

APPENDIX G WASTE GENERATION

A. Historical Year Waste Generated

Instructions for completing Table G-1: Reference Year and Historical Waste Generated (remove these instructions for the solid waste management plan)

Table G-1 will provide historic generation data, including the reference year and the four preceding years, for residential/commercial waste, industrial waste, and excluded waste.

By default, waste generated is calculated by adding the quantities of waste disposed from Appendix D and the quantities recycled (from Appendix E for residential/commercial waste and Appendix F for industrial waste).

If quantities resulting from the disposal and recycling method do not accurately represent generation for the SWMD (for residential/commercial waste, industrial waste, or both), then use a different method to calculate generation. If using a different method, then in the spaces reserved with “[replace with text to explain the data in Table G-1]” explain why the disposal plus recycling methodology wasn’t representative and the method that was used. Provide sample calculations to illustrate math.

[NOTE: If the quantity of excluded waste disposed in the reference year was less than 10 percent of total generation then it is not necessary to complete the portions of this appendix that address excluded waste. For all tables, do not delete the columns for excluded waste - either leave those columns blank or hide them.]

Completing Table G-1:

Go to the workbook, find the tab for “G-1”, and follow the instructions below:

[NOTE: If not using disposal plus recycling to calculate generation, then you will likely need to manually complete most of Table G-1, including manually doing needed calculations.]

Year – The years will automatically populate based on the year entered as the reference year in Tab A.

Population – Manually enter populations. Use the populations the SWMD reported in annual district reports for those years (also presented in the annual district review report forms for those years).

Residential/Commercial/Industrial/Excluded – The quantities for all of these columns will automatically populate once all historical data has been entered into Appendices D, E, and F.

Total - Formulas embedded in this column will automatically calculate the total waste generated annually.

Per capita generation – Formulas embedded in this column will automatically calculate per capita generation using the following formula:

$$\text{Generation rate} = ((\text{tons generated} \times 2000) \div 365) \div \text{population}$$

Annual percent change – Embedded formulas will automatically perform these calculations using the following formula:

$$\text{Annual percent change} = ((\text{New year} - \text{old year}) \div \text{old year}) \times 100$$

For example: annual percent change from 2008 to 2009 = $(\text{quantity generated in 2009} - \text{quantity generated in 2008}) \div \text{quantity generated in 2008} \times 100$

If the policy committee chooses to include more than five years in the historical analysis, then add rows as needed.

In the space reserved with “[replace with text explaining the data in Table G-1]”, provide any text necessary to support Table G-1.

Table G-1: Reference Year and Historical Waste Generated

Year	Population	Residential/ Commercial		Industrial		Excluded (tons)	Total (tons)	Per Capita Generation (ppd)	Annual % Change (tons)
		Disposal (tons)	Recycled (tons)	Disposal (tons)	Recycled (tons)				

Source(s) of Information:

Sample Calculations:

Assumptions:

[replace with text explaining the data in Table G-1]

Instructions for narrative to support Table G-1 (remove these instructions for the solid waste management plan)

The policy committee will have evaluated each sector's historical disposal and recycling data in previous appendices. Table G-1 provides another opportunity to evaluate the SWMD's historical data to ensure that the data is as accurate as possible. Some of the information needed to complete the generation analysis was completed with the analyses of the disposal and recycling information in Appendices D, E, and F. The purpose of reviewing the SWMD's generation data is to ensure that it makes sense in the context of other available generation information (e.g. statewide, national generation, and rates for other SWMDs). Reviewing the generation data may also help identify other factors to consider or potential errors with the disposal or recycling data that were not identified by the analyses of that data.

Recommended analyses and discussion points are identified below:

1. Historical Residential/Commercial Waste Generated

- Look for trends – did the quantities of residential/commercial waste generated and the per capita generation rate increase, decrease, or fluctuate inconsistently?
- Look at disposal and recycling portions of the generation calculation. Did increases, decreases or other variations in the quantities of residential/commercial waste generated result more from quantities disposed or more from quantities recycled?
- Compare the SWMD's residential/commercial per capita generation rate to national average (see Reference Table 1) and Ohio average (see Reference Table 2) per capita generation rates. Also, compare per capita generation rate to per capita rates for other comparable SWMDs. Did the SWMDs quantities and generation rate increase faster, in-line with, or slower than Ohio's or national averages and those for other SWMDs? Are the SWMD's quantities and generation rate significantly different than the other rates (if yes, then need to evaluate further)
 - Try to identify reasons why the SWMD's rate is above/below those rates. Factors to consider include:
 - Are there specific factors that influence the SWMD's generation rate? (some of these factors may be the same as those that influence the disposal rate):
 - a large operation like an auto shredder or a regional distribution warehouse
 - seasonal populations such as a university or tourists
 - a large number of people who work in the SWMD but live in other counties, the SWMD or a county in the SWMD is a destination hub for residents from other counties (such as a shopping center or mall).
- Are there correlations between population change and generation?
- Explain any outliers (some of these factors may be the same as those that influence the disposal rate. Examples: a large ice storm or other natural disaster resulted in more yard waste or other waste in one year than in other years; a large generator or processing facility returned a survey in one year but not in others; a new, large commercial entity began generating or quit generating waste during the year.)

