



COUNTY BACKGROUND AND MATERIALS MANAGEMENT OVERVIEW

Fairfax County Solid Waste Management Plan Project

PREPARED BY:



COMMISSIONED BY:

**Fairfax County,
Virginia**



TABLE OF CONTENTS

Table of Contents.....	3
List of Exhibits.....	5
County Background.....	6
County Growth.....	7
<i>Population</i>	7
<i>Housing</i>	8
<i>Employment</i>	9
Refuse and Recycling Data	9
Recent Trends	9
Waste Composition.....	12
Business Sector Analysis	16
Projected Trends.....	18
Fairfax County Services.....	19
County Curbside Collection Services	19
Private Curbside Collection Services.....	20
Residential & Non-Residential Drop-off Services	20
Materials Management Infrastructure.....	21
County-Utilized Infrastructure	21
<i>Refuse Infrastructure</i>	22
<i>Recycling Infrastructure</i>	23
<i>Yard & Food Waste Infrastructure</i>	23
<i>Specialty Waste Infrastructure</i>	23
Regional Infrastructure	25
<i>Refuse Infrastructure</i>	26
<i>Recycling Infrastructure</i>	26
<i>Yard Waste Infrastructure</i>	26
<i>Specialty Waste Infrastructure</i>	26
County Programs, Plans, and Policies	26
Community Access to Effective and Convenient Collection Systems.....	26
Education and Outreach	27
Supportive Policy.....	28



Public and Private Partnerships.....29

Facilities.....30

Robust Markets30

Policy, Plans, and Programs Takeaways.....31

Appendix32

Population, Housing, and Employment32

Waste Composition Studies.....34

Curbside Collectors.....43

Drop-off Fees.....46

Materials Management Facilities47

Business Sector Analysis52

References58

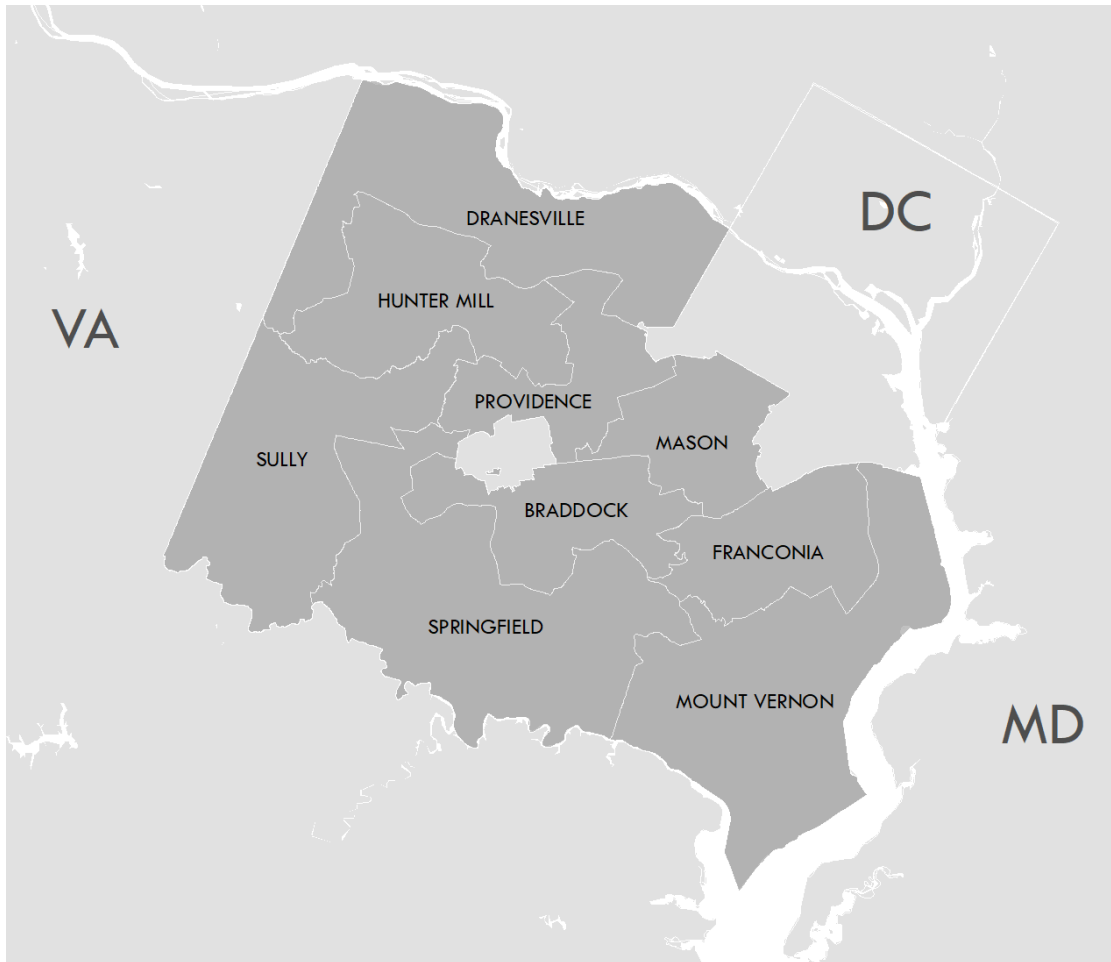
List of Exhibits

Exhibit 1: Map of Fairfax County Supervisor Districts.....	6
Exhibit 2: Fairfax County Population, 1970-2023.....	7
Exhibit 3: Fairfax County Population, 2025-2050.....	7
Exhibit 4: Historic and Projected Housing Growth by Unit Type, 1950 through 2050	8
Exhibit 5: Recent Waste and Recycling Data, 2019 through 2023	10
Exhibit 6: 2018-2023 and Average Waste and Recycling Generation Rates, lbs./person/day	11
Exhibit 7: Fairfax County Residential and Commercial Refuse, 2019-2023.....	11
Exhibit 8: Fairfax County Waste Composition Results, April 2024.....	12
Exhibit 9: Demographics & Diversion Rates of Comparison Communities.....	13
Exhibit 10: Comparison of Major Material Categories from Residential Waste Composition Studies.....	14
Exhibit 11: Comparison of Major Material Categories from Commercial Waste Composition Studies	14
Exhibit 12: Comparison of Major Material Categories from Overall Waste Composition Studies	15
Exhibit 13: Updated 2023 Estimated Refuse Tonnage Distribution, C&D Removed	16
Exhibit 14: Estimated 2023 Commercial Refuse Tonnage by Supervisor District	16
Exhibit 15: CalRecycle Employee Disposal Rates by Sector, tons/employee/year	17
Exhibit 16: Projected Fairfax County Waste Generation.....	18
Exhibit 17: Projected Single-family, Multi-family, and Commercial Refuse	19
Exhibit 18: Funding for County Curbside Collection Programs	20
Exhibit 19: Map of County Utilized Facilities.....	21
Exhibit 20: Funding for Solid Waste Management at Facilities	22
Exhibit 21: County-Contracted Landfill & WTE Facility Capacity and Remaining Life	22
Exhibit 22: Map of Uncontracted Facilities.....	25
Exhibit 23: Current and Projected Population by Supervisor District, 2023-2050.....	32
Exhibit 24: Fairfax County Age Distribution, 1970-2050	32
Exhibit 25: Fairfax County Racial and Ethnic Distribution, 2000, 2010, and 2020	32
Exhibit 26: Fairfax County Housing Distribution, 1950-2050.....	33
Exhibit 27: Distribution of Commercial Square Footage	33
Exhibit 28: Employed Fairfax County Residents, 2010-2022	34
Exhibit 29: Fairfax County Employment Projections, 2025-2050.....	34
Exhibit 30: Austin, TX Residential Waste Composition, 2015	34
Exhibit 31: Denver, CO Residential and Commercial Waste Composition, 2017	35
Exhibit 32: City of Minneapolis – Hennepin County, MN Residential Waste Composition, 2014	37
Exhibit 33: Metro Nashville Residential, Commercial, and Overall Waste Composition, 2018	39
Exhibit 34: San Diego, CA Overall Waste Composition, 2012.....	40
Exhibit 35: Permitted Residential Collectors.....	43
Exhibit 36: Private Residential Curbside Service Provisions, Interviewed Collectors	44
Exhibit 37: Permitted Commercial Private Collectors.....	45
Exhibit 38: County Permitted Food Waste Private Collectors	45
Exhibit 39: Residential Drop-off Fees (I-66 Transfer Station and I-95 Landfill Complex), FY 2025.....	46
Exhibit 40: Commercial Drop-off Fees (I-66 Transfer Station and I-95 Landfill Complex), FY 2025	47
Exhibit 41: County Utilized Facilities.....	47
Exhibit 42: Fairfax County Purple Can Club Dumpster Locations	48
Exhibit 43: Nearby Transfer Stations, MRF's, Landfills, and Compost Sites	49
Exhibit 44: Capacity and Expected Life of Uncontracted Landfills in Northern Virginia and Nearby Maryland Communities ...	51
Exhibit 45: Additional End Markets Found Near Fairfax County (~100 Mile Range).....	51
Exhibit 46: CalRecycle Sector Groups & Correlating NAICS Codes	52
Exhibit 47: Fairfax County Business Establishments and Employment by 3-digit NAICS Code, 2021 County Business Patterns ..	54
Exhibit 48: Commercial Refuse Stream Contribution Estimates by Industry, 2021	56

COUNTY BACKGROUND

Located in northern Virginia, Fairfax County spans 391 square land miles and is home to over 1.18 million people. The County is governed by a Board of Supervisors, which is comprised nine elected members for each of nine magisterial districts and an elected County-wide Chair. The nine Supervisor Districts are outlined in in Exhibit 1.

Exhibit 1: Map of Fairfax County Supervisor Districts



The County is a member of the Metropolitan Washington Council of Governments (MWCOG), which is a non-profit association of elected officials from 24 local governments, including Maryland and Virginia state legislators and the United States Congress. Fairfax County is also a member of the Northern Virginia Regional Commission (NVRC). NVRC is a council of 13 local governments and considered a political subdivision of the Commonwealth of Virginia.

Much the County falls within the Piedmont plateau region of the United States, which features rolling hills and clay soils. To the east of Interstate 95, the County lies within the embayed section of the Coastal Plain, which is characterized by water features such as bays and estuaries. The Potomac River runs along Fairfax County's northern and eastern borders and separates the County from the State of Maryland. Fairfax County is also bordered by Arlington County, Virginia to the east and Loudoun County, Virginia to the west. The Occoquan River separates

Fairfax County from Prince William County, Virginia to the south. Fairfax County encompasses the Cities of Fairfax and of Falls Church, Virginia, as well as the towns of Clifton, Vienna, and Herndon.

Fairfax County’s Department of Transportation provides a multi-modal transportation system for people and goods throughout the County. Development of the County’s transportation system is guided by the One Fairfax policy to ensure the community’s mobility needs are adequately addressed. The One Fairfax policy came into effect in 2017 and outlines expectations for racial and social equity considerations in all County programs, policies, and plans. The County’s transportation system includes the Fairfax Connector, which maintains 93 daily bus routes. The Washington Metropolitan Area Transit Authority (WMATA) also maintains local Metrorail and Metrobus programs, which operate throughout Fairfax County and surrounding communities. In 2024, the County will open two “Park and Ride” commuter garages for vehicles and bicycles with stations for the Fairfax Connector and Metrobus programs. The County also provides the Fastran program, which is a separate busing system dedicated to transporting residents receiving critical healthcare or participating in human services programs. In addition, Fairfax County maintains over 900 miles of bikeways and sidewalks for pedestrians and bicyclists.

County Growth

Fairfax County is expected to grow in population, housing, and employment throughout the County’s solid waste management planning period, which will result in an approximately 3% increase in total waste generation every five years through 2050. The socioeconomic conditions of the County are a major influence on the generation and management of local refuse and recycling materials.

POPULATION

In 1970, the County had a population of 454,300 (Exhibit 2). By 2020, the County’s population grew to 1,171,800 and reached an average household size of 2.77 people. From 2010 through 2020, the County’s population growth slowed. According to the NVRC, this was largely due to federal government shutdowns that occurred during the period, as well as the start of the COVID-19 Pandemic. The only documented decrease in the County’s overall population since 1970 occurred from 2020-2021, during which overall County population declined by 1,800 people. This decrease occurred during the height of the COVID-19 Pandemic.

Exhibit 2: Fairfax County Population, 1970-2023

Year	1970	1980	1990	2000	2010	2020	2021	2022	2023
Pop.	454,300	596,900	818,600	969,700	1,081,700	1,171,800	1,170,000	1,172,600	1,185,980

County population rebounded in 2022 to 1,172,600 people. As of January 2023, the County reported an overall population of 1,185,980 and a population density of approximately 2,916 people per square mile. By 2050, the County is expected to have a population of 1,384,000 people (Exhibit 3). The County’s projected population by Supervisor District can be found in Exhibit 23 of the Appendix.

Exhibit 3: Fairfax County Population, 2025-2050

Year	1970	1980	1990	2000	2010	2020
Pop.	454,300	596,900	818,600	969,700	1,081,700	1,171,800

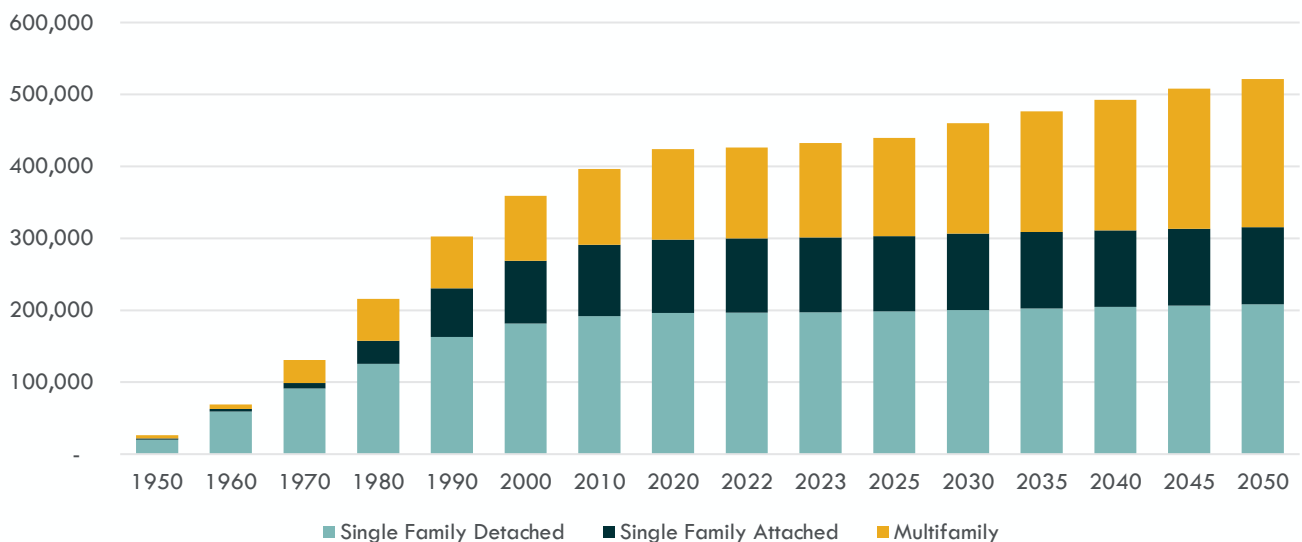
In 1970, over 60% of Fairfax County’s population was under the age of 35 and the median age was 25.2 years. Since then, the County’s population has matured, shifting the overall distribution towards older age groups. In 2020, only about 45% of Fairfax County’s population was under the age of 35 and the County’s median age rose to 38.3 years (See Appendix, Exhibit 24). This trend is expected to continue through 2050.

The racial and ethnic distribution of Fairfax County has also shifted over time. In 2000, the County was 69.9% White, 13.1% Asian and Pacific Islander, 11.0% Hispanic¹, 8.6% Black, 0.3% American Indian and Alaska Native, and 8.2% identified as belonging to “other” racial and ethnic groups. The County’s diversity among racial and ethnic groups has notably increased since 2000, and as of 2020, Fairfax County was 49.5% White, 20.5% Asian and Pacific Islander, 17.3% Hispanic², 9.6% Black, 0.6% American Indian and Alaska Native, and 19.8% identified as belonging to “other” racial and ethnic groups (See Appendix, Exhibit 25).

HOUSING

Historically, housing infrastructure in Fairfax County has been predominantly composed of single-family detached and attached units. In 1950, single-family units accounted for 83% of housing structures, and multi-family units accounted for only 17%. As of 2023, Fairfax County’s single-family units comprise about 70% of housing structures in the County overall, and multi-family units account for the remaining 30% (Exhibit 4). During this time, total housing units increased from 26,558 units in 1950 to about 432,550 units in 2023, which indicates an additional 405,992 units were constructed in Fairfax County between 1950 and 2023 (See Appendix, Exhibit 26).

Exhibit 4: Historic and Projected Housing Growth by Unit Type, 1950 through 2050



Along with the growth in housing units, the County’s median household and family incomes have more than doubled in recent decades. In 1995, the median household income was \$70,000, and the median family income was \$78,000. As of 2022, the median household income was \$145,164, and the median family income was \$174,085. The median market value of owned housing units in Fairfax County also increased from \$194,700 in 1990 to \$691,564 in 2023. Similarly, the average monthly rent in 1995 was \$767, and by 2022, it had risen to \$1,958.

¹ Hispanic persons may be of any race; percentage total sums to over 100%.
² Hispanic persons may be of any race; percentage total sums to over 100%.

Additional single-family and multi-family units are expected to be constructed as the Fairfax County population increases. However, single-family detached and attached units are expected to grow at a much slower rate than multi-family units. From 2020 to 2050, the number of multi-family units is expected to increase by over 80,000. Comparatively, the number of single-family units is expected to increase by approximately 17,000.

EMPLOYMENT

As of 2022, over 620,000 people were employed within Fairfax County (See Appendix, Exhibit 28). According to MWCOG, the region's employment spans across many sectors but is concentrated in the "professional & business services" sector. According to the Fairfax County Economic Development Authority (FCEDA), the County's major private-sector employers include Amazon, Booz Allen Hamilton, Capital One, Freddie Mac, General Dynamics, Inova Health System, and SAIC. Public-sector employers also play a key role in the County. The United States Federal Government employs over 25,000 in the County, while Fairfax County Government and Public Schools employ over 30,000. The Commonwealth of Virginia also employs over 5,000 people in the County.

Fairfax County is expected to experience continuous growth in employment from 2025-2050 (Exhibit 29). The five-year period from 2025-2030 is expected to experience the most rapid growth in employment with a net gain of nearly 38,000 jobs. This growth is expected to continue at a slower pace after 2030, but by 2050, the County's employment is expected to reach 842,043. According to MWCOG's Round 10.0 Economic Model, most of the job growth will occur within "professional and business services" and the "leisure and hospitality" industries.

REFUSE AND RECYCLING DATA

Fairfax County submits an Annual Recycling Report to Virginia's Department of Environmental Quality (VADEQ). The annual reports to VADEQ include data gathered through public collection programs in the County and direct outreach to private collectors (also known as haulers) and commercial entities. Annual reports for 2018, 2019, 2020, 2021, 2022, and 2023 were analyzed to understand recent disposal and recycling activity.³

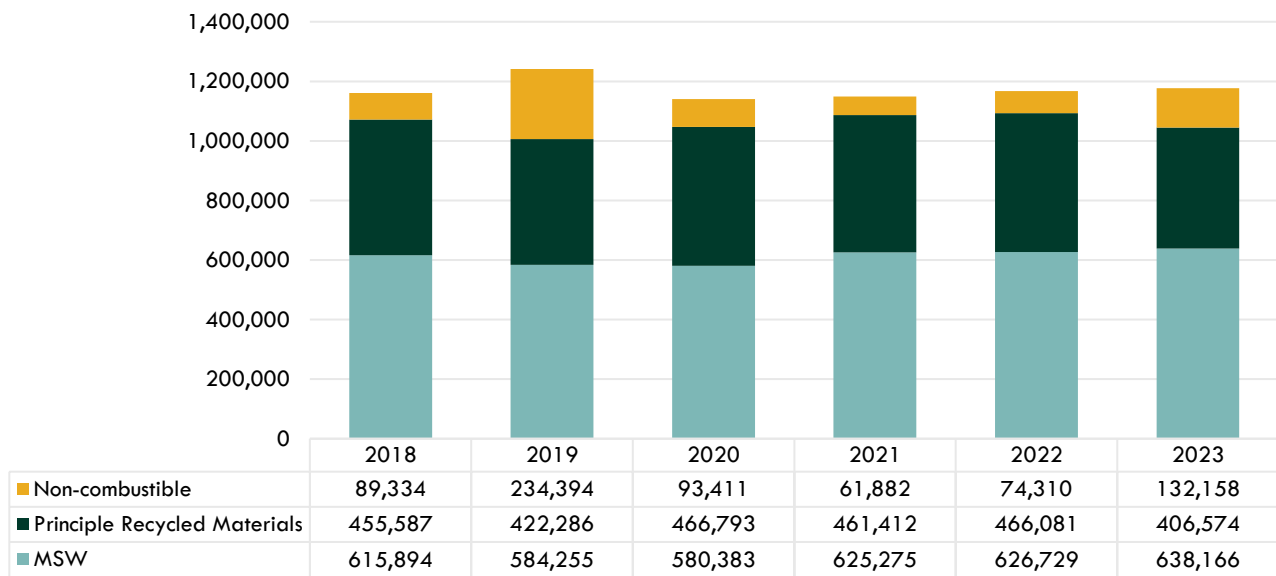
Recent Trends

Fairfax County's highest year of waste generation over the six-year period occurred in 2019 (

³ The Annual Recycling Reports reflect the County's best available data; however, data submission by private collectors and commercial entities in the County is largely voluntary. As a result, tonnage data be inaccurately or inconsistently reported. These issues were not evaluated as part of Task 2.

