

### **III. Waste Generation**

#### **Purpose**

This section of the solid waste management plan provides a summary of the SWMD's historical and projected solid waste generation. The SWMD's policy committee must understand the waste the SWMD will generate before the policy committee can make decisions regarding how to manage the waste. To create that understanding, the policy committee analyzed the amounts and types of waste that were generated within the SWMD's jurisdiction in the past and those that will be generated in the future.

The SWMD's policy committee calculated solid waste generation for two types, or sectors, of generators – the residential/commercial sector and the industrial sector. 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.

The policy committee calculated how much waste each sector generated by adding together the quantities of solid waste disposed of in landfills and the quantities of materials reduced/recycled. The policy committee then added the quantities generated by both sectors to arrive at total waste generated within the SWMD.

The SWMD's policy committee obtained baseline waste 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 baseline disposal data from Ohio EPA. Owners/operators of solid waste facilities are required to 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 during the report year. Ohio EPA adjusts the reported disposal data by adding in waste disposed in out-of-state landfills.

The policy committee analyzed the baseline year data and historic generation data to project future waste generation. The details of this analysis are presented in Appendix F. 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.

The SWMD's comprehensive waste management strategies are presented in Chapter IV and Appendix H.

**A. Solid Waste Generated in Reference Year**

**Instructions** (Remove this text box for the solid waste management plan)

Complete Table III-1 as follows:

- Enter the quantity of residential/commercial waste generated from Table XX in Appendix F.
- Enter the quantity of industrial waste generated from Table XX in Appendix F.
- If required to account for excluded waste because it comprised 10 or more percent of total generation, enter the quantity of excluded waste generated from Table XX in Appendix F. If excluded waste comprised less than 10 percent, then enter “N/A” in the cell for “Generation Quantity”
- Enter the per capita residential/commercial rate. Calculate this rate using the reference year, adjusted population from Table XX in Appendix B and the following formula:

$$\text{Tons of residential/commercial waste generated} \times 2000 \div 365 \div \text{population.}$$

- Enter the per employee industrial generation rate. Calculate this rate using the reference year employment from Table XX in Appendix XX and the following formula:

$$\text{Tons of industrial waste generated} \times 2000 \div 365 \div \text{number of employees.}$$

- Enter the per capita excluded waste generation rate. Calculate this rate using the reference year population from Table XX in Appendix B and the following formula:

$$\text{Tons of excluded waste generated} \times 2000 \div 365 \div \text{population.}$$

- Calculate the total generation rates and generation quantity and enter those quantities in the total row.

**Table III-1 – Solid Waste Generated in the Reference Year**

Type of Waste	Generation Rate		Generation Quantity
	per person (lbs/day)	per employee (lbs/day)	tons (year)
Residential/Commercial			
Industrial			
Excluded			
<b>Total</b>			

1. *Residential/Commercial Waste Generated in Reference Year*

**Instructions** (Remove this text box for the solid waste management plan)

In the space indicated by “[insert text, figures, and charts here to describe the reference year residential/commercial waste generated]”, provide a general overview of the amount and nature of residential/commercial waste generated in the District in the reference year. Using figures and charts helps to break up the text and provides visual interest. Label all figures and charts, refer to them in the text, and explain what they illustrate.

Information to provide for the residential/commercial sector could include:

- How residential/commercial waste was managed (refer to the information in Table III-1).
- Waste characteristics that are unique to the SWMD.
- Major generators that affect waste generation. Examples include a large university or a distribution center for a large retailer, a large seasonal food and hospitality industry, or a large non-traditional population.
- A comparison of the SWMD’s residential/commercial generation rate to Ohio’s average generation rate and/or the national generation rate and an explanation for significant differences.
- A comparison of the SWMD’s residential/commercial generation rate to the rates of SWMDs located in the region, with commensurate populations, or with similar population distribution or population characteristics.

[insert text, figures, and charts here to describe the reference year residential/commercial waste generated]

2. *Industrial Waste Generated in Reference Year*

**Instructions** (Remove this text box for the solid waste management plan)

In the space indicated by “[insert text, figures, and charts here to describe the reference year industrial waste generated]”, provide a general overview of the amount and nature of industrial waste generated in the District in the reference year. Using figures and charts helps to break up the text and provides visual interest. Label all figures and charts, refer to them in the text, and explain what they illustrate.

Information to provide for the industrial sector could include:

- The amount of industrial solid waste generated (refer to the information in Table III-1).
- How the industrial waste was managed in the reference year.
- Characterization of major types of industries/products manufactured.
- Waste characteristics that are unique to the District.
- Specific industrial generators that significantly affect generation, such as a large paper manufacturing industry or a coal-burning power utility.
- Distribution of industry throughout the SWMD, particularly for a multi-county SWMD (are there more industrial facilities in one county than in the others; are the largest industrial facilities in one county or one community; was more of the industrial waste generated in

one county than in the others?).

- Discuss how survey responses impacted total industrial generation.

[insert text, figures, and charts here to describe the reference year industrial waste generated]

### 3. *Excluded Waste Generated in Reference Year*

**Instructions** (Remove this text box for the solid waste management plan)

If excluded waste comprises 10 percent or more of the SWMD’s total waste generated in the reference year, then, in the space indicated by “[insert text, figures, and charts here to describe the reference year excluded waste generated]” provide a general overview of the amount and nature of excluded waste generated in the District in the reference year. Using figures and charts helps to break up the text and provides visual interest. Label all figures and charts, refer to them in the text, and explain what they illustrate.

