

V. Planning Period Projections & Strategies [ORC Section 3734.53(A)(5)-(6)]

This section of the plan contains population and waste generation projections for each year of the fifteen-year planning period. In addition, this section details the waste reduction strategies which will be used throughout the planning period to meet the Goals established in the *2001 State Solid Waste Management Plan* and projects the amount of waste reduction anticipated for each year of the planning period as a result of these strategies.

A. Planning Period

This Plan is based on a fifteen-year planning period for projections and future strategies. The planning period is January 1, 2017 through December 31, 2028.

B. Population Projections

Ohio law requires the entire population of municipalities and villages located in more than one solid waste district be added only to the district containing the largest portion of the jurisdiction's population. After subtracting the population of the City of Vermilion that resides in Erie County, subtracting the population of the City of Bellevue and adding the population of the Village of Milan that resides in Huron County, the District's population in the reference year 2013 is 71,524.

To project the District's population throughout the planning period, the same rate of change that occurred in 2000-2014 was applied to the planning period years. Using the Ohio County Indicators Report from the Ohio Department of Development, Office of Statistical Research (Appendix H), the average annual percent change of population for the period 1990-2014 was calculated for Erie County, Vermilion (Erie County portion) and Milan (Huron County portion). The results were as follows:

	2000 Population	2014 Population	% Change	Average Annual % Change
Erie County	74,614	75,828	1.6%	0.12%
Vermilion (Lorain County)	4,937	4,663	-5.5%	-0.40%
Milan (Huron County)	420	358	-14.8%	-1.05%
City of Bellevue (Erie County)	1	2	100.0%	7.14%

Applying the average annual percent change to the population of these four entities for each year of the planning period yields the resulting population projections shown in **Table V-1**. These projections indicate that the District's population will increase from 72,607 in 2016 to 74,010 in 2031.

C. Waste Generation Projections

1. Residential/Commercial Sector

Projected residential/commercial waste generation for each year of the planning period is shown in **Table V-2**. Based historical data generated from the "Ohio Solid Waste Flows to Landfills & Incinerators in Ohio – 2013" and applying the same percent change seen in the population change to historical waste figures. Historical data shows that for the

reference year 74,401 tons of residential/commercial waste was generated. The rate of change can be seen in the below chart.

Year	Population	Rate of Change
2016	72,607	0.015141771
2017	72,700	0.001284946
2018	72,794	0.001284605
2019	72,887	0.001284251

The rate of change can be calculated by the following formula:

$$2017: [(2017 \text{ population} - 2016 \text{ population}) / 2016 \text{ population}] = \text{Rate of Change}$$

$$[(72,700 - 72,607) / 72,607] = 0.001284946$$

This same formula was applied to historic waste generation tonnages as seen in the chart below.

Year	Tonnage	Rate of Change
2016	75,528	0.015141771
2017	75,625	0.001284946
2018	75,722	0.001284605
2019	75,819	0.001284251

The District used historical tonnage data from the reference year and applied the rate of change from 2013 population to 2016 population and did the same for the following years as shown in the example below.

$$2017: [(2016 * 2017 \text{ Rate of Change}) + 2016 \text{ Tonnage}] = 2017 \text{ Tonnage}$$

$$[(75,528 \text{ tons} * 0.001284946) + 75,528 \text{ tons}] = 75,625 \text{ tons in 2017}$$

$$97.0489483 \text{ tons} + 75,528 = 75,625 \text{ tons in 2017}$$

Table V-2 shows District residential /commercial waste generation projections and per capita generation rate in pounds per person per day (PPPPD). Residential/commercial waste tonnage projections were divided by 0.0005 to calculate pounds then divided by the population for the given year and divided by 365 days to find PPPPD.

2017 Example:

- Population 72,700
- Total Residential/Commercial Generation 75,625 tons

$$\text{Calculation: } 75,625 \text{ tons} * 0.0005 = 151,249,223 \text{ pounds}$$

$$151,249,223 \text{ pounds} / 72,700 \text{ population} = 2,080 \text{ pounds per person}$$

$$2,080 \text{ pounds per person} / 365 \text{ days in a year} = 5.70 \text{ PPPPD}$$

2. Industrial Sector

Projected industrial waste generation by NAICS for the 15-year planning period is shown in **Table V-3**. For planning purposes, the District projects that industrial waste generation will decrease by 5% per year throughout the planning period. Utilizing the *Breakdown of Waste Stream Type by District for the Erie County Landfill* from 2000-2014 (a monthly OEPA report filled out by the Erie County Landfill) the tonnages in the table below and Table V-3 were compiled.

In the 2010 Plan, the District stated that from 2008-2012 Industrial Generation would decrease and begin to increase in 2013. In 2014, the District's records showed that industrial recycling decreased dramatically and industrial disposal increased slightly. From 2013-2014 the District lost three more industries. Numerous businesses and industries have been bought out and drastically downsized. Many large businesses and industries have or will be making major cuts in the next five years due to the declining economy. These factors could have dramatic effects to the waste generation, and recycling statistics for this planning period and future Annual District Reports sent to Ohio EPA.

Year	Industrial Recycling & Composting	Industrial Disposal	Industrial Generation
2000	261,608	34,722	296,330
2001	270,953	26,931	297,884
2002	252,143	30,165	282,308
2003		107,093	107,093
2004	197,946	115,046	312,992
2005	246,721	109,229	355,950
2006	269,221	110,623	379,844
2007	177,976	20,752	198,728
2008	204,185	19,481	223,666
2009	167,456	13,426	180,882
2010	144,485	12,831	157,317
2011	110,044	11,576	121,619
2012	108,581	11,361	119,942
2013	112,200	10,374	122,574
2014	86,291	11,396	97,686
Total	2,609,809	554,561	2,231,129

The District will be using historical data to estimate the amount of industrial waste generated in 2013. The District used historical data generated from the “Ohio Solid Waste Flows to Landfills & Incinerators in Ohio – 2013”. Using this historical data, the District estimates generation of industrial waste in 2013 as 10,374 tons as seen in **Table IV-9** which will be used throughout the planning period.