Exhibit 5). The overall tons generated dropped by over 100,000 the following year in 2020, which coincides with height of the COVID-19 Pandemic. Overall waste generation did not increase again until 2022 but remains below 2019 levels as of 2023.

Exhibit 5: Recent Waste and Recycling Data, 2019 through 2023



As part of the annual reports to Virginia’s Department of Environmental Quality, the reported disposed and diverted tonnages are used to calculate an adjusted recycling rate with the following formula:

$$\left(\frac{\text{PRM} + \text{Non-combustible}}{\text{PRM} + \text{Recycling Credits} + \text{Disposed Refuse}} \right) \times 100 + \text{Source Reduction Credit} = \text{Final Recycle Rate}$$

“PRM” includes paper, metal, plastic, glass, commingled materials, yard waste, wood, textiles, tires, used oil filters, used antifreeze, inoperative automobiles, batteries, and electronics. “Non-combustible” refers to tonnages of recycling residues, reused solid waste, recycled construction and demolition debris, recycled ash and debris, and source reduced materials.⁴ “Disposed Refuse” includes tonnages of solid waste delivered to sanitary landfills or incinerators for disposal.⁵ A “Source Reduction Credit” of 2% is given to communities with documented source

⁴ The VADEQ refers to Non-combustible as “Credits.” In Fairfax County, these materials are considered “non-combustible” because they are not incinerated through the local Waste-to-Energy facility, but they are not considered PRM.

⁵ The VADEQ refers to Disposed Refuse as “MSW Disposed”

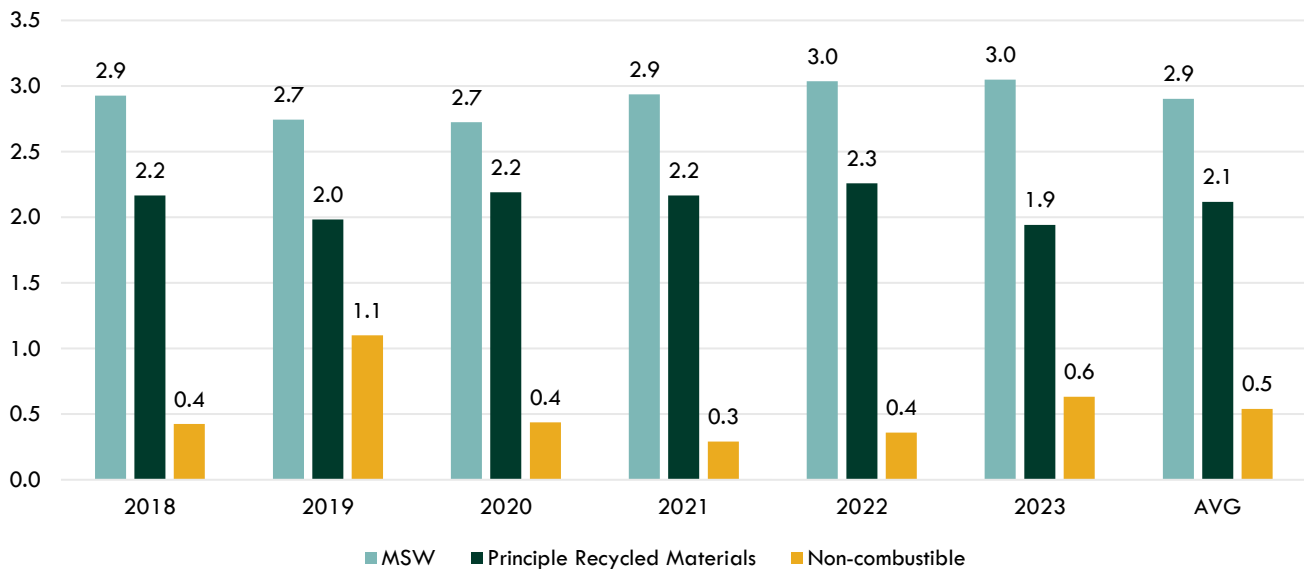
reduction programs, including Fairfax County (VADEQ's formula does not allow more than 5 percentage points to be added to the PRM despite the total Recycling Credits and/or Source Reduction Credit).

The sudden change in material generation from 2019 to 2020 resulted in the County's highest adjusted recycling rate during the six-year period (49.6% in 2020). The County's adjusted recycling rate has declined in proceeding years, despite overall generation remaining below pre-pandemic totals. The County's adjusted recycling rate was 43.9% in 2023, which was notably lower than the reported rates from 2018 through 2022.

Applying the annual Fairfax County population data to the respective disposal and recycling reported totals allows the County to estimate the amount of material in pounds (lbs.) generated per person per day. The generation rates for disposed and recycled materials from 2018 through 2023, as well as the average of all six years, are found in

Exhibit 6.

Exhibit 6: 2018-2023 and Average Waste and Recycling Generation Rates, lbs./person/day



From 2019 through 2020, the County utilized a guideline provided by the Virginia Department of Environmental Quality (VADEQ), which estimated that 45% of the refuse disposal total was generated by the residential sector and 55% of the refuse disposal total was generated by the commercial sector. “Residential” refers to waste generation from single-family properties, and “commercial” refers to waste generation from private entities and multi-family properties. An updated VADEQ guideline was utilized for 2021 through 2023, which estimated that 40% of the County’s refuse total was generated by the residential sector and the remaining 60% of the refuse disposal total was generated by the commercial sector. The results of applying these estimates to the County’s reported refuse tonnages are found in Exhibit 7.

Exhibit 7: Fairfax County Residential and Commercial Refuse, 2019-2023

SECTOR	2019	2020	2021	2022	2023
Residential	262,915	261,172	250,110	250,692	255,266
Commercial	321,340	319,211	375,165	376,037	382,900

In April 2024, the Fairfax County Department of Public Works and Environmental Services (DPWES) commissioned a waste composition study for the County. Following this study, it was concluded that VADEQ’s general guidelines did not fully reflect residential and commercial generation levels in the County, and DPWES determined the split should be adjusted to breakout multi-family waste from the commercial total. With this adjustment, 40% of the County’s refuse disposal total should be allocated to the single-family residential sector, 15% should be allocated to the multi-family residential sector, and 45% should be allocated to the commercial sector. If uncompacted bulk + CDD is removed from the County’s refuse totals, then this split is adjusted to 35% single-family, 13% multi-family, 39% commercial, and 13% CDD. The updated distribution with CDD broken out is utilized in the “Business Sector Analysis” section of this report.

Waste Composition

As mentioned above, Fairfax County’s DPWES team commissioned a waste composition study in April 2024. DPWES partnered with environmental consulting firms, Resource Recycling Systems (RRS) and CDM Smith, to conduct a hand sort of commercial and residential sector materials. A full report on the waste composition study, its methodology, results, and additional analysis are provided separately from this section; however, the high-level results of the study are displayed in Exhibit 8. The composition results were calculated at a 90% confidence interval.

Exhibit 8: Fairfax County Waste Composition Results, April 2024

MATERIAL	RESIDENTIAL	+/-	COMMERCIAL	+/-	OVERALL ⁶	+/-
Mixed paper	7.5%	1.54%	7.6%	1.26%	7.6%	0.98%
OCC	5.4%	2.20%	8.5%	2.04%	7.1%	1.51%
Poly coated paper	1.5%	0.25%	1.8%	0.33%	1.7%	0.21%
Other fiber (non-compostable)	0.3%	0.20%	0.4%	0.17%	0.4%	0.13%
TOTAL PAPER	14.8%	3.20%	18.3%	2.44%	16.7%	2.00%
PET, HDPE Bottles	1.4%	0.21%	2.5%	0.51%	2.0%	0.30%
PET Thermoforms	0.5%	0.10%	0.5%	0.20%	0.5%	0.11%
Polypropylene	0.6%	0.11%	0.8%	0.20%	0.7%	0.12%
Bulky Rigid Plastics	1.7%	0.60%	1.7%	0.68%	1.7%	0.45%
Other plastics	2.8%	0.55%	3.0%	0.56%	2.9%	0.39%
Plastic Film	4.6%	0.67%	5.7%	1.12%	5.2%	0.67%
TOTAL PLASTIC	11.6%	1.24%	14.1%	2.05%	12.9%	1.24%
Glass Containers	2.6%	0.56%	1.5%	0.48%	2.0%	0.38%
TOTAL GLASS	2.6%	0.56%	1.5%	0.48%	2.0%	0.38%
Aluminum Beverage Containers	0.4%	0.10%	0.5%	0.10%	0.4%	0.07%

⁶ Overall composition in this report has not been adjusted for C&D materials.

MATERIAL	RESIDENTIAL	+/-	COMMERCIAL	+/-	OVERALL ⁶	+/-
Other Aluminum	0.5%	0.10%	0.5%	0.14%	0.5%	0.09%
Ferrous Containers	0.4%	0.09%	0.3%	0.08%	0.3%	0.06%
Scrap metal	4.7%	1.94%	3.0%	1.12%	3.8%	1.09%
TOTAL METAL	6.0%	1.93%	4.3%	1.14%	5.1%	1.09%
Yard waste	13.7%	3.30%	6.1%	2.83%	9.7%	2.25%
Food Waste	17.2%	3.55%	18.0%	5.26%	17.6%	3.23%
Other Organics	4.0%	0.61%	6.4%	1.60%	5.3%	0.91%
Fines	1.0%	0.36%	0.6%	0.20%	0.8%	0.20%
Diapers	3.2%	0.91%	1.7%	0.73%	2.4%	0.59%
TOTAL ORGANICS	39.1%	4.14%	32.9%	4.98%	35.8%	3.30%
Electronics	2.1%	0.86%	2.4%	0.96%	2.3%	0.65%
Batteries	0.1%	0.03%	0.0%	0.01%	0.0%	0.02%
Landfill	8.1%	1.67%	8.2%	2.18%	8.2%	1.39%
TOTAL MISC. INORGANIC	10.2%	1.73%	10.7%	2.12%	10.5%	1.38%
CDD	8.0%	2.88%	14.4%	5.57%	11.4%	3.28%
HHW	1.0%	0.43%	0.5%	0.36%	0.7%	0.28%
TEXTILES	6.8%	1.67%	3.3%	1.40%	4.9%	1.12%

To support the results of the County’s hand sort, recent waste composition studies from five communities were selected for comparison. The five communities were selected by Fairfax County based on demographic data and published waste diversion metrics. The communities include the City of Austin, Texas, the City/County of Denver, Colorado, Hennepin County, Minnesota, the City of Nashville and Davidson County (Metro Nashville), Tennessee, and the City of San Diego, California. High-level demographic and diversion information for each community is below (Exhibit 9).

Exhibit 9: Demographics & Diversion Rates of Comparison Communities

	FAIRFAX COUNTY, VA	AUSTIN, TX	DENVER, CO	HENNEPIN COUNTY, MN	METRO NASHVILLE, TN	SAN DIEGO, CA
Population (2020)	1,167,000	961,855	716,577	1,281,565	689,447	1,386,932
Land Area (2020, Sq. Miles)	390	320	153	554	476	326
Population Density (2020, persons per Sq. Mile)	2,869	3,006	4,674	2,313	1,449	4,256
Households (2018-2022)	410,844	423,079	322,964	529,029	291,884	515,475
Persons per Household (2018-2022)	2.8	2.2	2.2	2.4	2.3	2.6

While the communities' demographics and diversion rates differ from those of Fairfax County, these communities were selected for comparison because they are geographically diverse and each has conducted a waste composition study of the refuse generated by its residential, commercial, or overall populations. Each waste composition study was reviewed and organized into major material categories for comparison.⁷ Exhibit 10 displays the major material categories found in the residential waste composition studies available from the comparison communities.

Exhibit 10: Comparison of Major Material Categories from Residential Waste Composition Studies⁸

	FAIRFAX COUNTY, VA	AUSTIN, TX ⁹	DENVER, CO	HENNEPIN COUNTY, MN	METRO NASHVILLE, TN
Paper	14.8%	22.8%	20.7%	14.1%	23.2%
Plastic	11.6%	12.8%	12.8%	14.5%	15.5%
Metal	6.0%	4.4%	2.5%	4.0%	3.5%
Glass	2.6%	3.9%	5.5%	2.4%	5.4%
Organics	39.1%	46.3%	47.9%	29.1%	31.9%
Textiles	6.8%	2.0%	2.9%	5.1%	5.9%
Other Waste	19.2%	5.6%	7.7%	30.9%	14.6%

Residential waste composition may vary between communities due to demographics, cultural differences, and collection service availability. By comparing the major material categories of the residential compositions, Fairfax County's residential population disposes more metal, textiles, and other waste (HHW, CDD, etc.) than the comparison communities. The County's residential population disposes less plastic than the comparison communities. County residents also dispose less paper and glass than all other comparison communities, except Hennepin County, Minnesota.

Of the comparison communities, only Denver and Metro Nashville conducted comprehensive commercial waste composition studies. Exhibit 11 displays the major material categories from the commercial studies.

Exhibit 11: Comparison of Major Material Categories from Commercial Waste Composition Studies¹⁰

	FAIRFAX COUNTY, VA	DENVER, CO	METRO NASHVILLE, TN
Paper	18.3%	24.7%	27.9%
Plastic	14.1%	13.1%	16.9%

⁷ The full waste composition results from each comparison community can be found in the Appendix, Exhibit 30, Exhibit 31, Exhibit 32, Exhibit 33, Exhibit 34.

⁸ Totals may sum to over 100% due to rounding.

⁹ Austin, TX's residential waste composition study focuses only on waste collected through the Austin Resource Recovery (ARR) program; it does not include material managed by private collectors.

¹⁰ Totals may sum to over 100% due to rounding.

	FAIRFAX COUNTY, VA	DENVER, CO	METRO NASHVILLE, TN
Metal	4.3%	3.5%	3.0%
Glass	1.5%	4.0%	4.9%
Organics	32.9%	35.1%	18.5%
Textiles	3.3%	3.1%	5.0%
Other Waste	25.6%	16.1%	23.8%

Commercial waste composition can vary between communities depending on local industries, regulations, and consumer behavior. Denver’s economic landscape features nine industry clusters: aerospace, aviation, bioscience, broadband & digital communications, energy & natural resources, financial services, food & beverage production, healthcare & wellness, and information technology/software. Metro Nashville’s economy is driven by the following industries: health care, tourism & hospitality, advanced manufacturing, music & entertainment, and technology. Fairfax County’s economic activity focuses on cybersecurity, aerospace, financial services, healthcare, and information technology. Considering economic activity differences and similarities between the three communities, it is notable that Fairfax County’s commercial population disposes less paper (including cardboard) and glass than the commercial populations of both Denver and Metro Nashville. The County’s commercial sector disposes of organics and textiles at a similar rate to Denver.

Similar to the commercial waste composition studies, only two communities have published overall waste composition results for their communities, Metro Nashville and San Diego. The results of these studies are compared to the Fairfax County overall waste composition study results in Exhibit 12.

Exhibit 12: Comparison of Major Material Categories from Overall Waste Composition Studies¹¹

	FAIRFAX COUNTY, VA	METRO NASHVILLE, TN	SAN DIEGO, CA
Paper	16.7%	26.3%	16.8%
Plastic	12.9%	16.4%	8.9%
Metal	5.1%	3.2%	3.5%
Glass	2.0%	5.1%	1.7%
Organics	35.8%	22.9%	38.9%
Textiles	4.9%	5.3%	3.4%
Other Waste	22.6%	20.8%	26.8%

Factors influencing communities’ residential and commercial waste composition results, such as economic activity, also impact overall waste composition. The City of San Diego’s overall results for paper, glass, and organics align well with the results of Fairfax County’s recent study. Conversely, the amount of textiles and other waste found in the composition of Metro Nashville’s waste stream better aligns with the amount of these materials found in Fairfax County’s study. Overall, Fairfax County’s waste stream does not align perfectly to any comparison community, but the communities who have been successful and faced challenges in lowering the amount of recoverable materials in their disposal streams can serve as models for the County.

¹¹ Totals may sum to over 100% due to rounding.

In conclusion, the waste composition study for Fairfax reveals several material categories that constitute a significant percentage of the total refuse volume, including paper (17%), plastic (13%), food waste (18%), other organics (18%), and construction demolition debris (11%). Most materials in these categories can be easily diverted through existing programs, particularly paper materials, plastics, food waste, and yard trimmings. There is potential to recover some other organics and construction demolition debris materials, but additional collection programs and processing infrastructure would be needed.

Following the waste composition study, the County staff conducted a statistical analysis of refuse accepted at its facilities that was not part of the waste composition study. This portion of the County’s refuse is brought directly to the County facilities by junk collectors, small contractors, and residents. Much of this volume has a high percentage of construction debris and bulk waste. Staff estimates the volume to be in the range of 70,000 to 90,000 tons per year. It is not included in the above 11% of Construction Debris found in the waste composition study. Staff also noted that this stream would require much less sorting by the generator and less processing for reuse than the other categories noted above. The above material types should be the focus of the County’s strategy for achieving its waste diversion goals as these present the majority of the current and projected refuse waste stream.

Business Sector Analysis

To understand the impact of commercial entities on the County's refuse disposal, this section presents an analysis aimed at estimating the amount of commercial refuse disposed in each Supervisor District, as well as a breakdown of refuse disposed by each business sector within the County. In 2023, Fairfax County disposed approximately 635,200 tons of refuse and reported that the commercial sector was responsible for 382,900 tons of this total. If this amount is adjusted with the County’s new single-family, multi-family, and commercial split, and uncompacted bulk construction and demolition debris is removed (13% of the refuse total), the commercial sector disposed an estimated 249,900 tons of refuse in 2023 (Exhibit 13).¹²

Exhibit 13: Updated 2023 Estimated Refuse Tonnage Distribution, Uncompacted Bulk + C&D Removed

SECTOR	2023	% of TOTAL
Single-family	219,200	35%
Multi-family	83,300	13%
Commercial	249,900	39%
Uncompacted Bulk + CDD	82,700	13%
Total MSW	635,200	100%

While the adjusted split provides insight on the amount of multi-family refuse previously categorized as “commercial,” it is unknown how much of the commercial refuse is generated in each Supervisor District. To better understand where the 2023 commercial refuse tonnages were generated throughout the County, commercial square footage data by Supervisor District was utilized (See Appendix, Exhibit 27). The percentages of the County’s total commercial square

¹² The 13% C&D material is referring to material that was not sorted as part of the 2024 Waste Characterization Study.

footage within each Supervisor District were calculated and applied to the tonnages above.¹³ The results of combining these data provide estimates of commercial refuse generation by Supervisor District in Exhibit 14 below.¹⁴

Exhibit 14: Estimated 2023 Compacted Commercial Refuse Tonnage by Supervisor District

Supervisor District	Commercial
Braddock	12,200
Dranesville	25,900
Franconia	22,400
Hunter Mill	34,800
Mason	27,400
Mount Vernon	22,800
Providence	56,800
Springfield	13,200
Sully	34,300

Historically, when businesses do not have actual data available, the County has utilized commercial generation rates based on building use type (office/mixed use, industrial, food/retail, public facility, institution/school, or warehouse) and square footage to estimate the total amount of waste generated at commercial sites. These rates estimate overall generation and do not differentiate between waste disposed or diverted or breakdown the amount of refuse generated by specific business sectors.

To address this gap, disposal rate data from a 2014 CalRecycle commercial waste characterization study was utilized and applied to County employee data for 2021. The choice of 2021 employee data for this analysis was strategic, as it coincides with the publication of the most recent County Business Patterns Survey from the U.S. Census Bureau. The estimated disposal figures calculated with the CalRecycle rates were subsequently normalized against the compacted commercial refuse data reported by the County in 2023. This was done to ensure that the analysis more accurately reflects the County's state of waste disposal and promotes informed decision-making for future waste reduction initiatives. The steps taken to complete this analysis, as well as the high-level results, are detailed in this section.

