling, and to change behavior.

The District will work with OSU Extension to develop appropriate metrics for the event. Participation in surveys will be tracked.

The program will be considered a success if it has reached 1,000 persons, measured through survey/questionnaire completions.

Name	Start Date	End Date	Goal
Outreach at Libraries and Senior Centers	2023	Ongoing	1, 2, 4, & 6

In the previous Plan update, the District outlined an adult outreach program that was to be launched in the planning period. Due to the COVID-19 pandemic, that outreach program was cancelled. For the upcoming planning period, the District implement the adult education outreach program.

This program will be implemented at 12 local libraries and senior centers throughout the District. As this program is geared towards adults and seniors, it will focus on the costs and consequences of recycling contamination. It will also focus on methods for improving recycling and changing habits. Because all residents in the District have access to curbside recycling services, materials will focus on appropriate use of these services, while also touching on the available drop sites in the eastern portion of the District. Materials will also focus on the fact that some residents do not have de-facto access to curbside recycling (subscription-based), and will provide direction on how to set up recycling service. The District will also provide information on special collections, their purpose, and how to dispose of difficult items, including those not accepted through standard curbside service. Through this education, the District hopes to inform people of the ease with which they can recycle common items, and the net benefit of doing so. This program will include:

- Developing special exhibits about the typical recyclable materials collected in the various curbside recycling services, unacceptable materials that cause contamination, and ways to dispose of the unrecyclable items that can be left on display at a location for a few months. This will entail creating three versions of the display.
- A special program will be developed that will include a speaker (OSU Extension program assistant) who will be available to speak at each of the public libraries once a year. At the end of the program, the speaker will distribute a questionnaire.
- The District will develop and distribute a durable flyer or other materials that can easily be displayed at homes, on refrigerators, etc. to remind residents of the types of items that can and cannot be placed in their recycling bins.

Name	Start Date	End Date	Goal
Nursery and Greenhouse Research Workshop	Ongoing	Ongoing	3 & 4

OSU Extension offers the Nursery and Greenhouse Research Workshop as a once-a-year event, held at the Lake County Fairgrounds. USDA's Agricultural Research Service assists with the event, which is staffed and led by research scientists. The program instructs participants about techniques in weed management and nursery operations, which includes management of organic wastes.

This program targets all residents of the District, with no restriction on age. It provides valuable information on composting and disposal of organic wastes, including what materials can be safely composted or disposed of in yard waste bins/bags. Residents are also taught about compost drop-off sites and local yard waste pickup programs. The goal of the program is to help residents examine their yard and food waste stream, and divert away from the solid waste facility when possible.

Name	Start Date	End Date	Goal
Recycling Hotline Inquiries	Ongoing	Ongoing	3, 4, & 6

The OSU Extension Lake County office fields telephone calls from residents, businesses, institutions, communities, and schools concerning HHW buying practices and disposal. This program provides human contact to answer questions and concerns instead of a recorded device. Each question can raise a host of additional questions not accessible with a recording, thus providing an opportunity for education on the waste facilities through the District. Staff can direct callers to any program, drop location, their local service provider, or the solid waste facility, helping to inform them of the correct time, manner, and place to dispose of any type of waste in a manner that reduces landfill waste and increases diversion.

The offices are open from 8:30 am until 4:30pm Monday through Friday. After hours calls are set up so that messages are taken and the caller is then contacted the following workday, thus providing a 24-hour service. In providing 24-hour service the District gives any person or entity in the District a reliable repository of information that can help change habits through a simple phone call.

This program will continue during the planning period. The District will coordinate with OSU Extension to quantify the number of calls received, document the types of questions and create a Frequently Asked Questions section for its website where it can post the answers to FAQ.

Name	Start Date	End Date	Goal
Announcements of Special Collections	Ongoing	Ongoing	4

The District markets and advertises its special collection events in a number of ways to reach the largest audience possible, in the most efficient and economical manner. The primary methods for the advertising of special collections are radio ads on local radio stations, and print ads in local papers (IE Painesville Pride, Willoughby Times, etc.) and regional papers (IE The News-Herald). Further, the district sends printed materials to each municipality for their own distribution to residents, and distributes special event calendars in conjunction with the County Commissioners that lists special collections. The materials, printed on magnetic sheets, can be placed on the refrigerator of a home, business, or other entity, providing a constant reminder of special waste and recycling collections.

The District and OSU Extension also develop a flyer each year that provides the dates for all special collections. This flyer can be found on the District website, the OSU Extension website, and the Lake County General Health District website. Many communities also opt to publish it on their own websites. In all, the District spent nearly $13,000 on outreach and advertising in 2021, much of which is devoted to these advertisements and announcements.

Name	Start Date	End Date	Goal
Clean and Green Lake County Cleanup Program	Ongoing	Ongoing	4

Each year, the Commissioners declare a six-week period in early spring as the Clean and Green Lake County program timeframe. The Commissioners encourage residents, businesses and civic organizations to identify areas in their neighborhoods in need of attention and to undertake clean-up activities. The District provided bags and gloves for residents to participate in the cleanup program. The District schedules its annual special scrap tire collection on one of the weekends during the event and the electronics special collection during another weekend in order to assist residents in the clean-up efforts.

Part of this event includes a poster contest involving all schools in the SWMD. Students are challenged to develop a logo for the SWMD to use in their marketing materials for the year. Winning designs are also displayed at the Lake County administration building for the year. In 2021, the SWMD received 836 entries from eight elementary schools, two middle schools, and six high schools.

Efforts will be made to increase participation in this program through marketing and general awareness. The District will post on social media and its website, and encourage local jurisdictions do the same. The District will also provide marketing materials, in conjunction with OSU Extension. The District has set a goal of **10% increase** in participation over the 2021 participation numbers (836 entries).

Commercial/Institutional Sector

Measurable Outcomes | The District can track participation in the commercial survey to understand if messaging and the BWRC, and by extension the Environmental Steward Program, is achieving success.

Needs of the Audience | Commercial and institutional users are unique due in large part to the amount of waste generated, and the current lack of curbside recycling. The District provides information on its website for commercial users, and is exploring the offering of more technical assistance through a Pollution Prevention Intern.

Consistent Messaging | Any posting on social media, and any advertisement for the District in general, should utilize uniform branding unique to the District. This will help users identify the materials or advertisement as official District messaging and avoid confusion. All messaging and advertisements, especially those on social media, should be simple and direct. Messaging should be utilized over and over to reinforce positive change in recycling behavior. Specific materials can be provided to commercial and institutional users.

Behavioral Change | The District's focus on education and awareness continues to be a focal point of messaging due to the absence of curbside commercial and institutional recycling. The District could send informational flyers to commercial users informing them of ways to recycle all types of materials, as well as educate them on the commercial recycling survey, and can utilize the BWRC to increase awareness of infrastructure and programs. There is also potential to partner with Chambers of Commerce to push this information.

Results Evaluation | The District can view participation and data in the commercial survey as a method of evaluating commercial waste reduction.

Name	Start Date	End Date	Goal
Business Waste Reduction Committee	Ongoing	Ongoing	1, 2, 4, 5, & 7

The previous Plan update set out to reinvigorate the Business Waste Reduction Committee (BWRC). Due to the COVID-19 pandemic, the BWRC was not able to meet during the previous planning period. This Plan update indents to carry that goal forward into the next planning period, as the Policy Committee has put an emphasis on reinvigorating the BWRC in order to enhance outreach to the business community and the industrial manufacturing sector, which has been inactive for the past few years. In the past, the BWRC's main tasks were focused on the Lake County Captains recycling day and providing education and recycling information for the commercial and industrial sectors.

With a commitment to reinvigorating the BWRC, the Policy Committee will begin by doubling the membership (currently comprised of six people who are affiliated with the District) to add members from the commercial and industrial sectors. Once the committee membership is expanded, the BWRC will spend the first few meetings (meeting every two months) developing its work plan, which will include: prioritizing its short-term and long-term areas of focus, identifying strategies and metrics that it will use to measure success, develop a specific action plan.

Three of the primary goals of the BWRC are to:

• Promote the successes of the Lake County business community in recycling and reducing waste. This will be achieved by reinstituting the Environmental Steward Award to publicly recognize businesses that show exemplary success in the recycling efforts. The BWRC will develop the recognition program with input from businesses to determine how best to market the award program, advertise the criteria and celebrate the winners.

• Provide value-added services that are instrumental in helping businesses succeed at recycling. The BWRC will achieve this by promoting the state's market waste exchange through a targeted social media campaign aimed businesses who are most likely to benefit from the exchange, distributing information on recycling opportunities – both on the District's website and through social media, and providing technical assistance regarding source reduction to the District's major solid waste generators in the commercial and industrial sectors

• Develop an online survey form to encourage local businesses to report their recycling amounts. The survey will also ask those that say they don't recycle, why they do not recycle. Feedback from the 2016 survey indicates that for the 18% of the survey respondents who indicated they do not recycle, the most common response was they do not want to pay for a recycling service.

The success of the BWRC shall be measured by an increase in recycling rates in both commercial and industrial sectors. An increase in OEPA Commercial Reported tonnage **of 2% annually, or 10% at the end of the planning period**, shall be considered a successful program for the commercial sector. Industrial results are harder to track, but should correspond with **similar increases** in industrial recycling tonnage.