3. Exempt Waste Generation

Table V-4 shows the total projected waste generation for each year of the planning period. Residential/commercial and industrial generation are based on the figures developed in Tables V-2 and V-3. Generation of exempt waste is assumed to remain at a constant generation rate of 1.91 pounds per person per day, as it was in the reference year, as shown in Table IV-9. Generation of exempt waste then varies with changes in population as shown below.

Year	Population	Gen Rate	Waste
2017	72,607	1.91	25,309
2018	72,700	1.91	25,342
2019	72,794	1.91	25,374
2020	72,887	1.91	25,407
2021	72,981	1.91	25,439
2022	73,074	1.91	25,472
2023	73,168	1.91	25,505
2024	73,262	1.91	25,537
2025	73,356	1.91	25,570
2026	73,450	1.91	25,603
2027	73,544	1.91	25,636
2028	73,638	1.91	25,668
2029	73,733	1.91	25,701
2030	73,827	1.91	25,734
2031	73,921	1.91	25,767

4. Total Waste Generation

Table V-4 indicates that total waste generation will increase from 111,340 tons in 2017 to 113,159 tons in 2031.

D. Projections for Waste Stream Composition

The SWMD anticipates changes in waste stream composition during the planning period due to contaminated soil tonnages coming from NASA Plum Brook for intermediate daily cover. NASA Plum Brook is scheduled to bring 500 tons of dirt per day for the next two years.

The SWMD also anticipates the Erie County Sanitary Engineer with permission of the Erie County Commissioners to seek out-of-county waste to supplement the loss of waste seen at the Erie County Sanitary Landfill.

The District has also been receiving municipal wastewater dewatered sludge at the Erie County Sanitary Landfill and will continue to do so throughout the planning period. The municipal wastewater dewatered sludge has been coming to the Erie County Sanitary Landfill from out of county wastewater treatment plants.

In the event of a natural disaster or severe storm the SWMD reserves the right to manage and/or coordinate the removal and/or disposal of storm debris as stated in the Erie County Emergency Management Plan (Executive Summary in Appendix L). This may include but not limited to in-kind contribution of man hours by volunteers, approval by the Board of Directors for waived disposal fees, coordinate removal and disposal efforts between Erie County municipalities and disposal or composting facilities.

E. Waste Reduction Strategies through the Planning Period

The SWMD proposes to continue and/or implement the following waste reduction strategies in order to meet the goals established in the *2009 State Plan*. **Table V-5** and **Table V-6** list these strategies and project the amount of waste reduction anticipated as a result of each strategy throughout the fifteen-year planning period.

Residential/Commercial Waste Reduction Strategies

Goal #1 Infrastructure – the SWMD shall ensure that there is adequate infrastructure to give residents and commercial businesses opportunities to recycle solid waste. The District meets Goal #1 by the following eight opportunities:

1. Non-Subscription Curbside Recycling

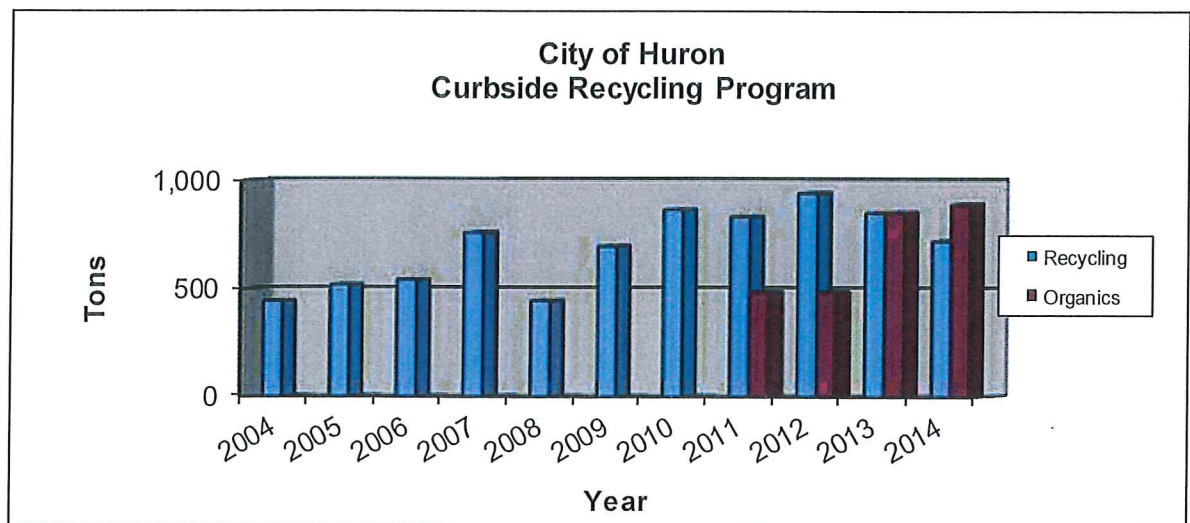
City of Huron curbside recycling program

The City of Huron is expected to continue its curbside recycling program throughout the planning period. Since Huron's non-subscription program is available to all residents, amount of material collected is expected to change relative to population changes. According to the Ohio County Indicators Report from the Ohio Department of Development, Office of Statistical Research,

Huron's population: 7,958 in 2000, 7,149 in 2010, and 7,045 in 2014 or -1% per year. Assuming this same growth factor applies throughout the planning period, the annual growth in materials recovered through curbside recycling in Huron will also decrease by -1% per year and statistics show the program is decreasing more dramatically:

- 942 tons of recyclables collected in 2012
- 850 tons of recyclables collected in 2013, decreased by 10%
- 721 tons of recyclables collected in 2014, decreased by 15%

The District estimates the City of Huron's curbside recycling program at 695 tons annually (approximate average of 2004-2014 tonnages).



In 2006, the Barnes Composting Facility received a special grant (\$10,000) through Ohio Department of Natural Resources, Division of Recycling & Litter Prevention to investigate food waste diversion. The grant was used to hire JF Connolly, an organics diversion expert, to determine the feasibility of composting food waste in Erie County. The results indicated that food waste tonnage was sufficient for a pilot program and also delineated the challenges of diverting that tonnage. Again in 2007, Barnes received an ODNR Special Assistance Grant for \$250,000, to purchase specialized equipment related to composting food scraps. This grant was matched 100% by Barnes.

