

DISTRICT OF COLUMBIA

SOLID WASTE DIVERSION ANNUAL REPORT

2019-2022



GOVERNMENT OF THE
DISTRICT OF COLUMBIA
MURIEL BOWSER, MAYOR

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Acknowledgements

This document was produced by the Department of Public Works and the Interagency Waste Reduction Working Group, in fulfillment of reporting requirements per the Sustainable Solid Waste Management Amendment Act of 2014. The Interagency Waste Reduction Working Group is a coalition of District agency stakeholders charged with creating a path to zero waste for the District of Columbia.



LETTER FROM DIRECTOR TIMOTHY SPRIGGS



I am pleased to share the District of Columbia's Solid Waste Diversion Annual Report for calendar years 2019-2022. In 2013, under the leadership of Mayor Bowser, the District Government released the Sustainable DC Plan as we embarked down the path to make the District of Columbia the most sustainable city in the country. Under the Sustainable DC Plan, we established an ambitious zero waste goal to divert 80% of the entire citywide waste stream away from landfill and incineration. This report provides information on the District's progress towards these waste diversion goals.

Increasing the District's solid waste diversion rate necessarily includes collaboration between the District Government and its regional partners, as well as District residents and businesses. Despite the challenges to solid waste management and diversion programs presented by the COVID-19 pandemic, I am proud of the action the District Government has taken – both in my own agency and our partner agencies – to make meaningful progress towards our waste diversion goals since 2019. This collaborative, whole government approach is what will make us successful. Just a few examples of our accomplishments are below:

- The District began implementation of the Zero Waste Omnibus Amendment Act, a 2019 law that laid the groundwork for a number of new initiatives to reduce use of disposable food ware and increase food waste diversion and recycling.
- The Department of Public Works (DPW) launched a home composting workshop and rebate program, training 1,248 participants and helping more than 300 households purchase home composting supplies.
- Through an innovative cart tagging pilot program, DPW achieved its lowest observed contamination rate in residential recycling—from 33% in 2017 down to 11% in 2021.
- The Department of Energy and Environment launched both paint and electronics product stewardship programs that have become staple services for residents.
- The Department of Small and Local Business Development launched Food Waste Innovation Grants that support the diversion of food waste from commercial food businesses.
- The website [Reuse.dc.gov](https://reuse.dc.gov) was launched to provide a user-friendly hub for residents to learn where to repair, donate, and shop for second-hand household items.

To build on this progress, the District is actively developing a comprehensive roadmap of the actions to fully achieve our zero waste goals. I am proud of our work so far and look forward to our future accomplishments. Together, we are moving the needle on zero waste.

Sincerely,

A handwritten signature in black ink that reads "Timothy W. Spriggs".

Timothy W. Spriggs
Director, Department of Public Works

INTRODUCTION

On behalf of Mayor Muriel Bowser, the Department of Public Works' (DPW) Office of Waste Diversion is proud to present the Solid Waste Diversion Annual Report for calendar years 2019-2022. First established in the Sustainable DC Plan in 2013 and codified through the Sustainable Solid Waste Management Amendment Act of 2014 ("Act"), the District's zero waste goal aims to divert 80% or more of the city's solid waste stream away from landfills and incineration through waste reduction, reuse, recycling, and composting. This Solid Waste Diversion Annual Report provides data on these efforts for CY 2019-2022, as required by of the Act.

In Section I, "Summary of Results," this report provides data on solid waste tonnage generated and diverted between 2019 and 2022 and is intended to track the progress that the District is making in pursuit of its zero waste goals. In Section II, "Estimating Citywide Waste Diversion," the report estimates unreported solid waste to contribute to an improved understanding of citywide solid waste generation and diversion.

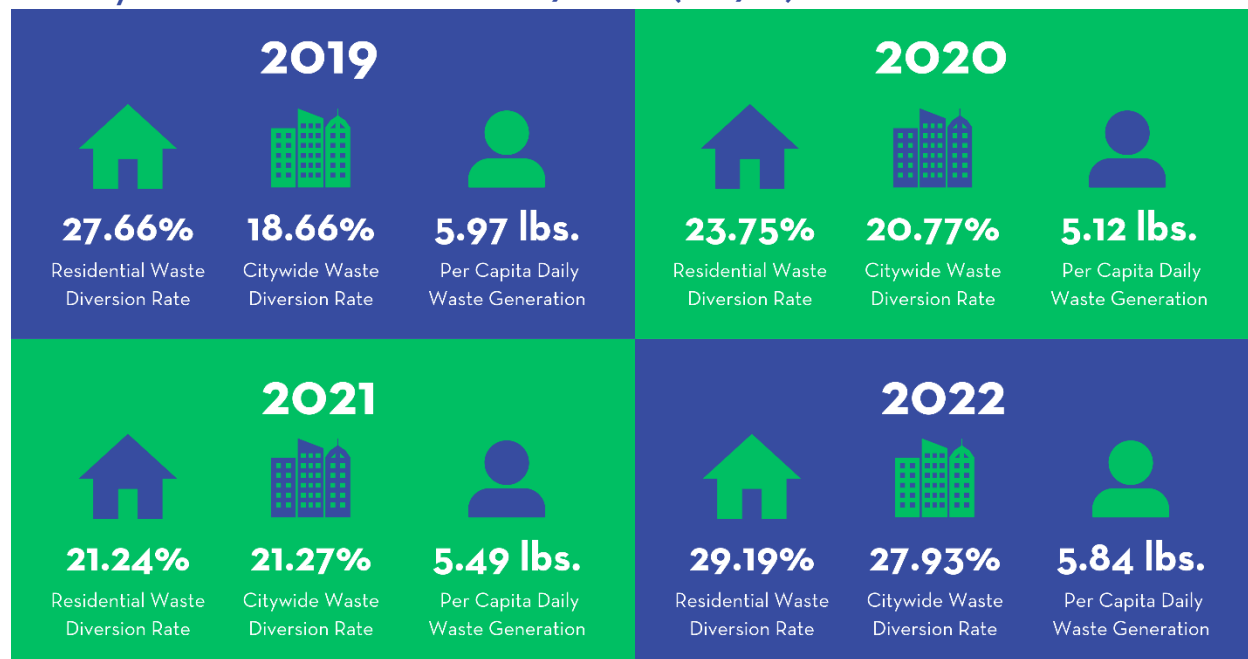
I. SUMMARY OF RESULTS

The Solid Waste Diversion Progress Report for calendar years 2019-2022 provides information on the solid waste diversion rates in the District. The report tracks three solid waste diversion metrics:

- **Residential Waste Diversion Rate:** the percentage of waste diverted from the DPW-serviced single-family residential sector, plus resident drop-off programs that are open to all residents including residents living in multi-family households across the District.
- **Citywide Waste Diversion Rate:** the percentage of waste diverted across the entire District's solid waste stream including waste derived from residential and non-residential (commercial) sectors.
- **Per Capita Waste Generation Rate:** the average number of pounds of waste generated per resident per day derived from citywide waste generation data and District of Columbia population data from each calendar year.

Figure 1

Summary Statistics for Calendar Years 2019 to 2022 (CY19-22)



While reported citywide waste generation remained relatively consistent between 2019 and 2022, the volume of waste diverted away from landfills and incineration increased from 18.66% of total solid waste in 2019 to 27.93% in 2022. Beginning in 2020, as the District began to face the COVID-19 pandemic, consumption patterns and waste generation behaviors shifted causing the per capita daily waste generation to fall to 5.12 pounds per person per day in 2020 before rising to 5.84 pounds in 2022.

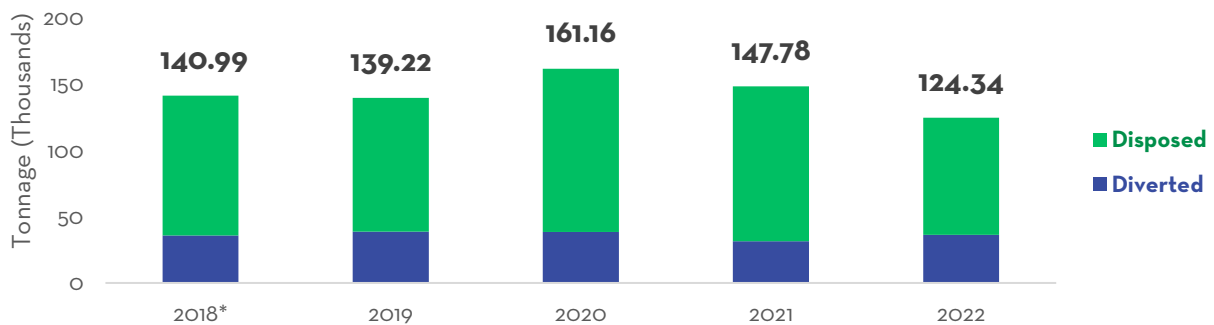
Residential Waste Diversion

The District's Residential Waste Diversion rate measures the percentage of waste generated by residential households that is diverted from disposal in landfills or incinerators through recycling, composting, and other waste reduction strategies. This metric includes data for approximately 105,000 DPW-serviced single-family households plus resident drop-off programs including residential drop-off services at District-owned Transfer Stationsⁱ, Community Composting Cooperative Network sitesⁱⁱ, and Food Waste Drop-off sitesⁱⁱⁱ. Private solid waste collectors service more than 200,000 multi-family households in the District (i.e., buildings with four or more residential units); data from multi-family households is not included in residential waste diversion figures.

