Howard County

March 2025

Solid Waste Management Plan
2025-2034 Planning Period

Howard County
Bureau of Environmental Services
Columbia, MD 21046
(410) 313-6444

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Appendices

EXECUTIVE SUMMARY

The County has established this Solid Waste Management Plan (Plan) to provide for the sustainable management of solid waste generated in Howard County for the next ten years (2025 – 2034). Development of this Plan is required by the Maryland Code of Regulations (COMAR 26.03.03) and provides a description of the County's current and future solid waste management system. Existing infrastructure, services, and support required to manage solid waste generated in Howard County for the duration of the planning period are described in this Plan. While a ten-year planning horizon is required for regulatory compliance, the Plan is also required to be reviewed and amended as necessary at a minimum frequency of every three years.

The County anticipates that solid waste management in the County and region will continue to be provided through both public and private sector programs, services, and facilities. This Plan expresses the goals, objectives, and policies regarding the County's solid waste activities. All systems are operated in accordance with County, State, and Federal laws and will continue operating in compliance throughout the 2025-2034 planning period.

Solid waste management activities in Howard County are carried out by the Bureau of Environmental Services. The Bureau's mission statement, **"*Advancing environmental responsibility through responsive solutions and service*,"** guides their activities in providing solid waste services to the community. The County has established several goals which serve as a framework for solid waste management, which include the following:

1. Implement programs to promote material reduction, reuse, and recycling (including organics) of residential, government, school, and commercial waste.

2. Exceed the State of Maryland recycling and waste diversion requirement of recycling 35 percent of waste generated for counties with a population greater than 150,000.

3. Provide efficient and cost-effective residential solid waste collection services.

4. Facilitate efficient collection, processing, and marketing of residential, municipal, and county institutional generated recyclable materials.

5. Promote reduction in the quantity and toxicity of household hazardous waste and provide environmentally sound management and collection of household hazardous wastes requiring disposal.

6. Provide efficient and environmentally sound processing and disposal of solid waste generated in the County, minimizing landfilling of waste at the Alpha Ridge Landfill.

7. Operate the Alpha Ridge Landfill in accordance with applicable County and State laws and regulations including Howard County Code, Title 18 "Public Works," Subtitle 6 and State Refuse Disposal Permit Number 2021-WMF-0110.

8. Explore opportunities for regional solid waste management programs and facilities when feasible.

9. Implement and maintain programs and facilities necessary for the management of special wastes (metals, batteries, household hazardous waste, etc.), which must be handled separately from the general residential, county institutional, and commercial municipal solid waste.

The County's population is expected to increase by approximately 7.2 percent from 343,840 in 2025 to about 368,700 in 2034. Job growth in the County is also expected to increase from 251,183 in 2025 to 268,683 in 2035. Increased growth will continue to require solid waste management systems that can manage materials generated in the County to protect public health and the environment. This growth also provides opportunities for the County to maintain and expand waste diversion programs. The County's comprehensive zoning regulations specify where solid waste facilities may be developed. Overall, there are few undeveloped tracts of land with the capacity for solid waste facility development.

Waste and recyclable quantity projections are the foundation for identifying facility and program needs. The following table provides solid waste generation projections for both the residential and commercial waste generating sectors. By 2034, it is expected that nearly 568,000 tons of solid waste will be generated in the County.

Commercial and Residential Projected Waste Generation

Year	Population (1)	Annual Generation (Tons/Year)						
		Waste				Recycling		Total
		Residential		Commercial (4)	Other (5)	Residential	Commercial (4)	
		County-Control (2)	Private-Control (3)					
2025	343,839	134,523	26,075	141,033	103,651	60,150	167,340	632,771
2028	353,699	136,199	29,045	145,113	106,624	61,874	172,139	650,994
2031	362,378	137,817	31,518	148,705	109,240	63,393	176,363	667,035
2034	368,697	139,317	33,152	151,458	111,145	64,498	179,438	679,009

(1) Source: Extrapolated from Table 2-2, Household Population.
(2) Residential waste quantities are directly managed and controlled by the County either collected curbside or ARL.
(3) Residential waste quantities managed by the private sector; County has no control over waste materials.
(4) Commercial Waste includes Commercial, Institutional, and Industrial as reported to MDE being disposed of at other facilities outside the county Commercial Recycling includes materials reported through MRA surveys to the county.
(5) Other Waste Includes Industrial Waste, C&D Debris (including Land Clearing) not initially brought to ARL, HHW, Dead Animals, Bulky Waste, Vehicle Tires not initially brought to ARL, Sludge, Septage, Asbestos, Asphalt, Soil, Special Medical Waste, Scrap Metals not initially brought to ARL.

To provide sustainable solid waste management, the County has established seven (7) action steps, each including specific activities, which will help the County continue to provide solid waste management services that protect public health and the environment. These actions are included in the following table.

Action Step	Timeframe
Action Step 1 – Promote and Encourage Source Reduction and Reuse	
Conduct a source reduction outreach campaign directed at consumers	Short
Conduct a source reduction outreach campaign directed at businesses	Short
Provide compost bins and promote their use	Short
Continue operating paint, bike and textile reuse programs	Short
Explore establishing a swap shop/reuse center	Medium
Include more reuse options as markets develop	Short/Medium/Long
Action Step 2 – Increase Commercial Recycling Participation	
Support and enforce Apartment and Condo recycling law	Short
Encourage recycling in office buildings in response to state requirements	Short
Continue the Work Green Howard Certification Program and explore opportunities for program enhancement	Short
Increase business recycling reporting through voluntary or mandated actions	Short
Support school recycling programs and initiatives	Short
Action Step 3 – Increase Organics Diversion	
Expand food scraps collection in public schools	Short
Facilitate food donation programs	Short
Conduct an organics composting education and outreach campaign	Short
Revise planning and zoning text amendments allowing commercial food scraps anaerobic digestion, food scraps composting and on-farm composting	Short/Medium
Expand residential food scraps collection to more households with year-round collections	Short/Medium/Long
Study feasibility of a public/private partnership for anaerobic digestion of food scraps in Howard County	Medium
Action Step 4 – Expand List of Acceptable Recyclable Materials	
Expand mix of curbside recycling program materials if processing and marketing capabilities exist	Short/Medium/Long
Expand mix of recyclable materials accepted at the ARL if processing and marketing capabilities exist	Short/Medium/Long
Action Step 5 – Solid Waste Disposal	
Continue MSW waste export	Short/Medium/Long
Continue to assess the capacity of Alpha Ridge Transfer Station to handle daily tons as required	Short
Continue to assess the capacity of the current active landfill cell at ARL	Short
Assess the feasibility, benefits, and requirements for a PAYT program in Howard County.	Short
Action Step 6 – Energy and Greenhouse Gas Reductions	
Monitor greenhouse gas emissions from landfill and maintain or remediate to acceptable limits	Short
Prioritize, when practical, the use of renewable energy to meet the County's energy needs	Short
Evaluate alternative technology for energy	Long
Action Step 7 – Education and Outreach	
Conduct business waste audits and reduction/recycling education	Short/Medium/Long
Establish a business recycling recognition program	Short/Medium/Long
Continue education and outreach programs in schools	Short/Medium/Long

INTRODUCTION

STATEMENT OF PURPOSE

The County has established this Plan to provide for the sustainable management of solid waste generated in Howard County for the next ten years (2025 – 2034). Development of this Plan is required by the Maryland Code of Regulations (COMAR 26.03.03) and the Howard County Code (Sections 18.600A and 22.405). The Codes require a description of the County's current and future solid waste management system, existing and future infrastructure, services, and support required to manage solid waste generated in Howard County for the duration of the planning period. While a ten-year planning horizon is required for regulatory compliance, the Plan is also required to be reviewed and amended as necessary at a minimum frequency of every three years.

PLAN ORGANIZATION

The Plan is divided into five chapters as follows:

- **Chapter 1 – Legal and Institutional Framework:** This chapter provides the planning framework, goals, objectives, and policies that govern the County's integrated solid waste management system. The goals, objectives, and policies are drawn from the County's comprehensive plan (HoCo By Design[1]), climate action plan (Live Green Howard[2]), and the guiding vision of the Department of Public Works and the Bureau of Environmental Services[3]. The planning framework is also established by the relevant federal, state, and county solid waste laws and regulations.

- **Chapter 2 – Demographics and Land Use:** This chapter includes the current demographics, including population distribution and population projections. A summary of zoning regulations is also provided.

[1] https://www.howardcountymd.gov/planning-zoning/general-plan
[2] https://livegreenhoward.com
[3] https://www.howardcountymd.gov/public-works/bureau-environmental-services

- **Chapter 3 – Waste Generation and Markets:** This chapter includes current and historical waste generation quantities and provides estimates of expected waste generation for the 10-year planning period. The current collection and recycling programs and markets available for various types of materials are described. The information in Chapter 3 provides the basis for the recommendations in Chapters 4 and 5.

- **Chapter 4 – Assessment of Solid Waste Management System:** This chapter includes an assessment of the current solid waste management system. Using the information from the preceding chapters, proposed alternatives are evaluated for their ability to meet gaps in the current system and to meet the goals and objectives in Chapter 1. Siting constraints for solid waste facilities are also described.

- **Chapter 5 – Action Plan:** Chapter 5 presents the chosen implementation and action plan for the planning period. Actions are based on the assessment provided in Chapter 4.

Acronyms used in this Plan are included in **Appendix A**.

PLAN APPROVAL PROCESS

The Bureau of Environmental Services, Department of Public Works, directed the development of this Plan. Multiple County agencies were consulted throughout the Plan development process and key information from these agencies was incorporated into this Plan. A draft version of the Plan was submitted to the Maryland Department of the Environment (MDE) for preliminary review. The County Planning Board and the County Public Works Board reviewed the draft Plan and provided forums for public comments. Additionally, the Planning Board evaluated the Plan for consistency with the County's General Plan. After consideration of the Planning Board's comments, the Plan was submitted to the County Executive for final review and submission to the County Council. A public hearing for the Plan was held by the County Council on September 2, 2025.

Approval letters from both the County Council and MDE are provided in **Appendix B**.

CERTIFICATION

The Solid Waste Management Plan has been prepared and is confirmed to be in accordance with the Code of Maryland Regulations (COMAR) 26.03.03 and covers the planning period from 2025 through 2034. A copy of the certification letter issued by the County is provided in **Appendix B**.

1.0 LEGAL AND INSTITUTIONAL FRAMEWORK

This chapter lays the foundation for solid waste management in Howard County by listing the goals and objectives of the Plan and describing the County's existing and anticipated solid waste management system. These elements form the framework upon which the Howard County Solid Waste Management Plan is developed.

An understanding of the organization within County government that implements and operates solid waste and recycling programs and facilities is important for system planning. A description of the organization of the Bureau of Environmental Services, a unit of the Department of Public Works, is presented in this section.

This chapter also summarizes federal, state, and local laws and regulations governing management of solid waste and recyclable materials.

1.1 SOLID WASTE PLANNING FRAMEWORK

A key mission of the Howard County Bureau of Environmental Services is to provide effective solid waste management that includes the following:

- Collection of residential solid waste and recyclable materials
- Recovery and diversion of recyclable materials from residential sectors
- Disposal of remaining waste materials in a manner that protects public health and the environment.

The County anticipates that solid waste management in the County and region will continue to be provided through both public and private sector programs, services, and facilities. This Plan expresses the goals, objectives, and policies regarding the County's solid waste activities. All systems are operated in accordance with County, State, and Federal laws and will continue operating in compliance throughout the 2025-2034 planning period. Specific solid waste management goals, objectives and policies are discussed below.

The development of regional solid waste management programs and facilities is desirable. The economies of scale afforded through regional approaches and solutions to waste management must be considered along with the associated transportation costs, fuel prices, and greenhouse gas generation. Additionally, future programs and facilities may become more technically sophisticated as communities continue prioritizing recycling and recovery of materials over disposal.

1.1.1 Goals

The Vision Statement of the Howard County Department of Public Works is:

"Aspiring to be a national model of public works excellence."

The Bureau of Environmental Services is focused on advancing environmental responsibility through responsive solutions and service. The County has established several goals which serve as a framework for solid waste management. These goals include the following:

1. Implement programs to promote material reduction, reuse, and recycling (including organics) of residential, government, school, and commercial waste.

2. Exceed the State of Maryland recycling and waste diversion requirement of recycling 35 percent of waste generated for counties with a population greater than 150,000.

3. Provide efficient and cost-effective residential solid waste collection services.

4. Facilitate efficient collection, processing, and marketing of residential, municipal, and public-school generated recyclable materials.

5. Promote reduction in the quantity and toxicity of household hazardous waste and provide environmentally sound management and collection of household hazardous wastes requiring disposal.

6. Provide efficient and environmentally sound processing and disposal of solid waste generated in the County, minimizing landfilling of waste at the Alpha Ridge Landfill.

7. Operate the Alpha Ridge Landfill in accordance with applicable County and State laws and regulations including Howard County Code, Title 18 "Public Works," Subtitle 6 and State Refuse Disposal Permit Number 2021-WMF-0110.

8. Explore opportunities for regional solid waste management programs and facilities, when feasible.

9. Implement and maintain programs and facilities necessary for the management of special wastes, which must be handled separately from the general residential and commercial municipal solid waste.

1.1.2 Objectives and Policies

To meet the solid waste management goals identified above, the County established the following objectives and policies.

1. Management and operation of all County facilities, services, programs, and equipment that directly provide for the management of solid waste generated in the County.

2. Review and evaluate private facilities to confirm alignment with this Solid Waste Management Plan and assess the impact of private facilities on the County's solid waste management system.

3. Manage, direct, or administer, as appropriate, the residential solid waste and recyclable materials collection and processing services provided by agencies and private firms under contract with the County.

4. Evaluate alternative waste processing and disposal capacity, as necessary, to provide for future County needs.

5. Implement and maintain a comprehensive solid waste management program in conformance with the approved Plan, including development of new programs, facilities, and contracts with private service providers.

6. Maintain a comprehensive recycling program as described in the Plan, including programs to reduce the amount of solid waste requiring landfill disposal through source reduction, reuse, and recycling.

7. Provide information and assistance to residents, government entities, schools, and businesses about the County's solid waste management system; implement education programs to promote waste reduction, reuse, and recycling.

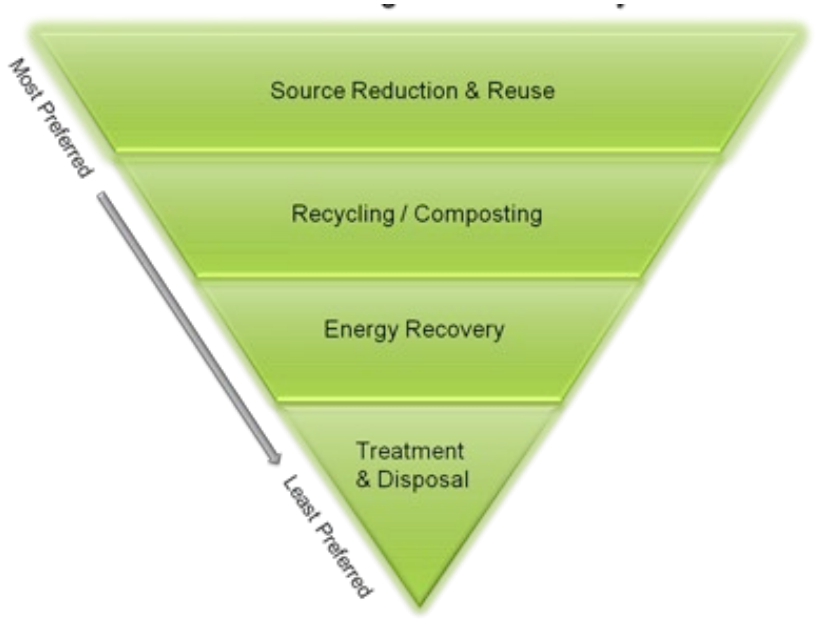
1.1.3 Recycling and Waste Reduction

Howard County's goal of efficient and cost-effective management of solid waste is reflected in the County's comprehensive recycling program[4]. One goal presented in this Plan is to exceed the minimum recycling requirements of the Maryland Recycling Act (MRA), which requires the County achieve a 35 percent recycling rate and establishes a 60 percent voluntary waste diversion goal. The comprehensive recycling program has been designed to meet and exceed these requirements and goals with participation by residents, schools, government, and business operators.

Reduction of solid waste and household hazardous waste generation are objectives of the County solid waste management system. This is consistent with the Environmental Protection Agency's (EPA) waste management hierarchy as shown in **Exhibit 1-1**. The County has implemented numerous initiatives regarding recycling and waste reduction. These are described in Chapter 3 of this Plan.

[4] https://www.howardcountymd.gov/bureau-environmental-services/recycling

Exhibit 1-1 U.S. EPA Non-Hazardous Waste Management Hierarchy



Source : www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste- management-hierarchy

1.1.4 Solid Waste Disposal Capacity

Howard County's only active solid waste disposal facility is the County-owned and operated Alpha Ridge Landfill (ARL). Since 1999, the County has prioritized conserving landfill space at the ARL. In July 2022, the County entered into a Waste Disposal Agreement with the Northeast Maryland Waste Disposal Authority (the Authority) to provide for the transfer of solid waste from the County to a private regional landfill located in King George County, Virginia. The agreement established Howard County's maximum annual disposal tonnage of 150,000 tons. There is no daily tonnage limit. Waste generated in the County is directly hauled to the Annapolis Junction Transfer Station (AJTS) in Anne Arundel County before being transported to the King George County Landfill in Virginia. Most of the residential and commercial waste received at the ARL is also transported to the AJTS.

Howard County does not provide collection of non-residential waste nor does the County control its disposal. Businesses and industries contract directly with waste management firms for the collection and disposal of their waste. A substantial portion of this uncontrolled waste stream has been diverted from the ARL to private facilities. This trend is anticipated to continue. The existing solid waste management disposal system in Howard County is projected to extend the operating life of the ARL (discussed in Chapters 4 and 5). For the planning period 2025-2034, Howard County anticipates continuing to transport solid waste to the AJTS for consolidation, then disposal at the King George County Landfill in Virginia.

The term of Howard County's current waste management/transportation agreement through the Authority is from July 1, 2022, with ten 12-month renewal options through June 30, 2033.

The County anticipates, upon conclusion of this existing agreement, a new agreement will be put in place with a private entity that will continue to minimize disposal at ARL. Potential solid waste management alternatives discussed in Chapter 4 of this Plan should result in continued minimized waste disposal at the ARL during the planning period and beyond.

1.1.5 Conformance with Local, Regional, and State Plans

The County's General Plan, HoCo by Design, provides information on the infrastructure and support needed to maintain the County's solid waste management system. HoCo by Design established a policy statement to guide the County's actions in planning solid waste activities in the future. This policy statement is:

"Divert waste from landfills using a program that promotes reduction, reuse, and recycling materials in the County[5]"

To achieve this policy, HoCo by Design identifies three implementing actions for the County to prioritize, including:

1. Minimize the tons of waste each year that is exported from the County under an agreement with the Authority.

2. Expand business opportunities in the County that focus on recycling, reusing, or repurposing components of solid waste management.

3. Consider new future solid waste technologies to further reduce the waste footprint for Howard County.

Howard County plans the following activities to complete these implementation actions:

1. ***Promote Waste Diversion:*** Howard County plans to build on the existing public education program to promote solid waste reduction, recycling, and diversion.

2. ***Expand Food Scraps Recovery:*** Continue expanding the existing food scraps collection and recovery program by providing curbside service to more residents in the County.

3. ***Evaluate and Implement Options for Attracting Innovative and Entrepreneurial Solid Waste Businesses to Howard County:*** Work with the Howard County Economic Development Authority to explore ways to encourage existing solid waste businesses to relocate to Howard County and encourage entrepreneurs to start new and innovative businesses in the County.

4. ***Identify and Evaluate New Technologies, Systems, and Options for Reducing Waste Generation:*** Consider the applicability of unique technologies with success managing waste streams generated in the United States. Complete feasibility studies and, when applicable, complete pilot tests of these technologies.

Maryland's requirements for solid waste management plans are presented in Title 9, Subtitle 5 of the Environment Article, Annotated Code of Maryland, and the Code of Maryland Regulations (COMAR)

[5] HoCo by Design; Chapter 9: Supporting Infrastructure; p. 49; INF-13 Policy Statement

26.03.03. These specifications define the plan content and require that counties develop and maintain a solid waste management plan that covers a ten-year planning period. The plan is required to be reviewed and updated by the County, as necessary, or at a minimum every three years. This Plan for Howard County is prepared in compliance with Maryland regulations.

Section 9-503 of Title 9, Subtitle 5 of the Environment Article, Annotated Code of Maryland, requires that the Solid Waste Management Plan incorporate all or part of the subsidiary plans of each town, municipal corporation, sanitary district, privately owned facility or local, state, or federal agency that has existing or planned development in the County if such plans promote public health, safety, and welfare. There are no incorporated municipalities in Howard County. Likewise, no towns, sanitary districts, private facilities, or government agencies have developed subsidiary plans separate from the County's Plan. Therefore, no such plans have been incorporated.

1.2 COUNTY SOLID WASTE MANAGEMENT ORGANIZATION

1.2.1 Legislative Framework

Howard County is designated as a "home rule" or "charter" county, which means that the County has been granted broad powers to pass local laws specific to solid waste management. In addition, the Maryland General Assembly may not impose a Public Local Law upon Howard County. Instead, powers granted to a "home rule" county can be affected only by a Public General Law.

1.2.2 Administration

The Howard County Charter established the Office of County Executive and the County Council, which serve as the executive and legislative branches of government respectively. Solid waste collection, disposal, and recycling responsibilities fall under the Bureau of Environmental Services in the Department of Public Works. Environmental Services activities overseen by the Bureau are divided into three (3) divisions: Administrative Services, Collections, Recycling, and Landfill Operations and Environmental Compliance. The Administrative Services, Collections and Recycling, and Operations divisions provide direct support to the County's solid waste management program. The following describes the functions and activities of each of the divisions managing solid waste activities:

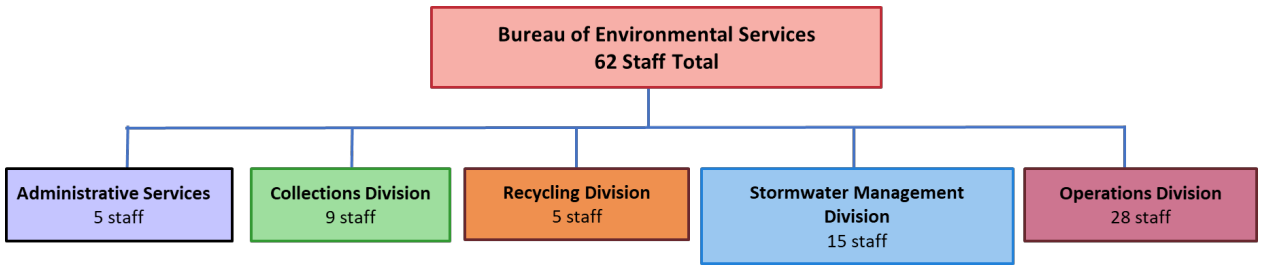
- **Administrative Services Division:** Provides leadership and administrative support for the three waste divisions, including budget development, revenue/expenditure tracking, personnel management, payroll, purchasing, and coordination of clerical support and customer service.

- **Collections and Recycling Division**: Manages the residential curbside collection of recyclable materials, solid waste, yard trim and food scraps. Also manages the County's comprehensive recycling and waste reduction programs, including long-term planning, public education/promotion, and the preparation of performance data and compliance reports.

- **Operations Division**: Manages and maintains the operations of the county's three landfills located at Alpha Ridge, New Cut Road and Carrs Mill Road which includes the Residents' Convenience Center, wood mulching area, composting operation, household hazardous waste collection facility, and scrap tire storage area. Professional engineering staff are responsible for the design and implementation of landfill improvements and for monitoring and implementing environmental compliance within all county agencies in accordance with state and federal regulations.

The Bureau of Environmental Services is directed by the Bureau Chief who is assisted by three Division Chiefs. The Bureau of Environmental Services has approximately 60 employees. Administrative support staff, who report directly to the Bureau Chief, are responsible for providing for the Bureau's financial management needs. The Howard County Bureau of Environmental Services organizational chart is provided in **Exhibit 1-2**.

Exhibit 1-2 Howard County Bureau of Environmental Services Organization Chart



1.3 LAWS AND REGULATIONS

This section describes the framework by which regulations at the federal, state, and local level interact to facilitate solid waste management activities in the County. Proper solid waste management is essential for maintaining and enhancing a community's public and environmental health. A full compendium of applicable laws and requirements impacting solid waste management are included in **Appendix C.**

The primary framework for federal regulation of solid waste management comes from the Resource Conservation and Recovery Act (RCRA). Passed in 1976, this law allows the EPA to regulate both hazardous and non-hazardous solid waste.[6] The Hazardous and Solid Waste Amendments (HSWA) of 1984 established "cradle-to-grave" requirements for all entities handling solid waste. Hazardous waste sites that have been closed or abandoned are regulated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). This act, later amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, gave the EPA the authority to evaluate the threat of a closed or abandoned hazardous waste site and implement remedial measures to minimize the threat. Based on their evaluation, both the U.S. and state governments can place a hazardous waste site on the National Priorities List (NPL).[7]

The federal government grants authority to state governments to implement RCRA programs instead of the EPA. This process is called "State Authorization" and currently all 50 states and territories have been given the responsibility to implement solid waste plans under RCRA. States must comply with all federal requirements under RCRA but have the authority to implement more stringent requirements. The federal regulations provide national standards while allowing state governments flexibility in implementing those standards. For example, regulations under Subtitle D of RCRA establish minimum requirements for the operation of municipal and industrial waste landfills. These requirements include design criteria, location restrictions, and closure requirements. Waste facilities must comply with federal regulations as well as any stricter state requirements.[8]

[6] State Authorization under the Resource Conservation and Recovery Act (RCRA) | US EPA
[7] https://www.epa.gov/superfund
[8] Resource Conservation and Recovery Act (RCRA) Overview | US EPA

While many state governments oversee implementing solid waste plans under RCRA, local governments play a large role in complying with the requirements. In general, the state is the "regulator" while the local government is the "operator." [9] Many local governments, including Howard County, are directly involved in owning and operating solid waste facilities such as transfer stations, recycling centers, and landfills. This requires the government to inherit a large financial responsibility. Local governments that do not own or operate solid waste facilities are still responsible for participating in local solid waste planning. This can include managing the collection of household and commercial waste or controlling the solid waste market in their region. For example, local governments can establish where specific types of materials can be disposed of and if other communities are allowed to haul waste to their region.[10]

[9] https://swana.org/docs/default-source/advocacy-documents/technical-policies-library/t-3-2---role-of-state-local-government.pdf?sfvrsn=6545544b_4

[10] Local Governments and the Municipal Solid Waste Landfill Business (ny.gov)

2.0 DEMOGRAPHICS AND LAND USE

2.1 INTRODUCTION

Howard County is approximately 254 square miles, making it the second smallest of Maryland's 23 counties. The County is situated in central Maryland between the Baltimore and Washington, D.C. metropolitan areas. As presented in **Exhibit 2-1**, the County is bounded by Baltimore, Anne Arundel, Prince George's, Montgomery, Frederick, and Carroll counties. The County's location has facilitated substantial residential and industrial development along Route 29, I-95, and Route 1 corridors. There are no incorporated municipalities located in Howard County. The federal government has five (5) facilities physically located in Howard County. **Exhibit 2-2** is a map that identifies these five (5) facilities and their location in the County.

The County's demographics and land use are described in this chapter. For the purposes of overall planning for solid waste management, Howard County may be considered as a unit. The County's Department of Public Works collects most of the municipal solid waste (MSW) from single-family residences. There are no privately managed residential waste collection districts; however, the development of private roads, which are not built to accommodate large trash trucks, necessitated the establishment of some private residential collection programs. Generally, commercial waste is collected by haulers contracting directly with commercial waste generators. However, solid waste from a small number of commercial waste generators is collected by private haulers under contract to the County (Ellicott City Historic District).

There is one (1) active landfill and two (2) closed landfills in Howard County as follows:

- Alpha Ridge Landfill (ARL), Marriottsville - Active
- Carrs Mill Landfill (CML), Glenwood - Closed
- New Cut Landfill (NCL), Ellicott City - Closed

The ARL, owned and operated by the County, is the sole active MSW disposal facility located within the County. Only a small amount of waste generated in Howard County is disposed of at the ARL. Waste collected from County residences is delivered to the Annapolis Junction Transfer Station (AJTS) in Anne Arundel County for transfer to the King George Landfill in Virginia. A significant portion of the commercial waste generated in the County is delivered to out-of-county transfer stations.

Exhibit 2-1 Howard County Regional Map

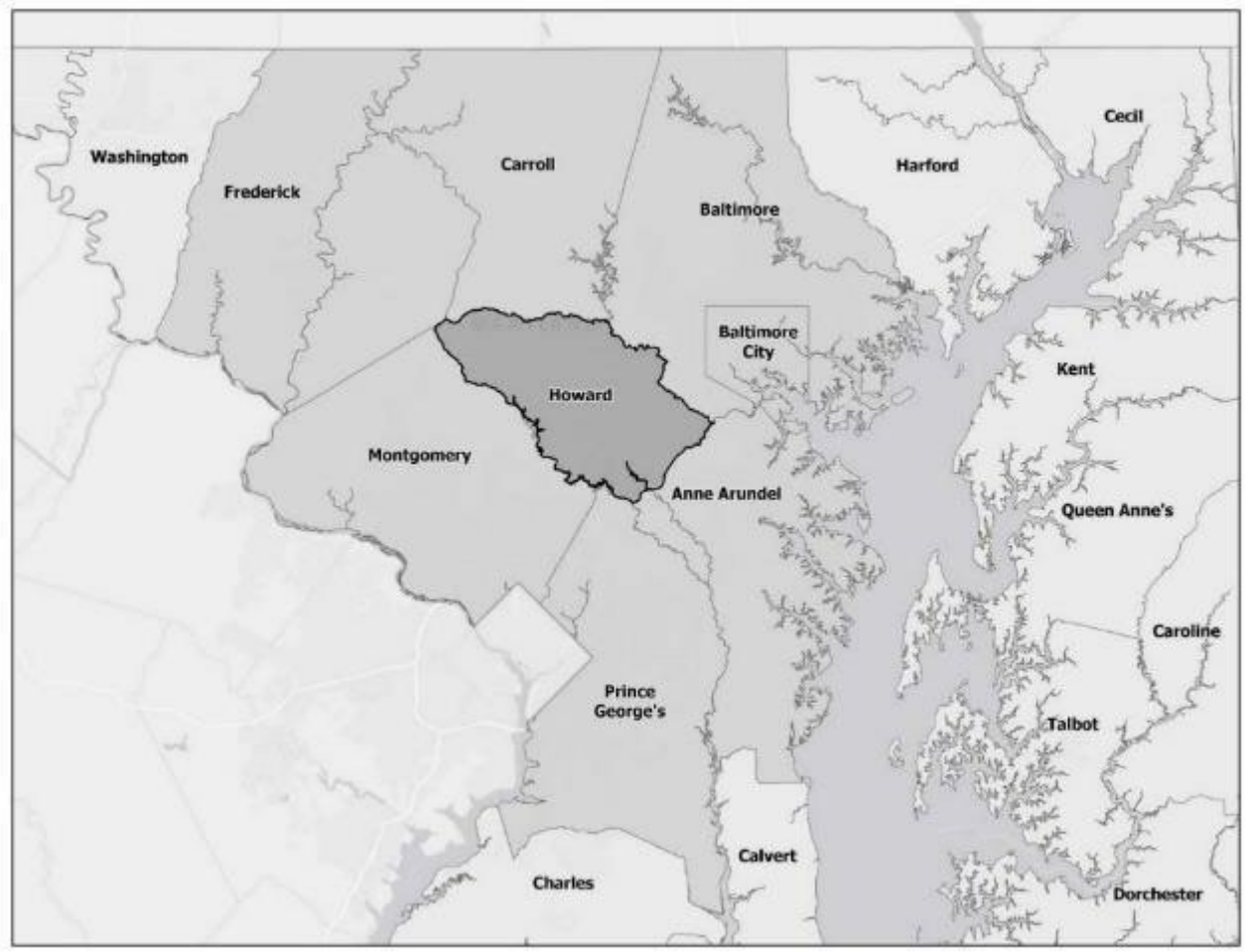
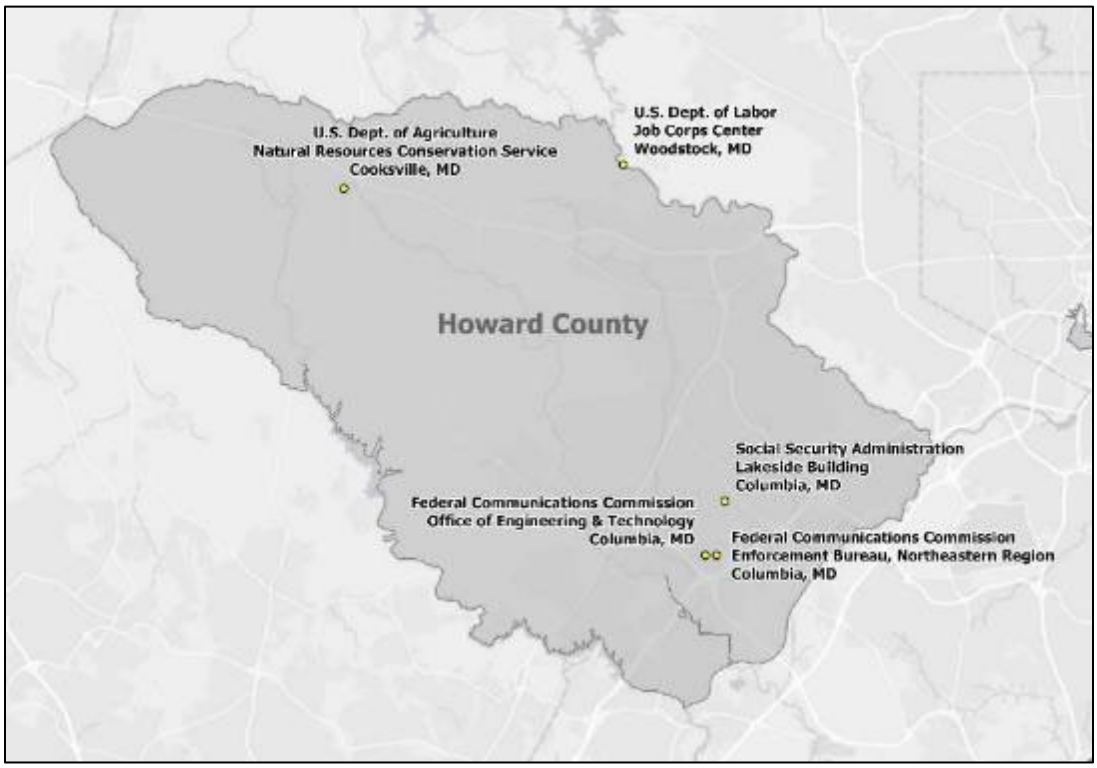


Exhibit 2-2 Federal Facilities located in Howard County



2.2 POPULATION

Estimates of population, households, and employment for the County are presented in this section as all have impacts on the generation of solid waste. The population history of the County is summarized in **Table 2-1**. The "Group Quarters" population is the number of people living in facilities such as correctional institutions, nursing homes, and homeless shelters.

Table 2-1 Howard County Population History

Year	Household Population	Group Quarters Population	Total Population
1990	185,371	1,957	**187,328**
2000	244,224	3,618	**247,842**
2010	284,376	2,709	**287,085**
2020	329,240	3,077	**332,317**
2023	336,611	3,077	**339,688**

Sources:
1990, 2000, 2010, and 2020 household and total populations from Decennial Census (U.S. Census Bureau).
2023 Howard County DPZ, Research Division

Population forecasts are developed by the County's Department of Planning and Zoning (DPZ) in consideration of the policies in key County planning documents such as jurisdictional master plans, including HoCo by Design[11]. The resulting population data and forecasts through 2040 are presented in **Table 2-2**.

Table 2-2 Howard County Population Projections, 2025 to 2045

Year	Household Population	Group Quarters Population	Total Population
2025	340,762	3,077	343,839
2030	357,195	3,077	360,272
2035	367,726	3,077	370,803
2040	374,848	3,077	377,925

Source: Howard County DPZ, Research Division

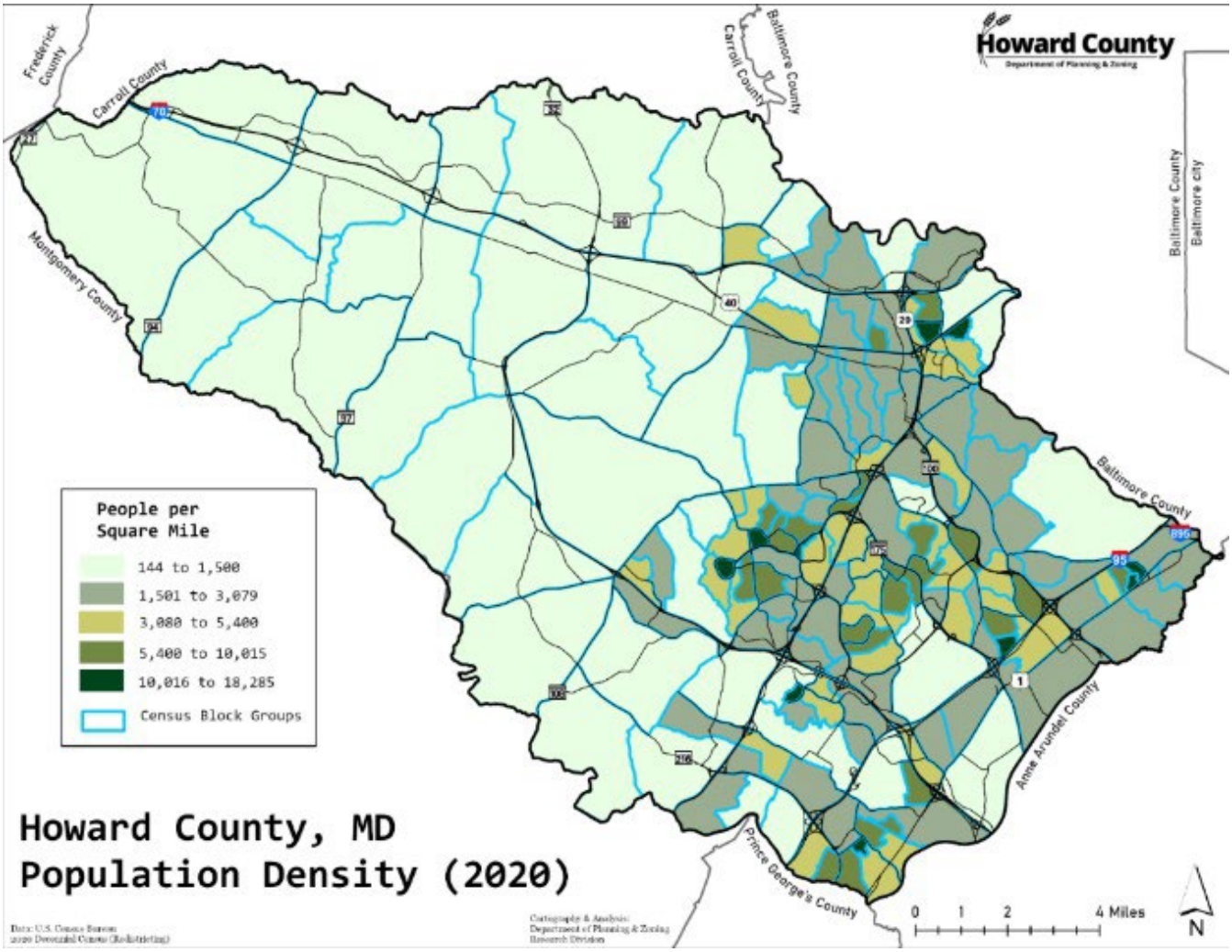
Projections of residential growth take into consideration growth pressures from both the Baltimore and Washington metropolitan areas, as well as capacity limits in public facilities that will have the effect of controlling growth. The County adopted the Adequate Public Facilities Act (Howard County Code, Title 16, Subtitle 11, Section 16).[12] This ordinance can delay residential and commercial development until transportation and school capacity is available.

2.3 POPULATION DISTRIBUTIONS

Population and development in Howard County are concentrated in the eastern part of the County. Maintaining this distribution of development and preserving the rural character of the western part of the County are two planning objectives prioritized in HoCo by Design. Development of more dense types of housing in the western portions of the County is precluded due to the lack of public water and sewer systems. **Exhibit 2-3** illustrates the distribution of population throughout the County (2020) by Census Block Group.