Both Erie County and out of county businesses participated in the pilot program. These pilots turned into on-going food scrap diversion programs. Since its inception businesses including Sawmill Creek and Resort, Great Wolfe Lodge, Fisher Titus Medical Center, multiple Kroger Grocery Stores, Perkins Pancake House, Max and Irma's Restaurant participate in the program. Collection and transportation are the greatest challenges to overcome.

City of Huron residents that participate in the subscription curbside yard waste program became part of Ohio's first residential curbside food scrap diversion program. Yard Waste customers were informed in February and March of 2009 that April 1st, when yard waste collection started up, that residents could include their food scraps in their yard waste container. Both commercial and residential programs show increasing usage and will be continued throughout the planning period. The District started to receive yard waste and food waste totals in 2011. In 2014, more organics (892 tons) were collected at the curb than recycling (722 tons).

New Strategies for the City of Huron

The District would like to help the City of Huron move forward to a cart system for curbside trash and curbside recycling and to incorporate an incentivized program for recycling. The District will work with the City Manager's Office to discuss the cart system for their next contract. The current waste hauler for the City of Huron is Republic Waste Services, which has the contract to work with Recycle Bank – an incentive program that rewards recycling by weight to customers. The District will discuss how this could increase recycling rates and the possibility of working this in to the next contract.

New Strategies for Non-Subscription Curbside Recycling

Any interested Erie County Community can ask the District for technical assistance regarding request for bidding documents, and contract documents to move forward with Non-Subscription Curbside Recycling.

2. Subscription Curbside Recycling

Erie County residents in the City of Sandusky, Perkins Township, Milan Township, Milan Village, Berlin Township, Village of Berlin Heights, Village of Bay View, Margaretta Township, and the Village of Castalia currently have subscription curbside recycling services available.

Subscription curbside recycling in Erie County collected a total of 617.88 tons was collected during the Reference Year and 1,183.22 tons were collected in 2014 for the above mentioned communities. The increase in subscription curbside recycling was due to the special offer provided by Republic Waste Services that included curbside recycling and trash for \$55 per quarter in both the City of Sandusky and Perkins Township, Erie County's 2 largest communities.

In the previous Plan, the Erie County Solid Waste Management District Policy Committee set the following two goals:

1. Fifty percent of the population in Erie County participating in a curbside recycling program by 2015, five years after the plan is approved.
2. Seventy-five percent of the population in Erie County participating in a curbside recycling program in 2020, ten years after the plan is approved.

The District did not reach the 2015 goal; however, the District did increase curbside recycling opportunities to the residents of Erie County by 28%.

The District is planning to reach the access goal for recycling services to be provided to 90% of the residential population by 2016 by updating the District's Service Provider Agreements (Will be Available in Appendix L) and the Solid Waste Rules to require all trash hauling service providers in Erie County to provide non-subscription curbside recycling. If non-subscription curbside recycling results in unreasonable rates and charges for trash hauling service, as determined in the sole discretion of the District, the District reserves the right to amend the Service Provider Agreements to require subscription curbside recycling instead.

Compliance with the Curbside Recycling Initiative

Under the authority granted by Revised Code section 343.01(G)(2) and the District's Rules, haulers that provide trash service to the residents of Erie County must enter into a Service Provider Agreement with the District. The updated Service Provider Agreement will require that haulers:

- Offer curbside trash hauling service;
- Offer non-subscription curbside recycling services to all residents who obtain curbside trash hauling service;
- Collect curbside trash and curbside recycling in separate containers;
- Provide the District with Quarterly Reports on forms prescribed by the District;
- Comply with any other District Rule set forth in Appendix I, or as later amended by the District.

Non-compliance with the District's Curbside Recycling Initiative may be enforced as a violation of the District's Rules in accordance with Revised Code section 343.99, or as a breach of contract of the Service Provider Agreement.

The residential and commercial generators currently have a 35% recycling rate. The District will assume that for the first year of the new program trash volumes will increase and recycling rates will drop (this has happened every time we have removed a drop-off recycling site). The estimate is that trash will increase by 50%. Throughout the remainder of the planning period the District is anticipating a 20% increase in recycling and then a plateau. The reason the District feels this will plateau at the end of the planning period is that the residents were recycling at a 35% recycling rate. The Erie County Landfill averages around 100,000 tons per year and 35,000 tons is 35% of the annual landfill tonnage. This is a very optimistic statement, but there is not any data yet for comparison. The generation rate for landfill disposal in Chart IV-9 will remain the same as there is more statistical data for that generation rate.

3. SWMD Drop-Off Program

In Table III-5 are the sites that currently exist in the SWMD drop-off program during the reference year. The District will remove four of the five drop-off recycling locations during 2016 with the implementation of curbside recycling. The remaining location will be the Erie County Sanitary Landfill location. Tonnage collected at the Erie County Sanitary Landfill location in 2013 was 148.23 tons and this will be used for the first year of the planning period and a 2% increase will be added for the remainder of the planning period.

4. Community Drop-Off Programs

There are three communities with drop-off recycling locations. The locations and their respective tonnages are:

- City of Sandusky: 269.36 tons total
 - Sandusky East: 139.70 tons
 - Sandusky West: 129.66 tons
- Margaretta Township: 131.04 tons
- Vermilion Township: 100.63 tons

The above tonnages will be used as a total 386.15 tons for the first year of the planning period and a 2% increase will be added for the remainder of the planning period.

5. School Recycling

With the aid of an Ohio Department of Natural Resources ODNR, Division of Recycling and Litter Prevention (DRLP) Community Development Grant the District will establish a school recycling program. The program would provide the eight (8) Erie County School Districts with their own drop-off recycling program, which grants each school with more accessible recycling, offsets the cost of waste removal from each school, and devises a way to keep track of their progress.