Name	Start Date	End Date	Goal
Pollution Prevention Intern	Ongoing	Ongoing	1, 2, 4, 5, & 7

The District intend to launch the Pollution Prevention Intern during the planning period. The Pollution Prevention Intern program is a collaborative agreement between the District and various businesses throughout the District, with assistance and input from the BWRC. The intern will be an undergraduate or graduate student with an interest in solid waste, sustainability, or other field related to the work of the SWMD or the project/goals of the host employer. Interns work for one semester in a full-time capacity; however, that may be modified to accommodate two (2) interns for 20 hours a week each.

Under this model, the cost of the intern is split between the District and an employer within the District with a need for the intern. The Pollution Prevention intern will be trained by the District before going to work in assisting the host employer with waste reduction, sustainability, and diversion. Interns may also

potentially do work for the District, specifically in the form of waste audits. Otherwise, the intern works exclusively with the host employer.

Each individual intern and host employer will have specific goals and projects for the intern. These may be waste audits, internal sustainability analyses and projects, waste reduction efforts, recycling plans, etc. Goals and projects will be established by agreement between the District and the host employer prior to hiring the intern.

Industrial Sector

Measurable Outcomes | The District can track participation in the industrial survey to understand if messaging and the BWRC, and by extension the Environmental Steward Program, is achieving success.

Needs of the Audience | Industrial users are unique for a number of reasons, including the amount of waste generated, the types of waste generated, and the current lack of curbside recycling. The District provides information on its website for industrial users, and is exploring the offering of more technical assistance through a Pollution Prevention Intern.

Consistent Messaging | Any posting on social media, and any advertisement for the District in general, should utilize uniform branding unique to the District. This will help users identify the materials or advertisement as official District messaging and avoid confusion. All messaging and advertisements, especially those on social media, should be simple and direct. Messaging should be utilized over and over to reinforce positive change in recycling behavior. Specific flyers and materials can be provided to industrial users.

Behavioral Change | The industrial survey, which has not been done since the last plan, could be revisited to better influence and inform behavior of industrial generators. The BWRC can also influence behavioral change through programs like the Environmental Steward Award.

Results Evaluation | The District has the ability to obtain tonnages from various programs to understand changes in usage.

Name	Start Date	End Date	Goal
BWRC	Ongoing	Ongoing	1, 2, 4, 5, & 7

BWRC is also listed under the commercial/industrial sector. The Policy Committee will focus on appointing additional members to the committee, to include some that represent industrial businesses.

Name	Start Date	End Date	Goal
Pollution Prevention Intern	Ongoing	Ongoing	1, 2, 4, 5, & 7

Pollution Prevention Intern is also listed under the commercial/industrial sector. The intern will be available for use for all user types.

Political Leaders

The District faces major challenges in maintaining the momentum and increasing the effectiveness of curbside recycling services. Even with the elimination of District funding for curbside recycling services in

2014, each community in the District offers curbside recycling service as of 2016. The District must continue to offer contracting support to help communities obtain favorable agreements with haulers. In addition, the District must also continue to produce marketing and informational materials geared towards increasing usage of recycling services.

Measurable Outcomes | The District can track interactions and meeting with communities by number and type of interactions, and obtain minutes from all public meetings.

Needs of the Audience | The District maintains a good relationship with all communities, but can do better and reaching out to communities and meeting regularly with them. Communities often need help with contract negotiations and messaging to residents on waste reduction. The District can provide materials for outreach and education, and advises on contract negotiations, as requested.

Consistent Messaging | The District can help design outreach materials and social media posts to ensure they are in keeping with the messaging and themes being used Districtwide. The District can keep community leaders and officials informed through emails and notifications of events.

Behavioral Change | The District should encourage communities share social media posts and information via their own personal or community-wide social media channels. The District should also encourage communities migrate to non-subscription recycling services to increase waste diversion.

Results Evaluation | The District has the ability to obtain tonnages from various programs to understand changes in usage.

Name	Start Date	End Date	Goal
Annual Survey	Ongoing	Ongoing	4

OSU Extension administers an annual survey to each community in the District. Surveys are intended to gather data of community-wide recycling and compost tonnage, as well as service provider. Recycling and compost data provides significant detail, such as type of material disposed. Typically, responses have been difficult to obtain, with some communities failing to respond at all, while others respond annually.

The survey will continue to be utilized, as it provides an opportunity for collaboration with community political and professional leadership. The District and OSU Extension will work together to continually improve the survey and its distribution. Revamp of the survey is done with the goal of 100% completion in mind.

Name	Start Date	End Date	Goal
Community Meetings with Service Directors and Elected Officials	Ongoing	Ongoing	4

Each year, the District holds its annual meeting with service directors and local officials with the primary goal of soliciting cooperation in gathering data for the annual survey of recycling tonnage. As part of the Strategic Analysis in Appendix H, the District understands that to achieve its recycling goals in the absence of financial incentives, a network of informed elected officials is necessary. To achieve this goal, the District will expand its efforts to bring local communities together to not only gather more and better data, but also to share information, and hopefully collaborate on joint efforts to maximize grant-funded opportunities.

At these meetings, the District will be able to discuss and address any concerns that the communities or their residents may have and identify ways to increase recycling objectives such as providing incentives. This conversation serves to establish an open dialogue and deepen the relationship between the District and the individual communities to meet their needs as well as impart the necessity of their participation in recycling efforts for the District.

Discussions and sharing lessons learned and best practices, will provide elected officials and their representatives with the tools and understanding to implement sound waste management practices within their communities. Depending on the success of these meetings, the District will identify potential speakers to present topics that reflect those issues considered by the local communities to have the greatest impact on their solid waste and recycling performance. Although the Service Directors are the targeted participants, communities will be encouraged to select additional representatives to participate in these sessions as well. Individual assistance would also be provided on an as needed basis.

It is hoped that by sharing success stories and resolving service issues, the District will foster the growth of more non-subscription collection programs during the planning period.

Schools

Measurable Outcomes | The District can measure through the number of individual programs offered, students reached, and schools involved. The District can also track the number of participating schools and districts, to look for opportunities to reach new students.

Needs of the Audience | OSU Extension's Program Assistant has developed at least 15 programs to engage schoolchildren throughout the SWMD. The Program Assistant's programs are repeated every year at 13 schools across five school districts, reaching over 16,000 students through over 200 individual events. Programs are designed to target specific age groups, such as Kindergarten through First Grade, Second Grade, or Third Grade, ensuring materials are age-appropriate and can be understood by the target audience.

Consistent Messaging | The Districts messaging within schools will link curbside recycling and drop-off sites within communities to school-based recycling infrastructure like Royal Oak Paper Retrievers and classroom recycling bins.

Behavioral Change | The OSU Extension Program Assistant provides programs and activity that reinforce waste reduction habits and actions, and link them with available recycling infrastructure and opportunities in the home.

Results Evaluation | The District can monitor Royal Oak Paper Retriever tonnage, as well as curbside tonnage.

Name	Start Date	End Date	Goal
In Class Recycling Education Programs	Ongoing	Ongoing	3 & 4

OSU Extension and the District work together to implement educational programs in local schools throughout the District. Educational programs and developed by OSU Extension in cooperation with the District, and programs and led and delivered by OSU Extension's program assistant. Programs are

designed to teach younger students, typically elementary school age, about waste reduction and recycling. Topics include "Magnet Mania", "How Long Does Trash Last", and "What We Waste" with the hope the programs and ideas ignite discussion about waste reduction, landfill capacity, and recycling methods at home. Thus, programs reach both children and families. In 2021 alone, OSU Extension held programs in 13 schools across five districts. An integral part of OSU Extension's programs is the in-class recycling program. Current programs, which will continue through the planning period, include the following.

Clean and Green Lake County Poster Contest - The District holds the Clean and Green Lake County Poster Contest. This contest is held concurrently with the Clean and Green Cleanup Program, taking place each spring. The purpose of the program is to promote recycling education and an anti-littering/cleanup message with a focus on Lake County through a friendly art competition to create a logo that will be used by the District during the following year. School Principals and Art Teachers are contacted in autumn with instructions for participation for their students.

Posters should include imagery encouraging recycling and waste cleanup. One winner each is selected from an elementary school, middle school, and high school, with winning posters being placed at the county administration building and also being used in marketing materials for the year. Winners are selected by the County Commissioners, and are honored at a regular meeting of the County Commissioners. In 2021, 836 entries were received.

Changes for the planning period may include the following:

- Advertising on the County's social media pages
- Potential for prizes to increase participation
- Developing giveaway and marketing materials using winning artwork from previous winners.

In-Class Recycling Education Programs - Offered to K-4 schoolchildren, OSU Extension provides monthly in-class programs about recycling topics from October to May annually. In 2021, 16,131 students across 13 schools and 5 school districts participated. Topics range from Magnet Mania, where students learn about the basics of recycling and what can be recycled while a magnet of items that can be recycled, to Earth Bracelets, where students learn about resource conservation while making bracelets that remind of everyday actions to preserve the environment.

C. Outreach Priority

Name	Start Date	End Date	Goal
Multifamily Recycling Pilot Program	2023	2027	1, 2, 4, & 7

The Multifamily Recycling Pilot Program was identified in the previous Plan update, and was intended to launch during the previous planning period, beginning in 2019. However, due to the COVID-19 pandemic, launch of the program was placed on hiatus until conditions normalized. It is now intended to launch in 2023.

After assessing recycling programs for each target audience, the policy committee has identified the challenges (see Appendix H) and determined that while residential recycling programs provide adequate infrastructure to traditional single-family households in the County, the challenge continues to be

incentivizing multi-family apartments to participate. Maintaining curbside recycling is a high priority, but the Policy Committee recognizes that there are a number of households in the county that live in apartment buildings and these types of housing units typically do not offer recycling services. Residents of the apartment buildings are at the mercy of the decisions that their property managers make in terms of curbside service and they have been underserved.