[11] https://www.howardcountymd.gov/planning-zoning/general-plan
[12] https://www.howardcountymd.gov/planning-zoning/adequate-public-facilities

Exhibit 2-3 Howard County Population Density – 2020



2.4 HOUSEHOLD CHARACTERISTICS

Table 2-3 details Howard County's historical household population by dwelling unit type from 2019 to 2023, as provided by the Howard County DPZ, Research Division. **Table 2-4** provides the number of dwelling units by type in the County from 2019 to 2023, as estimated by Howard County DPZ.

Table 2-3 Howard County Household Population by Dwelling Unit Type

Year	Single Family Detached	Single Family Attached	Condo Apartment	Rental Apartment	Mobile Home	Total
2019	191,621	69,955	14,773	45,346	3,920	**325,615**
2020	192,595	70,447	14,804	47,473	3,920	**329,240**
2021	193,566	71,375	14,930	48,307	3,920	**332,098**
2022	194,485	72,270	14,971	48,326	3,920	**333,973**
2023	195,484	72,749	15,054	49,403	3,920	**336,611**

Source: Howard County DPZ, Research Division

Table 2-4 Howard County Dwelling Units by Type

Year	Single Family Detached	Single Family Attached	Condo Apartment	Rental Apartment	Mobile Home	Total
2019	61,956	27,439	7,515	23,068	1,288	**121,266**
2020	62,271	27,632	7,531	24,150	1,288	**122,872**
2021	62,585	27,996	7,595	24,574	1,288	**124,038**
2022	62,882	28,347	7,616	24,584	1,288	**124,717**
2023	63,205	28,535	7,658	25,132	1,288	**125,818**

Source: Howard County DPZ, Research Division Land Use Database, September 30 of each year

It is estimated that the number of households in the County will increase from 122,348 in 2023 to 137,866 in 2035, an increase of 13 percent. This information is presented in **Table 2-5**.

Table 2-5 Estimated Number of Households by Dwelling Unit Type, 2023 - 2040

Year	Single Family Detached	Single Family Attached	Condo Apartment	Rental Apartment	Mobile Home	Total
2023	61,941	27,679	7,352	24,127	1,249	**122,348**
2025	62,512	28,260	7,475	25,240	1,249	**124,737**
2030	63,774	29,111	8,066	30,558	1,249	**132,759**
2035	65,399	29,534	8,372	33,312	1,249	**137,866**
2040	67,053	29,796	8,530	34,733	1,249	**141,362**

Source: Howard County DPZ, Research Division

In 2023, the average household size in Howard County was 2.7465 people. Howard County DPZ and HoCo by Design projects the average household size in Howard County will slowly decline over the planning period due, in part, to an increase in the elderly population. **Table 2-6** details the average household size by dwelling unit type in 2023 along with the projected household size by dwelling unit type for the 2025-2034 planning period and beyond.

Table 2-6 Estimated Household Size by Dwelling Unit Type, 2023 to 2050

Year	Single Family Detached	Single Family Attached	Condo & Rental Apartment	Mobile Home	Average Household Size
2023	3.1560	2.6283	2.0477	3.1379	2.7425
2025	3.1402	2.6152	2.0477	3.1379	2.7288
2030	3.1245	2.6021	2.0272	3.1066	2.7151
2035	3.1089	2.5891	2.0171	3.0911	2.7015
2040	3.0933	2.5761	2.0070	3.0756	2.6880
2045	3.0779	2.5633	1.9970	3.0603	2.6746
2050	3.0625	2.5504	1.9870	3.0450	2.6612

Source: Howard County DPZ, household size factors from DPZ Construction Report

Understanding the distribution of dwelling unit types in the County is significant for solid waste management planning as there are different product consumption rates, yard trim production rates, and collection service options. The County expects a 38,000 person increase in the household population from 2023 to 2040. The number of Howard County households by dwelling unit type has been estimated by the County's DPZ and is presented in **Table 2-7**.

Table 2-7 Estimated Household Population by Dwelling Unit Type, 2023-2040

Year	Single Family Detached	Single Family Attached	Condo Apartment	Rental Apartment	Mobile Home	Total
2023	195,484	72,749	15,054	49,403	3,920	**336,611**
2025	196,301	73,905	15,231	51,426	3,901	**340,762**
2030	199,263	75,749	16,352	61,949	3,881	**357,195**
2035	203,318	76,465	16,888	67,194	3,862	**367,726**
2040	207,416	76,760	17,120	69,710	3,843	**374,848**

Source: Howard County DPZ, Research Division

2.5 EMPLOYMENT

Historical and projected employment data is important for Howard County to understand solid waste generation and management, particularly in the commercial waste generating sector. Based on data from the U.S. Bureau of Economic Analysis (USBEA) employment data, the number of jobs in Howard County increased by approximately 12 percent over the 2014-2023 planning period. Job sectors that experienced the most significant growth included Federal and civilian government positions, company/enterprise management, and real estate/rental/leasing. Some job categories experienced a decrease in the number of workers over the previous planning period, including arts/entertainment/recreation, state and local government, and wholesale trade. Historical Howard County job counts by type and industry are provided in **Table 2-8**.

Table 2-8. Historical Job Counts by Type and Industry

TITLE	2014	2015	2016	2017	2018	2019	2020	2021	2022
TOTAL JOBS	219,369	227,369	231,230	234,009	238,602	240,797	230,475	238,132	245,933
BY TYPE:									
Wage and salary	172,519	178,089	181,623	183,739	186,440	189,827	175,739	178,652	182,146
Proprietors	46,850	49,280	49,607	50,270	52,162	50,970	54,736	59,480	63,787
Farm proprietors	257	262	270	269	267	260	264	264	264
Nonfarm proprietors	46,593	49,018	49,337	50,001	51,895	50,710	54,472	59,216	63,523
BY MAJOR INDUSTRY									
Farm	502	500	557	588	537	507	473	523	500
Nonfarm	218,867	226,869	230,673	233,421	238,065	240,290	230,002	237,609	245,433
PRIVATE	200,643	208,443	212,606	215,344	219,684	221,731	212,339	219,900	227,029
Forestry, fishing, related activities, and other	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Mining	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Utilities	(D)	(D)	(D)	(D)	189	(D)	(D)	(D)	482
Construction	13,038	13,040	14,377	14,457	14,877	14,385	13,812	13,654	14,129
Manufacturing	7,823	8,333	8,512	8,881	9,484	9,606	9,353	8,567	7,899
Wholesale trade	15,123	15,250	15,029	15,200	15,053	16,183	15,350	14,697	14,828
Retail Trade	19,818	20,338	20,717	20,372	20,356	19,391	18,499	19,881	20,526
Transportation and warehousing	(D)	(D)	(D)	(D)	7,355	(D)	(D)	(D)	10,178
Information	4,816	4,607	5,370	5,136	4,931	4,748	4,749	4,917	5,292
Finance and insurance	11,366	11,879	12,441	12,523	13,319	12,376	13,795	14,138	14,100
Real estate and rental and leasing	11,828	12,216	12,441	12,774	12,831	12,267	12,970	13,498	14,808
Professional and technical services	39,892	41,742	41,167	41,273	42,312	44,028	44,088	45,819	47,912
Management of companies and enterprises	2,894	3,693	4,028	3,902	3,777	3,827	3,324	3,806	3,819
Administrative and waste services	15,055	15,139	16,324	16,816	16,668	16,397	15,036	16,602	15,721
Educational services	5,292	5,630	5,445	5,700	5,726	6,118	5,361	5,374	5,596
Health care and social assistance	19,032	20,253	19,844	20,431	20,941	22,023	20,609	21,330	22,088
Arts, entertainment, and recreation	5,731	5,824	6,189	6,721	7,173	7,075	4,709	4,945	5,276
Accommodation and food services	12,700	12,878	12,722	13,226	13,448	13,692	11,021	11,644	13,424
Other services, except public administration	10,374	10,620	10,501	10,459	10,882	10,948	9,977	10,331	10,634
GOVERNMENT & GOVERNMENT ENTERPRISES	18,224	18,426	18,067	18,077	18,381	18,559	17,663	17,709	18,404
Federal, civilian	611	627	639	645	674	665	742	712	881
Military	1,129	1,117	1,112	1,192	1,183	1,239	1,233	1,235	1,283
State and local	16,484	16,682	16,316	16,240	16,524	16,655	15,688	15,762	16,240
State	1,767	1,884	1,812	1,726	1,731	1,750	1,756	1,790	1,800
Local	14,717	14,798	14,504	14,514	14,793	14,905	13,932	13,972	14,440

1. The estimates of employment for 2014-2016 are based on the 2012 North American Industry Classification System (NAICS). Employment estimates from 2017-2022 are from the 2017 NAICS.
2. (D) Not shown to avoid disclosure of confidential information; estimates are included in higher-level totals.
3. Last updated: November 16, 2023 – new statistics for 2022; revised statistics for 2002-2021.
4. Obtained from the U.S. Bureau of Economic Analysis website on December 12, 2023.

The Fiscal Impact Analysis prepared for HoCo by Design provides job count estimates by planning area and job type for the 18-year period 2022 to 2040, which covers the planning period for this Plan and beyond. Columbia is expected to have the largest increase in job growth during this time period. Of the 31,500 new jobs expected through year 2040, over 22,000 are expected to be in Columbia.

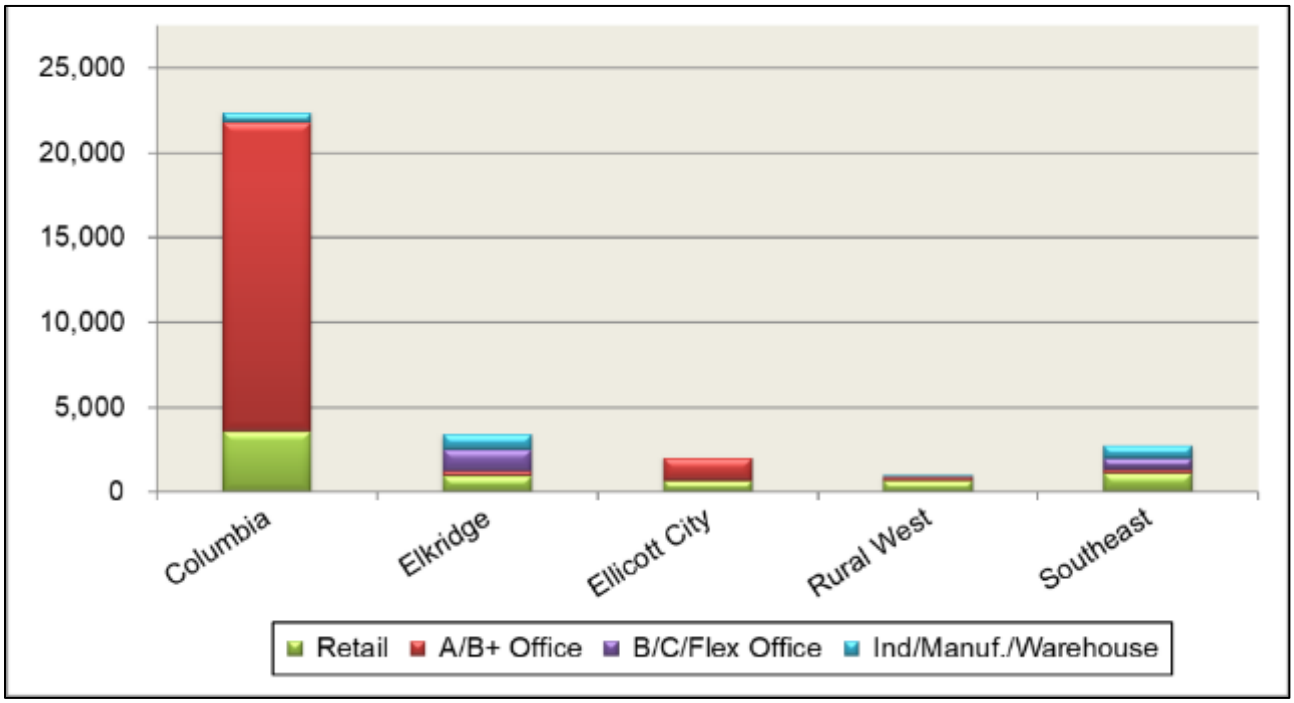
Table 2-9 provides the job count estimates by planning area and job type. **Exhibit 2-4** provides a visual representation of the data.

Table 2-9 Non-Residential Development by Planning Area and Job Type (2022-2040)

Job Type	Columbia	Elkridge	Ellicott City	Rural West	Southeast	Total
Retail	3,596	956	667	675	1,109	**7,003**
A/B+ Office	18,197	273	1,341	225	248	**20,283**
B/C/Flex Office	0	1,294	0	0	617	**1,911**
Ind/Manuf./Warehouse	572	879	0	90	762	**2,303**
TOTAL	**22,365**	**3,402**	**2,008**	**990**	**2,735**	**31,500**

Source: HoCo By Design Fiscal Impact Analysis

Exhibit 2-4 Non-Residential Development by Planning Area and Job Type – HoCo By Design Fiscal Impact Analysis



The Fiscal Impact Analysis for HoCo by Design further provides the total estimated job counts at five-year intervals through 2040. These job counts include existing jobs and estimated job growth due to commercial development in the County. These estimates are provided in **Table 2-10.**

Table 2-10. Howard County Estimated Future Jobs Count

Year	Total Jobs
2025	251,183
2030	259,933
2035	268,683
2040	277,433

Source: HoCo by Design Fiscal Impact Analysis; includes full and part -time jobs and proprietors as recorded by USBEA

2.6 LAND USE

The Howard County Charter and Code empowers the County Council to adopt maps dividing the County into various zoning districts, each of which has certain regulations that govern the development and use of land within the district. The Zoning Regulations were adopted on October 6, 2013 and set forth the uses that are permitted, not permitted, or conditioned in each zoning district. Together, the Zoning Maps and Zoning Regulations serve to guide the proper growth and development of the County in accordance with the goals and policies of the General Plan.

High and medium density residential development is centered in Columbia and in areas along U.S. Route 29 and U.S. Route 40. Industrial development is located along Interstate 95 and U.S. Route 1 corridors in the eastern portion of the County and in several industrial parks located in Columbia. Agricultural and low density rural residential areas of the County lie to the west.

All of Howard County's 161,998 acres are zoned. Land is classified into one of four (4) categories including: residential, non-residential (commercial/industrial/government), open space and parkland, or preservation easements. **Table 2-11** lists the number of acres in the County by zoning classification.

Table 2-11 Land Area Zoning Classification

Zoning Classification	Number of Acres	Percent of Land Area
Residential	66,389	41.0%
Non-Residential	32,031	19.8%
Open Space and Parkland	33,831	20.9%
Preservation Easements	29,746	18.4%
TOTAL	**161,998**	**100.0%**

Source: Howard County DPZ

About 93 percent of the County's land area, or 151,200 acres, is developed while the remaining approximately seven (7) percent (10,800) is undeveloped. **Table 2-12** lists the number of acres developed by zoning classification along with the number of acres that are not developed. **Table 2-13** provides a breakdown of the number of undeveloped acres in the County by zoning classification. **Exhibit 2-5** illustrates the land use conditions in the County as provided in HoCo by Design (adopted October 19, 2023. and became effective December 19, 2023).

Table 2-12 Developed Land Acreage by Zoning Classification

Zoning Classification	Number of Acres	Percent of Land Area
Open Space and Parkland	29,746	18.4%
Preservation Easements	33,831	20.9%
Developed Residential	56,669	35.0%
Commercial/Industrial/Government	30,974	19.1%
Undeveloped Land	10,777	6.7%
TOTAL	**161,998**	**100.0%**

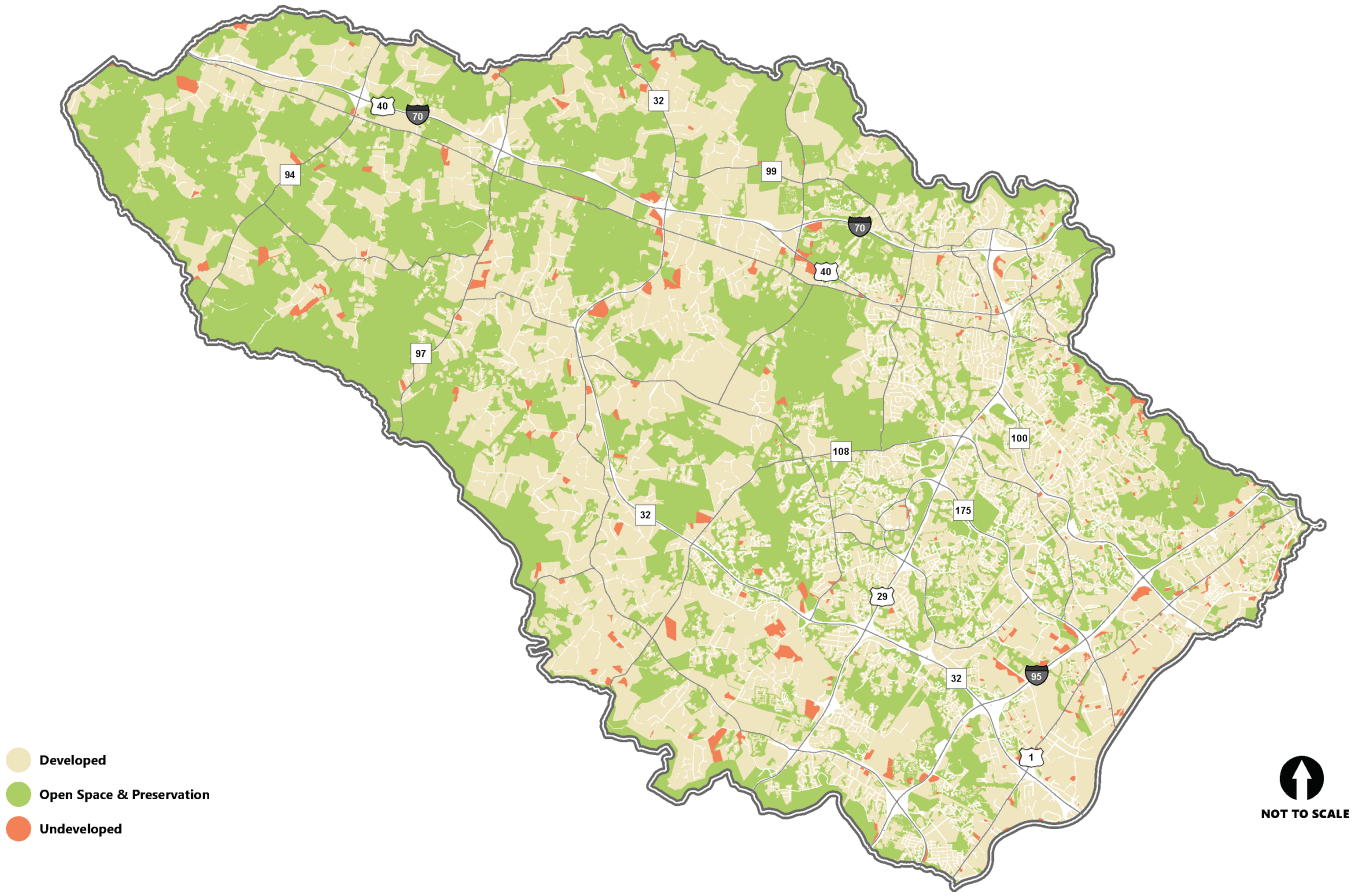
Source: Howard County DPZ

Table 2-13 Undeveloped Land Acreage by Zoning Classification

Zoning Classification	Number of Acres	Percent of Land Area
Undeveloped Residential	9,720	90.2%
Undeveloped Industrial	447	4.2%
Undeveloped Government and Institutional	152	1.4%
Undeveloped Commercial	458	4.2%
TOTAL	**10,777**	**100.0%**

Source: Howard County DPZ

Exhibit 2-5 Howard County Land Use Conditions (2022)



Source: Howard County Departments of Public Works, Technology and Communication Services, and Planning and Zoning, 2022; accessed from HoCo by Design, Chapter 2. Growth and Conservation Framework

The HoCo by Design planning process identified five planning themes to strategically transform the County while preserving, strengthening, and enhancing the variety of places and assets that make Howard County unique. The five planning themes in HoCo by Design include:

1. Ecological Health: Protecting and Preserving our Natural Resources
2. County in Motion: Fostering Modern Mobility Choices
3. Economic Prosperity: Creating Opportunities for Business to Innovate and Thrive
4. Dynamic Neighborhoods: Maintaining and Supporting Vibrant Living for a More Equitable Future
5. Quality by Design: Respecting and Prioritizing Community Character.

HoCo by Design includes the County's policies for land use, transportation, and growth management over the next 20 years. County policies stated in HoCo by Design related to solid waste management are summarized in Chapter 1. HoCo by Design policies direct the rate of growth; the distribution of housing, employment and facilities throughout the County, and the types of housing to be provided in the future. These policies have been considered by DPZ in the development of the population and employment forecasts presented in this Plan.

HoCo by Design guides the pace of development in the County by stipulating the amount of residential development that can occur each year. The policy used to implement the pace of development is the County's adequate public facilities ordinance. The Howard County Council adopts a resolution annually that sets the growth limits each year based on the level established in HoCo by Design. The County anticipates completing a comprehensive re-zoning that would serve as another tool to implement the land use policies of HoCo by Design. As of spring 2024, the timeline for comprehensive rezoning has not been set.

2.7 ZONING REGULATIONS RELATED TO SOLID WASTE MANAGEMENT

Solid waste management facilities are permitted under Howard County zoning regulations in several zoning districts, under different conditions, depending on the type of facility. There are three general methods for private facilities to be permitted:

1. By right in industrial zoning districts.
2. By conditional use is approved by the Board of Appeals. This method is restricted to use in specific zoning districts discussed in this section.
3. By approval of a solid waste overlay zoning district designation by the Zoning Board.

Any solid waste management facility which is owned by the County is permitted as a government use in any zoning district other than CC (Convenience Centers) and R-MH (Residential: Mobile Home) Districts. Prior to the establishment of a solid waste facility under the auspices of the County, approval of a site development plan and compliance with all applicable requirements is necessary.

Zoning regulations in Howard County were adopted as part of the Comprehensive Zoning Plan in 1993 and have been amended several times. This Plan shall not be used to create or enforce local land use and zoning requirements. The following discussion presents the impacts of zoning regulations on solid waste facilities.

There are three general categories of Howard County zoning districts: residential, business, and mixed use. Within each category there are numerous zoning districts which have been established for specific

purposes. Privately-owned and operated solid waste management facilities, including junkyards, land clearing debris landfills, rubble landfills, rendering plants, horticultural mulch manufacturing facilities, and yard trim composting facilities, may be permitted as a conditional use approval in these districts. A privately-owned and operated MSW landfill is not allowed in any zoning district. For each type of facility, the zoning regulations specify development requirements. These requirements may include types of materials permitted for processing or disposal, site development plan submission requirements, minimum and/or maximum acreage limitations, screening and buffer requirements, access roads requirements, operating hours, and others. The zoning districts in which each type of facility may be located by special exception are given in **Table 2-14**.

Table 2-14 Allowable Zoning Districts for Solid Waste Facilities

Type of Facility	Zoning District	
	By Conditional Use	By Right
Junk Yard	M-2	N/A
Rubble Landfill & Land Clearing Debris Landfill	M-1	M-2 with the SW Overlay
Composting Facility	RC/RR/M-1	N/A
Sawmills, Bulk Firewood Processing, Mulch Manufacturing, or Soil Processing	RC and RR	BR, sawmills only in M-1 and M-2
Material Recovery Facility (for source-separated material)	N/A	M-1, M-2 & sites with CLI Overlay
Material Recovery Facility (for non- source-separated material)	N/A	SW Overlay over M-1 or M-2
Recycling Collection Facilities	N/A	B-2, SC, M-1, M-2 & sites with CLI Overlay
Waste Transfer Facilities	N/A	SW Overlay over M-1 or M-2
Solid Waste Processing Facilities	N/A	SW Overlay over M-2

Source: Comprehensive Zoning Plan for Howard County, MD, 2013, as amended.

The following is a discussion of the zoning districts in which certain types of solid waste facilities may be located.

1. **The RC District, Rural Conservation** was established to conserve farmland, encourage agricultural activities, and preserve natural features and the rural landscape. Residential development is allowed at low density, in a clustered development, when located and designed to minimize its impact on agricultural land, farming operations, and sensitive environmental areas.

2. **The RR District, Rural Residential** was established to allow low-density, residential development within a rural environment. The RR District is intended for an area of the County which is already committed to low-density residential subdivisions. Agriculture and conservation areas are among the uses permitted as a matter of right in the RR District.

3. **The M-1 District, Light Manufacturing** permits a mix of light manufacturing, warehousing, and business uses, with provisions for limited retail sales.

4. **The M-2 District, Heavy Manufacturing** was established to permit a mix of heavy manufacturing, warehousing, industrial, and business uses with provisions for limited retail sales.

5. **The B-2 District, General Business** was established to provide commercial sales and services that directly serve the general public.

6. **The SC District, Shopping Center** was established to permit local retail and office use areas.

7. **The BR District, Rural Business** was established to provide for the development of businesses supporting the agricultural industry and to serve the needs of the farming community.

8. **The Solid Waste (SW) Overlay District,** created as part of the 1993 Comprehensive Zoning (ZB9), may be approved by the Zoning Board after its inclusion in this Solid Waste Management Plan, upon petition by a property owner, to land zoned M-1 or M-2. When approved for M-1 zoned land, this designation allows waste transfer stations and material recovery facilities for non-source separated material. When approved for M-2 zoned land, the SW District allows many types of non-hazardous solid waste processing facilities. Application of the SW District is summarized in Exhibit 2-14. Prior to Zoning Board approval of overlay district status, a project developer is required to submit detailed information for Zoning Board review related to the intended use of the land.

The Code of Maryland (COMAR) 26.04.07.02 (23) defines a "processing facility" as "a combination of structures, machinery, or devices which reduces or alters the volume, chemical, or physical characteristics of solid waste. For the purpose of these regulations, collection points serving rural residential areas are not considered to be processing facilities, provided that solid waste is not transferred from collection vehicles to another transportation unit. A generator who processes his or her own solid waste at the site of generation and disposes of the processed solid waste off the site of generation at a disposal site permitted by the Department is not considered to be a processing facility." Processing facilities, as well as landfills and transfer stations, require issuance of a Refuse Disposal Permit by MDE. Recycling collection facilities and material recovery facilities accepting source-separated recyclable materials are not currently subject to MDE permitting procedures.

A material recovery facility which accepts source-separated recyclable material is defined in Howard County zoning regulations as a facility where previously separated recyclable materials are sorted, processed, and packaged for distribution to other facilities where the materials will be used as raw materials or will otherwise be returned to the marketplace. Processing means the preparation of material for efficient shipment, or to a user's specifications, by such means as baling, briquetting, compacting, grinding, crushing, shredding, and cleaning.

Material recovery facilities that accept non-source-separated solid waste to remove recyclable materials for sorting, processing, and packaging are considered to be "processing facilities" per COMAR 26.04.07.02 (23) and must obtain a Refuse Disposal Permit. A recycling collection facility is defined in the zoning regulations as a facility where recyclable materials are accepted from the public for distribution to users who will accept and process the materials.

Current zoning requirements do not necessarily imply either the current or the ultimate use of the land. Land is considered committed to a particular use when an appropriate facility is constructed on the land, or when an agricultural, environmental, or other easement is established for the specific tract. Thus, it is important to understand the amount of land that is not yet developed within the zoning categories where solid waste management facilities would be allowed. This information provides a general picture of the potential to site solid waste management and recycling facilities in Howard County.

Table 2-15 presents the total acreage in the zoning districts that allow for solid waste facilities as listed in **Table 2-14**. The table also specifies the portion of each district that is yet undeveloped, representing potential acreage for these facilities. The information presented illustrates the small amount of acreage that could potentially be developed for solid waste management facilities. In addition, the small amount of land zoned for manufacturing highlights the potential that solid waste management facilities will have to compete with other types of allowable uses for the available sites.

Table 2-15 Development Status of M-1, M-2, RC, RR, B-2, and SC Zoning Districts

Zoning District	Developed Land		Undeveloped Land		Total Acres
	Acres	Percent of Total	Acres	Percent of Total	
M-1	2,202	95.3	109	4.7	2,311
M-1/MXD3	436	94.6	25	5.4	461
M-2	3,832	96.9	124	3.1	3,956
B-2	1,027	92.0	90	8.0	1,117
SC	13	100.0	0	0.0	13
RC	58,582	94.7	3,281	5.3	61,863
RR	62	100.0	0	0.0	62

Source: Howard County DPZ Land Use database, September 30, 2023

The County expects continued growth throughout the planning period as described in this chapter. The County's population is expected to increase by 7.8 percent from 343,839 in 2025 to 370,803 in 2035. Job growth in the County is also expected to increase from 251,183 in 2025 to 268,683 in 2035. Increased growth will continue to require solid waste management systems that can manage materials generated in the County to protect public health and the environment. This growth also provides opportunities for the County to maintain and expand waste diversion programs. The County's comprehensive zoning regulations specify where solid waste facilities may be developed. Overall, there are few undeveloped tracts of land with the capacity for solid waste facility development.

3.0 EXISTING WASTE MANAGEMENT SYSTEM

3.1 INTRODUCTION

This chapter presents a detailed description of the County's existing solid waste management system including information on waste composition, waste generators, material streams, historical and projected material quantities, acceptance facilities, and market conditions.

3.2 WASTE GENERATION

Understanding waste generation and the composition of waste managed in the County is useful in the assessment of processing and recovery technologies. The viability of processing technologies for materials or energy recovery, or to produce compost, is dependent upon predictable quantities, within ranges, of various materials in the waste stream.

In accordance with the Code of Maryland Regulations (COMAR) 26.03.03, which specifies requirements for county solid waste management plans, this Plan addresses the following types of waste:

1. Municipal Solid Waste (MSW), including four sub-types:
    a. Residential (household, domestic)
    b. Commercial
    c. Industrial (nonhazardous) solids, liquids, and sludges
    d. Institutional (schools, hospitals, government buildings)
2. Land clearing and construction and demolition debris (rubble)
3. Controlled Hazardous Substances (CHS)
4. Dead Animals
5. Bulky and Special Waste (automobiles, large appliances, etc.)
6. Vehicle Tires
7. Wastewater treatment plant sludges
8. Septage
9. Other wastes (i.e., residues collected by a pollution control device, agricultural wastes, mining wastes, litter, street sweepings, recreational wastes, etc.).

Additionally, this Plan includes a discussion of other material streams managed in the County, including food scraps. Waste streams addressed in this chapter are restricted to those types generated or managed within the County. For waste types not generated or managed in the county, supporting information is presented.

3.2.1 Residential and Commercial Waste

Howard County completed a comprehensive residential waste composition study in 2022 to measure the composition of residential MSW generated in the County. For the purposes of this Plan development, MSW composition has been estimated based on an understanding of the mix of residential, commercial, and institutional waste generators in the County.

In Howard County, Residential Waste is collected from households through a combination of curbside service, curbside bulk collection, dumpsters, community clean-up projects, and drop-off facilities at the ARL. Due to local factors, the proportion of various materials in the MSW stream would be expected to vary somewhat from that experienced in other communities.

Commercial Waste is non-hazardous waste generated by businesses in the ordinary course of their operations and is collected by private contractors and is generally not disposed of at the county landfill. It includes non-bulky waste that is normally stored outside in closed containers, due to the potential presence of food scraps and other putrescible materials. Commercial Waste excludes waste generated by construction and demolition activities. Industrial Waste is generally generated by manufacturing operations. Included in institutional waste is schools, hospitals, prisons, government offices and similar facilities.

3.2.1.1 Projected Quantities and Composition

Table 3-1 includes the actual waste and recycling quantities disposed of in Howard County in 2022. This exhibit also provides projections for the planning period of 2025 through 2034. The 2022 waste disposal data was provided to Howard County by MDE. This information is taken from waste tonnages reported to MDE by permitted solid waste facilities. Recycling quantity data is from the MRA reports completed by Howard County and submitted to MDE. Data from the historical recycling reports is presented later in this chapter. Future waste generation quantities were calculated by multiplying the 2022 per capita rate for each waste category by respective future annual population projections.

Exhibit 3-1 presents the results of the 2022 residential waste composition study. The study sampled waste from each of the 15 Trash and Recycling Zones (TRZs) that comprise the County's curbside collection system. The composition only includes residential waste collected curbside. It does not include source-separated recyclable materials placed curbside or materials self-hauled to the Alpha Ridge Residents' Convenience Center. The composition of recyclable materials presented in **Exhibit 3-1** are materials in the residential waste stream that are disposed of and represent an opportunity for increased diversion. The waste composition study indicates that organics are the largest component of the waste stream. In total, they represent 38.8% of the waste stream, of which about 29.6% would be acceptable in the Green Bin program. This demonstrates the importance of the County's "Feed the Green Bin" program for improved waste diversion and recycling.

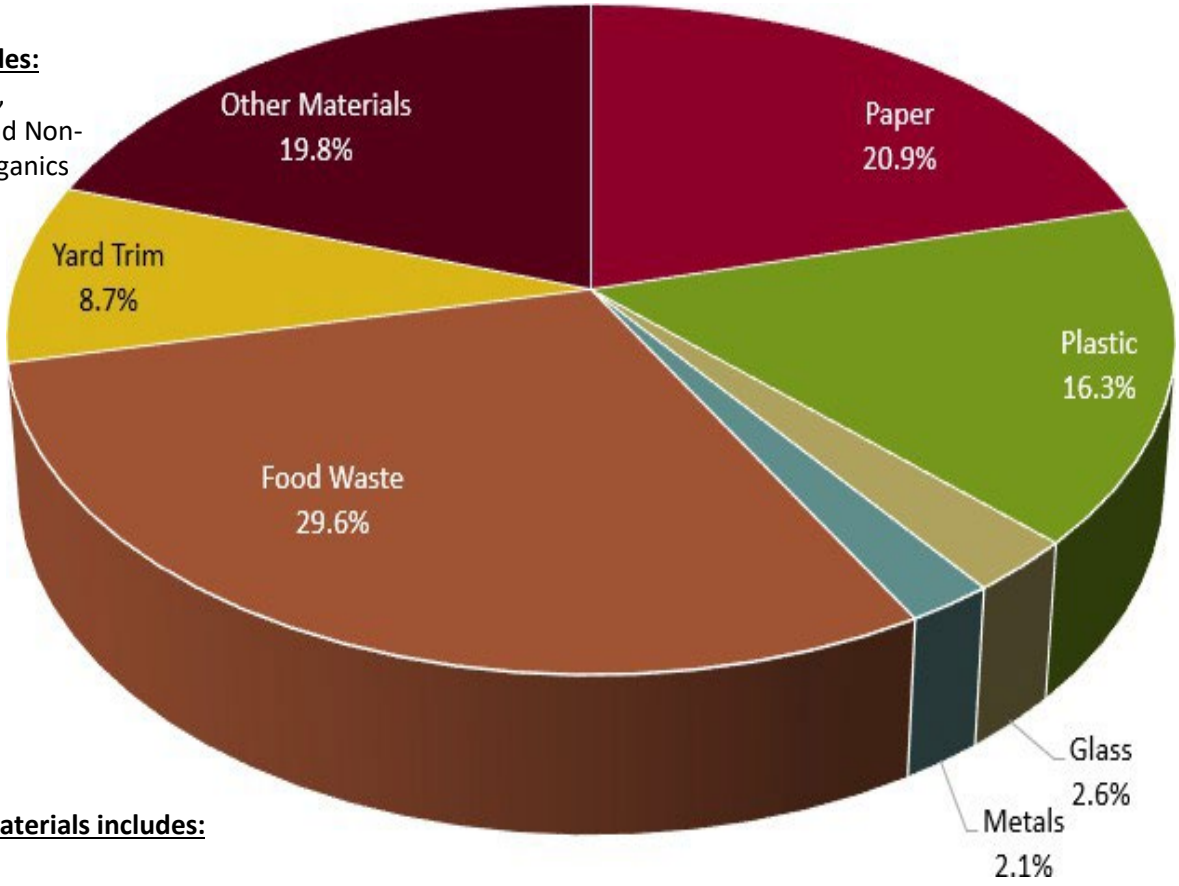
There has not been a recent waste composition study for Howard County's commercial sector, so data from the 2016 Maryland Statewide Waste Composition Study was used to estimate the distribution of different types of institutional/commercial/industrial (ICI) waste in the County. **Exhibit 3-2** presents an estimate of ICI waste composition in graphic form. Paper is the largest component of the commercial waste stream, comprising 27.4 percent. Organics are also a large part of the commercial waste stream, totaling about 20.5 percent. The composition of recyclable materials presented in **Exhibit 3-2** are materials disposed of in the ICI waste stream.

