Table of Contents

TABLES

Lists of tables, figures, and appendices to be updated.

FIGURES

APPENDICES

ABBREVIATIONS AND ACRONYMS

Formal names for offices, agencies, institutions, and programs are capitalized; technical terms are in lower case.

ABS	acrylonitrile butadiene styrene (e.g., Lego)
AD	anaerobic digestion; anaerobic digestor
AVAC	automated vacuum collection
BCAA	Baltimore Clean Air Act
BCCF	Baltimore City Compost Facility
BCPS	Baltimore City Public Schools
BCRP	Baltimore City Department of Recreation and Parks
BFWRS	Baltimore Food Waste and Recovery Strategy
BPPF	Baltimore Patapsco Pelletizer Facility
BOS	Baltimore Office of Sustainability
BRC	Baltimore Recycling Center
BRPF	Back River Pelletech Facility
BRWWTP	Back River Wastewater Treatment Plant
BRESCO	Baltimore Refuse Energy Systems Co. (now Wheelabrator)
BSP	Baltimore Sustainability Plan
BZWP	Baltimore Zero Waste Plan
CAP	Baltimore City Climate Action Plan
CAPEX	capital expenditure; capital costs
CASP	covered aerated static pile (composting)
CDL	container deposit law; bottle bill
C&D	construction and demolition
DBO	design-build-operate (contract)

DBFO	design-build-finance-operate (contract)
DHCD	Baltimore City Department of Housing and Community Development
DP3	Baltimore City Disaster Preparedness and Planning Project
DPW	Baltimore City Department of Public Works
EPR	extended producer responsibility
EPS	expanded polystyrene, Styrofoam
FDA	Food and Drug Administration
GHG	greenhouse gas
HDPE	high density polyethylene; no. 2 plastic
HFPA	Healthy Food Priority Area
HHW	household hazardous waste
ICI	industrial, commercial, and institutional (sectors)
ILSR	Institute for Local Self Reliance
LEED	Leadership in Energy and Environmental Design
LMO	last mile organization
LWBB	Less Waste, Better Baltimore (Plan)
L&J	L&J Waste Recycling, LLC
MDE	Maryland Department of the Environment
MDP	maximum diversion potential
MES	Maryland Environmental Service
MFD	multi-family dwelling
MRA	Maryland Recycling Act
MRC	mandated recycled content
MRF	materials recovery facility

MSW	municipal solid waste
SWMP	solid waste master plan

INTRODUCTION

Statement of Purpose

The intent of this Ten-Year Solid Waste Management Plan is to provide an accurate description of the City's solid waste management activities to the public and to comply with Maryland regulations. The current plan is for the planning period 2024-2033 and is an update to the plan that was adopted by the Mayor and City Council in December 2015. This update has been prepared in accordance with current state planning regulations (Code of Maryland Regulations, Title 26, Subtitle 03, Chapter 03, or COMAR 26.03.03) which requires the Plan to address waste management and recycling for a period of at least 10 years.

Key updates to this Plan include the prioritization of waste prevention and diversion, sustainable materials management, and orienting all solid waste disposal activities to serve the City's best interests and meet its' sustainability goals. This Plan provides the residents of Baltimore with information on the City's current and future solid waste management system. It also outlines ways in which the City can continue to successfully manage and reduce waste by meeting solid waste management goals.

Solid Waste Management Goals

- The primary solid waste management goals that the City plans to achieve over the planning period 2024-2033 are:To provide residents with waste and recycling disposal capacity, waste collection services, and waste reduction opportunities;
- To increase the efficiency and cost effectiveness of the solid waste program;
- To change waste & recycling behaviors, increase recycling rates and decrease contamination through education, outreach & engagement ;
- To implement waste reduction strategies outlined in the Less Waste Better Baltimore Plan;
- To minimize improper waste disposal and littering;
- To promote legislation that supports waste diversion and source reduction goals; and
- To explore opportunities to increase organics recycling in Baltimore City and create local organics processing capacity

Plan Organization

The Ten-Year Solid Waste Management Plan is divided into five chapters, the content of which is dictated by COMAR 26.03.03.03:

Chapter 1: "Goals and Regulatory Background" describes the legal and institutional framework for the City's solid waste management system, including City goals and objectives;

Commented [H(1]: and also in alignment with DPW's mission to *"To be a strong proponent and protector of our environment and the health and vitality of our communities"*

Commented [H(2]: this needs to be reworded. we say plan and update too many times in the span of two sentences and its confusing

Commented [C(3]: I would add to this list diverting waste to be repurposed...

Commented [R(5]: Are these goal regulatory or more visionary - meaning what the city plans to achieve over the next 10 years? Some suggested text changes here for consideration.

Commented [MR6]: These are placeholders based on goals from our last SWMP and need input from @Moore-Jackson, Yvonne (DPW) , @Sykes-Coates, Toya Y. (DPW) , @Hosain, Sophia (DPW)

Commented [MR7R6]: Mayor's Strategic Pillars related to SW:

- Improve residential solid waste pickup through route modernization, staff recruitment, retention, and service changes.
- Increase the amount of food waste diverted from the residential waste stream through food scrap drop-off, composting workshops, and partnerships with local institutions.
- Distribute recycling carts to Baltimore households and increase public awareness of recycling services provided by the City, improving recycling rates and sustainability.
- Improve air quality and move the city closer to zero waste through more sustainable waste management practices, including recycling and composting.

Chapter 2: "Background Information" describes the demographic and land use information of Baltimore City;

Chapter 3: "Existing Solid Waste Management System" includes waste generation data, estimates for waste generation and characterization, and information on current waste management facilities in the City;

Chapter 4: "Assessment of Needs and Constraints" provides an evaluation of the current waste management system and its future potential; and

Chapter 5: "Plan of Action," establishes a plan for the City to achieve its solid waste management goals.

Plan Approval Process

This Ten-Year Solid Waste Management Plan was prepared by Geosyntec in coordination with the Bureau of Solid Waste, a unit of the Baltimore City Department of Public Works. Within the Department of Public Works, the Bureau of Water and Wastewater was asked to provide data and review the information contained in the plan. Other entities contributing to the Plan were Baltimore City Department of Planning, Office of Sustainability, Northeast Maryland Waste Disposal Authority, and neighboring counties. A draft version of the plan was submitted to Maryland Department of the Environment (MDE) for preliminary review and comment prior to developing the final plan, which was later submitted to the Baltimore City Council. A series of public meetings and hearings were held, in addition to City Council review. Final review was completed after receiving comments during the approval process for the 2013-2023 plan. After incorporating plan comments from all stakeholders, the Mayor and City Council adopted the final plan on October 30, 2014, with amendments adopted on December 18, 2015. The adopting and amendatory Council Resolutions are included in Appendix A. The MDE approval letter is included in Appendix B.

Commented [C(8]: Do we need to put in blanks for dates, etc? If someone is coming cold to this plan they will think that the process is comleted.

Commented [MR9R8]: I agree that more information on or a graphic illustrating the timeline would be helpful for context.

Commented [S(10R8]: sounds good to mee. More is less.

Commented [H(11]: and residents?

Professional Certification

I hereby certify that this document was prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, **License No. 57689** and **Expiration Date 06 June 2023**.

_____

Sean T. O'Donnell, Ph.D., P.E.

_____

Date

1. GOALS AND REGULATORY BACKGROUND

As required by state regulations for the development of comprehensive solid waste management plans, Chapter 1 discusses Baltimore City's goals regarding solid waste management, the structure of the City's government as it relates to solid waste management, and state, federal, and local laws and regulations which effect the planning, establishment, and operation of solid waste disposal systems by the City.

1.1 Goals and Objectives

Since 1872, Baltimore City has provided solid waste collection and disposal services for its residents. While waste that once was collected in horse-drawn carts is now collected in trash compacting motor vehicles, the original purpose of the solid waste management system remains the protection of public health and the environment. Effective collection and disposal of solid waste is critical to public health, especially in high-density urban areas. To provide effective sanitation services to its residents, the City must use its limited financial resources efficiently. As such, the City's primary solid waste management goal is to cost-effectively provide and facilitate safe and proper sanitation, including the collection and disposal of wastes generated within the City, while making progress towards the City's sustainability goals.

Commented [C(12]: Since we are throwing in some history and evolution of solid waste, it would be prudent to add some sentences about the importance of recovery of recyclables, food donations and animal feed/composting, as how communities treat their waste can evolve.