The Plan calls for establishing a recycling pilot program in 2023. The BWRC will conduct an outreach campaign in the three cities where the multi-family developments are most concentrated (Mentor, Willoughby and Willoughby Hills). The BWRC will obtain the list of property management firms in each city and distribute information about the pilot program. The BWRC will work with two interested property management firms to establish a contract with a private recycling hauler with a commitment of 2 years, and the BWRC will enter into a Memorandum of Understanding with the property manager to reimburse the firm 6 months' worth of the cost (up to $5,000). The BWRC will be responsible for providing outreach materials and guides to property management companies and will engage with them to market the program to their residents. These materials will include signage throughout the property educating residents of what can be recycled, and materials that can be attached to receptacles to encourage recycling behaviors. Brightly colored and/or eye-catching materials will also be used to direct residents to the nearest recycling receptacle drop point. Because the focus is on changing behavior, rather than providing new infrastructure, every effort will be made to place recycling collection points and receptacles in conspicuous and heavily-traffic areas.

Initial success will be determined by the number of apartment buildings that begin service. The onus will then be on the property management company to advertise the service to their residents, though the District and OSU will supplement the companies with education and outreach materials, including materials that can be emailed to residents as a follow-up once the program has begun.

The program will be considered a success with the enrollment of five properties by the end of the pilot program, regardless of tonnage diverted. The District will further measure success by requiring property managers to report quantities collected to the District and the District will keep track of recycling trends, the number of multi-family complexes that participate in the program, and how many continue to provide recycling after the expiration of the MOU.

APPENDIX M WASTE MANAGEMENT CAPACITY ANALYSIS

A. Access to Publicly Available Landfill Facilities

Table M-1 Remaining Operating Life of Publicly Available Landfills

Facility	Location	Years of Remaining Capacity	Status (no change, planned expansion, pending expansion, or closing)
Lake County Solid Waste Facility	Lake County	23	No change
Geneva Landfill	Ashtabula County	65	No change
Countywide RDF	Stark County	62	No change
Wood County Landfill	Wood County	5	No change
Mahoning Landfill, Inc.	Mahoning	45	No change
American Landfill, Inc.	Stark County	74	No change
Port Clinton Landfill, Inc.	Ottawa County	120	No change
Noble Road Landfill	Richland	16	No change
Lorain County II Landfill, LLC	Lorain	16	No change
Kimble Sanitary Landfill	Tuscarawas	20	No change
Carbon Limestone Landfill LLC	Mahoning	47	No change

Source: Ohio EPA Facility Report Data Tables, 2021

The most utilized facilities that accept waste from the District have substantial life remaining. Lake County Solid Waste Facility, which accounts for 86% of waste generated in the District, has 23 years of capacity remaining. This is above and beyond the eight years required by Ohio EPA. The facility was expanded during the previous Plan's planning period.

The bulk of remaining waste (10.9%) is taken to Geneva Landfill, which has 65 years of capacity remaining. Lorain County II Landfill LLC accepts a further 2.8% of waste, the majority of which is industrial. This landfill has 16 years of capacity remaining. That capacity may expire before the end of the planning period, depending on that facility's expansion plans. If there are no plans for expansion by the next Plan update, alternative locations for disposal should be explored.

It is important to note policy-related steps taken by the District to address capacity. In 2009, the District adopted a policy statement which states the following:

"The Lake County Solid Waste Facility shall accept all solid waste generated within Lake County and routed to the facility for disposal. Out-of-District waste will be accepted at the facility with the following provisions:

- The County would set the amount of Out-of-District waste, such that the total amount of Lake County waste and Out-of-District waste not exceed 400,400 tons per year.
- Whenever the life expectancy of the landfill falls below 5 years, the Solid Waste Plan will be modified to incorporate volume developed from adjacent county owned property and a PTI (Permit to Install) applied for from the Ohio Environmental Protection Agency

for not less than a 10-year period. The Solid Waste Policy Committee will review the policy relative to the Out-of-District waste during its required plan review process. The review will take into consideration: 1) public health and environmental impact on Lake County, 2) projected life expectancy of the landfill, 3) financial impact on Lake County, 4) current and proposed EPA rules relative to operation and siting of landfills, and 5) every five (5) years the plan will be reviewed by the District.

- Lake County, as owner/operator of the landfill, will develop the arrangements for obtaining Out-of-District waste as part of the District Plan.
- The owners/operators of the Lake County Solid Waste Facility will develop guidelines, rules, and policies to ensure to the extent possible that the contributing Out-of-District solid waste meets all HB592 requirements relative to recycling and prohibitive wastes.
- The Lake County Solid Waste Facility will develop inspections, monitoring, and enforcement procedures related to Out-of-District waste consistent with HB592 provisions.

B. Access to Captive Landfill Facilities

Table M-3 Remaining Operating Life of Privately Available Landfills

The District does not utilize any such facilities.

C. Incinerators and Energy Recovery Facilities

The District does not utilize any such facilities.

APPENDIX N EVALUATING GREENHOUSE GAS EMISSIONS

This Appendix evaluates greenhouse gas emissions (GHG) from solid waste within the District. U.S. EPA has released WARM (Waste Reduction Model) as a simple tool that entities can utilize to determine GHG under any scenario they choose. The tool uses a locked and pre-filled spreadsheet with formulas to calculate GHG for a variety of waste generation situations. Users need only input waste under the correct category and how it was disposed, and the tool will provide GHG emissions data.

WARM is reliant on specific type of waste data. Unfortunately, not all waste tracked by the District is enumerated in the tool and conversely, not all types of waste in the tool are tracked by the District. Therefore, the entire picture of GHG emissions and reduction cannot be captured, though the data tracked by the District is enough to give a general idea of emissions and reduction from waste management practices.

Table N-1 below shows the scenario in which the tracked items in the left column were placed in a landfill, rather than recycled or composted. Table N-2 below Table N-1 shows the existing situation, in which items were either recycled or composted. Finally, Table N-3 shows the difference in GHG generation (shown as metric tons of carbos dioxide equivalent).

Table N-1 Greenhouse Gas Emissions from All Recyclables in 2021 if Landfilled

Material	Tons Recycled	Tons Landfilled	Total MTCO2E
Corrugated Containers	0	20,223.6	3673.21
Mixed Paper (general)	0	5,592.8	417.8
Food Waste	0	1,070.7	536.92
Yard Trimmings	0	36,928.7	-7,404.93
Mixed Plastics	0	2,283.2	46.25
Mixed Electronics	0	130.3	2.64
Mixed Metals	0	6,006.8	121.66
Glass	0	2,047.2	41.47
Dimensional Lumber	0	2,688.7	-2,482.77
Tires	0	1,739.4	35.23
Mixed Recyclables	0	778.9	26.63

Source: Table E-5, U.S. EPA WARM

Table N-2 Greenhouse Gas Emissions from All Recyclables in 2021 if Recycled

Material	Tons Recycled	Tons Landfilled	Tons Composted	Total MTCO2E
Corrugated Containers	20,223.6	0	0	-63,407.80
Mixed Paper (general)	5,592.8	0	0	-19,829.40
Food Waste	0	0	1,070.7	-162.89
Yard Trimmings	0	0	36,928.7	-3,910.98
Mixed Plastics	2,283.2	0	0	-2,113.16
Mixed Electronics	130.3	0	0	-117.77
Mixed Metals	6,006.8	0	0	-26,376.82
Glass	2,047.2	0	0	-565.21
Dimensional Lumber	2,688.7	0	0	-4,462.10
Tires	1,739.4	0	0	-654.54
Mixed Recyclables	778.9	0	0	-2,181.66

Source: Table E-5, U.S. EPA WARM

Table N-3 Net GHG Reductions for 2019: Landfilled vs Recycled

Material	Change (Alt - Base) MTCO2E
Corrugated Containers	-67,081.01
Mixed Paper (general)	-20,247.20
Food Waste	-699.81
Yard Trimmings	3,493.96
Mixed Plastics	-2,159.40
Mixed Electronics	-120.41
Mixed Metals	-26,498.49
Glass	-606.68
Dimensional Lumber	-1,979.33
Tires	-689.77
Mixed Recyclables	-2,208.29
Total	**-118,796.43**

Source: U.S. EPA WARM

GHG Reductions are equivalent to:

28,274	Gasoline-powered passenger vehicles driven for one year
13,367,440	Gallons of gasoline consumed
23,445	Homes' electricity use for one year

GHG is equivalent to:

31.3	Wind turbines running for one year

GHG is equivalent to amount sequestered by:

1,964,309	Tree seedlings grown for ten years

Source: U.S. EPA GHG Equivalency Calculator

The second scenario demonstrated is similar to the first, only instead of 2021 data, 2030 projected data is analyzed. To obtain 2030 tonnages, the ratio of each material to overall recycled material was obtained from 2021 data. Then, those ratios were held constant and applied to the projected 2030 recycling total for each specific material. Table N-4 shows projected tonnages for 2030 if recycling was not utilized. Table N-5 below that shows the outcome if all tonnage was recycled. Finally, Table N-6 shows GHG reductions gained by recycling.