Table 3-1 Waste Generation in Howard County

Waste Categories	2022		Ten Year Planning Period (2025-2034) [3]			
	Actual [1] (tons)	Per Capita Rate [2] (tons)	2025	2028	2031	2034
Total Population	**337,050**	**337,050**	**343,839**	**353,699**	**362,378**	**368,697**
Residential Waste – County Control	132,774	0.3939	134,523	136,199	137,817	139,317
Residential Waste – Private Control	24,623	0.0731	26,075	29,045	31,518	33,152
Commercial Waste	139,496	0.4139	141,033	145,113	148,705	151,458
Mixed Waste [9]	-	-	-	-	-	-
Industrial Waste	592	0.0018	604	621	636	648
Institutional Waste [4]	0	-	-	-	-	-
C&D Debris (includes Land Clearing)	69,409	0.2059	70,807	72,837	74,625	75,926
Controlled Hazardous Substances (CHS)	Unknown	-	-	-	-	-
Household Hazardous Waste (HHW)	235	0.0007	240	247	253	258
Dead Animals [5]	69	0.0002	70	72	74	75
Bulky (white goods, scrap metal)	1,931	0.0057	1,970	2,026	2,076	2,112
Vehicle Tires	203	0.0006	207	213	218	222
Wastewater Treatment Plant Sludge [6]	4,603	0.0137	4,695	4,830	4,949	5,035
Septage [7]	409	0.0012	417	429	439	447
Asbestos	44	0.0001	45	46	47	48
Asphalt	3,742	0.0111	3,817	3,927	4,023	4,093
Concrete	0	-	-	-	-	-
Soil	19,407	0.0576	19,798	20,366	20,865	21,229
Wood Waste	0	-	-	-	-	-
Special Medical Waste	435	0.0013	444	456	468	476
Metals - FE	150	0.0004	153	157	161	164
Electronics	322	0.0010	328	338	346	352
Textiles	54	0.0002	55	57	58	59
Other	0	-	-	-	-	-
Total MRA and Non-MRA Waste	398,498	1.1823	405,281	416,981	427,279	435,072
Total MRA and Non-MRA Recyclables	222,998	0.6616	227,490	234,013	239,755	243,936
Total Waste Generation [8]	621,496	1.8439	632,771	650,994	667,035	679,009

(1) 2022 data provided to Howard County by MDE, which is taken from waste tonnages reported to MDE by permitted solid waste facilities and the MRA reports completed by Howard County.
(2) 2022 per capita generation computed by dividing 2022 tons for each waste category by 2022 County population.
(3) 2025-2034 tonnage projections calculated by multiplying 2022 per capita rate for each waste category by respective future yearly population projections except for Residential (both County and Private controlled) and Commercial. Residential Private controlled households are projected to increase at a higher rate than Residential County controlled households during the planning period.
(4) Institutional waste is collected and disposed of with commercial and mixed waste.
(5) The total weight of domestic animals picked up in FY23 was 14,669 lbs. In the same year 822 deer were picked up. If the average deer is 150 lbs., that equals an approximate weight of 123,300 lbs.
(6) Approximate weight, in dry tons, reported by Little Patuxent Water Reclamation Plant for 2023.
(7) Weight, in dry tons, calculated from 4.9 million gallons reported by Little Patuxent Water Reclamation Plant in 2023. MDE conversion factors: gallons 8.34 lbs./gal ÷ 2000 = wet tons; wet tons x % solids ÷ 100 = dry tons. For this calculation, assumed 2% solids for septage.
(8) Vehicle Tire tonnage is reported in both wastes disposed and in MRA Recycling. In the total waste generation, tires are only counted once, in recycling.
(9) Mixed Waste is redistributed into Residential (County Control and Private Control) and Commercial Waste Quantities

Exhibit 3-1 Estimated Residential Waste Composition
After source separation



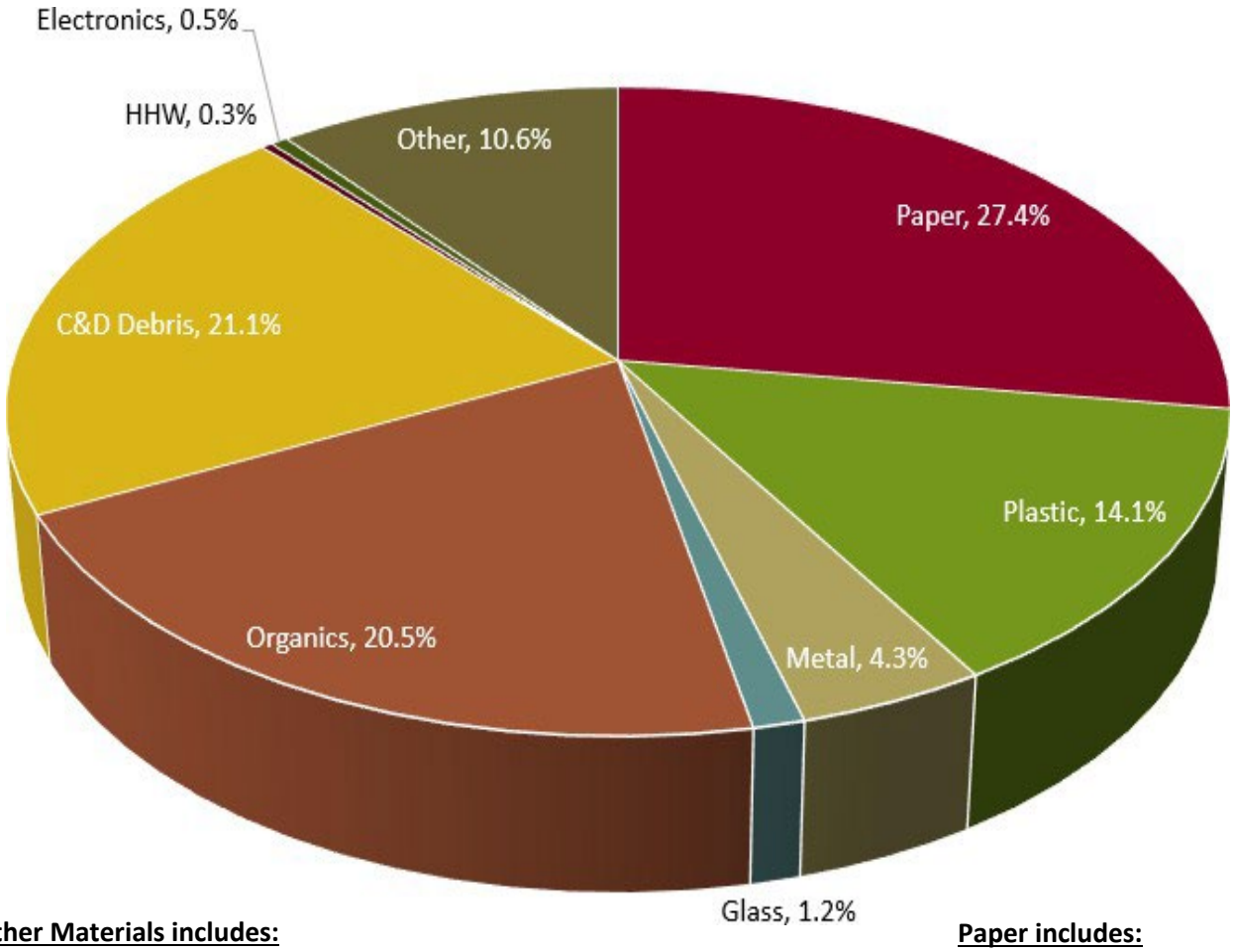
Yard Trim includes:
Brush, Branches, Leaves, Grass and Non-Compostable organics

Other Materials includes:
Wood
Concrete, brick, other C&D
Bulky waste
Carpet & rugs
Textiles, rubber, leather
Diapers, sanitary products
E-waste
HHW

Food Waste includes
Packaged and non-packaged food scraps

Paper includes:
Old newspapers
OCC
Magazines
Paperboard
Mixed paper
Gable top, aseptic
Other paper

Exhibit 3-2 Estimated Commercial Waste Composition



Other Materials includes:
Wood
Concrete, brick, other C&D
Bulky waste
Carpet & rugs
Textiles, rubber, leather
Diapers, sanitary products
E-waste
HHW

Paper includes:
Old newspapers
OCC
Magazines
Paperboard
Mixed paper
Gable top, aseptic
Other paper

County records do not differentiate between commercial, industrial, and institutional waste streams. Commercial waste collection companies collect and deliver for disposal waste generated in the County from commercial, institutional, and industrial waste generators. Waste from these three types of generators is commingled in collection trucks, thereby precluding the ability to segregate waste quantities by type of generator. Unless indicated otherwise, references to commercial waste in this Plan include commercial, institutional and industrial waste.

3.2.2 Construction, Demolition, and Land Clearing Debris

Construction, demolition, and land clearing debris is assessed as one waste stream and is referred to in this Plan as C&D debris. This is a waste type generated in the County which is categorized separately from residential and commercial waste. C&D composition is characterized by plastic, wooden, and metal containers, lumber, brick, insulation, wallboard, and a variety of other materials. Land clearing debris consists of tree stumps and limbs, soil, rock, and other materials generated by land clearing activities. Construction and demolition debris may include only a nominal amount of putrescible material. C&D debris may be disposed of at a permitted municipal landfill (such as the County's ARL) or at a permitted C&D landfill. Quantities of C&D debris comprise a significant portion of the County's waste stream, as discussed later in this chapter. Precise information regarding the composition of the construction, demolition, and land clearing debris steams in Howard County is not available.

3.2.3 Controlled Hazardous Substances

Controlled Hazardous Substances (CHS) are materials that meet one or more of U.S. EPA's criteria for hazardous properties. Generators and handlers of CHS must document their transportation, use, and disposal through a manifest system. Manifests generated for CHS used in Maryland must be submitted to MDE. Howard County does not receive manifest copies or regulate CHS.

EPA defines a large quantity generator as one that disposes of more than 220 pounds (100 kg) of CHS in a month.[13] Manifests from small quantity generators, who are generators that dispose of less than 220 pounds monthly, are not reported to or recorded by MDE. Since the total quantity of CHS from sources in the County requiring disposal as hazardous waste is unknown, the quantity of CHS from large quantity generators and CHS composition, other than Household Hazardous Waste (HHW), is not addressed in this Plan.

Part of the CHS waste stream is HHW. HHW includes, but is not limited to, oil-based paints, solvents, swimming pool chemicals, pesticides, and lawn care products. The County has established an HHW program whereby residents can bring HHW to a facility at the ARL for proper disposal. When dropped off at the ARL, HHW is evaluated by staff, and the material is prepared for pick-up by a private vendor the County contracts with for disposal of the materials. **Table 3-2** presents an estimated composition of HHW collected and diverted from disposal.

[13] Fact Sheet on Requirements for Large Quantity Generators of Hazardous Waste | US EPA

Table 3-2 Estimated Composition of Household Hazardous Waste (Pounds per Year)

Material	Percent of Total (2)	2018	2019	2020	2021	2022	2023
Paint in cans (1)	49%	278,400	274,900	263,800	214,800	216,000	191,400
Lab packs (acids, reactives, bases, organics)	5%	20,855	26,979	20,939	25,507	41,526	20,660
Bulk Liquid Flammables (gas, kerosene, diesel)	4%	87,173	60,870	60,925	59,200	47,230	15,749
Aerosols	7%	43,443	50,319	41,773	44,540	53,180	28,800
Solid Fertilizer	0%	35,926	31,350	25,800	18,300	-	-
Solid Pesticides	16%	22,582	32,400	25,200	25,500	24,000	63,300
Fluorescent Light Tubes (Straight, U-Circle, HID)	3%	4,258	9,946	8,188	10,965	21,940	12,710
Batteries (NICADS, Nickel Metal Hydride)	2%	3,047	2,400	6,850	2,180	7,000	9,300
Other	12%	63,405	84,842	61,317	61,422	59,951	46,910
Totals	100%	559,089	574,006	514,792	462,414	470,827	388,829

Source: Howard County Household Hazardous Waste Manifest

(1) Paint in cans is a combination of latex and oil-based paint.

(2) Percent composition based on 2023 data.

3.2.4 Dead Animals

Dead animals are generated primarily by the County Animal Control Facility (euthanized animals and road kills), local veterinarians, and agricultural operations. Dead animals are not disposed of in the Landfill but diverted to rendering plants for cremation. Currently, there are no rendering plants or compost programs for dead animals in the County. Instead, Howard County Animal Control contracts with a private contractor to collect and render the animals.

In 2023, Howard County Animal Control reported 14,669 pounds of domestic animals picked up. The County also reported picking up 822 deer. Assuming the average deer is 150 pounds, the total weight of dead animals generated in the County in 2023 was approximately 137,969 pounds (69 tons).

Dead animals are classified as special medical waste and disposal data was provided to Howard County by MDE. This data is taken from waste tonnages reported to MDE by permitted solid waste facilities. There are two facilities that dispose of dead animals listed by MDE. **Table 3-3** provides the weights of dead animals generated in Howard County and collected and disposed of through cremation for the period of 2019 - 2022.

Table 3-3 Dead Animals Disposal from Howard County (tons)

Processing Facility	Year			
	2019	2020	2021	2022
Animal Control Facility	49	36	28	35
Domestic Animal Cremation	0.3	0.5	0.5	0.4
Total	**49.3**	**36.5**	**28.5**	**35.4**

3.2.5 Bulk Trash

Bulk trash, as reported in the MDE Annual Tonnage Reports, includes white goods and scrap metal. In 2022, approximately 1,940 tons of scrap metal was delivered to the ARL. White goods which contain refrigerants (i.e., refrigerators, air conditioners, etc.) that are delivered to the Residents' Convenience Center are staged in a location where a certified contractor removes refrigerants. These materials are then placed in scrap metal storage containers for processing off-site. Refrigerants are removed and managed in accordance with existing regulations to prevent venting to the atmosphere.

Curbside scrap metal collection is available for households receiving County residential curbside collection. **Table 3-4** provides the quantity of scrap metal collected and recycled from the curbside program from 2019 to 2023.

Table 3-4 Curbside Scrap Metal Collected in Howard County

Year	2019	2020	2021	2022	2023	TOTALS
Tons of scrap metal	148	190	181	149	152	**819**

3.2.6 Sludge

The central and eastern parts of Howard County are provided with public sewerage services. Wastewater received from the public system is treated at two facilities. Howard County operates the Little Patuxent Water Reclamation Plant (LPWRP), in the Savage area, which treats wastewater from the central part of the County. The Patapsco Wastewater Treatment Plant, located in and operated by neighboring Baltimore City, serves the eastern portion of the County, including Ellicott City, Elkridge, and Jessup. The western part of the County is primarily rural and served by septic tanks. Private contractors transport the waste from the septic tanks, by truck, to LPWRP. There are no potable water treatment plants located in the County so no sludge material from this type of facility is generated in Howard County.

The LPWRP's primary and biological nutrient removal (BNR) treatment processes generate sludge. Primary and BNR sludge is treated through anaerobic digestion followed by direct heat drying to meet high standards for pollutants, pathogens, and vector attraction reduction.[14]

[14] 210824-Little_Patuxent_Water_Reclamation_Facility-Envision_Silver_Award-DRAFT-RevisedFinal.pdf (sustainableinfrastructure.org)

The sludge generated by the LPWRP is land applied to bulk agriculture by a County Contractor after treatment. The County is also looking at alternative markets for the dried biosolids, including soil blending operations. The LPWRP produces 35 tons of biosolids each day.

The Biosolids Addition No 8. at the LPWRP broke ground in 2017 and finished construction in 2022. The addition allowed the Biosolids Program to receive a Class "A" permit. Class A biosolids can be recycled into a marketable fertilizer product. These biosolids provide organic matter to soil, increase crop yields, and decrease soil erosion. Currently, Howard County provides these biosolids to farms in Maryland, Pennsylvania, and Virginia.[15]

Currently, 4.9 million gallons per year of septage waste is collected by private contractors and delivered to LPWRP, in accordance with Howard County's septage management plan (Management of Hauler Waste in Howard County). The plan is implemented by the Department of Public Works, which operates the LPWRP.

Septage collection and disposal are regulated by the County Health Department and by the Department of Public Works. The Health Department issues licenses to each septage hauler operating in the County. Haulers must meet specified standards established by the Health Department and equipment must undergo regular inspection. The Health Department also investigates reports of improper disposal.

The LPWRP is the only authorized discharge location for septage waste available in Howard County. Septage handling facilities at the Plant consist of a receiving station which discharges into an aerobic digester. Septage haulers weigh in at the plant scale, then discharge into an inlet which feeds into the septage digester. Plant personnel can inspect and test loads as they flow into the receiving basins. The processed septage is discharged into the headworks of the plant. Septage waste may only be disposed of at permitted receiving facilities, which essentially limits acceptance to treatment plants. It is not anticipated that private sector facilities will be implemented to handle this waste. As a result, it is anticipated that all septage waste will be received at public treatment plants.

3.3 WASTE AND RECYCLABLES QUANTITIES

3.3.1 Historic Municipal Solid Waste Quantities

Residential Waste collected at the curb from Howard County is not delivered to the ARL but is transported directly to the AJTS and then is hauled by rail to the King George Landfill in Virginia. Less than 10 percent of the waste generated in Howard County is landfilled at the ARL. A limited amount of residential and commercial waste received at the ARL, not suitable for waste export, is landfilled on site.

Haulers deliver waste to the ARL six days per week (except for six County holidays). The landfill accepts all non-hazardous solid waste, including construction, demolition, rubble, and land clearing debris.

Table 3-5 presents the quantities of waste disposed of in Howard County at ARL. **Table 3-6** provides the waste quantities delivered by the County to the AJTS from 2018 through 2023. Waste categories noted are those recorded at the landfill and transfer station scale houses.

[15] Innovative Biosolids Addition Completed at Little Patuxent Water Reclamation Plant | Howard County (howardcountymd.gov)

Table 3-5 Historic Waste Quantities Disposed at ARL (tons) (1)

Incoming						Method of Handling			
Year	Residential	Commercial	C & D	Other	**Total**	To AJTS	Stored (2)	Landfilled	**Total**
2018	9,387	9,516	29,235	-	**50,156**	48,290	1,250	616	**50,156**
2019	9,785	9,622	32,985	229	**54,640**	49,767	2,806	2,067	**54,640**
2020	16,276	11,001	30,916	754	**60,967**	55,604	5,208	155	**60,967**
2021	13,472	13,762	34,709	20,090	**84,054**	60,714	23,336	4	**84,054**
2022	31,722	16,441	40,521	3,745	**94,451**	63,123	29,729	1,599	**94,451**
2023	8,926	17,609	34,425	17,614	**80,597**	62,628	17,332	637	**80,597**

(1) Source: ARL Annual MDE Landfill Tonnage Reports; AJTS Scale Records.
(2) Stored represents soil, asphalt, concrete and woodwaste held on site (not landfilled)

Table 3-6 Historic Waste Quantities Delivered to the AJTS (tons) (1)

Annapolis Junction Transfer Station (AJTS) (Tons per Year)				
Year	**Residential**	**Commercial**	**Total Transferred from ARL**	**Total Delivered**
2018	57,408	8,251	48,290	113,949
2019	58,544	6,527	49,767	114,838
2020	65,683	4,611	55,604	125,897
2021	63,248	7,332	60,714	131,294
2022	61,551	8,100	63,123	132,774
2023	60,973	8,046	62,628	131,647

Table 3-7 Historic Combined Waste Quantities Disposed (Tons) (1)

Year	Residential	Commercial	Construction and Demolition	Bulky	Tires	Liquid
2018	66,795	17,767	29,235	2,282	241	239
2019	68,329	16,148	32,985	2,361	252	258
2020	81,959	15,612	30,916	2,439	241	259
2021	76,720	13,762	34,709	2,248	236	242
2022	93,274	24,541	40,521	1,931	191	210
2023	69,899	25,655	34,425	2,241	250	227

(1) Combined tonnage for each waste category disposed at either the Alpha Ridge Landfill or at King George Landfill via the Annapolis Junction Transfer Station.

3.3.1.1 Residential Generation

Over the last five (5) years, the amount of residential waste generated has increased from about 132,000 tons to about 152,000 tons, an increase of about 15 percent. Per capita waste generation rates have also increased during the last five (5) years. This indicates an increase in waste generation is not only due to an increasing population, but also that existing residents in the County are producing more waste. The 2018 per capita waste generation rate of 0.474 tons/capita/year increased to 0.532 tons/capita/year in 2022.

The County's residential recycling rate has also fluctuated during the same time. In 2021, the County's residential recycling rate was calculated to be about 53 percent, while in 2022 the recycling rate was calculated to have dropped to about 39 percent. Recycling rates for the years 2018 to 2020 were calculated to be between 39 and 53 percent. **Table 3-8** presents historic waste generation rates (MRA recycled waste only) from 2018 to 2022 and **Table 3-9** presents historic waste generation rates that include non-MRA recycling rates.

Table 3-8 Historic Residential Waste Generation Rates
Including MRA Recycled Materials Only

Year	Household Population[(1)]	Recycled[(2)] (tons)	Disposed[(3)] (tons)	Total Generation[(4)] (tons)	Generation Rate[(5)] (tons)	Residential Recycling Rate
2018	278,471	65,237	66,795	132,032	0.474	49.4%
2019	280,269	69,182	68,329	137,511	0.491	50.3%
2020	281,767	66,430	81,959	148,389	0.527	44.8%
2021	283,791	86,892	76,720	163,612	0.577	53.1%
2022	285,647	58,751	93,274	152,025	0.532	38.6%

(1) Source: Table 2-3 (Does not include rental apartment units.)
(2) Source: Table 3-11
(3) Source: Table 3-5
(4) Total Generation equal to disposed plus recycled quantities.
(5) Generation rate, tons per person per year, equal to total waste generation divided by household population.

Table 3-9 Historic Residential Waste Generation Rates Including MRA and Non-MRA Recycled Materials

Year	Household Population[1]	Recycled[2] (tons)	Disposed[3] (tons)	Total Generation[4] (tons)	Generation Rate[5] (tons)	Residential Recycling Rate
2018	278,471	76,416	66,795	143,211	0.514	53.4%
2019	280,269	69,557	68,329	137,886	0.492	50.4%
2020	281,767	66,723	81,959	148,682	0.528	44.9%
2021	283,791	86,909	76,720	163,629	0.577	53.1%
2022	285,647	58,962	93,274	152,236	0.533	38.7%

(1) Source: Table 2-3 (Does not include rental apartment units.)
(2) Source: Table 3-12
(3) Source: Table 3-6
(4) Total Generation equal to disposed plus recycled quantities.
(5) Generation rate, tons per person per year, equal to waste generation divided by household population.

3.3.1.2 Commercial Generation

The portion of commercial waste managed by the County is less than 10 percent of the commercial waste generated in the County. The calculated generation rate is used to project future commercial solid waste generation to be managed by the County during the planning period of 2025 through 2034. Historical commercial MRA and non-MRA waste generation is shown in **Table 3-10** and **Table 3-11.**

Table 3-10 Historic Commercial Waste Generation Rates Managed by the County - MRA Recycled Materials Only

Year	Population Served[1]	Recycled[2] (tons)	Disposed[3] (tons)	Total Generation[4] (tons)	Generation Rate[5] (tons)
2018	238,602	171,823	17,767	189,590	0.795
2019	240,797	160,889	16,148	177,037	0.735
2020	230,475	158,585	15,612	174,197	0.756
2021	238,132	125,987	13,762	139,749	0.587
2022	245,933	159,292	24,541	183,934	0.748

(1) Source: Howard County DPZ. Total number of private sector employees working in the County.
(2) Source: County managed collections from front-end dumpsters and commercial style carts
(3) Source: Commercial tonnage added together from Table 3-7
(4) Total Generation equal to disposed plus recycled quantities
(5) Generation rate, tons per employee per year, equal to total generation divided by number of employees.

Table 3-11 Historic Commercial Waste Generation Rates
MRA and Non-MRA Recycled Tons

Year	Population Served[(1)]	Recycled[(2)] (tons)	Disposed[(3)] (tons)	Total Generation[(4)] (tons)	Generation Rate[(5)] (tons)
2018	238,602	216,877	17,767	234,644	0.983
2019	240,797	191,032	16,148	207,180	0.860
2020	230,475	162,563	15,612	178,175	0.773
2021	238,132	129,855	13,762	143,617	0.603
2022	245,933	164,036	24,541	188,577	0.767

(1) Source: Howard County DPZ. Total number of employees in the County.
(2) Source: **Commercial tonnage added together from** Table 3-12 and Table 3-13. Note that Non-MRA tons may fluctuate by year, depending on County projects
(3) Source: Commercial tonnage added together from Table 3-7
(4) Total Generation equal to disposed plus recycled quantities
(5) Generation rate, tons per employee per year equal to total generation divided by number of employees.

3.3.2 Historic Recycled Quantities

The Bureau of Environmental Services compiles the results of recycling programs operating in the County and submits annual reports to MDE. Categories of materials reported are selected by MDE and are included in its MRA report form. Quantities of recycled materials reported to MDE for 2018 through 2022 are presented in **Table 3-12.** The quantities reported in this differ from the historical MRA report quantities as those reports include recyclable material quantities collected from apartments and commercial properties. This adjustment was made to reflect the fact that apartment waste is collected by private commercial haulers and is not captured as residential waste tonnage.

The County first reached the state mandated recycling goal in 1993 and has increased its overall recycling rate each year since then except for 2022. In 2022, Howard County's overall MRA recycling rate (accounting for both residential and commercial waste) was calculated to be 44.7 percent, and the total waste diversion rate was 49.7 percent. The total diversion rate includes five (5) percentage points awarded for reuse and source reduction programs. Improving waste diversion rates reflect increased recycling, increased awareness and knowledge of recycling, increased types of materials recycled, residential recycling carts and increasing levels of reporting among private parties responsible for commercial recycling. Single stream recycling is collected from the curbside program, multi-family program, County government offices, County Schools, and the Residents' Convenience Center at the ARL.

Mixed yard trim (wood waste, leaves, and grass) is collected at curbside and at the Wood Waste Area at the ARL. As a result, most residential and some commercial recycling tonnage is reported as mixed or commingled material in **Table 3-12**. Food scrap recycling is provided in the County through the "Feed the green Bin Program." Since its start in 2013, more than 44,000 households are eligible to sign up for curbside collection for food scraps. Seven (7) Howard County Public Schools are participating in the curbside program as well. The collected food scraps are transported to the ARL where they are turned into a soil amendment at the compost facility. It is estimated from these activities that the County diverted over 360 tons of food scraps from the landfill in 2021.

Materials in the "Other" category in **Table 3-14** include such items as electronic waste, polyurethane foam, shingles, and rendering waste. Electronic waste collected for recycling processing includes computers, cathode ray tubes (CRT), televisions, printers, and other types of equipment. Significant quantities of "other" materials are recycled in the commercial sector.

In 2022 residential (not including apartments) recycling resulted in approximately 0.17 tons, or 346 pounds, of recyclable materials per resident in the County.

In the commercial sector, recycling resulted in larger quantities per employee of approximately 0.6 tons, or 1,296 pounds of MRA recycling in 2022. Including non-MRA recycling gives a total for 2022 of approximately 0.7 tons, or 1,334 pounds, of recycled material per employee. **Table 3-12** shows the historical MRA recycled material and **Table 3-13** provides the historical quantities of non-MRA recycled material.

Table 3-12 Historical MRA Recycled Materials Quantities (Tons) [1]

Commodity	2018		2019		2020		2021		2022	
	Res.	Com.	Res.	Com.	Res.	Com.	Res.	Com.	Res	Com.
Commingled Containers	0	233	0	203	0	1,319	0	640	0	174
Compost/Mulch (Yard) [2]										
Brush and Branches	0	635	0	12,990	14,139	15,159	47	38,016	87	40,695
Grass	0	0	0	3,000	0	0	0	0	0	0
Leaves	0	149	0	2,302	0	208	0	362	0	0
Mixed Yard Trim	9,375	4,200	11,514	3,000	8,922	3,900	9,778	3,418	9,485	951
Other	0	0	0	0	0	0	0	0	0	0
Compost/Mulch (Other)										
Food Waste	1,153	57,325	1,342	52,015	0.00	56,027.23	0	46,202	625	58,034
MSW Compost	0	0	0	0	0	0	0	0	0	0
Wood Materials [3]	21,134	21,618	19,146	1,893	4,465	4,041	22,445	25	21,500	25
Other: Manure	1,200	1,991			1,524	1,830	1,248	1,051	1,388	1,051
Other: Stall waste	0	0	1,100	1,310	0	0	0	0	0	0
Glass										
Brown Glass	0	0	0	0	0	0	0	0	0	0
Clear Glass	0	0	0	0	0	0	0	0	0	0
Green Glass	0	0	0	0	0	0	0	0	0	0
Mixed Glass	3,767	5,142	4,704	7,075	4,080	4,751	4,382	342	3,542	342
Other	0	0	0	0	0	0	0	0	0	0
Other: holiday lights	0	0	0	0	0	0	0	3	0	0
Metals										
Aluminum Cans	0	0	0	2,263	141	514	460	343	460	344
Back-End Scrap	171	171	0	445	420	0	315	52	28	5

Commodity	2018		2019		2020		2021		2022	
	Res.	Com.	Res.	Com.	Res.	Com.	Res.	Com.	Res	Com.
Lead Acid Batteries	11	348	370	815	32	308	39	367	37	188
Mixed Cans (Al, Sn, Steel)	579	1,143	500	1,010	450	545	0	0	827	141
Tin (Sn)/Steel Cans	0	0	410	816	0	0	406	137	0	0
White Goods	2,282	2,346	2,103	2,565	2,442	3,100	2,248	2,041	1,937	2,041
Other	0	0	0	0	0	0	0	0	0	0
Other: front end scrap	0	2,211	0	0	0	0	0	0	0	0
Other: oil filters	0	0	0	0	0	0	0	51	0	0
Other: lithium batteries	0	0	0	0	0	0	0	0.1	0	0
Paper										
Magazines	0	0	0	0	0	0	0	0	0	0
Mixed Paper	23,185	34,992	23,805	34,848	22,034	24,173	15,441	22,641	15,329	23,775
Newspaper	0	415	0	0	245	873	0	0	0	744
Office/Computer Paper	0	2,414	0	0	0	15,666	179	1,075	179	1,231
Old Corrugated Cardboard	0	29,578	378	26,677	445	26,653	16,323	437	495	20,857
Other	0	0	0	0	0	0	0	0	0	0
Other: Books	0	0	0	200	0	0	0	0	0	0
Other: ONP	0	0	0	0	0	743	0	743	0	0
Plastic										
Mixed Plastic	0	1,535	1,705	250	0	1,383	379	431	479	451
Plastic #1 PET	608	1,430	599	1,330	562	1,597	1,163	453	1,011	448
Plastic #2 HDPE	551	769	547	761	478	725	595	316	647	314
Other: Latex	105	0	0	0	91	0	0	0	0	0
Other: Polypropylene	5.53	0	0	0	0	0	0	0	0	0
Other: Film	0	579	0	0	0	412	0	182	0	236
Other: Rigid	189	623	199	776	516	664	0	0	0	0
Other: Foam	0	0	13	0	10	0	0	0	0	0

Commodity	2018		2019		2020		2021		2022	
	Res.	Com.	Res.	Com.	Res.	Com.	Res.	Com.	Res	Com.
Other: Plastic Bags	0	0	0	234	0	0	811	335	0	0
Other Materials										
Animal Protein/Solid Fat	0	160	0	468	0	584	0	217	0	1,164
Electronics	553	14	495	352	554	31	424	36	323	178
MSW-to-Energy Ash	0	0	0	0	0	0	0	0	0	0
Pallets [4]	0	0	0	1,633	0	4,224	0	3,891	0	3,884
Textiles	120	0	0	0	54	18	53	33	54	43
Tires [5] (Recycled)	249	1,804	234	1,659	238	2,686	233	2,039	0	0
Tires [6] (Retread)	0	0	0	0	0	0	0	0	0	0
Tires [7] (Cement Kiln 12%)	0	0	0	0	0	0	0	0	205	2,076
Other: Mattresses	0	0	0	0	221	0	0	106.42	113	0
Other: Toner/Ink Jet	0	0	0	0	0	0	9,600	0	0	0
Other: Rigid/Vinyl	0	0	0	0	0	0	219	0	0	0
Other: Latex Paint	0	0	0	0	0	0	105	0	0	0
Subtotals:	**65,237**	**171,823**	**69,182**	**160,889**	**66,430**	**158,585**	**86,892**	**125,987**	**58,751**	**159,393**
Annual Total:	**237,060**		**230,071**		**225,015**		**212,878**		**218,144**	
MRA Recycling Rate [8]:	**45%**		**44%**		**42%**		**45%**		**43%**	
Population/Employees	**310,906**	**238,602**	**315,759**	**240,797**	**335,175**	**230,475**	**337,050**	**238,132**	**339,688**	**245,933**
Recycling Tons Per Capita/Tons Per Employee	**0.762**	**0.994**	**0.729**	**0.955**	**0.671**	**0.976**	**0.632**	**0.894**	**0.642**	**0.887**

(1) Recycled material collected from apartments reported as commercial.
(2) Grass, leaves, brush and branches and mixed yard trim generated from landscaping operations.
(3) Includes only wood materials that have been mulched or composted.
(4) Refurbished pallets only. Mulched or composted pallets are listed in Wood Materials.
(5) Tires that are recycled into new products containing rubber and whole tires used for playground and reef construction.
(6) Retread or recapped tires.
(7) 12% of the total weight of tires used at cement kilns.
(8) Official MRA Recycling Rates as reported by MDE.

Table 3-13 Historical Total MRA and Non-MRA Recycled Materials (Tons) [1]

Commodity	2018		2019		2020		2021		2022	
	Res.	Com.	Res.	Com.	Res.	Com.	Res.	Com.	Res.	Com.
Antifreeze	11	13	0	27	0	0	0	88	0	75
Asphalt	11,000	37,300	0	14,220	0	0	0	287	0	0
C&D Debris	0	0	0	2,667	0	0	0	196	0	322
Roof Shingles (construction jobs)	0	286	4	0	0	0	0	0	0	0
Rubble	0	0	0	0	0	0	0	0	0	0
Coal Ash (Fly Ash, Pozzolan)	0	0	0	0	0	0	0	0	0	0
Concrete	0	1,932	0	1,578	0	0	0	46	0	0
Land Clearing Debris [2]	0	177	0	0	0	600	0	0	0	0
Scrap Automobiles	0	30	0	4,000	0	30	0	2	0	1,855
Scrap Metal	0	2,137	0	2,976	0	1,010	3	1,876	0	2,023
Oxygen/Propane Tanks	0	0	32	0	24	0	0	0	19	0
Utility Pole (metal)	0	0	0	0	0	0	0	0	0	0
Aluminum (WTP)	0	0	0	0	0	0	0	0	0	0
Sewage Sludge	0	0	0	0	0	0	0	0	0	0
Soil	0	1,926	0	3,853	0	952	0	429	0	281
Waste Oil	118	359	0	458	0	366	0	871	42	0
Animal Protein/Fats (liquid)	0	0	0	260	0	0	0	0	0	0
Ballasts	0	0	0	9	0	1	0	0	0	0
Boats	0	0	0	0	0	0	0	0	0	0
Freon	0	0	0	0	0	0	0	0	0	0

Commodity	2018		2019		2020		2021		2022	
	Res.	Com.	Res.	Com.	Res.	Com.	Res.	Com.	Res.	Com.
Fuel	0	0	0	0	0	0	0	0	0	0
Glass (Transportation/C&D)	0	0	0	0	0	0	0	0	0	0
Industrial Fluids	0	0	0	18	0	0	0	0	0	44
Insulators	0	0	0	0	0	0	0	0	0	0
Paint (reused/donated)	0	0	22	0	0	0	0	0	83	0
Textiles (donated/reused)	34	0	43	0	54	19	0	0	54	43
Utility Poles (wood)	0	0	0	0	0	0	0	0	0	0
Vegetable Oil	16	895	15	0	216	0	14	21	14	0
Cooking grease (liquid)	0	0	0	0	0	0	0	0	0	0
Other	0	0	259[4]	77[5]	0	0	0	54[3]	0	0
Total Non-MRA (Tons)	**11,179**	**45,054**	**375**	**30,143**	**293**	**3,978**	**17**	**3,868**	**211**	**4,643**
Total MRA and Non-MRA (Tons)	**293,293**		**260,589**		**229,286**		**216,763**		**222,998**	
Population/Employees	**310,906**	**238,602**	**315,759**	**240,797**	**335,175**	**230,475**	**337,050**	**238,132**	**339,688**	**245,933**
MRA and Non-MRA Rec. Tons Per Capita/ Tons Per Employee	**0.943**	**1.229**	**0.825**	**1.082**	**0.684**	**0.995**	**0.643**	**0.910**	**0.656**	**0.907**

(1) Recycled material collected from apartments reported as commercial.
(2) Earthen materials (i.e., clays, sands, gravels, and silts), topsoil, tree stumps, root mats, brush and branches, logs, vegetation, and rock from land clearing operations that if not recycled are discarded in land clearing debris, Rubble, or C&D landfills.
(3) Combination of mixed aggregates and food donations.
(4) Combination of mattresses and used building materials.
(5) Combination of oil filters and fluorescent lightbulbs.

3.3.3 Projected Municipal Solid Waste and Recyclable Quantities

Waste and recyclable quantity projections are the foundation for identifying facility and program needs. While actual experience may vary from projections, enough is known about waste generation in the County to develop projections that should adequately serve for facility sizing and program planning.

In Howard County, commercial waste and recyclables generation previously presented in this chapter was defined as industrial, government, institutional, and apartments. Data is not available to demonstrate waste generation rates particular to each subsector. Thus, for the purpose of projecting waste and recycling quantities, one estimated generation rate, in units of tons per employee per year, is used for all commercial subsectors.

Unit waste generation is projected to be stable throughout the planning period. Quantities are expected to rise due to increases in employment in the County. Employment projections are based on sector proportions for 2022 and overall, five-year employment projections, as reported by the Howard County DPZ (see Chapter 2, Exhibit 2-1).

MRA and non-MRA recycling in the commercial sector is projected to increase from the 2022 level of 164,036 tons per year (**Table 3-11)** to 179,729 tons per year in 2034 (**Table 3-14**). This is an approximately nine (9) percent increase in the commercial recycling rate. This assumption reflects an increase in the number of employees and a stable unit generation rate.

Recycling in the residential sector is projected to increase by approximately nine (9) percent during the planning period from 58,962 tons per year in 2022 (**Table 3-9**) to 64,603 tons per year in 2034 (**Table 3-14).** This is due to the projected increase in population, with a stable unit generation rate. The total waste generation rate of about 1.55 tons per person per year is projected to remain relatively stable for the planning period ending in 2034.

Table 3-14 presents all projected quantities of waste generated by the commercial and residential sectors for MRA and Non-MRA recyclable materials and all materials requiring disposal, both in-county and out-of-county. Population projections have been developed by extrapolating five-year data presented in Chapter 2.

Table 3-14 Commercial and Residential Projected Generation
MSW and MRA and Non-MRA Recycling

Year	Population (1)	Annual Generation (Tons/Year)						
		Waste				Recycling		Total
		Residential		Commercial (4)	Other (5)	Residential	Commercial	
		County-Control (2)	Private-Control (3)					
2025	343,839	134,523	26,075	141,033	103,651	60,150	167,340	632,771
2028	353,699	136,199	29,045	145,113	106,624	61,874	172,139	650,994
2031	362,378	137,817	31,518	148,705	109,240	63,393	176,363	667,035
2034	368,697	139,317	33,152	151,458	111,145	64,498	179,438	679,009

(1) Source: Extrapolated from Table 2-2, Household Population.
(2) Residential waste quantities directly managed and controlled by the County.
(3) Residential waste quantities managed by the private sector; County has no control over waste materials.

(4) Commercial includes Commercial, Mixed, and Industrial.
(5) Other Waste includes Industrial Waste, C&D Debris (including Land Clearing), HHW, Dead Animals, Bulky Waste, Vehicle Tires, Sludge, Septage, Asbestos, Asphalt, Soil, Special Medical Waste, Metals, Electronics, and Textiles.

3.3.4 Historic and Projected Generation – Other Wastes

3.3.4.1 Construction and Demolition Debris

The generation of C&D debris has fluctuated over the past several years showing a slight increase in the amount delivered to ARL from approximately 29,235 tons in 2018 to about 34,425 tons in 2023. In 2023, the generation of C&D in the County and disposed of at ARL was approximately 203 pounds per person. A significant portion of C&D generated in the County is exported out-of-county for disposal in Anne Arundel, Baltimore, and Prince Georges counties. The volume of stone and rubble has remained constant over this time frame, mostly due to higher tipping fees at the ARL. Waste disposal rates only reflect materials disposed of at the ARL. Several factors affect waste disposal rate including:

- Construction activity levels
- Demolition and remodeling projects
- Economic conditions

Waste disposal rates only reflect materials disposed of at the ARL.

3.3.4.2 Tires

Tire generation in the County is estimated to be the national average of one (1) tire per person per year. Projected waste tire generation in future years is estimated to continue to be the historic national average. Tire delivery to the ARL has varied from 191 tons in 2022 to 250 tons in 2023. All these tires were recycled. The small quantities of tires delivered to the ARL reflect the fact that most of the tires discarded in the County are disposed in some other manner, such as through tire dealers.

The prohibition on disposal of tires in landfills is codified as §9-228 of the Environmental Article, Annotated Code of Maryland. This prohibition can only be waived under terms and conditions specified by the MDE if it is determined that a scrap tire recycling system does not exist or has insufficient capacity available.

3.3.4.3 Controlled Hazardous Substances

Controlled Hazardous Substances, CHS, are generated in the County by commercial, industrial, and institutional organizations. CHS refers to regulated quantities of materials having a hazardous nature. The solid waste management system focuses on CHS that are disposed of as waste. CHS may not be disposed of at the ARL. Aside from Howard County's HHW program and County agency disposal of CHS described in Chapter 4, the County does not specifically regulate CHS. The management of this material is regulated by the MDE. Generators must arrange for CHS disposal through a permitted transportation and disposal firm. In addition to manifesting all disposal activities, types and quantities disposed must be reported annually to the MDE.

HHW is considered a CHS. In 2022, 194 tons of HHW were collected at ARL. Based on the 2023 generation rate, the estimated quantities of HHW to be generated in Howard County from 2025 to 2034 are presented in **Table 3-1** and **Table 3-13**.

Medical waste is also considered a CHS. Medical wastes are wastes that are bio-hazardous or infectious and are generated in the County by the hospital, clinics, nursing facilities, and laboratories. Medical waste includes anatomical material (human and animal), blood-soiled articles, contaminated material, microbiological laboratory wastes, or sharps. Two State agencies regulate the management of medical waste, the MDE and the Department of Health and Mental Hygiene (DHMH).

MDE regulations pertain to the identification, packaging, manifesting, transporting and disposal of special medical wastes. DHMH regulations outline acceptable methods for handling these wastes and rendering them non-infectious. Medical waste is considered infectious until it is properly treated. Disposal is not allowed at the Alpha Ridge Landfill. The County does not manage medical waste; thus medical waste is not included in the Plan. Medical waste generated because of in-home medical treatment is not regulated by MDE and may be disposed of and managed as residential waste. In 2022, approximately 400 tons of medical waste were collected in Howard County by a permitted private company for transportation and incineration.

3.3.4.4 Other Wastes

- **Friable asbestos** is not accepted at ARL. This material may be disposed of in permitted facilities located outside the County. In 2022, forty-four tons of asbestos from Howard County was disposed of at an out of county landfill.

- **Roofing shingles** are accepted for disposal at the ARL and are classified as C&D debris.

- **Used oil and anti-freeze** are generated by businesses, industry, and do-it-yourself mechanics. The County collected the equivalent of approximately 121 tons of used oil at the Residents' Convenience Center in 2023. About three (3) tons of anti-freeze was collected by the County in 2023

Table 3-15 includes the tons of C&D Debris, tires and HHW disposed of at ARL and the disposal rate in tons per capita. **Table 3-16** provides projections for delivery of these materials to ARL during the planning period.

Table 3-15 ARL Historic Waste Disposal Quantities Construction, Demolition and Land Clearing Waste; Tires and HHW

Year	Total Population (1)	C&D Debris (2) (tons)	C&D Debris Disposal Rate (3)		Tires (4) (tons)	Tires Disposal Rate (3)		HHW (5) (tons)	HHW Disposal Rate (3)	
			(tons/ capita/yr)	(pounds/ capita/yr)		(tons/ capita/yr)	(pounds/ capita/yr)		(tons/ capita/yr)	(pounds/ capita/yr)
2018	310,906	29,235	0.09	188	241	0.0008	1.55	280	0.0009	1.80
2019	315,759	32,985	0.10	209	252	0.0008	1.59	287	0.0009	1.82
2020	335,175	30,916	0.09	184	241	0.0007	1.44	257	0.0008	1.54
2021	337,050	34,709	0.10	206	236	0.0007	1.40	231	0.0007	1.37
2022	337,050	40,521	0.12	240	191	0.0006	1.13	235	0.0007	1.40
2023	339,688	34,426	0.10	203	250	0.0007	1.47	194	0.0006	1.14

(1) Source: Table 2-2.
(2) Source: Table 3-7.
(3) Tons/pounds disposed divided by population.
(4) Source: Table 3-7. Disposal of tires is prohibited in accordance with state law. All tires received at ARL were recycled.
(5) Source: Table 3-4.