- Compare the quantity of residential/commercial waste generated in the reference year to the quantity the currently approved solid waste management plan projected would be generated in that year. If the quantities are significantly different, is it necessary to factor that into the projections?

Based on evaluation of the historical generation data, is it necessary to revisit the disposal projections in Appendix D or the recycling projections in Appendix E?

In the space reserved with “[replace with text explaining the residential/commercial generation analysis here]” provide text to explain the analysis and any conclusions.

2. Historical Industrial Waste Generated

- Identify trends – did quantities of industrial waste generated increase, decrease, or fluctuate inconsistently?
- Look at disposal and recycling portions of the generation calculation. Did variations in the quantities of industrial waste generated result more from variations in quantities disposed or more from quantities recycled?
 - Identify any correlations among generation, employment, and manufacturing output. Sources to consult include:
 - Information from the Bureau of Labor Market Information
 - Ohio Job Outlook published by the Ohio Department of Job and Family Services
 - [Ohio County Indicators](#) published by the Ohio Development Services Agency (for employment trends by county)
 - County Profiles (lists the largest employers in the county)
 - Information from local chambers of commerce
 - [Ohio Industry Series](#) published by the Ohio Development Services Agency (provides overviews of specific industries including projected growth, employment trends, number of establishments by county).
 - Information from local trade associations
 - [Economic Overview of Ohio](#) published by the Ohio Development Services Agency.
 - The Ohio Manufacturer’s Association
- Compare growth or reduction in industrial generation activity within the SWMD to activity or trends in the SWMD’s region of the state and/or to Ohio.
- Identify factors that influence the quantities, composition of industrial waste generated and the generation rate (hosting large generators, such as automotive plants or foundries that are strongly affected by the economy; hosting an electric utility).
- Explain any outliers (some of these factors may be the same as those that influence the disposal rate. Examples: 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.)
- Compare the quantity of industrial waste generated in the reference year to the quantity the currently approved solid waste management plan projected would be

generated in that year. If the quantities are significantly different, then should that be factored into the projections?

Based on the evaluation of the historical generation data, is it necessary to revisit the disposal projections in Appendix D or the recycling projections in Appendix F?

In the space reserved with “[replace with text explaining the industrial generation analysis]” provide text to explain the analysis and any conclusions.

3. Historical Excluded Waste Generated

- Identify trends – did the quantities of excluded waste generated increase, decrease, or fluctuate inconsistently?
- Identify any factors that influence how much excluded waste is generated – presence of a coal-burning utility, foundries that generate excluded foundry sand, ongoing construction activities, etc.
- Identify correlations between the types of excluded waste and the activities that generate them. For example, if a large portion of the excluded waste is bottom or fly ash and there was a significant change in the quantities generated, then is there an identifiable cause – a new utility began/ceased operating, a utility upgraded its pollution control technology, a utility generated more/less electricity than usual, etc.
- Compare the quantity of excluded waste generated in the reference year to the quantity the currently approved solid waste management plan projected would be generated in that year. If the quantities are significantly different, is it necessary to factor that into the projections?

In the space reserved with “[replace with text explaining the exclude waste generation analysis]”, provide text to explain the analysis and any conclusions.

1. Residential/Commercial Waste

[replace with text explaining the residential/commercial generation analysis]

2. Industrial Waste

[replace with text explaining the industrial generation analysis]

3. Excluded Waste

[replace with text explaining the excluded waste analysis]

B. Generation Projections

Instructions for completing Table G2: Generation Projections (remove these instructions for the solid waste management plan)

This table will provide projections for residential/commercial, industrial, excluded, and total waste for the planning period. .

Completing Table G-2:

Go to the workbook, find the tab for “G-2”, and follow the instructions below:

Year – Years will automatically populate based on the year entered as the reference year in Tab A.

Population – Annual population will automatically populate using data from Appendix C, Table C-2.

Residential/Commercial, Industrial, Excluded – The quantities for both disposal and recycle will automatically populate using data from Appendices D (for disposal), E (for residential/commercial recycling projections), and F (for industrial recycling projections). The quantities for residential/commercial recycling include quantities composted.

Total - Formulas embedded in this column will automatically calculate the total waste generated annually.

Per Capita Generation – Formulas embedded in this column will automatically calculate per capita generation using the following formula:

$$\text{Generation rate} = ((\text{tons generated} \times 2000) \div 365) \div \text{population}$$

In the space reserved with “[replace with text explaining the data in Table G-2]” provide any needed text to explain the data in Table G-2.