Table N-4 2030 Scenario for Projected Tons of Recyclable Materials, Landfilled

Material	Tons Recycled	Tons Landfilled	Tons Composted	Total MTCO2E
Corrugated Containers	0	22,552	0	4,096.12
Mixed Paper (general)	0	6,236.7	0	465.90
Food Waste	0	1,193.9	0	598.70
Yard Trimmings	0	41,180	0	-8,257.40
Mixed Plastics	0	2546.1	0	51.57
Mixed Electronics	0	145.3	0	2.94
Mixed Metals	0	6,698.4	0	135.67
Glass	0	2,282.8	0	46.24
Dimensional Lumber	0	2,998.2	0	-2,768.56-
Tires	0	1,939.7	0	39.29
Mixed Recyclables	0	868.6	0	29.69

Source: Table E-5, U.S. EPA WARM

Table N-5 2030 Scenario for Projected Tons of Recyclable Materials, Recycled

Material	Tons Recycled	Tons Landfilled	Tons Composted	Total MTCO2E
Corrugated Containers	22,552	0	0	-70,708.12
Mixed Paper (general)	6,236.7	0	0	-22,112.37
Food Waste	0	0	1,193.9	181.63
Yard Trimmings	0	0	41,180	-4,361.21
Mixed Plastics	2546.1	0	0	-2,356.48
Mixed Electronics	145.3	0	0	-131.33
Mixed Metals	6,698.4	0	0	-29,413.75
Glass	2,282.8	0	0	-630.26
Dimensional Lumber	2,998.2	0	0	-4,975.74
Tires	1,939.7	0	0	-729.92
Mixed Recyclables	868.6	0	0	-2,432.79

Source: Table E-5, U.S. EPA WARM

Table N-6 Net GHG Reductions for 2030, Landfilled vs Recycled

Material	Change (Alt - Base) MTCO2E
Corrugated Containers	-74,804.23
Mixed Paper (general)	-22,578.27
Food Waste	-780.33
Yard Trimmings	3,896.19
Mixed Plastics	-2,408.05
Mixed Electronics	-134.27
Mixed Metals	-29,549.42
Glass	-676.50
Dimensional Lumber	-2,207.18
Tires	-769.20
Mixed Recyclables	-2,462.49
Total	**-132,473.75**

Source: U.S. EPA WARM

GHG Reductions are equivalent to:

31,529	Gasoline-powered passenger vehicles driven for one year
14,906,464	Gallons of gasoline consumed
26,145	Homes' electricity use for one year

GHG is equivalent to:

34.9	Wind turbines running for one year

GHG is equivalent to amount sequestered by:

2,190,465	Tree seedlings grown for ten years

Source: U.S. EPA GHG Equivalency Calculator

APPENDIX O FINANCIAL PLAN

This appendix summarizes the District's funding mechanisms and expenses for the planning period 2021-2039. The district has prepared the budget section of this Plan Update to meet requirements of ORC 3737.53(A)(13)(d).

A. Funding Mechanisms and Revenue Generated

1. Disposal Fee

Table O-1 Disposal Fee Schedule and Revenue

Year	Disposal Fee Schedule ($/ton)			Revenue ($)			Total Disposal Fee Revenue ($)
	In-District	Out-of-District	Out-of-State	In-District	Out-of-District	Out-of-State	
2017	*$2*	*$4*	*$2*	$380,613	$93,480	$0	**$474,093**
2018	*$2*	*$4*	*$2*	$365,541	$92,645	$0	**$458,186**
2019	*$2*	*$4*	*$2*	$390,294	$95,962	$0	**$486,256**
2020	*$2*	*$4*	*$2*	$397,962	$110,142	$0	**$508,104**
2021	*$2*	*$4*	*$2*	*$405,348*	*$128,288*	*$0*	***$533,637***
2022	*$2*	*$4*	*$2*	*$405,348*	$130,854	*$0*	**$536,202**
2023	*$2*	*$4*	*$2*	*$405,348*	$133,471	*$0*	**$538,819**
2024	*$2*	*$4*	*$2*	*$405,348*	$136,141	*$0*	**$541,489**
2025	*$2*	*$4*	*$2*	*$405,348*	$138,863	*$0*	**$544,212**
2026	*$2*	*$4*	*$2*	*$405,348*	$141,641	*$0*	**$546,989**
2027	*$2*	*$4*	*$2*	*$405,348*	$144,473	*$0*	**$549,822**
2028	*$2*	*$4*	*$2*	*$405,348*	$147,363	*$0*	**$552,711**
2029	*$2*	*$4*	*$2*	*$405,348*	$150,310	*$0*	**$555,658**
2030	*$2*	*$4*	*$2*	*$405,348*	$153,316	*$0*	**$555,658**
2031	*$2*	*$4*	*$2*	*$405,348*	$153,316	*$0*	**$555,658**
2032	*$2*	*$4*	*$2*	*$405,348*	$153,316	*$0*	**$555,658**
2033	*$2*	*$4*	*$2*	*$405,348*	$153,316	*$0*	**$555,658**
2034	*$2*	*$4*	*$2*	*$405,348*	$153,316	*$0*	**$555,658**
2035	*$2*	*$4*	*$2*	*$405,348*	$153,316	*$0*	**$555,658**
2036	*$2*	*$4*	*$2*	*$405,348*	$153,316	*$0*	**$555,658**
2037	*$2*	*$4*	*$2*	*$405,348*	$153,316	*$0*	**$555,658**
2038	*$2*	*$4*	*$2*	*$405,348*	$153,316	*$0*	**$555,658**
2039	*$2*	*$4*	*$2*	*$405,348*	$153,316	*$0*	**$555,658**

Source: LCSWMD Financial Reports
Sample Calculations: Total Disposal Revenue = In-District + Out-of-District + Out-of-State; (2021) $533,637 = $405,348 + $128,288 + $0

The District will continue to charge the current disposal fee for the planning period. These fees are subject to limits set by Ohio Revised Code.

Revenue is almost entirely reliant on the amount of waste accepted at the Lake County Solid Waste Facility. Revenue from disposal fees skews heavily towards in-district disposal, even when accounting for the 2:1 difference in cost for out-of-district disposal vs. in-district disposal. Revenues held steady during first half of the observation period, roughly 2017 to 2019. 2020 and 2021 saw larger increases in revenue, especially from

out-of-district disposal. This was due in part to landfills and transfer stations in neighboring Cuyahoga County being closed and/or not accepting waste. Closures in this urban and densely populated county just to the west caused a cascade effect that drove customers and haulers further away from the urban center in Cleveland. The result was significantly higher tonnages than in past years for out-of-district waste.

The District is constantly contending with fraud related to origin of waste. It can be hard to verify where waste is coming from, and some haulers or residents will readily fabricate an in-district destination to save on the tonnage fee. This practice has only gotten worse during the COVID-19 pandemic, and the District is working hard to reduce this type of fraud, as it amounts to a loss in revenue from incorrect origin of waste.

Projections for revenue show increases in out-of-district fees collected while in-district fees are constant. In-district fees are constant due to the flatlining of waste generated by the district, projected increases in recycling tonnage, and projected population decline. Out-of-district fees are shown to increase due to the amounts of waste hauled from neighboring districts increasing, such as that from Geauga-Trumbull SWMD.

1. *Generation Fee*

The District does not have a generation fee, and there are no imminent plans to institute one during the planning period.

2. *Designation Fees*

The District does not have a designation fee, and there are no imminent plans to institute one during the planning period.

3. *Debt/Loans*

The District does not have any outstanding debt or loans from which will collect revenue and does not plan to issue any during the planning period.

5. *Other Sources of District Revenue*

Table O-5 Other Sources of Revenue

Year	User Fee	Reimbursements	Other	Total Other Revenue
2017	$1,908	$0	$0	$1,908
2018	$11,893	$0	$0	$11,893
2019	$13,823	$237	$499	$14,559
2020	$0	$5,000	$0	$5,000
2021	***$16,750***	$0	$0	$16,750
2022	$0	$0	$0	$0
2023	$0	$0	$0	$0
2024	$0	$0	$0	$0
2025	$0	$0	$0	$0
2026	$0	$0	$0	$0
2027	$0	$0	$0	$0
2028	$0	$0	$0	$0
2029	$0	$0	$0	$0
2030	$0	$0	$0	$0
2031	$0	$0	$0	$0
2032	$0	$0	$0	$0
2033	$0	$0	$0	$0
2034	$0	$0	$0	$0
2035	$0	$0	$0	$0
2036	$0	$0	$0	$0
2037	$0	$0	$0	$0
2038	$0	$0	$0	$0
2039	$0	$0	$0	$0

Source: LCSWMD Financial Reports

Sample Calculations: Total Other Revenue = User Fee + Reimbursements + Other; (2019) $14,559 = $13,823 + $237 + $499

The District has had intermittent spurts of revenue from other sources during the observation period. User fees are typically collected from residents who drop off scrap tires at the Lake County Solid Waste Facility. Reimbursements can result from the District recouping funds or fees owed from other agencies. Other may apply to situations such as the District recycling items at a scrap yard and receiving money in return. These revenues are hard to plan for, and as such are projected as zero for the planning period. Any revenue from other sources should be treated as additional funds, rather than planned funds to be used for expenses.