Table 3-16 Estimated Generation and Management at ARL of C&D, Tires and HHW

Year	Total Population (1)	C&D Generation (2) (tons/yr)	Tires (3) (tons/yr)	HHW Generation (4) (tons)
2025	343,839	35,338	241	275
2028	354,083	36,391	248	283
2031	362,526	37,259	254	290
2034	369,294	37,954	259	295

(1) Source: Extrapolated from Table 2-2.
(2) Based on 0.07 tons per capita per year. (See Table 3-17)
(3) Based on 0.0001 tons capita per year. (See Table 3-17)
(4) Based on 0.0008 tons capita per year. (See Table 3-17)

3.3.5 Summary – All Projected Waste and Recycling

A summary of projected quantities of all waste types that are addressed in the Plan is presented in **Table 3-1**. The projections cover the planning period 2025 through 2034. It should be noted that County operations generate small quantities of debris from cleaning streets, litter, and stormwater catch basins.

Quantities of debris generated from County maintenance operations are accounted for in the institutional and government portion of the waste stream, which is a component of the commercial waste category.

Additionally, agricultural wastes are typically recycled on the farm where they are generated. For example, manure is used as fertilizer and organic debris is applied to farmland. Although not identified as such, small quantities of agricultural waste entering the ARL are accounted for as commercial waste. Approximately 1,494 tons of manure were collected at ARL for composting in 2023. This is included in the tonnages reported by the ARL.

3.4 WASTE FLOW

In accordance with Maryland regulations, types and quantities of waste imported into and exported from the County are addressed in the plan. To understand the topic of waste import/export, it is helpful to review the various flows of waste in the County.

Each type of waste managed in the County is delivered to one of a variety of waste management or processing facilities or is exported out of the County. These facilities may consolidate materials, dispose materials, or prepare and process materials in raw commodities for use by product manufacturers and/or direct use to manufacture a product.

3.4.1 Imported Waste

The ARL and the Alpha Ridge Transfer Station accept no waste imported from out-of-county sources as provided in Section 18.604(q) of the Howard County Code of Ordinances. These facilities are the only public facilities located within the County permitted to accept MSW and C&D debris. Waste haulers not abiding by these rules may face penalties, including possible fines and suspension or revocation of the County permit to use the landfill or transfer station.

The ARL tipping fee is competitive with fees in neighboring jurisdictions, thus removing financial incentives for haulers to import waste to these facilities. All commercial customers delivering waste generated in the County are required to have an active hauling permit for each vehicle.

3.4.2 Exported Waste

In this section, waste generated in the County and delivered to out-of-county facilities are described.

3.4.2.1 Municipal Solid Waste

The County controls most residential waste collection and exports essentially all quantities collected through a service agreement with the Authority. Collected residential waste is delivered directly to and exported from the AJTS to King George Landfill located in northern King George County, Virginia. A portion of the commercial waste received at the ARL and Alpha Ridge Transfer Station is also transported to the AJTS for conveyance to King George Landfill. In addition, County agencies deliver waste directly to AJTS.

The County has not imposed prohibitions on deliveries of waste types that are allowed by permit and regulations but has relied on economic pressures to reduce commercial waste quantities received at the ARL and Alpha Ridge Transfer Station. The County will continue to landfill all waste received which is not transported for export. In 2023, the County exported approximately 131,647 tons of waste collected and managed by the County.

Private companies providing collection services to the commercial sector may use any legally available disposal facility. Because only a small quantity of the commercial waste generated in Howard County is disposed of at the ARL, the County cannot determine the total commercial waste disposal quantities.

Most landfills operated by other local governments in the region restrict the acceptance of waste to that which is generated within the political subdivision, like Howard County. Also, tipping fees in the region are competitive with the County's, eliminating the economic incentive to use them. Thus, it is believed that waste is not exported to other publicly owned landfills in Maryland.

On an annual basis, MDE collects data on waste deliveries to each solid waste acceptance facility in the state. The report on waste generated in Howard County and accepted at various facilities was used to prepare **Table 3-1** above. The 2022 report identified 16 private in-county and out-of-county facilities, other than the ARL and AJTS, which received waste from various sources in Howard County.

These transfer stations and the waste-to-energy facilities have adequate capacity to take the waste generated by the commercial sector in the County. It is likely that these facilities are receiving most of the commercial waste generated in the County. Due to the availability of these private facilities and the potential for new facilities being approved in the County, it can be expected that essentially all commercial waste will continue to be exported in the future.

3.4.2.2 Recyclable Materials

In 2022 nearly 218,150 tons of recyclables from residential and commercial sources in Howard County were documented as being diverted from landfills[16]. This includes recyclables normally found in MSW and allowed to be counted under the MRA toward the County's recycling goal. It excludes other recyclables for which all or a significant portion have historically been managed by the private sector, such as used oil and scrap metal.

Few manufacturers that use recycled materials are in Howard County. Exceptions include a company which manufactures industrial and commercial plastics products and uses post-consumer regrind plastic and plastic pellets purchased from plastics processors. It is reasonable to assume that all other documented recyclables tonnage is exported to end-markets outside of Howard County.

[16] MDE Maryland Recycling Act Report #CT-MD-HO-9999-2022, May 5, 2023

The County has a yard trim curbside collection program, where residents can set out yard trim to be picked up. The curbside pick-up season ends in mid-January every year and starts in the first week of April. During the time curbside yard trim collection is unavailable, residents can drop off yard trim at ARL's Wood Waste Area. Private companies in the county also collect and recycle wood waste. In 2022, the County managed about 10,400 tons of yard trim at ARL.

Over 20,000 households have joined the "Feed the Green Bin" food scraps collection program, which diverted about 400 tons of food scraps in 2023. Additionally, other County facilities including schools, libraries, fire stations, and the Robinson Nature Center have signed up for their food scraps to be collected curbside. The collected material is transported to a composting facility at the ARL and is turned into compost. The compost produced, HoCoGro Compost, can be purchased as a soil amendment. Residents are also able to include yard trim in their green bins, which is helpful when curbside collection for yard trim stops in the winter months. There are several private haulers in the area that offer food collection services.

Currently, a Materials Recycling Facility (MRF) in Elkridge receives the recyclables generated and collected from Howard County's recycling program. In 2023, a recycling audit was conducted at their facility to determine the composition of the incoming material. Paper and cardboard were the largest part of the recycling stream, comprising about 58 percent, which included 32 percent old corrugated cardboard.

Recyclable materials are also collected at the Residents' Convenience Center at the ARL. In addition to more traditional recyclables such as mixed paper, corrugated cardboard, and food and beverage containers, the Convenience Center also accepts electronic waste, lead acid car and truck batteries, textiles, shoes, rigid plastic, cooking oil, used motor oil, anti-freeze, and white goods from residents and small businesses. These materials are collected from ARL by different contractors and delivered to out-of-county end-markets.

Maryland's Statewide Electronics Recycling (Sections 9-1727 to 9-1730 of the Environment Article) require select electronics manufacturers to register annually with MDE and pay a registration fee. If those manufacturers have an approved take back program, MDE reduces their annual fee. The Northeast Maryland Waste Disposal Authority maintains an updated recycling market directory for electronics on their website: Recycling Directory - Recycling Maryland - Recyclables, waste reduction, reuse (mdrecycles.org). A permanent public drop off center for electronics in Howard County is located at the Residents' Convenience Center at ARL.

Both scrap metal and cardboard are separated for recycling from waste received on the tipping floor of the Alpha Ridge Transfer Station. These materials are separated both manually and using mobile waste transfer equipment. Separated materials are loaded into roll-off containers and the materials are subsequently transported out of the County for marketing.

3.4.2.3 Tires

Maryland law prohibits the disposal of scrap tires in landfills located within the state. This prohibition can only be waived under terms and conditions specified by the MDE or if MDE determines whether a scrap tire recycling system does not exist or has insufficient capacity available.

Waste tires generated in the County are tracked as part of the State's Scrap Tire Program administered by MDE, ensuring that tires are collected, hauled, processed, and disposed in a responsible manner. In 2023, 250 tons of tires were brought to ARL for recycling. The County is only responsible for the tires delivered to ARL, which are stored and hauled out of the County under permits and regulations administered by the MDE Scrap Tire Program.

Using the national average of one (1) tire per person, at an average weight of 20 pounds per tire, it is estimated that a total of approximately 3,400 tons of scrap tires were exported from all sources in Howard County for all collection programs in the County.

3.4.2.4 Used Oil and Antifreeze

No facilities exist in Howard County for the processing of used motor oil and antifreeze for recycling. All collected quantities are exported. The County collected 121 tons of used oil and three (3) tons of antifreeze at the ARL for recycling in 2023. The total generation of these products in the County is not known, nor is it known what portions of the total quantities generated were recycled.

3.4.2.5 Controlled Hazardous Substances

No CHS processing or disposal facilities are located in the County. All quantities of CHS are exported from the County. In 2023 Howard County collected approximately 194 tons of HHW, all of which were exported for disposal or destruction. No medical waste processing or disposal facilities are located in the County. Medical waste is exported from the County.

3.4.2.6 Dead Animals

No rendering plants are located in Howard County. Estimated quantities of dead animals requiring disposal in 2022 equaled about 69 tons.

3.4.2.7 Construction, Demolition, and Land Clearing Debris

It is estimated that 34,425 tons of C&D debris were managed at the ARL in 2023.

3.4.2.8 Sludge and Septage

Sludge production at the County's LPWRP equaled about 4,600 dry tons in 2023, none of which was disposed at the ARL. The sludge generated by the LPWRP is land applied to bulk agriculture by a County Contractor.

3.4.2.9 Asbestos

No non-friable asbestos, which requires special handling, was disposed at the ARL. All non-friable asbestos generated are assumed to have been exported to permitted out-of-county disposal sites.

3.4.3 Waste and Recyclables Collection System

The Bureau of Environmental Services is responsible for County-wide curbside collection services for residential waste, recyclables, food scraps, and yard trim; as well as collection from private condominium units in the residential collection program, public buildings, and county schools; and curbside waste and recyclables collection for businesses in the Ellicott City Historic District. Other than the Ellicott City Historic District, the County does not provide commercial waste collection. Businesses must contract private haulers for collection and disposal of solid waste.

The Bureau operates a curbside bulky trash collection for items such as sofas, desks, etc., which are collected with the regular curbside solid waste collection. Also, a Residential Bulk Dumpster Program or community cleanup program is available for multi-family homes within the County's collection program. In this Program, the County coordinates with multi-family homes to provide collection containers for scheduled community waste clean-ups. Containers are delivered to collection sites by a county contractor, usually for use over a weekend, and are removed at the beginning of the following week.

The Collections Division of the Bureau of Environmental Services manages the Residential Refuse Collection Program and the Residential Bulk Dumpster Program. The Collections Division uses private haulers under contracts awarded on a competitive basis. The County is divided into 15 Trash and Recycling Zones, each with about 4,500 to 6,000 households. A 16th TRZ provides front-end dumpster collections to about 5,700 County offices, schools, and condominium properties. The County currently collects trash and recycling from 87,000 households, yard trim from 64,000 households, and food scraps from over 20,000 households. Collection of waste, recycling, and yard trim is provided by a single contractor within each zone. A single contractor also services the containers located at condominium developments and at public buildings.

The integrated routes offer separate waste collection including bulk items, recyclables collection, yard trim collection, and food scraps collection, each once per week. Recyclables collection is for metal cans, glass, plastic containers, and mixed paper. Yard trim collection for grass clippings, leaves, and small wood scraps is provided from April to the middle of January. Collections are scheduled for Christmas trees in January of each year. Food scrap collection is currently available only on certain routes. In November of 2023, the County expanded the "Feed the Green Bin" food scraps collection program and is planning further expansion. Curbside scrap metal collection includes metal swing sets, file cabinets, appliances, lawn mowers, exercise equipment, etc. Integrated collection contracts to provide for solid waste and recyclables collection are awarded for up to six-year terms. The County funds waste and recycling collection and disposal with revenue from a dedicated Environmental Services Fund.

Collection contractors are required to drop off collected waste at disposal facilities or in the case of recyclable materials, processing facilities. Contracts provide that contractors deliver materials to facilities as directed by the Bureau of Environmental Services. The County has a service agreement with the Authority which provides that collected residential waste from Howard County be delivered to AJTS.

Commingled loads of yard trim and food scraps are delivered to the Alpha Ridge Landfill's compost facility. Yard trim collected from routes that are not part of the County's food scrap collection program are sent to yard trim only processing facilities. Recyclables are directed to a MRF located in Elkridge, Maryland. Scrap metal is directed to ARL for recycling through the scrap metal contractor.

Commercial waste generators, including industry, institutions, and retail and service businesses, contract directly with private contractors, who provide collection services for commercial waste. Private

contractors also provide services for C&D debris, dead animals, and septage. Collection contractors may deliver waste to any legally permitted transfer or disposal facility. As discussed previously, waste exported from the County is often disposed at privately-owned landfills rather than publicly owned sites.

The County collects HHW at a drop-off facility located at the Residents' Convenience Center. The facility is open to receive waste every Saturday from April through November, and the first Saturday of the month in January, February, and March, during ARL operating hours. A contractor operates the site and is responsible for receiving waste from citizens, identifying unknown wastes, properly packaging wastes for shipment, and transporting packaged wastes to processing and disposal facilities.

3.4.4 Solid Waste Acceptance Facilities

The ARL and Alpha Ridge Transfer Station are the only County-owned and operated public solid waste acceptance facilities. The compost facility at the ARL is the only food scrap compost facility within the County. The LPWRP is a County-owned wastewater treatment facility that receives septage waste.

A list of solid waste acceptance facilities and recycling/composting facilities in Howard County can be found in **Appendix D**. It also contains a map showing the location of these facilities.

3.4.4.1 Public Facilities

There is one (1) active landfill and two (2) closed landfills undergoing post-closure care activities in Howard County. These facilities include the following:

- Alpha Ridge Landfill; Marriottsville - Active
- Carrs Mill Road Landfill; Glenwood - Closed
- New Cut Landfill; Ellicott City - Closed

The ARL is located on Marriottsville Road, north of Interstate 70, in the northern part of the County. The Landfill opened in 1980. It consists of 590 acres, of which 190 are permitted for fill. Since most of the residential waste and commercial waste is exported to private facilities, the ARL is not expected to reach capacity until after the year 2055 based on projections documented in Annual Capacity Utilization Reports submitted to the MDE. The total permitted landfill capacity at the ARL is about 7.4 million tons (based on a waste density of 1,100 pounds per cubic yard). There are undeveloped cells at the ARL, currently the County is working in Cell 1.

The Alpha Ridge Transfer Station is located on the property of ARL. The Transfer Station is a two-level 500-ton per day (tpd) MSW transfer facility which occupies a four-acre area. Haulers deliver solid waste onto a tipping floor utilizing self-unloading vehicles. There is a separate area provided for smaller vehicles requiring hand unloading.

The ARL and Transfer Station accept non-hazardous solid waste including MSW, and C&D debris. Operations are Monday - Saturday, 52 weeks per year, except for specified County holidays. Daily receipts of all types of acceptable waste at the ARL averaged about 260 tons per day in 2023, for a total of approximately 78,500 tons for the year. Most of the waste received is transported to the AJTS for transfer to disposal sites.

At the Residents' Convenience Center residents may dispose of waste not collected at the curb. White goods, bulky waste, tires, wet cell batteries, used motor oil, antifreeze, mattresses, electronics, rigid plastics, textiles, shoes, cooking oil, and other recyclables also can be brought to the facility by residents.

Landfill operations are conducted in a 35-acre cell which has a double geomembrane liner and a leachate collection system. A final cap and associated facilities for each fill area that reaches permitted capacity will be constructed in accordance with Maryland regulations.

In the early 2000s the County constructed remedial measures to prevent groundwater contamination at the ARL as well as two older closed landfills. The containment system will operate for approximately 30 years with regular monitoring of groundwater quality to assess the progress of the clean-up effort.

3.4.4.2 Private Facilities

The MRF in Elkridge receives various grades of paper, cardboard and glass, rigid plastic, and plastic and metal food and beverage containers. This facility receives and processes the single-stream recyclables collected from the County's curbside program, the County schools, County government buildings, and multi-family and drop-off center recycling programs. The facility also receives recyclables from neighboring jurisdictions and a few commercial customers. Total quantities of materials received per year from other sources are not disclosed; however, waste sorts are periodically performed to determine the percentage of each type of waste coming to the MRF. In 2023 paper and cardboard were the largest material in the waste stream, amounting to about 58 percent. All materials are shipped to end-markets located outside of Howard County.

The AJTS, located in Anne Arundel County, receives both commercial and residential waste from Howard County. Most commercial waste is delivered by private sources. Residential waste, collected in Howard County by firms under contract to the County, is also delivered directly to the transfer station. In addition, residential and commercial waste received at the ARL is transported to the transfer station. Waste is delivered by the County under a publicly procured Service Agreement with the Authority. Howard County may deliver a maximum of 150,000 tons per year of residential and commercial waste to the AJTS.

Howard County prepared a Contingency Plan in response to an MDE policy that requires any waste disposal system selected by a county provides a redundant and secure backup capability to assure that waste is continually managed and properly disposed of in the event of an interruption or other problem with the primary disposal option. In addition to MSW, which comprises the majority of a county's waste stream, secure and adequate disposal capacity must also be identified and provided for all other wastes in a county, including but not limited to non-transportable waste such as asbestos or bulky wastes. Alternate or back-up disposal capacity may be provided either through contractual arrangements with the transporter or by the county providing disposal capacity in a permanent landfill either within or outside of the County. The County's waste disposal contract requires the identification of a secondary facility for the disposal of solid waste should the primary facility become unavailable for use. This plan identifies the ARL as the County's solid waste acceptance facility which will receive waste not delivered to the AJTS or other facilities. In addition, the County's contract with Waste Management specifies a secondary disposal facility to receive waste in the event waste transfer operations cease or are interrupted, either due to a catastrophic event, contractual issues or for any other reason.

Citron Hygiene US Corp. operates a small-scale transfer facility for the acceptance and transfer of waste generated from its own business operations only. The firm services restroom disposal containers for feminine hygiene products and consolidates small quantities of collected waste at its warehouse. Waste is placed in an on-site dumpster which is periodically emptied for export to a disposal facility for landfilling. During the past year 1200 cubic yards of waste were exported from their site.

WM of Maryland purchased the Ameriwaste, LLC facility from Enviro Solutions and ceased operations at the facility which still has an active disposal permit until 2026. The site on Kit Kat Road in Elkridge is now home to a new Material Recovery Facility operated by Waste Management Recycle America.

At present, no private landfills exist in Howard County which are permitted for disposal of C&D debris. This material may be disposed of at the ARL or at disposal facilities outside the County.

3.5 RECYCLING AND WASTE REDUCTION PROGRAM

Howard County has a multi-faceted and comprehensive recycling and waste reduction program which satisfies the requirements of the 1988 MRA. Data regarding waste quantities diverted through recycling and waste reduction programs is provided and discussed previously in this chapter. Since the inception of Howard County's recycling and waste reduction program, the percentage of waste recycled and diverted, as reported annually to MDE, has grown. The documented total recycling and waste reduction diversion is calculated to be 49.7 percent (which includes the overall recycling rate plus source reduction credits) in 2022, surpassing the state's mandatory goal of 35 percent. Components of the program are discussed below.

3.5.1 Waste Reduction

Reduction of solid waste generation by residents and commercial establishments, and reduction of HHW generation, are objectives of Howard County's solid waste management program. MDE allows jurisdictions to count waste reduction efforts towards their overall recycling and waste reduction diversion rate goals. In the past, Howard County was able to add an additional five (5) percent to its MRA diversion rate through documented waste reduction activities. The County has implemented several waste reduction initiatives as described below.

3.5.1.1 Backyard Composting

The County operates a multi-faceted backyard composting program in cooperation with the University of Maryland Cooperative Extension Service ("Extension Service")[17]. The cornerstone of the program is the availability of free backyard composting bins to all County residents. In 2022 the County and the Master Gardeners gave away about 600 compost bins. Other elements of this program include literature and promotions and Master Gardener-led composting classes. Volunteers from the Extension Service also manage the "Rake and Take" program, which helps match residents in need of yard trim for compost projects with residents who wish to divert their yard trim from disposal (mostly in the western portion of the County).

The objective of these programs is to encourage residents to compost yard trim on their property rather than place these materials out for collection at the curb. Backyard composting is considered as a source reduction effort by MDE.

[17] https://extension.umd.edu/resource/how-make-compost-home/

3.5.1.1 Grasscycling

Grasscycling refers to leaving grass clippings on the lawn after mowing and is promoted through the County and the Extension Service as a waste reduction method. The practice is promoted through the distribution of literature and through various other promotional methods. This practice is especially encouraged in the western rural section of the County, where yard trim collection is not offered. Grasscycling is considered as a source reduction effort by MDE.

3.5.1.2 Household Hazardous Waste Reduction

Despite the small quantities involved, reducing disposal of HHW has positive impacts on the overall toxicity of solid waste disposed. The County promotes the use of less toxic alternative household products for cleaning, painting, etc. through the distribution of County produced literature and resources from the EPA.

3.5.1.3 Donation and Reuse Programs

Building materials, bikes, paints, textiles, books, and medical equipment are some of the waste streams that Howard County diverts from disposal with the help of non-profit organizations.

3.5.2 Recycling

Since the inception of Howard County's recycling and waste reduction program, the percentage of waste recycled and diverted, as reported annually to MDE, has increased. Howard County's diversion rate continues to surpass both the state's mandatory recycling goal and voluntary diversion goal.

The residential recycling program tonnage growth can be attributed to the fact that the County's recycling program has been fully implemented for a number of years. A combination of changes in packaging and economic conditions have contributed to a downward trend in recyclable waste tonnage over the past few years. Many newspapers, magazines and other publications are also now smaller in size and have fewer subscribers. Recycling programs and initiatives that the County has implemented are discussed below.

3.5.2.1 Curbside Recycling

The County provides weekly collection of select recyclable materials for most single-family homes and town homes in the County, as well as some of the condominium units. Residents may set out paper, plastics, metal cans, glass jars, and cardboard in County-provided recycling containers. The County will not accept recyclables in plastic bags. There is no limit on the number of recyclables that can be set out per collection. Single stream food and beverage containers and residential mixed paper are delivered to the County's recycling processing contractor.

The curbside recycling program is voluntary. County performed field surveys have consistently shown participation to be in the 90 to 95 percent range.

Curbside collection of scrap metal is available to all households with curbside recycling collection. Residents can call the Bureau of Environmental Services offices to schedule a pickup.

All homes in areas zoned for medium or high-density development receive weekly yard trim collection from April through the third week in January. For areas with food scraps collection, the weekly collection service is year-round. Leaves, grass, small brush and branches, etc. are collected. There is no limit on the amount of yard trim that can be set out per collection.

Yard trim (and food scraps where applicable) are collected on the same day as regular single-stream recycling. Food scraps are collected with the same collection crews and vehicles used to collect the yard trim.

Residents who receive regular yard trim collection service also receive Christmas tree recycling collection service named “Merry Mulch” from the end of December to the third week in January. The same collection crews and vehicles used to collect yard trim are used to collect Christmas trees. Christmas trees are also delivered to the same site as yard trim. About 9,600 tons of yard trim, including Christmas trees during the holiday season, were collected from Howard County households in 2023. The County also operates Christmas tree recycling drop-off centers during January, primarily at County parks and at cooperating private nurseries and hardware stores throughout the County.

3.5.2.2 Apartment and Condominium Recycling

State law requires apartment buildings and condominiums with 10 or more dwelling units ("Multi-family Communities") to provide recycling of paper and plastic, metal, and glass containers for their residents. The County does not provide recycling services for these properties. The property owner or manager is responsible for contracting with a private hauler for collection. Multi-family communities recycling must be completed in accordance with the requirements of the County Solid Waste Management Plan. This section of the Plan details the requirements for multi-family recycling. Additional information is available on the Howard County web site, Apartment & Condo Recycling | Howard County (howardcountymd.gov).

The Property Owner or Manager of a multi-family community (the "Responsible Party") for properties in Howard County must submit a recycling plan to Howard County’s Recycling Division. Plans are reviewed, amended when necessary, and approved by the County. If the property has a change in ownership, the new owner must complete a new recycling plan and submit it to the Recycling Division upon taking ownership. An annual report form is mandatory for all apartments and condominiums that are required to provide recycling. For new construction or redevelopment of multi-family communities, the site development plan must be reviewed by the Bureau of Environmental Services to verify accommodation is made for recycling. Recycling plans must be approved before use and occupancy is issued and recycling collection must commence when the multi-family community has at least one resident.

Interested parties may call the Howard County Recycling Division at 410-313-6444 to obtain information about the list or for assistance with the development of their recycling plan.

3.5.2.2.1 Plan and Annual Report

The Responsible Parties must submit and implement a recycling plan that includes specific details about the property, materials, education, and collection locations.

Each multi-family community must provide an annual report to the Howard County Recycling Division by March 1, which covers the previous calendar year and provides the information and data specified in the recycling regulations.

3.5.2.2.2 Monitoring and Enforcement

The Howard County Recycling Division monitors the performance of each recycling program. The County has the right to inspect any multi-family community to assess any element of the program. If the County identifies deficiencies, the Responsible Party has 30 days to correct these deficiencies upon written notification by the County.

The Recycling Division may require changes to an approved plan. In addition to the information provided in the Annual Report, Responsible Parties must provide documentation related to the Recycling Plan, when requested by the County.

Any Responsible Party who does not implement their Recycling Plan, does not submit an Annual Report, or does not cooperate in providing access or information about its recycling program is in violation of Howard County Code §18.611 and is subject to a civil penalty for each day that the violation continues. In addition to a civil penalty, the County may pursue other legal action to enforce State and County law.

3.5.2.3 Office Building Recycling

The Annotated Code of Maryland, Environment Article §9-1714 requires that office buildings of a certain size implement a recycling program. The code defines an office building as a building that has 150,000 square feet or greater of office space and is required to provide recycling for the entire building. The building shall provide (1) containers for the collection of recyclable materials; and (2) arrangement with a hauler for the removal and recycling of paper, cardboard, metal, and plastic materials placed in the recycling containers in accordance with the Howard County single-stream recycling program. Howard County maintains a list of all office buildings within the County that are 150,000 square feet or greater. The list of impacted office buildings is updated annually.

Monitoring of recycling receptacles is carried out by the office building owners and/or tenants. Annually, the County's Recycling Division contacts impacted office building owners or their management companies to identify the service provider and verify that single-stream recycling services are provided.

3.5.2.4 Public Schools Recycling

The Howard County Government does not govern or make policy for the Howard County Public Schools System (HCPSS) or the Howard Community College (HCC) but does provide funding to both entities. The HCPSS and HCC are responsible for maintaining recycling programs at facilities under their control. Both HCPSS and HCC maintain informational websites on the opportunities for recycling within each school system. The County partners with HCPSS and HCC to support solid waste management within their facilities. This includes managing/sharing solid waste and recycling collection contracts and providing periodic material/waste audits. HCPSS website is Recycling Efforts – HCPSS. The HCC recycling website can be found at Recycling | Howard Community College (howardcc.edu).

3.5.2.5 Recycling at Alpha Ridge Landfill Resident's Convenience Center

The County operates a recycling drop-off center as part of the Residents' Convenience Center at the ARL. The center is open daily during landfill operating hours and County residents may use it at no charge for the disposal of household waste and recyclable materials. Small businesses with a valid commercial permit may also drop off reasonable quantities of recyclable materials.

Materials accepted for recycling, and in some cases reuse, include glass and plastic containers, mixed paper, corrugated cardboard, scrap metal and white goods, tires, wood waste, yard trim, car batteries, motor oil, anti-freeze, and textiles.

3.5.2.6 Recycling Processing Operations

The County has elected to privatize its recyclables processing operations rather than pursue a public option. The County has an existing agreement with a private company for the receiving, transferring, processing, and marketing of single stream recyclable materials and cardboard. The materials subject to this contract are collected as part of the County's curbside single-family and multi-family residential recycling programs. The contract does not specify a minimum or maximum tonnage commitment, but the contractor receives all materials collected from curbside collection and multi-family collection. The commodity values fluctuate monthly based on prices quoted from regional market indices for all materials. The contract is set up so that the County benefits when market prices for recyclable materials increase.

3.5.2.7 Education

The County has invested in public education and outreach initiatives to increase participation in recycling programs. These initiatives include using a diversified series of media and community outreach tools and activities that are designed to reach all County residents, including children, and businesses. Outreach and education efforts are led by the Recycling Division and include the following:

- **County Website -** The County website, www.HowardCountyRecycles.org, is updated regularly and is a useful source for how to recycle or reuse many items, even beyond what the County collects. Included on the website are how-to videos, information on what is recycled curbside and at the ARL, recycling, waste reduction, and environmental events, surveys, reports, and links to other useful sites. A monthly newsletter highlighting creative recycling and waste reduction practices is also sent out to all who request to be on the list.

- **School Presentations -** The County provides educational presentations to both private and public county schools. Recycling Coordinators provide classroom presentations, assemblies, and brief lunchroom presentations. Students learn responsibility, environmental science, math, energy, conservation, and business during an interactive presentation about recycling. It's important to encourage students to become better stewards of the environment and adopt life habits for waste reduction and recycling.

- **Community and Civic Group Information Sharing** - The County also provides educational presentations to County organizations, including homeowner associations, churches, and businesses. Many of the local organizations in Howard County produce and maintain their own newsletters. The County sends regular reminders to these organizations so that they may include recycling-related updates and information in these publications.

- **Community Events -** The County attends local events to provide information and to be available to answer questions. Table-top displays include pertinent brochures and promotional items, as well as a variety of items that can be recycled. The Division has found that this display is very effective for providing information about what can be recycled in the County program.

- **Recycling Hotline -** Prerecorded recycling information on frequently asked questions (FAQs) is available 24 hours per day, seven days per week on the County's recycling hotline at (410) 313-6444. During regular business hours of 8:00 a.m. to 5:00 p.m., the hotline is staffed.

- **Commercial Information Packet and Technical Support -** The County has a packet of business recycling and waste reduction materials from county, state and federal sources. Business recycling and waste reduction materials include lists of local service providers, markets, and technical assistance information. Businesses are also directed to visit the www.mdrecycles.org website, which is maintained by the Authority. This website was developed at the direction of the Authority member jurisdictions, and includes a comprehensive listing of business recycling services, markets, and technical advice. County and Authority staff are available to visit businesses and assist in conducting waste stream evaluation and identifying recycling markets. Recent outreach has included direct mail, telephone calls, site visits, website information and working with business associations and the Howard County Chamber of Commerce.

- **Christmas Tree Recycling -** The County implements its 'Merry Mulch' community outreach program to foster Christmas tree recycling. The program provides information explaining Christmas tree recycling options, including curbside collection, and identifying area drop-off locations. The fliers are distributed throughout the community and at all participating Christmas tree vendor stands. In exchange for the vendors displaying posters and fliers, the vendors earn the right to dispose of their unsold trees at the ARL Christmas tree drop-off site at no charge. Normally vendors are required to pay a tip fee to dispose of them.

- **Pumpkin Recycling –** The for the past several years recycling staff have held a fall outreach event to highlight the composability of pumpkins in the organics stream and to keep them out of the waste. Pumpkins are collected curbside with food scraps, at ARL, and at the event.

3.5.3 Material Markets

The County has established relationships with end-markets for each of the recyclable materials in its recycling program either directly or through contractors that provide collection and/or marketing services. The general strength or weakness and volatility of end-markets varies among recyclable commodities. The County has reacted to market dynamics by periodically changing some of the end markets it uses. The County has also changed some contract payment/rebate formulas based on changing market conditions. However, in general, the County contracts with stable firms for marketing its recyclables. While these firms often have long-term contracts with recyclables buyers, often with floor prices built in for protection against market swings, these firms are also able to change markets if needed.

3.5.3.1 Single Stream Recyclable Materials

The County contractor processes and markets the materials collected from curbside collection routes, the multi-family recycling program, County schools, County buildings and from the ARL Residents' Convenience Center.

The per-ton processing fees paid for the single-stream material are adjusted monthly based on regional market prices. The processing contract is set up so that the County benefits when market prices for the materials are high, through receipt of revenues from the contractor. Conversely, when published market prices for materials are low, the County must pay for this service. The processing fees are based on the weighted average makeup of the County's commingled stream (i.e., the percentage of aluminum, plastic, glass, and steel per ton of material). These weighted averages are verified through sampling and are adjusted periodically throughout the course of the contract.

3.5.3.2 Corrugated Cardboard and Mixed Paper

Several firms provide containers to their commercial waste collection customers for the separate collection of select paper types, corrugated cardboard being the most prevalent material collected. Collected material is taken to processing facilities for baling and marketing. In Howard County about 21,000 tons of OCC were recycled in 2022.

Several large retailers and grocery stores in Howard County recycle a variety of materials, most notably corrugated cardboard. Many large retail businesses back-haul recyclables from their Howard County stores to central distribution centers.

3.5.3.3 Yard Trim and Wood Waste

Most yard trim delivered to local contractors are composted to produce generally locally marketed products. The costs are set with a CPI adjustment based on current contracts. The County shreds wood waste collected at the Residents' Convenience Center to produce a mulch product. Yard trim and food Scraps collected from the "Feed the Green Bin" program, along with those materials dropped off at the Residents' Convenience Center are composted.

3.5.3.4 Textiles

Used clothing and other textiles are collected at the Residents' Convenience Center. Approximately 56 tons of textiles were recycled in 2023.

3.5.3.5 Tires

A local contractor takes scrap tires from the County's permitted secondary storage facility located at the Residents' Convenience Center at ARL. Approximately 250 tons of tires were collected at ARL and subsequently recycled in 2023.

3.5.3.6 Used Oil

A Baltimore contractor collects waste oil from two 1,000-gallon tanks at the Residents' Convenience Center at the ARL. Oil collected at the ARL includes used motor oil and cooking oil. About 135 tons or 36,000 gallons of waste oil were collected in 2023.

3.5.3.7 Antifreeze

A Baltimore contractor collects used antifreeze from a 1,000-gallon tank at the Residents' Convenience Center. About 3 tons or 579 gallons of antifreeze were collected in 2023.

3.5.3.8 Scrap Metal

A local contractor takes the scrap metal, such as appliances, bicycles, metal chairs and other items. The contractor provides roll-off containers at the Residents' Convenience Center and provides transportation of full containers to its facility.

3.5.3.9 Liquefied Petroleum Gas Bottles

A Baltimore contractor collects propane tanks and other compressed gas bottles collected at the Residents' Convenience Center. These materials are transported and processed at their facility for recycling. Payment is made by the County for this service. About 32 tons were recycled in 2023.

3.5.3.10 Fluorescent and Compact Fluorescent Lights

The County was required, by the 2010 amendment to §9-1703 of the Annotated Code of Maryland, to develop a strategy for the collection and recycling of fluorescent tubes and compact fluorescent lamps (CFLs) containing mercury. There are several options for residents to drop-off of these items, including the Alpha Ridge Residents' Convenience Center.

3.5.3.11 Sawdust and Wood Shavings

A contractor located in Jessup receives sawdust and wood shavings from sources within and outside Howard County. Materials received are processed for sale to agricultural markets and to manufacturers requiring this raw material. Quantities received are unknown.

3.5.3.12 Electronics Recycling

Electronic scrap is handled in several ways, including the separation of glass, wire, precious metals, plastic, lead, etc., which are then marketed. Electronic waste is dropped off by residents onto special boxes in trailers located at the Residents' Convenience Center. A contractor picks up the boxes from ARL. Approximately 321 tons of residentially generated electronics were diverted through the County program in 2023.

3.5.3.13 Scrap Automobile Bodies

There are many auto salvage firms that receive scrap automobiles in Howard County. These firms acquire automobiles that are no longer serviceable from a variety of sources, including private owners, businesses, and other types of owners. These firms remove and sell parts from vehicles. After marketable parts have been removed, the remaining portion of the vehicles are marketed to metal processors (shredders), who in turn market separated metal to steel mills. No shredder facilities are located in Howard County. Approximately 1,855 tons of automobiles were recycled in 2022.

4.0 ASSESSMENT OF EXISTING SYSTEM

4.1 INTRODUCTION

This chapter assesses the existing County solid waste management system to understand its adequacy in meeting the goals and objectives of the Howard County Solid Waste Management Plan. This assessment addresses program/facility alternatives grouped by waste types to be managed. In focusing on the development of management programs that best fit various components of the waste stream, the County has embodied the practice of integrated waste management, which is a comprehensive program that includes waste prevention, recycling, composting, and disposal. US EPA describes the concept of integrated solid waste management in fact sheet EPA530-F-02-26A, titled "What is Integrated Solid Waste Management[18]."

The need to alter, extend, modify, or add to the existing solid waste disposal systems in the County are included in this chapter. The assessment uses, when appropriate, the background information contained in Chapters 1, 2, and 3. The assessment also considers the constraints imposed upon the establishment of solid waste acceptance facilities. The assessment evaluates:

- The use of source reduction and source separation programs to reduce the quantities of solid wastes which are collected for disposal.
- Resource recovery options to reduce landfill disposal capacity needs.
- Consumer education programs, and cooperation with appropriate suppliers for the purchase of recycled products to encourage and help create markets for resource recovery and source separation programs.
- Programs and procedures needed to respond to the unplanned (emergency) spillage or leaking of hazardous wastes within the County.
- Whether existing local master plans and zoning regulations provide for the appropriate siting, and/or operation of solid waste management systems or facilities.

This chapter assesses both regional and County programs and facilities to manage specific categories of solid waste. By addressing solid waste management on a regional basis, the County recognizes that combining waste streams and using shared facilities can result in economic and environmental benefits.

[18] US EPA Fact Sheet, EPA530-F-02-026A, What is Integrated Solid Waste Management, May 2002

In addition, unnecessary duplication of facilities and services can be avoided. It is not intended to discourage participation by the private sector in waste management. The regional and County facilities described in this Plan are not intended to preclude the development of private sector facilities necessary for a firm to serve the needs and interests of its clients and customers. However, new private facilities shall conform to applicable zoning and other legal requirements and must be identified in this Plan. The design and siting criteria set forth in this chapter relate to programs and facilities which would be provided by the County and/or other jurisdictions in the region and are not to be considered applicable to private sector facilities. As stated in Chapter 2, this Plan shall not be used to create or enforce local land use and zoning requirements.

4.2 REGIONALIZATION

The County is a participating member of the Northeast Maryland Waste Disposal Authority. The Authority is a multi-county agency that was established as a public corporation in 1980 (Chapter 871, Acts of 1980) to assist the participating local governments in Maryland, other public entities, and the private sector in developing adequate, environmentally friendly solid waste disposal facilities, by coordinating efforts. The Authority also assists in finding ways to reduce waste, minimize costs of waste disposal, and providing services such as recycling, composting, landfilling, and combustion and energy recovery (Chapter 163, Acts of 2004). Member jurisdictions participating in the Authority include Anne Arundel County, Baltimore City, Baltimore County, Carroll County, Frederick County, Harford County, Howard County, and Montgomery County. The Authority's Board of Directors is comprised of a representative of each of these jurisdictions.

MES serves as a back-up entity to manage solid waste and water/wastewater in the event of a system failure of either of these two systems. MES does not have any regulatory authority, nor does it receive direct appropriations. MES is self-supporting, through fees for services, and is authorized to issue revenue bonds.

4.3 COLLECTION

4.3.1 Residential Curbside

As described in Chapter 3, the Bureau of Environmental Services provides curbside collection services for most of the residential waste, recyclables, and yard trim generated in Howard County. There are 15 Residential Trash and Recycling Zones in the County with approximately 5,000 housing units each. A 16th TRZ provides front-end dumpster collections to about 5,700 County offices, schools, and condominium properties. Total households receiving collection service for each material stream are as follows:

- Trash – 87,000
- Recycling – 87,000
- Yard Trim – 64,000
- Food Scraps – 44,000

The County does not provide residential collection service to all residential properties since some are located on private roads. This is due to the limitations of collection vehicles in these areas such as:

- Standards of construction for the roads
- Gated communities
- Residents preferring to use dead-end alleys
- Communities that may not wish to sign a damage waiver allowing the County contractor's access to private roads.