From 2019 to 2022, the District's Residential Waste Diversion Rates were 27.66% in 2019; 23.75% in 2020; 21.24% in 2021; and 29.19% in 2022.

Figure 2a

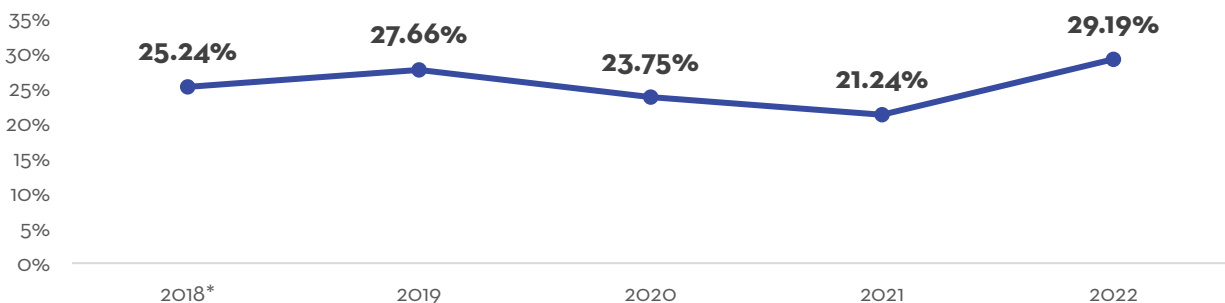
Total Residential Solid Waste, Tonnage Diverted vs. Disposed (CY18-22)



	2018*	2019	2020	2021	2022
Total Residential Solid Waste, Disposed	105,290.89	100,707.74	122,880.10	116,390.23	88,039.46
Total Residential Solid Waste, Diverted	35,696.56	38,515.65	38,284.06	31,387.06	36,300.13
Total Residential Solid Waste Generation	140,987.45	139,223.39	161,164.16	147,777.29	124,339.59

Figure 2b

Residential Waste Diversion Rates (CY18-22)



*2018 residential data was reported in the 2018 Solid Waste Diversion Annual Report found online at dpw.dc.gov/WasteDiversionReport.

Table 1: Composition of Residential Solid Waste Stream & Waste Diversion Rates (CY19-22)				
Material Stream	2019 Tonnage	2020 Tonnage	2021 Tonnage	2022 Tonnage
Single Stream Recyclables ^{iv}	27,448.47	29,277.86	23,362.90	26,508.73
Leaves ^v	8,518.08	6,814.82	5,659.52	6,435.10
Textiles ^{vi}	831.56	831.12	724.59	1,203.74
Holiday Trees ^{vii}	369.80	219.39	237.90	328.67
Community Compost ^{viii}	315.00	278.00	327.00	382.00
Scrap Metal ^{ix}	312.40	207.96	246.18	251.03
Food Waste ^x	268.34	346.70	422.06	459.84
Electronic Waste ^{xi}	167.74	69.85	88.10	60.40
Shredded Paper ^{xii}	160.00	147.00	153.00	116.68
Household Hazardous Waste ^{xiii}	65.60	51.32	74.17	74.24
Tree Brush / Yard Debris ^{xiv}	53.09	16.26	91.64	479.70
Toters (i.e., Bins) Recycled ^{xv}	5.57	23.78	0.00	0.00
Residential Refuse	100,707.74	122,880.10	116,390.23	88,039.46
Total Residential Diversion	38,515.65	38,284.06	31,387.06	36,300.13
Total Residential Solid Waste	139,223.39	161,164.16	147,777.29	124,339.59
Residential Waste Diversion Rate	27.66%	23.75%	21.24%	29.19%



DPW's 2021 "Do Not Bag Recyclables" Campaign

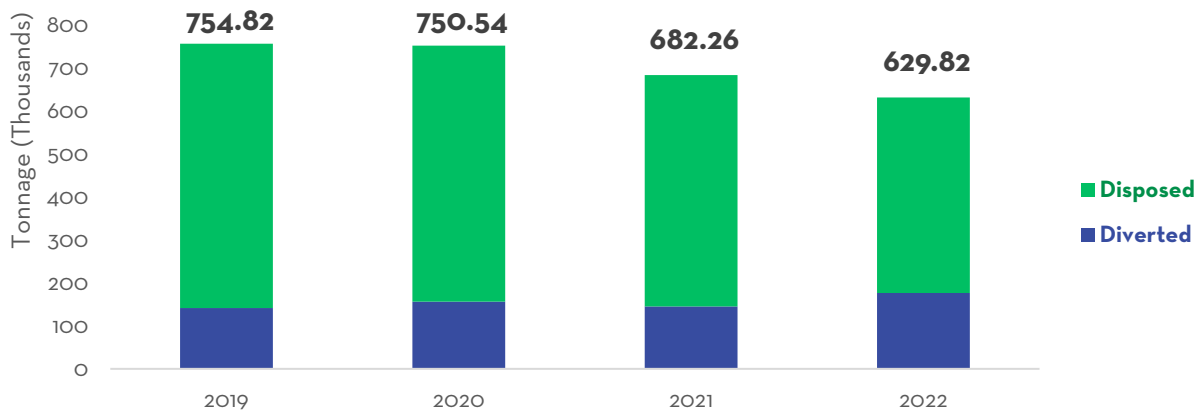
Citywide Solid Waste Diversion

Citywide solid waste includes all solid waste that the District generates including waste derived from the residential sector (both single-family and multi-family households) and non-residential (commercial) sector. Commercial waste tonnage was gathered from DPW’s Solid Waste Collectors Registration and Reporting Program, which came into effect in 2018. ^{xvi}

Between 2019 and 2022, the following Citywide Waste Diversion Rates were reported in the District: 18.66% in 2019; 20.77% in 2020; 21.27% in 2021; and 27.93% in 2022. ^{xvii}

Figure 3a

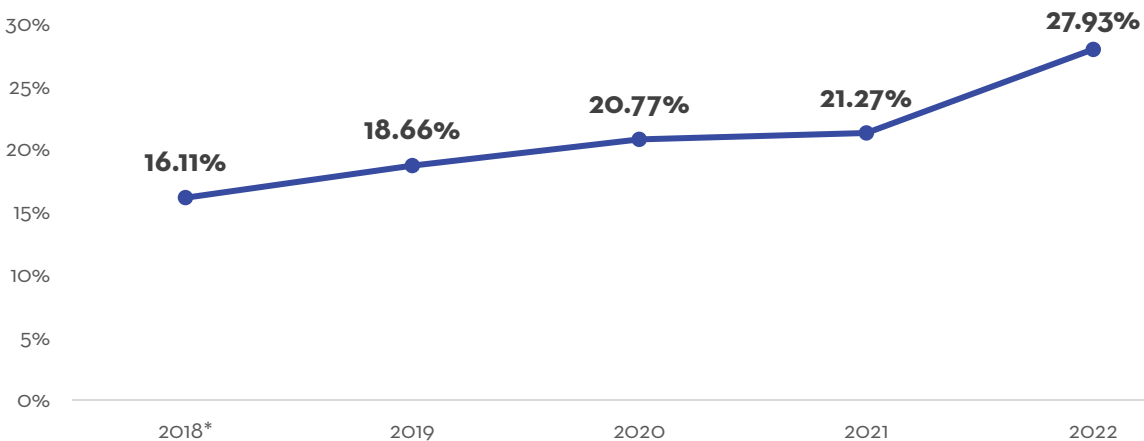
Total Citywide Solid Waste, Tonnage Diverted vs. Disposed (CY19-22)



	2019	2020	2021	2022
Total Citywide Solid Waste, Disposed	613,998.49	594,651.05	537,152.86	453,887.26
Total Citywide Solid Waste, Diverted	140,824.31	155,886.44	145,111.83	175,937.35
Total Citywide Solid Waste Generation	754,822.80	750,537.49	682,264.69	629,824.61

Figure 3b

Citywide Waste Diversion Rates (CY18-22)



*The 2018 city-wide diversion rate was previously reported in the 2018 Solid Waste Diversion Annual Report which used data from the March 2021 Desktop Waste Characterization Study to estimate this figure. Data from the 2018 Solid Waste Diversion Annual Report was estimated using a combination of existing data sources and proxy data, where data was not fully available.

Table 2: Composition of Citywide Solid Waste Stream				
	2019 Tonnage	2020 Tonnage	2021 Tonnage	2022 Tonnage
Mixed Recyclables	112,529.93	124,695.19	113,814.19	133,329.33
Organic Materials*	23,269.51	26,222.95	24,510.45	33,080.26
Fats, Oils, & Grease	1,683.27	1,858.62	2,666.94	5,852.55
Scrap Metal	1,119.25	1,061.67	1,999.94	1,060.90
Textiles	840.66	969.87	833.29	1,205.99
Food Waste	583.34	624.70	749.06	841.84
Shredded Paper	409.10	255.75	248.80	262.74
Tires	155.91	76.52	126.89	169.10
Electronics	167.74	69.85	88.10	60.40
Household Hazardous Waste	65.60	51.32	74.17	74.24
Refuse	613,998.49	594,651.05	537,152.86	453,887.26
Total Citywide Diversion	140,824.31	155,886.44	145,111.83	175,937.35
Total Citywide Solid Waste	754,822.80	750,537.49	682,264.69	629,824.61
Citywide Waste Diversion Rate	18.66%	20.77%	21.27%	27.93%

* "Organic Materials" does not include food waste; includes leaves, yard debris, and other organic waste.