Each School District is equipped with:

- An outside recycling container
- Inside recycling containers (96-gallon)
- Hauling services for the outside container
- Environmental Service Club to manage the program beyond the grant funds

The outside recycling containers were not needed by the school recycling program. Funds allocated towards these containers were used to purchase more 96-gallon containers. These containers are stored at Christie Lane Industries, whom provides the pick-up services utilized by the schools involved with the program.

The extra containers can be used by special venue recyclers requiring more than the seven 40-gallon containers located at the District. A \$20 delivery and pick-up charge is required of the user to compensate Christie Lane Industries

transportation costs. In the future this fee may rise and fall due to rise and fall of transportation costs.

In 2013, Schools that participated in the School Recycling Program recycled 25.70 tons. The District plans on using this total for the first year of the planning period and a 2% increase will be added for the remainder of the planning period.

New Strategies for School Recycling

The District will be hiring an Environmental Education Intern and a Community Outreach Specialist. The Environmental Education Intern will be a year-long internship focusing on the target audience: Schools. The Environmental Education Intern will shift hands on activity boxes and Windows on Waste curricula to a technology based approach with SMART Software for SMART Boards for educators to download from the District's webpage. The Environmental Education Intern will annually provide:

- SMART Software updates
- Create virtual fieldtrips
- Update the District's webpage
- Provide environmental education programs to Erie County Schools
- Facilitate a Teacher Workshop
- Incentive based program to increase school recycling

6. Tools

Bin Loan Program for Special Collections

The District allows any municipality, organization, or non-profit up to seven 40 gallon containers for recycling special venues. Anyone wanting to borrow the recycling containers must contact the District a week in advance to pick-up the containers and fill out a user Agreement.

The Agreement states that the user of the recycling containers will bring them back in the condition in which they were received and also provides the District with contact information.

G.R.E.E.N. Bean Litter Clean-Up Trailer

In 2013, the G.R.E.E.N. Bean provided 265 volunteers the necessary tools to pick up 4,220 pounds of litter along Erie County's roadsides, public lands, and waterways.

G.R.E.E.N. Pod Sustainability Trailer

In 2013, the G.R.E.E.N. Pod sustainability trailer attended 5 events demonstrating how to use solar panels, green roofs, and rain barrels in their home.

NEW Sheriff Litter Trailer

In 2016, the District will purchase a litter trailer for the Sheriff's Office to use with inmates that have minor offenses to pick up litter along Erie County's roadsides, public lands, and waterways.

The District will utilize the 4,220 pounds of material collected by the G.R.E.E.N. Bean as the amount that will be collected by the new Sheriff Litter Trailer until a full year of operation provides the tonnage. Estimated tonnage for 2013 will be 4.22 tons and a 2% increase will be added for the remainder of the planning period.

7. Community Grants Program

The District offered local political subdivisions of Erie County a \$1,000 grant to aid with their community's recycling collection. A total of 43 tons was collected from eleven out of the sixteen communities in 2013. Tonnage collected in 2013 was 43 tons and this will be used for the first year of the planning period and a 2% increase will be added for the remainder of the planning period.

The District would like to reserve the right to increase the grant amount when funds allow and to revamp the qualifications for the grants to allow growth of the program. The District will form a committee made up of the local political subdivisions to provide suggestions on improving the grant guidelines, increase/decrease the grant awarded dollar amount, and provide other target materials not currently included in the grant guidelines.

8. Commercial Recycling

Although it is likely that a great deal more commercial recycling occurred than was reported on the District's survey, waste haulers and commercial businesses reported that 18,647.94 tons of commercial waste was recycled in 2013. This amount is in addition to any recycling done by commercial businesses using the District's drop-off program. Since the amount of recycling that commercial businesses will do in response to market conditions, hauler-provided services and District education efforts in future years is unknown, the amount of commercial recycling that occurred in 2013 will be used in the first year of the planning period and a 2% increase will be added for the remainder of the planning period.

The District will be hiring a Community Outreach Specialist in 2016 to act as the liaison between the District and Institution/Commercial Business and Industries. The Community Outreach Specialist will be responsible for providing waste audits, feasibility studies and aiding the Institution/Commercial Business and Industries with:

- Set-Up/Improving Recycling Infrastructure
- Targeting a Specific Material
- Manufacturing with Recycled Products
- Energy Saving Projects
- Feasibility of the District Establishing a Revolving Loan Fund

- Surveys

The District would like to offer a joint workshop with surrounding solid waste districts. The workshop would provide information on current Institution/Commercial Business and Industries recycling opportunities, and the above mentioned new opportunities.

Goal #2 Waste Reduction and Recycling Rates - – the SWMD shall reduce and recycle at least 25% of the solid waste generated by the residential/commercial sector and at least 66% of the solid waste generated by the industrial sector.

In the reference year 2013, the District met the requirements of Goal #2 by: Achieving a 33% reduction and recycling rate for the residential/commercial sector, and 92% of the solid waste generated in the industrial sector. Both targets are projected to be met throughout the planning period.

Section IV.G of this plan shows the following data for 2013.

Residential/Commercial Waste	
Landfill Disposal - GSW	78,151
Landfill Disposal - asbestos	0
Reported Recycling	29,256
Composting	8,661
Yard Waste Land Application	60
Net Incineration	0
Total	116,128

$((\text{Reported Recycling} + \text{Composting}) / \text{Total Generation}) * 100 = \% \text{ of waste reduced or recycled}$

$$((29,256 \text{ tons} + 8,661 \text{ tons}) / 116,128) * 100 = 33\%$$

Industrial Waste Reduction Strategies

The District has met the goal to reduce or recycle at least 66% of industrial waste generation through **reported recycling by industries** as shown below and documented via the District's annual industrial survey.

Section IV.G of this plan shows the following data for 2013.

Industrial Waste	
Landfill disposal - ISW	10,374
Reported Recycling	112,200
Composting	0
Total	122,574

$((\text{Reported Recycling} + \text{Composting}) / \text{Total Generation}) * 100 = \% \text{ of waste reduced or recycled}$

$$(112,200) / 122,574 * 100 = 92\% \text{ industrial waste reduction}$$

For purposes of Table V-6, figures for 2009-2013 recycling and composting are obtained from the SWMD's Annual Reports based on surveys of District industries. The report shows that industrial recycling and composting is decreasing by 11% per year through 2009-2013. The District will use the reference year's 10,374 tons throughout the planning period.

