APPENDIX E Residential/Commercial Reduction and Recycling Data

A. Reference Year Recovery Data

The purpose of this plan section is to report data about the type and quantity of materials that were recovered from residential and commercial waste in the Reference year, 2018. The tables in Appendix E report recycling information organized by the source of the diverted material, or the programs and services that were used to collect the material. The District gathers data from several sources using a variety of methods. The sources, methods, and steps taken to avoid double counting of material that is reported by more than one entity will be explained following the appropriate table.

Excluded material: Only materials from residential and commercial sources can be included in the recycling quantities credited to residential/commercial recycling and waste reduction. Materials that cannot normally be deposited in municipal solid waste landfills or that have not traditionally been landfilled cannot be credited. The excluded materials include construction and demolition debris, metals from railway boxcars and vehicle salvage operations (no car parts, except lead acid batteries), auto bodies, farm equipment, or buses, agricultural waste including crop residue and animal manure, and municipal sewage sludge.

To obtain commercial recycling data, the District sends out an annual survey to local businesses. A sample copy of the survey and the commercial survey mailing list is included in Appendix R. The results of the District's 2018 survey are entered in
Table E-1. The results are grouped by NAICS (North American Industry Classification System) codes. Note that code numbers and material categories for which no material was reported have been omitted from the table supplied in the Plan 4.0 format. All amounts are reported in tons rounded to the nearest whole number. A "0" in a table cell indicates that some material was reported, but it was less .5 tons, so the amount was rounded to "0" .

Table E-1 Commercial Survey Results

NAICS	LAB	FM	NFM	OCC	MxP	Other Used Motor Oil	Total
42 - wholesale distribution	0	1	35	573	3		612
44 – retail trade	2	12	2	16		7	40
45 – retail trade			0				0
Total	2	13	37	589	3	7	652

Materials abbreviations: LAB-lead acid batteries, FM-ferrous metals, NFM-non- ferrous metals, OCC-corrugated cardboard, MxP-mixed paper. Columns for MATERIALS that were NOT reported have been omitted from this Table.

Table E-1 comments:

Source: Survey results from 2018 ADR surveys compiled by the Darke SWMD.

Calculations and assumptions: No adjustments were required. Commercial businesses reported the recycling service provider that collected their materials. Responses for recyclables that were collected by Rumpke were not tallied for individual business. The materials collected by Rumpke are included only in the recycling reported by Rumpke. The materials were not double counted.

Table 2-E. Data from Other Recycling Facilities

Source of Materials/Data	Gl	FM	NFM	OCC	MxP	Pl	W	Total
Buybacks - None								
None reported								
Scrap Yards								
None reported								
Brokers								
None Reported								
Processors/MRF's								
Rumpke Center City - Hamilton Co. - Commercial	507	90	57	701	1,750	303		3,408
Rumpke Elmwood-Commercial				24				24
Rumpke Recycling Commercial-Dayton	3	2	1	83	47	9	14	159
Rumpke Recycling Residential-Dayton	1	1		1	12	2		17
Total Processors/MRFs	510	92	58	808	1,797	312	14	**3,608**

Materials abbreviations: Gl-glass, FM-ferrous metals, NFM-non- ferrous metals, OCC-corrugated cardboard, MxP-mixed paper, Pl-Plastic, , W-wood.
Columns for materials that were NOT reported have been omitted from this table.

Source :2018 Ohio EPA MRF Report

Calculations: No adjustment for double counting was needed in Table E-2. Commercial materials that were sent to these facilities were not included in the commercial or residential data reported in Table E-1, E-3, or E-4.

Table E-3 Data Reported to Ohio EPA

Ohio EPA Data Source	Gl	Pl	OCC	MxP	NFM	FM	W	Other NR	Total
Wal-Mart Recycling		22	379	2	0			87	490
Lowe's Companies, Inc		1	21		2	45	5		74
Dollar General			125	1					126
Kroger		49	315	3				8	375
U.S. Postal Service		1	3	52					56
Total	0	73	842	58	2	45	5	95	1,121

Materials abbreviations: Gl-glass, Pl-plastic, OCC-corrugated cardboard, MxP-mixed paper, NFM-non-ferrous metal, FM-ferrous metal, W-wood, Other NR-other material type not reported. .