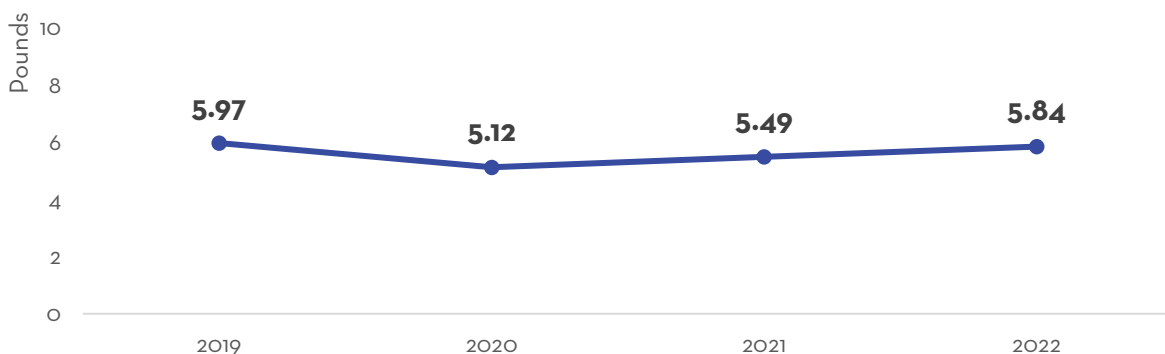
Per Capita Waste Generation

The Per Capita Waste Generation Rate is the average number of pounds (lbs.) of solid waste generated per resident per day derived from citywide solid waste generation data and District of Columbia residential population data.

Based on reported data, the Per Capita Waste Generation Rate between 2019 and 2022 was 5.97 lbs. per day in 2019; 5.12 lbs. per day in 2020; 5.49 lbs. per day in 2021; and 5.84 lbs. per day in 2022. The District's total citywide solid waste generation is influenced by changes in the daytime population, which swells beyond the residential population due to the influx of daily commuters and tourists. The Per Capita Waste Generation Rate, however, is only calculated using residential population data from the U.S. Census Bureau and therefore may not accurately represent the average volume of waste generated by each District resident.^{xviii}

Figure 4a

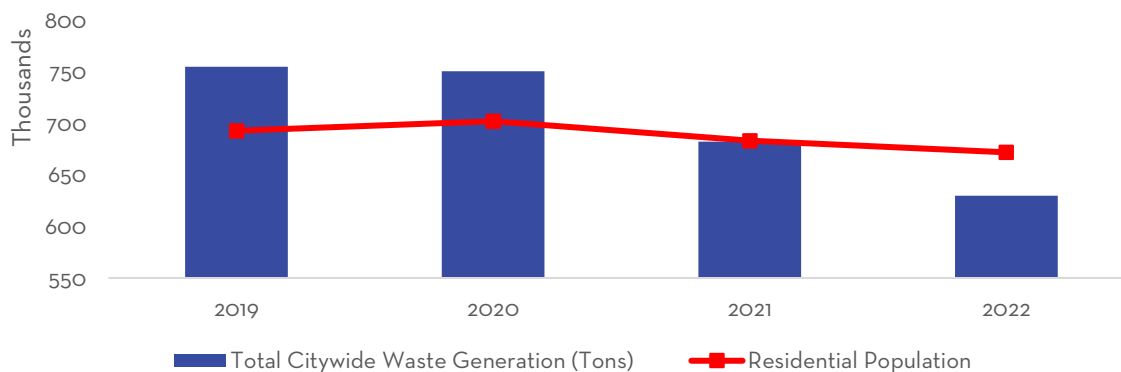
Per Capita Waste Generation Rate (average lbs. per resident per day)



As population fell between 2019 and 2022, the District also experienced a decrease in total reported citywide waste generation, as illustrated in Figure 4b below.

Figure 4b

Total Citywide Solid Waste Generation & District of Columbia Residential Population



	2019	2020	2021	2022
Citywide Generation (tonnage)	754,822.80	750,537.49	682,264.69	629,824.61
District Population^{xix}	692,683.00	701,974.00	683,154.00	671,803.00

Citywide Solid Waste Disposal by Destination

In accordance with Solid Waste Collector Registration and Reporting requirements at D.C. Code § 8-1031.05 and D.C. Code § 8-1031.06, all solid waste collectors operating in the District must annually report to DPW the locations, names, and facility types used to dispose of or process any solid waste collected in the District, and the type and tonnage of each material delivered to the reported solid waste processing or disposal facility.^{xx} Table 3 sums this reporting by destination.

Table 3: Total Citywide Solid Waste Disposal by Destination (CY19-22)					
Facility Name	Address	2019 Tons	2020 Tons	2021 Tons	2022 Tons
Biofuel					
Lorco Petroleum Services	450 South Front Street, Elizabeth, NJ 07202	8.40	0.00	12.80	16.60
Petroleum Management Inc.	5218 Curtis Avenue, Baltimore, MD 21226	0.00	5.90	3.80	4.75
Revolution Biofuels	2162 Kerchner Lane, Seven Valleys, PA 17360	64.80	19.60	18.80	89.20
Mahoney Environmental Solutions	11401 Somerset Avenue, Beltsville, MD 20705	1,610.07	1,833.12	2,631.54	5,742.00
Biofuel Subtotal		1,683.27	1,858.62	2,666.94	5,852.55
Organic Processing					
ACME Biomass Reduction Inc.	21601 New Hampshire Avenue Brookeville, MD 20833	14,103.07	17,294.61	16,438.11	21,206.48
DPR Community Composting	Multiple Locations	315.00	278.00	327.00	382.00
Evergro Landscaping	11411 Old Pond Drive, Glenn Dale, MD 20769	59.85	116.55	127.20	316.20
Fine Earth Landscape	16815 Budd Road, Poolesville, MD 20837	1,980.00	1,815.00	1,881.44	2,038.00
DPW Food Waste Drop-Off Program	Multiple Locations	268.34	346.70	422.06	459.84
Great American Landscapes, Inc.	14310 Comus Road., Clarksburg MD 20871	268.00	33.00	0.00	174.09

Table 3: Total Citywide Solid Waste Disposal by Destination (CY19-22)					
Facility Name	Address	2019 Tons	2020 Tons	2021 Tons	2022 Tons
Level Green Upper Marlboro Yard	6408 Dower House Road, Upper Marlboro MD 20772	1,810.00	0.00	0.00	1,643.00
Maryland Environmental Service	6550 S. E. Crain Highway, Upper Marlboro MD 20772	1,354.67	549.17	1,408.22	2,718.23
PG County Yard Waste Composting Facility	6601 S.E. Crain Highway, Upper Marlboro, MD 20772	3,255.13	4,064.38	2,699.33	4,142.86
Remington Mulch	524 Lee Highway, Fairfax, VA 22031	42.39	43.86	39.49	25.26
Sun Services	11299 Old Baltimore Pike, Beltsville, MD 20705	109.54	371.04	81.44	529.28
We Care Denali	7800 Kabik Court, Woodbine, MD 21797	148.00	1,810.00	1,652.00	148.00
Wheat's Landscaping	400 Dominion Road NE, Vienna, VA 22180	138.86	125.34	183.22	138.86
	Organic Processing Subtotal	23,852.85	26,847.65	25,259.51	33,922.10
Landfill					
Annapolis Junction Transfer Station - WM	8077 Brock Bridge Road, Jessup, MD 20794	5,291.28	4,296.67	5,159.37	5,068.78
Brown Station Road Sanitary Landfill	3500 Brown Station Road, Upper Marlboro, MD 20774	6,783.19	16,119.25	28.32	6,783.19
Charles County Landfill	12305 Billingley Road, Waldorf, MD 20602	1,028.76	75.40	33.38	357.35
King George Landfill	10376 Bullock Drive, King George VA 22485	39,145.09	27,821.82	16,774.74	19,567.05
Oaks Sanitary Landfill	6001 Olney-Laytonville Road, Gaithersburg, MD	0.00	0.00	9.55	34.50
Old Dominion Landfill	2001 Charles City Road, Henrico, VA 23231	28.61	4,080.38	1,287.62	8,745.31
Waste Management - Middle Peninsula Landfill	3714 Waste Management Way, Saluda, VA 23149	55,599.58	57,327.96	33,486.90	29,691.69
Federal IPC LLC	1220 W Street NE, Washington, DC 20018	124,193.00	170,154.40	180,313.66	152,204.00
Waste Management - Dulles MRF	45752 Woodland Road, Sterling, VA 20166	0.00	507.44	48.48	0.00
Waste Management - Atlantic Waste Disposal	3474 Atlantic Lane, Waverly, VA 23890	0.00	45.14	21.39	0.00
Republic Services Landfill - Kings & Queen	4443 Iris Road, Little Plymouth, VA 23091	65,698.79	29,699.87	36,800.94	25,007.49
Waste Management - Merrifield Transfer Station	2802 Dorr Avenue, Fairfax, VA 22031	0.00	0.00	3,179.97	0.00
Waste Management - Queens Chapel Road	2160 Queens Chapel Road NE, Washington, DC 20018	4,796.48	2,573.46	13,020.65	5,245.56
Waste Management - Sterling, VA	1505 Moran Road, Sterling, VA 20166	0.00	14.00	796.79	0.00
Waste Management of Pennsylvania	720 E Butter Field, Lombard, PA 60148	710.08	145.00	0.00	567.22
Republic Services 623 Landfill	1961 Ashland Road, Rockville, VA 23146	32,207.29	22,784.79	8,795.16	650.39
Ritchie Marlboro Land Reclamation Landfill	2001 Ritchie Marlboro Road, Upper Marlboro, MD 20772	343.46	343.46	343.46	12,343.46
	Landfill Subtotal	335,825.61	335,989.04	300,100.38	266,265.99
Recycling					
ALL-SHRED, Inc	4831 Winchester Boulevard, Frederick, MD 21703	249.10	108.75	95.80	146.06
Brandywine Sand & Gravel	5800 Sheriff Road, Fairmount Heights, MD 20743	2,690.30	0.00	6.70	3,127.45
Davis Industries, Inc	9920 Richmond Highway,	31.42	31.24	43.91	54.00