Firelands Regional Medical Center is expected to use incineration for waste disposal throughout the planning period for proper disposal of pharmaceuticals, hazardous, and other biomedical wastes. Disposal takes place out of District and possibly out of state, tonnages are unknown and not possible to calculate.

Goal #3 Outreach and Education: Minimum Required Programs - the SWMD shall provide the following required programs: Web Site, Comprehensive Resource Guide, Inventory of Available Infrastructure and Speaker/Presenter.

The District meets the requirements of Goal #3 through continuation of the following existing strategy described in Section IV.E:

- Website: www.ErieCountyRecycles.org
- Comprehensive Resource Guide: <http://www.eriecounty.oh.gov/departments-and-agencies/environmental-resources/departments-of-environmental-services/recycling/how-what-where-to-recycle/> Also available in print
- Infrastructure Inventory: <http://www.eriecounty.oh.gov/departments-and-agencies/environmental-resources/departments-of-environmental-services/recycling/how-what-where-to-recycle/> Also available in print
- Speaker/Presenter: a speaker/presentation is available by contacting the District

Also please see the Outreach and Marketing Plan in Appendix K of this Plan

New Strategies:

The District will meet the requirements of Goal #3 through implementation of the following new strategies:

Personnel

The District will be hiring an Environmental Education Intern and a Community Outreach Specialist. The Environmental Education Intern will be a year-long internship focusing on the target audience: Schools. The Environmental Education Intern will shift hands on activity boxes and Windows on Waste curricula to a technology based approach

with SMART Software for SMART Boards for educators to download from the District's webpage. The Environmental Education Intern will annually provide:

- SMART Software updates
- Create virtual fieldtrips
- Update the District's webpage
- Provide environmental education programs to Erie County Schools
- Facilitate a Teacher Workshop
- Incentive based program to increase school recycling

The District will be hiring a Community Outreach Specialist in 2016 to act as the liaison between the District and Institution/Commercial Business and Industries. The Community Outreach Specialist will be responsible for providing waste audits, feasibility studies and aiding the Institution/Commercial Business and Industries with:

- Set-Up/Improving Recycling Infrastructure
- Targeting a Specific Material
- Manufacturing with Recycled Products
- Energy Saving Projects
- Feasibility of the District Establishing a Revolving Loan Fund
- Surveys

The District would like to offer a joint workshop with surrounding solid waste districts. The workshop would provide information on current Institution/Commercial Business and Industries recycling opportunities, and the above mentioned new opportunities.

The District is in the process of redesigning the website:

1. Easier navigation/user friendly
2. Virtual Field Trips to the Erie County Sanitary Landfill, Recycling Facility, Barnes Composting Facility, and Huron Basin Wastewater Treatment Plant.
3. SMART Software Curricula Based Programs that are downloadable – 90% of the educators in Erie County use a SMART Board. The District will make available the hands-on-activity boxes created with Windows on Waste curricula in a SMART Software application so the program is interactive with the SMART Board.
4. Industrial Sector page that shows Materials Wanted and Materials that industries are trying to find outlets.

Goal #4 Outreach and Education: Outreach Plan and General Requirements - 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.

In 2014, the District employed an Intern to develop and write the Outreach and Marketing Plan. The Outreach and Marketing Plan can be found in Appendix K of the Plan. The Outreach and Marketing Plan outlines how the District will reach the five target audiences with waste reduction and recycling opportunities in Erie County.

New strategies:

The District will meet the requirements of Goal #4 through implementation of the following new strategies:

The District will be hiring an Environmental Education Intern and a Community Outreach Specialist. The Environmental Education Intern will be a year-long internship focusing on the target audience: Schools. The Environmental Education Intern will shift hands on activity boxes and Windows on Waste curricula to a technology based approach with SMART Software for SMART Boards for educators to download from the District's webpage. The Environmental Education Intern will annually provide:

- SMART Software updates
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The District will be hiring a Community Outreach Specialist in 2016 to act as the liaison between the District and Institution/Commercial Business and Industries. The Community Outreach Specialist will be responsible for providing waste audits, feasibility studies and aiding the Institution/Commercial Business and Industries with:

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- Surveys

The District would like to offer a joint workshop with surrounding solid waste districts. The workshop would provide information on current Institution/Commercial Business and Industries recycling opportunities, and the above mentioned new opportunities.

Goal #5 Restricted Solid Wastes, Household Hazardous Waste (HHW) and Electronics -

The SWMD shall provide strategies for managing scrap tires, yard waste, lead-acid batteries, household hazardous waste, and obsolete/end-of-life electronic devices.

The District will meet the requirements of Goal #5 through continuation of the following scrap tire management activities described in Section IV.E:

Tires

Recovery of scrap tires by the private sector (i.e. tire dealers) is unknown. However, tire collection events conducted by political subdivisions through the District's Community Cleanup grant program since 1999. The District's tire management strategy will include maintaining a list of legal scrap tire recycling and disposal opportunities, and the continuation of the tire recycling program at the Erie County Sanitary Landfill.

The tire recycling program at the Erie County Sanitary Landfill was made possible through an Ohio Department of Natural Resources Grant. The grant provided the additional container at the Landfill. Residents pay \$2 a tire or \$0.10 a pound. The program is now self sufficient with revenues and expenses nearly balancing.

To estimate annual scrap tire recycling the average 32.37 will be used as in Table V-5 as the reference year and 2% increases will be projected throughout the planning period.

Yard Waste

Yard waste recovery figures vary widely from year to year depending on weather, economic conditions and the accuracy of reporting. Since these variables cannot be predicted, the SWMD will use averages from the Annual District Reports from 2009 to 2013 residential/commercial yard waste figures and compare the Barnes Regional Compost Facility reports and land application averaged numbers reported by cities, villages and townships from 2009 to 2013 throughout the planning period in Table V-5.