CalRecycle conducted its commercial waste characterization study in 2014 to evaluate commercial disposal and diversion in California and determined industry-specific disposal rates (Exhibit 15). This is the most recently available study of commercial generation and disposal with tons per employee per year rates by specific business sectors. These rates categorized businesses into sector groups that align with 2017 North American Industry Classification System (NAICS) codes, which are used in the County Business Patterns Survey. Based on the sector groups, the rates can be applied to the County's employment totals by sector to estimate each industry's contribution to the commercial refuse total for 2023 (See Appendix, Exhibit 46 and Exhibit 47).

Exhibit 15: CalRecycle Employee Disposal Rates by Sector, tons/employee/year¹⁵

¹³ Single-family housing units include single-family (detached houses), duplexes, multiplexes, townhomes, and mobile homes. Multi-family housing units include multifamily 1-4 stories, multifamily 5-8 stories, and multifamily 9+ stories. These are outlined in Exhibit 27 of the Appendix.

¹⁴ This analysis does not account for different business types and assumes refuse disposal is uniform across commercial square footage.

¹⁵ CalRecycle's study included a 17th sector for "Multi-family;" this sector was not included in the Fairfax County analysis because multi-family waste has been separated from the commercial waste total based on the County's estimated 40% single-family, 15% multi-family, and 45% commercial split for overall refuse.

CALRECYCLE COMMERCIAL SECTOR	DISPOSED (TONS/EMPLOYEE/YEAR)
1 Arts, Entertainment, & Recreation	1.94
2 Durable Wholesale & Trucking	0.57
3 Education	0.38
4 Hotels & Lodging	1.4
5 Manufacturing - Electronic Equipment	0.31
6 Manufacturing - Food & Nondurable Wholesale	1.23
7 Manufacturing - All Other	0.44
8 Medical & Health	0.57
9 Public Administration	0.3
10 Restaurants	1.57
11 Retail Trade - Food & Beverage Stores	0.94
12 Retail Trade - All Other	1.74
13 Services - Management, Administrative, Support, & Social	0.6
14 Services - Professional, Technical, & Financial	1.61
15 Services - Repair & Personal	0.85
16 Not Elsewhere Classified	0.46

Based on this analysis, it was determined that the professional and technical services sector (NAICS code 541, CalRecycle Sector Group 14) contributes the most to the compacted commercial waste total. Based on the reported compacted commercial waste and the CalRecycle disposal rates, this sector disposed an estimated 124,577 tons of waste in 2023, or 49.8% of the total compacted commercial waste stream. The food services and drinking places sector (NAICS 722, CalRecycle Sector Group 10) is estimated to be the second largest contributor to local compacted commercial waste totals. It is estimated that this sector disposed 18,330 tons of waste in 2023, or 7.3% of the compacted commercial waste total. The Credit intermediation and related activities (NAICS 522, CalRecycle Sector Group 14) disposed the third largest quantity of compacted commercial waste in 2023, which amounts to 12,255 tons of waste or 4.9% of the compacted commercial waste total. The remainder of the compacted commercial waste stream was distributed among the County’s other business sectors. Each sector’s estimated tonnage and percent contribution to the commercial waste stream can be found in Exhibit 48 of the Appendix.

Understanding the amount of waste generated by each commercial sector in the County provides insight on the opportunities and barriers Fairfax County may experience while moving towards their 90% landfill diversion goal. Based on the three commercial sectors that are estimated to be generating the most compacted commercial waste in the County, it is expected that large quantities of traditional refuse, as well as food waste, will continue to be generated by commercial entities in Fairfax County.

Projected Trends

Understanding Fairfax County’s future waste and recycling generation is a key component of solid waste planning. To project the waste and recycling tonnage from 2025 through 2050, the six-year average lbs./person/day generation rates in Exhibit 6 of the “Recent Trends” section were applied to the projected population data detailed in Exhibit 16. A similar approach of applying average generation rates to projected population has been utilized

by other Virginia Counties and Planning Districts in their solid waste management plan updates, including Arlington County, Prince William County, and the Thomas Jefferson Planning District.

Exhibit 16: Projected Fairfax County Waste Generation

POPULATION	2025	2030	2035	2040	2045	2050
Fairfax County	1,202,400	1,247,500	1,283,700	1,319,000	1,353,600	1,384,000
TONNAGE						
Disposed refuse	637,001	660,894	680,072	698,773	717,103	733,208
Recycling	464,738	482,169	496,161	509,804	523,178	534,927
Non-combustible	118,711	123,163	126,737	130,222	133,638	136,640
Total Generation	1,220,450	1,266,227	1,302,970	1,338,800	1,373,919	1,404,776
LBS./PERSON/DAY						
Disposed refuse	2.9	2.9	2.9	2.9	2.9	2.9
Principal Recycling Materials	2.1	2.1	2.1	2.1	2.1	2.1
Non-combustible	0.5	0.5	0.5	0.5	0.5	0.5
Total Generation	5.6	5.6	5.6	5.6	5.6	5.6

As noted in the “Recent Trends” section of this report, DPWES determined that a 40% single-family residential, 15% multi-family residential, and 45% commercial distribution should be the basis of refuse disposed in the County.¹⁶ This updated distribution was also applied to the County’s projected refuse tonnages in Exhibit 17.

Exhibit 17: Projected Single-family, Multi-family, and Commercial Refuse

DISPOSED REFUSE	2025	2030	2035	2040	2045	2050
Single-family Waste	254,800	264,358	272,029	279,509	286,841	293,283
Multi-family Waste	95,550	99,134	102,011	104,816	107,565	109,981
Commercial Waste	286,651	297,402	306,032	314,448	322,696	329,944
Total Disposed Refuse	637,001	660,894	680,072	698,773	717,103	733,208

FAIRFAX COUNTY SERVICES

Fairfax County manages curbside collection in a limited number of established solid waste collection areas, or Sanitary Districts, serving approximately 10% of the County’s residences. The remaining 90% rely on private collectors for collection services. Fairfax County also provides county-wide drop-off programs for disposed and diverted materials, as well as items that cannot be easily collected curbside. The following sections describe collection programs in the County, the facilities that manage collected materials, and the influence of the commercial sector on waste generation and management.

¹⁶ This distribution includes both compacted and uncompact waste.

County Curbside Collection Services

Fairfax County’s Sanitary Districts receive refuse, recycling, yard waste, and bulky item pickup through the DPWES Solid Waste Management Program (SWMP). Each year, residents living outside of the Sanitary Districts who wish to receive these services are able to petition the Board of Supervisors to establish new collection areas. Between January 1 and July 1, petitions can be made by any resident who lives within an area encompassing fifty homes or more and gathers valid signatures of support from at least 50% of those homes.¹⁷ The SWMP staff can also make recommendations on petitions to the Board for new collection areas, but this is not required for petitions to move forward. If the petition is authorized by the Board of Supervisors, a public hearing is held to gauge local support or opposition. The Board of Supervisors votes to approve or deny the petition following this hearing; if approved, the affected property owners are notified by mail and assigned a collection day. It is important to note however, that current County staffing and equipment levels cannot provide collection to all additional homes. The County is implementing a new service model that outsources some collection for new and existing Sanitary Districts, with County staff providing customer service support and bulky item pickups. Funding for curbside collection systems in Fairfax County is generated through two separate funds (Exhibit 18).

Exhibit 18: Funding for County Curbside Collection Programs

FUND	NAME	FUNDS SOURCE
Fund 400-C40130	Leaf Collection	Fee charged to homeowners in leaf collection district
Fund 400-C40140	Refuse Collection and Recycling Operations	Refuse collection fee funded by households in the County collection district. The FY2025 Refuse Collection (per household unit) is \$555 per year.

Residents within a Sanitary District can place refuse at the curb for weekly pickup in County-provided, wheeled carts. These residents can also set out recyclables through the weekly curbside recycling program. Sanitary Districts receive weekly yard waste collection from March 1 through December 24 each year. Yard waste must be placed in resident-owned rigid containers or a reinforced paper bag. Brush must be bundled in dimensions set by the SWMP. Additionally, Sanitary District residents can request special pickup services for bulky or large materials, such as furniture, mattresses, electronics or appliances, up to five times per fiscal year (July 1 – June 30) per commodity for free. Vacuum leaf collection is also provided by the SWMP three times per year to select Sanitary Districts residents who petitioned for the service. A similar but separate petition process is required to establish vacuum leaf collection within a Sanitary District.

Private Curbside Collection Services

Approximately 90% of the County’s residences do not receive curbside collection through the Sanitary District program; these residents and all other non-residential refuse and recycling generators either self-haul to a County disposal site or rely on licensed private-sector collectors to pick up refuse, recycling, and yard waste (See Appendix, Exhibit 35, Exhibit 37,

¹⁷ If residents’ homes are contiguous to an existing Sanitary District, the homes may be added to the district by gathering signatures from only the number of homes necessary to make the expanded area contiguous and homogenous with the existing area.

Exhibit 38). County-permitted collectors were evaluated through online research and phone interviews in February and March 2024 to understand fees and the level of service being provided to their residential customers. The annual costs for residential service ranged anywhere from \$400 to \$1,000 per year. Commercial services were not addressed as part of this research. Full details from interviewed collectors can be found in Exhibit 36 of the Appendix.

Residential & Non-Residential Drop-off Services

Fairfax County offers drop-off programs for residential and non-residential refuse and recycling generators at the I-95 Landfill Complex and I-66 Transfer Station. Refuse, yard trimmings, compostable goods and food waste, small quantities of construction and demolition debris (CDD), appliances, tires, furniture, and other specialty waste items can be dropped off for varying fees (See Appendix, Exhibit 39 and Exhibit 40). Recyclables (e.g., paper, plastic, metal, and glass) are also accepted at the I-95 Landfill Complex and I-66 Transfer Station for free.

Glass is not accepted in the County's curbside recycling program due to the material's low recovery rate in single-stream recycling systems and the significant cost to collect and transport the material. Moreover, the broken glass damages local recycling infrastructure in single-stream systems and contaminates other recycling material collected in single-stream programs. As an alternative, DPWES provides drop-off glass recycling through its "Purple Can Club" program. Through this program, glass recycling drop-off containers (painted a branded shade of purple) are located throughout the County for residents to recycle glass bottles and containers. As of May 2024, there are over 20 of these drop-off centers in operation across the County (See Appendix, Exhibit 42).

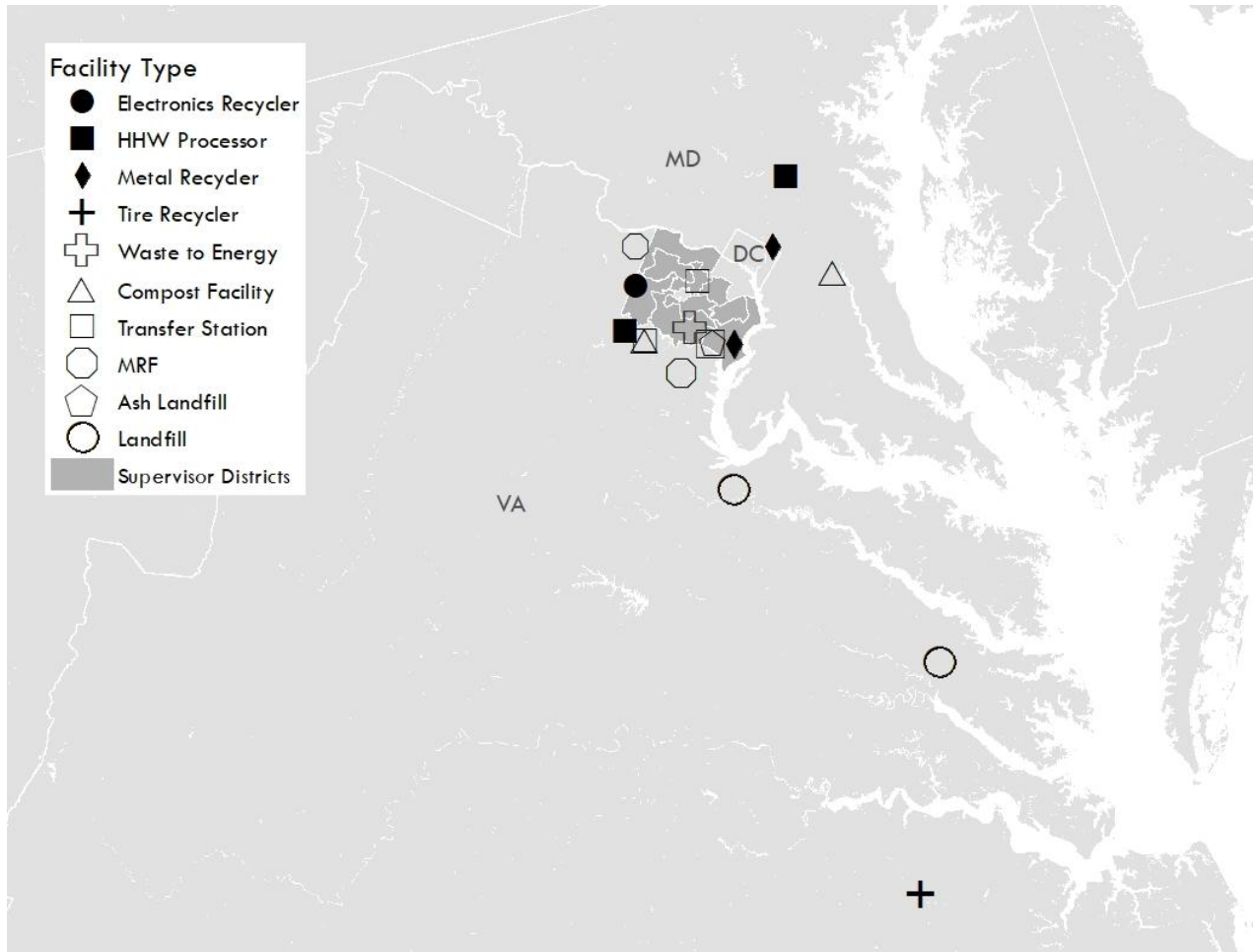
County residents have the option to drop-off food waste and compostable products at ten local farmers markets operated by the Fairfax County Park Authority, in addition to drop-off options at the I-66 Transfer Station and I-95 Landfill Complex. Residents also have the option to contract with private collectors for food waste collection at their homes. SWMP lists food waste collectors on its webpage.

MATERIALS MANAGEMENT INFRASTRUCTURE

County-Utilized Infrastructure

To manage waste collected through Fairfax County's programs, DPWES relies on a variety of materials management facilities in the County and surrounding communities as shown in Exhibit 19.

Exhibit 19: Map of County Utilized Facilities



Most of these facilities are contracted-private facilities, and only three are county-owned and operated. The facilities are discussed by material stream in the proceeding subsections, and a full list of County utilized facilities can be found in Exhibit 41 of the Appendix. Most recyclables are accepted for free. Fees collected at the facilities contribute to established funds that support disposal and energy recovery activity managed by DPWES (Exhibit 20 **Error! Reference source not found.**).

Exhibit 20: Funding for Solid Waste Management at Facilities

FUND	NAME	FUNDS SOURCE
Fund 400-C40150	Refuse Disposal	Fees collected from users of county facilities.
Fund 400-C40170	I-95 Refuse Disposal	Tonnage-based tip fee paid for by ReWorld and other jurisdictions which use the landfill for ash disposal.

REFUSE INFRASTRUCTURE

All refuse collected in Fairfax County must, by code, be delivered to the County-owned I-95 Landfill Complex or the I-66 Transfer Station. From there, the waste is transferred to the ReWorld Waste-to-Energy (WTE) facility located

in the County landfill complex to be burned for energy recovery. As part of the energy recovery process, the WTE facility captures ferrous metals post-combustion, prior to disposing of the remaining ash.

If the waste cannot be transferred to ReWorld for any reason, it is most often sent to WM Recycle America’s King George Landfill in King George County, Virginia. DPWES also has a contract in place with King & Queen County Landfill in Little Plymouth, Virginia to send waste there if additional capacity is needed; however, as of May 2024, this auxiliary contract has not been used. The capacity and expected remaining life of facilities accepting County refuse are noted in

Exhibit 21. It is important to consider that the remaining life of these facilities would be dramatically reduced if any were to accept Fairfax’s refuse.

Exhibit 21: County-Contracted Landfill & WTE Facility Capacity and Remaining Life

FACILITY	DATA YEAR	TONNAGE PROCESSED IN DATA YEAR	TONNAGE CAPACITY ¹⁸	EXPECTED REMAINING LIFE
I-95 Landfill Complex	2022	368,867	3,240,193	29.9 Years
WM Recycle America King George Landfill	2022	1,563,551	14,100,335	18.7 Years
King & Queen County Landfill	2022	606,059	8,848,495	29 Years
ReWorld Fairfax Waste-to-Energy (WTE) Facility	2022	1,228,043	1,292,100	N/A ¹⁹

DPWES also owns and operates the Newington Collection Operations Facility, where the County’s waste and recycling collection vehicles, auxiliary equipment, and a variety of administrative buildings are housed.

RECYCLING INFRASTRUCTURE

The residential curbside and drop-off collection programs direct single-stream recyclables to a private Material Recovery Facility (MRF) for processing. There are no MRFs located within the County, so the majority of recyclable materials collected via drop-off at I-95 Landfill Complex and I-66 Transfer Station, along with recyclables collected curbside, are hauled to either Waste Management’s transfer facility in Fairfax or to its MRF in Sterling Virginia.† The Fairfax transfer facility is located about 17 miles from the I-95 Landfill Complex and 10 miles from the I-66 Transfer Station, and has been operating for over 25 years. The Sterling MRF is located approximately 32 miles from the I-95 complex and 18 miles from the I-66 complex. At the MRF, recyclables are sorted and sent to interim processors or end-markets. Disposal of any residual material from the recovery process is the responsibility of the MRF.

Some recyclables that are collected separately at DPWES’ drop-off locations, like glass and metal, are sent directly to interim processors for recycling. Glass is sent to CAP Glass in Mt. Pleasant, Pennsylvania, which is about 220 miles from the County. CAP Glass’ facility is located on a 15-acre property, and they recycle over 200,000 tons of glass each year. Scrap metal is sent to Joesph Smith & Sons Metal Recycling in Capitol Heights, Maryland or Davis Industries

¹⁸ Total tonnage capacities were reported for the I-95 Landfill Complex, WMRA’s King George Landfill, King & Queen County Landfill in the VADEQ’s 2023 Annual Solid Waste Report for CY2022. Annual tonnage capacity was reported for ReWorld Fairfax was reported by NVRC.

¹⁹ Expected remaining life of ReWorld Fairfax facility unknown; however, Fairfax County maintains an owner-operator agreement with ReWorld Fairfax, Inc., which remains active through 2031 with the possibility for five-year extensions.

in Lorton, Virginia. The Smith facility is located about 30 miles from the County. The Davis facility is located within the County about five miles from the I-95 Landfill Complex and about 20 miles from the I-66 Transfer Station.

YARD & FOOD WASTE INFRASTRUCTURE

Yard and food waste collected through Fairfax County's curbside and drop-off programs is delivered to either Prince William County's Compost Site (Convertus/Freestate Farms/Balls Ford) in Manassas, Virginia, or Prince George's County Organics Composting Facility (Maryland Environmental Service, MES) in Upper Marlboro, Maryland. The Prince William County Compost Site is about 20 miles from Fairfax County. Fairfax County signed an Interjurisdictional Refuse Exchange Agreement with Prince William County, which allows Fairfax County to deliver up to 30,000 tons of waste per year to the facility. The Prince George's County Organics Composting Facility is located about 40 miles from Fairfax County. SWMP balances its deliveries of yard waste between the two facilities based on the available capacity at each.

SPECIALTY WASTE INFRASTRUCTURE

Fairfax County contracts with a variety of other facilities to manage hard-to-recycle materials, including household hazardous waste (HHW), biosolids, paints, spent fuel, and tires. Many of these facilities are not located within the County, which necessitates extensive transportation to move materials from Fairfax County to the appropriate destination.

TIRES

Collection: Tires are not collected through Fairfax County's curbside program. However, residents can drop off up to 10 tires per site visit at the I-66 Transfer Station or I-95 Landfill Complex for a fee of \$12 per tire. DPWES' commercial tire collection program has been suspended since 2021 due to environmental compliance and operational constraints. Thus, DPWES is not accepting bulk loads of any tire type (other than loads generated by County agencies). For fees, see Appendix, Exhibit 39 and Exhibit 40. Private collectors may collect tires curbside by customer request.