Table 3: Total Citywide Solid Waste Disposal by Destination (CY19-22)					
Facility Name	Address	2019 Tons	2020 Tons	2021 Tons	2022 Tons
	Lorton, VA 22079				
D. C. Materials	3334 Kenilworth Avenue, Hyattsville, MD 20781	543.13	357.00	326.00	3,372.06
DOEE's eCYCLE DC Program	Multiple Locations	1,705.00	585.00	545.00	N/A*
Encore Recycling	13211 Virginia Manor Road, Laurel MD 20707	2,462.18	1,655.30	1,785.87	3,501.76
Georgetown Paper Stock of Rockville, Inc.	14820 South Lawn Lane, Rockville, MD 20850	5,776.31	2,750.32	4,745.95	4,456.43
Greenwood Pallet	2929 Pennsy Drive Hyattsville, MD 20785	0.00	2.00	0.00	0.00
Joseph Smith & Sons, Inc.	2001 Kenilworth Avenue, Capitol Heights, MD 20743	1,029.92	968.67	888.85	956.89
LFF Recycling Inc.	45752 Woodland Road Ste 150, Sterling, VA, 20166	0.00	507.44	48.48	0.00
Metalpro, Inc.	7956 Twist Lane, Springfield, VA 22153	45.60	37.60	82.70	37.70
Montgomery County Recycling Center	16101 Frederick Road, Derwood MD 20855	237.36	167.33	9,543.02	12,347.02
MXI Environmental Services	26319 Old Trail Road, Abingdon, VA 24210	233.34	121.17	162.27	134.64
Olive Street Processing	1701 Olive Street, Capitol Heights, MD 20743	18,978.06	12,377.40	9,073.80	22,428.78
Planet Aid	6730 Santa Barbara Court Elkridge, MD 21075	831.56	939.87	820.39	1,203.74
Potomac Metals Inc	42702 Dulles Trade Court, Sterling, VA 20166	6.64	0.84	8.82	6.64
Prince George Universal Recycling	1000 Ritchie Road, Capitol Heights MD 20743	0.00	0.00	975.66	0.00
Prince Georges Scrap	5700 Branchville Road, College Park, MD 20740	5.67	23.32	0.00	5.67
Recycle One C+D Processing and Recycling	4700 Lawrence Street, Hyattsville, MD 20781	33,049.41	41,958.37	38,360.76	35,049.41
Republic Services MRF	300 Ritchie Road, Capitol Heights MD 20743	145.00	609.85	39.72	1,112.00
Rodgers Brothers Material Recovery Facility	2225 Lawrence Avenue NE, Washington, DC 20018	0.00	1.50	40.00	0.00
Briar Patch Shredding	2000 14th Street NW, Washington, DC 20009	160.00	147.00	153.00	116.68
Value Village	6611 Annapolis Road, Landover Hills, MD 20784	9.10	30.00	12.90	2.25
Virginia Recycling Corporation	4301 Mount Castle Road, Providence Forge, VA 23140	13.61	14.03	16.79	0.00
Waste Management Northern Virginia Recycling Facility	7911 Notes Drive, Manassas, VA 20109	31,977.30	42,731.12	37,477.57	33,973.29
Waste Management Recycle America, LLC	7175 Kit Kat Road, Elkridge, MD 21075	16,633.99	21,556.18	12,339.03	13,880.49
Emanuel Tire LLC	1300 Moreland Avenue, Baltimore, MD 21216	155.91	76.52	126.89	169.10
WiseTek Recycling	3200 Hubbard Road, Hyattsville MD 20785	0.00	7.35	10.50	15.21
World Recycling Company	2740 Wilmarco Avenue, Baltimore, MD 21223	23.28	0.00	0.00	65.43
	Recycling Subtotal	115,288.19	127,180.17	117,185.38	136,162.70
Incineration					
Covanta Energy Corporation Alexandria	5301 Eisenhower Avenue, Alexandria VA 22304	4,374.26	9,451.64	9,862.60	4,798.70

Facility Name	Address	2019 Tons	2020 Tons	2021 Tons	2022 Tons
Covanta Fairfax Inc.	9850 Furnace Road, Lorton, VA 22079	273,774.62	249,197.86	227,152.06	182,822.57
Wheelborator Baltimore	1801 Annapolis Road Baltimore, MD 21230	24.00	12.51	37.82	0.00
Incineration Subtotal		278,172.88	258,662.01	237,052.48	187,621.27
Total Citywide Solid Waste		754,822.80	750,537.49	682,264.69	629,824.61

*At the time of this report, DOEE's 2022 eCYCLE figures had not yet been published.

II. ESTIMATING CITYWIDE WASTE DIVERSION

DPW's Solid Waste Collector's Registration and Reporting (SWCR&R) Program was launched in 2018 with the intent of improving reporting on citywide waste generation. Before the SWCR&R Program's launch, DPW could only report on waste tonnage collected from DPW-serviced single-family households. The SWCR&R Program seeks to improve data collection on citywide solid waste by requiring all solid waste collectors operating in the District to report annually on the tonnage of waste they collect. This Program enables DPW to collect, analyze, and report on data from commercial and multi-family properties not serviced by DPW.^{xxi}

However, the journey towards comprehensive citywide waste generation and diversion information is ongoing. Due to two main factors, DPW has faced challenges ensuring that all private solid waste collectors are registered and reporting accurately. Because of these factors, total citywide waste generation values reported in Section I of this report may not be representative of the total solid waste generated within the District.

First, each year since the SWCR&R Program's launch, new unregistered collectors have been identified indicating that DPW is still working to reach all solid waste collectors, and the SWCR&R Program is not yet capturing data from all relevant entities. Differences in business structures contribute to this gap. For example, large waste generators such as national grocery and box stores often back-haul (i.e. transport in company vehicles to a central corporate location outside of the District) their refuse, recycling, and other solid waste. These businesses may not contract local solid waste collection vehicles and thus are more difficult to capture in DPW's reporting requirements. DPW is working to more fully identify large waste generators that are not reporting in order to capture refuse and waste diversion data from these types of entities.



Secondly, because of limited waste processing capabilities in the District, a significant tonnage of solid waste collected in the District is believed to be transported to neighboring municipalities to be processed and may not be reported to DPW. Between 2019 and 2021, the District of Columbia operated two transfer stations. In mid-2021, however, the Benning Road Transfer Station closed reducing the District's capacity to accept commercial refuse and recycling and eliminating the District's capacity to accept commercial bulk waste. As a result, many solid waste collectors began hauling to destinations outside of the District making it more difficult for DPW to identify

haulers who are not registering and reporting. DPW is addressing this concern by increasing its efforts to identify haulers from the generation side instead of the disposal side, using surveys and site visits to commercial generators to identify commercial waste haulers who may not be reporting.

Having a complete picture of citywide waste is important to the District's work. These data enable the District to calculate its waste diversion rate and understand the disposal or diversion destinations of solid waste in the District. Using the most accurate data possible is vital to understanding the volume and material composition of the District's solid waste. This information further allows the District to better guide its waste diversion programs and policies, and target outreach and education in order to achieve the District's zero waste goal of diverting 80% of solid waste away from landfills and incineration. In pursuit of these goals, the following section seeks to estimate total citywide solid waste.

Estimating Citywide Waste and Waste Streams

To estimate "missing" tons from the reported citywide solid waste stream, DPW developed a methodology for this report based on historical waste protections, population growth in the District, and the material composition of reported waste.^{xxii} Based on the results of these calculations, the report estimates that 33 % of citywide solid waste went unreported between 2019 and 2022.

The estimated share of unreported solid waste is highest in 2022. This increase can be attributed to changes to the reported waste composition and the closure of Benning Road Transfer Station in mid-2021. After Benning Road Transfer Station scaled back services, the District had only one transfer station for solid waste collectors. As a result, many solid waste collectors may have begun hauling their solid waste outside of the District to be processed, making it harder to track haulers doing business in the District. Figure 5a and Figure 5b below display the reported and estimated solid waste tonnage, and potential unreported solid waste tonnage by waste stream.