The City's solid waste management system consists of a mixture of public and private services. The City primarily provides collection of waste and recyclables from single-family residences and condominiums under contract with the City, while private contractors provide collection services to most multi-family residences and commercial and industrial establishments. The City believes it can collect and dispose of residential solid waste most effectively and efficiently through an integrated and comprehensive waste management system that prioritizes source reduction, reuse, and recycling while transitioning away from waste to energy and landfilling for waste disposal. To continue to provide efficient and effective solid waste services to the residents of Baltimore, the City has split its goals and objectives into two categories: goals specific to the planning period covered by this SWMP, and goals guiding overall solid waste management strategy.

Commented [M(13]: we need to evaluate how pro-incineration we want to be

Goals Specific to the Planning Period: 2024 to 2033

The City's goals for the ten-year planning period were developed by assessing the immediate needs of the solid waste management system. These goals are meant to achieve the City's primary solid waste management goal (to cost-effectively provide and facilitate safe and proper sanitation to City residents) while also complying with all relevant state and federal requirements. The City's goals for the planning period of 2024-2033 are:

- To provide residents with waste disposal capacity, waste collection services, and waste reduction opportunities;
- To increase the efficiency and cost effectiveness of the solid waste program;
- To change waste & recycling behaviors, increase recycling rates and decrease contamination through education, outreach & engagement

- To implement waste reduction strategies outlined in the Less Waste Better Baltimore Plan;
- To minimize improper waste disposal and littering;
- To protect public health and the environment;
- To promote legislation that supports waste diversion goals; and
- To explore opportunities to increase organics recycling in Baltimore city.

Goals Guiding Overall Solid Waste Management Strategy

The City's goals guiding overall solid waste management strategy are taken from a variety of planning documents produced by the City. Whilethese planning documents are not focused solely on solid waste management, they all contain aspirations and goals related to public health and environmental sustainability in the solid waste sector. These goals provide long-term benchmarks to inspire ambitious solid waste strategy during the planning period. Many of these goals provide a roadmap for the City to achieve zero-waste status. The City's goals guiding overall solid waste management strategy are summarized below by the planning document in which they appear.

Baltimore Sustainability Plan

The Baltimore Sustainability Plan (BSP) was published in 2019 by the Baltimore Office of Sustainability. The BSP outlines a zero-waste strategy for the City and presents three major goals, with associated action items:

1. Increase the amount of trash that is diverted from Quarantine Road Landfill (QRL) and BRESCO to recycling programs. Specific action items include providing free recycling bins to all City residents, launching an anti-litter, pro-recycling campaign, and creating and implementing a zero-waste plan.
2. Expand the City's Waste to Wealth Initiative (see below). Specific action items include implementing the Baltimore Food Waste and Recovery Strategy (BFWRS, see below), siting a local compost facility, and revising codes/creating ordinances to eliminate waste and encourage reuse of deconstructed building materials.
3. Pursue legislative and policy changes to reduce the waste stream. Specific action items include imposing a fee for plastic bags, creating a city government procurement committee to incentivize source reduction, and developing a plan for a "Save as You Throw" program.

Waste to Wealth Initiative

The Waste-To-Wealth Initiative was developed by the Baltimore Office of Sustainability,to help grow businesses in Baltimore City while reducing overall waste generation. The initiative seeks ways to support local businesses that are using waste (secondary materials) to make products rather than primary (virgin) materials.

The initiative acknowledges that while several businesses in Baltimore have already engaged in innovative reuse and repurposing strategies for a wide variety of secondary materials, they need support from the City. By fostering businesses that seek to capture value from secondary materials before they enter the waste stream, it is hoped the City can stimulate job creation, combat blight, and encourage resident-led

Commented [SO14]: Consider updating these goals to be more specific and in line with public comments/plan of action (Section 5) once Section 5 is complete

Commented [C(15R14]: We may want to add resiliency to our list; funding and services provided are on our residents' minds since COVID and our struggles with personnel and equipment.

Commented [MR16R14]: See my comments on the same goals listed on pg. 11

Commented [H(17R14]: can we re-order these so that the sustainability and waste reduction goals are at the top of the list?

Commented [H(18]: can we establish a standard for # of spaces after period. Seeing different things. Generally its 1 or 2 but we need to be consistent

Commented [C(19]: Shouldn't we refer to this as Wheelabrator or whatever company name they operate under?

Commented [R(20R19]: Yes, I think it's WinWaste.

Commented [H(21]: It might be nice to list out the specific goals in sub-bullets. Some we have achieved and revisiting the formatting might call them out more effectively

Commented [C(22]: Are we serious about such an effort?

Commented [MR23R22]: @Richardson, Ava (DOP) how active is the Waste to Wealth Initiative and Save as you throw program?

Commented [R(24R22]: Food waste is ongoing, C&D efforts have transitioned out, and camp small is still going strong. Added text here. There was never a save as you throw program, that was a recommendation in the BFWR plan

Commented [H(25R22]: @Collins, Marcia (DPW) this would be in line with DPW's desire to explore the feasibility of an enterprise fund model

Commented [R(26]: Not sure this is relevant anymore.

greening efforts to revitalize City neighborhoods. The initiative is designed to do this by targeting three high-value, primarily non-residential wastes that comprise a significant portion of waste generated in the City:

1. Food waste, of which it is estimated that the City generates nearly 100,000 tons annually;
2. Construction and demolition (C&D) debris, which makes up over 40% of the City's overall waste stream; and
3. Wood waste, which makes up only 6% of the City's overall waste stream but offers significant potential for high value reuse.

Commented [H(27]: can we include a graphic that visually represents the city's most recent waste characterization study

Baltimore Food Waste and Recovery Strategy

The Baltimore Food Waste and Recovery Strategy (BFWRS) was published in 2018 by the Baltimore Office of Sustainability in partnership with the Institute for Local Self-Reliance. In addition to presenting the reasons to reuse edible food and compost non-edible food waste, the BFWRS highlights seven local case studies and sets goals and strategies for recovering food waste in the City. The ten major goals outlined in BFWRS are as follows, with a target date of 2040 in each case:

1. Reduce commercial food waste in the City by 50%;
2. Eliminate all food waste from higher education institutions;
3. Divert 90% of food and organic waste generated by Baltimore City Government agencies from landfill or incineration;
4. Reduce household food waste in Baltimore by 80%;
5. Ensure all Baltimore City residents have access to organic waste collection at home or in their neighborhoods;
6. Divert 80% of residential food and organic waste from landfill or incineration;
7. Create composting and anaerobic digestion facilities capable of processing all the City's organic waste;
8. Support the food waste diversion market by ensuring an adequate supply of organic waste is being diverted to compost and anaerobic digestion facilities;
9. Attain 90% food and recyclable waste diversion in City K-12 schools; and
10. Create a supportive culture for food waste reduction and diversion in K-12 students, faculty, and staff.

To meet the above goals, BFWRS outlines over 60 short, medium, and long-term strategies to be implemented by the City, many of which will require significant funding to be approved by the City Council.

Commented [C(28]: should use Mayor and City Council here.

Camp Small – Wood Reutilization

Camp Small is zero waste, wood waste collection yard run by the Baltimore City Department of Recreation and Parks. The 5-acre site is located in the Jones Falls Valley just north of Cold Spring Lane. Every day, City crews and contractors bring logs, chips, and brush to the site for processing. In early 2016, the Rec & Parks Forestry Division, in collaboration with the Baltimore Office of Sustainability, began the Camp Small Zero Waste initiative in an effort to sort and distribute the variety of wood products at the site.

Climate Change Adaptation and Resilience Planning

To mitigate the severity of future impacts due to climate change, and to adapt to known risks facing a low-lying coastal region, the City is working to instill resilience into vulnerable systems and infrastructure. In addition to a multitude of ongoing projects and initiatives, two plans have been created that focus on mitigation and adaption strategies:

1. Climate Action Plan (CAP). The CAP was developed by the Office of Sustainability in 2012 to reduce the City's greenhouse gas emissions through a range of strategies targeted at reducing consumption of fossil fuels. An updated version of the CAP will be released in December 2023 outlining a roadmap to carbon neutrality, environmental justice-focused climate actions and climate mitigation priorities

Disaster Preparedness and Planning Project (DP3). Baltimore takes a comprehensive approach to hazard mitigation planning, recognizing the City's vulnerability to the impacts of severe hazard events and the need to increase our resilience to disaster. Baltimore's Disaster Preparedness and Planning Project (DP3) was first produced by the Department of Planning in 2013 to address both existing hazards and the predictions of the impacts of climate change on these natural hazards, including but not limited to heat waves, sea level rise, increased precipitation, and flooding. The 2018 update addresses changes in priorities that have taken place since the plan was created 5 years ago and includes the latest science. It also highlights the most recent climate-related disasters the city has faced and features many new strategies and actions to help Baltimore continue moving forward with hazard mitigation and community preparedness. In both cases, public services such as solid waste management are vulnerable to changing climate patterns but also offer solutions.