Processing: Emanuel Tire (Virginia) is contracted to process and manage Fairfax County's waste tires. The facility is located in Waverly, Virginia which is approximately 150 miles from Fairfax County. Emanuel Tire is licensed as a scrap tire collector and recycler by the Virginia Department of Environmental Quality.

ELECTRONIC WASTE (E-WASTE)

Collection: Electronics are collected through Fairfax County's Sanitary District curbside programs via Special Pickup requests that must be scheduled for specialized handling. Private collectors are not required to provide this service. Residents may drop-off up to 10 large electronic items at e-cycling stations located in the I-66 Transfer Station and at the I-95 Landfill Complex. Electronics accepted at e-cycling stations include computers, televisions, monitors, cell phones, electrical cords, computer peripherals light strings, cassette and video tapes. This program is not open for use by businesses, government agencies, non-profits, universities, or institutions.

Exhibit 39

Processing: Fairfax County contracts with Securis in Chantilly, Virginia to process and manage collected electronic waste. Securis refurbishes and resells electronic waste whenever possible. If an item cannot be refurbished, it is disassembled into its constituent materials. Hazardous components are sent to permitted

hazardous waste facilities for additional processing, while recyclable components are sold to end-markets and brokers.

HAZARDOUS WASTE

Collection: Residents of Fairfax County can dispose of household hazardous waste (HHW) for free at the I-66 Transfer Station and the I-95 Landfill Complex. HHW items (and other hazardous materials) accepted at these facilities include chemicals, automotive fluids, batteries, fats, oil, and grease (FOG), paint, lawn care products, mercury-containing products, light bulbs, and cleaning solutions. Large-scale hazardous waste generation by commercial entities is regulated, and this material cannot be disposed through DPWES' HHW program. Businesses, government agencies, non-profits, universities, and institutions that produce low quantities of hazardous materials (less than one kilogram per month) can qualify for the County's Very Small Quantity Generators (VSQG) Program. The program offers six disposal events per year (every other month). Generators are encouraged to bring their hazardous waste to any of these events, and DPWES will determine if they qualify based on the amount and types of material delivered. If the generator qualifies, it may dispose of accepted materials for varying fees.

Processing: Fairfax County contracts with several facilities to manage hazardous waste locally. ACV Enviro in Avenel, New Jersey, and Clean Harbors in Laurel, Maryland, are responsible for processing and managing the County's oil-based paints, chemicals, and spent fuel. Safety Kleen in Manassas, Virginia is responsible for processing and managing other hazardous materials collected by the HHW program.

CONSTRUCTION & DEMOLITION DEBRIS (CDD)

Collection: Most residential and commercial construction and demolition debris generated in Fairfax County is collected and managed by the private sector, directly from the generator site. Most collected waste is delivered directly to CDD landfills or recyclers outside the County. DPWES does not accept CDD through its curbside program. Most private collectors for curbside collection prohibit CDD from their programs.

Disposal and Processing: SWMP classifies construction and demolition debris such as dirt, soil, sand, stone, gravel, concrete, cement, brick, block, asphalt/tar, or rock as 'noncombustible.' DPWES does not accept any commercial loads of this material. It will accept up to two cubic yards from residents. For fees, see Appendix, Exhibit 39 and Exhibit 40. Combustible CDD materials such as drywall, shingles, lumber, fencing, siding and insulation will be accepted in loads up to 15 cubic yards. For fees, see Appendix, Exhibit 40. Combustible CDD collected at the I-66 Transfer Station is sent to the ReWorld Waste-to-Energy Facility at I-95 Landfill Complex. Noncombustible CDD collected at either I-66 or I-95 is transported to a landfill on contract with SWMP.

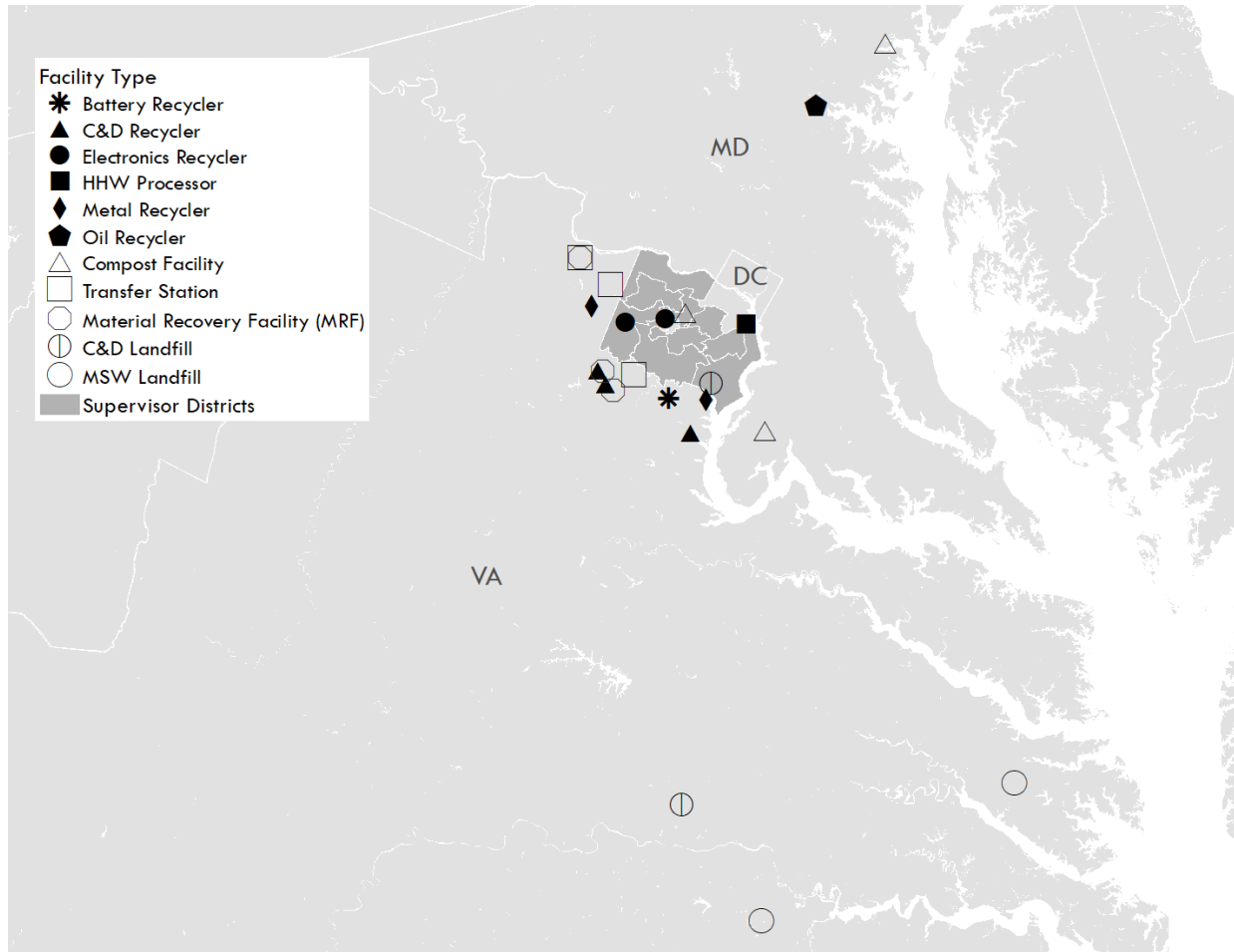
Regional Infrastructure

There are other materials management facilities in the surrounding region²⁰ that are not currently being used by Fairfax County SWMP (Exhibit 22). If the currently utilized facilities reach their permitted capacities or become

²⁰ The assessed region includes DC Metro areas, Fairfax County, Arlington County, Prince William County, and the Cities of Fairfax, Alexandria, Falls Church, Manassas, and Manassas Park, as well as facilities in nearby Maryland communities including Anne Arundel County, Carroll County, Charles County, Calvert County, Frederick County, Howard County, Montgomery County, Prince George's County, St. Mary's County, Washington County, and the City of Baltimore.

otherwise unable to accept material, the County will need to partner with another nearby facility or consider developing its own facility to serve community needs. Should any of these facilities accept Fairfax refuse, their life expectancy would be dramatically reduced. For a list of these facilities, see Appendix, Exhibit 43.

Exhibit 22: Map of Uncontracted Facilities



REFUSE INFRASTRUCTURE

There are several refuse landfills (also referred to as municipal solid waste (MSW) landfills by State agencies) operating in the surrounding region with existing tonnage capacity (See Appendix, Exhibit 43). These landfills are owned by private sector entities such as WM Recycle America (formerly known as Waste Management) and Republic Services. While this may suggest that landfill space is readily available in the region, most of the capacity of these landfills is committed by long term contracts and/or permits that prohibit waste from outside communities.

RECYCLING INFRASTRUCTURE

In the communities surrounding Fairfax County, three uncontracted private and public Material Recovery Facilities (MRFs) were identified as potential outlets for future County recyclables (See Appendix, Exhibit 43). Two metal recyclers also operate in the communities around Fairfax County. These facilities accept ferrous and non-ferrous scrap metal for recycling.

YARD WASTE INFRASTRUCTURE

Other than the Prince William County and Maryland Compost Site that Fairfax County contracts with, there are few permitted composting facilities located in the surrounding region that may be able to accept SWMP materials (See Appendix, Exhibit 43).

SPECIALTY WASTE INFRASTRUCTURE

There are several electronics recyclers operating in the communities surrounding Fairfax County (See Appendix, Exhibit 41, Exhibit 43, and Exhibit 45). There are two companies near Fairfax County that process and manage batteries, chemicals, and other hazardous waste. Multiple management options exist for construction and demolition debris near Fairfax County (See Appendix, Exhibit 43). At issue for these CDD facilities is either distance (and the related high transportation costs) and/or limited available capacity.

COUNTY PROGRAMS, PLANS, AND POLICIES

This section provides a summary of Fairfax County's programs, plans, and policies that support increased waste diversion. Six areas of best management were utilized to benchmark the County's efforts, including community access to effective and convenient collection systems, education and outreach, supportive policy, public-private partnerships, facilities, and end markets. Each County solid waste program impacted by an area of best management has been identified and assessed. Gaps identified during the program, plan, and policy assessment inform zero waste adaptation and resilience strategies that will be discussed in proceeding Solid Waste Management Plan chapters.

Community Access to Effective and Convenient Collection Systems

Convenient access is the most important component of recycling participation. Ideally, curbside recycling collection should be available to all single-family and multi-family residents, as well as commercial businesses. Curbside collection services should be available for refuse, recycling, and organic waste, and drop-off collection points should be conveniently located for disposal of hard-to-recycle materials, including household hazardous waste (HHW). Drop off points should provide access to residents regardless of home ownership status, be in easily accessible geographic locations, and provide hours of operation that are conducive to traditional and non-traditional work schedules.

As mentioned in the "Fairfax County Services" section above, the County provides refuse, recycling, and yard waste collection services to 10% of the County's residences and businesses, and the remaining 90% receives collection service through private licensed collectors. Sanitary Districts are a widely used method for standardizing rates, services, and materials collections strategies across regions.

In addition to curbside services, the County has two main recycling and waste drop-off locations. These include the I-66 Transfer Station and the I-95 Landfill Complex. These locations allow residents to drop-off refuse, recyclables, food and yard waste, and hard-to-recycle materials, such as HHW. Each facility has selected hours for HHW drop-off; the I-66 Transfer Station is open 48 hours per week for HHW drop-off, and the I-95 Landfill Complex is open 19 hours per week. There are also food-waste collection sites at 10 Fairfax County Farmer Markets, and the County's

“Purple Can Club” currently provides 24 dumpsters for glass drop-off, which are stationed around the County (See Appendix, Exhibit 42).

Drop-off locations are a valuable resource to multi-family communities, which often lack access to standard curbside services. The highest populations of multi-family residents are found in the County’s northeastern communities, including Tysons, Annandale, and Bailey’s Crossroads; however, the I-66 Transfer Station and I-95 Landfill Complex are not proximally located to these communities.

Education and Outreach

Consistent education is a key component of an effective recycling program, and informative resources related to recycling and solid waste management should be easily accessible. Fairfax County has an extensive webpage dedicated to refuse and recycling resources. The SWMP waste and recycling guide is available in multiple languages, and their website includes a Waste Wizard. A Waste Wizard allows residents and businesses to search for specific disposable and divertible materials and find local management options. The County also publishes a quarterly e-newsletter for information on all resources related to solid waste disposal. As of 2021, over 2,000 residents receive the newsletter. These resources are useful in guiding residents and businesses towards proper waste disposal or diversion methods; however, the information is limited to County-run programs. The Waste Wizard specifically states that private-sector service providers are not included in search results due to concerns around tacit endorsement and liability. While this protects the County’s interests, it limits information available to residents and businesses who cannot participate in the County program and may result in improper or unnecessary material disposal.

The DPWES team used creative approaches to engage with residents during the COVID-19 Pandemic, which included hosting a Facebook Live Event, 32 presentations to homeowners’ associations (HOAs), and two outdoor events. The outdoor events included the initial roll-out of the food scrap collection program at the local Farmers Markets and a table at the Reston Multicultural Festival.

Fairfax County DPWES staff have engaged in targeted outreach to over 600 local homeowner’s associations (HOAs) around recycling and composting services. This began as resource sharing via email and included information on recycling guidelines and articles and content for HOA newsletters. Some outreach resulted in invitations for DPWES to speak at HOA meetings. As of 2021, DPWES staff provide quarterly newsletters to HOAs, which include information on waste and contamination reduction, as well as reuse and recycling resources.

Additional options for outreach and education to Fairfax County residents and businesses include mailing printed guidelines to residents and utilizing contamination tickets, which can be tagged onto curbside carts with an acceptable recycling guide printed on the back.

Supportive Policy

Fairfax County Recycling Requirements, which are outlined in Chapter 109.1 of the Fairfax County Code, require private collectors to recover the following materials: container metal food and beverage containers, plastic bottles and jugs, yard waste, scrap metal, cardboard, and mixed paper. The Fairfax County Recycling Program Requirements state that single-family homes and townhomes shall source-separate recoverable materials that are typical of curbside recycling programs. As mentioned in the “Fairfax County Services” section above, the County provides curbside collection to 10% of the County’s residences and has a list of private collectors located on their website for the remaining 90% of residences and businesses to utilize (See Appendix, Exhibit 35, Exhibit 37, and

Exhibit 38).

According to the Recycling Program Requirements, all non-residential properties, including non-commercial establishments, schools, and other non-residential institutions such as parks, are required to provide recycling programs for mixed paper to their employees and customers. Non-residential properties that meet specific criteria are also required to collect and recycle one Principle Recyclable Material (PRM). The PRM required to be collected depends on the typical waste stream of the affected property; properties whose PRM is mixed paper are not required to collect and recycle an additional PRM. To ensure proportional usage, owners of non-residential properties must provide recyclables collection containers that are functionally convenient as disposal containers for system users, and the recycling containers must be of adequate capacity to meet demand, and no less than 25% of the volume of the refuse containers on site. For example, a property with a four cubic yard refuse dumpster must also provide a recycling container that is nearby and at least one cubic yard in volume.

The County Recycling Requirements also specify that multi-family property owners or managers must arrange a recycling system for residents. The recycling system must recover the same materials as single-family homes and townhouses. Multi-family properties must adhere to the same volume-based recyclables collection container requirements as commercial properties. The multi-family property owners or managers must also notify each unit about the recycling system upon move-in and provide reminders annually. The County requires the owners or managers to maintain records of each aspect of their recycling system for three years. It is unclear how frequently these systems are audited. There is no mandatory annual reporting to the County to verify compliance of property owners or managers providing a recycling system to their tenants.

Fairfax County has several other policies in place that support their zero waste goals. For example, the County passed a disposable plastic bag tax in 2020 and implemented the policy in 2022. The policy applies a five-cent tax to each bag provided to customers at a point of sale in grocery stores, convenience stores, and drugstores, and it is intended to reduce the amount of plastic waste in local roadways, waterways, and public spaces. This policy is also in place in neighboring communities, Arlington County, Loudoun County, the City of Alexandria, and the City of Falls Church. The Virginia Department of Taxation collects the revenue generated by this tax and disburses it to each community. Revenue that the County receives from this tax is allocated towards environmental cleanup programs, pollution and litter mitigation programs, waste reduction educational programs, and provisions of reusable bags for those receiving benefits through the Supplemental Nutrition Assistance Program (SNAP) or Women, Infants, and Children Program (WIC).

Other policies include the Green Building Standards, which were established in the County in 2008. The Standards apply to new County buildings and major renovations to existing buildings with 10,000 or more square feet and require design elements that minimize environmental impacts. The County also currently designs all new buildings and major renovations over the 10,000 square foot threshold to achieve at least LEED Gold rating. The County has constructed over 40 LEED Silver and Gold buildings and 1 LEED Platinum building since 2009. These buildings are designed to reduce energy consumption and minimize water use and waste generation. The County also adopted an Environmentally Preferable Purchasing (EPP) Policy in 2009. This policy does not mandate sustainable purchasing practices, but the County's EPP Buyer's Guide encourages the purchase of goods that are reusable, recyclable, or made of recycled content. The Fairfax County Purchasing Resolution was also passed in July 2020, and it outlines the County's procurement requirements and procedures for goods and services.

The One Fairfax Policy was established in 2017 and guides the County's approach to planning, developing, and implementing policies, programs, and plans. The policy outlines expectations for racial and social equity considerations and applies to all publicly delivered services in County government and Fairfax County Public Schools

(FCPS). The policy specifically mentions the need for a healthy environment with clean air and drinking water for current and future County populations. Efficient waste management is a key component of ensuring a healthy environment.

Public and Private Partnerships

The County's 90% landfill diversion goal was established through the Fairfax County Community-Wide Energy and Climate Action Plan (CECAP), which was published in 2021 and serves as a roadmap for the County towards reduced greenhouse gas emissions. The Plan development was led by the County's Office of Environmental and Energy Coordination (OEEC) and supported through partnerships and communication with the Board of Supervisors, ICF, MWCOG, and community stakeholders.

Fairfax County relies heavily on external partnerships for the management and processing of their waste materials. Other than the County's I-66 Transfer Station and I-95 Landfill Complex, all other material collection and processing facilities utilized by the County are privately operated. The County maintains agreements with these facilities to ensure capacity for their materials. For example, in 2017, Fairfax County signed an Interjurisdictional Refuse Exchange Agreement with Prince William County, which allows Fairfax County to deliver 20,000 to 30,000 tons of yard waste per year to their compost facility. Fairfax County also maintains an owner-operator agreement with ReWorld Fairfax, Inc., which remains active through 2031.

Fairfax County also maintains a Zero Waste plan for County government and public schools. This plan was published in October 2021 and was prepared by the County's Joint Environmental Task Force (JET). JET is a partnership between Fairfax County Public Schools staff and County government staff. The plan documents efforts towards waste diversion, prevention, and management and strategies to reach zero waste by 2030 at government and public school buildings. In 2019, Fairfax County piloted a food scrap compost program, which was launched by the Fairfax Employees for Environmental Excellence (FEEE). FEEE is a voluntary group of County staff that conducts education and outreach programs for fellow employees on green initiatives and develops action campaigns. The program expanded to include residential drop-offs at the I-66 Transfer Station and I-95 Landfill Complex in November 2020, and multiple farmers market locations managed by the Fairfax County Park Authority have opened food waste drop-off locations in the following years. Many FCPS also operate food waste diversion and reduction programs. As of 2019, 44 schools have compost programs and 66 schools have food sharing programs, which gather unopened food items for donation to food banks. Fairfax County's Department of Health and Human Services also maintains an online repository of food donation organization accepting unopened food items in the County.

County government and FCPS buildings have implemented source reduction efforts including hand dryer installation in bathrooms, water filtration systems in County office kitchens, and water bottle filling stations in schools. Some County buildings also have reusable dishware and dishwashers. The County's Department of Procurement and Material Management (DPMM) also provides a surplus property program for excess FCPS and County government items. DPMM collects and delivers the items to the department's Logistics Center for processing and storage, while the items are posted to an online shopping portal for staff. If items are not reused internally, they are offered for sale to the public in online auctions. Any remaining items are sent to recycling contractors.

Fairfax County also has partnerships with organizations focused on reuse. The County has a partnership with social services organization, Bikes for the World, which gives bikes to residents in economically strained communities in Africa and Latin America. Bikes can be dropped off by Fairfax County residents at the I-66 Transfer Station or I-95 Landfill Complex for donation through this program. In 2021, the County reportedly donated 2,798 bikes. Latex paint containers that are at least 90% full and less than a year old are handled separately through the County's

partnership with Habitat for Humanity. In 2021, the County reportedly diverted 14 tons of paint from disposal through this program.