Figure 5a
Total Solid Waste Generation, Tonnage Reported vs. Estimated (CY19-22)



Figure 5b

Reported and Estimated Citywide Solid Waste Streams (CY19-22)

2019	Reported Tonnage	Estimated Unreported	Estimated Tonnage	2020	Reported Tonnage	Estimated Unreported	Estimated Tonnage
Refuse	613,998.49	246,298.99	860,297.48	Refuse	594,651.05	259,353.78	854,004.83
Recyclables	115,288.19	46,246.64	161,534.83	Recyclables	127,180.17	55,468.93	182,649.10
Organic Material	23,852.85	11,926.81	35,779.66	Organic Material	26,847.65	14,378.70	41,226.35
Fats, Oils, & Grease*	1,683.27	N/A	1,683.27	Fats, Oils, & Grease*	1,858.62	N/A	1,858.62
Total Waste	754,822.80	304,472.43	1,059,295.23	Total Waste	750,537.49	329,201.41	1,079,738.90

2021	Reported Tonnage	Estimated Unreported	Estimated Tonnage	2022	Reported Tonnage	Estimated Unreported	Estimated Tonnage
Refuse	537,152.86	279,147.95	816,300.81	Refuse	453,887.26	275,462.07	729,349.33
Recyclables	117,185.38	60,898.98	178,084.36	Recyclables	136,162.70	82,636.51	218,799.21
Organic Material	25,259.51	17,179.78	42,439.29	Organic Material	33,922.10	29,991.60	63,913.70
Fats, Oils, & Grease*	2,666.94	N/A	2,666.94	Fats, Oils, & Grease*	5,852.55	N/A	5,852.55
Total Waste	682,264.69	357,226.70	1,039,491.39	Total Waste	629,824.61	388,090.18	1,017,914.79

*Fats, Oils, & Grease (FOGs) were not included in the historical data projects from 2013-2018 and, therefore, were not included in estimations. Reported FOG tonnage for each year was added into estimated total waste tonnage.

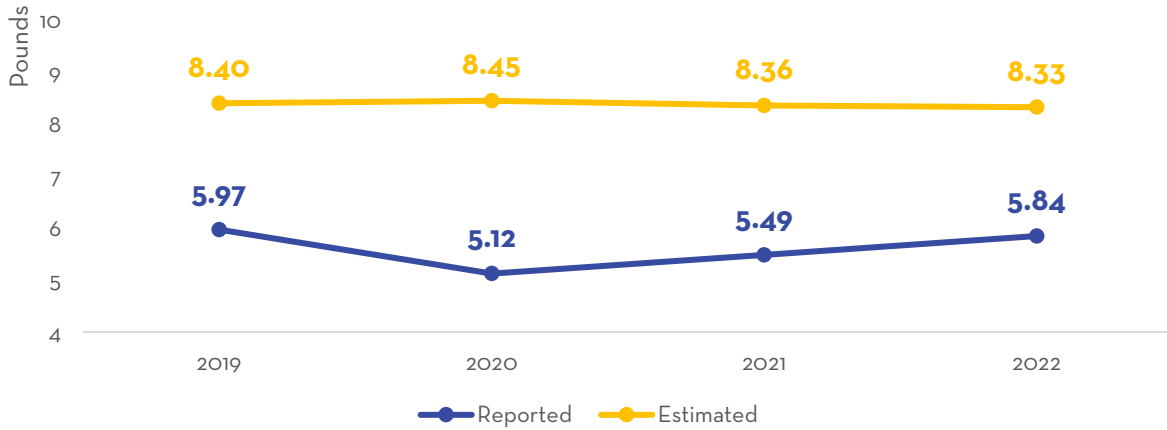
Estimating Per Capita Waste Generation

Estimating total citywide waste allows a different perspective of the District’s daily per capita waste generation. In addition to an estimated 50,000 tourists visiting the city each day, the District’s daily commuter-adjusted daytime population is estimated to be over one million people.^{xxiii} Utilizing total solid waste estimates, the District’s per capita solid waste generation rates range from 8.33 lbs. per day to 8.45 lbs. per day between 2019 and 2022, better reflecting the city’s daytime population flux.



Figure 5c

Per Capita Waste Generation Rate, Reported vs. Estimated (average lbs. per resident per day)



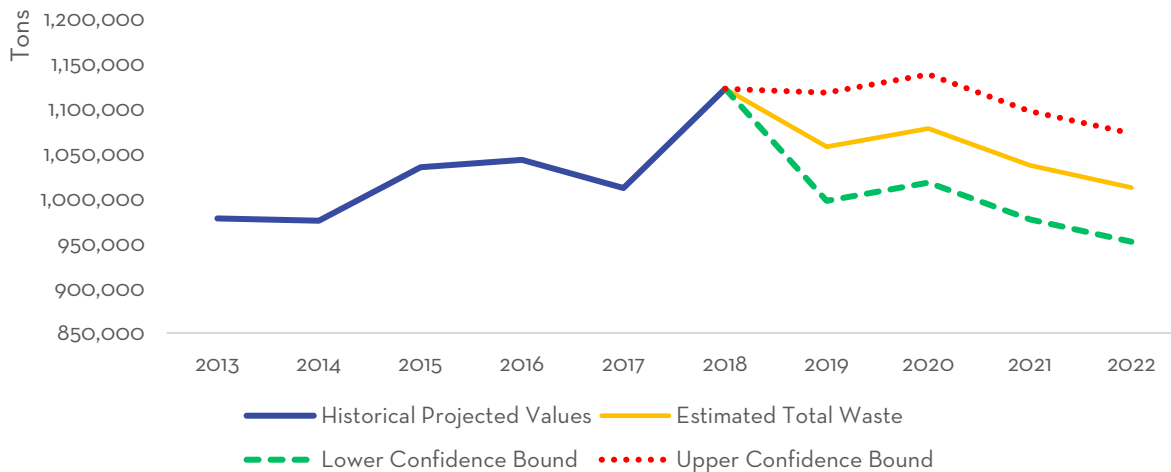
	2019	2020	2021	2022
District Population	692,683	701,974	683,154	671,803
Reported Citywide Waste Generation (Tons)	754,822.80	750,537.49	682,264.69	629,824.61
Estimated Citywide Waste Generation (Tons)	1,061,858.29	1,082,442.27	1,041,986.04	1,020,754.54

Addressing Uncertainty

To account for uncertainty in the prediction, confidence intervals were established for waste generation estimates. The graph below shows three scenarios: the total estimates from the model, a high-volume scenario, and a lower-volume scenario.

Figure 5d

Total Solid Waste Generation, Historical Projections (CY13-18) and Estimated (CY19-22)



	2019	2020	2021	2022
Estimated Total Waste	1,057,611.96	1,077,880.28	1,036,824.45	1,012,062.24
Lower Confidence	997,233.74	1,017,501.78	976,445.47	951,682.51
Upper Confidence	1,117,990.19	1,138,258.78	1,097,203.43	1,072,441.98

Conclusion

The goal of this report is to provide transparency and insight into the District's solid waste diversion and achieve a better understanding of the total citywide waste stream. Estimating potentially unreported waste data allows DPW to better target outreach efforts and improve data collection for future years. With increased education, outreach, and enforcement efforts, DPW intends to increase the number of solid waste collectors reporting and increase the quality of citywide solid waste data in future years. As compliance with reporting requirements grows, DPW anticipates increased data reporting and less dependence on data modeling to estimate citywide waste metrics.

Specifically, to address this gap, DPW is carrying out concerted outreach to large waste generators to ensure they are familiar and in compliance with the District's reporting requirements. This outreach will cover grocery stores, large box stores, arenas and stadiums, federal government agencies, and other organizations with a large waste footprint. By identifying their solid waste management practices, DPW will ensure that these entities are either directly reporting their data to DPW or that DPW staff are in contact with their contracted solid waste collectors.

In addition to proactively identifying and contacting large waste generators and solid waste collectors to obtain data, the Office of Waste Diversion will work closely with DPW's Solid Waste Education and Enforcement Program (SWEEP) to issue notices of violation to parties that fail to register and report accurate solid waste data. **The complete estimation methodology is listed in Appendix B.**

APPENDIX A: Glossary

See Appendix C for a more detailed description of data sources for individual material streams.

Bulk Waste: Refers to materials dropped off by residents at the District's Transfer Stations or collected from residential homes through DPW's bulk collection service. Both services are designed for the collection and disposal of residential waste that cannot fit in the bins used to contain trash and recycling for routine weekly collection. Examples of bulk waste include appliances, furniture, and mattresses.

Citywide Solid Waste Diversion Rate: The percentage of the citywide solid waste stream, by weight, successfully diverted from landfills and incineration through source reduction, reuse, recycling, composting, or conversion of compostable solid waste into biofuel. The Citywide Solid Waste Diversion Rate is calculated using reported solid waste generation and collection data from both residential and non-residential sectors.

$$\text{Citywide Solid Waste Diversion Rate} = (\text{tons of diverted solid waste} / \text{tons of total solid waste generated}) \times 100\%$$

Citywide Solid Waste Stream: All the solid waste generated by residential and non-residential sectors, including the commercial and public sector, across the District.