Less Waste, Better Baltimore

In 2019 and 2020, the City of Baltimore drafted the "Less Waste, Better Baltimore" (LWBB) Strategic Plan, informed by the goals of the BSP. The LWBB Plan was intended to:

1. Outline a clear and achievable vision for improving Baltimore City's solid waste and recycling system over both the near- and long-term, with the goal of maximizing waste reduction, reuse/repair, recycling, and sustainable management of materials;
2. Develop actionable strategies to achieve this goal; and
3. Identify potential impacts on existing solid waste management systems, including programmatic and infrastructure needs, investment challenges, and associated policy or regulatory initiatives.

As a result of the recommendations outlined in the LWBB Plan, Baltimore City now provides free recycling carts to all households, designated food waste drop-off locations, is planning for the development of local compost processing facilities, and is considering constructing a C&D MRF to increase diversion and reuse of construction waste.

1.2 Structure of Baltimore City Government

In the City of Baltimore, the Department of Public Works (DPW) is the primary agency responsible for planning and implementing solid waste management programs. DPW is responsible for fulfilling the City's solid waste management obligations. Figure 1-1 below shows the DPW organizational structure.

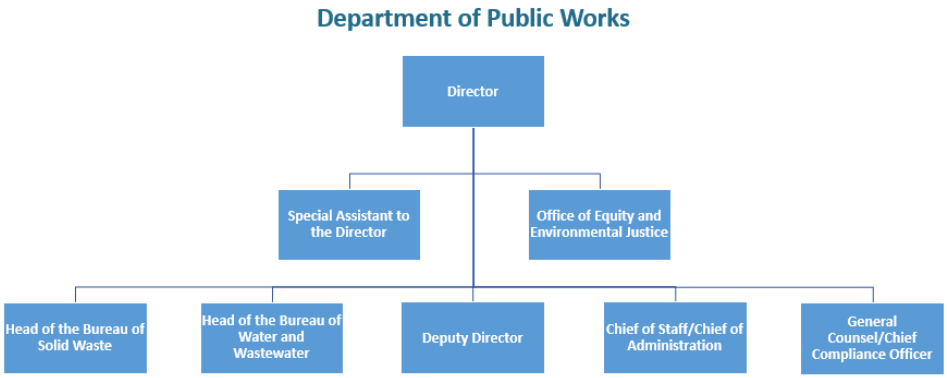


Figure 1-1. Baltimore City DPW

Within DPW, the Bureau of Solid Waste (BSW) is the entity that plans and implements solid waste management programs.

Bureau of Solid Waste

The Bureau of Solid Waste is comprised of multiple Divisions. Figure 1-2 below displays the organizational structure of the BSW's leadership team.

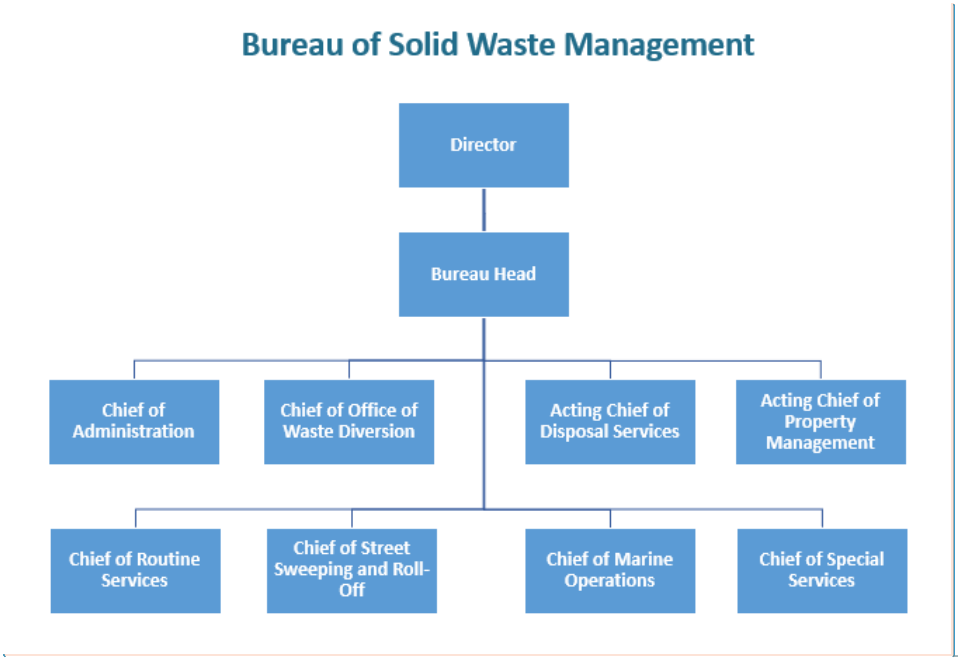


Figure 1-2. Bureau of Solid Waste Management Organizational Structure

Office of Administration

The Office of Administration provides administrative support to perform data compilation for reports and analyze operations to maximize efficiency. Figure 1-3 below shows the organizational structure of the Office of Administration.

Commented [M(29]: I believe we have a full chief of property mgmt, not 'acting'

Commented [M(30R29]: We need to include convenience centers under the chief of street sweeping, to make sure those are included

Commented [MR31R29]: I suggest we take out "Acting" from all positions so that we illustrate the permanent structure of the org chart.

Commented [H(32R29]: @Sykes-Coates, Toya Y. (DPW) This has my title as "Chief" please advise

Commented [S(33]: @Resler, Meghan (DPW) will forward an updated org chart for the Office of Administration - need to remove the CDL position as it belongs to another operation

Commented [S(34R33]: Fig 1-3

Commented [S(35R33]: emailed 1/17/23

Commented [S(36R33]: @Resler, Meghan (DPW) also add under the Office of Administration: Works closely with internal and external stakeholders to create sustainable initiatives that correlate with disposal services, recycling, zero waste education.

Commented [MR37R33]: Office of Administration Org Chart SWMP updated 1-17-23- 011723.xls

Commented [MR38R33]: Property MGT Org chart-updated 1-17-23.xls

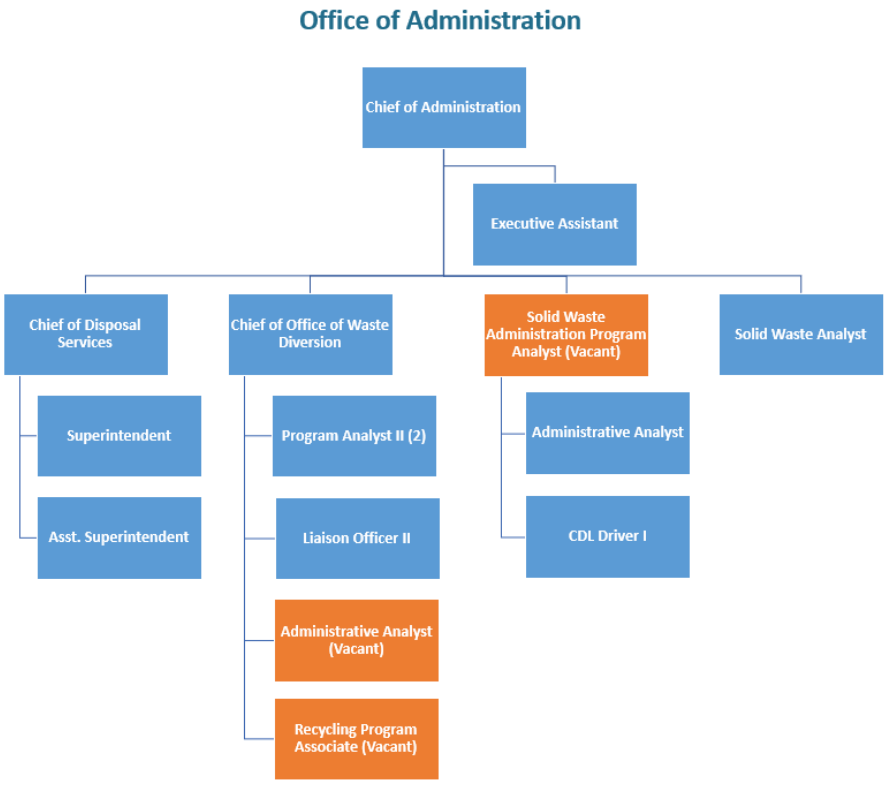


Figure 1-3. Office of Administration Organizational Structure

Office of Waste Diversion

The Office of Waste Diversion plans and manages initiatives and studies designed to advance zero waste and sustainable materials management efforts across BSW operations. They also provide administrative support for the City's recycling services, and act as a resource for residents to find information about recycling, composting, and solid waste services.