In 2013, 8,661 tons of compost was reported this will be used throughout the planning period

Land Application of Yard Waste

There is no data that this occurred for the reference year and will not be projected through the planning period.

Lead Acid Batteries

Lead acid batteries and yard waste are banned from disposal at the Erie County landfill, and all landfills in Ohio. Recycling opportunities are readily available at area scrap yards, automotive service businesses and the Erie County landfill for lead-acid batteries, and at the publicly-available Barnes Regional Composting Facility for yard waste. The District's cities, villages and some townships provide pickup of leaves and brush for their residents, then chip and/or land apply the material.

Lead acid battery generation has remained fairly constant at 1% of residential/commercial waste generation for several years according to the US EPA

report: Municipal Solid Waste in the United States: 2013 Facts & Figures” (see Appendix H). Therefore, generation throughout the planning period will be assumed to remain fairly constant also. However, since the District did not receive any information from either of the scrap yards operating within Erie County the District does not have accurate information to calculate through the planning period.

Household Hazardous Waste

The District previously held one day collections for Household Hazardous Waste. In 2012, the District revamped the program to hold five once a month collections per year from June-October last Saturday of each month. This was due to the overwhelming participation in 2011 when 700 cars with 99,000 pounds of material showed up in two hours and the District had to turn residents away. Since the new system has been in place; the attendance, materials, and cars are steady. In 2013, the District held five Household Hazardous Waste HHW Collections in 2013. The collection materials totaled 14.55 tons with 216 cars in attendance costing the District \$11,630.70.

The District will use 14.55 tons throughout the planning period. The purpose for these collections is to minimize the amount and the District statistics are showing that we are starting to plateau for this material.

Electronics

In 2013, the District partnered with the Volunteer Center of Erie County to collect 18.98 tons of electronics. The Volunteer Center of Erie County is no longer collecting electronic waste. The District will promote Goodwill Industries, Staples, and Best Buy’s programs for electronic waste. Therefore, the District will not include any electronic waste collection in current projections.

Batteries

In 1997, the District established a Household Battery Recycling program in partnership with six stores in Erie County. The stores accept household batteries of all types from the public in buckets provided by the District. The stores ship the batteries to Battery Solutions in Wayne, MI for processing. The District reimburses the stores for shipping costs, and pays Battery Solutions for the cost of recycling the batteries. In 2007, 2.46 tons of batteries were recycled through this program. In 2009, the District revamped the program to pay a contractor to pick up 12 sites throughout Erie County on a regular basis. This freed up staff time for the District and was less expensive than shipping the batteries.

All Restricted Solid Wastes

The District will continue to maintain a list of legal recycling opportunities for restricted wastes and publish in the recycling guide and Web site information on the proper management of these restricted wastes.

Goal #6 Economic Incentives- the SWMD shall explore how to incorporate economic incentives into source reduction and recycling programs.

The District currently meets the requirements of Goal #6 through:

1. Emphasize the importance of non-subscription curbside recycling programs.
2. Promote pay-as-you-throw programs.
3. Advocate programs such as Recycle Bank to local political subdivisions looking to start curbside recycling.
4. Utilizing curbside recycling programs that use carts (or similar containers used for automation).

New Strategies:

The District will meet the requirement of Goal #6 through implementation of the following new strategies:

1. Create an incentive program that fosters competition for haulers servicing Erie County.
2. Establish a report card that showcases recycling rates by community. The purpose is to foster competition between communities and increase recycling rates.
3. In partnership with Erie County Regional Planning establish a Revolving Loan Fund for Commercial Businesses/Institutions/Industries to create a recycling program at their facility and/or address a specific material. The District will talk to several SWMD that currently have this available to model the program.
4. Utilizing Survey Monkey for all surveys to make the process easier and more likely for anyone to fill out.
5. Set-up at least one incentive based program specific to each of the five target audiences.

Goal #7 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.

New Strategies:

The District will meet the requirement of Goal #7 through utilizing the U.S. EPA's Waste Reduction Model WARM with District data. The information generated by WARM will be used in Annual District Reports and may be used for the report card the District would like to implement as previously stated in Goal #6.

Goal #8 Market Development (Optional) – the SWMD has the option of providing programs to develop markets for recyclable materials and the use of recycled-content materials.

1. In partnership with Erie County Regional Planning establish a Revolving Loan Fund for Commercial Businesses/Institutions/Industries to create a recycling

- program at their facility and/or address a specific material. The District will talk to several SWMD that currently have this available to model the program.
2. Promote Ohio Environmental Protection Agency's Market Development Grant to commercial businesses, industries, and institutions.
 3. Re-vamp the Community Grant Program to include all five target audiences with more detailed grant guidelines and increased dollar amount.

Goal #9 Reporting – the SWMD shall report annually to Ohio EPA regarding implementation of the SWMD's solid waste management plan.

1. The District submits an Annual District Report to Ohio EPA, which describes the status of programs and activities in the implementation schedule of the Plan.

Table V-1. District Population Projections

Year	County Population	Adjustments to Population			Total District Population
	Erie	(Vermilion)	Milan	Bellevue	
2016	76,910	4,657	357	3	72,607
2017	77,002	4,656	357	3	72,700
2018	77,095	4,654	357	3	72,794
2019	77,187	4,653	356	4	72,887
2020	77,280	4,651	356	4	72,981
2021	77,373	4,650	356	4	73,074
2022	77,465	4,649	356	5	73,168
2023	77,558	4,647	356	5	73,262
2024	77,651	4,646	356	5	73,356
2025	77,745	4,644	355	6	73,450
2026	77,838	4,643	355	6	73,544
2027	77,931	4,642	355	6	73,638
2028	78,025	4,640	355	7	73,733
2029	78,118	4,639	355	7	73,827
2030	78,212	4,637	355	8	73,921
2031	78,306	4,643	355	8	74,010

Sample Calculation:

Erie County	2017 population = $76,910 \times 1.0012 = 72,607$
Vermilion	2017 population = $4,657 / 1.0003 = 4,656$
Milan	2017 population = $357 / 1.0005 = 357$
Bellevue	2017 population = $3 \times 1.0714 = 3$
Total	2017 population = $77,002 - 4,656 + 357 - 3 = 72,700$

Assumptions: The average annual percent change from 2000 - 2014 is applicable to the years 2016 - 2031.