Compost: A stable, organic substance produced by a controlled decomposition process that can be used as a soil additive, fertilizer, growth media, or other beneficial use. **Composting** refers to the series of activities, including separation, collection, and processing, through which compostable materials are recovered or otherwise diverted from the solid waste stream for conversion into compost. **Compostable** items are made solely of materials that break down into, or otherwise become part of, usable compost in a safe and timely manner in an appropriate program.

Community Composting Cooperative Network: Composting program in the District of Columbia run by the Department of Parks and Recreation in which composting activities at community gardens are managed by trained volunteer community members.

Disposal: Refers to the end-of-life treatment of refuse at waste to energy facility or landfill.

Electronic Waste: Also referred to as “E-waste”, this term can be broadly applied to consumer and business electronic equipment that is near or at the end of its useful life. Electronic waste includes items such as computers, computer peripherals, televisions, television peripherals, telephones, radios, stereo equipment, compact disc players/recorders, and calculators.

Fats, Oils, & Grease (FOGs): FOGs come from materials such as cooking oil, grease, and shortening. When not disposed of properly, FOGs can cause blockages in the sewer system and environmental damage. Some FOGs can be processed and used as biofuels when recycled.

Food Scraps, Food Waste: Unused and unconsumed organic matter remaining after meals or initial food preparation, intended for discard.

Hauler: See “Solid Waste Collector.”

Household Hazardous Waste: Household products that contain corrosive, toxic, ignitable, or reactive ingredients are household hazardous waste (HHW). Includes products such as lead-based paints, cleaners, oils, batteries, and pesticides, which contain potentially hazardous ingredients that require special care during disposal.

Inbound: Materials, measured in tons, entering a DPW-managed transfer station by truck. See also, “Outbound.”

Incineration: A form of solid waste disposal through combustion or thermal conversion of solid waste materials into ash, flue gas, fuel, or heat. Waste-to-energy plants use incineration techniques to transform solid waste into electricity. Recycling, composting, anaerobic digestion of compostable solid waste, and conversion of compostable solid waste into biofuel are not considered incineration.

Landfill: A designated site where waste is disposed of and managed.

Material Recovery Facility: Facility where recyclable materials are sorted into marketable commodities.

Mixed Recyclables: Refers to multiple types of recyclable materials (e.g., plastic, glass, paper) collected together for further sorting and processing.

Multi-Family Households: Mixed-use residential/commercial or residential buildings in the District of Columbia with four or more living units.

Organics: Organic material including leaves, yard debris, food waste, and other organic waste capable of biological decay and collected for organic processing such as composting.

Outbound: Materials, measured in tons, leaving a DPW-managed transfer station by truck for purposes of processing, marketing, or disposal. See also “Inbound.”

Per Capita Waste Generation Rate: A measure of the average number of pounds per resident per day of citywide waste generated during the calendar year. It is calculated using citywide waste generation estimates and residential population estimates. Citywide waste generation estimates are calculated using the methodology described above. This tonnage is then multiplied by 2,000 to convert total generation from tons to pounds. There are 2,000 pounds in a U.S. ton. Residential population estimates are from the U.S. Census Bureau, American Community Survey 5-year Estimates.

Recyclable: Materials that can be recycled using the District’s recycling collection program. **Recycling** refers to the series of activities, including separation, collection, and processing, through which materials are recovered or otherwise diverted from the solid waste stream for use as raw materials or in the manufacture of products other than fuel.

Residential Solid Waste Diversion Rate: The percentage of the residential solid waste stream, by weight, successfully diverted from landfilling and incineration through source reduction, reuse, recycling, composting, and conversion of compostable solid waste into biofuel. The Residential Solid Waste Diversion Rate is calculated using the following formula:

Residential Solid Waste Diversion Rate = (tons of diverted residential solid waste/ tons of total residential solid waste generated) x 100%

Residential Solid Waste Stream: All the solid waste generated by single-family residential properties serviced by DPW and from District-managed residential drop-off and collection programs at Transfer Stations or across the District. The total weight of residential solid waste generated includes data from:

- Refuse and Recycling collected from DPW-serviced, single-family residential households.
- DPW leaf and holiday tree and greenery collections.
- DPW-managed drop-off programs that are open to all residents (including multi-family residents) across the District of Columbia including DPW's Food Waste Drop-Off sites.
- Food waste collected and processed at DPR community composting sites.

Refuse: Solid waste that is collected for disposal by incineration or landfill. Synonymous with discarded waste, waste discards, and trash.

Residential refuse data includes waste from DPW routine curbside and scheduled bulk collections from single-family residential households, DPW leaf and holiday tree and greenery collections, and residential drop-off at District-owned Transfer Stations. Data sources for all values are inbound transfer station scale tickets except for bulk waste dropped off by residents at the Fort Totten Transfer Station. Residential bulk drop off was calculated by subtracting inbound bulk collected waste from outbound bulk waste.

Shredded Paper: Secure documents that are shredded as a means of document destruction. Paper shredded at DPW-hosted shredding events is then recycled.

Single-Family Households: Homes and apartment buildings with three or fewer living units.

Scrap Metal: Used metals that are an important source of industrial metals and alloys, particularly in the production of steel, copper, lead, aluminum, and zinc.

Solid Waste: Solid waste is garbage, refuse, trash, or any other waste or waste product, including recyclable, compostable, or otherwise reusable material, whether in solid, liquid, semisolid, or contained gaseous state, resulting from an industrial, commercial, residential, or government operation or community activity.

Solid Waste Collector: A person or company engaged in the collection or transportation of solid waste.

Solid Waste Registration and Reporting Program: Starting January 1 of each year, solid waste collectors are required to register and report to the Office of Waste Diversion. By February 1, all solid waste collectors must register for the current year and report solid waste tonnage data to the Office of Waste Diversion for the entirety of the previous calendar year. Annual reporting will include: (a) the location, name, and facility type of each delivery facility used to dispose of any solid waste collected in the District; (b) type of material delivered; and (c) tonnage of the material delivered.

Source Reduction: Reducing waste at the source, also known as waste reduction or prevention.

Source Separation: The separation of solid waste at the point of discard into the categories of recycling, composting, or refuse (trash).

Toters Recycled: Toters are the bins used for residential trash and recycling collection. Data sources for recycled toters include outbound transfer station scale tickets recorded as “Toters recycled.”

Textiles: Clothing and other items made from woven and nonwoven cloth.

Trash: See “Refuse.”

Transfer Station: DPW-owned facilities where solid waste is unloaded from collection vehicles and briefly held while it is reloaded onto larger long-distance transport vehicles for shipment to treatment or disposal facilities.

Waste Diversion: Reducing the volume of solid waste going to landfill or incineration facilities through source reduction, reuse, recycling, composting, or conversion of compostable solid waste into biofuel.

Waste Diversion Rate: The percentage of the solid waste stream, by weight, successfully diverted from landfilling and incineration through source reduction, reuse, recycling, composting, and conversion of compostable solid waste into biofuel.

Yard Debris, Yard Waste, Trimmings: Grass, leaves, tree branches, brush, tree stumps, and other compostable organic materials that are generated by homes, schools, or businesses.

APPENDIX B: Citywide Waste Estimation Methodology

This methodology outlines the approach used to estimate total citywide waste generated in the District of Columbia between 2019 and 2022. DPW has faced challenges ensuring all private solid waste collectors are registered with and reporting to the Office of Waste Diversion; each year since the Solid Waste Collector Registration and Reporting Program’s launch, new unregistered collectors are identified. DPW also assumes that, as this new reporting system is implemented, solid waste collectors may underreport their annual tonnage due to inaccurate or limited data tracking.

Due to the lack of reliable and consistent data from the commercial sector, the report presents a method developed to estimate the total solid waste stream in the District by leveraging historical waste projections, population data, and waste composition figures. The derived estimates of total citywide waste generation allow the District to better understand waste generation trends in our city and work to meet waste diversion goals.

With increased education, outreach, and enforcement efforts, DPW intends to increase the number of Solid Waste Collectors reported solid waste tonnage and increase the quality of citywide solid waste data in future years. As compliance with these requirements grows, DPW anticipates increased data reporting and less dependence on data modeling to estimate citywide waste metrics.

Data Sources

- For historical data, this methodology utilized total citywide solid waste estimates for 2013-2018 from the DPW-commissioned *Desktop Waste Characterization Study (2021)*. These estimates were derived through a study of municipal waste tonnage, estimated waste composition, annual visitors, commercial property markets, and changes in single- and multi-family households.
- To derive the waste composition (i.e., the proportion of refuse, recycling, and organics in the District’s citywide waste stream), data was used from DPW’s Solid Waste Collector Registration and Reporting Program from 2019-2022. Waste tonnage data was divided into three categories based on the processing facilities to which the waste is sent – refuse, recycling, and organics. “Refuse” includes waste received by landfill or incineration facilities, “recycling” includes waste

received by recycling processing facilities, and “organics” includes materials sent to organic processing facilities.

- District of Columbia population data from 2013-2022 was collected from the U.S. Census Bureau. Due to its strong correlation with total waste generation estimates from 2013-2018, population serves as the predictor variable in estimating annual waste generation from 2018-2022. Gross Domestic Product (GDP), personal income, personal expenditure, and visitor counts were also evaluated and found to be weaker predictor variables of total waste generation.