The Office of Waste Diversion's responsibilities include:

1.
2. Developing, implementing, and evaluating the Bureau of Solid Waste's zero waste and waste diversion pilot programs;
3. Annual reporting, including a report on the City's efforts to remediate illegal dumping;

Commented [H(39]: add other reports

Commented [H(40R39]: MRA, SR,

4. Updating the City's 10 Year Solid Waste Management Plan;
5. Coordinating the Mayor's community-focused annual Spring and Fall litter cleanup events;
6. Providing administrative support forthe City's Recycling Program;
7. Researching and pursuing industry best practices for advancing zero waste
8. Providing feedback on proposed legislation pertaining to BSW operations
9. Facilitating education and outreach initiatives with residents on waste diversion programs
10. Managing BSW grants
11. Conducting research and extensive planning functions to develop and recommend capital improvements that prioritize sustainable materials management principles

Figure 1-4 below shows the organizational structure of the Office of Waste Diversion.

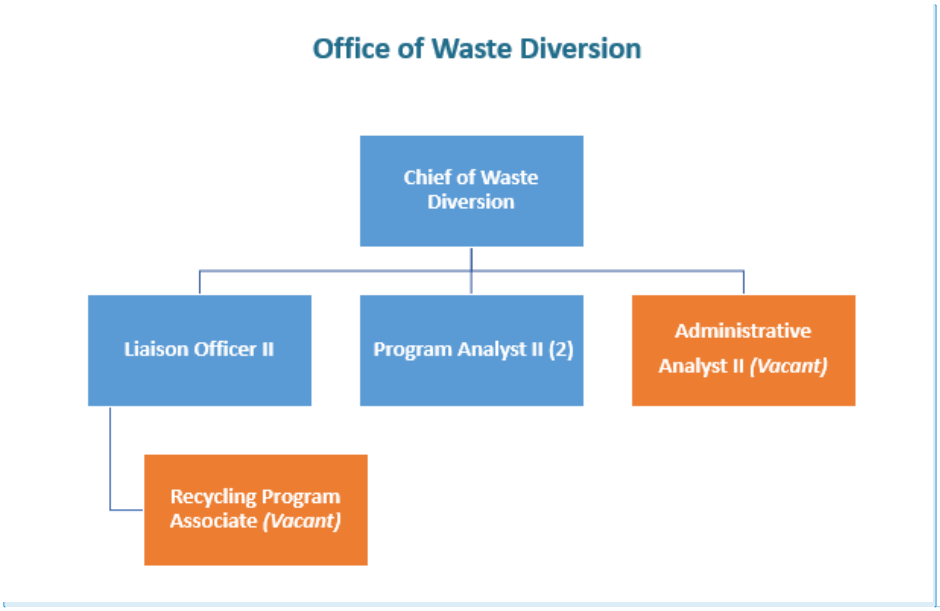


Figure 1-4. Office of Waste Diversion Organizational Structure

Disposal Services Division

The Disposal Services Division manages mixed refuse and recycling materials at Quarantine Road Landfill (QRL) and the Northwest Transfer Station (NWTS), which is integral to the efficiency of the Bureau of Solid Waste by providing a centralized drop off facility for trucks to shorten trips and consolidate material prior to transfer to Baltimore Energy Systems Company (BRESCO) or to recycling facilities.

Commented [S(41]: Line #8 - remove this is managed by Administration (Erik)

Commented [S(42R41]: Line #6 should give a description of some of the recycling program initiatives;/collaborations/projects i.e., popup grow centers, partnerships with BCPS for recycling collection, composting initiatives.....

Commented [M(43R41]: Line 9 also falls under administration, not waste diversion

Commented [H(44R41]: Isnt line #7 also managed by John?

Commented [H(45]: this needs updatng

Commented [C(46]: Wheelabrator or most recent company name?

The Disposal Services Division performs the following services:

1. Operate QRL;
2. Operate NWTS;
3. Manage the Small Hauler's Program at QRL and the NWTS; and
4. Maintain all closed public landfills.
5.

Figure 1-5 below shows the organizational structure of the Disposal Services Division.

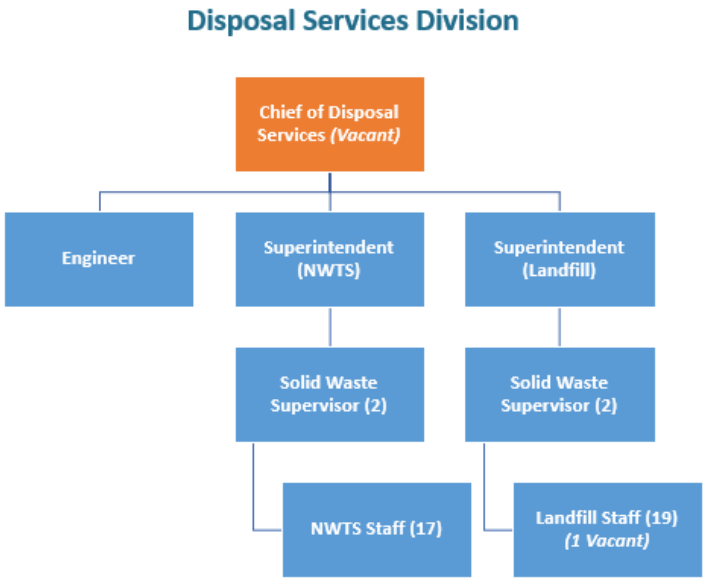


Figure 1-5. Disposal Services Division Organizational Structure

Property Management Division

The Property Management Division provides cleaning, boarding, mowing and rat control services to vacant and unoccupied properties that are cited by the City's housing inspectors. The structure of the property management division is shown in Figure 1-6.

Commented [S(47]: We should add information to this to note the following:
1. Scrap tire disposal
2. Partnership with the USCG monitoring the 52 gas wells located on the landfill
3. Partnership with Turbo Haul to recycle mattresses - CHECK ON THIS ONE WITH JAMES WOODS.

Commented [C(48R47]: Residential drop off facilities?

Commented [MR49R47]: Residential drop off facilities are under Street Sweeping and Roll-off

Commented [S(50]: Replace with the work RODENT…

Commented [S(51]: edit to read as follows - City's Code Enforcement Inspectors.