Source(s) of Information: Source :2018 Ohio EPA Survey of Chain Stores and MRF Report.

Calculations: No adjustment for double counting was needed.

The following table, Table E-4, reports residential and commercial recycling data not included in the three previous tables. This data was collected from a variety of sources. Information regarding the sources may provide insight into the recycling programs and events that contribute to waste reduction in the District. For that reason, we are highlighting the sources of the information in this narrative rather than in comments following the table.

The Village of Versailles provides waste and recycling collection to all households, many commercial businesses, and several small manufacturers. The Village reports curbside collection results directly to the District. The adjustment in Table E-4 subtracts 5 tons of material reported as comingled that was also reported by a manufacturer that named the Village of Versailles as the collector. This amount is included in industrial recycling and has been subtracted from this residential/commercial table.

The residential material listed as being recycled through the Rumpke Dayton material recovery facility was not included in Table E-4.

Composting facilities: The data for composting facilities is from the OEPA published Compost Facility Data Report for 2018 facilities: Fresh Aire Farms, Fitzwater Composting, and Versailles Village Compost Facility.

Alternative Yard Waste Management: These yard waste programs consist of autumn leaf collection provided by Villages. The amount of yard waste diverted is reported to the District. The conversion factors used to calculate tons diverted are shown following Table E-4.

District special collection programs and events: The District provides collection programs for difficult to manage wastes. The amounts collected by the HHW Collection Event, Paper Shredding Day, and the Appliance and Electronics Recycling Event are reported in Table E-4. The District manages a popular Plastic Cap collection program. The caps collected are listed under plastic.

The District collects small household dry cell batteries for recycling. The amount collected is entered in Table E-4 as zero, "0". In this and other tables "0" in a cell indicates that an amount was reported, but it was less than half a ton (.5) so it was rounded to zero. The cell is left blank if no recycling of that material was reported.

The District also sponsors a Scrap Tire Event. The amount collected in the tire event is included in the scrap tire data which is collected and reported by Ohio EPA. Scrap tires from the District are managed by several haulers/recyclers.

INTENTIONALLY BLANK

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

Other Programs or Sources of Data	APP	HHW	EW	FW	NF	OCC	MxP	Pl	CoM	YW	Tires	*Total*
Curbside Recycling Services- Village of Versailles					92	135			279			506
***Drop-off Recycling Locations**: The amounts collected at all District drop-offs is included in Rumpke MRFs Table E-2*												0
Composting Facilities\YW										3,755		3,755
Food Composting				144								144
Alternative Yard Waste Mgt. Activities										58		58
Scrap Tire Data reported to OEPA											635	635
District Special Collection Events:												0
Electronics and Appliance Recycling Day	6		24									30
HHW Waste Event		2										2
Paper Shredding Day							5					5
Plastic Bottle Caps Collection								4				4
Household Battery Collection; Note 2												0
Unadjusted Total	6	2	24	144	92	135	5	4	279	3,813	635	5,140
Adjustments (Industrial recycling reported by Versailles Curbside							0		5			5
Adjusted Total	**6**	**2**	**24**	**144**	**92**	**135**	**5**	**4**	**274**	**3,813**	**635**	**5,135**

Materials abbreviations: APP-appliances, HHW-household hazardous waste, EW, Electronic waste, FW-food waste, Gl-glass, FM-ferrous metals, NFM-non- fe
paper, Pl-Plastic, , CoM-comingled recyclables, W-wood, YW-yard waste.

Calculation : Total reported recycling – adjustment for industrial material that was collected and reported by Versailles. It is included in industri

Assumptions: The Villages listed under “Other Yard Waste Management Activities” reported leaf collection methods, number of loads, cubic yar
calculate weight in tons: chipped brush-243 lbs./cu. yd; vacuumed leaves-500 lbs./cu. yd./ dry leaves 250 lbs/cu. yd.