To facilitate additional partnership opportunities, Fairfax County maintains a Green Business Partners Program. This program was designed to highlight businesses that emphasize sustainability values, such as energy reduction, carbon neutrality, climate action, and greenhouse gas reductions. The Green Business Partners Program is a direct opportunity for local businesses and public entities, including Fairfax County government, to coordinate resources and increase public access of sustainability focused tools and opportunities. There are three departments within Fairfax County which work directly with Green Business Partners: Commuter Services, Department of Economic Initiatives, and the Economic Development Authority.

Facilities


Currently, Fairfax County manages its waste through County-owned and contracted facilities, which are discussed in the Materials Management Infrastructure section above and mapped in Exhibit 19. However, bottlenecks in the County's disposal processes occur when there are facility outages, and several of the contracted disposal facilities will reach their permitted capacity within the County's planning period. With a growing population, the demand for disposal and recycling facilities with long-term capacities will increase beyond the ability of the existing infrastructure to manage.

Major processing facilities that are not currently being utilized by the County, such as landfills, transfer stations, material recovery facilities, and compost facilities are noted in Exhibit 43 of the Appendix. Fairfax County will depend on these facilities outside of the County for waste disposal when their current facilities of choice reach capacity. Further, as available options and remaining capacity diminishes, costs for disposal and transportation to new facilities will likely increase. New facilities or major facility upgrades to manage increasing volumes of recoverable waste will be necessary to offset these challenges.

Robust Markets

An efficient and effective recycling system must have a strong supply of local secondary processing and end markets for recovered waste. Without access to local end markets, transportation costs for moving recovered materials from MRFs to secondary processing and end markets increase significantly. If the recycling of materials such as paper, aluminum, and plastic, continues to expand through enhanced curbside programs in the region, facilities with additional capacity will be necessary to handle the additional volume of recovered materials.

End markets for materials that are not accepted curbside include materials such as glass, scrap metal, electronic waste, paint, batteries, tires, grease, CDD, and hazardous materials (See Appendix, Exhibit 45). Cap Glass (Mount Pleasant, Pennsylvania) is the County utilized glass processor for the region, located about 200 miles outside of Fairfax County. There are two other glass processors within 100 miles of the County include O-I (Toano, Virginia), and Knauf-Guardian Industries (Inwood, WV). There are two county-utilized metal processing facilities located in or within 10 miles of Fairfax County, Davis Industries and Joseph Smith and Sons. Other metal facilities within 100 miles of the County include ArcelorMittal (Steelton, Pennsylvania), Gottlieb Inc (Neville Island, Pennsylvania), Pennex Aluminum (Wellsville, Pennsylvania), Potomac Metals (Sterling, Virginia), and Aleris Rolled Products Inc. (Richmond, Virginia).



There are four local HHW processors: Safety-Kleen (Manassas, Virginia), ACV Enviro (Avenal, New Jersey), Clean Harbors (Laurel, Maryland) and Thermostat Recycling Corporation (Alexandria, Virginia). Fairfax County utilizes Emanuel Tire Management Virginia LLC (Waverly, Virginia) for tire recycling, and electronics processing is provided by Securis (Chantilly, Virginia). Other electronics recyclers located near Fairfax County include Service Source (Oakton, Virginia) and Forever Green Recycling (Chantilly, Virginia). Interstate Batteries (Woodbridge, Virginia) is a nearby battery recycling facility. Atlantic Bio-Fuels (Baltimore, Maryland) is a local oil and grease recycling facility.

Policy, Plans, and Programs Takeaways

Fairfax County provides comprehensive curbside services to a portion of its residents. Residents and businesses not included in the County's curbside program rely on the County's drop-off services or private collectors and facilities. Some County policies and guidelines are in place (e.g., the Fairfax County Recycling Program Requirements) to require the provision of disposal and diversion services for multi-family and commercial properties. However, effective enforcement mechanisms and resources are not currently in place to guarantee the quality and accessibility of these programs. Expanded Sanitary Districts or other organized collection areas, as well as County code changes, would provide more flexibility to implement future programs and ensure consistent communication and guidelines for services within the County.

Increased transparency around private hauling service providers and the amounts and types of materials they handle may also benefit residents and businesses requiring collection services. Thorough reporting mechanisms would also be beneficial for understanding long term data trends in waste reduction, such as financial impacts for waste disposal, material feedstock for local markets, and progress towards waste reduction. Enforcement mechanisms will also be necessary to maximize diversion of materials in existing collection systems and monitor future changes.

Additionally, the County is likely to face significant challenges around facility capacity over the solid waste management planning period. The County's population and economic activity are expected to increase through 2050, which will lead to additional demand for waste and recycling services. Addressing these challenges will require significant investments in infrastructure upgrades, expansion, and continued development of public-private partnerships to manage the anticipated increase in material flows.

APPENDIX

Population, Housing, and Employment

Exhibit 23: Current and Projected Population by Supervisor District, 2023-2050

SUPERVISOR DISTRICT	2023	2025	2030	2035	2040	2045	2050
Braddock	128,044	129,029	130,437	130,989	131,439	131,820	132,309
Dranesville ²¹	130,446	134,099	142,930	147,704	151,015	154,266	157,674
Franconia	129,598	130,710	134,048	138,112	142,175	146,373	150,574
Hunter Mill ²²	137,636	140,652	149,349	158,630	167,483	176,552	185,393
Mason	122,834	123,548	124,889	127,811	130,964	134,257	137,499
Mount Vernon	128,922	129,804	132,057	134,803	137,499	140,278	143,257
Providence	135,899	138,901	146,186	153,329	160,179	167,204	174,115
Springfield ²³	131,144	131,732	133,247	134,438	135,556	136,627	137,735
Sully	141,456	142,383	148,185	151,641	154,903	158,186	161,429
Fairfax County	1,185,980	1,200,858	1,241,327	1,277,458	1,311,213	1,345,563	1,379,986

Exhibit 24: Fairfax County Age Distribution, 1970-2050

AGE GROUP	1970	1980	1990	2000	2010	2020	2023	2025	2030	2040	2050
Under 5	9.0%	6.4%	7.1%	7.0%	6.7%	5.8%	5.8%	5.6%	5.7%	5.9%	5.5%
5-9	11.5%	7.6%	6.8%	7.2%	6.7%	6.4%	6.2%	5.7%	5.5%	5.8%	5.7%
10-14	12.3%	9.2%	6.5%	7.1%	6.7%	6.8%	6.6%	6.2%	5.7%	5.7%	6.0%
15-19	9.4%	9.2%	6.6%	6.2%	6.2%	6.6%	6.5%	6.8%	6.3%	5.7%	6.1%
20-24	7.5%	8.0%	7.3%	5.4%	5.6%	6.0%	6.1%	6.3%	6.5%	5.7%	5.8%
25-34	14.3%	18.8%	19.4%	15.5%	14.7%	13.5%	13.0%	13.4%	13.8%	14.3%	12.8%
35-44	14.9%	16.4%	19.3%	18.4%	15.3%	14.4%	14.5%	13.4%	13.5%	14.5%	15.1%
45-54	13.0%	11.8%	13.2%	16.2%	16.2%	13.9%	13.8%	14.0%	13.7%	12.9%	14.0%
55-64	5.1%	8.1%	7.4%	9.1%	12.2%	12.8%	12.5%	11.9%	11.4%	11.4%	10.9%
65+	3.0%	4.5%	6.5%	7.9%	9.8%	13.8%	15.1%	16.9%	17.9%	18.2%	18.1%

Exhibit 25: Fairfax County Racial and Ethnic Distribution, 2000, 2010, and 2020

RACIAL AND ETHNIC GROUP	2000	2010	2020
White	70%	63%	50%

²¹ Includes the Town of Clifton

²² Includes the Town of Herndon

²³ Includes the Town of Vienna

Black	9%	9%	10%
Asian and Pacific Islander	13%	18%	21%
American Indian and Alaska Native	0%	0%	1%
Other	8%	10%	20%
Hispanic²⁴	11%	16%	17%

Exhibit 26: Fairfax County Housing Distribution, 1950-2050

YEAR	SINGLE-FAMILY DETACHED	SINGLE-FAMILY DETACHED	SINGLE-FAMILY ATTACHED	SINGLE-FAMILY ATTACHED	MULTI-FAMILY	MULTI-FAMILY	TOTAL
1950	19,979	73%	1,997	8%	4,582	17%	26,558
1960	59,261	86%	3,526	5%	6,394	9%	69,181
1970	91,134	70%	7,747	6%	31,887	24%	130,768
1980	125,717	58%	31,882	15%	58,072	27%	215,671
1990	163,029	54%	67,306	22%	72,129	24%	302,464
2000	181,591	51%	87,171	24%	90,198	25%	358,690
2010	191,873	48%	98,972	25%	105,541	27%	396,386
2020	196,238	46.3%	101,893	24%	125,956	30%	424,087
2022	196,663	46.1%	103,369	24%	126,380	30%	426,412
2023	196,975	45.5%	104,331	24%	131,244	30%	432,550
2025	198,651	45%	104,323	24%	136,657	31%	439,631
2030	200,468	44%	106,173	23%	153,409	33%	460,049
2035	202,516	43%	106,466	22%	167,434	35%	476,417
2040	204,562	42%	106,648	22%	181,132	37%	492,342
2045	206,528	41%	106,917	21%	194,501	38%	507,947
2050	208,387	40%	107,067	21%	206,170	40%	521,625

Exhibit 27: Distribution of Commercial Square Footage

District	Commercial Sq. Ft.	Percent of Total Square Footage
Braddock	17,525,853	5%
Dranesville	37,282,209	10%
Franconia	32,223,370	9%
Hunter Mill	50,184,238	14%
Mason	39,495,519	11%
Mount Vernon	32,848,035	9%
Providence	81,855,542	23%
Springfield	19,071,690	5%

²⁴ Hispanic persons may be of any race; percentage total sums to over 100%.

Sully	49,442,873	14%
Total	359,929,329	100%

Exhibit 28: Employed Fairfax County Residents, 2010-2022²⁵

YEAR	TOTAL EMPLOYMENT
2010	579,209
2011	589,888
2012	595,562
2013	597,713
2014	596,624
2015	594,499
2016	598,093
2017	610,106
2018	613,987
2019	622,620
2020	586,488
2021	601,506
2022	623,827

Exhibit 29: Fairfax County Employment Projections, 2025-2050²⁶

YEAR	TOTAL EMPLOYMENT
2025	690,499
2030	750,784
2035	788,775
2040	812,538
2045	831,956
2050	842,043

Waste Composition Studies

Exhibit 30: Austin, TX Residential Waste Composition, 2015²⁷

MATERIAL	RESIDENTIAL	+/-
Mixed/ unspecified Office	9.1%	0.8%
ONP	3.9%	0.7%

²⁵ This table refers to the number of employed Fairfax County residents, regardless of their place of employment.

²⁶ These projections were reported through MWCOG's Round 10.0 Economic Model. Projected totals include employees working within the County, regardless of their residency.

²⁷ Austin, TX's residential waste composition study focuses only on waste collected through the Austin Resource Recovery (ARR) program; it does not include material managed by private collectors.

MATERIAL	RESIDENTIAL	+/-
OCC	1.6%	0.4%
All other paper	8.1%	0.6%
Paper subtotal	22.8%	1.6%
PET bottles	1.5%	0.2%
HDPE Bottles Natural	1.0%	0.2%
LDPE (includes some bags, film)	0.5%	0.1%
Durable and Rigid containers	3.0%	0.3%
All other Plastics	6.8%	0.6%
Plastic subtotal	12.8%	0.8%
Aluminum cans	1.3%	0.2%
Ferrous metals (includes tin)	2.0%	0.4%
Other Metal	1.0%	0.5%
Metal subtotal	4.4%	0.6%
Glass - general	2.9%	0.7%
Other Glass	1.0%	0.4%
Glass Subtotal	3.9%	0.9%
Food	25.8%	2.1%
Yard Trimmings	6.6%	2.3%
Wood (not Yard Trimmings or C&D)	1.5%	0.5%
Other Organics/Combustibles	12.3%	1.7%
Organics Subtotal	46.3%	2.6%
Electronics	8.7%	0.2%
C&D	0.3%	1.5%
Textiles	2.0%	0.6%
HHW	2.9%	0.3%
Other Inorganics/Non-combustibles	0.3%	1.1%
Other Material Subtotal	3.2%	1.9%
Unknown or Not Classified	1.2%	1.3%
Residuals	1.2%	1.3%

Exhibit 31: Denver, CO Residential and Commercial Waste Composition, 2017

MATERIAL	RESIDENTIAL	Lower Bound	Upper Bound	COMMERCIAL	Lower Bound	Upper Bound
Cardboard/Kraft	3.5%	3.0%	4.0%	8.3%	6.8%	9.8%
Newspaper	1.5%	1.2%	1.7%	0.5%	0.3%	0.6%
Office Paper	1.7%	1.3%	2.1%	1.1%	0.7%	1.4%
Chip/Paperboard	2.4%	2.1%	2.7%	2.2%	1.8%	2.6%

MATERIAL	RESIDENTIAL	Lower Bound	Upper Bound	COMMERCIAL	Lower Bound	Upper Bound
Mixed Paper/Junk Mail	3.1%	2.6%	3.6%	1.6%	1.3%	2.0%
Magazines	1.3%	1.0%	1.6%	0.8%	0.4%	1.3%
To-Go Cups	0.3%	0.3%	0.4%	0.5%	0.4%	0.7%
Aseptic Containers	0.3%	0.3%	0.4%	0.2%	0.2%	0.3%
Compostable Paper	N/A	-	-	7.6%	6.6%	8.5%
Other Paper (low-grade)	6.6%	6.1%	7.0%	1.8%	1.0%	2.6%
Total Paper	20.7%			24.7%		
#1 PET Bottles	1.6%	1.4%	1.8%	1.5%	1.3%	1.7%
#2 HDPE Bottles	0.8%	0.7%	1.0%	0.8%	0.6%	1.0%
Rigid Containers #1-#7	1.4%	1.2%	1.6%	1.4%	1.2%	1.6%
Bulky Rigids	1.1%	0.8%	1.3%	1.4%	0.6%	2.2%
Styrofoam	1.0%	0.9%	1.2%	0.7%	0.5%	0.8%
Film, Bags, & Wrap	4.2%	3.8%	4.7%	6.0%	5.3%	6.7%
Other Plastics	2.6%	2.3%	3.0%	1.3%	1.1%	1.6%
Total Plastic	12.8%			13.1%		
Aluminum	0.9%	0.8%	1.0%	0.9%	0.8%	1.0
Steel/Tin	0.8%	0.7%	1.0%	0.6%	0.5%	0.7
Other Metals	0.8%	0.5%	1.1%	2.0%	1.1%	3.0
Total Metal	2.5%			3.5%		
Glass Containers	4.2%	3.6%	4.7%	3.7%	2.9%	4.5
Other Glass	1.3%	0.7%	1.9%	0.2%	0.1%	0.3
Total Glass	5.5%			4.0%		
Food Waste	18.6%	17.0%	20.3%	24.5%	21.0%	27.9
Yard Waste	16.5%	14.3%	18.7%	1.7%	0.5%	3.0
Cannabis Waste	N/A	-	-	0.1%	-0.6%	0.9
Clean Wood	0.7%	0.5%	1.0%	2.2%	0.2%	4.2
Other Organics	12.1%	10.0%	14.1%	6.6%	2.9%	10.3
Total Organics	47.9%			35.1%		
Composites	2.2%	1.7%	2.8%	5.2%	3.7%	6.6%
Textiles	2.9%	2.5%	3.3%	3.1%	2.4%	3.7%
Electronics	0.6%	0.2%	1.0%	N/A	-	-
Recyclable E-waste	N/A	-	-	0.4%	0.2%	0.7%
Other E-waste	N/A	-	-	0.0%	0.0%	0.1%
Batteries	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%
CFLs	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
Paint	0.5%	0.2%	0.8%	0.0%	0.0%	0.1%

MATERIAL	RESIDENTIAL	Lower Bound	Upper Bound	COMMERCIAL	Lower Bound	Upper Bound
Motor Vehicles	0.1%	0.0%	0.3%	0.3%	0.0%	0.7%
C&D Debris	4.1%	2.9%	5.3%	7.9%	4.6%	11.2%
Other Haz/Special Waste	0.1%	0.0%	0.1%	0.1%	-0.2%	0.4%
Carpet & Padding	N/A	-	-	2.0%	-0.4%	4.3%
Residue	0.0%	0.0%	0.0%	0.5%	0.2%	0.7%
Total Other Materials	10.6%			19.6%		
Total	100.0%			100.0%		

Exhibit 32: City of Minneapolis – Hennepin County, MN Residential Waste Composition, 2014

MATERIAL	RESIDENTIAL	+/-
Paper	14.1%	1.0%
Newspaper	1.2%	0.2%
Office Paper	0.6%	0.2%
Magazines / Catalogs	0.8%	0.2%
Cartons	0.1%	0.0%
Cardboard / Kraft Paper	2.4%	0.5%
Boxboard / Paperboard	1.2%	0.2%
Mixed Recyclable Paper	2.4%	0.4%
Plastic-coated Paper	0.3%	0.1%
Non-recyclable Paper	3.0%	0.5%
Supermix - Paper	2.1%	n/a
Plastic	14.5%	0.9%
#1 PET Bottles	0.8%	0.1%
#1 PET Non-Bottles	0.2%	0.0%
#2 HDPE Bottles	0.4%	0.1%
#2 HDPE Non-Bottles	0.1%	0.0%
#3 PVC	0.0%	0.0%
#5 PP Containers	0.4%	0.0%
#6 EPS	0.4%	0.1%
All Other Packaging Containers	1.3%	0.1%
Recoverable Film / Bags	0.9%	0.1%
Film: Trash Bags	1.1%	0.1%
Film: Other	3.8%	0.5%
Durable Plastic Items	2.7%	0.5%
All Other Plastic	0.7%	0.2%
Supermix - Plastic	1.7%	n/a

MATERIAL	RESIDENTIAL	+/-
Metal	4.0%	0.4%
Steel Cans	0.6%	0.1%
Aluminum Cans and Foil	0.7%	0.1%
Other Scrap Steel	0.9%	0.3%
Non-ferrous Metal	0.3%	0.1%
Mixed Metal	1.0%	0.3%
Supermix - Metal	0.5%	n/a
Electronics	0.7%	0.3%
Electronics	0.7%	0.3%
Household Hazardous Waste	0.3%	0.2%
HHW	0.3%	0.2%
Glass	2.4%	0.3%
Food and Beverage Glass	1.6%	0.3%
Non-recyclable Glass	0.6%	0.2%
Supermix - Glass	0.2%	n/a
Organics	29.1%	2.0%
Food Waste	15.0%	1.5%
Compostable Paper	5.7%	0.4%
Other Compostable Organics	0.2%	0.1%
Yard Waste	4.2%	1.4%
Supermix - Organics	3.9%	n/a
C&D Debris	8.9%	1.8%
Clean Lumber, Pallets, Crates	0.8%	0.6%
Treated Wood, Plywood	4.3%	0.8%
Gypsum Board	0.4%	0.4%
Concrete and Brick	0.2%	0.1%
Carpet & Padding	1.1%	0.6%
Other C&D	2.1%	0.7%
Textiles	5.1%	0.8%
Clothing	2.1%	0.5%
Shoes	0.9%	0.3%
Leather	0.1%	0.1%
All Other Textiles	2.0%	0.3%
Other Wastes	14.7%	1.4%
Smaller Household Appliances	0.5%	0.3%
Furniture	1.1%	0.6%
Mattresses / Box Springs	0.2%	0.3%

MATERIAL	RESIDENTIAL	+/-
Tires / Rubber	0.4%	0.4%
Diapers / Feminine Hygiene	4.9%	0.8%
Pet Waste	4.9%	1.1%
Other Not Elsewhere Classified	2.6%	0.7%
Super Mix	6.3%	1.2%
Supermix - Indistinguishable	6.3%	1.2%
Total	100.0%	100.0%

Exhibit 33: Metro Nashville Residential, Commercial, and Overall Waste Composition, 2018