6. Summary of District Revenues

Table O-6 Total Revenue

Year	Disposal Fees	Generation Fees	Designation Fees	Other Revenue	Total Revenue	Pct Change
2017	$474,093	$0	$0	$1,908	$476,001	
2018	$458,186	$0	$0	$11,893	$470,079	-1.2%
2019	$486,256	$0	$0	$14,559	$500,815	6.5%
2020	$508,104	$0	$0	$5,000	$513,104	2.5%
2021	$533,637	$0	$0	***$16,750***	**$550,387**	**7.3%**
2022	$536,202	$0	$0	$0	$536,202	-2.6%
2023	$538,819	$0	$0	$0	$538,819	0.5%
2024	$541,489	$0	$0	$0	$541,489	0.5%
2025	$544,212	$0	$0	$0	$544,212	0.5%
2026	$546,989	$0	$0	$0	$546,989	0.5%
2027	$549,822	$0	$0	$0	$549,822	0.5%
2028	$552,711	$0	$0	$0	$552,711	0.5%
2029	$555,658	$0	$0	$0	$555,658	0.5%
2030	$558,665	$0	$0	$0	$558,665	0 %
2031	$558,665	$0	$0	$0	$558,665	0 %
2032	$558,665	$0	$0	$0	$558,665	0 %
2033	$558,665	$0	$0	$0	$558,665	0 %
2034	$558,665	$0	$0	$0	$558,665	0 %
2035	$558,665	$0	$0	$0	$558,665	0 %
2036	$558,665	$0	$0	$0	$558,665	0 %
2037	$558,665	$0	$0	$0	$558,665	0 %
2038	$558,665	$0	$0	$0	$558,665	0 %
2039	$558,665	$0	$0	$0	$558,665	0 %

Source: LCSWMD Financial Reports
Sample Calculations: Total Revenue = Disposal Fees + Generation Fees + Designation Fees + Other Revenue; (2021) $550,387 = $533,637 + $0 + $0 + $16,750
*Percent Change = ((Current Year Total Revenue - Prior Year Total Revenue)) / Prior Year Total Revenue) *100; (2021) 7.3% = (($550,387 - $513,104) / $513,104) * 100*

District revenues increased steadily during the observation period, increasing by $74,386. This represents a 15.6% growth in revenue from 2017 to 2021, reflecting an average annual growth of 3.9%. However, when adjusting for inflation as of December 2021 (the end of the reference year), revenue growth was stagnant (0.1%) during the observation period.

The projected budget for 2022 shows a drop of 2.6% in revenue, reflecting the absence of Other Revenue from the budget. Revenue growth would be 0.5% otherwise. Growth in revenue was projected at 0.5% until 2030, and is held steady thereafter. Slow growth in revenue reflects stagnating/falling population, as well as small reductions in waste generated.

B. Cost of Implementing Plan

Table O-7 Expenses

Line #	Category/Program	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
1	**1. Plan Monitoring/Prep.**	$28,009	$15,899	$2,760	$490	$598	$15,000	$35,000	$25,000	$15,000	$15,000	$30,000	$50,000	$40,000	$15,000	$15,000	$30,000	$50,000	$40,000	$15,000	$15,000	$30,000	$50,000	$40,000
1.a	a. Plan Preparation	$28,009	$15,899	$450	$0	$0	$15,000	$35,000	$25,000			$15,000	$35,000	$25,000			$15,000	$35,000	$25,000			$15,000	$35,000	$25,000
1.b	b. Plan Monitoring	$0	$0	$2,310	$490	$418				$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000
1.c	c. Other	$0	$0	$0	$0	$180																		
2	**2. Plan Implementation**	$232,753	$263,596	$335,475	$314,289	$413,288	$427,382	$434,867	$442,494	$472,265	$485,183	$498,250	$511,471	$524,847	$503,381	$491,381	$491,381	$491,381	$491,381	$491,381	$491,381	$491,381	$491,381	$491,381
2.a	a. District Administration	$1,568	$1,358	$1,163	$1,754	$3,351	$3,189	$3,252	$3,317	$3,384	$3,451	$3,520	$3,591	$3,663	$3,736	$3,736	$3,736	$3,736	$3,736	$3,736	$3,736	$3,736	$3,736	$3,736
2.a.1	Personnel	$0	$0	$0	$0	$0																		
2.a.2	Office Overhead	$1,568	$1,158	$1,163	$1,245	$3,126	$3,189	$3,252	$3,317	$3,384	$3,451	$3,520	$3,591	$3,663	$3,736	$3,736	$3,736	$3,736	$3,736	$3,736	$3,736	$3,736	$3,736	$3,736
2.a.4	Other	$0	$200	$0	$509	$225																		
2.b	b. Facility Operation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2.b.1	MRF/Recycling Center	$0	$0	$0	$0	$0																		
2.b.2	Compost	$0	$0	$0	$0	$0																		
2.b.3	Transfer	$0	$0	$0	$0	$0																		
2.b.4	Special Waste	$0	$0	$0	$0	$0																		
2.c	c. Landfill Closure/Post-Closure	$0	$0	$0	$0	$0																		
2.d	d. Recycling Collection	$2,168	$2,389	$17,187	$31,885	$36,201	$32,307	$32,954	$33,613	$44,285	$49,971	$55,670	$61,383	$67,111	$37,853	$37,853	$37,853	$37,853	$37,853	$37,853	$37,853	$37,853	$37,853	$37,853
2.d.1	Curbside	$0	$0	$0	$0	$0																		
2.d.2	Drop-off	$0	$0	$17,187	$31,885	$31,674	$32,307	$32,954	$33,613	$34,285	$34,971	$35,670	$36,383	$37,111	$37,853	$37,853	$37,853	$37,853	$37,853	$37,853	$37,853	$37,853	$37,853	$37,853
2.d.3	Combined Curbside/Drop-off	$0	$0	$0	$0	$0																		
2.d.4	Multi-family	$0	$0	$0	$0	$0				$10,000	$15,000	$20,000	$25,000	$30,000										
2.d.5	Business/Institutional	$2,168	$2,389	$0	$0	$0																		
2.d.6	Other	$0	$0	$0	$0	$4,528																		
2.e	e. Special Collections	$129,815	$166,341	$217,007	$184,708	$278,499	$284,069	$289,751	$295,546	$301,457	$307,486	$313,636	$319,908	$326,306	$332,833	$332,833	$332,833	$332,833	$332,833	$332,833	$332,833	$332,833	$332,833	$332,833
2.e.1	Tire Collection	$9,819	$13,568	$17,731	$0	$27,599	$28,151	$28,714	$29,289	$29,874	$30,472	$31,081	$31,703	$32,337	$32,984	$32,984	$32,984	$32,984	$32,984	$32,984	$32,984	$32,984	$32,984	$32,984
2.e.2	HHW Collection	$119,064	$130,836	$160,564	$184,088	$173,560	$177,031	$180,572	$184,183	$187,867	$191,624	$195,457	$199,366	$203,353	$207,420	$207,420	$207,420	$207,420	$207,420	$207,420	$207,420	$207,420	$207,420	$207,420
2.e.3	Electronics Collection	$932	$21,938	$38,713	$620	$77,340	$78,887	$80,465	$82,074	$83,715	$85,390	$87,098	$88,840	$90,616	$92,429	$92,429	$92,429	$92,429	$92,429	$92,429	$92,429	$92,429	$92,429	$92,429
2.e.4	Appliance Collection	$0	$0	$0	$0	$0																		
2.e.5	Other Collection Drives	$0	$0	$0	$0	$0																		
2.f	f. Yard Waste/Other Organics	$0	$0	$0	$0	$0																		
2.g	g. Education/Awareness	$99,203	$47,251	$100,118	$95,942	$95,236	$107,816	$108,911	$110,018	$123,140	$124,275	$125,424	$126,588	$127,766	$128,960	$116,960	$116,960	$116,960	$116,960	$116,960	$116,960	$116,960	$116,960	$116,960
2.g.1	Education Staff	$82,400	$36,143	$82,400	$82,400	$82,400	$83,224	$84,056	$84,897	$85,746	$86,603	$87,469	$88,344	$89,227	$90,120	$90,120	$90,120	$90,120	$90,120	$90,120	$90,120	$90,120	$90,120	$90,120
2.g.2	Advertisement/Promotion	$16,803	$11,108	$17,571	$13,542	$12,836	$13,092	$13,354	$13,621	$13,894	$14,172	$14,455	$14,744	$15,039	$15,340	$15,340	$15,340	$15,340	$15,340	$15,340	$15,340	$15,340	$15,340	$15,340
2.g.3	Pollution Prevention Intern	$0	$0	$0	$0	$0	$0	$0	$0	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000									
2.g.4	BWRC/Contracted Services	$0	$0	$147	$0	$0	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500
2.h	h. Recycling Market Development	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2.h.1	General Market Development Activities	$0	$0	$0	$0	$0																		
2.h.2	ODNR pass-through grant	$0	$0	$0	$0	$0																		
2.i	i. Service Contracts	$0	$0	$0	$0	$0																		
2.j	j. Feasibility Studies	$0	$0	$0	$0	$0																		
2.k	k. Waste Assessments/Audits	$0	$0	$0	$0	$0																		
2.l	l. Dump Cleanup	$0	$46,257	$0	$0	$0																		
2.m	m. Litter Collection/Education	$0	$0	$0	$0	$0																		