As part of the County subdivision process, the standards and continuation of new construction of private roads are discussed. These plans typically require trash and recycling collection on private roads. Roads are required to meet County minimum standards to receive County-provided trash and recycling collection services.

Throughout the planning period, curbside residential waste and recyclable material tonnages generated in the County are expected to increase by approximately 12 percent. Despite this increase, the County plans to continue weekly collections for trash, recycling, and yard trim/food scraps for the planning period and the existing system is expected to adequately manage that increase in materials. Other considerations for the County's collection program are as follows:

- **Organic Waste -** Organic material diversion is important to reduce waste, increase recycling, produce compost/mulch products, reduce disposal costs, and curb greenhouse gas emissions. The County does not accept yard trim and food scraps in plastic bags.

  Since food scraps are collected in the same truck as yard trim, no additional trucks or contracts are expected. The current collection system has been designed to allow flexibility in redefining route boundaries to create new routes and keep existing routes to a manageable size as more residences are incorporated into the food scraps collection program. This flexibility should be adequate for the increase in waste projected.

- **Non-Residential Service -** The County's collection program also includes a dumpster or cart-based recycling collection at most condominium communities, government buildings, and public schools. The County will continue to offer these services and will provide additional carts or dumpsters as needed to handle the projected increase in recyclable materials over the planning period. The program is also flexible in that, if it is deemed necessary, the County can increase the frequency of pickup service to confirm program adequacy during the planning period with the main limitation being space to add additional containers.

4.3.2 Residents' Convenience Center

The Residents' Convenience Center is located at the ARL. This facility allows Howard County residents to drop off solid waste and recyclable materials at no cost to the residents. Proof of Howard County residency must be shown before using the facility. The convenience center's hours of operation as well as a list of accepted materials can be found on the County Website (Residents' Convenience Center | Howard County (howardcountymd.gov).

Residents disposing of large quantities of household trash or disposing of waste for someone else, may be required to obtain a Special Exception Permit. As more materials can be economically recycled, the

The county will expand the recycling opportunities at the convenience center. Materials may be added or removed as markets and vendors change.

Emptying/servicing of containers and trailers at the Residents' Convenience Center is completed daily. Considering the inherent operational flexibility, including the ability to utilize other County agency truck drivers on Saturdays or in emergencies to provide additional staffing and flexibility to meet the needs, this facility will be adequate to manage waste and recyclables quantities delivered during the planning period.

4.4 SOURCE REDUCTION

Source reduction is the design, manufacture, purchase, use, or reuse of materials to reduce the amount or toxicity of waste generated. Source reduction incorporates a philosophy of waste prevention, and thus differs from historic waste management practices, which manage materials after they have been discarded as waste.

Reduction of solid waste generation by residents, schools, government operations, and commercial establishments, and reduction of household hazardous waste generation, are objectives of Howard County's solid waste management program. In addition, MDE, through a credit system, allows jurisdictions to count waste reduction efforts towards their overall recycling and waste reduction diversion rate goals. In the 2022 calendar year Howard County received a five percent credit, through documented waste reduction activities, that was added to the county's reported 44.7 percent MRA diversion rate. This gave Howard County a total diversion rate of 49.7 percent (including residential and commercial waste quantities) for the 2022 calendar year.

4.4.1 Public Education

The County will need to continue coordination with local businesses, community organizations, and public agencies to develop its source reduction education and outreach efforts. The existing outreach program provides source reduction information to citizens, businesses, community groups, educators, and students. Source reduction outreach elements may include:

- Presentations to community organizations, schools, and scout troops.
- Demonstrations on backyard composting with advice by Howard County Master Gardeners.
- Distribution of free backyard composting bins and accompanying literature.
- Tips and techniques on source reduction posted on the County's website.
- Inclusion of source reduction techniques in the Bureau's periodic tips email and social media.
- Consider greater use of social media options and technical possibilities.
- Press releases, stories, and advertisements on source reduction through social media.
- Maintaining the "Know Before you Throw" webpage including an interactive sorting game at: Know Before You Throw | Howard County (howardcountymd.gov).
- Maintaining the Business Recycling Guide on the County's website at: Business Recycling | Howard County (howardcountymd.gov).
- Business referrals to the Authority's website and others which have a source reduction system (www.mdrecycles.org).
- Host/Sponsor Greenfest which is the annual environmental festival.

- Provide information on source reductions on the back of the County tax bills which is distributed to every taxpayer in the County, both business owners and residents.
- Provide information in the water bill on source reduction, which goes to everyone connected to water and sewer, including residents, businesses, schools, and government agencies.
- Presentations and meetings with businesses to help them start or increase their recycling efforts.
- Presentations, meetings, and direct mailings with downtown Ellicott City businesses and residents.

Howard County's program has proven effective at distribution of education and outreach materials to the public. This program, supported by regional efforts, will continue to provide comprehensive and varying information on source reduction to the public.

4.4.2 Yard Trim Management

Yard trim represents about 23 percent of the County's total waste volume (including both MRA and non-MRA waste). Source reduction programs can reduce the amount of yard trim the County needs to manage, therefore reducing collection and composting costs. Such programs require continued public promotion and education to maintain and increase participation. The County will continue to promote and encourage low maintenance landscaping, such as: rain gardens, bay conservation lawns, leaving grass clippings on the lawn (grasscycling), backyard composting, and planting non-deciduous vegetation. Additionally, the County anticipates expanding yard trim collection to all TRZs.

Currently, the County distributes free compost bins at the ARL and at the main Environmental Services office. About 600 backyard composting bins were distributed to the public in 2023.

4.4.3 Household Hazardous Waste

County residents are encouraged to reduce the amount of HHW generated. The County has developed information and promotional materials for general distribution to educate the public regarding products which can be used as alternatives to those containing hazardous materials. In addition, residents are encouraged to purchase hazardous products in smaller quantities to avoid disposal of excess amounts. The types of materials targeted include solvents, pesticides, household cleaners, paints, lights containing mercury, and similar materials. In May 2024, the State of Maryland approved a new law to establish a statewide paint recycling program. The law establishes a network of paint drop-off sites throughout the state that residents can use at no cost to drop-off left over or unwanted paint.

4.4.4 Special Event Recycling

Organizations in Howard County that hold special events are required by state and county laws to provide recycling services at these events. Recycling is required at events that use a public street, site/facility or park; serves food and drink; and is expected to have 200 or more people in attendance. County staff provide guidance to event organizers on program establishment and operation. Event organizers are responsible for arranging recycling services either through a contracted hauler or by self-hauling recyclable materials to the Residents' Convenience Center. Event organizers must also report to the County the amount of trash and recyclable materials generated after each event.

4.5 RECYCLING

Recycling is an integral component of the County's solid waste management program and is required by Maryland law. The State has a mandated recycling goal of 35 percent for counties with populations greater the 150,000. In addition, the Maryland General Assembly established a voluntary 60 percent waste diversion goal, which is calculated by adding the recycling rate plus the maximum of five percent source reduction credits.

The County contracts for services including curbside collection, and processing and marketing of recyclable mixed paper, commingled containers, and yard trim. Costs to operate the system are paid from the Bureau of Environmental Services' operating budget. All yard trim and food scrap collection are taken to the Compost Facility at the ARL to be composted.

The County provides recycling opportunities at its Residents' Convenience Center located at the ARL. The recyclables collected at the center include those items collected curbside with the addition of textiles, shoes, waste oil, antifreeze, vehicle batteries, tires without rims, wood, yard trim, cooking oil, scrap metal, scrap propane tanks, scrap tires, and electronics waste.

4.5.1 Public Education

The County utilizes a diverse collection of media and community outreach approaches to promote recycling. Promotional and informational materials developed and circulated by the Recycling Division each year include the items accepted at the Residents' Convenience Center at that time. The County's comprehensive public education program has been effective at distributing recycling information but can be enhanced through continued participation.

The County conducted a public opinion survey to assess the adequacy of current services to inform preparation of this Plan. A total of 3,110 residents responded to the survey, reflecting a variety of demographics. A full list of the questions and survey results can be found in **Appendix E**. Participants had the opportunity to give feedback on their satisfaction with the County's solid waste program. **Exhibits 4-1, 4-2,** and **4-3** summarize residents' satisfaction with the County's solid waste and recycling program. Overall, over 90 percent of residents are satisfied or very satisfied with the current solid waste and recycling services. Recurring requests/concerns identified in the survey include:

- Expanding the "Feed the Green Bin" Program to more communities.
- Confusion over why select materials are not picked up by the hauler.
- Education about what plastics can be recycled and what needs to be thrown away.

Exhibit 4-1 Public Satisfaction with the County's Trash Collection Services

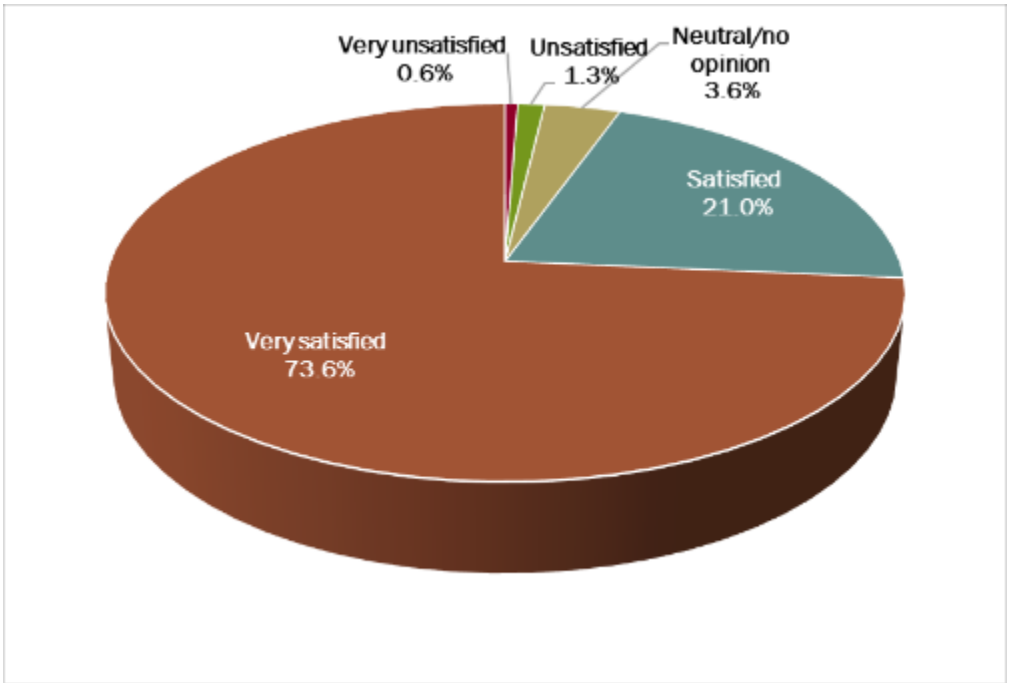


Exhibit 4-2 Public Satisfaction with the County's Recycling Collection Services

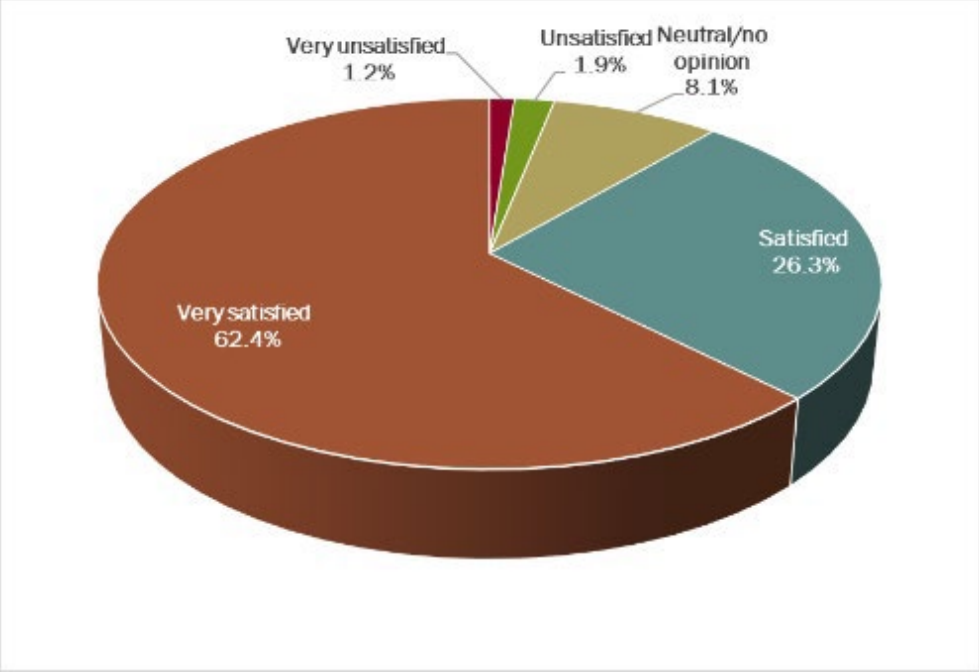
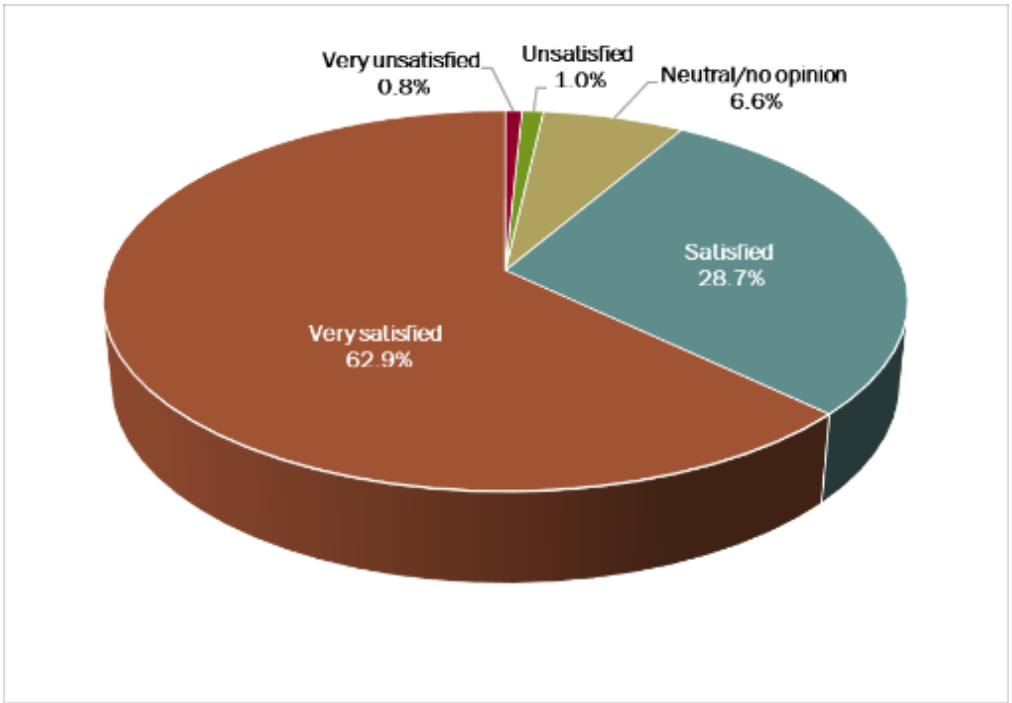


Exhibit 4-3 Overall Public Satisfaction with the County's Solid Waste and Recycling Services



As one of many member benefits, the Authority maintains a comprehensive database of recycling collection, processing, and end-market businesses throughout the State of Maryland. Authority staff regularly assist member jurisdictions in obtaining recycled tonnage information from businesses in the region. Authority staff have ongoing work to implement regional market development programs for member jurisdictions.

4.5.2 Environmentally Preferred Products

Howard County's procurement program promotes the purchase of Environmentally Preferred Products (EPP). The County's Office of Purchasing specifies a preference for EPP for recycled materials (asphalt, tires, paper), low or no volatile organic compound paint, non-toxic dyes, designated green certified cleaning products, low emission vehicles, to name of few.[19]

In FY 2023, 28.1 percent of all paper purchased contained recycled content. Excluding paper and furniture, County office supplies designated as "green" represented about 42 percent of office supply purchases in FY 2023. This was an increase of 13.2 percent from the previous fiscal year.

[19] Howard County Office of Purchasing Annual Report – FY 2023.
https://www.howardcountymd.gov/procurement-contract-administration/environmentally-preferred-products

4.5.3 Materials Recovery Facility

A MRF is designed to receive large quantities of commingled or single-stream recyclables, separate them by type, and prepare finished quantities for transportation to markets. The type of process and the equipment used depends on the specific recyclable materials and the collection method. Separation includes a combination of mechanical and manual processes.

Howard County contracts with a private firm for MRF services for the residential recyclables collected in the County. The contract is on a per-ton processing rate or rebate basis, with no minimum or maximum tonnage commitment other than the contractor receives all materials collected in the County from curbside collection and condominium collection. In the future the County may evaluate the feasibility of a publicly owned and operated processing facility.

Some County businesses contract separately for collection and processing of recyclable materials. Such recyclables from the commercial waste stream are typically delivered either to a MRF or directly to a recycling market.

The County's current approach using contracted services is flexible and can respond to an increase or decrease in processed quantities. Also, the County has the potential to add materials to expand the processing contractor's services, although the cost and feasibility of adding a specific material must be negotiated with the contractor prior to adding the new material to the collection program. The addition of materials to the curbside recycling program that increases costs for processing and marketing would require revising the budget. The County's practice has been to plan program changes prior to the budget cycle and implement approved changes in a new fiscal year. The County's MRF contractor has the flexibility to expand operating hours and use alternative or additional final markets when quantities delivered increase.

The County expects to continue to contract for MRF services during the planning period. However, consideration will be given to the implementation of any proposed regional facility if one is developed during the planning period.

4.5.4 Additional Recyclables

The County may recycle some additional materials like C&D debris, automobile bodies, and some scrap metal, but Maryland law and regulations state that these three (3) particular materials do not receive recycling credit towards the County's MRA goal.

The County will consider adding materials to the recycling program where collecting additional materials is compatible with existing collection systems and stable, long-term, cost-effective markets exist. It is desirable that added materials allow the use of current collection equipment and existing collection routes. The County will consider adding materials when they can be collected, processed, and marketed by its existing contractors without a net cost increase.

4.5.6 Latex Paint

Latex paint dropped off by County residents at the Residents' Convenience Center at the ARL is recycled through a private contractor. The contractor collects latex paint from the ARL and transports it to the contractor's facility for blending, repackaging, and marketing.

4.5.7 Electronics

All electronic waste collected at the Residents' Convenience Center is transported out of the County for recycling by a contractor. In 2023, 321 tons of electronics were recovered.

4.5.8 C&D Debris

Construction, demolition, and land clearing waste is disposed in both MSW and rubble landfills. C&D is a mixture of packaging, excess or trimmed material, and residue from construction activities. Demolition waste contains components of structures resulting from partial or complete demolition. Generators of either waste type often store the waste in open top, roll-off containers having 20 to 40 cubic yard capacity. C&D waste cannot be disposed of in land clearing landfills. C&D may be sent to processing facilities for at least partial recovery and recycling of select materials such as wood, metal, and wall board.

In 2022, Howard County generated approximately 69,500 tons of C&D debris, which is expected to increase to approximately 70,800 tons per year in 2025. Most C&D is disposed at private C&D and/or rubble landfills outside of Howard County. Some major C&D waste constituents can and are recycled, including gypsum wallboard, wood, and asphalt and concrete pavement.

C&D processing systems are often designed to address specific characteristics of the materials received in loads. Using a combination of manual and mechanical separation and processing, these facilities can recover significant portions of materials received and sell these materials to available markets. Residue remaining is disposed in permitted landfills.

Some facilities are designed to receive and process only wood waste in the form of pallets, fencing, and dimensioned lumber. These facilities usually do not accept treated or painted wood. A list of permitted Maryland C&D facilities that are processing C&D or wood waste is presented in **Appendix F.**

Existing C&D facility operators have consistently identified increased government purchases of recycled C&D products as an important way to improve the acceptance and economics of C&D recycling. The County and Authority can work with the Maryland Department of Transportation (MDOT), the Maryland Department of General Services (MDGS), builders and contractors to expand use of C&D products in government operations and projects, including road construction. The Authority is working on regional procurements to expand markets for C&D materials such as wood, drywall, carpet, insulation, and roofing shingles as part of a regional market development program. This effort would involve identifying sources of supply and markets, and researching new materials end uses.

4.5.9 Public Schools Recycling Plan

Article §9-1703 of the Annotated Code of Maryland requires a county recycling plan to address the collection, processing, marketing, and disposition of recyclable materials from public schools. Howard

County does not govern or make policy for the Howard County Public Schools System (HCPSS) or Howard Community College (HCC). Howard County does provide funding to HCPSS and HCC. The HCPSS's recycling website is Recycling Efforts – HCPSS. The HCC's website mentions recycling under their sustainability page, Recycling | Howard Community College (howardcc.edu).

4.5.10 Apartment and Condominium Recycling

Article §9-1711 of the Annotated Code of Maryland requires that recycling services be provided at all apartments and condominiums of 10 or more dwelling units (except in Ocean City MD). The law allows counties to enforce this law and to require reporting. Council Bill No. 2-2014 addresses the enforcement of this law and of the "apartment and condominium recycling plan" amended the County's solid waste management Plan.

4.5.11 Office Building Recycling

The State of Maryland code requires that office buildings that have 150,000 square feet or greater of office space must have a recycling program established. Each owner of an office building must provide:

- Containers for the collection of recyclable materials
- Removal and recycling of paper, cardboard, metal, and plastic materials placed in the recycling containers.

In accordance with the single-stream recycling program, Howard County maintains a list of all office buildings within the County of 150,000 square feet or greater. The list of impacted office buildings is updated annually.

Monitoring of recycling receptacles is carried out by the office building owners and/or tenants. Annually, the County's Recycling Division contacts affected office building owners or their management companies to identify the service provider and verify that recycling services are provided. County staff provide support for developing and implementing an office building recycling program.

4.5.12 Special Events Recycling

The County is required by §9-1703 (b) and (c) and §9-1712 of the Annotated Code of Maryland to develop a strategy for the collection and recycling of recyclable materials from special events. According to the law, a special event is defined as an event that includes the use of a public street, facility, or park; serves food or drink; and is expected to have 200 or more people in attendance. The law requires counties to include special event recycling in their recycling plan.

4.5.13 Increase Recovery Rate

As discussed earlier in this chapter, the County will continue to work to increase the recycling rate by expanding the collection of curbside food scraps county-wide and working to encourage either a public-private food digester or other food scrap recycling program for commercial food scraps. An expanded public education program could further increase recycling quantities.

4.6 WASTE PROCESSING AND DISPOSAL

Howard County will continue to provide processing and disposal capacity for residential waste and the portion of commercial waste currently received at the ARL. It is assumed that the practice of exporting commercial waste, as discussed in Chapter 3, will continue throughout the planning period, and the County anticipates that it will directly receive and dispose no more than 10 percent of the commercial waste generated at ARL.

The total amount of waste in place at the ARL is about 3.3 million tons. Currently, the total remaining permitted landfill capacity is about 4.1 million tons. Under the current Plan that minimizes disposal at the ARL and prioritizes waste export, the ARL has about 33 years of life remaining. These conditions are used as the basis for evaluating the adequacy of facility size or capacity share for each of the alternatives discussed below. Should circumstances arise that prevent the County from exporting solid waste, the life of the ARL would be significantly shortened.

The County relies primarily on waste export via the AJTS to manage waste collected and controlled directly by the County. Additional processing options are provided here to understand their feasibility for use during the planning period as a contingency should the need arise.

4.6.1 Waste-To-Energy

Waste-to-energy (WTE) facilities are designed to serve as a reliable disposal option while producing power. As in any combustion process, solid ash residue is produced. Bottom ash is formed by combusted material that exits at the bottom of the furnace chamber, while fly ash consists of ash and other solids captured from the boiler and air pollution control equipment. Most ash residue is shipped to a landfill for disposal. Maryland Law prohibits counting the recycling and reuse of ash from MSW incinerators and WTE facilities as Recycled Material. About 90 percent of the waste burned at this facility comes from the City of Baltimore and the County of Baltimore. Howard County has no intention of sending solid waste collected curbside or at our landfill to a WTE facility.

4.6.2 Waste Export

Howard County currently exports all its residential waste and a small quantity of commercial waste. In July 2022, the County entered into a Waste Disposal Agreement with the Authority to provide for the transfer of solid waste from the County to a private regional landfill located in King George County, Virginia. The agreement establishes Howard County's maximum annual disposal tonnage is 150,000 tons. There is no daily tonnage limit. Waste generated in the County is directly hauled to the AJTS in Anne Arundel County before being rail transported to the King George County Landfill in Virginia. Most of the residential and commercial waste received at the Alpha Ridge Landfill is also transported to the AJTS.

4.6.3 Mixed Solid Waste Composting

There are no in-county or regional solid waste facilities that manage solid waste composting operations. The County has no plans to initiate this type of operation during this planning period.

4.7 ALPHA RIDGE LANDFILL

Despite the environmental and public concerns associated with landfill operations, most waste management systems require landfill disposal. Recycling, composting, and material separation and removal can divert significant portions of the waste stream from final disposal, but not all materials are compatible with processing methods. Combustion of solid waste significantly reduces waste volumes, but these facilities must dispose of non-recycled ash residuals.

Less than ten (10) percent of the waste generated in Howard County is landfilled at the ARL. A limited amount of residential and commercial waste received at the ARL, which is not suitable for waste export, is landfilled on site. Most of the waste received at the ARL is exported.

It is Howard County's objective to minimize the amount of waste disposed of at the ARL. Disposal of substantial waste quantities at this facility will be limited to short time periods during which other preferred disposal options are unavailable. As noted in Chapter 3, the ARL is the County's back up facility for waste disposal as identified in the County's Contingency Plan.

4.7.1 Landfill Design

From 1981, when the ARL opened, to 1993, waste was placed in an unlined cell. A 38-acre cell constructed with a double synthetic liner and leachate collection system was put into operation in January 1993 and the unlined cell was closed. The ARL has permitted space available on-site for two additional lined 38-acre cells, or for a larger number of smaller cells.

The existing liner system cross-section from top to bottom includes the following:

- Six (6) inches coarse sand and five (5) oz. geotextile
- 12 inches pea gravel
- 50 mil High Density Polyethylene (HDPE) primary liner
- Geonet
- 40 mil HDPE secondary liner
- 24 inches of prepared subgrade

Leachate that drains from the geonet is pumped via force main to the public sewerage system and, ultimately, to the LPWRP for treatment.
The cell design exceeds federal design requirements specified in 40 CFR Part 258. The liner design for future cells, as well as the closure of completed cells, will have to comply with state regulations (COMAR 26.04.07) and with the revised Federal Resource Conservation and Recovery Act Subtitle D requirements for leachate collection and removal (LCR).

4.7.2 Landfill Life

There are approximately 779,000 cubic yards of space available in the active cell at the ARL as of 2021. Under the current practice of waste export, there is an estimated 33 years of landfill life at this site. In the event of the preferred waste disposal method becoming unavailable, the landfill has adequate existing capacity in the currently active lined cell to provide waste disposal needs for approximately three years. This projection of available cell life assumes the disposal of approximately 124,000 tons per year at the compacted density of 1,100 pounds per cubic yard. This is an adequate timeframe to arrange for the replacement of contracted waste disposal services. If it becomes apparent while arranging for replacement services that a longer time period will be required to finalize these arrangements, the County will utilize available land at the ARL to construct an additional cell.

4.7.3 Existing or Planned Expansion or Other Construction Projects

Since the last Solid Waste Management Plan was published in 2014, several major changes have taken place at the ARL. These changes include:

- Compost facility expansion
- Construction of a waste hauler trailer storage area
- Groundwater collection system expansion
- Construction of an equipment barn at the maintenance shop
- Maintenance shop overflow parking addition and site improvements
- Electronics pavilion, organics storage structure, and recycling storage shed additions
- Leachate storage tank and truck fill building improvements
- Weighing management software system improvements
- Commercial Permit booth addition
- Wood waste area erosion and sediment control improvements

With approval from MDE, several more changes are expected to happen in the next 10-year planning period. These changes include:

- Decommissioning of the existing groundwater treatment system
- Decommissioning of the existing flare system and replacement with biofilters
- Site grading and modifications to the gas collection system to address methane detection at the property line
- Compost Phase III
- Decommissioning of the existing landfill gas-to-energy generator
- Replacement of the existing scale house
- Expansion of the existing transfer station
- Construction of a new administration building

4.8 CONSTRUCTION, DEMOLITION, AND LAND CLEARING DEBRIS LANDFILL

County zoning regulations provide a specific description of waste types which may be disposed of in construction, demolition, and land clearing (CDL) debris landfills. CDL debris landfills are divided into two categories: land clearing debris landfills and rubble landfills. Land clearing debris landfills can receive land clearing debris only.

The County regulates CDL debris landfills under Section 126 of the zoning regulations. Requirements for a CDL debris landfill are specified in COMAR 26.04.07 and in County zoning regulations and include control of site access, control of litter, and evaluation of geology and hydrogeology.

4.8.1 Capacity

It is anticipated that most CDL debris generated in Howard County will be disposed by private haulers at private CDL debris landfills. While allowed by current zoning, no permitted CDL debris landfills currently exist in Howard County. The possibility exists that a private CDL debris landfill could be constructed in Howard County. However, the construction of a public CDL debris landfill is not anticipated during the planning period.

4.9 SPECIAL WASTE

Several categories of special waste are generated in the County. Management of these materials varies according to their nature and regulatory status. Some of the materials, such as sludge, tires, and white goods, are recycled. The County does not provide disposal or recycling services for most commercially generated special waste. Provisions in Maryland statues or regulations prevent certain materials from being disposed of at County facilities, such as controlled hazardous substances. Described below are those special wastes for which the County may need to alter, extend, or modify disposal or processing or may need to add to existing solid waste disposal or processing systems during the next ten years.

4.9.1 Wastewater Treatment Sludge and Septage Processing and Disposal

The County's LPWRP provides for treatment of wastewater generated in the portion of Howard County roughly bordered by Maryland Route 108 to the north, Maryland Route 176 to the east, the County's Metropolitan District boundary to the west and the border with Anne Arundel County to the south. Wastewater is carried to the LPWRP through 820 miles of gravity and force main sewer pipe.

Most of the western, rural, part of the County is served by septic tanks. The waste from these septic tanks is transported by truck to the LPWRP. The eastern portion of the County, including Ellicott City, Elkridge and Jessup are served by the Patapsco Wastewater Treatment Plant in Baltimore City. The primary and biological nutrient removal treatment processes located on the LPWRP site generate sludge. Pasteurized sludge is land applied but the County is also looking at alternative markets for the dried biosolids including soil blending operations. Sludge is transported to spreading sites by a contractor, who is responsible for permitting land application sites through MDE for Maryland sites and land applying sludge in accordance with those permits, based on detailed state regulations (COMAR 26.04.06). As a backup disposal method, if application sites or markets are not available, sludge may be delivered to a regional landfill in accordance with the landfill's operating permit. In 2023, all sludge produced was land-applied at various sites in the region except for a few truckloads (approximately 15-17 tons each). In 2023, the LPWRP generated 4,603 dry tons of treated sludge. In addition, it receives 4.9 million gallons per year of septage from private contractors.

All sewage sludge generated by the LPWRP is processed on site. No sludge is disposed of at ARL.

Anaerobic digesters and sludge dryers were added to the sludge treatment process which reduced (85 percent reduction by weight) the quantity of biosolids. The addition allowed the biosolids program to receive a "Class A" permit. Class A biosolids can be used as a fertilizer product, providing organic matter

soil while increasing crop yields and decreasing erosion.

Septage waste is managed in accordance with the County's septage management plan, titled "Management of Hauler Waste in Howard County." Septage waste may only be disposed of at permitted receiving facilities, which essentially limits acceptance to treatment plants. It is not anticipated that private sector facilities will be implemented to handle this waste. As a result, it is anticipated that all septage waste will be received at public treatment plants. The LPWRP facilities and contracted services will be adequate to handle the projected sludge and septage volumes produced during the planning period.

Howard County is also served by the Patapsco Wastewater Treatment Plant, which is managed by the Baltimore City Department of Public Works through its Bureau of Water and Wastewater. Both the LPWRP and the Patapsco Wastewater Treatment Plant have assigned pollution caps to meet the Chesapeake Bay Total Maximum Daily Loads (TMDLs). Both plants have undergone upgrades to Enhanced Nutrient Removal (ENRs). The LPWRP upgrade was completed in 2012, and the Patapsco upgrade was completed in 2016.

4.9.2 Asbestos

The County does not accept friable asbestos for disposal at the ARL. Residents desiring to dispose of asbestos must comply with COMAR Title 26, Chapter 21 regarding handling. The County may limit the quantity disposed of by each individual. The County receives very small quantities of non-friable asbestos and believes that since most asbestos is generated by commercial contractors, it is disposed in out-of-County landfills. Asbestos generation in the County in 2022 was estimated to be 44 tons. About three (3) tons of non-friable asbestos were received at the ARL in 2023.

Landfills will continue to be the primary disposal facilities for asbestos throughout the planning period. Based on the available landfill capacity there is adequate capacity for disposal of non-friable asbestos at the ARL during the planning period.

4.9.3 Household Hazardous Waste

The County operates the HHW collection facility at ARL. Residents may drop off CFLs and fluorescent tubes at the Alpha Ridge Residents' Convenience Center on the County's HHW collection days. In 2023, 194 tons of HHW were collected at the ARL. Hazardous waste generated by County agencies is collected quarterly and additional collection can be scheduled as needed. The Bureau of Environmental Services assists other agencies with scheduling, training, record keeping, and contractor selection.

4.9.4 Bulk Trash

Bulk trash collection is collected from residences through the curbside bulk trash collection program. It is also collected in open top roll-off containers on a bi-annual basis at condominiums in the County's collection program. The same truck that collects curbside garbage collects bulk trash at the same time. Certain items such as glass-topped tables are excluded from the curbside bulk trash collection program and must be self-hauled by residents, or a small hauler must be hired by the resident to move these items to the ARL or the AJTS.

4.9.5 Rigid Plastics

Small rigid plastic items such as landscaper's pots, small plastic toys are collected curbside at the same time as the curbside recycling collection using the regular recycling truck. The Howard County website provides information on what rigid plastics are acceptable. Large rigid plastic items such as coolers and buckets or totes must be brought to the ARL for recycling. Residents are encouraged through the County website to donate usable items instead of discarding them.

4.9.6 Wood Waste

Tree branches and other wood wastes received at the ARL are ground into primary and secondary mulch on-site. Wood grindings are used for composting processing. Self-hauled grass, leaves, and yard trim are considered Type 1 feedstocks and can be composted in the Aerated Static (ASP) system or through traditional windrow composting. The County owns and operates the wood grinding and composting operations. The composting facility at the ARL opened in 2013. As the "Feed the Green Bin" Program expands to more neighborhoods, more improvements are being made to the compost facility. Phase 2C, completed in the spring of 2024, includes a grinding building and a pumping station for contact water, which allows staff to reuse contact water in the composting process and further reduce the volume of contact water that requires treatment.

About one-to-two trucks of curbside collected food scraps and yard trim arrive at the compost facility each day from each TRZ. Based on historical data, the average drop-off is 21 tons per day with a maximum of 70 tons per day. Loaders, skid loaders, and other equipment are used to spread the material from the trucks to look for contaminants. Contaminants removed from the pile are treated as municipal solid waste and are taken to the Alpha Ridge Landfill Transfer Station. Currently, no out-of-county material is accepted at the compost facility, but the County is interested in possibly composting digestate from the new anaerobic digester facility in Jessup. The County uses best composting practices to achieve a good carbon to nitrogen ratio (C:N), as well as an optimal moisture content (50 to 60 percent). Contact water is collected by drainage systems and stored in a lagoon at the facility. The water is either used for material wetting or pumped into the ARL leachate holding tank which ultimately discharges to the sanitary sewer. Non-contact stormwater drains into the stormwater treatment system and does not require sanitary system disposal.

The ARL compost facility has an AC Composter System and a Covered Aerated Static Pile (CASP) system, both manufactured by Engineered Compost Systems of Seattle, Washington. A computer program monitors the temperature and air draw rate of both systems to maintain good composting conditions. After the temperature and aeration goals for composting are met, material is removed and allowed to cure for 30 to 60 days. The compost product must be tested quarterly or once every 20,000 tons of compost are generated. The product is sold to both wholesalers and to residents and contractors.

4.9.7 Food Scraps

In 2021, Maryland passed a law requiring supermarkets, convention centers, and other food generators that generate one (1) ton or more of food waste weekly to divert it from landfills by January 1, 2024. These facility types are required to divert food waste if there is an organic recycling facility within 30 miles and costs less than 10 percent more than current disposal fees.

Covered businesses may apply for a waiver from the requirements, up to one year[21], that must be submitted annually if no facility exists or costs remain prohibitive. A privately owned food scraps digester was constructed in Jessup, MD in 2021; however, most residential food scraps will continue to be composted with wood waste and yard trim at ARL.

4.10 EMERGENCY MATERIALS SPILL MANAGEMENT PROGRAM

This section describes the programs and procedures for responding to emergency spills or leakage of hazardous substances within the County. The Howard County Department of Fire and Rescue Services (HCDFRS) is responsible for responding to emergency spills or releases of hazardous substances. Consequently, HCDFRS responds to all reported instances of releases of hazardous substances and calls upon other county and state resources to assist them on an as-needed basis. The County Department of Public Works does not operate a separate program for responding to emergency spills or leakages of hazardous substances except at County facilities. HCDFRS has two documents that describe primary policy and procedures for responding to emergency hazardous substances spills.

4.10.1 Hazardous Waste Operations and Emergency Response

Emergency response to hazardous substances releases, commonly known as the Hazardous Materials Plan, is an emergency response plan for employees engaged in mitigating hazardous substance releases. The County is required to develop and implement this plan in accordance with applicable federal regulations, specifically 29 CFR 1910.120(q).

This document covers pre-incident planning, personnel training, use of personal protective equipment, incident classification, operational procedures, decontamination planning and clean-up waste disposal procedures.

4.10.2 Emergency Operations Plan

This plan is prepared by the County's Office of Emergency Management (OEM) which is within HCDFRS. The Emergency Operations Plan (EOP) sets forth policy and procedures for effectively managing a variety of hazard related emergencies (e.g., civil disorder, major power outages, natural disasters, terrorist event, etc.).

The intent of the EOP is to provide a coordinated and integrated framework that will enable the various local, state, federal, and private agencies in the County to:

- Mitigate the emergency condition
- Minimize human suffering and loss of life
- Contain property damage
- Return the community to a normal state as quickly as possible

A chain-of-command policy is set forth in the EOP to describe the responsibilities of the various personnel within HCDFRS.

[21] Waiver Application Form - Food Residuals Diversion Law (Dec 22).pdf (maryland.gov)

4.10.3 Program Implementation

Three general types of emergency hazardous substance releases could occur in the County.

1. Releases from public agencies and private companies that maintain hazardous material on-site.
2. Releases from vehicles on public roads.
3. Releases from facilities not normally having hazardous material on-site. For example, the inadvertent receipt and subsequent release of hazardous materials at an MRF.

HCDFRS handles all three types of releases in the same manner. Site-specific plans are updated as new reports are received each year.

When a hazardous substance release related to solid waste management is reported, HCDFRS dispatches a Special Operations Team (Special Ops). Special Ops consists of highly trained personnel in HCDFRS. They maintain dedicated response vehicles and a mobile command post used for response personnel when donning protective clothing and other gear at the spill site.

HCDFRS accomplishes four objectives when responding to hazardous substance emergencies in the following order of priority:

1. Ensure the safety of HCDFRS personnel responding to the emergency
2. Ensure the safety of civilians involved in or near the emergency
3. Contain the hazard and stop further contamination
4. Assure that recovery efforts are implemented

In cases where a significant quantity of hazardous materials is expected to be recovered during the response, HCDFRS notifies MDE. Once the immediate danger from a hazardous release has been mitigated, responsibility for the release site is relinquished to MDE.

Specific to solid waste management, HCDFRS maintains open lines of communication with the County Department of Public Works (DPW). HCDFRS seeks review and comments on the adequacy of its Emergency Operations Plan (EOP) from the DPW and other County agencies on a routine basis. A DPW representative is a member of the Local Emergency Planning Committee (LEPC). Given the demonstrated adequacy of the existing emergency hazardous spill response program, there is no need to implement a separate, dedicated program for County solid waste management facilities.

4.11 SITING FACILITIES AND CONSTRAINTS

One of the largest obstacles to the development of new facilities is siting. Municipalities face complex political, social, economic, and environmental concerns posed by citizens and adjacent land users. In addition, compliance must be attained with a myriad of federal, state, and local laws and regulations.