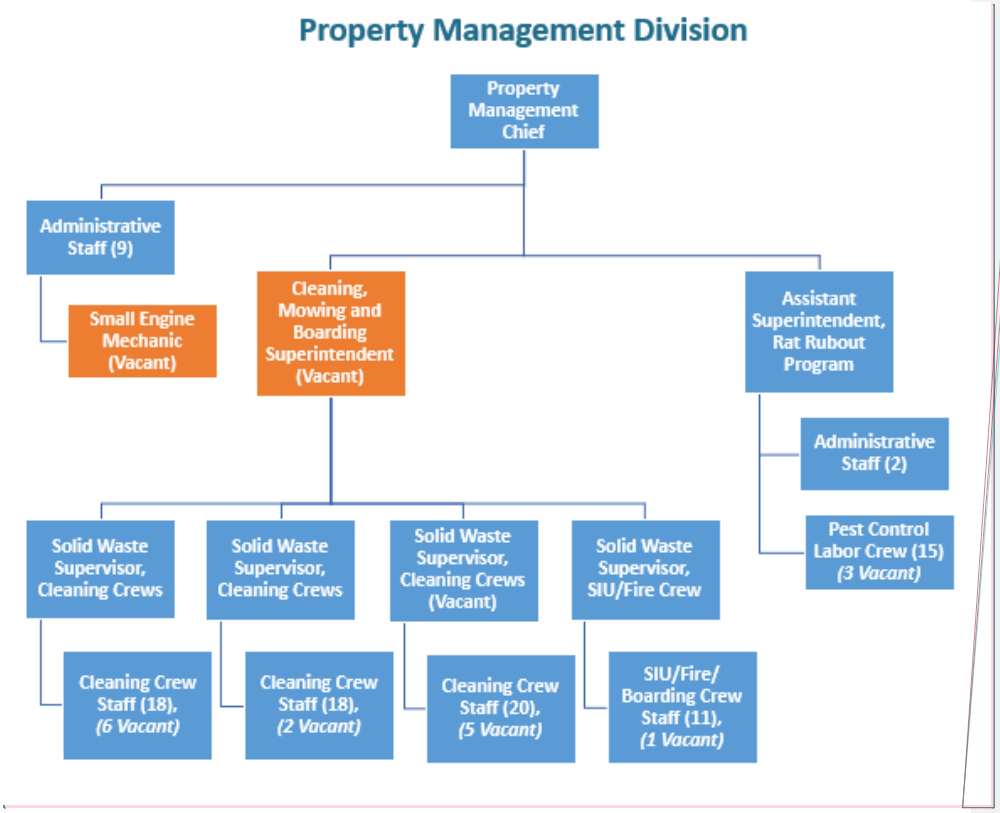


Figure 1-6. Property Management Division Organizational Structure

Routine Services Division

The Routine Services Division provides residents with waste and recycling pickup from households and multi-family dwellings. Routine Services also provides condominium and public housing refuse collection, recycling administration, and funding for household hazardous waste disposal services. The organization of the Routine Services Division is shown in Figure 1-7 below.

Commented [S(52]: @Resler, Meghan (DPW) i will forward an updated copy of the Property Management org chart - removing SMALL ENGINE MECHANIC.

Commented [S(53R52]: Emailed 1/17/23

Commented [MR54R52]: Property MGT Org chart-updated 1-17-23.xls

Commented [MR55]: Remove this service from Routine Services and add to Marine Services.

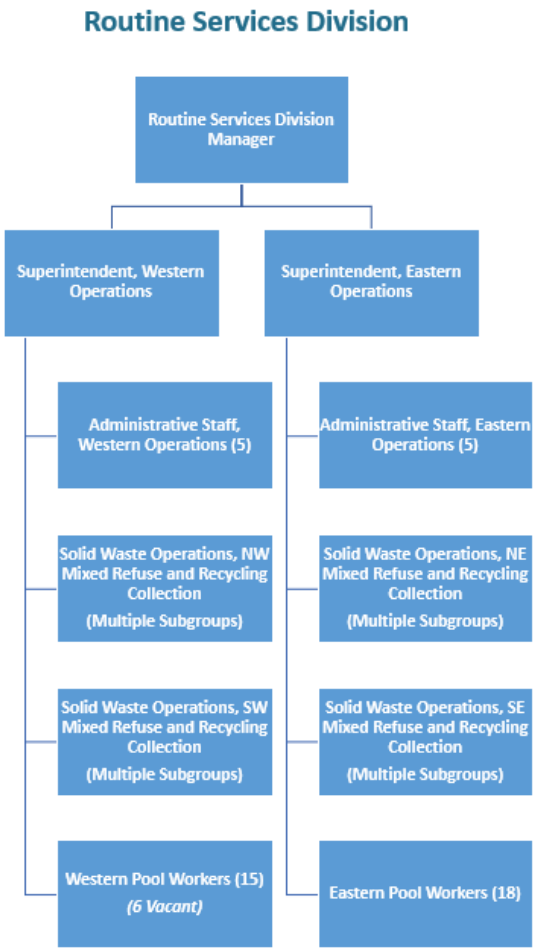


Figure 1-7. Routine Services Division Organizational Structure

Street Sweeping and Roll-off Division

The Street Sweeping and Roll-Off Division runs mechanical street sweeping operations. This division also oversees drop off centers and community pitch-in programs. The organization of the Street Sweeping and Roll-off Division is shown in Figure 1-8 below.

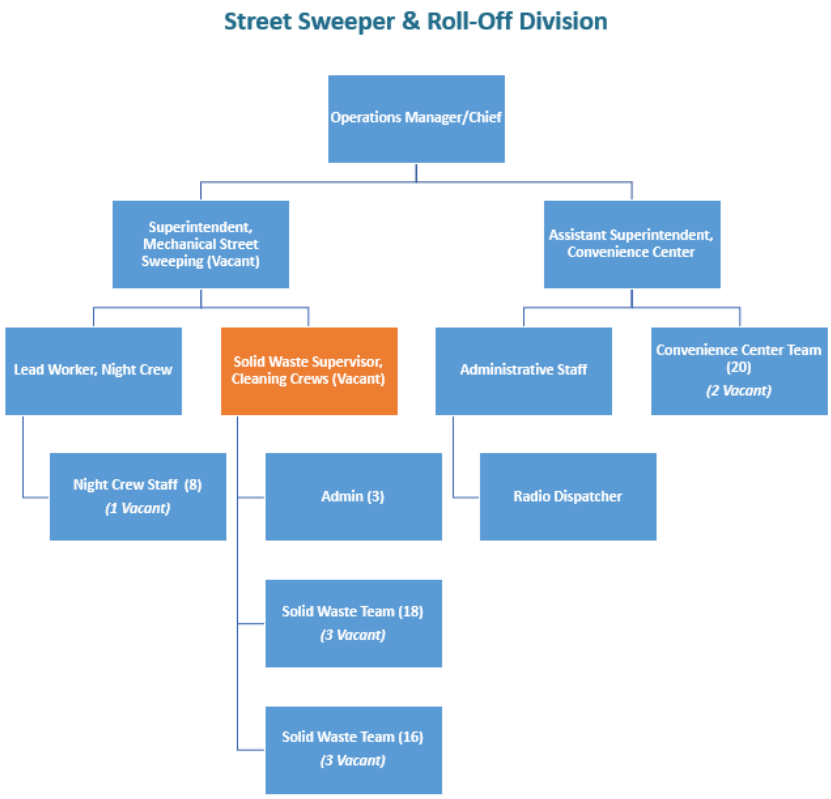


Figure 1-8. Street Sweeping and Roll- Off Division Organizational Structure

Marine Operations Division

The Marine Operations Division oversees collection and disposal of marine debris collected from the inner harbor and surrounding waterways. The division ensures the cleanliness of business districts, provides trash and recycling services for special events and clears debris away from storm drains to protect water quality. The Marine Operations Chief is also responsible for special waste collection services in the Central District (i.e., the downtown area).

Figure 1-9 below shows the organizational structure of the Marine Operations Division.

Commented [S(56]: @Resler, Meghan (DPW) so dumpster collections from the public housing, condo and municipal buildings is actually conducted by Marine Operations. we need to move it from under Routine Services and list that here.

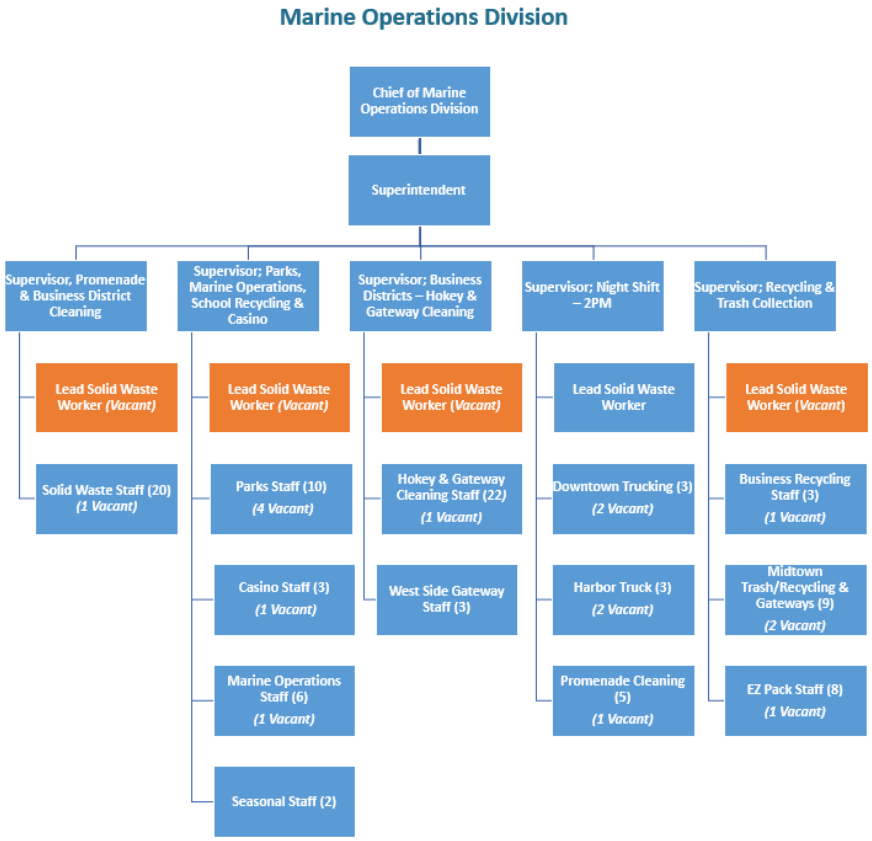


Figure 1-9. Marine Operations Division Organizational Structure

Special Services Division

The Special Services Division maintains the cleanliness of public rights-of-way by providing services including graffiti removal, dirty street cleaning, dirty alley cleaning, and bulk trash collection. The organization of the Special Services Division is shown in Figure 1-10 below.