INTENTIONALLY BLANK

;

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

Material	Quantity (tons)
Appliances/ "White Goods"	6
Household Hazardous Waste	2
Used Motor Oil	7
Electronics	24
Scrap Tires	635
Dry Cell Batteries	0
Lead-Acid Batteries	2
Food	144
Glass	511
Ferrous Metals	151
Non-Ferrous Metals	189
Corrugated Cardboard	2,375
All Other Paper	1,875
Plastics	391
Textiles	0
Wood	19
Rubber	0
Commingled Recyclables (Mixed)	274
Yard Waste	3,813
Other (Aggregated)	95
Total	10,515

Source and assumptions: The information regarding the amount of the materials recycled by material type is compiled from the survey data reported in Tables E-1 *Commercial Survey Results*; E-2 *Data from Other Recycling Facilities* , E-3 *Data Reported to Ohio EPA* and E-4. *Other Recycling Programs/Other Sources of Data.* The sources of the data, the means of collection, and methods to avoid double counting are reported for each of the previous four tables.

Table E-6 Quantities Recovered by Program/Source

Program/Source of R/C Recycling Data	Quantities (Tons)
Commercial Survey	652
Data from Other Recycling Facilities	3,608
Ohio EPA Commercial Retail Data	1,121
Curbside Recycling Services- Village of Versailles (adjusted to avoid double counting)	501
Drop-off Recycling Locations: The amounts collected at all District drop-offs is included in Rumpke MRFs Table E-2 (Row 2 above: Data from Other Recycling Facilities)	0
Composting Facilities/YW	3,755
Food Composting	144
Scrap Tire Data reported to OEPA	635
Alternative Yard Waste Management	58
Electronics and Appliance Recycling Day	30
HHW Waste Event	2
Paper Shredding Day	5
Plastic Bottle Caps Collection	4
Household Battery Collection; Note 2	0
Total	**10,515**

Source and assumptions: The information regarding the amount of the materials recycled by material type is compiled from the survey data reported in Tables E-1 *Commercial Survey Results*; E-2 *Data from Other Recycling Facilities* , E-3 *Data Reported to Ohio EPA* and E-4. *Other Recycling Programs/Other Sources of Data.* The sources of the data, the means of collection, and methods to avoid double counting are reported for each of the previous four tables.

B. Historical Recovery

The tables that follow report residential/commercial recovery for the four years preceding the reference year and the reference year.

Because the data from "Other yard waste management activities," varies so much from year to year depending on whether or not villages or townships reported data the amounts are consolidated in the following tables. Future projections for this category will be based on the consolidated data. The calculation is shown in Table E-6a.

Table E-6a Other Yard Waste Management Activities Historic Data

Year	Ansonia brush chipped for mulch	Gettysburg Village - leaves field spread	New Madison - leaves field spread	Pitsburg Village - leaves field spread	Alternative YW management total
2014	238		26.67	55	**320**
2015			68	47	**115**
2016	12		25		**37**
2017	8	27	29	20	**84**
2018	**9**	**11**	**19**	**19**	**58**

Source: Data collected for and reported in the District's annual district reports.

Calculation: The "Alternative yard waste management total" for each year is the total reported by the listed communities.

Assumptions: The Villages listed under "Other Yard Waste Management Activities" reported leaf collection methods, number of loads, cubic yards per load. The following conversion factors were used to calculate weight in tons:
chipped brush-243 lbs./cu.yd; vacuumed leaves-500 lbs/cu.yd./ dry leaves 250 lbs/cu.yd.

Historical Residential/Commercial Recovery by Program/Source

The tables that follow include all of the programs and data sources that contribute to annual residential/commercial waste recovery. The recovery total includes the amount of residential/commercial material recycled, yard and food waste composting, and alternative methods of diverting yard waste (primarily leaves), from disposal. Incineration is not a method used by the District.

The information in Table E-7 is from the data collected for the District's annual district reports. The amounts reported in some categories and the annual totals vary from the amount reported in the ADR's as originally submitted to OEPA. We reviewed the data that was used, and the tables used to calculate the data and found several errors which were corrected for this plan.

Tables E-7a1, E-7a2, E-7a3 , and E-7a4 are all derived from the Table E-7 data.