2.n	n. Emergency Debris Management	$0	$0	$0	$0	$0																		
2.o	o. Loan Payment	$0	$0	$0	$0	$0																		
2.p	p. Other	$0	$0	$0	$0	$0																		
3	**3. Health Dept. Enforcement**	$51,795	$61,857	$70,915	$62,686	$72,285	$73,731	$75,206	$76,710	$78,244	$79,809	$81,405	$83,033	$84,694	$86,388	$86,388	$86,388	$86,388	$86,388	$86,388	$86,388	$86,388	$86,388	$86,388
	Health Department Name: Lake County	$51,795	$61,857	$70,915	$62,686	$72,285	$73,731	$75,206	$76,710	$78,244	$79,809	$81,405	$83,033	$84,694	$86,388	$86,388	$86,388	$86,388	$86,388	$86,388	$86,388	$86,388	$86,388	$86,388
	Health Department Name:	$0	$0	$0	$0	$0																		
	Health Department Name:	$0	$0	$0	$0	$0																		
	Health Department Name:	$0	$0	$0	$0	$0																		
4	**4. County Assistance**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4.a	a. Maintaining Roads	$0	$0	$0	$0	$0																		
4.b	b. Maintaining Public Facilities	$0	$0	$0	$0	$0																		
4.c	c. Providing Emergency Services	$0	$0	$0	$0	$0																		
4.d	d. Providing Other Public Services	$0	$0	$0	$0	$0																		
5	**5. Well Testing**	$0	$0	$0	$0	$0																		
6	**6. Out-of-State Waste Inspection**	$0	$0	$0	$0	$0																		
7	**7. Open Dump, Litter Law Enforcement**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7.a	a. Heath Departments	$0	$0	$0	$0	$0																		
7.b	b. Local Law Enforcement	$0	$0	$0	$0	$0																		
7.c	c. Other	$0	$0	$0	$0	$0																		
8	**8. Heath Department Training**	$0	$0	$0	$0	$0																		
9	**9. Municipal/Township Assistance**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
9.a	a. Maintaining Roads	$0	$0	$0	$0	$0																		
9.b	b. Maintaining Public Facilities	$0	$0	$0	$0	$0																		
9.c	c. Providing Emergency Services	$0	$0	$0	$0	$0																		
9.d	d. Providing other Public Services	$0	$0	$0	$0	$0																		
10	**10. Compensation to Affected Community (ORC Section 3734.35)**	$0	$0	$0	$0	$0																		
	Total Expenses	$312,558	$341,352	$409,149	$377,464	$486,170	$516,113	$545,073	$544,204	$565,509	$579,992	$609,655	$644,504	$649,540	$604,769	$592,769	$607,769	$627,769	$617,769	$592,769	$592,769	$607,769	$627,769	$617,769

Source: LCSWDM Financial Data

Table O-7 Includes actual expenses from the observation period and the reference year, as well as preliminary expenses from the 2022 budget. Projections for budget years 2023 to 2039 are included. Expenses are projected to increase by 2% per year to account for inflation. Despite the rapid and significant price increases seen in the second half of the observation period due to inflation, the District projects expenses to grow at the pace of historical inflation. Because of this volatility, the District understands there may be rapid changes in costs in the future.

Note the relative flatlining of expenses in 2030. This is a result of holding expenses steady after the 7th year of the plan (2030) as per Ohio EPA.

Explanation of Expenses

1 ***Plan Monitoring/Prep***.

1.a Plan Preparation: Shown in 5-year cycles, with costs spread over three years, as utilized in the previous Plan update. This represents the costs to retain a consultant to assist in the SWMD plan update.

1.b Plan Monitoring: Costs associated with monitoring the implementation of the Plan. Its purpose is to ensure progress towards the goals and priorities.

2 Plan Implementation

2.a District Administration: The District's original Plan called for administration of District programs by the Lake County Department of Utilities. This arrangement has continued and will be in effect during this Plan Update planning period, unless otherwise amended. Specific day-to-day responsibility for the administration of District programs falls upon the District Coordinator

The District Coordinator's duties include a) coordination of the Policy Committee's annual review of plan implementation; b) the preparation of the 5-year plan updates; and c) preparation of the annual reports to Ohio EPA as required. The annual review work involves an analysis of the adequacy of each program and the District's funding sources, as well as a description of program refinements and adjustments. The Plan update work involves inventory updates, program and funding source evaluations, and other analyses as require by Ohio EPA.

2.a.1 Personnel: Cost for personnel, such as payroll and benefits. The County Commissioners assume these costs.

2.a.2 Office Overhead: Assorted costs of running an office, such as supplies and postage.

2.a.3 Other: Those costs not covered by other categories, such as audits and survey costs.

2.b Facility Operation: The District does not operate any facilities, and thus has no costs associated.

2.c Landfill Closure/Post-Closure: The District does not maintain any closed landfill facilities, and thus has no associated costs.

2.d Recycling Collection

2.d.1 *Curbside: The District does not fund any curbside recycled pickup. That burden is assumed by the individual communities. The District previously funded this until 2014.*

2.d.2 *Drop-off: This is the amount of funding dedicated to recycling drop-off locations across the District.*

2.d.3 *Combined Curbside/Drop-off: The District does not support this type of program and thus has no associated costs.*

2.d.4 *Multi-family: The District planned on implementing a five-year multi-family recycling program at selected multi-family developments. Original program called for*

reimbursement of costs for curbside recycling programs to property management. Reimbursement would be capped at six months of programming, up to $5,000 for those developments entering into a 2-year recycling pickup contract with a private hauler. Due to the COVID-19 pandemic, the program did not launch as planned.

Given the continued gap in recycling at multi-family properties, this program is projected to begin in 2025, the first year of implementation for the Plan. The District will evaluate the outcomes of the program at the next Plan update.

2.d.5 *Business/Institutional: While work in this area is planned, it is not expected to result in additional encumbrances.*

2.d.6 *Other: Expenses reported in 2021, but none projected.*

2.e Special Collections

2.e.1 *Tire Collection; This represents the costs for administering the scrap tire collection program. This program is projected to continue throughout the planning period, though as a year-round drop-off, rather than a special collection. Expenses are projected to freeze as a result of significant price rises in the last few years of the observation period.*

2.e.2 *HHW Collection: This represents the costs for administering the HHW collection program and associated twice-annual collection. This program is projected to continue throughout the planning period. Expenses are projected to freeze as a result of significant price rises in the last few years of the observation period.*

2.e.3 *Electronics Collection: This represents the costs for administering the electronics waste collection program. This program is projected to continue throughout the planning period, though as a year-round drop-off, rather than a special collection. Expenses are projected to freeze as a result of significant price rises in the last few years of the observation period.*

2.e.4 *Appliance Collection: This represents the costs for administering the appliance collection program. This program is projected to continue throughout the planning period. Expenses are projected to freeze as a result of significant price rises in the last few years of the observation period.*

2.e.5 *Other Collection Drives: No Expenses projected*

2.f Yard Waste/Other Organics

2.g Education/Awareness

2.g.1 *Education Staff: The District has a contract with The Ohio State University Extension – Lake County to provide educational programs, materials, and services to the SWMD. This contract, in effect since 1990, is expected to continue through the planning period.*

2.g.2 *Advertisement/Promotion: Costs associated with advertising the special collections events, in the form of radio ads, print ads, and printed materials.*

2.g.3 *Pollution Prevention Intern: Costs to be incurred by the District for the program.*

2.g.4 *Other*

2.h Recycling Market Development: There are no expenses associated with this group of items.

2.i Service Contracts: There are no expenses associated with this item.

2.j Feasibility Studies: There are no expenses associated with this item.

2.k Waste Assessments/Audits: There are no expenses associated with this item.

2.l Dump Cleanup: There are no expenses associated with this item.

2.m Litter Collection/Education: There are no expenses associated with this item.

2.n Emergency Debris Management: There are no expenses associated with this item.

2.o Loan Payment: There are no expenses associated with this item.

2.p Other: There are no expenses associated with this item.

3 Health Dept. Enforcement

Health Department Name: Lake County General Health District

4 County Assistance

There are no costs associated with this group of items.

5 Well Testing

There are no expenses associated with this item.

6 Out-of-State Waste Inspection

There are no expenses associated with this item.

7 Open Dump, Litter Law Enforcement

There are no expenses associated with this group of items.

8 Heath Department Training

There are no expenses associated with this item.

9 Municipal/Township Assistance

There are no expenses associated with this group of items.

10 Compensation to Affected Community (ORC Section 3734.35)

Table O-8 Budget Summary

Year	Revenue	Expenses	Annual Surplus/Deficit ($)	Cumulative Balance
2016			**Ending Balance**	$370,662
2017	$476,001	$312,558	$163,443	$534,105
2018	$470,079	$341,352	$128,727	$662,832
2019	$500,815	$409,149	$91,665	$754,498
2020	$513,104	$377,464	$135,639	$890,137
2021	$550,387	***$486,170***	**$64,216**	**$954,353**
2022	$536,202	$516,113	$20,089	$974,443
2023	$538,819	$545,073	-$6,253	$968,189
2024	$541,489	$544,204	-$2,715	$965,474
2025	$544,212	$565,509	-$21,297	$944,177
2026	$546,989	$579,992	-$33,003	$911,174
2027	$549,822	$609,655	-$59,834	$851,341
2028	$552,711	$644,504	-$91,793	$759,548
2029	$555,658	$649,540	-$93,882	$665,666
2030	$558,665	$604,769	-$46,104	$619,562
2031	$558,665	$592,769	-$34,104	$585,458
2032	$558,665	$607,769	-$49,104	$536,353
2033	$558,665	$627,769	-$69,104	$467,249
2034	$558,665	$617,769	-$59,104	$408,145
2035	$558,665	$592,769	-$34,104	$374,040
2036	$558,665	$592,769	-$34,104	$339,936
2037	$558,665	$607,769	-$49,104	$290,832
2038	$558,665	$627,769	-$69,104	$221,727
2039	$558,665	$617,769	-$59,104	$162,623

Table O-8 offers a summary of revenues, expenses, and cumulative balance. If price increases continue as projected, and revenue/funding remains static, the District will face a budget shortfall each year of the planning period. That shortfall will increase each year until 2029.

C. Alternative Budget

The District does not consider funding to be in danger during the planning period and has not prepared any alternative or scenario-based budgets.