Figure 1-10. Special Services Division Organizational Structure

1.3 Regulatory Framework

Solid waste planning is a local responsibility but is governed by federal and state laws that regulate local practices to protect public health and welfare. The major federal, state, and city laws and regulations related to solid waste management are listed below. The implications of these laws and regulations are discussed throughout this Plan.

Federal Laws and Regulations

The federal laws, initiatives, and policies relevant to this Plan include those focusing on municipal solid waste (MSW), special and hazardous waste, air emissions, and water pollution. A summary of relevant federal legislation and guidance is found below.

Federal Resource Conservation and Recovery Act

Commented [H(57]: separate and organize by law vs regulation

Commented [H(58]: All of these legal overviews need to be much simpler and straightforward synopsis with no legal jargon or run on sentences. We can link to the full legislative text if people want more info.

(42 U.S.C. 6901 et seq.)
In 1976, the Federal Resource Conservation and Recovery Act (RCRA) was passed to improve solid waste disposal methods. It was amended in 1984 by the Hazardous and Solid Waste Amendments.

An expressed objective of RCRA is to "provide for the promulgation of guidelines for solid waste, collection, transport, separation, recovery, and disposal practices and systems." RCRA is divided into nine subtitles, A through I.

Under Subtitle C, hazardous waste is regulated through standards for generators, transporters, owners, and operators of hazardous waste treatment, storage, and disposal facilities, and for the management of specific hazardous wastes and management facilities. Subtitle C established a "cradle to grave" hazardous waste management system. EPA has authorized the State of Maryland, through MDE, to administer a State hazardous waste program, which generally parallels the federal program.

Under Subtitle D, municipal solid waste is regulated through technical standards for solid waste management facilities and a program under which states may develop and implement solid waste management plans. Subtitle F of RCRA requires the federal government to participate actively in procurement programs to foster the use of recycled materials. The role of EPA in the Subtitle F program is to prepare guidelines for procuring products made from recovered materials.

Federal Municipal Waste Management Regulations

Commented [H(59]: edit to make brief straightforward and easy to understand synopsis

(40 CFR Part 258)
On October 9, 1991, EPA promulgated new federal requirements for construction and operation of municipal solid waste landfills in accordance with Subtitle D of RCRA.

The federal regulations set forth minimum criteria for municipal solid waste landfills which include: location restrictions, operating requirements, design criteria, groundwater monitoring and corrective action protocol, closure and post-closure care, and financial assurance requirements. New federal regulations require random inspections of incoming loads at landfills and training of all relevant personnel. The regulations also impose an extensive record keeping protocol.

With respect to air emissions, the federal regulations require quarterly monitoring of methane levels at municipal solid waste landfills. Furthermore, the federal regulations prohibit violations of a Clean Air Act State Implementation Plan. In March 1996, EPA promulgated a regulation governing emissions from municipal solid waste landfills, which emit more than 50 mega grams of volatile organic compounds. EPA also established a New Source Performance Standard for new municipal solid waste landfills, which include those that began construction, modification, reconstruction, or began accepting waste after May 30, 1991. The New Source Performance Standard requires the owner or operator of a municipal solid waste landfill having a design capacity less than 2.5 million mega grams to submit an initial design capacity report. Larger facilities must submit a design plan for a gas collection control.

With respect to closure, the federal regulations dictate that closure must begin within 30 days of the last deposit and must be completed within 180 days. Generally, post-closure groundwater, gas, and leachate

monitoring must be performed for 30 years. Subtitle D also imposes substantial financial assurance requirements that will assure the ability to pay for closure, post-closure, and corrective action.

The effective date of the regulations was October 9, 1993, except for financial assurance requirements (effective October 9, 1994) and groundwater monitoring requirements (phased in beginning October 9, 1994). Facilities that stop receiving waste prior to the effective date are exempt from the federal rule except for the final cover requirement. Facilities that receive waste after the effective date must comply with all requirements of the federal rule.

Federal Comprehensive Environmental Response, Compensation, and Liability Act

(42 U.S.C. 9601 et seq.)

In December 1980, Congress enacted the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), commonly referred to as "Superfund," and substantially amended it in 1986 by the Superfund Amendments and Reauthorization Act. In contrast to RCRA, which generally regulates current hazardous waste handling and disposal, CERCLA focuses on both short-term and long-term remediation of past contamination. The federal government can use the Superfund trust fund to clean up a property and then sue the responsible parties for reimbursement, or the government may order responsible parties to clean up the site. Maryland has created a parallel State Superfund, the Hazardous Substance Control Fund.

CERCLA identified in its National Priorities List (NPL) two sites in Baltimore as Superfund sites. One site, located at the intersection of Kane and Lombard streets, used to contain nearly 1,200 drums of flammable solids; however, since its cleanup in the mid-1980s, it is now known as the "Super Fun" golf driving range. The other location at the Chemical Metals Industries sites at 2001 and 2103 Annapolis Road has been removed from the NPL since December 1982. It is now used by MDE as an Emergency Response Field Office.

Federal Hazardous Waste Regulations

(40 CFR Parts 264 and 265)

Regulations pursuant to Subtitle C of RCRA established the hazardous waste management system, including identifying and listing hazardous wastes; established standards for generators and transporters, and for the management of hazardous wastes for the owners and operators of hazardous waste treatment, storage, and disposal facilities. The regulations require stringent administrative and record keeping practices by permitted facilities.

Save Our Seas 2.0 Act

(Public Law 116-224)

In December 2020, the Save Our Seas 2.0 Act was signed into law. The Act contains three titles that enhance the United States domestic programs to address marine debris, international engagement to combat marine debris, and domestic infrastructure to prevent marine debris. Among other actions, the Act authorized the creation of the Marine Debris Foundation to support the marine debris activities of the National Oceanic and Atmospheric Administration, established grant programs for studies of waste

Commented [H(60]: edit to make brief straightforward and easy to understand synopsis

Commented [H(61]: keep this info

Commented [H(62]: edit to make brief straightforward and easy to understand synopsis

management and mitigation, and formalized U.S. policy on international cooperation with respect to marine debris.

RECYCLE Act

(Public Law 117-58)
The Recycling Enhancements to Collection and Yield through Consumer Learning and Education (RECYCLE) Act was introduced in the U.S. Senate by Senator Rob Portman (R-OH) and was signed into law as part of the Bipartisan Infrastructure Law in November 2021. RECYCLE creates a program within the U.S. EPA to bolster recycling education and authorizes up to $15 million per year over five years in grants to states, tribes, nonprofits, public partnerships, and local governments to ramp up commercial and municipal recycling outreach and education. Under the law, the EPA is directed to develop a model recycling toolkit to bolster recycling participation and decrease contamination rates. Where appropriate, the act also tasks the EPA with updating guidelines for products containing recycled material more frequently, as well as recommending that federal agencies purchase those items.

Winning on Reducing Food Waste Initiative

On 9 April 2019, the U.S. EPA, U.S. Dept. of Agriculture (USDA), and Food and Drug Administration (FDA) issued a federal interagency strategy for reducing food waste, as part of the "Winning on Food Waste" initiative. The strategy includes six priorities to work towards a national goal of reducing food loss and waste by 50% by 2030. The priorities include improving interagency coordination; increasing education and outreach; improving guidance and collaboration with private industry; and encouraging food waste reduction within the federal government.