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

Year	Commercial Survey	Data from Other Recycling Facilities	Ohio EPA Commer-cial Retail Data	Curbside Recycling Services-Village of Versailles	Drop-off and curbside – reported in Data from other Recycling Facilities	Compost-ing Facilities Yard Waste	Food Waste Composting	Scrap Tire Data reported to OEPA	Alternative YW manage-ment Total	Electronics and Appliance Recycling Day	HHW Waste Event	Paper Shredding Day	Plastic Bottle Caps Collection	Household Battery Collection	Totals
2014	2,292	3,164	1,305			2,616	262	420	320	36	0	6		2	**10,423**
2015	4,286	5,353	898			3,294	237	596	115	31	10	6		2	**14,828**
2016	1,015	4,620	837	371		4,025	0	546	37	39	10	9		2	**11,511**
2017	624	4,342	1,240	511		4,122	202	710	84	38	10	4			**11,887**
2018	652	3,608	1,121	501	0	3,755	144	635	58	30	2	5	4	0	**10,515**

Source: data compiled for Annual District Reports. Methods of data collection and methods to avoid double counting are the same as those use in collection the 2018, reference year data.

Table E-7a1 Annual Percent Change in Tons Recovered

Year	Commercial Survey	Data from Other Recycling Facilities	Ohio EPA Commer-cial Retail Data	Curbside Recycling Services-Village of Versailles	Drop-off Recycling Locations: The amounts collected at all District drop-offs is included in Rumpke MRFs	Compost-ing Facilities Yard Waste	Food Waste Composting	Scrap Tire Data reported to OEPA	Alternativ e YW manage-ment Total	Electronics and Appliance Recycling Day	HHW Waste Event	Paper Shredding Day	Plastic Bottle Caps Collection	Househol d Battery Collection	Totals
2014															
2015	87%	31%	-31%			26%	-10%	42%	-64%	-14%		0%			42%
2016	-76%	-14%	-7%			22%	-100%	-8%	-68%	26%	0%	50%			-22%
2017	-39%	-6%	48%	38%		2%		30%	127%	-3%	0%	-56%			3%
2018	***4%***	***-17%***	***-10%***	***-2%***		***-9%***	***-29%***	***-11%***	***-31%***	***-21%***	***-80%***	***25%***			***-12%***

Calculation for percent change example using Commercial survey Data column 2. 2015 tons minus 2014 tons = difference in tons divided by 2015 tons equals the percent of change.
4,286-2292 = 2,094 2,094 / 2,292 = .869 or 87% (rounded and expressed as a percent.

Table E-7a2 Average Percent Change in Tons Recovered

Commercial Survey	Data from Other Recycling Facilities	Ohio EPA Commer-cial Retail Data	Curbside Recycling Services-Village of Versailles	Drop-off Recycling Locations: The amounts collected at all District drop-offs is included in Rumpke MRFs	Compost-ing Facilities Yard Waste	Food Waste Composting	Scrap Tire Data reported to OEPA	Alternative YW manage-ment Total	Electronics and Appliance Recycling Day	HHW Waste Event	Paper Shredding Day	
-6%	-1%	0%	18%	0%	10%	-46%	13%	-9%	-3%	-27%	5%	Average percent change all categories 3%

Calculation: Average percent change: add positive and subtract negative numbers for the four years, 2015 through 2018, and divide the total by 4.
(87% - 76% - 39% + 4%) = -24%/4 = -6%

Table E-7a3 Annual Per Capita Recovery Rate (pounds/person/day)

Year	Commercial Survey	Data from Other Recycling Facilities	Ohio EPA Commercial Retail Data	Curbside Recycling Services-Village of Versailles	Drop-off Recycling Locations: The amounts collected at all District drop-offs is included in Rumpke MRFs Table E-2	Compost-ing Facilities Yard Waste	Food Waste Composting	Scrap Tire Data reported to OEPA	Alternative YW manage-ment Total	Electronics and Appliance Recycling Day	HHW Waste Event	Paper Shredding Day	Plastic Bottle Caps Collection	Household Battery Collection; Note 2	Totals
2014	0.24	0.43	0.14			0.27	0.03	0.04	0.03	0.00	0.00	0.00			1.09
2015	0.46	0.57	0.10			0.35	0.03	0.06	0.01	0.00	0.00	6.00		0.00	1.58
2016	0.11	0.50	0.09	0.04		0.43	0.00	0.06	0.00	0.00	0.00	9.00		0.00	1.24
2017	0.07	0.47	0.13	0.06		0.45	0.02	0.08	0.01	0.00	0.00	0.00			1.29
2018	0.07	0.39	0.12	0.05	0.00	0.41	0.02	0.07	0.01	0.00	0.00	0.00	0.00	0.00	1.13