Information to provide about excluded waste could include:

- The amount of excluded waste generated (refer to the information in Table III-1).
- How the excluded waste was managed in the reference year.
- Characterization of major types of excluded wastes generated
- Waste characteristics that are unique to the District.
- Specific generators that significantly affect generation, such as a coal-burning power utility, or a landfill that takes large quantities of construction and demolition debris.

[insert text, ,figures, and charts here to describe the reference year excluded waste generated]

## B. **Historical Waste Generated**

**Instructions for Historical Waste Generated** (remove this text box for the solid waste management plan)

Use data and information from Table XX in Appendix F to complete this section.

In this section, summarize the SWMD’s waste generation over the four years prior to the reference year. Provide separate summaries for the residential/commercial sector, the industrial sector, and excluded waste (if required). In particular, explain any past trends in waste generation that will help develop waste generation projections. Providing graphs or summary tables may help illustrate any trends. Label all graphs or tables, refer to them in the text, and explain what they illustrate.

### 1. Residential/Commercial Waste

In the space indicated by “[insert text, graphs, or summary tables here to describe historical residential/commercial waste generated]”. Information to address includes:

- Whether the quantities of residential/commercial waste generated and the per capita generation rate increased, decreased, or fluctuated inconsistently and the reasons for or factors that influenced the changes.
- Whether the quantities and per capita generation rate increased faster, in-line with, or

slower than the state's averages.

- If there was a year that was an outlier in the data or if a trend changed, then explain causes for the outlier or the change. Examples could include: a natural disaster or major storm event; a major survey that was returned in one year that had not been returned in prior years; a new, large commercial entity began generating waste during the year; etc.

## 2. Industrial Waste

In the space indicated by “[insert text, graphs, and summary tables here to describe historical industrial waste generated]”, provide a summary of industrial waste generated. Information to address includes:

- Whether the quantities of industrial waste generated and the per employee generation rate increased, decreased, or fluctuated and the reasons for or factors that influenced the changes.
- If there was an anomaly in the amount of waste generated in a particular year or something that changed a trend, then explain the cause of the anomaly or the change. Examples could include: a major new industrial generator began operating or closed; an existing industrial facility completed a major addition, hired additional employees/reduced employees, increased/decreased output; a large industrial generator returned a survey in one year but not in others, etc.

## 3. Excluded Waste

If required to account for excluded waste because it made up 10 or more percent of total waste generated in the reference year, then In the space indicated by “[insert text, graphs, and summary tables here to explain the historical excluded waste generated]”, provide a summary of the excluded waste generated. Information to address includes:

- Whether the quantities of excluded waste generated and the per capita generation rate increased, decreased, or fluctuated inconsistently and the reasons for or factors that influenced the changes .
- Any changes in the specific types of excluded waste generated.
- If there was an anomaly in the amount of waste generated in a particular year or something that changed a trend, then explain the cause of the anomaly or the change. Examples could include: a major construction/demolition project; change in output by an electric utility (for excluded ash); change in output by a foundry (for slag or foundry sand).

### 1. *Historical Residential/Commercial Waste Generated*

[insert text, graphs, and summary tables here to describe the historical residential/commercial waste generated]

### 2. *Historical Industrial Waste Generated*

[insert text, graphs, and summary tables here to describe the historical industrial waste generated]

3. *Historical Excluded Waste Generated*

[insert text, graphs, and summary tables here to describe the historical excluded waste generated]

**C. Waste Generation Projections**

**Instructions for completing Table III.5 and supporting text** (remove this text box for the solid waste management plan)

Use data from Table XX in Appendix F to complete Table III-2.

For solid waste management plans that cover 15 years, provide data for years 1, 5, 10 and 15 of the planning period. For solid waste management plans that cover 10 years, provide data for the reference year and years 1, 5, and 10 of the planning period. Illustrating the data with a graph may also be helpful.

In the spaces indicated after Table III-2, for all three types of waste – residential/commercial, industrial, and excluded – provide short descriptions of the following:

- The policy committee’s methodology for projecting waste generation
- Any assumptions the policy committed used to project waste generation
- A description of the overall trend projected for the planning period.
- Any special factors that the policy committee considered when developing projections (i.e. knowledge of a new, large commercial business or industrial generator that will begin business during the planning period.

For Excluded Waste, if the SWMD is not required to project excluded waste because it comprised less than 10 percent of total waste generated in the reference year, then enter “N/A” in the columns for “Rate” and “Waste” for the first year.

**Table III-2 – Waste Generation Projections**

Year	Residential Commercial Waste		Industrial Waste		Excluded Waste		Total Waste	
	Rate (ppd)	Waste (tons)	Rate (ped)	Waste (tons)	Rate (ppd)	Waste (tons)	Rate (ppd)	Waste (tons)

ppd = pounds per person per day  
ped = pounds per employee per day

1. *Residential/Commercial Waste Projections*

[insert text here to describe the residential/commercial waste generation projections]

2. *Industrial Waste Projections*

[insert text to describe the industrial waste generation projections here]

3. *Excluded Waste Projections*

[insert text to describe the excluded waste generation projections here]