Federal Clean Air Act

(42 U.S.C. 7401 et seq.)
The Clean Air Act Amendments of 1970 passed by Congress established the current framework for federal and State enforcement of air pollution. The Act authorizes the federal government, through the EPA, to set standards for the control of air pollution and directs the State toward achievement of these standards.

The regulation of air quality is managed through a combination of ambient air quality standards, emission standards, State planning processes, and construction and operating permits. Existing sources are subject to a different regulatory scheme than are new or modified sources.

EPA has developed National Ambient Air Quality Standards, which establish maximum allowable levels of certain pollutants, regardless of source. The primary standard is the maximum amount of pollutant that can exist in the air before public health would be endangered. An area that follows the ambient air quality standard is called an attainment area. An area which exceeds the standard is a non-attainment area. In 1997, EPA issued a "SIP2 call" to 22 States and the District of Columbia, directing a revision of

Commented [H(63]: contextualize this in the realm of BSW, ie. how this applies to landfill or incineration regs, simplify and cut superfluous info

requirements. The rules were adopted in 1998. Baltimore City did not achieve attainment; however, in 2005 the 1-hour ozone standards were revoked by the EPA[1] [2].

With respect to emission standards, the 1970 Clean Air Act Amendments established a special program entitled National Emission Standards for Hazardous Air Pollutants for the regulation of certain hazardous air pollutants. These standards are health based. Title III of the 1990 Clean Air Act Amendments established a technology-based standard for the control of hazardous air pollutants, whereby sources would be required to adopt the "maximum allowable control technology" to reduce certain toxic emissions.

Federal New Source Performance Standards

These standards impose national emission standards for newly constructed or modified industrial facilities, by imposing limitations based on the pollution control technology available to each category of new sources.

New Source Review

EPA has published guidance for new source review, whereby requirements were promulgated to ensure that major new sources do not adversely affect states' attempts to achieve compliance with the national ambient standards.

Commented [H(64]: "whereby, promulgated" etc simplify. good rule of thumb is 5th grade reading level

Commented [H(65R64]: can these two sections be consolidated? seems like they are subsets of the CAA

Prevention of Significant Deterioration

This program was designed to ensure that air quality would not significantly deteriorate in areas where the ambient standards are being met, primarily controlling new sources of pollution.

Federal Clean Water Act

Commented [H(66]: edit to make brief straightforward and easy to understand synopsis

(33 U.S.C. 1251 et seq.)

The Clean Water Act is the framework for federal and State enforcement of water pollution control laws. The Clean Water Act's objective is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The Clean Water Act includes: water quality standards based on a waterway's designated use, a permit program for the discharge of wastewater directly into waterways, minimum effluent standards based on the capabilities and costs of pollution control technology for each industry, pre-treatment standards for industries that discharge into publicly-owned treatment works, the handling of spills of oil and hazardous wastes, and minimization of non-point source pollution. All states are required by the Clean Water Act to consider the development of Total Maximum Daily Loads, which formulate procedures for setting upper limits on pollutants through permit discharge limits.

Every 2 years, MDE will submit a prioritized list of waterways that currently do not meet water quality standards or will not meet the standards after all technology-based controls are in place. Modeling is then used to establish the maximum load of quality standards. Once this maximum pollutant loading is

[1] MDE "Modification to Phase II Attainment Plan for the Baltimore Non-Attainment Area and Cecil County: Revising the Mobile Source Emissions Budgets" Nov 1999
[2] EPA "1-Hour Ozone Information" Jan 25, 2010

defined, it must be allocated between point and non-point sources, accounting for the margin of safety and future growth.

The Clean Water Act requires solid waste disposal facilities discharging wastewater to: (1) obtain a National Pollution Discharge Elimination System (NPDES) permit to discharge into surface waters, using best available technology to control pollution; or (2) meet pre-treatment standards and discharge to a sewer system. Furthermore, stormwater management plans are required, and facilities sited in wetlands must obtain a Section 404 permit. The amendments also require an increased EPA effort to establish regulations for permits for stormwater discharge associated with landfills and other treatment, storage, and disposal facilities for municipal waste.

National Pollutant Discharge Elimination System (NPDES) Program

(40 CFR Parts 122 through 125)

The NPDES program was created under §402 of the Clean Water Act to implement regulations, limitations, and standards promulgated for point source direct discharges, including certain stormwater discharges. It is also responsible for issuing, monitoring, and enforcing permits for direct wastewater discharges to waters of the State or the United States. NPDES permits contain applicable effluent standards (i.e., technology-based and/or water quality-based), monitoring requirements, and standard and special conditions for discharge. Part 123 describes how states may obtain approval to operate a permit program in lieu of the federal program. Maryland's permit program, administered by MDE, ordinarily operates in lieu of the federal program.

NPDES permits are now required for stormwater discharges associated with industrial activity and discharges from municipal separate storm sewer systems under 40 CFR 122.26. Among those entities considered to be engaging in industrial activity are landfills that receive or have received any industrial wastes, and facilities involved in the recycling of materials. These regulations are applicable to State NPDES programs, including Maryland's.

National Pre-Treatment Program

(40 CFR Part 403)

The National Pre-Treatment Program authorized under the Clean Water Act controls the discharge of pollutants to municipal wastewater treatment facilities. The goal of the pre-treatment program is to protect municipal wastewater treatment plants and the environment from damage that may occur when hazardous, toxic, or other non-domestic wastes are discharged into a sewer system. This objective is achieved through pre-treatment of wastewater discharged by industrial users such as incinerators. The discharge standards specify quantities or concentrations of pollutants or pollutant properties that are permitted to be discharged to the municipal wastewater collection system.

Safe Drinking Water Act

(42 U.S.C 300f et seq.)

The Safe Drinking Water Act requires EPA to establish regulations to protect human health from contaminants in drinking water. The legislation authorizes national drinking water standards and a joint federal-State system for assuring compliance with those standards. Maximum contaminant levels and

Commented [H(67]: edit to make brief straightforward and easy to understand synopsis

Commented [H(68]: focus on sharing parts of law related to BSW

Commented [H(69]: remove? doesn't have to do with BSW

treatment techniques ensure the quality of public drinking water supplies. The 1986 amendments to the Safe Drinking Water Act established a wellhead protection program that the states may use to protect public drinking wells and springs from contaminants, including contaminants from landfills. The 1996 amendments overhauled the water standard scheme; changed enforcement mechanisms; appropriated $1 billion for State loan funds; required EPA to develop arsenic, sulfate, and radon standards; implemented public right-to-know requirements; imposed new monitoring requirements; and budgeted federal money for source water protection and the construction, rehabilitation, and improvement of water supply systems.

Commented [H(70]: don't need all this historical info. maybe cut down to what is monitored and how it relates to landfill or more generally groundwater monitoring

EPA Actions to Address Per- and Polyfluoroalkyl Substances (PFAS)

The EPA has recently taken several steps to reduce PFAS contamination in the environment. For example, in December 2022, EPA issued guidance for states and municipalities to use the most current sampling and analysis methods in their NPDES programs to identify known or suspected sources of PFAS and to take actions using their pretreatment and permitting authorities. EPA has also proposed to designate the most widely used PFAS substances under CERCLA. Additional information can be found here.

Break Free from Plastic Pollution Act (Introduced)

Commented [H(71]: I like that these are in here, they are progressive, but they feel out of place if they have not been adopted? want to talk through the decision to include

U.S. Senator Jeff Merkely (D-OR) and U.S. Representative Alan Lowenthal (D-CA) introduced the Break Free from Plastic Pollution Act in March 2021 to tackle the plastic waste crisis. The full text of the bill can be found here. A summary of the components is provided below, with the full announcement available here.

- Obligations for producers: Require producers to design, manage, and finance programs for end-of-life management of their products and packaging as a condition of sale. Producers will help cover the costs of waste management and clean-up, as well as awareness raising measures.
- Nationwide container deposit requirements: Place a national deposit requirement on beverage containers (all materials, including glass, plastic and aluminum).
- Source reduction: Phase out lightweight plastic carryout bags, expanded polystyrene food and drinkware, plastic stirrers, and plastic utensils from sale and distribution.
- Carryout bag fee: Place a fee on the distribution of available carryout bags (paper bags and non-reusable bags).
- Create minimum recycled content requirement: Set requirements for certain products to be made of 100% recyclable materials and others made from a significant percentage post-consumer recycled product.
- Labelling Requirements: Develop standardized recycling and composting labels for products and receptacles to encourage proper sorting and disposal of recyclable and compostable items.
- Review effects of plastic tobacco filters, electronic cigarettes, and derelict fishing gear.
- Reduce sources of microplastics: Establish a pilot program to test the efficacy and cost effectiveness of technologies to prevent and remove microplastics.
- Expand support for reuse and refill technology: Issue reports on feasibility and best practices on reuse and refill technology.