Methodology

Linear Regression Analysis

To predict total citywide waste generation for 2019-2022, simple linear regression analysis was used with annual District of Columbia population as the independent variable and 2013-2018 estimates for total citywide waste generation as the dependent variable. This analysis allowed for the quantification of the relationship between population and waste generation during 2013 and 2018 to extrapolate for the reporting period (2019-2022). Key regression metrics, including the R-squared value, coefficient values, and p-values, were examined to gauge the significance of population as the predictor variable.

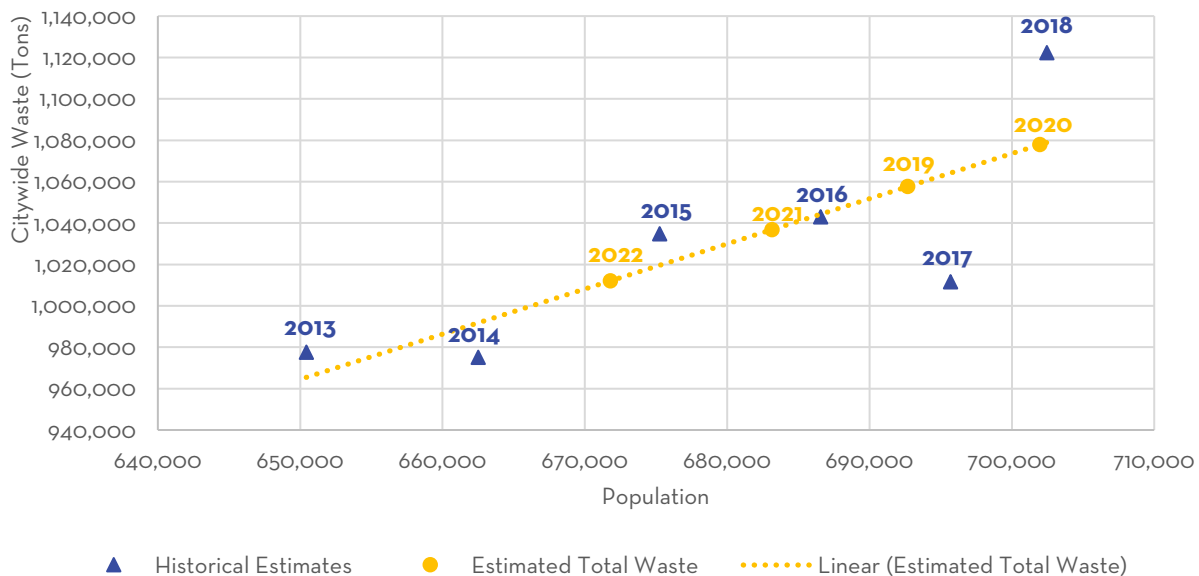
Using key indicators derived from the regression output, the linear equation below was developed to predict total waste generation during the years 2019-2022 based on the annual population data.

$$\text{Estimated Total Waste}_{\text{year}} = (2.1815 \times \text{Population}_{\text{year}}) - 453,476$$

The linear regression equation, having been fitted to the historical data, was utilized to forecast waste generation for the upcoming years.

Figure A

Population Versus Historical (CY2013-2018) and Estimated (CY2019-2022) Total Waste Generation



	2019	2020	2021	2022
Population	692,683	701,974	683,154	671,803
Reported Citywide Waste	754,822.80	750,537.49	682,264.69	629,824.61
Estimated Citywide Waste	1,057,611.96	1,077,880.28	1,036,824.45	1,012,062.24

Determining Estimated Waste Composition

Waste composition ratios were calculated using the total reported citywide solid waste for years 2019-2022, grouped by material type (i.e., refuse, recycling, and organics) to provide insights into the distribution of waste materials within the overall waste stream. Waste composition ratios were then applied to the estimated total waste generation for 2019-2022 to estimate the true tonnage of waste generation for each material stream.

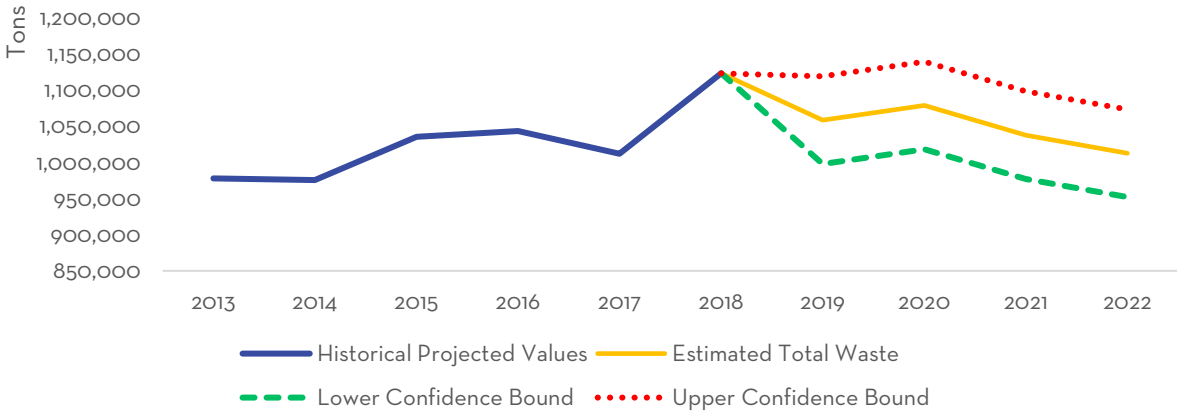
Table A: Waste Composition Rates (CY2019-2022)				
	2019	2020	2021	2022
Refuse	81.3%	79.2%	78.7%	72.1%
Recycle	15.3%	16.9%	17.2%	21.6%
Organics	3.2%	3.6%	3.7%	5.4%

Despite being reported between 2019-2022, the waste category Fats, Oils, & Grease (FOGs) was not included when determining the waste composition ratios because the *Desktop Waste Characterization Study (2021)* did not project tonnage for FOGs between 2013-2018. Diverted FOG tonnage reported through the Solid Waste Collector’s Registration and Reporting Program was added to the total citywide waste generation estimate after regression analysis. As a result, waste diversion rates between the reported and estimated data vary slightly.

Addressing Uncertainty

Uncertainty is an inherent part of statistical analysis and regression modeling. To account for the uncertainty in the prediction, confidence intervals were established for waste generation estimates. The graph below shows three scenarios: the total estimates from the model, a high-volume scenario, and a lower-volume scenario. These intervals provide a range of values in which, with high confidence, the actual waste generation is likely to fall and provide a view of the potential variability in the waste generation predictions.

Figure B
Historical Projections (CY2013-2018) and Estimated Total Waste Generation (CY2019-2022)



	2019	2020	2021	2022
Estimated Total Waste	1,057,611.96	1,077,880.28	1,036,824.45	1,012,062.24
Lower Confidence	997,233.74	1,017,501.78	976,445.47	951,682.51
Upper Confidence	1,117,990.19	1,138,258.78	1,097,203.43	1,072,441.98

Limitations

The estimation method applied in this study provides valuable insights into citywide solid waste generation, yet several limitations should be acknowledged.

- The assumption of a linear relationship between population and waste generation may oversimplify complex factors that influence waste generation in the District. Changes in the local economy, commercial building usage, tourism, packaging, and consumption patterns during the COVID-19 pandemic also affect the waste generated and diverted across the city. Population presented the best option for use in this model, however, due to ample availability of population data and a strong relationship with total waste generation.
- In estimating the volume of refuse, recycling, and organics, we assume underreporting is consistent across all waste streams (i.e., refuse, recycling, and organics). It is possible that solid waste collectors are reporting more accurately or consistently in certain waste categories than others resulting in a variation of underreporting. At this time, however, there is not sufficient data to make assumptions of the variation in reporting quality nor evidence of inaccurate reporting in a certain waste stream that would significantly influence total waste estimates.
- This model also assumes underreporting happened at a consistent rate each year because the number of registered solid waste collectors remained consistent throughout the reporting period. In 2018, the first year of the Solid Waste Collector's Registration and Reporting Program, 54 solid waste collectors registered with the Office of Waste Diversion, and by 2019, 93 solid waste collectors were registered. Despite this large initial jump, by 2022, the number of registered solid waste collectors had increased only to 95. Therefore, there is reasonable confidence that underreporting issues were consistent between 2019-2022.
- Lastly, this model assumes the *Desktop Waste Characterization Study (2021)* ("Study") estimated total citywide solid waste figures accurately represent "true" waste generation values allowing us to use those values to accurately predict total waste generation. This model is also limited by the availability of historical estimated total citywide solid waste data; regression analysis is performed using only six observations (2013-2018). However, because of the breadth of variables included and the lack of alternative historical data, the Study's results for 2013 through 2018 are the most thorough estimates available for the District's historical waste generation.

Improving Future Data Collection

Having an accurate reporting of citywide solid waste is integral to the District's solid waste management operations and development of waste diversion policy. The methodology reported here allows DPW to better understand solid waste diversion in our city and facilitate more informed decisions; however, DPW continues to prioritize improved registration and reporting to ensure the District has quality data in the future.

By partnering with other District agencies and connecting to solid waste collectors through DPW's Solid Waste Education and Enforcement Program (SWEET), the District can work towards full registration and reporting compliance from private solid waste collectors. Coordination with private solid waste disposal facilities will also allow DPW to verify reported data to enhance the reliability of future analysis of the full waste diversion landscape.