Table O-9 Contingent Funding

There is no contingent funding during the planning period.

Contingent Expenses

Table O-10 Contingent Expenses

There are no contingent expenses during the planning period.

Explanation of Contingent Expenses

There were no contingent expenses during the planning period.

Table O-11 Contingent Budget Summary

There is no contingent budget for the planning period.

D. Major Facility Project

There are no facility projects during the planning period.

APPENDIX P DESIGNATION

A. Statement Authorizing/Precluding Designation

The Board of Directors of the Lake County Solid Waste District is hereby authorized to establish facility designations in accordance with Section 343.014 of the Ohio Revised Code after this plan has been approved by the director of the Ohio Environmental Protection Agency.
If necessary, the Board of Directors shall develop procedures for issuing a waiver to allow solid waste to flow to undesignated facilities. The procedures shall be developed in accordance with Section 343.01 (I) (2) of the ORC. The District shall act on a waiver request in accordance with its procedures within 90 days after receipt of the request. The District shall establish steps to evaluate the impact of the issuance of the waiver upon:

- Projections contained in the District's approved (or ordered to be implemented) plan under section 3734.353(A)(6) and (A)(7); and
- Implementation and financing of the District's approved Plan.

Only after evaluating the waiver request and finding that: 1) it is not inconsistent with plan projections, and 2) it will not adversely impact plan implementation and financing, may the District issue a waiver allowing solid waste to be taken to an undesignated facility.

B. Designated Facilities

There are no designated facilities in the Lake County Solid Waste Management District.

APPENDIX Q DISTRICT RULES

A. Existing Rules

The Lake County Solid Waste Management District's Solid Waste Management Plan authorizes the Board of the District to adopt rules applying to:

- Prohibiting or Limiting of Out-of-District Wastes.
- Maintenance, Protection, and Use of Facilities.
- Zoning Exemption.

There are no rules currently in effect in the District.

B. Proposed Rules

Board of the Lake County Solid Waste Management District is hereby authorized to make, publish and enforce rules in accordance with Division (F) of Section 343.01 of the Revised Code and Division (C) of Section 3734.53 of the Revised Code, to the extent any such rules are determined by the Board from time to time to be necessary or desirable to implement any provision or to accomplish any objective of this Solid Waste Management Plan or any amended Plan.
Those rules may include, without limitation and subject to modification or further specification as the Board of County Commissioners in its discretion may deem necessary or desirable, rules that are substantially to the following effect:

1. Prohibiting or Limiting Out-Of-District Wastes.
Solid wastes generated outside the District shall not be received at any solid waste facilities covered by the Solid Waste Management Plan or any amended Plan to the extent that the receipt of those waste would decrease the capacity available for receipt of solid wastes at those facilities to an amount less than the amount required from time to time for the wastes generated within the District or projected to be required from time to time for the wastes generated within the District or brought into the District during any applicable forecast period.

2. Maintenance, Protection and Use of Facilities
Solid waste collection, transfer, disposal, recycling or resource recovery facilities located within the District shall be maintained, protected and used in accordance with such rules as may be adopted from time to time by the Board of Directors in accordance with the Solid Waste Management Plan or any amended Plan. Those rules shall not establish design standards for solid waste transfer, disposal, and recycling and resource recovery facilities and shall be consistent with Sections 3734.01 to 3734.13 of the Revised Code and the rules adopted under those sections.

3. Zoning Exemption
The owner of operator of any solid waste facility or proposed solid waste facility provided for in the Solid Waste Management Plan or any amended Plan shall be exempt from compliance with any amendment to a township zoning resolution adopted under Section 519.12 of the Revised Code or to a county rural zoning resolution adopted under Section 303.12 of the Revised Code that rezoned or redistricted the parcel or parcels upon which the facility is to be constructed or modified and that became effective within two years prior to the filing of an application for a permit required under Division (A)(2)(a) of Section 3734.05 of the Revised Code to open a new or modify an existing solid waste facility.

Consistent with the provisions of the Solid Waste Management Plan or any amended Plan designating the solid waste disposal, transfer, and resource recovery facilities, and recycling activities contained in the Plan where solid wastes generated within the District will be taken for disposal, transfer, resource recovery or recycling, and in order to implement those provisions included in the Plan pursuant to Division (A)(12) of Section 3734.53 of the Revised Code, each person, municipal corporation, township, or other political subdivision shall deliver, or cause the delivery of, any solid wastes generated within the District to the respective solid waste transfer, disposal, recycling, or resource recovery facility or facilities designated in the Solid Waste Management Plan or any amended Plan in accordance with Section 343.01(H)(2) of the Revised Code upon the request of the legislative authority of that municipal corporation or township.

The Prosecuting Attorney of the County where a violation of Division (F)(2) or (3) or (H)(1) or (2) of Section 343.01 of the Revised Code, including any rule made and published in accordance with and pursuant thereto, has occurred, is occurring or may occur, upon the request of the Board Directors, shall take such appropriate action in respect thereof as may be authorized by Sections 343.03 and 343.99 of the Ohio Revised Code, or as otherwise may be authorized and appropriate.

4. Contingent Funding or Financing

The District anticipates that it will adopt any and all rules necessary to implement the contingent funding mechanism or mechanisms chosen by the Board as described in this plan.

APPENDIX R BLANK SURVEY FORMS AND RELATED INFORMATION

In 2022, the District conducted a survey of commercial businesses to obtain information about their waste diversion habits, such as recycling and composting, for the Plan's reference year (2021). These results are included in the Plan update.

Lake County SWMD worked with the consultant, CT Consultants, Inc. to develop and follow a detailed survey methodology. Using this survey methodology, the District sent informational postcards to all commercial business establishments of record within the boundaries of the District through regular U.S. Mail. These postcards contained information on how to access the survey. Businesses were able to either complete the survey online or print a survey and email it back to the SWMD.

Nearly 2,000 postcards were mailed to businesses with this information. The District received roughly 20 responses (~1% response rate), indicating a disconnect between businesses and the District. Response rate for the prior Plan update was 10%. In addition, the response rate for the Plan Update preceding the prior update was 5%, though that survey was sent to about four times the number of businesses compared to this Plan update. In the interim between this Plan update and the next, the District should work to better understand how to interact with the business community in order to obtain more robust and complete results.

The data collected in the survey supplements the data from the 2021 ADR.

Lake County Solid Waste Management District
2039 Blasé Nemeth Road
Painesville, OH 44077

Take the

Lake County
Solid Waste Management District

Commercial Business Recycling Survey

Please respond by June 15, 2023

Prelude Photography
Great Lakes Mall
7850 Mentor Ave, Ste 148
Mentor, OH 44060-5520

Recycling Survey

We need your help!

The Lake County Solid Waste Management District is conducting a business recycling survey as part of its state-mandated Solid Waste Management Plan Update. The survey asks for data on the amounts and types of solid waste that your business recycled in 2021. The information you provide for your company is crucial to measuring Lake County Solid Waste Management District's progress towards achieving Ohio's recycling goals.

Thank you for participating in the survey!

Questions? Contact Tim Gourley at tim.gourley@lakecountyohio.gov or (440) 350-2908.

Go to: www.lakecountyohio.gov/utilities/solid-waste-management-district/ to take the survey:

1. Click on the link to the online survey, OR
2. Download the survey form, complete it and email to Tim.Gourley@lakecountyohio.gov

Please complete survey by June 15, 2023

Dear Commercial Business,

Thank you for completing this survey. The information you provide for your company is crucial to monitoring the Lake County Solid Waste Management District's progress towards achieving Ohio's recycling goals. Your information will be combined with information submitted by other businesses and used to calculate the amount of material commercial businesses recycled in the Lake County Solid Waste Management District and Ohio in **2021**. Your company's survey response **will not** be reported individually; all data will be summarized by the North American Industry Classification System (NAICS) category.

For assistance completing this form or any questions related to the survey, please contact Timothy Gourley, the Lake County Solid Waste Management District's Coordinator, at tim.gourley@lakecountyohio.gov or (440) 350-2908.

Please complete and submit this survey no later than June 15, 2023.

Options for Returning the Completed Survey

- Email directly to Timothy Gourley at tim.gourley@lakecountyohio.gov, Subject Line: 2021 Commercial Survey
- Fax to (440) 350-2666, Attention: Timothy Gourley
- Mail to Timothy Gourley at 105 Main Street, Painesville, Ohio 44077

Thank you again for taking the time to complete this survey. Please contact Timothy Gourley with any questions.

Timothy Gourley, Coordinator
Lake County Solid Waste Management District
Phone: (440) 350-2908
Email: tim.gourley@lakecountyohio.gov

Instructions for Table A:

Please provide all information requested in ***Table A*** below. Even if your business does not currently recycle or is unable to report quantities of materials recycled, please complete ***Table A***. Doing so will allow the Lake County Solid Waste Management District to contact you in the future to discuss your recycling needs.

Table A: Company Information			
Name:	County:	Store I.D.	
Address:	City:		Zip:
Contact Person:	Title:		
Email:	Telephone Number (include area code): ( ) —		
Primary NAICS:	Secondary NAICS:	Number of full-time employees:	
Provide the name(s) of your recycling hauler, processor and/or broker:			
Would you like to be contacted by your local solid waste management district for recycling assistance? ☐Yes ☐No			

Instructions for completing Table B:

Table B provides a list of common materials that are recycled by commercial businesses in Ohio. Please indicate the unit of each quantity of material that is reported (pounds, tons or cubic yards). Provide any comments related to each material as necessary. Please do not report any liquid waste, hazardous waste or construction & demolition debris.