Source of Information: Ohio County Indicators Report, Ohio Department of Development, Office of Statistical Research

Table V-2. District Residential/Commercial Waste Generation Projections

Year	District Population	Per Capita Generation Rate in PPPPD	Total Residential/Commercial Generation (TPY)
2016	72,607	5.70	75,528
2017	72,700	5.70	75,625
2018	72,794	5.70	75,722
2019	72,887	5.70	75,819
2020	72,981	5.70	75,916
2021	73,074	5.70	76,014
2022	73,168	5.70	76,111
2023	73,262	5.70	76,209
2024	73,356	5.70	76,307
2025	73,450	5.70	76,404
2026	73,544	5.70	76,502
2027	73,638	5.70	76,600
2028	73,733	5.70	76,698
2029	73,827	5.70	76,797
2030	73,921	5.70	76,895
2031	74,010	5.70	76,987

Sample Calculation: 2016

The same rate of change that was seen in population was added to the Residential Commercial Generation tons per year.

PPPD: Total Residential/Commercial Generation (75,528) / 0.0005 = pounds (151,056,000 pounds)

Pounds (151,056,000) / Population (72,607) = 2,080 pounds per person

Pounds Per Person (2,080) / 365 days in a year = 5.70 pounds per person per day

Assumptions:

The District is using the historical residential/commercial generation rate of 5.99 per person per day for the reference year 2013. The District then followed the national average trends as determined by Ohio EPA for varying this rate during the planning period. Numbers may not be exact due to rounding.

Source of Information:

Population: See Table V-1

Reference year generation rate: See Table IV-9

Generation rates were taken from "Municipal Solid Waste in the United States: 2013 Facts and Figures". The average PPPPD was taken from 2000 to 2013 and the percentage was applied to the national residential/commercial waste generation for each year of the planning period, then to the District PPPPD and applied.

Table V-3 Projected Industrial Waste Generation

NAICS	Year																		
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
20	232	220	209	199	189	179	170	162	154	146	139	132	125	119	113	107	102	97	92
21	176	167	159	151	143	136	129	123	117	111	105	100	95	90	86	82	77	74	70
23	9,790	9,301	8,835	8,394	7,974	7,575	7,197	6,837	6,495	6,170	5,862	5,569	5,290	5,026	4,774	4,536	4,309	4,093	3,889
31	2,656	2,523	2,397	2,277	2,163	2,055	1,952	1,855	1,762	1,674	1,590	1,511	1,435	1,363	1,295	1,230	1,169	1,110	1,055
32	205,399	195,129	185,372	176,104	167,299	158,934	150,987	143,438	136,266	129,453	122,980	116,831	110,989	105,440	100,168	95,159	90,402	85,881	81,587
33	45,378	43,109	40,953	38,906	36,960	35,112	33,357	31,689	30,104	28,599	27,169	25,811	24,520	23,294	22,129	21,023	19,972	18,973	18,025
42	2,130	2,024	1,923	1,827	1,735	1,648	1,566	1,488	1,413	1,343	1,276	1,212	1,151	1,094	1,039	987	938	891	846
44	6,160	5,852	5,560	5,282	5,018	4,767	4,528	4,302	4,087	3,882	3,688	3,504	3,329	3,162	3,004	2,854	2,711	2,576	2,447
45	92	88	83	79	75	71	68	65	61	58	55	53	50	47	45	43	41	39	37
54	1,097	1,042	990	941	894	849	807	766	728	691	657	624	593	563	535	508	483	459	436
71	3,564	3,386	3,217	3,056	2,903	2,758	2,620	2,489	2,365	2,246	2,134	2,027	1,926	1,830	1,738	1,651	1,569	1,490	1,416
81	9	8	8	8	7	7	7	6	6	6	5	5	5	5	4	4	4	4	4
92	1,258	1,195	1,136	1,079	1,025	974	925	879	835	793	753	716	680	646	614	583	554	526	500
99	11,757	11,169	10,611	10,080	9,576	9,097	8,642	8,210	7,800	7,410	7,039	6,687	6,353	6,035	5,734	5,447	5,175	4,916	4,670
Total TPY	122,574	116,445	110,623	105,092	99,837	94,845	90,103	85,598	81,318	77,252	73,390	69,720	66,234	62,922	59,776	56,787	53,948	51,251	48,688
Adjusted	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374	10,374

Assumptions:

2013 Actual tonnages will be used for the Planning Period

Source of information:

2013 Total Industrial Waste Generation: Table IV-9

2013 Waste Generation by NAICS code: Table IV-3

Erie County Sanitary Landfill Historical Data

Ohio EPA "Ohio Solid Waste Flows to Landfills & Incinerators in Ohio – 2013"

Table V-4
Total Waste Generation for the District During the Planning Period in TPY

Year	Res/Comm	Industrial	Exempt	Total	Population	PPPPD
2016	75,528	10,374	25,309	111,211	72,607	8.39
2017	75,625	10,374	25,342	111,340	72,700	8.39
2018	75,722	10,374	25,374	111,470	72,794	8.39
2019	75,819	10,374	25,407	111,600	72,887	8.39
2020	75,916	10,374	25,439	111,730	72,981	8.39
2021	76,014	10,374	25,472	111,860	73,074	8.39
2022	76,111	10,374	25,505	111,990	73,168	8.39
2023	76,209	10,374	25,537	112,120	73,262	8.39
2024	76,307	10,374	25,570	112,251	73,356	8.38
2025	76,404	10,374	25,603	112,381	73,450	8.38
2026	76,502	10,374	25,636	112,512	73,544	8.38
2027	76,600	10,374	25,668	112,643	73,638	8.38
2028	76,698	10,374	25,701	112,774	73,733	8.38
2029	76,797	10,374	25,734	112,905	73,827	8.38
2030	76,895	10,374	25,767	113,036	73,921	8.38
2031	76,987	10,374	25,798	113,159	74,010	8.38

Sample Calculation:

2016 Residential/Commercial + 2016 Industrial + 2016 Exempt = 2016 Total Waste Generation in TPY
 $75,528 + 10,374 + 25,309 = 111,211$ TPY

$((\text{Total Waste Generation}) / (\text{Population from Table V-1})) / 365 \text{ days per year} * 2000 \text{ lbs. per ton} = \text{Generation Rate in PPPPD}$
 $(111,211 / 72,607) / 365 * 2000 = 8.39$ PPPPD

Assumptions:

Exempt waste is assumed to remain at a constant generation rate of 1.91 PPPPD throughout the planning period.