Calculation: Tons * 2000 pounds equals total pounds for the year. Divide total pounds by 365 days to get pounds per day for the entire District. Divide pounds per day by the population of the District to calculation the pounds per person per day. 2018 total recovery 11,515 tons x 2000 lbs = 21,030,000 lbs. divided by 365 days = 63.095 lbs. per day divided by population in 2018 of 50.784 =1,13 pounds/person/day

Figure E-1: Historic Recovery Residential/Commercial

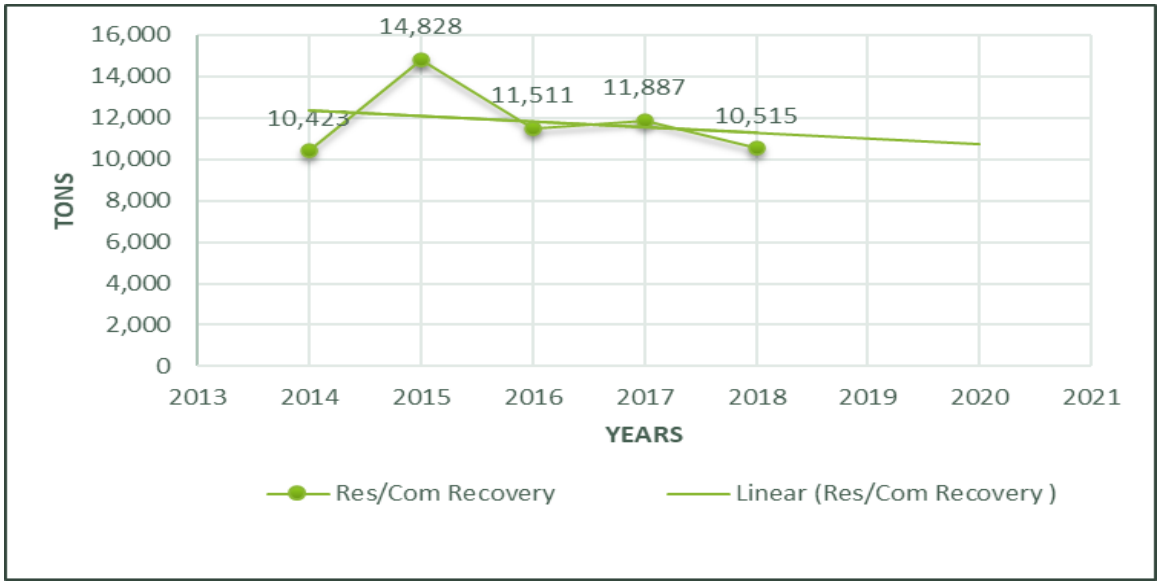

Figure E-1 illustrates the recycling trends over five years. Not including this spike up in 2015, the amounts recycled stayed about the same over the five years. The amount recycled per person per year in 2018 was not significantly more than in 2014.

C. Residential/Commercial Recovery Projections by Source

Historical program data was considered in the projections shown in Table E-8.
The categories were modified in order to link the projections to District programs while recognizing that the District does not have total control over the way that some of the data is collected and reported to the District. For example, most of the curbside and drop-off recyclables are collected by one hauler, Rumpke. The material is weighed and recorded at the MRF and the data that is reported to the District is the total weight, broken down into the weights of each material type but not reported by the specific program or point of in-District origin. Therefore, it is not possible to accurately separate the amount collected through drop-offs, curbside, and commercial sources.

Explanations for each of the projections by program or data source is provided following Table E-8. Projections are included for the years between the reference year and the first year of the planning period. The 2019 amounts use actual data collected for the District's annual report to OEPA. Due to the disruption from Covid-19 during the time when the District was collecting data, responses were fewer than expected. We believe this reduced the amount of commercial recycling reported. Covid -19 disrupted some District programs in 2020. We anticipate 2020 waste disposal and recovery amounts may be unusual; early observations from waste haulers suggest that the amount of both waste disposal and recycling has increased. However, we do not have real data to inform 2020 predictions at this time. Therefore, the projections for the planning

period will depend primarily on the historic data and the review and analysis of District circumstances and programs. This analysis is the subject of Appendices H and I.