APPENDIX C: Data Sources

Below is a detailed description of the data source for each solid waste material stream.

Population: Population data sourced from the U.S. Census Bureau – American Community Survey (ACS) 5-Year Estimates (2017 – 2021) and the U.S. Census Bureau – Population Estimates Program (PEP) 1 Year Estimate (2022).

Electronic Waste (or E-Waste): Data for DPW-collected e-waste is provided by the District’s contractor, MXI Environmental Services. All e-waste sent to MXI is either refurbished or recycled. Citywide e-waste also includes waste coming from the eCYCLE program run by the Department of Energy and Environment.

Fats, Oils, & Grease: Data is provided by commercial haulers in the District that collect fats, oils, and grease (FOGs) including Lorco Petroleum Services, Petroleum Management Inc., Revolution Biofuels and Storm Oil.

Food Waste: Data is provided by commercial haulers in the District that collect food waste and report those materials through the Solid Waste Collector Registration and Reporting Program. Additionally, food waste collected from the DPW’s Food Waste Dropoff Program is included.

Household Hazardous Waste (HHW): DPW-collected Household Hazardous Waste material is provided by MXI Environmental Services. HHW collected by MXI is safely disposed of or recycled.

Mixed Recyclables: Data is provided by commercial haulers in the District that collect recyclable materials and report those materials through the Solid Waste Collector Registration and Reporting Program.

Composting: Data is provided by commercial haulers in the District that collect compostable material and report those materials through the Solid Waste Collector Registration and Reporting Program.

Organic Material: Organic material that does not include food waste. This includes leaves, yard debris, and other organic waste. Data is provided through the Department of Public Works.

Refuse, Citywide: Citywide waste stream data is derived from a combination of data sources:

- Most of the information is from the Solid Waste Collectors Registration & Reporting Portal, which manages all the solid waste data for the District’s private haulers. This portal manages data related to vehicles, disposal facilities visited, how much waste was sent to what facility, and what material type disposed.
- Data reports generated by DPW’s Solid Waste Management Administration via the CompuWeigh Data System provide waste tonnage by weighing collection vehicles on inbound and outbound scales at the Benning Road and Fort Totten Transfer Stations through December 2022. As of June 2023, the Benning Road Transfer Station is closed for renovations.
- Individual reports for commodity streams handled by third-party vendors were also utilized.
- Additional data is gathered from citywide and residential waste diversion programs, such as DPW’s Food Waste Drop-Off program or DOEE’s eCYCLE program.

Refuse, Residential: Residential waste stream data includes waste from DPW routine curbside and scheduled bulk collections from single-family residential households, DPW leaf and holiday tree and greenery collections, and residential drop-off at District-owned Transfer Stations. Data sources for all values are inbound transfer station scale tickets except for bulk waste dropped off by residents at the Fort Totten Transfer Station. Residential bulk drop-off was calculated by subtracting inbound bulk collected waste from outbound bulk waste.

Scrap Metal: Calculated by subtracting inbound tonnages of scrap metal and white goods (e.g., dishwashers, refrigerators) dropped off by residents for bulk waste collection at the Fort Totten Transfer Station from the outbound total for recycled scrap metal.

Shredded Paper: Tonnage data is provided by the District's contractor Briar Patch Shredding for all shredded paper dropped off and recycled at DPW's transfer station and DPW-hosted shredding events by residents.

Single Stream Recyclables: Data sources include inbound transfer station scale tickets for recycling recorded as collected by DPW's collections and bulk divisions.

Textiles: Data is provided by Planet Aid and Value Village.

Tires: Data is provided by commercial haulers in the District that collect tires and report those materials through the Solid Waste Collector Registration and Reporting Program.

Toters Recycled: Data sources include outbound transfer station scale tickets with material type recorded as Toters recycled. Toters are the bins used for residential trash and recycling collection.



DPR Community Compost Cooperative Site

END NOTES

ⁱ To learn more about the District's residential drop-off services as District Transfer Stations, visit dpw.dc.gov/service/household-hazardous-waste-electronics-recycling-document-shredding.

ⁱⁱ To learn more about the District's Community Compost Cooperative Network, visit dpr.dc.gov/page/community-compost-cooperative-network.

ⁱⁱⁱ To learn more about the District's Food Waste Drop Off Program, visit zerowaste.dc.gov/foodwastedropoff.

^{iv} Includes recycling from residential households collected by DPW. Data is collected through inbound scale tickets at transfer stations for recycling collected by DPW's collections and bulk divisions.

^v Includes leaves collected in residential neighborhoods through DPW's Fall Leaf Collection Program.

^{vi} Includes textiles from both single and multi-family residential collected at distributed drop-off bins across the city. Data from 2019-2021 is exclusively provided by Planet Aid. In 2022, Value Village began reporting data which is represented by the large increase in total tonnage diverted between 2021 and 2022.

^{vii} Includes holiday trees and greenery from residential households dropped off at District Transfer Stations collected through the seasonal Holiday Tree and Greenery Collection Program.

^{viii} The Department of Parks and Recreation (DPR) manages the Community Compost Cooperative Network. Estimates for community composting figures were reported by the DPR Community Garden Program. To learn more about the Community Compost Cooperative Network, visit dpr.dc.gov/page/community-compost-cooperative-network

^{ix} Reflects scrap metal dropped off by residents at District Transfer Stations and bulk waste pickups of scrap metal. Tonnage was calculated by subtracting inbound tonnages of scrap metal and white goods (such as appliances) from the outbound total for scrap metal.

^x Food waste is collected through the DPW's Food Waste Drop-off Program at farmers markets around the District.

^{xi} Electronic waste is collected through special drop-off events held by DPW and open to District residents, including single-family and multifamily residents. MXI Environmental Services, the vendor contracted with the District to collect materials at drop-off events, tracks, and reports tonnage data from each event. All e-waste sent to MXI is either refurbished or recycled. This figure does not include electronics collected for recycling through eCYCLE DC, as this program is open to both residential and commercial entities and does distinguish the source of these materials based on sector. Electronics collected through eCYCLE DC are reflected in Table 4: Total Citywide Solid Waste Disposal by Destination.

^{xii} Shredded paper is collected through special drop-off events held by DPW and open to District residents, including single-family and multifamily residents. Briar Patch Shredding and Recycling LLC - the vendor contracted with the District to collect paper materials at shredding drop-off events - tracks and reports tonnage data from each event.

^{xiii} Household hazardous waste (HHW) is collected through special drop-off events held by DPW and open to District residents, including single family and multifamily residents. This also includes paint from DOEE's "Paint Care Program". MXI Environmental Services, the vendor contracted with the

District to collect HHW materials at drop-off events, tracks, and reports tonnage data from each event. For the purposes of this report, all HHW was reused or recycled rather than disposed. DPW will work with the contractor to see if greater detail regarding the amount of material recycled can be provided for inclusion in future reports.

^{xiv} Includes grass, leaves, tree branches, brush, tree stumps, and other organic materials from residential households that are either dropped off at District Transfer Stations or collected by DPW through scheduled yard waste pick-up services.

^{xv} Includes trash totes or wheeled containers used for DPW-serviced curbside collection of household waste and recycling. When residents request totes to be removed by DPW, totes are then recycled.

^{xvi} For more information about Solid Waste Collector Registration and Reporting requirements, please visit dpw.dc.gov/service/solid-waste-collector-registration-and-reporting.

^{xvii} When comparing annual waste diversion rates with prior Solid Waste Diversion Annual Reports, please note that the 2018 Solid Waste Diversion Annual Report utilized estimates of total waste from the Desktop Waste Characterization Study (March 2021) in calculating the Citywide Waste Diversion Rate of 16.11%. As such, these rates are not directly comparable with the 2018 figures.

^{xviii} The 2018 Solid Waste Diversion Annual Report utilized estimates of total waste from the Desktop Waste Characterization Study (March 2021) in calculating the Per Capita Waste Generation Rate of 8.89 lbs. per day. As noted above, reported values for Per Capita Waste Generation Rates (2019-2022) are not directly comparable with 2018 figures.

^{xix} Source: Population data sourced from the U.S. Census Bureau – American Community Survey (ACS) 5-Year Estimates (2017 – 2021) and the U.S. Census Bureau – Population Estimates Program (PEP) 1 Year Estimate (2022).

^{xx} For more information about Solid Waste Collector Registration and Reporting requirements, please visit dpw.dc.gov/service/solid-waste-collector-registration-and-reporting.

^{xxi} To learn more about the registration and reporting requirements for solid waste collectors in the District, visit dpw.dc.gov/service/solid-waste-collector-registration-and-reporting.

^{xxii} The *Desktop Waste Characterization Study (March 2021)* can be found online by visiting zerowaste.dc.gov/page/reports-1.

^{xxiii} Source: U.S. Census Bureau “Characteristics of Daytime Urban Commuters for 20 U.S. Cities: Gender, Work, and Family” (hdcensus.gov/content/dam/Census/library/working-papers/2015/demo/2015-Laughlin-01-Abstract.pdf); WTOP’s “Has DC tourism rebounded since the pandemic?” (wtop.com/business-finance/2023/05/dc-domestic-tourism-within-9-of-pre-pandemic-where-dc-is-marketing-now/).

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For more information on waste diversion in the
District of Columbia, visit zerowaste.dc.gov.