The list in ***Table B*** is not all-inclusive. If your business recycles a material that is not listed in ***Table B***, please enter the name and quantity of that material on a line labeled **"Other."** Some materials may not apply to your operation. Some of the listed materials are broad categories. For example, "Plastics" includes plastics #1-7, plastic films etc. Please refer to the ***"Materials Cheat Sheet"*** attached to this document for examples of materials and definitions.

If you do not currently track this information internally, your solid waste hauler or recycling processor may be able to provide it upon request. The Lake County Solid Waste Management District may also be able to provide you with assistance.

Table B: Quantities of Recycled Materials: Commercial Businesses			
Recyclable Material Category	**Amount Recycled in 2021**	**Units**	**Comments**
Lead-Acid Batteries		☐ lbs.☐ tons ☐ yd^3	
Food		☐ lbs.☐tons ☐ yd^3	
Glass		☐ lbs. ☐tons☐ yd^3	
Ferrous Metals		☐ lbs. ☐tons ☐ yd^3	
Non-Ferrous Metals		☐ lbs. ☐tons ☐ yd^3	
Corrugated Cardboard		☐ lbs. ☐tons ☐ yd^3	
All Other Paper		☐ lbs. ☐tons ☐ yd^3	
Plastics		☐ lbs. ☐tons ☐ yd^3	
Textiles		☐ lbs. ☐tons ☐ yd^3	
Wood		☐ lbs. ☐tons ☐ yd^3	
Rubber		☐ lbs. ☐tons ☐ yd^3	
Commingled Recyclables		☐ lbs. ☐tons ☐ yd^3	
Yard Waste		☐ lbs. ☐tons ☐ yd^3	
Other:		☐ lbs. ☐tons ☐ yd^3	
Other:		☐ lbs. ☐tons ☐ yd^3	
Other:		☐ lbs. ☐tons ☐ yd^3	
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Other:		☐ lbs. ☐tons ☐ yd^3	
Other:		☐ lbs. ☐tons ☐ yd^3	

Table C: Please provide any additional information, comments, suggestions, questions etc.

Materials Cheat Sheet

Food
- Compostable food waste
- Food donations

Glass
- Bottles (any color)
- Jars

Ferrous Metals
- Mild Steel
- Carbon Steel
- Stainless Steel
- Cast Iron
- Wrought Iron

Non-Ferrous Metals
- Aluminum
- Copper
- Brass
- Silver
- Lead
- Misc. Scrap Metals

All Other Paper
- Office paper
- Paperboard
- Newspapers
- Folders
- Telephone Books
- Magazines
- Catalogs
- Junk Mail

Plastics
- Plastics #1-7
- Plastic Bottles
- Plastic Jugs
- Shrink Wrap
- Plastic Films
- Coat Hangers

Textiles
- Fabrics
- Clothes
- Carpet

Wood
- Bark
- Woodchips
- Sawdust
- Scrap Wood
- Shipping Pallets
- Boards

Commingled Recyclables
- This is a mix of several different materials that are placed into one container and hauled for recycling. It can include all or a combination of the materials listed above.

Examples of materials that fall under "Other"

- Appliances
- Household Hazardous Waste
- Used Motor Oil
- Electronics
- Scrap Tires
- Dry Cell Batteries
- Any other solid waste that is recycled at your facility

Estimating recycling tonnages – if you are not able to obtain exact tonnages of materials recycled, there are numerous ways to estimate the amount of material recycled in any given year. Below are some common conversion factors that may assist you with your estimations:

Material Type	Density (lb/cu yd)
Mixed Paper Recycling	484
Bottles and Cans	200
Single Stream Recycling	139
Cardboard	100

- (size of container (in cubic yards) X number of collections per month X 12) X density (see table above) = Total Pounds per Year
- 2,000 pounds = 1 ton

For more assistance, contact your solid waste management district.

APPENDIX S SITING STRATEGY

The siting strategy shall be implemented by the Lake County Department of Utilities and shall be under the general direction of the District Coordinator. The District, if and when the need arises, will establish a Facilities Siting Committee to undertake the site survey and ranking scheme reviews in connection with the siting of facilities.

1. Preliminary Site Survey/Site Review Investigation Process:

The District will develop a site review investigation process or procedure to be followed in the siting of new solid waste management facilities. The process will incorporate the site survey, ranking scheme, and procedure for resolving site impasses through meditation, which make up the District's siting strategy. The siting committee will also develop a schedule for completing the siting process.

The District will also develop the baseline information needed in undertaking the site review investigations. The objective of this work will be to gather and assemble in one place all of the background information on the physical features, land use, ordinances affecting land use, socioeconomic, environmental and other relevant data on the District, as well as the existing Ohio EPA regulations and siting criteria and other requirements related to facilities siting. This information, to be used in the site review and ranking scheme process, will be presented in a suitable technical format such as GIS (geographic information system) plotting. The District has developed a set of preliminary exclusionary siting criteria based mainly on Ohio EPA's siting restrictions.

The siting committee will be responsible for revising the criteria to conform to any new Ohio EPA regulations and may also add additional restrictions for siting solid waste facilities.

2. Public Participation

The Facilities Siting Committee will be established with the objective of having as broad a public representation on the Committee as possible.

After the Site Review Investigation Process has been developed, the District will hold a public information meeting on the process and the site survey and ranking scheme. The Policy Committee and Facilities Siting Committee will seek public input in the review process for the siting of individual facilities. This process will include at least one public information meeting following the ranking of sites for consideration for a particular facility.

3. Ranking Scheme

A preliminary ranking scheme has been devised. The following factors will be considered when reviewing potential sites:

- Access to Site
- Soil Conditions
- Ground Water Wells in the Vicinity
- Availability of Public Utilities
- Site Visibility
- Land Use and Zoning
- Archaeological, Historical, Cultural, and Recreational Significance
- Lake County District Solid Waste Capacity

Each factor will be analyzed quantitatively and depending on the type of facility will receive a certain number of points proposed. Each type of proposed facility will receive different quantitative levels for each factor. For example, a proposed landfill will have a more severe effect on ground water wells than a recycling center or incinerator, and, therefore, the level of points assigned to this factor will reflect this. The Facilities Approval Committee will be responsible for assigning the quantitative levels to each factor. This will be done before any proposed sites are considered.

4. Resolving Site Impasses through Mediation

The Facilities Siting Committee will develop the dispute resolution process to be used, when necessary, in siting solid waste facilities. A mediator will be used in a case where a controversy develops among the parties involved in siting a solid waste facility. Some examples are disputes between the facility operator and neighbors, the District, or the landowners.

APPENDIX T MISCELLANEOUS PLAN DOCUMENTS

District Resolutions

During the process of preparing this plan, the policy committee signs three official documents certifying the plan. These documents are as follows:

1. Certification Statement for the Draft Solid Waste Management Plan. The Policy committee signs this statement to certify that the information presented in the draft solid waste management plan submitted to Ohio EPA is accurate and complies with the Format 4.1.

2. Resolution Adopting the Solid Waste Management Plan (adopted prior to distributing the draft plan for ratification). The policy committee signs this resolution to accomplish two purposes:

- Adopt the draft solid waste management plan
- Certify that the information in the solid waste management plan is accurate and complies with the Format 4.0.

The policy committee signs this resolution after considering comments received during the public hearing/public comment period and prior to submitting the solid waste management plan to political jurisdictions for ratification. The policy committee should not make any changes to the solid waste management plan after signing the resolution.

3. Resolution Certifying Ratification of the Solid Waste Management Plan. The policy committee signs this resolution to certify that the solid waste management plan was ratified properly by the political jurisdictions within the solid waste management district. The policy committee signs this resolution after the solid waste management plan is ratified and before submitting the ratified plan to Ohio EPA)

Other documents in Appendix T include:

- Public notices
- Copies of notices sent to:
  - Adjacent SWMDs;
  - the director of Ohio EPA;
  - the 50 industrial, commercial or institutional facilities that generate the largest quantities of solid waste within the SWMD; and
  - the local trade associations representing the industrial, commercial or institutional facilities generating the largest quantities of solid waste in the SWMD.

APPENDIX U RATIFICATION RESULTS

Table U-1 Ratification Results

Lake County			
Board of County Commissioners	**Approved**	**Rejected**	**Date Resolution Adopted**
Community	**Population**		**Date Resolution Adopted**
	Approved	Rejected	
Cities			
Eastlake City			
Kirtland City			
Mentor City			
Mentor-on-the-Lake City			
Painesville City			
Wickliffe City			
Willoughby City			
Willoughby Hills City			
Willowick City			
Townships			
Concord Township			
Leroy Township			
Madison Township			
Painesville Township			
Perry Township			
Villages			
Fairport Harbor Village			
Grand River Village			
Kirtland Hills Village			
Lakeline Village			
Madison Village			
North Perry Village			
Perry Village			
Timberlake Village			
Waite Hill Village			
Total	0	0	
County Population			
Ratification percentage			#DIV/0!

Appendix V Inventory of Open Dumps and Other Disposal Facilities

A. Existing Open Dumps and Waste Tire Dumps

Table V-1 Existing Solid Waste Open Dumps

Site Location (either address or description of site location)	Materials at Site (solid waste and/or scrap tires)

B. Ash, Foundry Sand, and Slag Disposal Sites

Table V-2 Existing Ash, Foundry Sand, and Slag Disposal Sites

Site Location (Address, description of site location)	Materials at Site (fly ash, bottom ash, foundry sand, and/or slag)

Appendix W District Map