Table E-7a4 Adjusted Average Annual Per Capita Recovery Rate (pounds/person/day with highest and lowest year data eliminated)

Year	2014	2015	2016	2017	2018	Average ppd	Adjusted Average ppd
Commercial Survey	0.24	~~0.46~~	0.11	0.07	~~0.07~~	0.19	**0.14**
Data from Other Recycling Facilities	0.43	~~0.57~~	0.50	0.47	~~0.39~~	0.47	**0.46**
Ohio EPA Commercial Retail Data	~~0.14~~	0.10	~~0.09~~	0.13	0.12	0.12	**0.12**
Curbside Recycling Services- Village of Versailles	~~0.00~~	~~0.00~~	0.04	0.06	0.05	0.03	**0.05**
Composting Facilities	~~0.27~~	0.35	0.43	~~0.45~~	0.41	0.38	**0.40**
Other Food and Yard Waste Management Activities	~~0.03~~	0.03	~~0.00~~	0.02	0.02	0.02	**0.02**
Scrap Tire Data reported to OEPA	~~0.04~~	0.06	0.06	~~0.08~~	0.07	0.06	**0.06**
Alternative YW manage-ment Total	~~0.03~~	0.01	~~0.00~~	0.01	0.01	0.01	**0.01**

Calculation: The adjusted average is calculated by eliminating the highest and lowest pound per person per day in each category. The Shaded cells contain the eliminated amounts. Darke Count SWMD offers a small data base . A few changes in the businesses or facilities that respond to surveys can make a major difference in the reported amounts The adjusted method helps level the spikes and valleys and give a better picture of the amounts that can be expected in the future. .

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

Year	Commercial Survey	Data from Other Recycling Facilities	Ohio EPA Commercial Retail Data	Curbside Recycling Services-Village of Versailles	District frop-off and Rumpke Curbside included in Rumpke MRFs Table E-2	Composting Facilities \YW	Alternative Yard Waste Mgt. Activities	Food Compost-ing	Scrap Tire Data reported to OEPA	Electronics and Appliance Recycling Day	HHW Waste Event	Paper Shredding Day	Plastic Bottle Caps Collection	Household Battery Collection; Note 2	Totals
2018	***652***	***3,608***	***1,121***	***501***	***0***	***3,755***	***58***	***144***	***635***	***30***	***2***	***5***	***4***	***0***	**10,515**
2019	224	3,238	1,319	400		2,969	57	158	516	22	2	8	5	3	**8,922**
2020	652	3,238	1,319	400		2,969	57	158	516	22	2	8	5	3	**9,350**
2021	1,269	4,246	1,372	455		3,625	57	191	582	22	2	8	5	3	**11,837**
2022	1,261	4,219	1,363	452		3,602	57	190	578	22	2	7		3	**11,757**
2023	1,253	4,334	1,354	449		3,580	57	189	574	22	2	7		3	**11,825**
2024	1,245	4,486	1,346	446		3,557	57	187	571	22	2	7		3	**11,930**
2025	1,237	4,636	1,337	443		3,534	57	186	567	22	2	7		3	**12,032**
2026	1,231	4,787	1,330	441		3,514	57	185	564	22	2	7		3	**12,143**
2027	1,224	4,760	1,322	438		3,495	57	184	561	22	2	7		3	**12,075**
2028	1,217	4,733	1,315	436		3,475	57	183	557	22	2	7		3	**12,007**
2029	1,210	4,706	1,307	434		3,455	57	182	554	22	2	7		3	**11,939**
2030	1,203	4,679	1,300	431		3,435	57	181	551	22	2	7		3	**11,872**
2031	1,196	4,652	1,292	429		3,415	57	180	548	22	2	7		3	**11,804**
2032	1,189	4,625	1,285	426		3,396	57	179	545	22	2	7		3	**11,736**
2033	1,182	4,598	1,277	424		3,376	57	178	542	22	2	7		3	**11,668**
2034	1,175	4,571	1,270	421		3,356	57	177	538	22	2	7		3	**11,600**
2035	1,168	4,545	1,262	419		3,336	57	176	535	22	2	7		3	**11,532**
2036	1,165	4,533	1,259	418		3,328	57	175	534	22	2	7		3	**11,503**
2037	1,162	4,521	1256	416		3319	167	175	533	22	2	7		3	**11,584**
2038	1,159	4,510	1253	415		3311	167	174	531	22	2	7		3	**11,555**