MATERIAL	RESIDENTIAL	+/-	COMMERCIAL	+/-	OVERALL	+/-
Paper	23.2%	1.67%	27.9%	2.90%	26.3%	1.30%
Newspaper	1.4%	0.34%	0.5%	0.18%	0.8%	0.09%
Office Paper	1.2%	0.40%	1.1%	0.42%	1.1%	0.19%
Magazines / Catalogs	1.7%	0.36%	0.8%	0.22%	1.1%	0.10%
Uncoated OCC	3.5%	0.64%	10.1%	1.49%	7.9%	0.66%
Cardboard / Kraft Paper	0.4%	0.11%	0.7%	0.41%	0.6%	0.18%
Boxboard / Paperboard	2.6%	0.27%	3.6%	1.58%	3.2%	0.70%
Mixed Recyclable Paper	3.0%	0.33%	1.7%	0.35%	2.1%	0.16%
Compostable Paper	9.3%	0.73%	9.4%	2.09%	9.3%	0.94%
Cartons	0.2%	0.04%	0.1%	0.03%	0.1%	0.01%
Plastic	15.5%	0.88%	16.9%	2.13%	16.4%	0.95%
#1 PET Bottles	2.3%	0.20%	1.4%	0.20%	1.7%	0.09%
#1 PET Non-Bottles	0.4%	0.08%	0.3%	0.09%	0.3%	0.04%
#2 HDPE Bottles - clear	0.4%	0.06%	0.4%	0.26%	0.4%	0.11%
#2 HDPE Bottles - color	0.6%	0.10%	0.8%	0.52%	0.7%	0.23%
#2 HDPE Non-Bottles	0.1%	0.06%	0.1%	0.05%	0.1%	0.02%
#6 EPS	1.1%	0.11%	1.1%	0.39%	1.1%	0.17%
#3-#7 Other - All	1.8%	0.16%	1.3%	0.20%	1.5%	0.09%
Durable Plastic Items	1.7%	0.40%	1.8%	0.60%	1.8%	0.27%
Recoverable Film / Bags	1.1%	0.11%	0.7%	0.12%	0.8%	0.06%
Film: Trash Bags	1.7%	0.18%	2.4%	1.17%	2.2%	0.52%
Commercial & Industrial Film	0.4%	0.19%	2.2%	0.93%	1.6%	0.41%
Film: Other	2.4%	0.18%	2.3%	0.33%	2.3%	0.15%
All Other Plastic	1.4%	0.29%	2.1%	0.84%	1.9%	0.37%
Glass	5.4%	0.59%	4.9%	1.73%	5.1%	0.77%
Glass Bottles and Jars - clear	3.0%	0.34%	1.8%	0.39%	2.2%	0.18%
Glass Bottles and Jars - brown	1.5%	0.29%	0.9%	0.30%	1.1%	0.14%

MATERIAL	RESIDENTIAL	+/-	COMMERCIAL	+/-	OVERALL	+/-
Glass Bottles and Jars - green	0.9%	0.20%	1.1%	0.66%	1.0%	0.29%
Glass Bottles and Jars - blue	0.0%	0.03%	0.1%	0.06%	0.1%	0.03%
Flat Glass	0.0%	0.00%	1.0%	1.53%	0.7%	0.68%
Other Glass	0.0%	0.02%	0.0%	0.03%	0.0%	0.01%
Misc. Inorganic	6.3%	1.97%	8.3%	2.54%	7.6%	1.15%
Televisions	0.0%	0.00%	0.7%	0.61%	0.5%	0.27%
Computer Monitors	0.0%	0.00%	0.0%	0.00%	0.0%	0.00%
Computer Equipment/Peripherals	0.2%	0.17%	0.1%	0.12%	0.2%	0.06%
Electronic Equipment	1.0%	0.41%	0.8%	0.34%	0.9%	0.16%
Household bulky items, batteries, tires, fluorescents, other misc. inorganics	5.1%	1.68%	6.6%	2.37%	6.1%	1.07%
Organics	31.9%	2.27%	18.5%	2.82%	22.9%	1.28%
Yard Waste - compostable; leaves, grass, branches less than 0.5 in.	3.1%	1.05%	2.3%	1.25%	2.6%	0.57%
Yard Waste - woody; branches 0.5 in. or larger	0.1%	0.05%	0.0%	0.01%	0.0%	0.01%
Food Scraps	20.8%	1.61%	12.7%	2.26%	15.4%	1.02%
Bottom fines and dirt	0.9%	0.39%	1.1%	0.56%	1.1%	0.25%
Diapers	3.7%	0.61%	1.5%	0.44%	2.3%	0.21%
Other organic	3.2%	0.76%	0.9%	0.29%	1.7%	0.15%
Metal	3.5%	0.43%	3.0%	0.57%	3.2%	0.26%
Aluminum Cans	0.9%	0.13%	0.6%	0.10%	0.7%	0.05%
Other Aluminum	0.3%	0.07%	0.2%	0.08%	0.3%	0.04%
Steel Cans	1.2%	15.00%	0.5%	0.16%	0.7%	0.07%
Aerosol cans	0.2%	0.05%	0.1%	0.03%	0.1%	0.01%
Other Scrap Steel	0.6%	0.30%	1.1%	0.42%	0.9%	0.19%
Non-ferrous Metal	0.0%	0.02%	0.1%	0.08%	0.1%	0.04%
Mixed Metal	0.3%	0.15%	0.4%	0.22%	0.4%	0.10%
Textiles	5.9%	0.94%	5.0%	1.50%	5.3%	0.67%
Carpet and carpet padding	0.8%	0.51%	0.4%	0.37%	0.5%	0.17%
Clothing	5.1%	0.79%	4.6%	1.44%	4.7%	0.65%
Household Hazardous Waste	0.8%	0.28%	1.0%	0.55%	1.0%	0.24%
HHW	0.8%	0.28%	1.0%	0.55%	1.0%	0.24%
C&D Debris	7.4%	2.52%	14.6%	3.73%	12.2%	1.68%
C&D Debris	7.4%	2.52%	14.6%	3.73%	12.2%	1.68%
Total	100.0%		100.0%		100.0%	

Exhibit 34: San Diego, CA Overall Waste Composition, 2012

MATERIAL	OVERALL	+/-
Paper	16.8%	
Uncoated Corrugated Cardboard	4.6%	0.4%
Waxed Corrugated Cardboard	0.3%	0.1%
Paper Bags	0.3%	0.1%
Newspaper	0.8%	0.1%
White Ledger Paper	0.9%	0.1%
Mixed Waste Paper	2.9%	0.2%
Magazines	0.6%	0.1%
Phone Books and Directories	0.0%	0.0%
Compostable/Soiled Paper	5.2%	0.3%
Aseptic/Milk Containers	0.1%	0.0%
Remainder/Composite Paper	1.1%	0.1%
Plastic	8.9%	
CRV HDPE Containers	0.0%	0.0%
Non-CRV HDPE Containers	0.4%	0.1%
CRV PETE Containers	0.2%	0.0%
Non-CRV PETE Containers	0.2%	0.0%
Compostable Biodegradable Plastic Containers	0.0%	0.0%
Miscellaneous Plastic Containers	0.6%	0.0%
Plastic Grocery and Merchandise Bags	0.3%	0.0%
Clean Film Plastic	0.6%	0.1%
Dirty Film Plastic	2.6%	0.2%
Durable Plastic Items	2.3%	0.3%
Expanded Polystyrene	0.5%	0.1%
Remainder/Composite Plastic	1.2%	0.2%
Glass	1.7%	
CRV Clear Glass Bottles	0.2%	0.0%
Non-CRV Clear Glass Bottles	0.3%	0.0%
CRV Brown Glass Bottles	0.2%	0.0%
Non-CRV Brown Glass Bottles and Containers	0.0%	0.0%
CRV Other Colored Glass Bottles	0.1%	0.0%
Non-CRV other Colored Glass Bottles and Containers	0.2%	0.0%
Flat Glass	0.3%	0.1%
Remainder/Composite Glass	0.5%	0.2%
Metal	3.5%	
Tin/Steel Cans	0.5%	0.1%

MATERIAL	OVERALL	+/-
Major Appliances	0.1%	0.1%
Other Ferrous Metal	1.2%	0.2%
CRV Aluminum & Tin Cans	0.1%	0.0%
Non-CRV Aluminum Cans	0.0%	0.0%
Used Oil Filters	0.0%	0.0%
Other Non-Ferrous Metal	0.6%	0.1%
Remainder/Composite Metal	1.0%	0.2%
Organics	38.9%	
Food	15.0%	0.8%
Palm, Succulent, Coral Tree	5.3%	0.8%
Leaves and Grass	6.8%	0.7%
Prunings and Trimmings	3.5%	0.5%
Branches and Stumps	0.7%	0.2%
Agricultural Crop Residues	0.0%	0.1%
Grass Sod	0.6%	0.5%
Manures	0.0%	0.0%
Diapers	1.9%	0.2%
Textiles	3.4%	0.3%
Remainder/Composite Organics	1.6%	0.2%
Electronics	0.6%	
Brown Goods	0.3%	0.1%
CRT	0.1%	0.1%
Computer-Related Electronics	0.0%	0.0%
Other Consumer Electronics	0.1%	0.1%
Video Display Devices (non-CRT devices)	0.1%	0.1%
Construction & Demolition	24.6%	
Concrete	1.8%	0.5%
Asphalt Paving	0.3%	0.3%
Asphalt Composition Shingles	0.3%	0.1%
Roofing Tar Paper/Felt	0.3%	0.2%
Roofing Mastic	0.0%	0.0%
Built-Up Roofing	0.2%	0.2%
Other Asphalt Roofing Material	0.1%	0.1%
Clean Dimensional Lumber	1.2%	0.2%
Clean Engineered Wood	1.0%	0.3%
Clean Pallets and Crates	2.2%	0.4%
Other Wood Waste	5.1%	0.6%

MATERIAL	OVERALL	+/-
Clean Gypsum Board	0.6%	0.2%
Painted/Demolition Gypsum Board	1.1%	0.3%
Carpet & Carpet Padding	4.2%	0.7%
Rock, Soil, and Fines	2.3%	0.5%
Contaminated Soils, Street Sweepings, Drain Cleaning	0.5%	0.6%
Remainder/Composite C&D	3.7%	0.5%
Household Hazardous Waste	0.2%	
Oil-Based Paint	0.0%	0.0%
Water-Based Paint	0.0%	0.0%
Vehicle and Equipment Fluids	0.0%	0.0%
Used Oil	0.0%	0.0%
Lead-Acid Batteries	0.0%	0.0%
Household Batteries	0.0%	0.0%
Sharps	0.0%	0.0%
Pharmaceuticals	0.0%	0.0%
CFL, Fluorescent Tubes, and Other Mercury-Containing Goods	0.0%	0.0%
Remainder/Composite Household Hazardous Waste	0.0%	0.0%
Special Waste	3.1%	
Ash	0.0%	0.0%
Sewage Solids	0.0%	0.0%
Industrial Sludge	0.0%	0.0%
Treated Medical Waste	0.0%	0.0%
Bulky Items	19.0%	0.4%
Tires	0.6%	0.3%
Remainder/Composite Special Waste	0.6%	0.2%
Mixed Residue	1.6%	
Mixed Residue	1.6%	0.3%
Total	100.0%	

Curbside Collectors

Exhibit 35: Permitted Residential Collectors

PRIVATE COLLECTOR	SUBSCRIPTION OR CONTRACT?	PHONE NUMBER
ALM Disposal Service, LLC	Subscription and Contract	703-755-0567
American Disposal Services, Inc.	Subscription and Contract	703-368-0500
Bates Trucking Company, Inc.	Subscription and Contract	301-773-2069

Capitol Services of VA	Subscription and Contract	703-998-5860
Champion Services, Inc.	Subscription and Contract	703-239-8540
Disposal Services LLC	Contract Only	703-441-1111
Evergreen Disposal Service, LLC	Subscription and Contract	703-468-8100
Flag Disposal, Inc.	Subscription Only	703-273-5226
Garby LLC	Subscription and Contract	703-261-4885
Gettier Commercial, Inc.	Contract Only	703-904-9752
Home Hauling	Unknown	571-249-7965
Jerome L. Taylor Trucking, Inc.	Contract Only (Multi-family/Residential Facilities Only)	202-280-2008
KMG Hauling, Inc.	Contract Only	703-961-1100
Nightingale Trucking Company, Inc.	Subscription and Contract	703-360-6634
Patriot Disposal, Inc.	Contract Only (HOAs Only)	703-257-7100
Republic Services	Subscription and Contract	703-818-8222
Thompson Hauling	Contract Only	703-299-8880
Trash Away, Inc.	Contract Only	703-339-4560
Virginia Trash Service	Subscription and Contract	703-734-0970

Exhibit 36: Private Residential Curbside Service Provisions, Interviewed Collectors

COLLECTOR	CONTACT INFORMATION	SERVICE DESCRIPTION
American Disposal Services, Inc.	Phone: 703-368-0500	American Disposal Services Inc.'s residential service provisions include 64-gallon carts for refuse, recycling, and yard waste that are collected weekly for subscription and contracted customers. Service is available at a bundled price of \$126 every three months, or \$42 per month. Other cart sizes are available for varying fees.
Bates Trucking Company, Inc.	Phone: 301-773-2069	Bates Trucking Company, Inc.' residential service provisions include 96 gallon carts for refuse and 64 gallon carts for recyclable and organic material, which are collected weekly for subscription and contracted customers. Costs for collection services through Bates Trucking Company, Inc. are \$135 every three months, or \$45 per month. Other cart sizes are available for varying fees.
Capitol Services of VA	Phone: 703-998-5860	Capitol Services of VA's residential service provisions include 96 gallon refuse carts and recycling containers for subscription and contracted customers. Refuse collection occurs twice per week, and recycling collection occurs once per week. Bundled costs for refuse and recycling collection are about \$46 per month. Customers may also purchase specified yard waste bags for curbside collection of grass clippings, leaves, flowers, and brush. Bulk waste may be collected for a minimum fee of \$50 per pickup.
Garby LLC	Phone: 703-261-4885	Garby LLC's residential service provisions include 96 gallon refuse carts and recycling containers for subscription and contracted customers. Refuse collection occurs twice per week, and recycling collection occurs once per week. Bundled costs for refuse and recycling collection are about \$34 per month. Customers may also purchase specified yard waste bags for curbside collection of grass clippings, leaves, flowers, and brush. Bulk waste may be collected for a minimum fee of \$50 per pickup.
Nightingale Trucking Company, Inc.	Phone: 703-360-6634	Nightingale Trucking Company, Inc.'s residential service provisions include 95 gallon carts for refuse and 65 gallon carts for recycling collection, which occurs once per week for contracted and subscription customers. Yard waste collection is also available, but

COLLECTOR	CONTACT INFORMATION	SERVICE DESCRIPTION
		container provisions are unknown. To start service, customers must pay an initial fee of \$99 and \$32 per month for service.
Virginia Trash Service	Phone: 703-734-0970	Virginia Trash Service provides subscription and contracted services to residential customers in the County. They provide refuse, recycling, and yard waste collection for \$52 per month, which is billed quarterly.
Republic Services	Phone: 703-818-8222	Republic Services' residential service provisions include 96 gallon refuse carts and 64 gallon recycling carts that are picked up once per week for subscription and contracted customers. Yard waste collection is available, but container provisions are unknown. Costs for collection include an initial fee of \$50. A 2-year contract costs about \$65 per month, or month-to-month subscription service costs about \$80 per month. Republic Services does not offer residential collection in all areas of the County; Burke and Mount Vernon are not included in their residential service area.

Exhibit 37: Permitted Commercial Private Collectors

COLLECTOR	SUBSCRIPTION OR CONTRACT	PHONE
ALM Disposal Service, LLC	Unknown	703-775-0567
AVW of Maryland, Inc.	Contract Only	410-590-3924
American Disposal Services, Inc.	Subscription and Contract	703-368-0500
Bates Trucking Company, Inc.	Subscription and Contract	301-773-2069
Bryant's Container Service, Inc.	Subscription Only	703-631-8239
Champion Services, Inc.	Unknown	703-239-8540
Flag Disposal, Inc.	Unknown	703-273-5226
Garby LLC	Subscription and Contract	703-261-4885
Georgetown Paper Stock of Rockville, Inc.	Contract Only	301-762-6990
Gettier Commercial, Inc.	Unknown	703-904-9752
Industrial Disposal Services, Inc.	Unknown	703-366-2707
Jerome L. Taylor Trucking, Inc.	Contract Only	202-280-2008
KMG Hauling, Inc.	Contract Only	703-961-1100
Patriot Disposal, Inc.	Subscription Only	703-257-7100
Prime Disposal, LLC	Unknown	540-724-3131
Republic Services	Subscription and Contract	703-818-8222
Trash Away, Inc.	Unknown	703-339-4560
Waste Management of Sterling, Inc.	Contract Only	703-406-7463
Waste Management of Virginia, Inc.	Contract Only	703-633-3058
WB Waste Solutions, LLC	Subscription and Contract	410-768-1900
Zero Waste Solutions, Inc.	Contract Only	844-417-9376

Exhibit 38: County Permitted Food Waste Private Collectors

COLLECTOR	PHONE OR EMAIL
-----------	----------------

Compost Crew, LLC	301-202-4450
Future Acres Urban Farming LLC	202-738-9678
Monster Organics	703-574-3414
Natural Upcycling	585-584-3124
Veterans Compost DC	443-584-3478
Purple Pilot Program	PurplePilotProgram@gmail.com
Worm Works LLC	703-409-2252

Drop-off Fees

Exhibit 39: Residential Drop-off Fees (I-66 Transfer Station and I-95 Landfill Complex), FY 2025

MATERIAL	MATERIAL	COST	
Trash	Trash	\$79.00	per ton
	1 – 5 bags*	\$17.00	
	6 – 10 bags*	\$23.00	
	Senior Residents (60 years or above) rate for 1 – 2 bags	\$9.00	
Brush	Brush	\$54.00	per ton
	Mini-pickup load	\$16.00	
	Full-size pickup without rack	\$23.00	
Yard Waste	Yard waste (loose and bagged (no plastic) bulk loads)	\$79.00	per ton
	1 – 5 bags*	\$18.00	
	6 – 10 bags*	\$24.00	
	*Senior Residents (60 years or older) with 1-2 bags	\$9.00	
Weighed Loads	All Weighed Loads of All Material – not C&D (Small/Minimum Fee)	\$31.00	
	Minimum Charge All Material – not C&D (Medium/Minimum Fee)	\$43.00	
	Minimum Charge All Material – not C&D (Large/Minimum Fee)	\$79.00	
Brick, Concrete, Dirt, Rock, Shingles (C&D)	Small amounts only (limited to up to 2 cubic yards (4-95-gallon carts) per day per County resident household)	\$90.00	per ton
	C&D (Minimum Fee/Small Load)	\$40.00	per load
	C&D (Minimum Fee/Medium Load)	\$51.00	per load
	C&D (Minimum Fee/Large Load)	\$90.00	per load
White Goods	White Goods	\$79.00	per ton
	Appliance or item (if Freon and/or a capacitor must be removed) Propane Tanks (20lb.)	\$13.00	Each
Tires	1 – 10 tires	\$12.00	Each
Small Sized Items	Christmas Trees, Toilet or Sink, and Small single items in general (e.g., vacuum cleaners)	\$10.00	Each
Large Sized Items	Fiberglass Bathtub, Dresser or Desk, Sleep Sofa/Sofa/Love Seat, Carpet or Pad, Recliner or Chair, Dining Room Table, and Mattress and Box Spring	\$14.00	Each
		\$14.00	Each

MATERIAL	MATERIAL	COST	
		\$14.00	Each
		\$14.00	Each
		\$14.00	Each
		\$14.00	Each

*A bag of waste is defined as a standard 32-gallon trash bag or can of material

Exhibit 40: Commercial Drop-off Fees (I-66 Transfer Station and I-95 Landfill Complex), FY 2025

MATERIAL	COST	COST
Fairfax County Solid Waste Tipping Fee	\$79.00	per ton
Brush, all customers	\$54.00	per ton
Yard Waste (bagged & unbagged), all customers	\$79.00	per ton
Construction Debris	\$90.00	per ton
Vacuumed Leaves	\$51.00	per ton
Bumpers	\$132.00	per ton
Minimum Charge (all materials – not C&D) – Small	\$31.00	per load
Minimum Charge (all materials – not C&D) – Medium	\$43.00	per load
Minimum Charge (all materials – not C&D) – Large	\$79.00	per load
Minimum Charge (all materials) – Small	\$40.00	per load
Minimum Charge (all materials) – Medium	\$51.00	per load
Minimum Charge (all materials) – Large	\$90.00	per load
Out-of-County Combustible Waste (I-66 Transfer Station)	\$85.00	per ton
Out-of-County Combustible Waste (Reworld/I-95 Landfill Complex)	\$71.00	per ton

Materials Management Facilities

Exhibit 41: County Utilized Facilities

FACILITY NAME	FACILITY TYPE	MATERIAL(S)	ADDRESS
I-95 Landfill Complex	Ash Landfill, Transfer Station	Ash, Refuse (Transfer), Recycling (Transfer), Food Scraps (Transfer), Yard Waste (Transfer), HHW (Transfer), Electronic Waste (Transfer), Cooking Oil (Transfer), CDD (Transfer), White Goods/Appliances (Transfer)	9850 Furnace Road, Lorton, VA, 22079
I-66 Transfer Station	Transfer Station	Refuse, Recycling, Food Scraps, Yard Waste, HHW, Electronic Waste, Cooking Oil, White Goods/Appliances	4618 West Ox Road, Fairfax, VA, 22030