Sources of Information:

Residential/Commercial Generation: Table V-2
 Industrial Generation: Table V-3
 Exempt Generation Rate: Table IV-9
 Population: Table V-1

Table V-5 Residential/Commercial Waste Reduction Strategies

Goal #1																				
Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
City of Huron Curbside	850.43	841.93	833.51	825.17	816.92	808.75	800.66	792.66	784.73	776.88	769.11	761.42	753.81	746.27	738.81	731.42	724.11	716.86	709.70	
Erie County Subscription Curbside	617.88	926.82	1,112.18	1,334.62	1,601.54	1,921.85	2,306.22	2,767.47	3,320.96	3,985.16	4,782.19	5,738.63	6,886.35	8,263.62	9,916.34	11,899.61	14,279.64	17,135.44	20,562.53	
SWMD Drop-Off Recycling	529.75	540.35	551.15	562.17	573.42	584.89	596.58	608.52	620.69	633.10	645.76	658.68	671.85	685.29	698.99	712.97	727.23	741.78	756.61	
Community Drop-Off Recycling	386.15	393.87	401.75	409.79	417.98	426.34	434.87	443.56	452.44	461.48	470.71	480.13	489.73	499.53	509.52	519.71	530.10	540.70	551.52	
School Recycling	25.70	26.21	26.74	27.27	27.82	28.37	28.94	29.52	30.11	30.71	31.33	31.95	32.59	33.25	33.91	34.59	35.28	35.99	36.71	
Community Grants	43.00	43.86	44.74	45.63	46.54	47.48	48.42	49.39	50.38	51.39	52.42	53.47	54.53	55.63	56.74	57.87	59.03	60.21	61.41	
Commercial Recycling	18,647.94	19,020.90	19,401.32	19,789.34	20,185.13	20,588.93	21,000.61	21,420.62	21,849.03	22,286.01	22,731.73	23,186.37	23,650.10	24,123.10	24,605.56	25,097.67	25,599.63	26,111.62	26,633.85	
Subtotal	21,100.05	21,793.94	22,371.39	22,994.00	23,669.36	24,406.51	25,216.32	26,111.74	27,108.34	28,224.74	29,483.26	30,910.64	32,538.97	34,406.67	36,559.87	39,053.85	41,954.91	45,342.60	49,312.33	
Goal #5																				
Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
Tires	22.22	22.66	23.12	23.58	24.05	24.53	25.02	25.52	26.03	26.55	27.09	27.63	28.18	28.74	29.32	29.91	30.50	31.11	31.74	
Electronics	18.98																			
Composting	8,660.70	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	6,406.00	
HHW	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	
Batteries	3.78	3.86	3.93	4.01	4.09	4.17	4.26	4.34	4.43	4.52	4.61	4.70	4.79	4.89	4.99	5.09	5.19	5.29	5.40	
Subtotal	8,720.23	6,447.07	6,447.60	6,448.14	6,448.69	6,449.26	6,449.83	6,450.42	6,451.01	6,451.62	6,452.24	6,452.88	6,453.52	6,454.18	6,454.86	6,455.54	6,456.24	6,456.96	6,457.68	
Totals	29,255.82	28,241.01	28,818.99	29,442.14	30,118.05	30,855.77	31,666.15	32,562.16	33,559.36	34,676.36	35,935.50	37,363.52	38,992.49	40,860.86	43,014.73	45,509.39	48,411.15	51,799.56	55,770.01	

Assumptions:

1. The City of Huron Curbside recycling program will decrease at a rate of 1% to match population projections
2. Erie County Subscription Curbside will be available as Non-Subscription County-Wide and the District assumes a 50% increase the first year and 20% increases thereafter.
3. SWMD Drop-Off Recycling locations will go from 5 to 1 in 2016 and the District used the total tons collected at the Landfill site for the reference year and is projecting 2% increases thereafter.
4. Community Drop-Off Recycling the District is using the total tons collected in the reference year and 2% increases thereafter.
5. School Recycling the District is using the total tons collected in the reference year and 2% increases thereafter.
6. Community Grants the District is using the total tons collected in the reference year and 2% increases thereafter.
7. Special material collections the District is using the total tons collected in the reference year and 2% increases thereafter.
8. Reported commercial recycling will be used for the reference year and 2% increases thereafter.
9. Scrap tire recycling the District is using the total tons collected in the reference year and 2% increases thereafter.
10. Yard waste figures from Barnes Regional Compost Facility's report for 2013 are 6,406 tons and will remain the same for the planning period.
11. Household batteries collection was at 14.55 tons in 2013 and will remain throughout the planning period.
12. Batteries Household batteries collection the District is using the total tons collected in the reference year and 2% increases thereafter

Sources of Information:

Annual District Reports 2000-2014
 Population Projections by Ohio Department of Development & U.S. Census
 Other SWMD citing 50% increases with implementation of curbside recycling programs

Table V-6 Industrial Waste Reduction Strategies

Goal #2		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Industries Recycling/Composting		122,574.00	116,445.30	110,623.04	105,091.88	99,837.29	94,845.42	90,103.15	85,598.00	81,318.10	77,252.19	73,389.58	69,720.10	66,234.10	62,922.39	59,776.27	56,787.46	53,948.09	51,250.68	48,688.15

Assumptions:

Industrial combined recycling and composting were used for the reference year and an estimated decrease of 5% from 2013-2031 for the remainder of the Planning Period.

Sources of Information:

Annual District Reports 2000-2014
Surveys 2000-2014