To provide for the adequacy of solid waste management facilities to serve Howard County's needs, local master plans and related regulations must provide for the siting and operation of these facilities. In addition to this Plan, the County Master Plan for Water and Sewerage and HoCo by Design impact the implementation of solid waste management systems in Howard County. HoCo by Design presents County policies for land use, transportation, and growth management for a 20-year planning period. It also guides land use in the County by describing land use categories and specifying land use locations. Wastewater

sludge management and disposal is addressed in the County's Master Plan for Water and Sewerage.

The zoning districts described in Chapter 2 accommodate a wide range of solid waste management facilities including those for recycling, waste processing, and waste disposal. In addition, zoning regulations specify operational requirements and constraints applicable to the various types of solid waste facilities addressed in this Plan. Of note, a Solid Waste Overlay District (District) provides a mechanism for solid waste processing facilities to locate in Howard County.

This District was also created to encourage facilities to reuse and recycle solid waste. Recognizing that changes in technology result in the creation of new approaches to solid waste management, the District regulations do not attempt to identify all specific types of solid waste processing which could be proposed for inclusion in the District. The District generally permits processing facilities for non-hazardous solid waste which are not covered elsewhere in the zoning regulations, while requiring detailed review of each proposed facility to evaluate its land use impacts and its potential contribution to the County's solid waste management system.

Siting efforts for solid waste facilities face additional obstacles due to the stigma associated with managing waste. Neighbors want assurance that a proposed facility will not adversely impact their property values or immediate environment. Where there are only a few such facilities in a region to point to as references, those available come under scrutiny when a similar facility is proposed elsewhere. Problems with existing solid waste facilities, whether perceived or real, negatively impact proposed facility siting.

Implementation of a solid waste facility hinges on the successful completion of the siting effort. Should siting not be successful, the project would not be implemented, regardless of its ability to meet solid waste management needs.

The process for identifying and/or siting solid waste facilities depends on whether the facility is being proposed by the County or by a private developer. Private developers are required to comply with the documentation and review procedures specified in the County zoning regulations that are a part of the

County's site development plan review process. The developer of a private facility must petition for inclusion of a facility in the Plan. Publicly owned facilities are not required to be in a Solid Waste Overlay District.

The siting of a new facility or expansion of an existing one must consider siting constraints prescribed by Maryland regulations including topography, soil, underlying geology, planned land use, and other federal or local laws.

A number of these factors are oriented toward facilities that are highly land dependent, including solid waste and C&D landfills. For other facilities, these factors may have a minimal impact. Below is a general discussion of factors impacting facility siting.

4.11.1 Topography

Howard County lies primarily in the Piedmont Plateau with a small portion along the southeastern border in the Atlantic Coastal Plain. The gently rolling terrain and soil characteristics throughout the middle and western parts of the County provide suitable areas for agricultural uses. Ground elevation varies from a low point of 20 feet in the east to as high as 875 feet in the west.

Landfill sites generally are in broad valleys, flat plateau areas, and areas which do not have steep slopes. Land with slopes greater than 15 percent generally are not considered acceptable for landfills due to excessive site grading required to develop large landfill cells. Other waste management facilities are not as constrained by the slope of the land; however, cost factors associated with site work must be considered.

Low-lying areas along rivers and waterways may be regulated by federal, state, and local laws due to the presence of non-tidal wetlands.

4.11.2 Soils

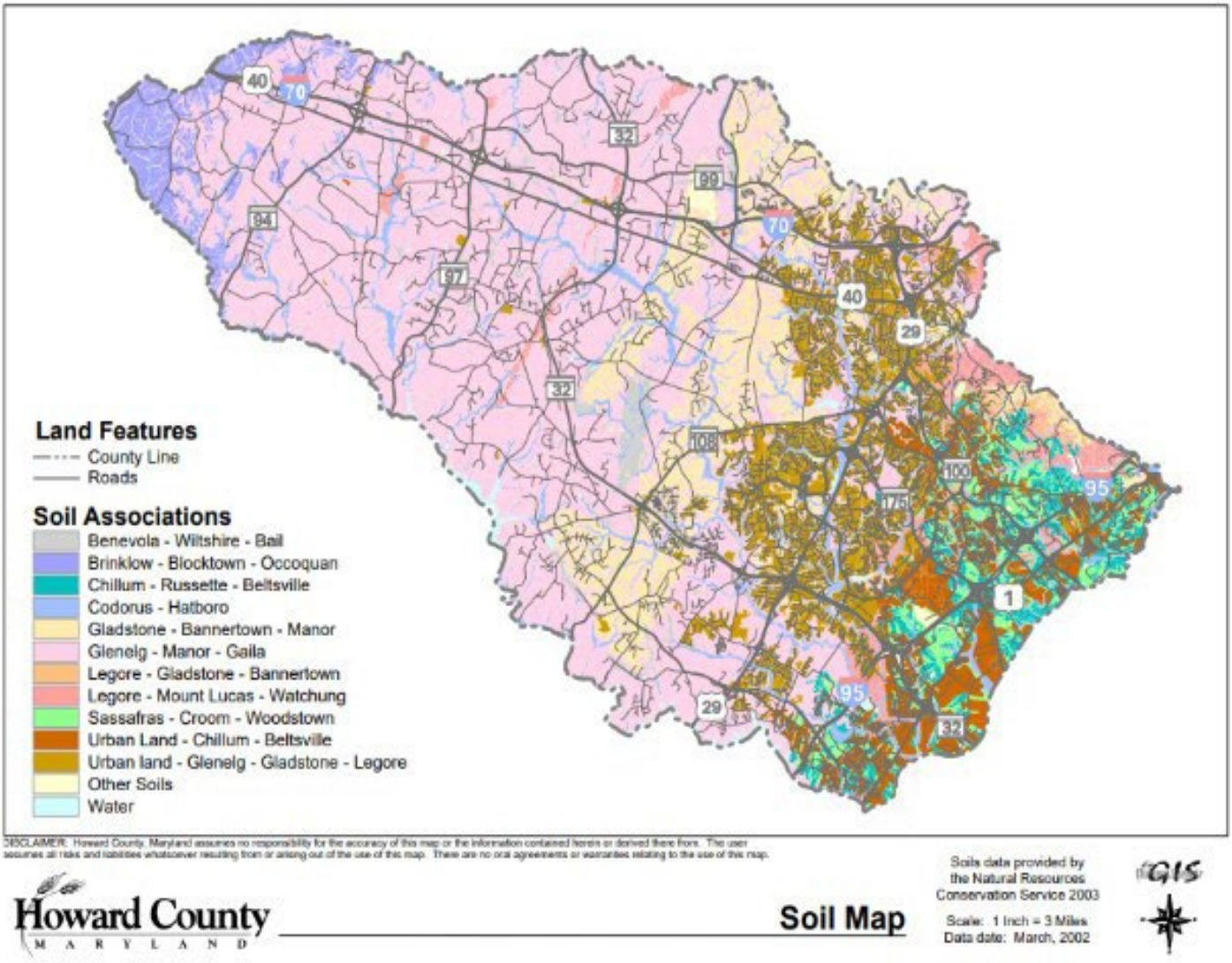
Howard County is classified into eight (8) primary soil associations. **Exhibit 4-5** is a generalized soil map of the County that illustrates the location and extent of these soil associations. A soil association is an area that has a distinctive pattern of soils with similar characteristics. It normally consists of one or more major

soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern. An evaluation of soil characteristics shows that about 85 percent of Howard County consists of well drained and excessively drained soils. About 10 percent of the County has somewhat poorly drained soils and only five (5) percent has poorly drained soils. Approximately 65 percent of the soils are well suited for cultivation.

Unconsolidated soils throughout the County are generally too porous to meet MDE design standards for a MSW landfill liner and will require excavation and compaction to ensure adherence with liner permeability requirements. The properties of the soils on which a landfill is sited should be considered in planning, design, construction, and closure. Soil characteristics such as soil texture, erodibility, load-bearing capacity, resistance to slide, permeability, water table elevation and quantity should be addressed during the site selection process.

Impermeable soils are desirable for the base of a landfill; however, landfill operations require a loamy or silty soil which is easily spread and compacted for cover material. Soil types suitable for other waste management facilities are those which can provide adequate support for buildings, structures, or concrete pads.

Exhibit 4-5 Howard County Soil Map



4.11.3 Geologic Conditions/Aquifer Characteristics

Generally, Howard County is underlain by several crystalline rock formations. Along the eastern edge of the County, from Elkridge to Laurel, the crystalline rock is overlaid by a northwestern outcrop area of the Patuxent Formation. Groundwater supplies are stored in, and travel through, a network of fine cracks and fissures in the bedrock aquifer, the ability to locate and tap ground water supplies may vary significantly with well location.

Groundwater yields are found to vary somewhat with geologic formation and topographic position. Because of variations in lithology, metamorphic grade and structure, the water yielding capacity of the crystalline rock underlying the study area varies from an expected low of 5.6 gallons per minute (gpm) to a maximum of 13.9 gpm. Topographic position (draw, valley, upland, valley side, valley flat, hillside, and hilltop) is also an important factor affecting yields. Wells drilled in either a valley or a valley flat have the highest yield potential while hilltop sites have the lowest average yield. The overall quality of ground water flowing through crystalline rock in the study area is good to excellent although its soft, acidic nature can cause corrosion.

Recharge of the aquifer occurs primarily through the infiltration of rain through surface soils and into the bedrock. Ground water is discharged naturally through streams and springs, or through wells.

Landfills can be designed to provide an engineered liner system which will protect ground water quality for most geologic conditions. However, it is prudent to avoid geologic areas where ground water contamination could spread rapidly if the liner system is breached by leachate flows. For example, locating landfill facilities in areas underlain by the Cockeysville Marble formation should be avoided.

From a geological perspective, other solid waste facilities can be in geologic areas where foundation design can accommodate site conditions.

4.11.4 Location

Facility siting requires consideration of technical, economic, legal, and political issues. Economic and technical concerns are addressed in this Plan. County land use policies are reflected in HoCo by Design and in the Howard County Zoning Regulations and dictate the allowable locations of solid waste management facilities. Applicable zoning regulations are described in Chapter 2.

4.11.5 Wetlands

Areas of non-tidal wetlands are present in the County. Wetland areas are generally considered unsuitable for siting waste management facilities. However, a site-specific study is required to establish the exact locations of wetlands within a potential site for a solid waste management facility and the impacts which will result. Wetland impacts which cannot be reasonably avoided may result in the need to provide for mitigation in compliance with MDE regulations.

4.11.6 Surface Waters/Floodplains

Surface waters are not available for development by Howard County as public water supply sources since the larger streams have already been developed by others to a high degree. The major surface waters in

Howard County includes the Patuxent River, the Middle and Little Patuxent Rivers, Dorsey Run, Deep Run, and the Patapsco River.

Existing reservoirs are required to discharge sufficient flow to maintain downstream aquatic life in accordance with reservoir discharge permits issued by MDE. The Middle and Little Patuxent Rivers and associated tributaries are used to a small extent by several manufacturers and institutions in Howard County. Fort Meade also withdraws water from the Little Patuxent River downstream from the Howard County line. It is expected that the Middle and Little Patuxent River and associated tributaries will be used for recreational purposes. The County has no plans to develop these sources as a potable water supply beyond the present limited industrial use. Three lakes have also been constructed in Columbia in the Little Patuxent Basin for recreational use.

Dorsey Run does not offer the potential to supply significant quantities of water for potable or industrial use in Howard County. Likewise, the County has no plans for developing a potable supply in the Deep Run watershed.

The Patapsco River is the only water course which has a potential for contributing to the public water supply in Howard County. However, natural flow alteration by the Liberty Reservoir; and withdrawals by numerous industries, institutions, and towns limit this potential.

Siting of future solid waste facilities must consider the potential impact on surface waters to ensure no adverse impact on potable water supplies or water quality to the streams. Likewise, the location of solid waste facilities within the 100-year flood plains of County surface waters is not permissible. Minor encroachments will be considered on a case-by-case basis in accordance with county and state review procedures and regulations.

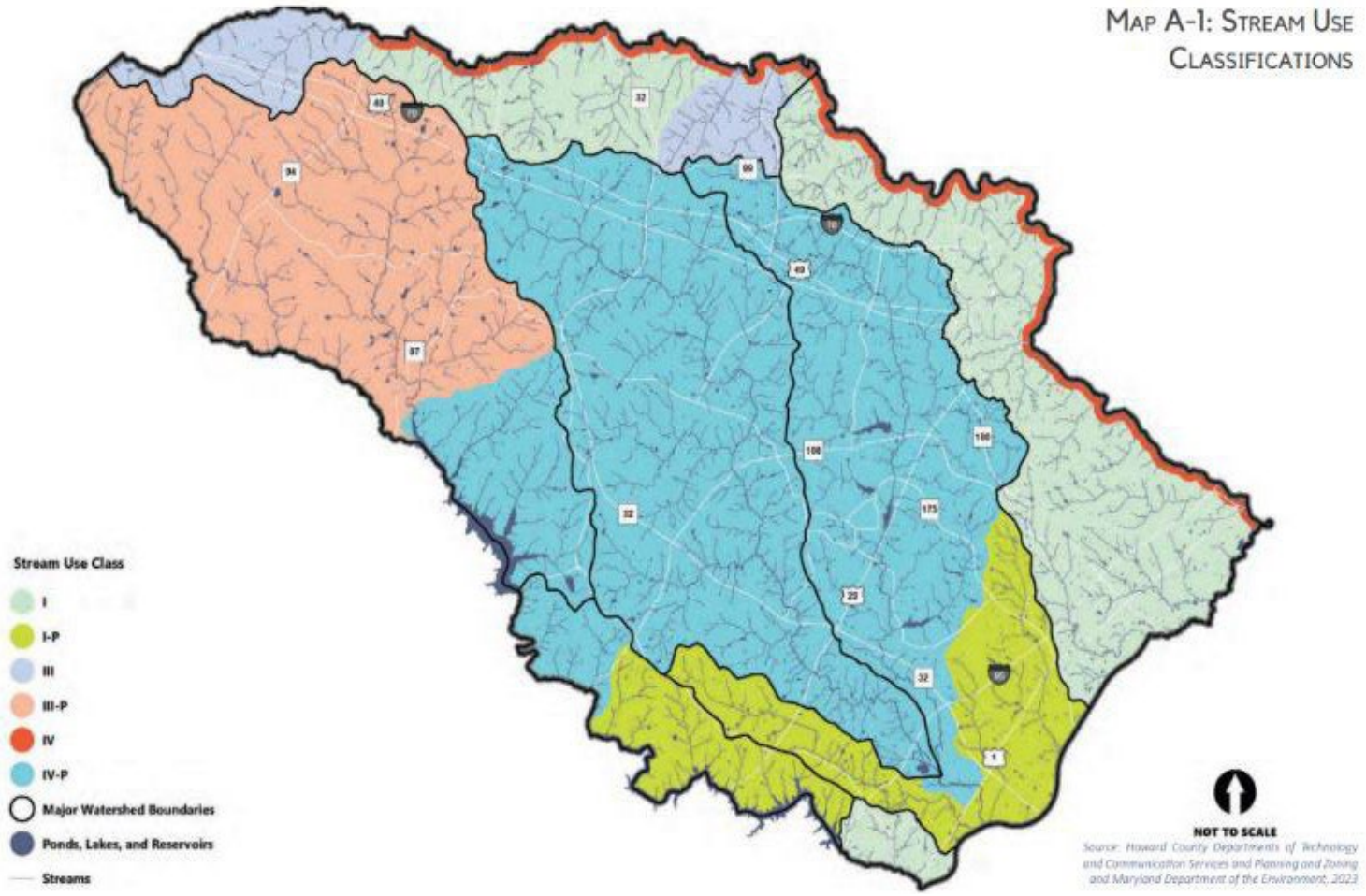
4.11.7 Water Quality

Individual surface waters in Howard County are assigned water use designations by MDE. Designated uses are based upon state regulations (COMAR 26.08.01). Each use is associated with specific enforceable water quality standards for such parameters as dissolved oxygen, pH, and turbidity. Uses applicable to Howard County are summarized in **Table 4-1**. Waters within the County are designated in the HoCo by Design plan and included in **Exhibit 4-6**. This information can be used to assess water quality protection requirements in the vicinity of proposed solid waste facilities.

Table 4-1 Surface Water Usage Designations in Maryland

Use Designation	Description
I	Water contact recreation and protection of nontidal warm water aquatic life.
I-P	Public water supply, water contact recreation, and protection of aquatic life.
III	Nontidal cold water (Natural trout waters).
III-P	Nontidal cold water and public water supply.
IV	Recreational trout waters.
IV-P	Public water supply and recreational trout waters.

Exhibit 4-6 Watershed Classification Map



4.11.8 Incompatible Land Uses/Long Term Growth

HoCo by Design and the Howard County Zoning Regulations are written to ensure that solid waste facilities generally are located in suitable areas to avoid adverse impacts on adjacent land uses and to ensure compatibility with long term growth patterns. The zoning regulations further define specific site development requirements, such as setbacks and buffers, and operational requirements, such as vehicle traffic controls, established to minimize impacts on neighboring development. Applicable zoning regulations are discussed further in Chapter 2. Of more specific note, the U.S. Department of Transportation, Federal Aviation Administration (FAA) Advisory Circular No. 150/5200-33 provides guidelines regarding the construction of facilities that may attract certain types of wildlife (especially birds)[22]. The guidelines recommend that:

- Waste processing and disposal facilities should not be located within 10,000 feet of any runway end (existing or proposed) to be used by a turbine-powered aircraft.
- Waste processing and disposal facilities should not be located within 5,000 feet of a runway end used only by piston-powered aircraft.
- Compliance with federal statutory requirements regarding the separation of landfills and airports that landfills may not be located within a six-mile radius of a public airport.

State law (Section 9-225, Environment Article, Annotated Code of Maryland) prohibits the location of any landfill within a one-half mile radius of a hospital.

4.11.9 Areas of Critical State Concern

At present, no areas in Howard County have been designated in conjunction with the Department of State Planning as Areas of Critical State Concern.

4.12 MEANS OF APPROVING NEW SOLID WASTE FACILITIES

Prior to development and submission of plans and documents for consideration as part of the County's site development plan review process, a site selection process would be undertaken to identify potentially viable sites for the proposed facility. The generalized site selection steps, which could be modified to best accommodate site selection for a specific facility, are described in the following sections.

4.12.1 Establish Facility Requirement/Constraints

The initial step in identifying a site for a public solid waste facility would be to identify the criteria and constraints which will define a suitable site. For example, siting criteria such as site size, access to roads or other forms of transportation, geology, slopes, proximity of public utilities, buffer needs, distance requirements from incompatible facilities and land uses, zoning requirements and regulatory/legal requirements may be applicable. Establishing applicable constraints and requirements may require

[22] https://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.current/documentNumber/150_5200-34

meetings with local and State regulatory agencies. Defined constraints and requirements will vary depending upon the type of facility proposed and must be developed on a case-by-case basis.

4.12.2 Collect Baseline Information

Once the requirements and constraints applicable to the facility under study have been identified, it is necessary to compile information related to the area or properties under consideration for location of the proposed facility. Pertinent information may include previous technical studies and reports related to the facility, land use and zoning maps, existing and vacant land use inventory, aerial topography, wetlands delineation, and flood plain maps. As part of the compilation effort, it is anticipated that maps and other visual aids would be prepared for use in the subsequent screening effort.

4.12.3 Preliminary Screening

The requirements and constraints applicable to the proposed facility must be compared to the information compiled for the areas where the facility may be potentially located. Areas or properties that are not compatible with facility needs would be eliminated from further consideration. Conversely, areas or properties that are compatible with facility needs would be identified and retained for further evaluation.

4.12.4 Public Participation

After completion of the preliminary screening, areas/properties which have been judged suitable for the facility will be reviewed with impacted citizen groups, business organizations, and other groups which may have an interest in a specific facility. Input obtained through public meetings, and workshops as appropriate, will be considered in subsequent site evaluation.

4.12.5 Site Ranking

Prior to this step, sites which are incompatible with facility requirements have been eliminated from consideration. As a result, remaining sites can be ranked considering both qualitative and quantitative factors such as buffers, easements, wetland impacts, water quality impacts, impact on endangered species habitat, archeological/historical site impacts, accessibility, distance from service areas, and topography. It is anticipated that sites will be ranked assessing constraints, which were not previously considered, of a magnitude which would disqualify the site from consideration. The site ranking will establish a relative comparison of the superiority of sites for the proposed facility. The factors considered in establishing the ranking will depend upon the type of facility. Superior sites will be identified as preferred sites to be evaluated in greater detail. Additional public meetings may be scheduled at this time to review preferred site selections with the public and interested groups.

4.12.6 Final Site Ranking

Prior to final site selection, engineering and environmental studies will be conducted to ensure that the preferred sites will meet requirements for permitting (if necessary) by MDE. Final site selection will be made working with the County Executive and the County Council.

4.12.7 Plans Preparation/Permitting

Once a facility site has been selected, preparation of a site development plan and engineering documents

will be initiated. The site development plan review and approval process is essentially the same as that described below for private facilities. Solid waste management facilities may require issuance of a Refuse Disposal Permit by MDE. The permitting process, which may be multi-phased, varies depending upon the type of facility being permitted. The permitting process and submission requirements are detailed in State regulations (COMAR 26.04.07). Section 9-210(a) of the Environment Article, Annotated Code of Maryland, prohibits MDE from issuing a Refuse Disposal Permit until a county has provided, after being notified by MDE in writing of the Department's preliminary Phase I technical review of a permit application, a written statement that the proposed facility meets all applicable land use and zoning requirements and is in conformity with the Plan.

4.13 FACILITY SITING AND ZONING

Solid waste management facilities may be proposed for locations in Howard County at any time by private parties. As noted previously, such facilities must be incorporated into the Plan before site development plan approval and, where applicable, must obtain a Refuse Disposal Permit from MDE. As noted in Chapter 2, Section 7, County zoning regulations stipulate that solid waste facilities, depending upon type, may be allowed in a given zoning district as a matter of right. Other solid waste facilities require the developer to obtain conditional use approval by the County Hearing Examiner. Still other solid waste facilities, where the proposed facility is to be located on land zoned M-1 or M-2, may need to have the property designated as a Solid Waste Overlay District. The detailed zoning requirements for solid waste facilities in included in Section 100 for the County Code.

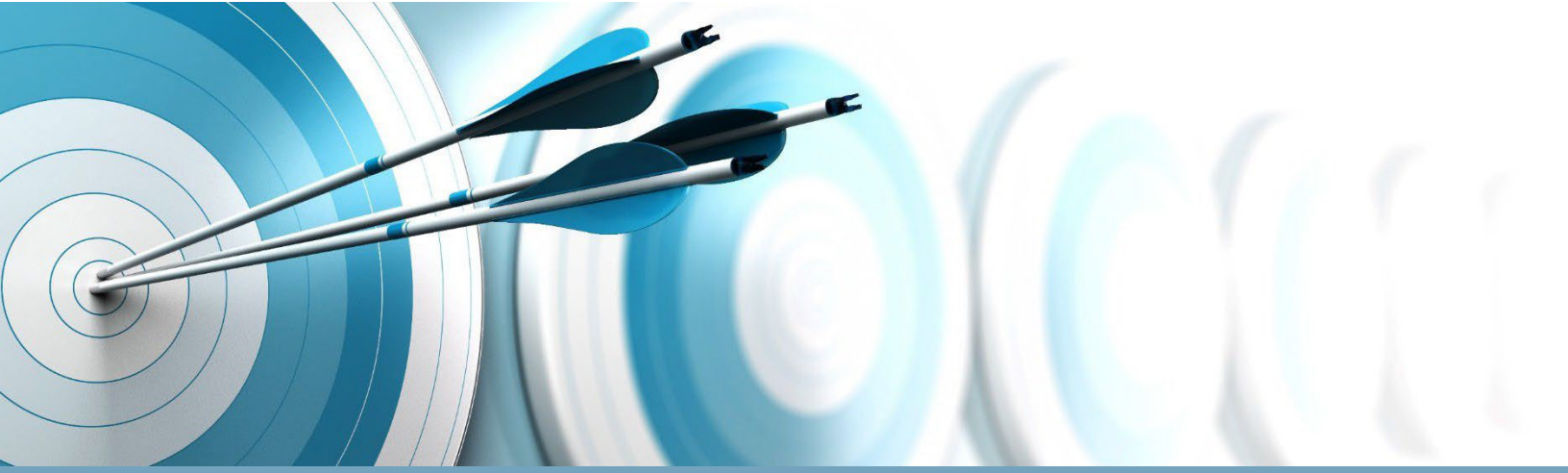
4.14 WASTE FLOW CONTROL

Flow control refers to the legal requirement for waste collection firms to deliver waste to one or more public facilities. County or municipal governments operating a waste processing facility or landfill that generates revenue exclusively by tipping fees have in the past enacted flow control ordinances. Flow control can help a public facility receive guaranteed revenues to sustain operations to help a government entity meet its statutory obligations to manage waste.

Waste is collected either by the municipal collection system or by private firms under contract to the city or county. Howard County uses the contracting approach for residential waste. Waste collected from businesses and institutions and disposed of by private firms usually is the uncontrollable portion of the solid waste stream, as it is in Howard County.

For Maryland, the presence of numerous privately operated landfills in neighboring states with available capacity now and for future years promotes the export of uncontrolled waste to these facilities by private firms. The County directs firms under contract for residential waste collection to a disposal facility, which is contracted for separately by the County. Contracted collection firms are not charged a tipping fee at the contracted disposal facility and have no incentive to transport residential waste to another location.

Howard County received virtually all uncontrollable (commercial) waste generated in the County when it was economically attractive for private collection firms to use ARL. Commercial waste quantities received at the ARL diminished to the current level of less than ten percent of the uncontrollable waste generated in the County as the tipping fee has increased. The County has not historically taken steps to control this waste stream through legislation or other forms of regulatory control, nor does it plan to do so over this planning period.



5.0 ACTION PLAN

5.1 INTRODUCTION

The Howard County Solid Waste Management Plan (2025-2034) is a planning document for the County, and is coordinated with the general plan, HoCo by Design. This is a dynamic document which may be amended from time to time as necessary to meet changing requirements for an integrated solid waste management program that meets the needs of the community, as well as the requirements of the State of Maryland. As required by COMAR 26.03.03, this Plan will be reviewed at least once every three (3) years and updated if necessary.

The action plan presented in this chapter responds to the County's needs for managing the various types and quantities of waste generated and provides for system components that are technically and economically feasible for the County. As presented in previous chapters, the County manages most of the residential waste generated in the County, but less than 10 percent of the MSW generated by commercial establishments, apartments, industry, and institutional facilities.

This chapter presents the Plan of action for Howard County's integrated solid waste management system and components that are to be used during the planning period ending in 2034. Public and private programs and facilities for source reduction, recycling, processing, and disposal are addressed as part of the County's solid waste management strategy. Other components addressed include contingency planning and funding mechanisms.

Flexibility is incorporated into the implementation process as the County can respond to developments and changes in materials markets, technology, private sector services, and opportunities for regional cooperation. The County is open to considering new approaches to solid waste management in the future. This Plan conforms to the County's land use plan and to HoCo by Design.

5.2 CHANGES SINCE THE 2014 PLAN

A number of changes have occurred in Howard County since the 2014 Solid Waste Management Plan, which are reflected in this updated Plan.

5.2.1 Food Scraps Recovery

The County's food scraps composting program known as "Feed the Green Bin Program," has grown over the last 10 years. In 2022 over 36,000 eligible households have signed up to participate in the curbside

collection of food. Additionally, several County facilities and schools within HCPSS participate in the program as well. The collected food scraps are transported to the ARL where they are turned into a soil amendment at the compost facility. Howard County reported diverting 400 tons of food scraps from the landfill in 2023.

5.2.2 Alpha Ridge Landfill Tonnage

Waste generated in the County is directly hauled to the AJTS in Anne Arundel County before being transported to the King George County Landfill in Virginia. Most of the residential and commercial waste received at ARL is transported to the AJTS. In 2022, only 1,600 tons of waste were disposed of at the ARL.

The current Waste Disposal Agreement has a maximum term which will end on June 30, 2033. A new long-term waste transfer and disposal alternative must be in place by that time. Based on the current waste disposal practice of exporting most of the MSW generated in the County, the ARL has an estimated 33 years of disposal capacity available. If all waste generated in the County is disposed of at ARL, it is estimated there are only about three (3) years of available capacity.

5.2.3 State Laws Affecting this Plan

- **Maryland Resource Recovery Plan** (Executive Order 01.01.2017.13) - The order established a sustainable materials management policy for the state to reaffirm its commitment to waste reduction and recycling. This order also required MDE to establish ambitious but achievable goals which were developed and published in April 2019 that includes the following:

    a. Capture and make optimal use of recovered resources, including raw materials, water, energy, and nutrients.
    b. Work towards a system of materials management that is both environmentally and economically sustainable in the long term.
    c. Minimize the environmental impacts of materials management over their entire life cycles, including from product design to production, consumption, and end-of-life management.
    d. Conserve and extend existing in-State disposal capacity through source reduction, reuse, and recycling.

    The full executive order is available at https://mde.maryland.gov/programs/LAND/RecyclingandOperationsprogram/Documents/EO-01.01.2017.13.pdf.

    MDE's goal in response to the order is available at https://mde.maryland.gov/programs/land/RecyclingandOperationsprogram/Documents/EO%20recommendations.pdf.

- **Food Residual Diversion** - In 2021, House Bill 264 was passed requiring generators of large amounts of food residuals to separate and divert it from landfill disposal. These requirements only apply to businesses that produce a certain amount of food residuals and are within a 30-mile radius of an organics recycling facility. The law went into effect on January 1, 2023, for a business who generates at least two (2) tons of food residuals each week. Generators of at

least one (1) ton of food residuals were subject to the ruling beginning January 1, 2024.

- **Altered Definition of "Recyclable Materials"** – In 2021, House bill 280 amended §9-1701 by altering the definition of "recyclable materials" to exclude incinerator ash. This bill also banned counties from using a resource recovery facility to meet five (5) percent of the waste reduction required in the County's recycling plan.

- **Recycling Markets** – In 2021, §9-1702 was amended to include a provision requiring the Office of Recycling in the Department of the Environment to promote the development of markets for recycled materials in the state. It also requires MDE to identify businesses in the state that use recycled materials and provide annual updates beginning with the 2022 Maryland Solid Waste Management and Diversion Report.

- **Onsite Organics Recycling** – In 2021, House Bill 248 prohibited condominiums or homeowners' associations from restricting a unit owner from contracting with a private entity to collect organic waste for composting. The Maryland Code addressing this requirement is Section 11-111.5 of the Real Property Article, Annotated Code of Maryland.

5.3 MEETING THE GOALS AND OBJECTIVES

Howard County will meet the goal of providing for environmentally sound and cost-effective solid waste management by continuing to expand programs for solid waste reduction, reuse, and recycling, and organics diversion.

The County will ensure that reliable options are available for solid waste processing and disposal that allow sufficient lead time for planning and construction of a new cell at the ARL, if needed, or other new facilities, or for instituting new programs.

5.3.1 Increase Source Reduction and Reuse

This will be accomplished by building upon the existing public education and outreach programs to promote solid waste reduction and reuse. The goal is to further reduce solid waste generation in the County.

5.3.2 Increase Recycling

Recycling programs may be expanded to include additional materials as technologies and markets become available. The County will encourage activities that divert waste from disposal and promote school recycling. In addition, the County will support recycling initiatives at apartment and office buildings as prioritized by action in the Maryland legislature.

5.3.3 Increase Organics Diversion

The County has continued to expand food scraps collection to more households and will continue to expand the program as resources and material processing capacity become available. The composting center at the ARL is set to expand to manage additional capacity. The County is also pursuing a partnership

with the anaerobic digester facility in Jessup. The anaerobic digester digestate could make an important addition to the compost produced at the ARL.

The County does not encourage the disposal of food scraps using garbage disposals. The costs associated with treating food scraps at the County's LPWRP is more than the costs for landfilling. The new BNR system at the LPWRP is further strained by additional loading caused by using garbage disposals. Other than preventing food scraps generation at the source or the donation of food for human or animal feed, composting is the most environmentally responsible way to manage food scraps according to the USEPA[23]. Home composting is considered to be the best and lowest cost option.

During the planning period, yard trim/food scraps will continue to be collected for composting with expansion of the program as capacity at the composting facility becomes available. The residential food scraps and yard trim are collected in lidded carts and then delivered to the County's compost facility.

5.3.4 Solid Waste Disposal and Future Landfill Capacity

Howard County plans to use the annual option to extend its current contract for solid waste export until at least 2033, as long as this is the most cost-effective solution. If necessary, landfill bans of targeted material may be considered. An expansion of the existing ARL transfer station may occur within the next 10-year planning period.

5.3.5 Expand Education and Outreach

Throughout the 10-year planning period, the County will expand its public education and outreach programs to residents, businesses, institutions, and schools. The County maintains a website at Trash & Recycling | Howard County (howardcountymd.gov) with extensive solid waste and recycling information.

5.4 REGIONAL COORDINATION

As several regional jurisdictions have procured long-term disposal capacity, a new regional waste disposal procurement effort has not been necessary to date. The County anticipates continuing active participation with the Authority to seek regional options for solid waste management. This will help facilitate regional solutions for environmentally sound and cost-effective solid waste management when necessary and appropriate.

5.5 RECYCLING PLAN

This Plan integrates the County's recycling and waste reduction program into the overall solid waste management strategy. Howard County's recycling system includes four major elements:

1. Comprehensive collection of residential recyclables, yard trim, and food scraps
2. Collection of a variety of other wastes for recycling such as used motor oil, antifreeze, wood waste, electronics, carpet, textiles, and others
3. Processing and marketing of collected materials
4. A public education and promotion program

[23] Wasted Food Scale | US EPA

Recycling, waste reduction, and waste collection/disposal programs included in the Plan complement each other and are designed to provide a comprehensive approach to managing the County's waste stream.

Howard County has been successful in exceeding the State's minimum recycling goal of 35 percent. Meeting this goal is dependent upon increased participation in the solid waste diversion system by all waste generating sectors.

In the commercial sector, the recycling program includes a regional effort to provide technical assistance to businesses, including efforts focused on regional market development. Residential quantities (not including apartments) are projected to increase nine (9) percent during the planning period, which is mainly due to an increase in population.

Adequate private MRF capacity is currently available to the County and is projected to be available during the planning period. However, it is noted that only one recyclable material processor is located within the area designated by the County as acceptable for direct delivery of recyclables by collection vehicles. A new recycling processing facility with the same capacity as the current one but with improvements that lead to cleaner commodities is under construction. The County has a 10-year contract in place with this new facility once it begins running in July 2024.

Howard County plans to continue to support the development of recycling markets through its participation in regional initiatives coordinated by the Authority. The County recognizes that converting discarded items into marketable new products is an essential element of recycling. When businesses are developed locally that use recycled materials as raw materials, greater economic value is realized due to lower costs for transportation of the recyclable material, as well as local job creation. An important element of this policy is to support local businesses that manufacture or otherwise participate as suppliers of recycled products and which serve the County's economic development objectives.

Howard County, in conjunction with the Authority and the County's Economic Development Authority, will support efforts to expand opportunities for existing and new local intermediate processors of recycled materials and manufacturing firms that use recycled materials as feedstock. These efforts will be in cooperation with the Maryland Department of Business and Economic Development and MDE. The County will continue to evaluate whether a mandatory business reporting requirement will be enacted.

5.5.1 Recycling Construction, Demolition, and Land Clearing Debris

Recycling opportunities exist for C&D, but in Howard County, and elsewhere in the Mid-Atlantic region, this is dependent upon generators separating materials and delivering them to markets. Howard County does not plan to provide recycling services for C&D during the planning period, as the private sector currently provides adequate opportunity for this material.

Existing C&D facility operators have consistently identified increased government purchases of recycled C&D products as an important way to improve the acceptance and economics of C&D recycling. Howard County will support any efforts undertaken to expand use of C&D products in government operations and projects, including road construction, and in providing business development support to C&D recyclers.

For new publicly funded buildings (County funding of 30 percent or more) larger than 10,000 square feet, LEED Silver rating is required. A LEED Certified rating is required for new private buildings larger than 50,000 square feet built in the County.

With the green building standards and requirements in the County Code, waste reduction and recycling are increasing for building construction and remodeling. Contractors must source separate materials such as shingles, sheetrock, wood, and metals.

5.5.2 Food Scraps, Yard Trim, and Wood Waste

The County plans to expand the ARL compost facility to accept more capacity as the food scrap collection program continues to expand.

An organics education and outreach campaign will continue throughout the planning period to encourage use of organic material diversion programs in the County. This campaign will include information and tips for source reduction, food donation, and composting of food that cannot be eaten or donated to align with U.S. EPA's Waste Food Scale as shown on the right[24].

5.5.3 Organics Recycling Mandate

In 2021, House Bill 264 was passed by Maryland, requiring generators of large amounts of food residuals to separate and divert them from other wastes heading towards the landfill. The law emphasizes the importance of preventing waste before it occurs.

These requirements apply to businesses that produce a certain amount of food residuals and are within a 30-mile radius of an organics recycling facility with capacity and willingness to enter into a contract. The law went into effect on January 1, 2023, for a generator of at least two (2) tons of food residuals each week. Generators of at least one (1) ton of food residuals were subject to the ruling beginning January 1, 2024. Diversion may be accomplished by using several different methods, including:

- Reducing food residuals generated
- Donating servable food
- Managing residuals in an organics recycling system on-site
- Providing collection and transportation for agricultural use
- Providing collection and transportation for processing in an organics recycling facility

Guidance on compliance with this law can be found on the MDE food residuals diversion webpage (Solid Waste Management - Organics Recycling and Waste Diversion - Food Residuals (maryland.gov)).

[24] https://www.epa.gov/sustainable-management-food/wasted-food-scale

5.5.4 Public Education and Outreach

The education outreach and information program operated by the Recycling Division of the Bureau of Environmental Services, which will continue during the planning period, is available to residential and non-residential waste generators, including County agencies, County public schools, institutions, and businesses. The County's website has a separate page for Business Recycling, which is found at Business Recycling | Howard County (howardcountymd.gov). The Howard County Public School System also has a recycling webpage located at Recycling Efforts – HCPSS.

County staff are available to visit business locations, schools, and events, to conduct audits to identify recycling opportunities and to assist in identifying markets for recyclable materials. The non-residential sector thus benefits from those programs previously described for the residential sector, as well as services targeted specifically toward non-residential waste generators.

The Recycling Division manages media, community outreach, and volunteer-assisted programs to promote recycling. The County will continue to provide education and outreach in as many ways as possible, evaluating the best options on a regular basis. Direct mailing of postcards, or literature on the envelopes of the tax bills and in water bills, will continue as one of the ways to reach those with residential curbside recycling.

Presentations and exhibits at fairs, festivals, schools, and homeowner association meetings will continue and the information and means of communicating with attendees at these events will continue to change and be developed. Recyclable giveaways draw people to a booth or recycling event and hands-on samples of what is recyclable are good visual and educational technique. Various games, activities, and contests will be used to educate people and get them excited about recycling, the environment, and making a difference.

Some print media and advertisements will be purchased. Webpages, email, social media, and other digital technology that assist in education and outreach will continue to be utilized and expanded as appropriate.

5.6 WASTE PROCESSING/DISPOSAL

5.6.1 Residential MSW

The County expects increases in the amount of trash and recycling collected throughout the planning period. Increases in tonnages are mainly the result of the expected increase in population. As waste and recyclable material quantities delivered to County facilities increase, operational adjustments can be made at the Residents' Convenience Center to adequately manage the materials received. Waste container sizes can be changed, and the frequency of servicing containers can be increased. Considering the inherent operational flexibility, the Residents' Convenience Center will be adequate to manage waste and recyclables quantities delivered during the planning period.

The County will continue delivering waste to AJTS in Anne Arundel County. The contractor, a national firm, owns landfills in Virginia and Pennsylvania that could potentially be used to dispose of Howard County's waste. The contract specifies that waste delivered to the AJTS is transported to King George Landfill located in King George County, Virginia, for disposal. The contract term for waste export extends until 2033, in one year renewal increments.

The projected waste to be exported is not expected to exceed the contract maximum of 150,000 tons per year during the planning period. Waste disposal for a major disaster is expected to be covered with these

contract maximums.

Additionally, the County will undertake a comprehensive study to assess the feasibility, benefits, and requirements for a PAYT program in Howard County.

5.6.2 Non-Residential MSW

Private haulers independently engage with a processing or disposal facility or deliver waste directly to the ARL. The County will monitor deliveries of MSW by commercial haulers, and fees charged by private facilities, and adjust its tipping fee upward should private sector fees change enough to cause quantities of non-residential waste delivered to the ARL to significantly increase. It is projected that less than ten (10) percent of the non-residential waste generated in the County will be directly managed by the County.