FACILITY NAME	FACILITY TYPE	MATERIAL(S)	ADDRESS
Prince William County Compost Site	Compost Facility (Anaerobic Digestion (AD)), Transfer Station	Yard Waste, Food Scraps; Refuse (Transfer), Recycling (Transfer), CDD (Transfer)	13000 Hansen Farm Road, Manassas, VA
Prince George's County Organics Composting Facility	Compost Facility (Windrows)	Yard Waste, Food Scraps	6550 Maude Savoy Brown Road. Upper Marlboro, MD 20772
Securis	Electronics Recycler	Electronic waste	3900 Stonecroft Blvd. Suite F Chantilly, VA 20151
CAP Glass	Glass Recycler	Glass	1556 Mt. Pleasant-Connellsville Road Mt. Pleasant, PA 15666
ACV Enviro	HHW Processor	Oil-based Paints, Chemicals, Spent Fuel	1500 Rahway Avenue Avenel, NJ 07001
Clean Harbors	HHW Processor	Oil-based Paints, Chemicals, Spent Fuel	3527 Whiskey Bottom Rd, Laurel, MD 20724
Safety Kleen	HHW Processor	HHW	11520 Balls Ford Road Manassas, VA 20109
King George Landfill	Landfill	Refuse, Biosolids, CDD, Yard Waste	10376 Bullock Dr. King George, VA 22485
King & Queen County Landfill	Landfill	Refuse	1000 Iris Road, Little Plymouth, VA 23091
Davis Industries	Metal Recycler	Scrap Metal	9920 Richmond Hwy, Lorton, VA 22079
Joesph Smith and Sons, Metal Recycling	Metal Recycler	Metal	2001 Kenilworth Avenue, Capitol Heights, MD 20743
Emanuel Tire Management Maryland LLC	Tire Recycler	Tires	9081 General Mahone Hwy Waverly, VA 23890
ReWorld Fairfax	Waste-to-Energy (WTE)	Refuse	9898 Furnace Road Lorton, VA 22079

Exhibit 42: Fairfax County Purple Can Club Dumpster Locations

BUILDING NAME	ADDRESS
Baron Cameron Park	11300 Baron Cameron Ave. Reston, VA 20190
Bull Run Winery	15950 Lee Hwy. Centerville, VA. 20120
Burke VRE	10399 Premier Ct. Burke, VA 22015
Burkholder - City of Fairfax	10700 Page Ave. Fairfax, VA 22030

BUILDING NAME	ADDRESS
Clifton ES	7010 Clifton Rd. Clifton, VA 22024
Dolley Madison Library	1244 Oakridge Ave. Mclean, VA 22101
Dunn Loring	2334 Gallows Rd. Dunn Loring, VA 22027
Falls Church	217 Gordon Rd. Falls Church, VA 22046
Government Center Lot B	12000 Government Center Parkway Fairfax, VA 22035
Great Falls Library	9880 Georgetown Pike. Great Falls, VA 22066
I-66 Transfer Station	4618 W Ox Rd. Fairfax, VA 22030
I-95 Landfill	9850 Furnace Rd. Lorton, VA 22079
Lee District Franconia Police Station	6121 Franconia Rd. Alexandria, VA 22310
Lee District Park	6601 Telegraph Rd. Franconia, VA 22310
Lorton Community Center Library	9520 Richmond Hwy. Lorton, VA 22079
Mason District	6507 Columbia Pike Annandale, VA 22003
Mount Vernon District	2511 Parkers Ln. Alexandria, VA 22306
Providence Community	3001 Vaden Dr. Fairfax, VA 22031
Reston South Park-N-Ride	2531 Reston Pkwy. Fairfax, VA 20191
Saratoga P&R	Barta Rd. Springfield, VA 22153
Springfield District	6140 Rolling Rd. West Springfield, VA 22152
Sully District	4900 Stonecroft Blvd. Chantilly, VA 20151
Wakefield Park	8100 Braddock Rd. Annandale, VA 22003

Exhibit 43: Nearby Transfer Stations, MRF's, Landfills, and Compost Sites

NAME	FACILITY TYPE	MATERIALS ACCEPTED	ADDRESS
623 Landfill (Republic Services)	CDD Landfill	Refuse	1961 Ashland Rd, Rockville, VA 23146
Atlantic Biofuels	Oil Recycler	Used Cooking Oil, Grease	2501 W Lexington St, Baltimore, MD 21223
Calvert Wood Recycling	Compost Facility	Yard Waste and Natural Wood Waste	6585 Ripley Road, La Plata, MD 20646

NAME	FACILITY TYPE	MATERIALS ACCEPTED	ADDRESS
Eastern Sanitary Landfill Solid Waste Management Facility	Compost Facility	Yard Waste	6259 Days Cove Road, White Marsh, MD 21162
Environmental Alternatives LLC	CDD Recycler	CDD	12301 Randolph Ridge Ln, Manassas, VA 20109
Forever Green Recycling	Electronics Recycler	Electronics	4124 Walney Rd F, Chantilly, VA 20151
IDS Broad Run Recycling Facility	CDD Recycler	CDD, Recycling	9220 Developers Dr, Manassas, VA 20109
Interstate batteries	Battery Recycler	Batteries	5121 Hoadly Rd Woodbridge, VA 22192
Leesburg Transfer Station	Transfer Station	Recycling	42228 Cochran Mill Road, Route 653, Leesburg, VA
Middle Peninsula Landfill and Recycling Facility	Refuse (MSW) Landfill	Refuse	3714 Waste Management Way, Saluda, VA 23149
Potomac Landfill Incorporated CDD MRF	C&D Recycler	CDD	3730 Greentree Lane, Dumfries, VA 22026
Potomac Metals	Metal Recycler	Metal	42702 Dulles Trade Ct. Sterling, VA 20166
Prince George's Materials Recovery Facility	Material Recovery Facility (MRF)	Recycling	1000 Ritchie Road Capitol Heights, Maryland 20743
Rainwater Landfill/C&D Site	C&D Landfill	Refuse, C&D	9917 Richmond Hwy, Lorton, VA 22079
Remington Mulch	Compost Facility	Leaves, Brush	8524 Lee Highway Fairfax, VA 22031
Republic Services MRF	Material Recovery Facility (MRF)	Recycling	7960 Notes Dr, Manassas, VA 20109
Service Source	Electronics Recycler	Electronics	10467 White Granite Drive Oakton, VA 22124
Shoosmith Landfill	Refuse (MSW) Landfill	Refuse	11520 Iron Bridge Rd Chester, Virginia 23831
Thermostat Recycling Corporation (TRC)	HHW Processor	Tires, Batteries, Solvents, HHW	1765 Duke Street, Alexandria, VA 22314
Waste Connections American Disposal Recycling Center	Material Recovery Facility (MRF)	Recycling	10220 Residency Rd. Manassas, VA 20110
Waste Management of Virginia - Merrifield	Transfer Station	Recycling, CDD	2801 Dorr Ave. Fairfax, VA 22031
Waste Management Sterling MRF (also referred to as Dulles MRF)	Material Recovery Facility (MRF)	Recycling	45752 Woodland Rd, Sterling, VA 20166

NAME	FACILITY TYPE	MATERIALS ACCEPTED	ADDRESS
Waste Management Sterling Transfer Station	Transfer Station	CDD	1505 Moran Rd. Sterling, VA 20166
Woodbridge Metal Recycling (Smith Industries)	Metal Recycler	Metals	1041 Cannons Ct, Woodbridge, VA 22191

Exhibit 44: Capacity and Expected Life of Uncontracted Landfills in Northern Virginia and Nearby Maryland Communities

FACILITY	LOCATION	DATA YEAR	TONNAGE PROCESSED IN DATA YEAR	TOTAL TONNAGE CAPACITY	EXPECTED REMAINING LIFE
623 CDD Landfill (Republic Services)	Rockville, VA	2022	842,376	7,883,758	11.3 Years
Eastern Sanitary Landfill Solid Waste Management Facility	White Marsh, MD	2022	11,648,579	3,057,932	5.5 Years
Middle Peninsula Landfill and Recycling Facility	Saluda, VA	2022	488,380	12,875,281	49.4 Years
Shoosmith Landfill	Chester, VA	2022	860,315	18,155,000	26 Years

Exhibit 45: Additional End Markets Found Near Fairfax County (~100 Mile Range)

FACILITY NAME	CITY	STATE	MATERIAL
Nursery Supplies Inc.	Chambersburg	PA	Plastic
Gottlieb Inc	Neville Island	PA	Aluminum
Pennex Aluminum	Wellsville	PA	Aluminum
Aleris Rolled Products Inc	Richmond	VA	Aluminum
Knauf-Guardian Industries	Inwood	WV	Glass
O-I Toano	Toano	VA	Glass
White Birch Paper	Ashland	VA	Paper
Ox Paperboard	Halltown	WV	Paper
WestRock	West Point	VA	Paper
Sonoco	Richmond	VA	Paper
Cascades	Hanover	VA	Paper
Cascades Bear Island	Ashland	VA	Paper
Ox Industries	Halltown	WV	Paper
Ba/ch Polymers	Annapolis	MD	Plastic
Eastern Recycling Services	Baltimore	MD	Plastic
Graham Recycling Co.	Lancaster	PA	Plastic
Klöckner Pentaplast Group	Gordonsville	VA	Plastic
Trex	Winchester	VA	Plastic
Chesapeake Materials	Edgewater	MD	Plastic

FACILITY NAME	CITY	STATE	MATERIAL
ArcelorMittal	Steelton	PA	Steel

Business Sector Analysis

Exhibit 46: CalRecycle Sector Groups & Correlating NAICS Codes

CALRECYCLE SECTOR GROUP	CORRELATING NAICS CODES	INDUSTRY
1	711	Performing Arts & Spectator Sports
	712	Museums, Historical Sites & Similar
	713	Gambling, Recreation, Amusement
2	423	Durable Goods Wholesalers
	484	Truck Transportation
	491	Postal Service
	492	Couriers & Messengers
3	493	Warehousing & Storage
	611	Educational Services
4	721	Accommodation
5	334	Computer & Electronic Products
	335	Electrical Equipment & Appliances
6	311	Food Manufacturing
	312	Beverage & Tobacco Products
7	424	Nondurable Goods Wholesalers
	313	Textile Mills
	314	Textile Product Mills
	315	Apparel Manufacturing
	316	Leather & Allied Products
	321	Wood Products
	322	Paper Products
	323	Printing & Related Support Activities
	324	Petroleum & Coal Products
	325	Chemical Products
	326	Plastics & Rubber Products
	327	Nonmetallic Mineral Products
	331	Primary Metal Manufacturing
	332	Fabricated Metal Products
	333	Machinery
	336	Transportation Equipment
337	Furniture & Related Products	
339	Miscellaneous Manufacturing	
8	511	Publishing Industries, except Internet
	621	Ambulatory Health Care Services
	622	Hospitals
9	623	Nursing & Residential Care Facilities
	920	Public Administration
	921	Public Administration

CALRECYCLE SECTOR GROUP	CORRELATING NAICS CODES	INDUSTRY
	922	Public Administration
	923	Public Administration
	924	Public Administration
	925	Public Administration
	926	Public Administration
	927	Public Administration
	928	Public Administration
	929	Public Administration
10	722	Food Services & Drinking Places
11	445	Food & Beverage Stores
12	441	Motor Vehicle & Parts Dealers
	442	Furniture & Home Furnishings
	443	Electronics & Appliance Stores
	446	Health & Personal Care Stores
	447	Gasoline Stations
	448	Clothing & Clothing Accessories
	451	Sporting Goods, Hobby, Books, Music
	452	General Merchandise Stores
	453	Miscellaneous Store Retailers
	454	Non-store Retailers
13	425	Electronic Markets, Agents, Brokers
	551	Management of Companies & Enterprises
	561	Administrative & Support Services
	624	Social Assistance
14	813	Religious, Civic, Professional & Similar
	515	Broadcasting, except Internet
	517	Telecommunications
	518	Data Processing, Hosting & Related
	519	Other Information Services
	521	Monetary Authorities - Central Bank
	522	Credit Intermediation & Related
	523	Financial Investment & Related
	524	Insurance Carriers & Related Activity
	525	Funds, Trusts, Other Financial Vehicles
	531	Real Estate
	532	Rental & Leasing Services
	533	Lessors of Nonfinancial Intangible Assets
	541	Professional & Technical Services
15	811	Repair & Maintenance
	812	Personal & Laundry Services
16	111	Crop Production
	112	Animal Production
	113	Forestry & Logging
	114	Fishing, Hunting & Trapping
	115	Agriculture & Forestry Support Activities
	211	Oil & Gas Extraction

CALRECYCLE SECTOR GROUP	CORRELATING NAICS CODES	INDUSTRY
	212	Mining, except Oil & Gas
	213	Support Activities for Mining
	220	Utilities
	221	Utilities
	222	Utilities
	223	Utilities
	224	Utilities
	225	Utilities
	226	Utilities
	227	Utilities
	228	Utilities
	229	Utilities
	444	Building Materials & Garden Supplies
	481	Air Transportation
	482	Rail Transportation
	483	Water Transportation
	485	Transit & Ground Passenger Transport
	486	Pipeline Transportation
	487	Scenic & Sightseeing Transportation
	488	Support Activities for Transportation
	512	Motion Picture & Sound Recording
	562	Waste Management & Remediation Services

Exhibit 47: Fairfax County Business Establishments and Employment by 3-digit NAICS Code, 2021 County Business Patterns

NAICS CODE	MEANING OF NAICS CODE	NUMBER OF ESTABLISHMENTS	NUMBER OF EMPLOYEES
115	Support activities for agriculture and forestry	6	210
212	Mining (except oil and gas)	3	57
221	Utilities	18	1707
311	Food manufacturing	55	609
312	Beverage and tobacco product manufacturing	16	305
314	Textile product mills	11	110
315	Apparel manufacturing	5	31
322	Paper manufacturing	3	9
323	Printing and related support activities	57	915
325	Chemical manufacturing	9	221
326	Plastics and rubber products manufacturing	6	346
327	Nonmetallic mineral product manufacturing	19	317
332	Fabricated metal product manufacturing	31	321
333	Machinery manufacturing	8	26
334	Computer and electronic product manufacturing	35	1274
335	Electrical equipment, appliance, and component manufacturing	3	124
336	Transportation equipment manufacturing	6	141
337	Furniture and related product manufacturing	15	175
339	Miscellaneous manufacturing	66	930
423	Merchant wholesalers, durable goods	503	13094

NAICS CODE	MEANING OF NAICS CODE	NUMBER OF ESTABLISHMENTS	NUMBER OF EMPLOYEES
424	Merchant wholesalers, nondurable goods	230	2923
425	Wholesale electronic markets and agents and brokers	75	191
441	Motor vehicle and parts dealers	179	5906
442	Furniture and home furnishings stores	188	1785
443	Electronics and appliance stores	71	929
444	Building material and garden equipment and supplies dealers	127	3576
445	Food and beverage stores	386	12661
446	Health and personal care stores	260	2662
447	Gasoline stations	194	1465
448	Clothing and clothing accessories stores	452	6034
451	Sporting goods, hobby, musical instrument, and book stores	105	1711
452	General merchandise stores	79	7570
453	Miscellaneous store retailers	260	2053
454	Non-store retailers	206	1370
481	Air transportation	7	38
483	Water transportation	8	387
484	Truck transportation	199	1924
485	Transit and ground passenger transportation	63	1666
488	Support activities for transportation	96	1418
492	Couriers and messengers	57	3561
493	Warehousing and storage	13	838
511	Publishing industries (except internet)	235	13388
512	Motion picture and sound recording industries	80	656
515	Broadcasting (except internet)	18	2251
517	Telecommunications	247	9279
518	Data processing, hosting, and related services	217	10726
519	Other information services	76	1904
522	Credit intermediation and related activities	680	22925
523	Securities, commodity contracts, and other financial investments and related activities	461	3032
524	Insurance carriers and related activities	481	6140
525	Funds, trusts, and other financial vehicles	4	7
531	Real estate	1708	9494
532	Rental and leasing services	86	763
533	Lessors of nonfinancial intangible assets (except copyrighted works)	14	463
541	Professional, scientific, and technical services	8767	233048
551	Management of companies and enterprises	321	22232
561	Administrative and support services	1804	54963
562	Waste management and remediation services	55	1104
611	Educational services	692	12034
621	Ambulatory health care services	2836	35426
622	Hospitals	6	13109
623	Nursing and residential care facilities	196	7126
624	Social assistance	568	10358
711	Performing arts, spectator sports, and related industries	103	513
712	Museums, historical sites, and similar institutions	12	594
713	Amusement, gambling, and recreation industries	314	4960

NAICS CODE	MEANING OF NAICS CODE	NUMBER OF ESTABLISHMENTS	NUMBER OF EMPLOYEES
721	Accommodation	124	2686
722	Food services and drinking places	2316	35164
811	Repair and maintenance	548	3604
812	Personal and laundry services	1169	5906
813	Religious, grantmaking, civic, professional, and similar organizations	1047	11070

Exhibit 48: Compacted Commercial Refuse Stream Contribution Estimates by Industry, 2021

NAICS CODE	MEANING OF NAICS CODE	% OF WASTE ACCORDING TO CALRECYCLE RATES	ESTIMATED TONS DISPOSED IN 2021
115	Support activities for agriculture and forestry	0.01%	32
212	Mining (except oil and gas)	0.00%	9
221	Utilities	0.10%	261
311	Food manufacturing	0.10%	249
312	Beverage and tobacco product manufacturing	0.05%	125
314	Textile product mills	0.01%	16
315	Apparel manufacturing	0.00%	5
322	Paper manufacturing	0.00%	1
323	Printing and related support activities	0.05%	134
325	Chemical manufacturing	0.01%	32
326	Plastics and rubber products manufacturing	0.02%	51
327	Nonmetallic mineral product manufacturing	0.02%	46
332	Fabricated metal product manufacturing	0.02%	47
333	Machinery manufacturing	0.00%	4
334	Computer and electronic product manufacturing	0.05%	131
335	Electrical equipment, appliance, and component manufacturing	0.01%	13
336	Transportation equipment manufacturing	0.01%	21
337	Furniture and related product manufacturing	0.01%	26
339	Miscellaneous manufacturing	0.05%	136
423	Merchant wholesalers, durable goods	0.99%	2,478
424	Merchant wholesalers, nondurable goods	0.48%	1,194
425	Wholesale electronic markets and agents and brokers	0.02%	38
441	Motor vehicle and parts dealers	1.37%	3,412
442	Furniture and home furnishings stores	0.41%	1,031
443	Electronics and appliance stores	0.21%	537
444	Building material and garden equipment and supplies dealers	0.22%	546
445	Food and beverage stores	1.58%	3,952
446	Health and personal care stores	0.62%	1,538
447	Gasoline stations	0.34%	846
448	Clothing and clothing accessories stores	1.39%	3,486
451	Sporting goods, hobby, musical instrument, and book stores	0.40%	988
452	General merchandise stores	1.75%	4,373
453	Miscellaneous store retailers	0.47%	1,186
454	Non-store retailers	0.32%	791
481	Air transportation	0.00%	6
483	Water transportation	0.02%	59

NAICS CODE	MEANING OF NAICS CODE	% OF WASTE ACCORDING TO CALRECYCLE RATES	ESTIMATED TONS DISPOSED IN 2021
484	Truck transportation	0.15%	364
485	Transit and ground passenger transportation	0.10%	254
488	Support activities for transportation	0.09%	217
492	Couriers and messengers	0.27%	674
493	Warehousing and storage	0.06%	159
511	Publishing industries (except internet)	0.78%	1,956
512	Motion picture and sound recording industries	0.04%	100
515	Broadcasting (except internet)	0.48%	1,203
517	Telecommunications	1.98%	4,960
518	Data processing, hosting, and related services	2.29%	5,734
519	Other information services	0.41%	1,018
522	Credit intermediation and related activities	4.90%	12,255
523	Securities, commodity contracts, and other financial investments and related activities	0.65%	1,621
524	Insurance carriers and related activities	1.31%	3,282
525	Funds, trusts, and other financial vehicles	0.00%	4
531	Real estate	2.03%	5,075
532	Rental and leasing services	0.16%	408
533	Lessors of nonfinancial intangible assets (except copyrighted works)	0.10%	247
541	Professional, scientific, and technical services	49.84%	124,577
551	Management of companies and enterprises	1.77%	4,429
561	Administrative and support services	4.38%	10,949
562	Waste management and remediation services	0.07%	169
611	Educational services	0.61%	1,518
621	Ambulatory health care services	2.68%	6,704
622	Hospitals	0.99%	2,481
623	Nursing and residential care facilities	0.54%	1,349
624	Social assistance	0.83%	2,063
711	Performing arts, spectator sports, and related industries	0.13%	330
712	Museums, historical sites, and similar institutions	0.15%	383
713	Amusement, gambling, and recreation industries	1.28%	3,195
721	Accommodation	0.50%	1,249
722	Food services and drinking places	7.33%	18,330
811	Repair and maintenance	0.41%	1,017
812	Personal and laundry services	0.67%	1,667
813	Religious, grantmaking, civic, professional, and similar organizations	0.88%	2,205