Planning period: 2022 through 2036

Commercial Survey: The District sends a mail survey to local commercial businesses. This survey is sent to businesses except the large chain operations which are surveyed by Ohio EPA. The businesses include banks, automotive supply and service providers, resale shops, retirement and nursing facilities, other retail stores, and wholesale distributors. The survey includes questions regarding waste and recycling service providers used so that double counting can be eliminated. Unfortunately, even using phone follow-up, the responses from businesses have been sporadic. The number and type of businesses that respond varies from year to year making it difficult to make comparisons and predictions. Although the reported recycling decreased, there are indications that the actual amount of commercial recycling has increased. This Plan includes strategies to increase both the number of businesses that recycle and changes in commercial survey strategy that may improve the number of responses.

The amount projected for 2020 is the same as the reference year. This is a conservative projection because of Covid-19, 2020 is not a usual year. The District does not know the effect that business shutdowns and changes in consumer buying patterns may have on commercial waste generation and recycling. The projections for 2021 and later years assume that the strategies in this Plan will make result in a modest increase in actual commercial recycling and a substantial increase in the number of responses from the commercial sector.

The calculation used is .14 ppd which is the adjusted average of reported recovery in the period starting in 2014 and continuing through 2018. The highest and lowest amounts were eliminated. Table E-7a4 uses shaded cells to show the data that was eliminated. The adjusted average is the average of three remaining years.

Calculation for the planning years: ((.14ppd x population) x 365 days)/2000 lbs. = tons recycled per year rounded to the nearest whole number.

Data from Other Recycling Facilities – Rumpke MRFS: The data in this category was collected and reported by Ohio EPA. Rumpke Waste and Recycling reports all the residential, commercial, and industrial material that is collected and processed from the District to OEPA. This data is very important to the District because *it includes almost all of the residential curbside material that is collected* (A small percentage of residential customers are serviced by other haulers.) *and all of the recyclable material that is collected through the District sponsored drop-off locations*. In addition, the MRF reports from Rumpke include a substantial percentage of the commercial and institutional recycling from the District. The District made adjustments to avoid double counting by not including material that is identified as collected by Rumpke in the Commercial Survey results category. (See commercial survey description above.)

The projection for 2020 assumes that the amount of reported recycling will be the same as 2019. The projections for 2020 through 2022 are calculated by using the adjusted average ppd recycled from Table E-7a4 of .46 ppd. Calculation: ((.46 x population) x 365 days)/2000 lbs.) = tons recycled each year.

The District believes that a renewed focus on increasing both the quantity and quality of residential and commercial recycling participation in the first years of the planning period will result in measurable increases in the material that is delivered and processed by material recovery facilities resulting in an increase in the average ppd. The projection for 2023 is calculated using .48 ppd, and 2024 are calculated using .5 ppd. 2025 is calculated using .52, 2026 and the remainder of the planning period is calculated using .54 ppd. If the District can attain these amounts, the projected residential/commercial recycling rate will be able to meet the requirements of Goal 1 of the State Plan with a recycling rate of slightly more than 25% by 2026.

Ohio EPA Commercial Data: Ohio EPA surveys large commercial business which operate in many Ohio communities. They are often called "big box stores" and include recognizable businesses like Walmart, Kroger, and Lowes. OEPA's efforts assist the District because many of these businesses manage recycling through their own supply chain instead of relying on local haulers. Local store management may not have easy access to the recycling data. Before OEPA began the statewide survey, it was often difficult to get this information from the local store. Although the amount reported varies from year to year depending on how many businesses respond. Even so, the amount reported was reasonably consistent in the period from 2014 to 2018. The projection for 2020 is same as the amount reported in 2019. Instead of the using the adjusted average of .12 ppd, .14 ppd is used to project the amount of recovery during the remainder of the planning period. The larger amount is used because more businesses reported in 2019 and if those businesses continue to report and other businesses begin to participate, the results should be higher than they were historically.