5.6.3 Construction, Demolition, and Land Clearing Debris

The construction of a public C&D disposal facility is not anticipated during the planning period. Any C&D landfill constructed in the County will be required to include a recovery facility to maximize recycling of C&D debris. A proposed C&D landfill not incorporating a recovery facility will not be included in this Plan.

Since private companies control most C&D debris disposal capacity in Maryland, it is not known what additional disposal capacity will be provided in the long term. Privately operated landfills located in the mid-Atlantic region outside of Maryland are available to compensate for a reduction, if any, in C&D capacity within Maryland. As noted in Chapter 4, the cost to use such landfills is anticipated to be competitive with in-state lined C&D landfills, although haulers will incur additional costs for long-haul transportation.

If it is determined that inadequate private C&D disposal capacity will be available on a long-term basis, the County will work with MDE and other counties to identify and implement opportunities for regional in-state C&D debris recovery and disposal facilities. As a last resort, the County will consider a capital project with the objective of siting and implementing a C&D debris recovery and disposal facility in the County to receive C&D debris generated in the County.

5.6.4 Other Wastes

Adequate programs and facilities exist for the management of these wastes through publicly and privately operated activities. Capacity exists to manage the predicted quantity increases during future years. The management system for each waste type is anticipated to be maintained during the planning period.

5.6.4.1 Controlled Hazardous Substances

During the planning period the quantity of HHW handled through this collection program is projected to increase by around 15 percent due to the projected increase in population. The existing program is sufficient to adequately manage the quantities of HHW projected for collection during the planning period. The County anticipates continuing operation of the HHW facility during the planning period as currently configured with the possibility of extra collection days during the planning period.

5.6.4.2 Emergency Spill Management

The Howard County Fire and Rescue Department responds to all reported incidents of releases of hazardous substances and petroleum spills. The Department's capability is adequate for the County's needs. Staff regularly assesses equipment and training programs to confirm adequate emergency spill

responses are maintained. The County intends to utilize its existing contractor to provide for materials disposal in the event of petroleum or hazardous waste spills. The designation of approved disposal sites is flexible, in that the contractor may propose new or replacement sites for County approval as conditions warrant.

5.6.4.3 Dead Animals

The County anticipates continuation of the existing public and private operations for management of dead animals through the planning period. The existing arrangements with the Department of Agriculture are adequate to manage the projected 69 tons of dead animals generated in the County.

5.6.4.4 Bulky Wastes and White Goods

The County is projected to receive about 2,000 tons in the year 2024. The 40 or 50 cubic yard containers into which bulky waste is placed at the Convenience Center can be serviced as frequently as necessary to accommodate increased quantities delivered during the planning period. As a result of this flexibility, the Residents' Convenience Center is adequate to provide bulky waste disposal needs during the planning period.

5.6.4.5 Tires

Tire tonnage is projected to increase slightly during the planning period. Tires are currently removed at a rate of about once every two weeks. Collection and removal frequency can be increased to accommodate expected increases in the number of tires generated.

5.6.4.6 Wastewater Treatment Plant Sludges

The quantity of treated sludge is anticipated to increase to 5,000 tons per year by the end of the planning period in 2034. The current sludge management approach of permitted land application will be adequate to meet the County's needs during the planning period. No sludge is accepted at ARL, and the County has no plans to accept sludge at ARL during the planning period.

5.6.4.7 Septage

The County's LPWRP has the capacity to receive greater quantities from contractors, should the need exist. The LPWRP will be adequate to handle the projected sludge and septage volumes produced during the planning period, and the County anticipates continuing to offer the service of receiving and treating septage through the planning period. The County does not anticipate that private sector facilities will be implemented to handle septage. As a result, it is anticipated that all septage waste will be received at public treatment plants.

5.6.5 Other Non-Hazardous Wastes

5.6.5.1 Asbestos

The ARL accepts small quantities of asbestos for disposal from demolition or renovation activities in the County.

5.6.5.2 Used Oil and Antifreeze

Quantities received are not projected to increase significantly during the planning period. Increased quantities delivered can be managed by more frequent emptying of storage tanks by the County's contractor. The existing County receiving facility is adequate for the planning period.

5.6.5.3 Medical Waste

Small quantities of medical waste generated by County residents are disposed of residential solid waste. The current medical waste disposal system, managed by the private sector, is adequate to meet the needs of the County. This system can respond to meet the changing needs of the medical industry, and the County does not anticipate the need for public processing and disposal facilities for special medical waste.

5.7 CONTINGENCY PLAN

Relying on waste export and disposal at private out-of-region facilities, as is the County's current practice, introduces the potential for adverse impacts which the County may not be able to control. For example, a natural disaster, accident, or other catastrophe could result in the extended shutdown of a private disposal facility. Likewise, new legislation or regulations, court decisions, or regulatory enforcement actions could cause a facility to curtail or cease operations. To ensure the County's ability to adequately manage its solid waste in the event of such an occurrence, MDE requires development of a contingency plan for each county which relies on out-of-region waste export. The plan must specify the County's method of waste disposal should the contracted disposal locations become unavailable.

The likelihood that the existing waste export system would cease or substantially curtail operations is remote. The County's disposal contractor owns and operates several waste disposal facilities in the Mid-Atlantic region. Several of these facilities are projected to have capacity available through the end of the planning period. Other private firms operating disposal facilities within a reasonable distance also have capacity projected to last to the year 2034 or beyond. The availability of capacity at multiple facilities is a reasonable assurance that the current waste export approach will be adequate for the foreseeable future.

The ARL and Alpha Ridge Transfer Station are the primary components of the County's contingency plan. The County intends to keep the ARL open and staffed with trained personnel and equipment to receive and dispose of waste and support other ongoing operations. The current waste export contract is valid through 2033, and the contract includes several alternative approved disposal sites with the option to review and approve additional sites. Based on historical data, during the contract period the ARL will be used for disposal of less than 10 percent of the waste generated in the County. The ARL, as a contingent disposal facility, can accept up to 500 tons per day of waste, through the Alpha Ridge Transfer Station. The County is planning on expanding the existing transfer station during the next 10-year planning period. Waste could be transferred directly to a disposal facility or, if no other disposal options were available, then ARL can be used.

Under the contingency plan, failure of the current waste export system would necessitate that all residential waste tonnage, and approximately 10 to 15 percent of non-residential and C&D waste tonnages, be disposed at the ARL. In the worst-case scenario, disposal at the landfill would be on a relatively long-term basis pending construction of an alternative waste processing facility or development of new contractual arrangements with the private sector.

While the Transfer Station is utilized to transfer waste received at the ARL to the AJTS for export, the County Transfer Station will be used on a contingency basis as the need arises. Should the AJTS become unavailable due to a natural disaster or other catastrophe, waste collected by the County can be directed to the County Transfer Station for direct transport to the King George Landfill or alternative County- approved site. Similarly, should the current waste export contract be terminated or otherwise become unusable, the Alpha Ridge Transfer Station can receive waste collected by the County for export to an alternative disposal location.

The Alpha Ridge Transfer Station also can provide for emergency needs if a processing component of the County's recycling plan stops receiving collected recyclables. Collected recyclables could be delivered to the Alpha Ridge Transfer Station for transport to an alternative processing facility on a short- or long-term basis. If necessary to prevent commingling of waste and recyclables, waste could be diverted to the ARL working face for disposal. Also, the new organics receiving building can be utilized to keep materials separated for later load-out.

Should the acceptance and transfer of recyclables at the Alpha Ridge Transfer Station become a long-term arrangement, the facility could be used to provide transfer capacity for both recyclables and waste. Similarly, the Alpha Ridge Transfer Station can provide for the long-term transfer of County-collected waste should current export arrangements become permanently unavailable. In this case, the facility would be able to process the amount of commercial waste received from private haulers, which would increase above the current projected ten percent fraction. Based on the Transfer Station refuse permit; the maximum amount of solid waste that can be accepted is 153,500 tons per year.

5.8 PUBLIC AND PRIVATE FACILITIES

Solid waste management programs and facilities in Howard County are and will continue to be provided directly by the County, or by contract with private firms or in cooperation with other local governments in the region. The existence of County facilities, and contracts with private firms, are not intended to discourage participation by the private sector in solid waste management. The County may also consider public-private partnerships. Current private facilities must be in conformance with applicable zoning and other legal requirements and must be identified in this plan.

All solid waste facilities must comply with County zoning requirements, the County's Comprehensive Zoning Plan, HoCo by Design and the County's Solid Waste Management Plan. The County will determine if any proposed new facility is consistent with the Plan. The firm can then continue with the planning and zoning process and petition the County Council for inclusion in the Plan.

5.8.1 Alpha Ridge Landfill and Landfill Capacity

Given the availability of private facilities, notably regional landfills in Virginia and Pennsylvania, it is reasonable to assume that most non-residential MSW will continue to be disposed at these facilities rather than through the County-operated system. It is unlikely that a new landfill to replace the ARL can be sited in Howard County due to the lack of an available site of suitable size in an acceptable location. Therefore, the

County desires to maximize the life of the Landfill by minimizing the waste quantities disposed there.

5.8.1.1 First Option

The current planned option consists of continuing to use the waste export contract. Under this option, the capacity will be sufficient until well past the end of the planning period.

5.8.1.2 Second Option

If the current waste export contract was discontinued for some reason and the County disposed all residential waste and non-residential waste and C&D waste generated in the County at the ARL, the remaining landfill life is estimated at three (3) years. This projection assumes that non-residential waste currently delivered to private facilities continues to be managed privately. Under this option, the capacity will also be sufficient until well past the end of the planning period. The County would have a 3-year lead time to design and construct the last cells at ARL or find another export option.

5.8.1.3 Third Option

If the County sent all the waste currently exported to a WTE facility, buried the ash, and continued the minimal landfilling of materials not acceptable at a WTE facility, the capacity will be sufficient until at least the end of the planning period. An alternative for this option, which would extend the life of the ARL, would be to send all the waste currently being exported to a WTE facility, with the ash landfilled at an out-of-county landfill. This is the least preferred option and one of last resort to be used only if regional solid waste disposal systems have experienced a total breakdown .

5.8.2 Alpha Ridge Transfer Station

In the event of one or more of the current facilities being unable to accept waste, the County could transfer waste from the ARL transfer station directly to one of the landfills.

5.8.3 Alpha Ridge Residents' Convenience Center

The Residents' Convenience Center at the ARL accepts solid waste and recyclables at no cost to Howard County residents. As more materials can be economically recycled, the County will expand the recycling opportunities at the convenience center during the planning period.

Considering the inherent operational flexibility, the convenience area will be adequate to manage waste and recyclables quantities delivered during the planning period. However, the County will continue to monitor the center to determine if additional expansion is needed.

5.8.4 Alpha Ridge Composting Facility

The Howard County compost facility at the ARL is adequately sized for the planning period; however, if necessary, additional processing capacity can be built.

5.9 FINANCING AND FUNDING

Howard County funds solid waste management capital and operating costs through an Environmental Services Fund (ESF). The ESF funds all administrative and operational costs for residential waste collection and waste disposal and all administrative costs for recycling processing and public outreach. The ESF is

evaluated annually with various budget models and projections to confirm sustainability. Fees are adjusted annually to cover the cost of the services provided.

5.9.1 Revenue

The primary revenue source for the ESF is the Refuse Collection Charge assessed on each improved residential real property (detached homes, town homes, and condominiums) that are on public roads and some on private roads that have provided a damage waiver.

The owner of each commercial property served by County solid waste services pays a Refuse Collection Charge per year for each weekly collection. The revenue generated is accrued to the ESF and costs for solid waste collection and disposal are paid from the ESF. The fees are established annually by resolution of the County Council based on the projected operating budget.

Other significant revenue sources for the ESF include landfill tipping fees, revenue from sales of recyclables, sales of various products such as mulch, topsoil, compost, and user permit fees.

5.9.2 Recycling, Processing, and Marketing

Recycling contracts are structured on a ton tip fee per ton and the County receives revenue based on market value of the materials. With the current contract, no processing fee, over and above the tipping fee, is paid to the contractor.

Current contractual arrangements with the MRF contractor also provide flexibility to expand the contractor's services to add additional materials if collection by the County is deemed feasible. The cost and logistics of adding new materials for processing must be worked out with the contractor prior to adding it to the collection program.

5.9.3 Capital Costs

General fund revenues support most capital costs for new solid waste management facilities and improvements. Capital costs include major operating equipment for the Residents' Convenience Center and ARL, new landfill cell and cell closure construction, transfer station construction, compost facility construction, and remediation system construction. The Environmental Services Fund pays the debt service back to the general fund.

5.9.4 Summary of Funding System

Howard County's funding system is structured to equitably distribute costs for solid waste programs and facilities. Costs that can be completely attributed to residential property (i.e., residential waste collection and disposal) are paid by the Refuse Collection Charge that is allocated to the Environmental Services Fund. Other costs resulting from solid waste management activities of prior years (i.e., landfill cell closures and remediation systems) are paid by the General Fund.

The County anticipates continuing to use the General Fund and the Environmental Services Fund (ESF), as currently structured, during the planning period. The General Fund is used for capital projects and the ESF pays for the operational expenses of the solid waste system. The ESF is also used to pay the interest on the bonds for capital projects. These revenue sources are adequate to cover solid waste management costs. The annual Refuse Collection Charge and tipping/user fees may require periodic adjustment to cover costs.

5.10 FACILITY CLOSINGS

No solid waste management facilities owned or operated by Howard County are scheduled to close during the planning period.

5.11 DESCRIPTION OF ACTION PLAN

5.11.1 Promote and Encourage Source Reduction and Reuse

The County will continue to prioritize education and outreach to promote source reduction and reuse. The education campaigns will be directed towards residents and businesses. Additionally, the County will continue to provide compost bins to residents and promote their use.

5.11.2 Increase Commercial Recycling Participation

Programs required by state law, including apartment, condo, and office building recycling, need to increase their commercial recycling rate during the planning period. Businesses operating in the County are asked to complete an annual recycling report. Businesses that submit a report and participate in recycling activities receive a Work Green Howard certification.

The County will continue to promote recycling opportunities in Public Schools and to encourage businesses to participate in waste diversion programs.

5.11.3 Increase Organics Diversion

Food scraps collection is currently available to about 44,000 homes with over 20,000 homes and several schools participating in curbside collection. Over the planning period, the County will expand residential food scraps collection to more households and provide year-round collections. There are scheduled improvements to the existing composting processing facility within the planning period to account for this projected increase in participation. The County will conduct an organics education and outreach campaign, including encouraging food donation.

5.11.4 Monitor Technologies and Expand List of Acceptable Recyclable Materials

The County will seek to add materials to the mix of recyclables currently accepted as part of the County's curbside and drop-off recycling programs as markets and technologies allow. Before adding new material to existing programs, the County will assess if stable, long-term, and cost-effective markets exist. The County will also have discussions with their current recyclable material collector and processor on the impact to their existing system.

5.11.5 Solid Waste Disposal

The current practice of exporting most of the waste generated within the County will continue. The County anticipates expanding the Alpha Ridge Transfer Station beyond the current planning period. If less than three years of life remain in the active cell at ARL, the County will design and construct the next landfill cell.

5.11.6 Energy and Greenhouse Gas (GHG) Reductions

Landfilling of organic materials generates methane and produces GHG. The County is prioritizing the diversion of organic materials from disposal by operating and expanding yard trim and food scraps collection and

processing programs. These programs reduce landfilling of this material and, thus, reduce the generation of methane from decomposition of the waste. These programs will be expanded during the planning period as existing and new organics diversion programs are implemented and developed.

5.11.7 Education and Outreach

The County's education and outreach program is integral to the success of solid waste management in the County. The County will continue to expand the public education currently provided with targeted messaging and campaigns. As part of this program, the County will put an emphasis on waste diversion activities in the commercial sector. This includes expanding services to provide technical assistance to businesses and other commercial properties in helping establish and expand waste diversion programs. The County will also explore opportunities to establish a recognition program whereby businesses that prioritize waste diversion are promoted and distinguished within the Howard County community. The County also anticipates using the results of the 2024 Public Input Survey to inform what education and outreach messages are needed. For example, some respondents indicated they do not participate in the County's recycling program because they do not believe materials are actually being recycled. The County may decide to use public education and outreach messaging to inform residents how materials are recycled to correct this misunderstanding. The County will periodically post on the website summary data as it becomes available from participation studies, surveys, and waste and recycling sorts. In addition, 3-year SWMP updates will be posted.

A summary of the action steps to be taken during the planning period are listed in **Table 5-1**. Time periods identified for each action step are as follows:

- Short Term – 2025-2027
- Medium Term – 2028-2031
- Long Term – 2032-2034

Table 5-1 Summary of Solid Waste Management Action Steps

Action Step	Timeframe
Action Step 1 – Promote and Encourage Source Reduction and Reuse	
Conduct a source reduction outreach campaign directed at consumers	Short
Conduct a source reduction outreach campaign directed at businesses	Short
Provide compost bins and promote their use	Short
Continue operating paint, bike and textile reuse programs	Short
Explore establishing a swap shop/reuse center	Medium
Include more reuse options as markets develop	Short/Medium/Long
Action Step 2 – Increase Commercial Recycling Participation	
Support and enforce Apartment and Condo recycling law	Short
Encourage recycling in office buildings in response to state requirements	Short
Continue the Work Green Howard Certification Program and explore opportunities for program enhancement	Short
Increase business recycling reporting through voluntary or mandated actions	Short
Support school recycling programs and initiatives	Short
Action Step 3 – Increase Organics Diversion	
Expand food scraps collection in public schools	Short
Facilitate food donation programs	Short
Conduct an organics composting education and outreach campaign	Short
Revise planning and zoning text amendments allowing commercial food scraps anaerobic digestion, food scraps composting and on-farm composting	Short/Medium
Expand residential food scraps collection to more households with year-round collections	Short/Medium/Long
Study feasibility of a public/private partnership for anaerobic digestion of food scraps in Howard County	Medium
Action Step 4 – Expand List of Acceptable Recyclable Materials	
Expand mix of curbside recycling program materials if processing and marketing capabilities exist	Short/Medium/Long
Expand mix of recyclable materials accepted at the ARL if processing and marketing capabilities exist	Short/Medium/Long
Action Step 5 – Solid Waste Disposal	
Continue MSW waste export	Short/Medium/Long
Continue to assess the capacity of Alpha Ridge Transfer Station to handle daily tons as required	Short
Continue to assess the capacity of the current active landfill cell at ARL	Short
Assess the feasibility, benefits, and requirements for a PAYT program in Howard County.	Short
Action Step 6 – Energy and Greenhouse Gas Reductions	
Monitor greenhouse gas emissions from landfill and maintain or remediate to acceptable limits	Short
Prioritize, when practical, the use of renewable energy to meet the County's energy needs	Short
Evaluate alternative technology for energy	Long
Action Step 7 – Education and Outreach	
Conduct business waste audits and reduction/recycling education	Short/Medium/Long
Establish a business recycling recognition program	Short/Medium/Long
Continue education and outreach programs in schools	Short/Medium/Long

Appendix A

Solid Waste Management Plan Acronyms

- AJTS – Annapolis Junction Transfer Station
- ARL – Alpha Ridge Landfill
- ASP – Aerated Static Pile
- BNR – Biological Nutrient Removal
- CASP – Covered Aerated Static Pile
- CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
- CDL – Construction, Demolition, and Land Clearing Debris
- CFL – Compact Fluorescent Lamps
- CHS – Controlled Hazardous Substances
- COMAR – Code of Maryland Regulations
- CRT – Cathode Ray Tubes
- C&D – Construction and Demolition
- DPZ - Department of Planning and Zoning
- DPW – Department of Public Works
- ENR – Enhanced Nutrient Removal
- ESF – Environmental Services Fund
- EOP – Emergency Operations Plan
- EPA – Environmental Protection Agency
- HCC – Howard Community College
- HCDFRS – Howard County Department of Fire and Rescue Services
- HCPSS – Howard County Public School System
- HHW – Household Hazardous Waste
- HSWA – Hazardous and Solid Waste Amendments
- ICI – Institutional/Commercial/Industrial
- LPWRP – Little Patuxent Water Reclamation Plant

- LEPC – Local Emergency Planning Committee
- MDE – Maryland Department of the Environment
- MDGS – Department of General Services
- MDOT – Maryland Department of Transportation
- MES – Maryland Environmental Service
- MRA – Maryland Recycling Act
- MRF – Material Recovery Facility
- MSW – Municipal Solid Waste
- NPL – National Priorities List
- OCC – Old Corrugated Containers
- PAYT – Pay As You Throw
- RCRA – Resource Conservation and Recovery Act
- SARA – Superfund Amendments and Reauthorization Act
- The Authority – Northeast Maryland Waste Disposal Authority
- TRZ – Trash and Recycling Zone(s)
- WTE – Waste-to-Energy
- USBEA – U.S. Bureau of Economic Analysis

Appendix B

County Council and MDE Approval Letters

County Council of Howard County, Maryland

2025 Legislative Session | Legislative Day No. 10

Resolution No. 143-2025

Introduced by: The Chairperson at the request of the County Executive

Short Title: Approving – Solid Waste Management Plan

Title: A RESOLUTION approving a comprehensive revision of the Solid Waste Management Plan as required by State Law.

Introduced and read first time July 7, 2025.

By order Michelle Harrod
Michelle Harrod, Administrator

Read for a second time at a public hearing on July 21, 2025.

By order Michelle Harrod
Michelle Harrod, Administrator

This Resolution was read the third time and was Adopted___, Adopted with amendments X, Failed___, Withdrawn___, by the County Council on September 2, 2025.

Certified By
Michelle Harrod, Administrator

Approved by the County Executive on Sept. 3, 2025

Calvin Ball, County Executive

NOTE: [[text in brackets]] indicates deletions from existing law; TEXT IN Small CAPITALS indicates additions to existing law; Strike-out indicates material deleted by amendment; Underlining indicates material added by amendment

July 30, 2025 Tabled Michelle Harrod

WHEREAS, Section 9-503 of the Environment Article of the Annotated Code of Maryland requires each Maryland county to have a solid waste management plan that covers at least the 10-year period following adoption of the plan by the county governing body; and

WHEREAS, Howard County's previous Solid Waste Management Plan, 2014-2024, was adopted by passage of Council Resolution No. 40-2015; and

WHEREAS, Section 18.1100 of the Howard County Code requires the Public Works Board to make recommendations to the County Council and the County Executive relating to plans and policies on matters under the jurisdiction of the Department of Public Works; and

WHEREAS, Section 16.900 of the Howard County Code authorizes the County Executive to seek the review and recommendation of the Planning Board on matters related to planning; and

WHEREAS, pursuant to State and County law, the Department of Public Works prepared a comprehensive revision of the Solid Waste Management Plan, 2025-2034, (the "Plan") and submitted it to the Public Works Board and the Planning Board for their review and recommendations; and

WHEREAS, the County Executive reviewed the Plan and the recommendations of the Public Works Board and the Planning Board, and has submitted the Plan to the County Council for its approval.

NOW, THEREFORE, BE IT RESOLVED by the County Council of Howard County, Maryland this 2nd day of September, 2025 that the County Council adopts the Solid Waste Management Plan attached to this Resolution and incorporated herein.

Maryland
Department of
the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary
Adam Ortiz, Deputy Secretary

November 19, 2025

Mr. Yosef Kebede
Director
Howard County Department of Public Works
3430 Court House Drive
Ellicott City, Maryland 21043

Dear Mr. Kebede:

The Maryland Department of the Environment ("MDE") has completed its review of Howard County's (the "County") Resolution No. 143-2025, for adopting the County's 2025-2034 Solid Waste Management Plan (the "Plan"). The County Council adopted the Plan on September 2, 2025, and the Department of Public Works forwarded the Plan to MDE for its review and approval. MDE received the adopted resolution and the Plan on September 29, 2025.

After review, MDE determined that the adopted resolution satisfies the requirements of Sections 9-503, 9- 505, and 9-1703 of the Environment Article, Annotated Code of Maryland, and Code of Maryland Regulations 26.03.03. In accordance with Section 9-507(a) of the Environment Article, Annotated Code of Maryland, the Plan is approved.

Section 9-506(b)(2) of the Environment Article, Annotated Code of Maryland, requires the County to submit a progress report to MDE at least every two years. Since the County's Plan was adopted on September 29, 2025, the County must submit to MDE its progress report on or before **September 29, 2027**.

Thank you for your continuing interest and cooperation in providing sound and long-term solid waste management planning for the County. If you have questions or need additional clarification of these matters, please contact me at 410-537-3381 or by email at rick.kessler@maryland.gov, or have a member of your staff contact Mr. Bradley Baker, Manager, Resource Management Program, at 410- 537- 3314 or by email at Bradley.baker1@maryland.gov.

Sincerely,

Rick Kessler
Director
Land and Materials Administration

cc: Honorable Liz Walsh, Chair, Howard County Council
Honorable Calvin Ball, Howard County Executive
Alan Wilcom, Howard County Bureau of Environmental Services
Bradley Baker

Appendix C

Laws and Regulations Impacting Solid Waste Management

This appendix lists and describes the federal, state, and local solid waste management legislative and regulatory initiatives impacting solid waste management.

1. Federal

1.1 Laws

Although compliance monitoring and enforcement of several federal laws are delegated to the state level, state implementation must meet the minimum requirements of federal statutes, and a state may choose to have more stringent requirements. Federal laws impacting solid waste management include:

1. ***Resource Conservation and Recovery Act (RCRA):*** In 1965, the Solid Waste Disposal Act was passed to improve solid waste disposal methods. It was amended in 1970 by the Resource Recovery Act, in 1976 by RCRA, and in 1984 by the Hazardous and Solid Waste Amendments (HSWA). The Act is divided into nine subtitles, A through I. Subtitles C, D, and F provide specific guidance and requirements impacting municipal and hazardous waste.

    a. Subtitle C established a system for the management of hazardous waste. This includes identifying and listing hazardous waste promulgating standards for generators, transporters, and managers of hazardous waste. This subtitle also sets requirements for owners and operators of hazardous waste treatment, storage, and disposal facilities.

    b. Subtitle D regulates municipal solid waste through technical standards for solid waste management facilities and through requirements under which states may develop and implement solid waste management programs. This subtitle sets the minimum criteria for MSW landfills, including location restrictions, operating requirements, design elements, and closure and post-closure care requirements, among other things.

    c. Subtitle F of RCRA requires the federal government to participate actively in procurement programs to foster the use of recycled materials. Government purchases that are subject to the Subtitle F requirements are designated in material specific "procurement guidelines" that are promulgated by the Environmental Protection Agency (EPA). Section F also requires federal facilities to comply with all federal, state, interstate, and local requirements concerning the disposal and management of solid waste.

2. ***Clean Air Act (CAA):*** The CAA requires EPA to identify pollutants and set performance standards to limit air emissions. Facilities must meet these performance standards by using the best available technology. The EPA has set standards for municipal solid waste combustors and has established standards for municipal solid waste landfills.

3. The Clean Air Act Amendments of 1990 extend the requirements in the EPA standards by subjecting proposed (new) solid waste combustion facilities to the Maximum Achievable Control Technology (MACT) for air toxics and particulate. The Amendments also require EPA to establish other performance standards for municipal solid waste combustion facilities and regulate emissions monitoring and operator training.

4. ***Clean Water Act (CWA):*** This Act is intended to restore and maintain the quality of surface waters through the National Pollutant Discharge Elimination System (NPDES) permitting system. The CWA requires solid waste disposal facilities generating ash-quench water, landfill leachate, and surface water discharges to: (1) control discharges using best available technology and obtain a permit or (2) meet pretreatment standards and discharge to a sewer system. Furthermore, stormwater management plans are required and facilities sited in wetlands need a Section 404 permit. Facilities may be covered under the provisions of a General Discharge Permit for a specific land use category. The CWA declares there should be no discharges of oil or hazardous substances into or upon the navigable waters of the United States.

5. ***Safe Drinking Water Act (SDWA):*** The Maximum Contaminant Levels developed under the SDWA are often referenced as standards for ground water monitoring programs for landfill facilities. Additionally, well head protection areas may affect siting of future facilities by placing restrictions on activities.

6. ***Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):*** CERCLA, or Superfund, addresses long-term liability for current and past waste disposal practices. The Act establishes both the legal and financial mechanisms to clean up abandoned or uncontrolled hazardous waste sites posing threats to public health or the environment. Sites meeting set criteria are included on EPA's National Priorities List (NPL). Municipal landfills posing serious threats are eligible for clean up under this Act.

7. ***Public Utilities Regulatory Policies Act (PURPA):*** PURPA was developed to encourage cogeneration and small power producers, such as municipal solid waste combustors, to supplement existing electrical utility capacity. The Federal Energy Regulatory Commission (FERC) is responsible for oversight and issuance of implementing regulations. FERC regulations set limits on the power output of qualifying small power production facilities.

8. ***Save Our Seas 2.0 Act:*** This act became law in 2020 and establishes requirements and incentives to reduce, prevent, and recycle marine debris in the United States. The act includes a title that prioritizes combating marine debris through the creation of the Marine Debris Foundation to support the marine debris activities of the National Oceanic and Atmospheric Administration. Additionally, the act aims to improve domestic infrastructure to prevent marine debris and requires the Department of State to implement U.S. policy to cooperate with foreign governments and the private sector to combat marine debris.

9. ***Infrastructure Investment and Jobs Act:*** This act, also known as the Bipartisan Infrastructure Law, provides $275 million in grants for infrastructure to support the U.S. recycling industry. For

each fiscal year from 2022 to 2026, $55 million in grant money will remain available until expended. The Solid Waste Infrastructure for Recycling grant program is authorized by the Save Our Seas 2.0 Act. This program provides grants to facilitate recycling strategies to improve and modernize material management infrastructure, support improvements to local materials management and recycling programs, and assist local solid waste authorities in making improvements to local waste management systems.

10. ***Recycling Enhancements to Collection and Yield through Consumer Learning and Education (RECYCLE) Act:*** This act is part of the Infrastructure Investment and Jobs Act. It provides U.S. EPA with resources to increase recycling education. It authorizes up to $15 million annually over five years for grants to states, local governments, tribes, nonprofits, and public partnerships to expand education efforts for commercial and residential recycling. EPA is also required to develop a toolkit that facilitates increasing recycling participation and decreasing material contamination in recycling streams.

11. ***Inflation Reduction Act of 2022****:* The Inflation Reduction Act of 2022 focuses on reducing greenhouse gas emissions, curbing energy prices, increasing investments in domestic manufacturing capacity, encouraging procurement of commodities from domestic or free-trade partners, and researching and developing commercially viable green technologies. This law supports technologies, such as anaerobic digestion, through tax credits, provides $5 billion in grant programs for pollution reduction, and establishes green banks to provide low-cost funding for clean energy projects.

12. ***Winning on Reducing Food Waste:*** This initiative in an interagency partnership between the

    U.S. Department of Agriculture (USDA), the U.S. EPA, and the U.S. Food and Drug Administration (FDA) to reduce the amount of food waste in the United States. The initiative includes six priority areas that include the following: 1) Enhance interagency cooperation, 2) Increase consumer education and outreach efforts, 3) Improve coordination and guidance on food loss and waste measurement, 4) Clarify and communicate information on food safety, food date labels, and food donations, 5) Collaborate with private industry to reduce food loss across the supply chain, and 6) Encourage food waste reduction by federal agencies in their respective facilities.

1.2 Regulations

Some of the relevant federal regulations impacting solid waste management, primarily for facility operation and construction, include the following:

1. ***Criteria for Municipal Solid Waste Landfills (40CFR Part 258):*** The regulations address six landfill location restrictions (airport safety, floodplains, wetlands, fault areas, unstable areas, seismic impact zones); minimum operating requirements, such as hazardous waste exclusion programs, daily cover, gas management, stormwater management, surface-water discharge controls and facility operations recordkeeping; design criteria (composite liner); ground water monitoring and corrective action for detected releases; closure and post-closure care; and

financial assurance. The requirements are designed to be self-implementing by landfill owners and operators unless a State has been delegated authority by EPA to manage its own program.

2. ***Greenhouse Gases (40 CFR Part 98):*** Under the Mandatory Greenhouse Gas Reporting rule, owners and operators of certain facilities that directly emit Greenhouse Gases (GHG) must calculate and report quantities of emitted GHG or what would be emitted by GHG suppliers.

3. ***Standards of Performance for New Stationary Sources (40 CFR Part 60):*** The regulations establish emission limitations that apply to municipal solid waste combustors with a capacity of more than 250 tons per day. The limitations vary depending on the size of the facility. These limitations address organic compounds (dioxins and furans), acid gases (sulfur dioxide, hydrogen chloride), metals, particulate matter, opacity, carbon monoxide and nitrogen oxides. Requirements for performance testing, monitoring and operator certification and training are included in the rule. In addition to these regulations, EPA has published guidance for new source review (NSR) and prevention of significant deterioration (PSD) permits. Under these programs, states may include more stringent emissions requirements if warranted by ambient air quality conditions. EPA has published New Source Performance Standards (NSPS) emission limitations, emission guidelines and compliance requirements for municipal solid waste landfills. The limitations address volatile organic compound emissions.

4. ***Oil Pollution Prevention (40 CFR Part 112):*** Originally published in 1973 under the authority of

   §311 of the CWA, the Oil Pollution Prevention regulation sets forth requirements for prevention of, preparedness for, and response to, oil discharges at specific non-transportation-related facilities. To prevent oil from reaching navigable waters and adjoining shorelines, and to contain discharges of oil, the regulation requires these facilities to develop and implement Spill Prevention, Control and Countermeasure (SPCC) Plans, and establishes procedures, methods, and equipment requirements (Subparts A, B and C). The SPCC Plan must include all oil stored above ground in containers which hold 55 gallons or more. The SPCC Guidance for Regional Inspectors was revised in August 2013.

5. ***National Pollutant Discharge Elimination System (NPDES) Permits (40 CFR Parts 121 through 125):*** An NPDES permit is required for a direct discharge (including stormwater) to navigable waters from existing or new sources. Permits may impose pollution control requirements including numerical limits on discharges based on technology-based guidelines and water quality standards, monitoring requirements and reporting requirements. Facilities within certain categories of industrial activity, including landfills, may be covered under general NPDES permits which specify control requirements. Stormwater Pollution Prevention Plans for specific covered sites are required by an NPDES permit.

6. ***Hazardous Waste Regulations (40 CFR Parts 260 through 272):*** The regulations set forth criteria to identify hazardous wastes and establish requirements for transportation, storage, treatment and disposal of such wastes.

7. ***Universal Waste Management (40 CFR Part 273):*** This regulation sets forth the requirements for managing universal waste including batteries, pesticides, mercury containing equipment, and household and very small quantity generator waste.

8. ***Dredge or Fill Discharge Permit Program (33 CFR Parts 321, 323, 329):*** The U.S. Army Corps of Engineers is authorized to issue permits for the discharge of dredged or fill material into the "waters of the United States." These waters include navigable waterways, tributaries, associated wetlands, and isolated water bodies and wetlands.

9. ***Standards for the Use or Disposal of Sewage Sludge (40 CFR Part 503):*** The regulations establish requirements for the final use and disposal of sewage sludge when the sewage sludge is applied to the land, distributed and marketed, placed in monofills (sludge-only landfills) or on surface disposal sites or incinerated. The rule requires pathogen reduction in sludge that is applied to land, sets standards for heavy metals, and establishes limits for total hydrocarbons from incinerators.

2. State

2.1. Laws

The following are Maryland laws that affect solid waste management:

1. ***Maryland Landfill Siting Law (Environment Article, Annotated Code of Maryland Title 9, Water, Ice, and Sanitary Facilities; Subtitle 2 – Regulation by State):*** This law sets forth requirements for public hearings for landfills; landfill permit requirements (issuance, denial, revocation, term); security requirements for landfills, incinerators and transfer stations; prohibitions on siting and waste acceptance; and requirements for the submission of plans and documents necessary for the State to conduct a technical review and approve proposed facilities.

2. ***Maryland Landfill Financial Assurance Law*** *(Environment Article, Annotated Code of Maryland, Title 9, Water, Ice, and Sanitary Facilities; Subtitle 2 – Regulation by State, §9-211.1, Regulations governing financial assurance for sanitary landfills accepting municipal solid waste):* This law sets forth financial assurance requirements for landfills in conformance with the requirements of federal regulations (40 CFR Part 258).

3. ***Maryland Wastewater Treatment Law*** *(Environment Article, Annotated Code of Maryland, Title 9, Water, Ice, and Sanitary Facilities; Subtitle 1 – Definitions; General Provisions and Subtitle 2 – Regulation by State):* This law requires permits prior to installation, alteration or extension of a water supply system, sewerage system or refuse disposal system (landfill or incinerator, waste transfer station or waste processing facility).

4. ***Maryland Scrap Tire Recycling Act*** *(Environment Article, Annotated Code of Maryland, Title 9, Water, Ice, and Sanitary Facilities; Subtitle 2 – Regulations by State):* This law establishes requirements for implementation of a scrap tire recycling system by the Maryland Environmental Service; provides for the licensure of scrap tire haulers, collection facilities and processing facilities; establishes a Used Tire Clean-Up and Recycling Fund and requires payment of fees to the Fund by tire dealers and prohibits the disposal of tires in landfills.

5. ***Maryland Sewage Sludge*** *(Environment Article, Annotated Code of Maryland Title 9, Water, Ice, and Sanitary Facilities; Subtitle 2 – Regulations by State, Part III, Sewage Sludge):* This law establishes permitting and hearing processes regarding the utilization of sewage sludge and the

siting of permanent sludge utilization facilities.

6. ***Maryland Water Pollution Control Law*** *(Environment Article, Annotated Code of Maryland, Title 9, Water, Ice, and Sanitary Facilities; Subtitle 3 – Water Pollution Control):* This law sets forth requirements for discharge permits, construction loans and grants, and other programs to prevent, abate and to control pollution of the waters of the state.

7. ***Maryland Drinking Water Law*** *(Environment Article, Annotated Code of Maryland Title 9, Water, Ice, and Sanitary Facilities; Subtitle 4 - Drinking Water):* This law provides the state with the primary enforcement responsibility for drinking water standards under the federal Safe Drinking Water Act.

8. ***Maryland Water and Sewerage Plan Act*** (*Environment Article, Annotated Code of Maryland, Title 9. Water, Ice, and Sanitary Facilities; Subtitle 5 – County Water and Sewerage Plans*): This law includes solid waste disposal and recycling plans. It requires regular submission of solid waste management plans by the counties and sets forth the minimum requirements of such plans. It provides for the appropriate coordination and review of the Plan and designation of the County agency responsible for formulation of the Plan.

9. ***Maryland Recycling Rate and Diversion Goal*** *(Environmental Article, Annotated Code of Maryland, Title 9. Water, Ice, and Sanitary Facilities; Subtitle 5 – County Water and Sewerage Plans, §9-505):* This law establishes a voluntary state-wide waste diversion goal of 60 percent and the method for calculating county diversion rates. It requires that certain information be reported by each county to the MDE to be used in determining source reduction credits. It also amends the MRA by requiring solid waste management plans to include a Recycling Plan that achieves an increase in the countywide recycling rate to 20 percent (counties with populations below 150,000) or 35 percent (counties with populations above 150,000) of the county's solid waste stream. The law also establishes a voluntary recycling rate of 55 percent.

10. ***Maryland Recycling Law*** *(Environment Article, Annotated Code of Maryland, Title 9, Water, Ice, and Sanitary Facilities; Subtitle 17 – Office of Recycling):* This law established an Office of Recycling within the MDE. It requires the submittal of county recycling plans and establishes waste reduction/recycling goals based on county population. The law includes provisions requiring newsprint recycling by the newspaper industry, telephone directory recycling by directory publishers and stipulates labeling requirements for plastic containers. The law also addresses composting as a recycling method and prohibits refuse disposal systems from accepting separately collected yard waste for disposal.

11. ***Maryland Recycling Act, Recyclable Materials and Resource Recovery Facilities, Alterations:*** House Bill 280 (HB280) changed the definition of "recyclable materials" under the MRA to remove incinerator ash and repealed the authority of a county to use a resource recovery facility to meet five percent of the waste reduction required to be achieved through recycling in the county's recycling plan

12. ***Maryland Natural Wood Waste Recycling*** *(Environment Article, Annotated Code of Maryland, Title 9, Water, Ice, and Sanitary Facilities; Subtitle 17 – Office of Recycling):* This law establishes requirements for the operation of natural wood waste recycling facilities in the state; provides that those facilities may operate only in accordance with the provisions of this Act; authorizes

the MDE to adopt additional regulations governing certain recycling facilities; requires the MDE to establish a permit system providing for exemptions and provides for the enforcement of this Act. The Act specifies that a person may not operate a natural wood waste recycling facility in the State without a permit issued by the MDE.