REFERENCES

- “2014 Generator-Based Characterization of Commercial Sector Disposal and Diversion in California (DRRR-2015-1543),” California Department of Resources Recycling and Recovery (CalRecycle), 15 Nov. 2015, <https://www2.calrecycle.ca.gov/Publications/Details/1543>. Accessed 14 May 2024.
- “2020 Solid Waste Management Plan Update.” Fairfax County. <https://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/Assets/documents/2020-Complete-SWMP-Update.pdf>. Accessed 14 May 2024.
- “2023 Annual Solid Waste Report for CY2022: Commonwealth of Virginia”, Virginia Department of Environmental Quality, Feb. 2024, <https://www.deq.virginia.gov/home/showpublisheddocument/20645/638436070995400000>. Accessed 14 May 2024.
- “A Field Guide To Fairfax County’s Plants and Wildlife.” *A Field Guide to Fairfax County’s Plants and Wildlife*, Fairfax County Stormwater Planning Division and Urban Forest Management, 2013, <https://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/assets/fieldguide/files/basic-html/page9.html>. Accessed 7 May 2024.
- “Adopted Capital Improvement Program (CIP) FY 2024-2028.” *Fairfax County, Virginia*, <https://www.fairfaxcounty.gov/budget/sites/budget/files/Assets/documents/fy2024/adopted/cip/13-SOLID%20WASTE.pdf>. Accessed 14 May 2024.
- “Application for Collection, Transportation and Disposal Certificate to Operate.” *Fairfax County - Public Works and Environmental Services*, <https://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/Assets/documents/PDF/publications/collpkg.pdf>. Accessed 14 May 2024.
- “Arlington County 2024 Solid Waste Management Plan”, Arlington County, Feb. 2024, https://www.arlingtonva.us/files/sharedassets/public/v/1/recycling/documents/2024-arlington-county-swmp-zero-waste-plan_v12.0.pdf. Accessed 14 May 2024.
- “Austin Resource Recovery Releases 2021 Annual Report.” *City of Austin, TX - Austin Resource Recovery*, City of Austin, TX, 18 Feb. 2022, <https://www.austintexas.gov/news/austin-resource-recovery-releases-2021-annual-report>. Accessed 7 May 2024.
- “Austin’s 2015 Community Diversion Study.” *City of Austin, TX - Austin Resource Recovery*, City of Austin, TX, Apr. 2016, https://www.austintexas.gov/sites/default/files/files/Resource_Recovery/Austin_s_2015_Community_Diversion_Study_Final-04.29.16.pdf. Accessed 7 May 2024.
- “Business Hazardous Waste Disposal Program: Very Small Quantity Generators.” *Fairfax County - Public Works and Environmental Services*, May 2023, <https://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/Assets/documents/PDF/publications/vsqq-brochure.pdf>. Accessed 14 May 2024.
- “CAP Glass.” *Glass Recycling by CAP Glass - A Division of Carry All Products*, www.capglassrecycling.com. Accessed 14 May 2024.
- Carnes, Fei, et al. “Fairfax County Demographic Reports 2023.” *Fairfax County, Virginia*, Fairfax County Department of Management and Budget, Mar. 2024, <https://www.fairfaxcounty.gov/demographics/>. Accessed 7 May 2024.

- City News Team. "San Diego Makes Progress toward Zero Waste Goals with Record-High Diversion Rate." *City of San Diego Official Website*, San Diego City News Team, 8 Nov. 2023, <https://www.sandiego.gov/insidesd/san-diego-makes-progress-toward-zero-waste-goals-record-high-diversion-rate>. Accessed 7 May 2024.
- "City-Serviced Residential Waste Characterization Study" *City of Austin, TX - Austin Resource Recovery*, City of Austin, TX, Apr. 2015, https://www.austintexas.gov/sites/default/files/files/Final_Report_-_Austin_City-Serviced_Waste_Characterization_Study_2015-04-14.pdf. Accessed 2020.
- "Climate Plans, Policies, and Initiatives." *Fairfax County Virginia Office of Environmental and Energy Coordination*, www.fairfaxcounty.gov/environment-energy-coordination/policies-and-initiatives. Accessed 7 June 2024.
- "Commonwealth of Virginia: 2023 Annual Solid Waste Report for CY2022." *Virginia Department of Environmental Quality*, <https://www.deq.virginia.gov/home/showpublisheddocument/20645/638436070995400000>. Accessed 14 May 2024.
- "Composting Facilities - Maryland Department of the Environment." *Maryland Department of the Environment*, <https://mde.maryland.gov/programs/land/RecyclingandOperationsprogram/Documents/Composting%20Facilities%20with%20Capacities%202023.pdf>. Accessed 14 May 2024.
- "Convertus Acquires Composting Facility in Manassas, Virginia." *Convertus*, 15 Apr. 2024, <https://convertusgroup.com/convertus-acquires-composting-facility-in-manassas-virginia/>. Accessed 14 May 2024.
- "Cooperative Forecasts: Employment, Population, and Household Forecasts by Transportation Analysis Zone." *MWCOG, Metropolitan Washington Council of Governments*, Nov. 2023, <https://www.mwco.org/documents/2023/11/03/cooperative-forecasts-employment-population-and-household-forecasts-by-transportation-analysis-zone-cooperative-forecast-demographics-housing-population/>. Accessed 7 May 2024.
- "County Collection Customers." *Fairfax County - Public Works and Environmental Services*, <https://www.fairfaxcounty.gov/publicworks/recycling-trash/county-collection-customers>. Accessed 14 May 2024.
- "County of Fairfax COVID-19 Pandemic After Action Report and Improvement Plan." *Department of Emergency Management and Security, Fairfax County Department of Emergency Management and Security*, Mar. 2023, <https://www.fairfaxcounty.gov/emergencymanagement/sites/emergencymanagement/files/Assets/images/COVID/AAR/Fairfax%20County%20COVID%20AAR%20Final.pdf>. Accessed 7 May 2024.
- Davis Industries*, <https://www.davisindustries.com/>. Accessed 14 May 2024.
- "Denver Recycles 2019 Annual Report." *Denver Recycles, Denver Solid Waste Management (DSWM) in the Department of Transportation and Infrastructure*, 2019, https://www.denvergov.org/content/dam/denvergov/Portals/709/documents/DR_AnnualReport_2019_Final.pdf. Accessed 7 May 2024.
- Denver Waste Reduction Strategy 2020-2030*, Denver Solid Waste Management (DSWM) in the Department of Transportation and Infrastructure, June 2020, https://static1.squarespace.com/static/6330c6e90ba8b06ba49f2bef/t/637666bc5a99d33b737410a4/1668703934597/DEHS_FRWD_Denver_Waste_Reduction_Strategy_vs2022.pdf. Accessed 7 May 2024.
- "Disposable Plastic Bag Tax in Fairfax County." *Fairfax County Virginia Office of Environmental and Energy Coordination*, www.fairfaxcounty.gov/environment-energy-coordination/disposable-plastic-bag-tax-fairfax-county. Accessed 7 June 2024.

- Draft Solid Waste Master Plan: Achieving Zero Waste Presentation*, Metropolitan Nashville and Davidson County, 21 May 2019, <https://filetransfer.nashville.gov/portals/0/sitecontent/pw/docs/recycle/MasterPlan/SWRB090617Presentation.pdf>. Accessed 7 May 2024.
- “Electronics.” *Fairfax County - Public Works and Environmental Services*, <https://www.fairfaxcounty.gov/publicworks/recycling-trash/electronics>. Accessed 14 May 2024.
- “Energy Resource Recovery Facility.” *Fairfax County - Public Works and Environmental Services*, <https://www.fairfaxcounty.gov/publicworks/recycling-trash/energy-resource-recovery-facility>. Accessed 14 May 2024.
- “Environmentally Preferable Purchasing Buyer’s Guide”, Fairfax County Department of Procurement and Material Management, 2018, <https://www.fairfaxcounty.gov/energy/sites/energy/files/assets/documents/epp%20buyers%20guide%20-%20external%202018-1-31.pdf>. Accessed 3 June 2024.
- “Explore the Nashville Region: Nashville Area Chamber of Commerce.” *Nashville Area Chamber of Commerce*, Nashville Area Chamber of Commerce, 11 Apr. 2024, <https://www.nashvillechamber.com/economic-development/our-region/>.
- “Fairfax Connector.” *Fairfax County Virginia*, www.fairfaxcounty.gov/connector/battery-electric-buses. Accessed 7 June 2024.
- Fairfax County § 109.1
https://library.municode.com/va/fairfax_county/codes/code_of_ordinances?nodeId=THCOCOFAVI1976_CH109.1_SOWAMA. Accessed 14 May 2024.
- “Fairfax County Boundary.” *ArcGIS Online*, Fairfax County, <https://www.arcgis.com/home/item.html?id=e6e10e55d29642238d4d03b1a4a11b09&sublayer=0>. Accessed 7 May 2024.
- Fairfax County Economic Success Strategic Plan Indicators ...*, Fairfax County, Office of the County Executive, Jan. 2019, <https://www.fairfaxcounty.gov/strategicplan/economic-opportunity>. Accessed 7 May 2024.
- “Fairfax County Major Employers.” *Fairfax County EDA*, Fairfax County EDA, Feb. 2024, <https://www.fairfaxcountyeda.org/doing-business/largest-employers-fairfax-county/>. Accessed 7 May 2024.
- Fairfax County Purchasing Resolution, Fairfax County, July 2020, [https://www.fairfaxcounty.gov/procurement/sites/procurement/files/assets/documents/fairfax_county_purchasing_resolution_\(2020\)_-final.pdf](https://www.fairfaxcounty.gov/procurement/sites/procurement/files/assets/documents/fairfax_county_purchasing_resolution_(2020)_-final.pdf). Accessed 3 June 2024.
- “Food Scraps Composting Drop off.” *Fairfax County - Public Works and Environmental Services*, <https://www.fairfaxcounty.gov/publicworks/food-scraps-drop>. Accessed 14 May 2024.
- “FY 2025 Solid Waste Commercial Disposal Rates Schedule.” *Fairfax County - Public Works and Environmental Services*, May 2024, <https://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/Assets/Documents/PDF/commercial-waste-disposal-rates-fy2025.pdf>. Accessed 7 June 2024.
- “FY 2025 Solid Waste Residential Disposal Rates Schedule.” *Fairfax County - Public Works and Environmental Services*, May 2024, <https://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/Assets/Documents/PDF/residential-waste-disposal-rates-fy2025.pdf>. Accessed 7 June 2024.

- “Glass Recycling Program Update | Glass recycling.” *Fairfax County - Public Works and Environmental Services*, <https://www.fairfaxva.gov/government/public-works/operations-division/refuse-recycling/glass-recycling>. Accessed 14 May 2024.
- “Glossary.” *Census.Gov, US Census Bureau*, 12 Oct. 2023, <https://www.census.gov/programs-surveys/susb/about/glossary.html>. Accessed 14 May 2024.
- “Green Business.” *Fairfax County - Office of Environmental and Energy Coordination*, <https://www.fairfaxcounty.gov/environment-energy-coordination/green-business> . Accessed 14 May 2024.
- Hennepin County Zero Waste Plan*, Hennepin County, Aug. 2023, <https://www.hennepin.us/-/media/hennepinus/your-government/projects-initiatives/solid-waste-planning/zero-waste-plan.pdf> . Accessed 7 May 2024.
- Hennepin County: City of Minneapolis Residential Waste Characterization and Recycling Analysis*, Hennepin County, MN, Sept. 2016, <https://www.hennepin.us/-/media/hennepinus/your-government/projects-initiatives/solid-waste-planning/hennepin-county-waste-sort-methodology-2016.pdf>. Accessed 7 May 2024.
- “Household Hazardous Waste.” *Fairfax County - Public Works and Environmental Services*, <https://www.fairfaxcounty.gov/publicworks/recycling-trash/household-hazardous-waste>. Accessed 14 May 2024.
- “Human Services Resource Guide (HSRG).” *Fairfax County Department of Health and Human Services, Fairfax County Department of Health and Human Services*, <https://www.fairfaxcounty.gov/HSRG/Pages/ServiceSearch.aspx?servicename=food>. Accessed 14 May 2024.
- “Joseph Smith & Sons, Inc.” *Smith Industries Group*, <https://smithindustriessgroup.com/facility/joseph-smith-sons-inc/>. Accessed 14 May 2024.
- “Maryland Solid Waste Management and Diversion Report – 2022 (CY 2021 Data)”, *Maryland Department of the Environment*, Mar. 2023, <https://mde.maryland.gov/programs/land/RMP/Documents/MSWMDR%20%2722.pdf> . Accessed 14 May 2024.
- Metro Denver Economic Profile, Denver Economic Development Corporation*, Mar. 2023, https://www.metrodenver.org/sites/default/files/data_central/Economic%20Profile%202023.pdf . Accessed 7 May 2024.
- Metro Nashville and Davidson County, TN Waste Stream and Recycling Characterization Study*, *Metro Nashville Public Works and Tennessee Department of Environment & Conservation*, Feb. 2018, https://filetransfer.nashville.gov/portals/0/sitecontent/pw/docs/recycle/MasterPlan/Nashville%20Waste%20and%20Recycle%20Characterization%20Study_Final.pdf. Accessed 7 May 2024.
- “Northern Virginia Map.” *Northern Virginia Map | Northern Virginia Regional Commission - Website*, <https://www.novaregion.org/233/Northern-Virginia-Map>. Accessed 14 May 2024.
- “One Hundred Thirteen Selected Causes of Resident Deaths by ICD Tenth Revision Codes by Age, Race, and Sex, Virginia 2020.” *Statistical Reports and Tables, Commonwealth of Virginia*, Apr. 2022, <https://apps.vdh.virginia.gov/HealthStats/stats.htm>. Accessed 7 May 2024.
- Overall City Waste Composition - City of San Diego*, *City of San Diego*, Jan. 2014, <https://www.sandiego.gov/sites/default/files/legacy/environmental-services/pdf/recycling/CompOverall.pdf>. Accessed 7 May 2024.

- "Permitted Solid Waste Collection Companies." Fairfax County - Public Works and Environmental Services, Fairfax County - Public Works and Environmental Services, <https://www.fairfaxcounty.gov/publicworks/recycling-trash/registered-solid-waste-collection-companies>. Accessed 14 May 2024.
- "Public Solid Waste Services in Northern Virginia and the District of Columbia: 2021 Report." Northern Virginia Regional Commission, Feb. 2023, <https://www.novaregion.org/583/Solid-Waste-Report>. Accessed 14 May 2024.
- "Purple Can Club Glass Recovery Program." Google Maps, <https://www.google.com/maps/d/u/0/viewer?mid=1lIVbhj5-z6Zs1rLfCXQZX7Pk1KOEIDef&femb=1&ll=38.87314020000002%2C-77.2722581&z=11>. Accessed 14 May 2024.
- Rannie, Mark. "Written Statement of Mark Rannie, Chairman, Tire and Rubber Division Institute of Scrap Recycling Industries on Maryland House Bill 131 before the Maryland House Environment and Transportation Committee." Maryland General Assembly, Maryland General Assembly, Jan. 2022, https://mgaleg.maryland.gov/cmte_testimony/2022/ent/1nr6KwdZQNdeVJhUxpdIOA5V_C_C_9Y-Q.pdf. Accessed 14 May 2024.
- "Recycle or Trash - What Goes Where?" Fairfax County - Public Works and Environmental Services, <https://www.fairfaxcounty.gov/publicworks/recycling-trash/residential-materials>. Accessed 14 May 2024.
- "Recycling and Trash Locations and Hours." Fairfax County - Public Works and Environmental Services, <https://www.fairfaxcounty.gov/publicworks/recycling-trash/locations-hours>. Accessed 14 May 2024.
- "Reduce, Reuse, Recycle." Fairfax County - Public Works and Environmental Services, <https://www.fairfaxcounty.gov/publicworks/recycling-trash/recycle>. Accessed 14 May 2024.
- "Residential Disposal Fees and Regulations | Public Works and Environmental Services." Fairfax County - Public Works and Environmental Services, <http://www.fairfaxcounty.gov/https://www.fairfaxcounty.gov/publicworks/recycling-trash/residential-disposal-fees-and-regulations>. Accessed 14 May 2024.
- "Selected Economic Characteristics." American Community Survey, ACS 1-Year Estimates Data Profiles, Table DP03, 2022, <https://data.census.gov/table/ACSDP1Y2022.DP03?q=Fairfax County, Virginia Employment>. Accessed on May 7, 2024.
- Sethi, Parvinder, et al. "Geology of Virginia CD-ROM Web Edition." Translated by Jon Tso, *Physiography*, Radford University, 15 May 2014, <https://sites.radford.edu/~jtso/GeologyofVirginia/CoastalPlain/CPPhysio-5.html>. Accessed 7 May 2024.
- "Solid Waste Management Plan 2022 Draft." Solid Waste Management, Prince William County, Oct. 2022, <https://www.pwcva.gov/department/solid-waste-management/solid-waste-management-plan-2022>. Accessed 14 May 2024.
- "Solid Waste Management Plan October 2021 Revision." Thomas Jefferson Planning District Commission, <https://tjpd.org/wp-content/uploads/TJPDU-SWPU-5YR-UPDATE-2021-11-27-2023.pdf>. Accessed 7 June 2024.
- "State of Public Transportation 2022 Report." National Capital Region Transportation Planning Board, www.mwcog.org/assets/1/6/2022_State_of_Public_Transportation_Report_FINAL.pdf. Accessed 7 June 2024.
- "Surplus Property Programs." Procurement and Material Management: Logistics Center, Fairfax County Department of Procurement and Material Management, <https://www.fairfaxcounty.gov/procurement/logistics/surplus>. Accessed 14 May 2024.
- "SWA 21-005 Second Update Suspension of Commercial Tire Disposal." Fairfax County - Public Works and Environmental Services, Dec. 2021,

<https://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/assets/documents/pdf/advisories/swa-21-005.pdf>. Accessed 14 May 2024.

U.S. Census Bureau. "All Sectors: Summary Statistics for the U.S., States, and Selected Geographies: 2017." Economic Census, ECN Core Statistics Summary Statistics for the U.S., States, and Selected Geographies: 2017, Table EC1700BASIC, 2017, <https://data.census.gov/table/ECNBASIC2017.EC1700BASIC?t=Business and Economy&q=050XX00US51059&n=N0300.00>. Accessed on May 14, 2024.

"U.S. Census Bureau Quickfacts: Austin City, Texas." *QuickFacts*, United States Census Bureau, <https://www.census.gov/quickfacts/fact/table/austincitytexas/LND110210>. Accessed 7 May 2024.

"U.S. Census Bureau Quickfacts: Denver City, Colorado." *QuickFacts*, United States Census Bureau, <https://www.census.gov/quickfacts/fact/table/denvercitycolorado/PST045222>. Accessed 7 May 2024.

"U.S. Census Bureau Quickfacts: Fairfax County, Virginia." *QuickFacts*, United States Census Bureau, <https://www.census.gov/quickfacts/fact/table/fairfaxcountyvirginia/PST045222>. Accessed 7 May 2024.

"U.S. Census Bureau Quickfacts: Hennepin County, Minnesota." *Quickfacts*, U.S. Census Bureau, <https://www.census.gov/quickfacts/fact/table/hennepincountyminnesota/PST045223>. Accessed 7 May 2024.

"U.S. Census Bureau Quickfacts: San Diego City, California." *QuickFacts*, United States Census Bureau, <https://www.census.gov/quickfacts/fact/table/sandiegocitycalifornia/PST120223>. Accessed 7 May 2024.

"Used Tires." *Fairfax County - Public Works and Environmental Services*, <https://www.fairfaxcounty.gov/publicworks/recycling-trash/used-tires>. Accessed 14 May 2024.

"Where Does Your Recycle Go?" *Fairfax County - Public Works and Environmental Services*, <https://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/assets/documents/pdf/publications/recycling-flowchart.pdf>. Accessed 14 May 2024.

"Yard Waste." *Fairfax County - Public Works and Environmental Services*, <https://www.fairfaxcounty.gov/publicworks/recycling-trash/yard-waste>. Accessed 14 May 2024.

"Zero Waste Champions Toolkit." *Fairfax County Department of Procurement and Material Management*, Fairfax County Department of Procurement and Material Management, <https://www.fairfaxcounty.gov/procurement/zero-waste-champions-toolkit>. Accessed 14 May 2024.