Curbside Recycling Services-Village of Versailles: The Village operates its own curbside collection program which includes residential housing and some commercial businesses that choose to participate. The average amount collected has been .05 ppd. The Village program is a mature program, and it is likely that the per person amount collected will remain stable.
.05 ppd is used to project the amount of recovery during the planning period.

Composting Facilities: Reported yard waste composting increased substantially between 2014 and 2018. The amount will vary from year to year depending on the weather and other factors. There has been an increase in reported compost from 2014 through 2018. The most likely explanation for the growth is the fact that the two private yard waste composting facilities have expanded their composting capabilities and reporting has become more consistent. The average pounds per person per day adjusted by eliminating the lowest and highest year is .04 and is used in making the future projections.

Other Food and Yard Waste Activities: Food composting is included in the OEPA composting facilities report. In 2018, 144 tons of food was reported as diverted from disposal by composting. The amount reported has increased from zero in 2014 to 414 tons in 2018 and 158 tons in 2019. The increase is probably due to expanded food recycling programs in one or both of the two largest super-markets in the District. The amount of food waste projected for 2020 is the same as 2019 and will remain the same over the planning period. Even though an increase is not projected, the District will work on increasing the amount of food composted.

Several villages in the District collect leaves in the autumn and spread them on agricultural land to be plowed into the soil. The District asks villages and townships to report information on the amounts collected and the method of collection to calculate the amount of material diverted by these methods. The District believes that the Villages will continue these programs because it is a convenience to residents and cuts down on less desirable methods of handling autumn leaves like illegal burning.

In previous years, the reportable diversion was higher. In 2018 and 2019 fewer villages reported. The District realizes that reporting is viewed as an extra burden and as such is sporadic. Therefore, the amount is projected to be the same as in the 2019.

Scrap Tires reported to OEPA: Scrap tires collection data is reported to Ohio EPA by registered scrap tire haulers and processors. The average amount reported for the years 2014 through 2018 is .06ppd. The adjusted average eliminating the lowest and highest year is also .06ppd. Future tire recovery is projected using .06 as a constant amount throughout the planning period assuming that the number of vehicles per household and the rate at which tires need to be replaced will stay about the same.

Electronics and Appliance Recycling Day: This event is held in cooperation with a local scrap yard which collects and recycles these materials year around. However, as of now the only reported and verified weights of material collected by this scrap yard and made available to the District come in conjunction with this event. The District does not expect the amount of reportable material managed by this event to grow. The annual events over the years seem to have reduced the back log of stored, obsolete items. As more appliance and electronic retailers in the District and out of the District have publicly available free programs to accept electronics, the amount that is delivered to these events will probably stay about the same or decrease. The amount collected in 2019 will be used as the projection for the remainder of the planning period.

Household Hazardous Waste Event: The District holds a household hazardous waste event annually to allow residents an opportunity to safely recycle or dispose of materials that are classified as household hazardous waste. The amount of material handled by the event has stayed about the same .The District hopes that the amount collected will dwindle over time as people learn to buy less, use what they buy, and safely dispose of items like latex paint, which is not really hazardous when dried or treated appropriately, instead of bringing materials to a collection event. The amount for 2020 and the remainder of the planning period is projected to be the same as the reference year.

P**aper Shredding Day:** The district works with local sponsors to provide an opportunity for the public to safely recycle paper documents that may contain information that should be kept confidential. The average amount collected in 2014 through 2018 was .01 ppd. There is no evidence that participation and the weight of materials delivered will change substantially. Future recovery credited to this event is projected using .01 as a constant each year of the planning period.

Plastic bottle cap collection: Participation in this program has been close to overwhelming. Public participation has exceeded expectations. As of 2020, the District is continuing to operate the program, but collecting, sorting, and delivering the caps to the processor is labor intensive. The District will continue to evaluate the program. Because the program's future is uncertain, projections are not included for 2022 and beyond.

Household battery collection: The District sponsors an ongoing dry-cell battery recycling program. Collection boxes are available at more than 25 locations around the District. The program is offered to discourage unsafe disposal of the batteries. The District will maintain the program until there are adequate recycling opportunities offered by private businesses. In years when the amount collected was less that .5 tons, the amount recycled was rounded to "0." The District plans to continue the program until there are better private sector opportunities to recycled household dry cells, The District will project the amount to be recycled at the 2019 level.