13. ***Maryland Air Quality Control Act*** *(Environment Article, Annotated Code of Maryland, Title 2, Ambient Air Quality Control):* This law allows for adoption of rules for air pollution control, including testing, monitoring, recordkeeping, and reporting and allows for determination of air quality control areas, including emissions standards and ambient air quality standards, for the air quality control areas. It specifies permitting requirements and requires training for municipal solid waste incinerator operators.

14. ***Maryland Environmental Noise Act*** *(Environment Article, Annotated Code of Maryland, Title 3, Noise Control):* This law establishes noise standards that are protective of human health and stipulates enforcement provisions.

15. ***Maryland Nonpoint Source Pollution Control Laws*** *(Environment Article, Annotated Code of Maryland, Title 4, Water Management; Subtitle 1 – Sediment Control and Subtitle 2 – Stormwater Management):* This law allows for the adoption of criteria and procedures by counties and soil conservation districts to implement soil erosion control programs and for counties and municipalities to implement stormwater management programs.

16. ***Maryland Oil Pollution Control Act*** *(Environmental Article, Annotated Code of Maryland, Title 4, Water Management; Subtitle 4 - Water Pollution Control and Abatement):* This law requires the MDE to regulate the transfer and storage of oil and other unctuous substances by setting approved methods, facilities, standards and devices for transfer, storage, separating, removing, treating, transporting or disposing of oil and other unctuous substances to prevent pollution of waters of the State.

17. ***Maryland Water Resources*** *(Environment Article, Annotated Code of Maryland, Title 5, Water Resources; Subtitle 5 – Appropriation or Use of Waters, Reservoirs, and Dams):* This law provides for the appropriation of waters of the State and establishes the permitting process to regulate such appropriations.

18. ***Maryland Water Resources*** *(Environment Article, Annotated Code of Maryland, Title 5, Water Resources; Subtitle 8 – Flood Control and Watershed Management):* This law provides that comprehensive flood and watershed management programs be prepared by each subdivision to control flooding and to protect the environmental quality of state watersheds. Allowable management techniques include storm drain and stream maintenance, local ordinances, land acquisition, and stormwater detention/retention structures.

19. ***Maryland Wetlands Law*** *(Environment Article, Annotated Code of Maryland, Title 5, Water Resources; Subtitle 9 – Nontidal Wetlands):* This law establishes a state-wide program to prevent the degradation and loss of nontidal wetlands due to human activity. It defines MDE responsibilities for regulating and conserving nontidal wetlands and provides for wetlands loss mitigation, banking and establishes a permitting program.

20. ***Maryland Used Oil Recycling Act*** *(Environment Article, Annotated Code of Maryland, Title 5,*

water Resources; Subtitle 10 – Used Oil Recycling): This law requires MDE to develop a public education program and to designate used oil collection facilities. The Act prohibits disposal of used oil into sewers, drainage systems or natural water, incineration or disposal as refuse.

21. ***Maryland Hazardous Materials and Hazardous Substances Act*** *(Environment Article, Annotated Code of Maryland, Title 7, Hazardous Materials and Hazardous Substances):* This law sets forth requirements for the control of defined hazardous substances, including their transportation, processing and disposal. It establishes permitting and certification requirements and empowers MDE to adopt regulations necessary to enact and enforce the law.

22. ***Maryland Environmental Service Act*** *(Natural Resources Article, Annotated Code of Maryland, Title 3, Environmental Programs; Subtitle 1 – Maryland Environmental Service):* This law allows for establishment of service regions (water supply, wastewater purification, solid waste disposal) and requires preparation of five-year plans. It created the Maryland Environment Service (MES) to manage the service regions. MES has broad powers to plan, operate, and finance solid waste management projects as well as water and sewage, projects.

23. ***Northeast Maryland Waste Disposal Authority*** *(Natural Resources Article, Annotated Code of Maryland, Title 3, Environmental Programs; Subtitle 9 – Northeast Maryland Waste Disposal Authority):* Created the Authority and specifies its powers. Enables the Authority to issue bonds under certain conditions. Provides ability for the Authority to undertake waste management projects on behalf of its member jurisdictions.

24. ***Maryland Forest Conservation Act*** *(Natural Resources Article, Annotated Code of Maryland, Title 5, Forests and Parks; Subtitle 16 – Forest Conservation):* The Act requires all units of local governments with planning and zoning authority to develop a Forest Conservation Program. Prior to approval of grading permits or erosion and sediment control plans, applicants must provide information on the condition of the existing forest and provide a plan for conserving the most valuable portions for the forest. The Act requires the submittal of two major components: a Forest Stand Delineation and a Forest Conservation Plan. The submittal of these two items is required by anyone making an application for subdivision, a grading permit or a sediment control plan on a land parcel meeting minimum size criteria.

25. ***Maryland Public School Recycling Plan*** *(Environment Article, Annotated Code of Maryland, Title 9, Water, Ice, and Sanitary Facilities; Subtitle 17 – Office of Recycling):* §9-1703 was amended in 2010 to require a county recycling plan to address the collection, processing, marketing and disposition of recyclable materials from county public schools.

26. ***Maryland Fluorescent and Compact Fluorescent Light Recycling*** *(Environment Article, Annotated Code of Maryland, Title 9, Water, Ice, and Sanitary Facilities; Subtitle 17 – Office of Recycling):* §9-1703 was amended in 2010 to require a county to develop a strategy for the collection and recycling of fluorescent and compact fluorescent lights that contain mercury.

27. ***Apartment Buildings and Condominiums*** *(Environment Article, Annotated Code of Maryland, Title 9, Water, Ice, and Sanitary Facilities; Subtitle 17 – Office of Recycling):* §9-1711, effective October 1, 2012, requires that a property owner or manager of an apartment building containing ten or more dwelling units; and that a council of unit owners of a condominium containing ten or more dwelling units shall provide for recycling for the residents in the

apartment building or condominium on or before October 1, 2014. The law allows the county to require the property owner or manager of the apartment building or the council of unit owners of the condominium "to report to the county on recycling activities in a manner determined by the county."

28. ***Environment, Recycling, Office Buildings Act*** *(SB370):* Requires counties to revise their 10-year solid waste management plans to include an Office Building Recycling Program to address recycling from office buildings with 150,000 square feet or more of office space.

29. ***Maryland Special Events Recycling*** *(Environment Article, Annotated Code of Maryland, Title 9, Water, Ice, and Sanitary Facilities; Subtitle 17 – Office of Recycling):* §9-1703 (b) and (c) were amended and §9-1712 was added in 2014, effective October 1, 2014, to require a county to address the collection and recycling of recyclable materials from special events. The law requires counties to include special event recycling in their recycling plans by October 1, 2015.

30. ***Statewide Electronics Recycling Law (2007)***: Mandates that manufacturers of covered electronic devices (computers, cellphones, televisions, etc.) register their products (screen size greater than 4 inches) with MDE, pay fees, and establish their electronics collection program.

31. ***Organic Waste, Organics Recycling, Collection and Acceptance for Final Disposal:*** Prohibits the owner or operator of a refuse disposal system from accepting loads of separately collected organic waste for final disposal unless the owner or operator provides organics recycling.

32. ***Expanded Polystyrene Food Service Products Ban:*** Bans the sale and use of food service products composed of expanded polystyrene.

33. ***Food Scraps Management***: House Bill 264 (HB264) requires large food waste generators to divert food waste from disposal if those generators are located within 30 miles of an organics recycling facility with the capacity and willingness to enter into a contract.

34. **Nickel Cadmium Battery Act (1995)**: Provides requirements for storage, transportation, and destination of nickel-cadmium batteries.

35. **Recycling Market Development (2021):** The Act requires the Office of Recycling of MDE to promote the development of markets for recycled materials and products in the State. Also, the act requires MDE to evaluate the availability of certain markets and identify businesses in the State that use recycled materials.

36. **Statewide Recycling Needs Assessment and Producer Responsibility for Packaging Material (2023):** This Act alters the definition of "Organics Recycling" to include the processing of certain compostable packaging materials in a certain manner. MDE is required to approve a certain producer responsibility organization for certain purposes on or before a certain date.

2.2. Regulations

Maryland regulations that apply to solid waste management include:

1. ***Maryland Solid Waste Management Regulation (****COMAR 26.04.07):* This regulation establishes

permitting (review, approval and public notification) requirements, design standards, operating procedures, closure requirements and post-closure monitoring requirements for sanitary, rubble, land clearing debris and industrial landfills. The regulations also include requirements for processing facilities, transfer stations and incinerators.

2. ***Development of County Comprehensive Solid Waste Management Plans*** *(COMAR 26.03.03):* This law requires each county to maintain a current, comprehensive solid waste management plan covering the succeeding ten-year period. It specifies plan content requirements and approval procedures.

3. ***Maryland Hazardous Waste Regulations*** *(COMAR 26.13):* This regulation establishes rules concerning the Disposal of Controlled Hazardous Substances and special medical waste. It provides waste listing, criteria defining hazardous wastes, definitions of hazardous and medical wastes, record keeping requirements (manifest), permitting requirements and regulations governing waste storage, transport and disposal.

4. ***Maryland Air Pollution Control Regulations*** *(COMAR 26.11.02, 26.11.03, 26.11.08, 26.11.19, and 26.11.42):* Sets forth air pollution control requirements for solid waste incinerators and landfill gas flares and for the issuance of permits (construction, operation, prevention of significant deterioration). Specifies Part 70 Permit issuance, content and hearing requirements. Operator training and emissions standards are set forth in Section 26.11.08. Section 26.11.19 sets volatile organic compounds control requirements (emission standards and guidelines) for municipal solid waste landfills meeting specified size and age requirements. On June 12, 2023, MDE published the final regulation addressing the control of landfill gas methane emissions from municipal solid waste landfills. The rule applies to active and closed MSW landfills that have accepted waste after 11/8/1987 and that have a design capacity greater than or equal to 2,750,000 tons and 3,260,000 cubic yards, and active and closed MSW landfills that have accepted waste after 12/31/1993 that have less than 2,750,000 tons or 3,260,000 cubic yards of waste but greater than 450,000 tons of waste in place. MSW landfills with a calculated methane generation rate greater than 8,548 tons per year must install a gas collection and control system (GCCS). MSW landfills with a calculated methane generation rate between 732 tons per year and 8,548 tons per year can either install a GCCS or evaluate surface methane emission rate, the results of which would determine if a GCCS is required.

5. ***Maryland Water Pollution Control Regulations*** *(COMAR 26.08):* These regulations require a permit for discharges of wastes or wastewater into the waters of the state. They specify permit application, issuance and hearing procedures and establish surface water and groundwater quality criteria.

6. ***Maryland Stormwater Management Regulations*** *(COMAR 26.17.02):* These regulations specify the minimum content of county and municipal ordinances and responsibilities for the review of stormwater management programs. They establish minimum control requirements and design criteria for stormwater management facilities and inspection and maintenance requirements.

7. ***Maryland Nontidal Wetlands Regulations*** *(COMAR 26.23):* These regulations define activities allowed in nontidal wetlands that require a permit from MDE. They provide requirements for buffer areas and mitigation and specify permit application, processing, review and approval requirements.

8. ***Maryland Noise Regulation*** *(COMAR 26.02.03):* This regulation sets noise standards that must be met through isolation of noise producing equipment, dampening of sound waves by insulation, equipment modification and redesign, land use management or other means.

9. ***Forest Conservation Regulations*** *(COMAR 08.19):* These regulations define activity to provide for the retention of existing forest cover while allowing development to occur. They require local jurisdictions to establish a program that will require the applicant to map the existing forest cover and submit a forest conservation plan to protect any residual forests.

10. ***Natural Wood Waste Recycling Facilities Regulations*** *(COMAR 26.04.09):* These regulate natural wood waste recycling, including the recycling of trees and other vegetative refuse. They establish permitting procedures and operating standards for these facilities and require that only natural wood waste is accepted. Facility discharges to the air or water are limited to those allowable under permits governing solid waste disposal. Wood waste may not be burned at the facility, except as permitted by MDE.

11. ***Scrap Tire Storage, Collection, Transferring, Hauling, Recycling, and Processing Regulations*** *(COMAR 26.04.08):* These regulations regulate the management of scrap tires with a focus on recycling. MDE authorizes scrap tire facilities and haulers by issuing licenses and approvals. The regulations provide technical and operational standards for scrap tire facilities. Scrap tire storage facility storage procedures, closure procedures, financial assurance requirements, license renewal and financial assistance are addressed.

12. ***Water Appropriation and Use Regulations*** *(COMAR 26.17.04):* These regulations specify permitting requirements and approval criteria applicable to the appropriation and use of waters of the state, including ground water.

13. ***Construction on Nontidal Waters and Floodplains*** *(COMAR 26.17.04):* This law provides evaluation criteria, permitting procedures and other requirements governing the construction, alteration or repair of structures or other obstructions located in the 100-year floodplain.

14. ***Sewage Sludge Management Regulations*** *(COMAR 26.04.06):* These regulations regulate the collection, handling, burning, storage, treatment, land application, disposal and transportation of sewage sludge and septage waste. They establish a permitting system for sludge transporters, processors, disposal facilities and land application sites.

15. ***Compost Regulations*** *(COMAR 15.18.04):* These regulations regulate the testing and distribution of compost, including branding and labeling of the product in addition to requirements for the facility operator.

16. ***Erosion and Sediment Control Regulations*** *(COMAR 26.17.01):* These regulations identify activities for which controls are required and specify plan approval procedures. They specify control measure design standards and inspection/enforcement requirements. They also describe content requirements of local sediment and erosion control ordinances.

17. ***Maryland Oil Pollution and Tank Management Regulations*** *(COMAR 26.10):* These regulations prohibit oil pollution, require report of any oil spill or discharge, specify a procedure for removal of any oil discharge and require an Oil Operations Permit from the MDE.

3 Local

3.1. Ordinances and Regulations

A summary of Howard County ordinances and regulations follows:

1. ***Sanitary Landfill Regulations*** *(Howard County Code, Title 18, Subtitle 6, Sections 18.600 through 18.606):* These regulations provide authority to the Director of Public Works to adopt rules and regulations regarding the design, construction, and operation of a sanitary landfill in the County. Subtitle 6 addresses numerous landfill operating and design requirements.

2. ***Permit and User Fees for use of Sanitary Landfills*** *(Howard County Code, Title 14, Subtitle 6, Sections 14.600 and 14.601):* This law establishes the requirement that persons using the Howard County Landfill are required to pay permit and user fees. County solid waste collection contractors, residents disposing of household waste, and County government operations are exempt from user fees.

3. ***Refuse Collection Charge*** *(Howard County Code, Title 20, Subtitle 9, Sections 20.900 through 20.904; and Title 15, Subtitle 5, Section 16.511):* This law establishes charges applicable to residential properties and to mobile home parks to fund the collection and disposal of solid waste. It also establishes a financial assistance program and the ability to charge a per bag fee for refuse over a set quantity.

4. ***Forest Conservation Act*** *(Howard County Code, Title 16, Subtitle 12):* This Act establishes a local Forest Conservation Program meeting the requirements of state law.

5. ***Unauthorized Removal of Recyclable Materials*** *(Howard County Code, Title 18, Subtitle 6A, Section 18.610):* This law prohibits the removal of recyclable material that is separated for collection under the County's recycling program by persons other than a County employee or contractor and stipulates penalties for violations.

6. ***Stormwater Management*** *(Howard County Code, Title 18, Subtitle 9):* This law establishes the framework, design criteria and financial components of the County's Stormwater Management Program.

7. ***Sediment and Erosion Control*** *(Howard County Code, Title 3, Subtitle 4):* In compliance with state law, this law establishes the framework of the County's control program and stipulates requirements for sediment control plans content, approval, permit issuance, inspections, enforcement and required surety.

8. ***Garbage and Trash Collection Rules*** *(Howard County Code, Title 18, Subtitle 10, Section 18.101):* These rules establish that the Director of Public Works is responsible for specifying requirements for management and collection of solid waste and recyclables.

9. ***Sanitary Landfill Regulations*** *(Howard County Code, Title 18, Subtitle 6; Title 14, Subtitle 6; and COMAR 26.04.07):* These regulations specify conditions for use of a County landfill and identify prohibited materials. The rules stipulate that users bringing waste to Howard County landfills must be permitted, that trucks must weigh at the scale house, and that refuse in vehicles must be covered. The rules prohibit scavenging.

10. ***Energy Efficiency and Environmental Design*** *(Howard County Code, Title 3, Subtitle 10, Section 3.10):* This law establishes requirements for Green Buildings for specific types and sizes of buildings. By reducing waste and increasing recycling, building owners can start to meet their required level rating.

11. ***Adequate Public Facilities Act*** *(Howard County Code, Title 16, Subtitle 11, Section 16):* This Act ensures that public roads, schools, and other infrastructure are adequate to accommodate new development in the County. By synchronizing new development with the availability of public facilities, this Act promotes orderly growth.

12. ***Fluorescent and Compact Fluorescent Light Recycling*** *(Howard County Resolution No. 110-2011):* This law provides a strategy for the collection and recycling of fluorescent and compact fluorescent lights that contain mercury.

13. ***Apartment and Condominium Recycling*** *(Howard County Resolution No. 7-2014 and Howard County Code, Title 18, Subtitle 6A, Section 18.611):* This law provides for the enforcement of apartment and condominium recycling

Summary of Solid Waste Acceptance Facilities in Howard County, MD

Appendix D

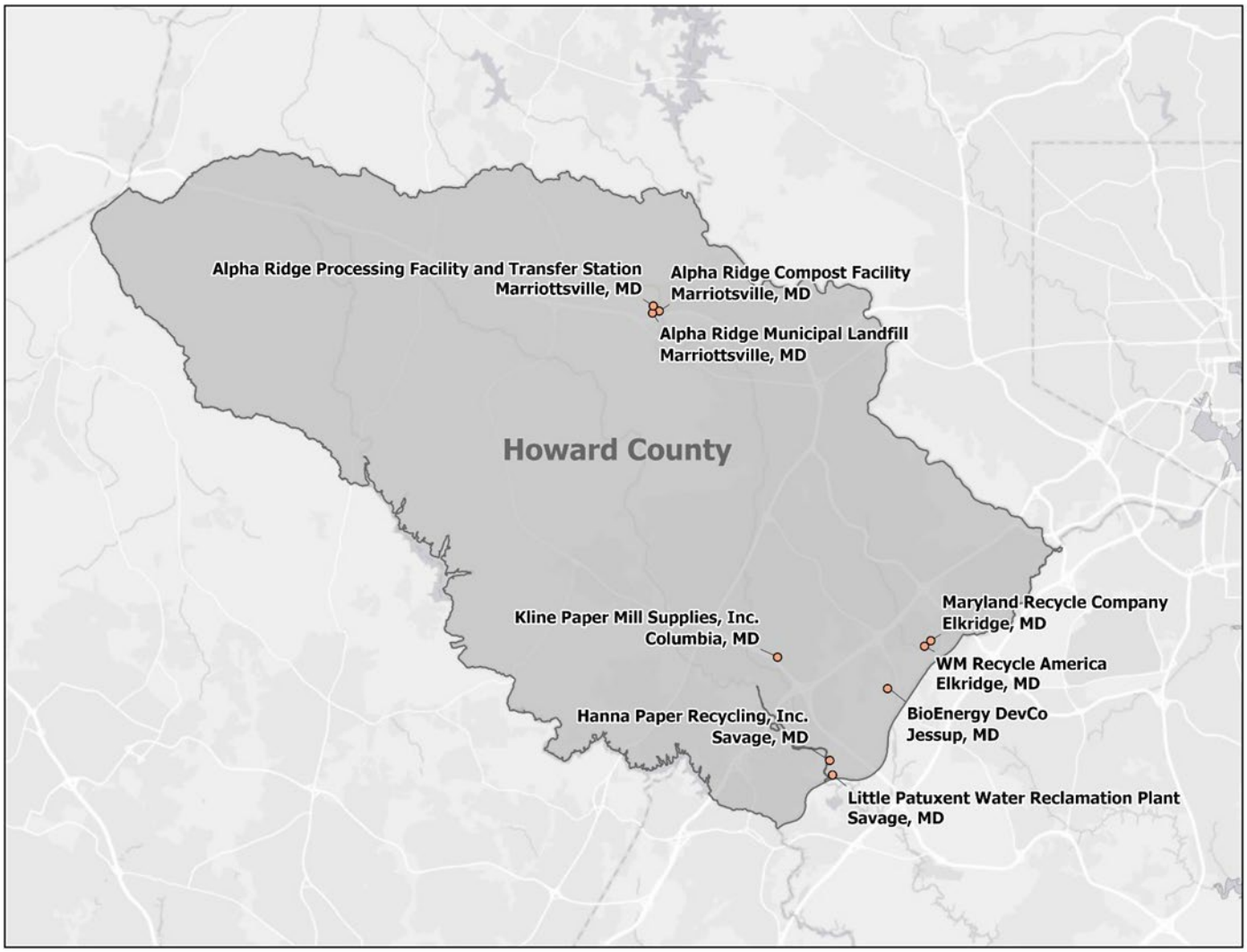
Waste Facilities in Howard County

Name	Location	Type Solid Waste Accepted or Generated	Ownership	Permit Status
Alpha Ridge Landfill	Intersection of Marriottsville Rd & 1-70	Non-hazardous municipal solid waste	Howard County Government	Approved -MDE Permit No. 2021-WMF-0110
Alpha Ridge Processing Facility and Transfer Station	Intersection of Marriottsville Rd & 1-70	Non-hazardous municipal solid waste	Howard County Government	Approved -MDE Permit No. 2017-WPT-0578
Ameriwaste Processing Facility and Transfer Station	7130 Kit Kat Road, Elkridge MD	Non-hazardous municipal, commercial, and C&D material	WM of Maryland	Approved – MDE Permit No. 2021-WPT-0572
Citron Hygiene Transfer Station	7184 Troy Hill Road, Elkridge MD	Non-hazardous commercial waste	Citron Hygiene US Corp	Approved – MDE Permit Number 2024-WTS-0687

Summary of Recycling and Compost Facilities in Howard County, MD

Name	Location	Type Solid Waste Accepted or Generated	Ownership	Permit Status
Alpha Ridge Compost Facility	2350 Marriottsville Rd Marriottsville, MD 21104	Wood waste, yard trimmings, and food scraps	Howard County Government	Approved -MDE Permit No. 2021-GCF-0004
Little Patuxent Waste Reclamation Plant	Between U.S. Route 1 and the CSX rail lines south of Savage.	Sludge generated on-site; septage accepted from private contractors.	Howard County Government	Approved Effluent Permit -MDE Permit No. 13-DP-1421
Hanna Paper Recycling, Inc.	8840 Greenwood Pl Savage, MD 20763	Secure paper shredding; all types of paper	Private	Not required
Kline Paper Mill Supplies, Inc.	9475 Gerwig Ln Columbia, MD 21046	All types of paper, old corrugated cardboard	Private	Not required
Maryland Recycle Company (Elkridge)	5618 Furnace Ave Elkridge, MD 21075	Ferrous and non-ferrous metals, lead acid batteries, and white goods	Private	Not required
WM Recycle America	7175 Kit Kat Rd Elkridge, MD	Recyclable materials	Private	Not required
BioEnergy DevCo	7900 Oceano Ave Jessup, MD	Organics	Private	Not required

Exhibit B-3 Map of Solid Waste Facilities in Howard County



Appendix E

Public Opinion Survey Results

Howard County Public Opinion Survey 2025-2034 Solid Waste Plan Update

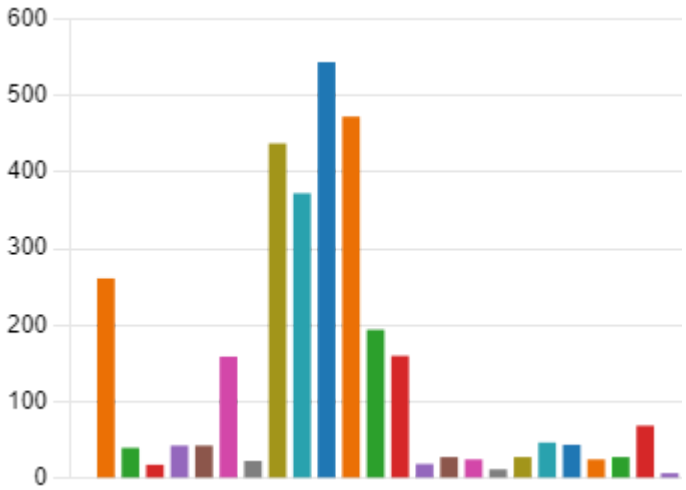
3110	12:23	Closed
Responses	Average time to complete	Status

1. Do you currently reside in Howard County?

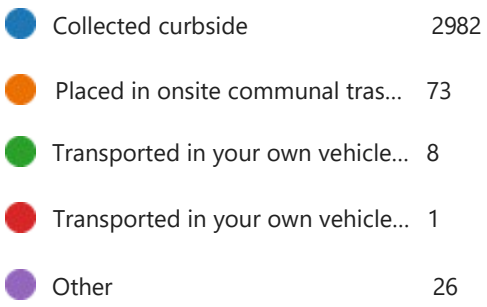
Yes	3097
No	13

2. Please select the zip code you live in

20701 (Annapolis Junction)	0
20723 (Laurel)	261
20759 (Fulton)	40
20763 (Savage)	18
20777 (Highland)	43
20794 (Jessup)	43
21029 (Clarksville)	159
21036 (Dayton)	23
21042 (Ellicott City)	437
21043 (Ellicott City)	372
21044 (Columbia)	543
21045 (Columbia)	472
21046 (Columbia)	194
21075 (Elkridge)	160
21076 (Hanover)	19
21104 (Marriottsville)	28
21163 (Woodstock)	25
21723 (Cooksville)	12
21737 (Glenelg)	28
21738 (Glenwood)	47
21771 (Mount Airy)	44
21784 (Sykesville)	25
21794 (West Friendship)	28
21797 (Woodbine)	69
Other	7

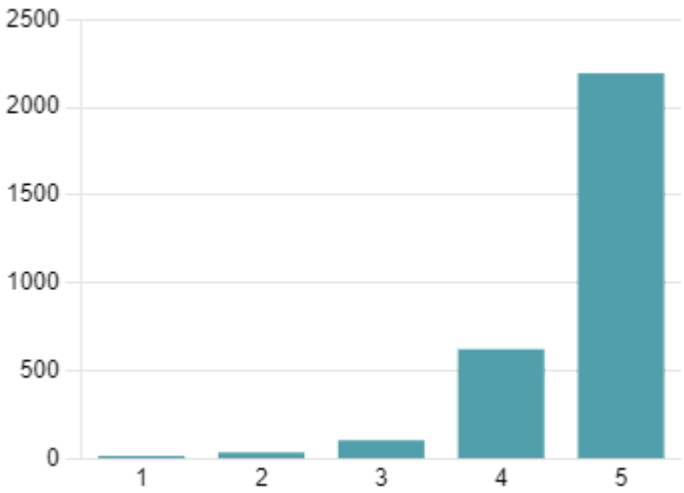


3. How is trash/garbage collected from your home?



4. How satisfied are you with Howard County's curbside trash collection program?

4.66
Average Rating



5. Please comment on your rating above.

1976
Responses

Latest Responses

"I'd like to see more and better educational materials as I am st...

"they are good"

6. How could the County improve the curbside trash/garbage collection program?

1646
Responses

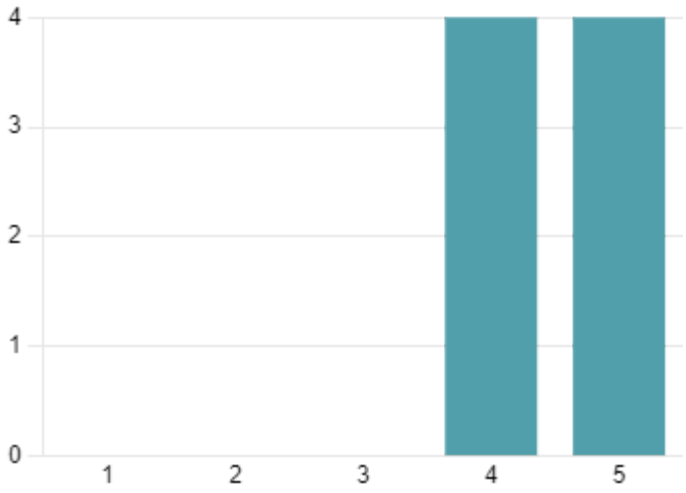
Latest Responses

"I'd like to see more and better educational materials as I am st…

"they are doing good for my trash bin at least."

7. How satisfied are you with your experience using the Howard County Landfill drop-off area in Marriottsville?

4.50
Average Rating



8. Please comment on your rating above.

6
Responses

Latest Responses

9. How could the County improve the landfill's drop-off area in Marriottsville?

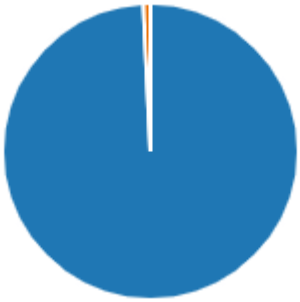
6

Responses

Latest Responses

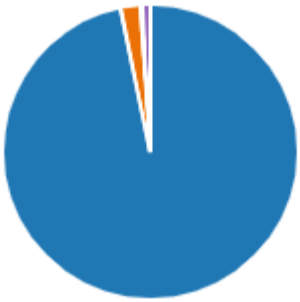
10. Do you recycle at your home?

Yes	3067
No	23



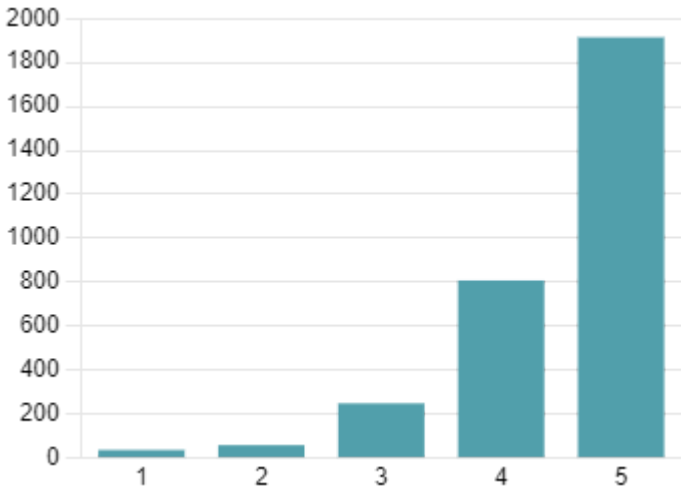
11. How are recyclable materials collected from your home?

Collected curbside	2967
Placed in onsite communal recy...	67
Transported in your own vehicle...	6
Transported in your own vehicle...	1
Other	26



12. How satisfied are you with Howard County's recyclable materials collection program?

4.47
Average Rating



13. How could the County improve the recyclable materials collection program?

1862
Responses

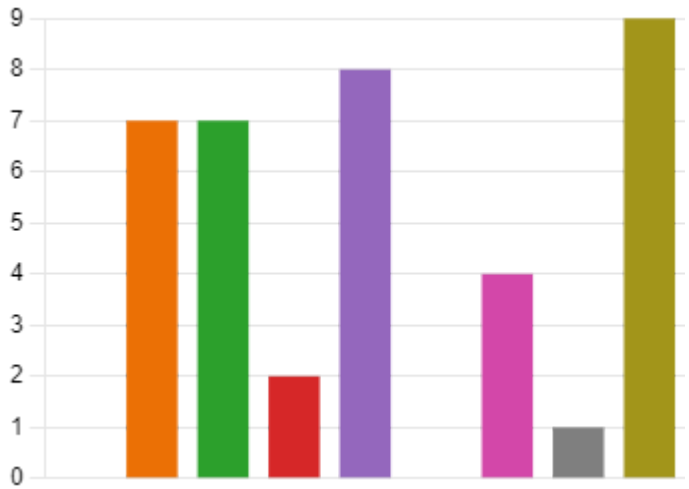
Latest Responses

"I'd like to see more and better educational materials as I am st...

"they are good but sometimes they spill on the roads while du...

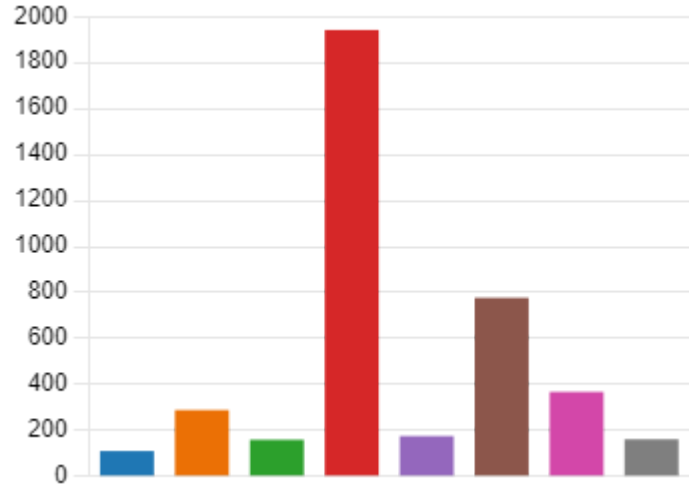
14. Which of the following reasons best describes why you do not recycle at home? (Select all that apply)

I do not believe recycling is imp...	0
It is not worth my time to separ...	7
I do not have room/space for se...	7
My waste collector and/or prop...	2
I do not believe my recyclable ...	8
Recycling collection costs extra	0
It is confusing	4
Not enough information is avail...	1
Other	9



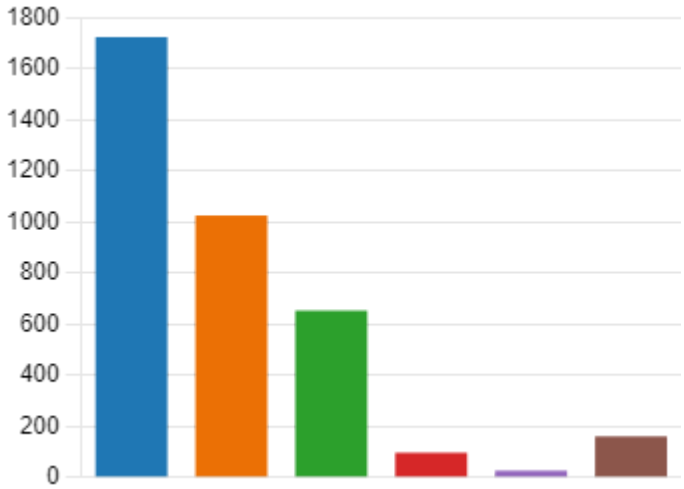
15. What do you do with yard trim (i.e. leaves, branches, grass clippings, etc.) generated at your home?

Not applicable (i.e. live in an ap...	111
Collected and managed by my ...	289
Place yard waste in the same co...	160
Separate yard waste from trash ...	1941
Keep yard waste separate from t...	176
Compost yard waste in backyard	777
Nothing - leave on yard	368
Other	162



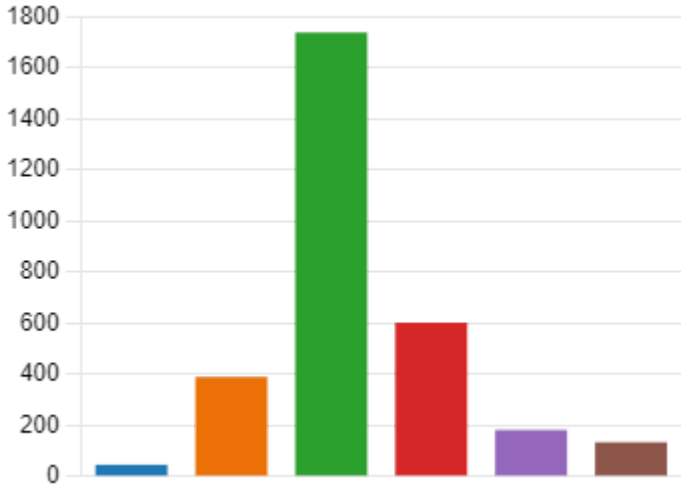
16. How do you dispose food scraps generated at your home? (Select all that apply)

Dispose with trash	1723
Participate in the County's "Fee...	1025
Compost at home	653
Feed to pets	97
Transport in your own vehicle to...	27
Other	161



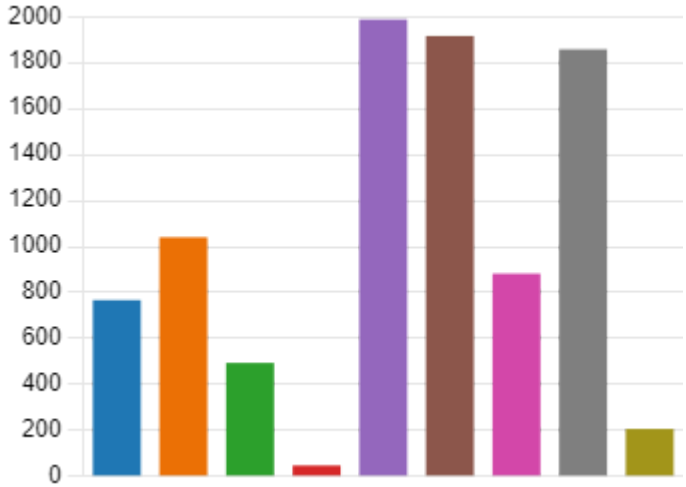
17. On average, how many times *per year* do you use the Howard County Landfill drop-off area to dispose of materials?

None - I did not know this facilit...	46
None - I am aware this facility is...	389
1 to 4 times	1737
5 to 8 times	602
9 to 12 times	182
13 or more times	134



18. Which material(s) do you bring to the Howard County Landfill drop-off area? (Select all that apply)

Household trash/garbage	767
Recyclable materials	1040
Yard waste	494
Food Scraps	48
Household hazardous waste	1987
Bulky waste (i.e. furniture, matre...	1915
Motor oil/antifreeze	882
Electronics	1857
Other	207

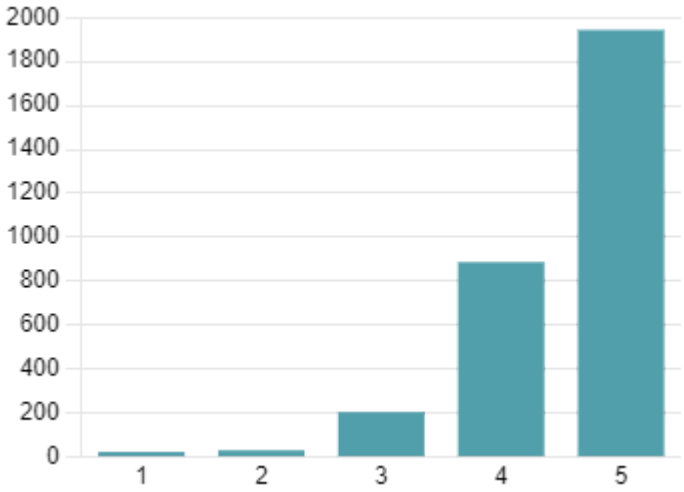


19. In the last year have you purchased mulch, compost, or topsoil from the County's Composting Facility?

No - I did not know this facility/...	1149
No - I am aware this facility/serv...	1764
Yes - 1 or 2 times	148
Yes - 3 or 4 times	23
Yes - 5 or more times	6

20. Overall, how satisfied are you with the solid waste and recycling services and programs provided by and available in Howard County?

4.52
Average Rating



21. Please comment on your rating above.

1517
Responses

Latest Responses

"I'd like to see better educational materials on what items can b...

"I am trying to obtain a green bin - I have called several times ...

22. What is your primary source of information for questions on solid waste programs or services in Howard County? (Select all that apply)

County's website	2659
County's social media (Faceboo...	324
Newsletters/flyers	908
Private collector	5
Other	319

23. Please use this space to share other thoughts, comments or ideas on solid waste management programs or services in Howard County.

    For more information or to sign up for the County's solid waste newsletter, please visit the Howard County website.

    Howard County | Howard County (howardcountymd.gov)

670
Responses

Latest Responses

"I have called several times - the bin to drop off compost materi...

Appendix F

Permitted C&D Landfills in Maryland

Permitted C&D Processing Facilities in Maryland (1)

County	Facility Name	Address
Anne Arundel	Tolson & Associates Rubble Landfill	1451 Capitol Odenton, MD 21113
Baltimore County	HoneyGo Run Reclamation Center	10710 Philadelphia Rd Perry Hall, MD 21128
	Days Cove Rubble Landfill Lateral Expansion	6425 Days Cove Rd White Marsh, MD 21162
Prince George's County	Ritchie Land Reclamation Limited Partnership	2001 Ritchie Marlboro Rd Upper Marlboro, MD 20774
Queen Anne's	Baker Rubble	501 4-H Park Rd Queenstown, MD 21658

Source: 2022 MDE solid waste report

[1]These facilities are privately-owned and operated and thus, recover costs from fees charged to customers. No county facilities are planned for this purpose during the planning period.