- Prevent plastic waste being shipped to developing countries: Prevent the export of plastic waste, scrap, and pairings to countries that are not part of the Organization for Economic Co-operation and Development.
- Protect existing state action: Protect the ability of state and local governments to enact more stringent standards, requirements, and additional product bans.
- Temporarily pause new plastic facilities: Give environmental agencies time to investigate the cumulative impacts of new and expanded plastic-producing facilities on air, water, climate, and communities.

Zero Waste Act (Introduced)

The Zero Waste Act was introduced in the U.S. House of Representatives by Representative Ilhan Omar (D-MN) on 25 July 2019 and would establish federal grants to support municipalities in recycling and waste reduction efforts. The program would be carried out by the U.S. EPA and would be funded with up to $250 million from 2020 through 2027. Similar legislation was previously introduced in 2017 as the "Zero Waste Development and Expansion Act." This legislation has been described as a component of the Green New Deal.

Maryland State Laws and Regulations

The state laws, initiatives, and policies relevant to this Plan include those focusing on MSW, special and hazardous waste, air emissions, and water pollution. The Annotated Code of Maryland, as amended, includes all state laws passed by the legislature. Laws addressing solid waste management are included in the Environment Article, which contains many of the laws affecting the location, design and operation of solid waste disposal facilities. Under the authority of Title 9, Subtitle 5, MDE is the State's principal regulatory agency with respect to solid waste management and serves as the State's lead agency for implementation of RCRA. State regulations are compiled into a document entitled Code of Maryland Regulations (COMAR). A summary of relevant state legislation and guidance is found below.

Maryland Solid Waste Management Regulations

(COMAR 26.04.07)
This chapter of COMAR includes permitting requirements, operating procedures, closure requirements, and post-closure monitoring requirements for sanitary, rubble, land clearing debris, and industrial landfills. This chapter also describes permitting and operating procedures for processing facilities, transfer stations, and incinerators. In addition, this chapter provides guidelines and requirements for construction plans, specifications, and operation procedures for waste acceptance facilities.

Development of County Comprehensive Solid Waste Management Plans

(COMAR 26.03.03 and Environment Article, Annotated Code of Maryland §§ 9-503)
These chapters require that each county adopts and submits to MDE a 10-year comprehensive Plan that deals with solid waste management. After submission to MDE for review, public hearing, and adoption of any required changes, the Plan is revised as necessary and resubmitted to MDE for approval. Approved

Plans are required to be reviewed at least every three years and updated or amended as necessary. Plans are required to undergo comprehensive revision at least every ten years.

Storage, Collection, Transferring, Hauling, Recycling, and Processing of Scrap Tires

(COMAR 26.04.08)

This section of COMAR establishes a regulatory system for proper management of scrap tires. MDE authorizes scrap tire facilities and haulers by issuing licenses and approvals for facilities. The regulations provide general technical and operational standards for scrap tire facilities including storage procedures, closure procedures, and financial assurances. The system is funded by a recycling fee of $0.80 for each new tire sold in the State.

Natural Wood Waste Recycling Facilities

(COMAR 26.04.09)

Management of natural wood waste recycling facilities is regulated under this part of COMAR. Permitting requirements for processing facilities are established and general operational requirements and procedures are prescribed.

Rubble Landfill Regulations

(COMAR 26.04.07.13-26.04.07.18)

These regulations require liners and leachate collection systems for any new rubble facilities or new cells at existing facilities. 1.3.1.3 City Laws Sanitation, Article 23, Baltimore City Code Subtitles 1 through 21 Article 23 of the Baltimore City Code deals directly with the collection and disposal of solid waste in the City. It defines in detail the responsibilities of the City and the citizen regarding the handling of solid waste. There are a total of seven subtitles which are summarized below.

Commented [C(72]: Why are we including the City Code here?

- **Subtitle 1: Definitions; General Provisions** - Defines terminology used within the Article.
- **Subtitle 2: Mixed Refuse Handling and Collection -** Specifies that DPW must collect mixed refuse from all dwellings subject to certain quantity limits.
- **Subtitle 4: Receptacles on Collection Days -** Specifies locations in which trash receptacles must be kept and penalties for non-compliance. · Subtitle 6: Markets - Instructs that all trash generated at City Markets must be placed within a designated receptacle.
- **Subtitle 11: Solid Waste Surcharges** – Establishes the authority of the Bureau of Solid Waste to charge surcharges for hauling, permitting, and waste disposal. The subtitle also establishes exemptions to the surcharge rule.
- **Subtitle 16: Recyclable Material and Compostable Yard Waste** - Requires that the Commission on Sustainability develop and implement a comprehensive recycling plan.
- **Subtitle 21: General Penalties -** Provides for the enforcement of Article 23 through citations and criminal penalties.

Hazardous Materials and Hazardous Substances

(Environment Article of the Annotated Code of Maryland §§ 7-101 through 7-516)

This part of the Annotated Code defines controlled hazardous substances, establishes requirements for facility permits, imposes obligations on transporters, and provides for appropriate enforcement actions.

Maryland Used Oil Recycling

(Natural Resources Article of the Annotated Code of Maryland § 8-1401)
In this subtitle, the Maryland Legislature expressed its desire that used oil be collected and recycled to the maximum extent possible. The Department of Natural Resources is required to develop a public education program and to designate used oil collection facilities. The Act prohibits disposal of used oil into sewers, drainage systems, natural waters, by incineration, or as refuse.

Maryland Hazardous Waste Regulations

(COMAR 26.13)
These rules concern the disposal of Controlled Hazardous Substances. Included are definitions of what is hazardous waste; standards applicable to generators of hazardous waste; and standards for owners and operator of hazardous waste treatment, storage, and disposal facilities.

Management of Special Medical Wastes

(COMAR 26.13.11 through 26.13.13)
The definition of special medical wastes is set forth and standards for generators are established including a manifest system to track the transportation of special medical wastes. Standards for transport vehicles are established. Special medical wastes include anatomical material and blood-soiled articles.

State Laws Governing the Construction and Operation of Solid Waste Acceptance Facilities

(Environment Article of the Annotated Code of Maryland §9-101 through §9-229)
Subtitle 2, Part II of the Environment Article, establishes permit requirements to construct and operate refuse disposal systems (sanitary, rubble, and industrial landfills; transfer stations; solid waste acceptance facilities; solid waste processing facilities; and incinerators) as part of the State's overall power to regulate water supply, sewerage facilities, and refuse disposal systems. It sets forth requirements for public hearings for waste disposal facilities; landfill permit provisions (issuance, denial, revocation, term); security requirements for landfills, incinerators, and transfer stations; prohibitions on locating and accepting waste; and financial assurance requirements for sanitary landfills.

Under § 9-228, scrap tires may not be stored longer than 90 days, and a Statewide scrap tire recycling system is established. The material from scrap tires is to be recovered and reused; or, if this is impractical, the tires may be incinerated. Scrap tires may not be disposed of in a landfill.

Under §§ 9-1701 and 9-1708, a system for wood waste recycling activities is established. Recycling of tree debris, grass clippings and other natural vegetative matter is regulated under COMAR 26.04.09.

State Laws Affecting Recycling and Composting

A summary of the state laws affecting recycling and composting that are of specific relevance to preparation of this Plan is as follows:

1. Maryland Recycling Act (1988): The Maryland Recycling Act (MRA) established a requirement for Maryland counties, based on a population of less than or exceeding 150,000, to reduce the County's waste stream by 15% or 20%, respectively;
2. Sludge Application (1993): Regulates land application of sludges to protect the public health;
3. Electronic Waste Recycling (2005): Requires computer manufacturers to pay an annual fee to fund local computer recycling programs;
4. Public School Recycling Plans (2010): Requires Counties to revise their Plans to address collection, processing, marketing, and disposition of recyclable materials from public schools;
5. Fluorescent and Compact Fluorescent Light Recycling (2011): Requires Counties to revise their Plans to include a strategy for collection and recycling of fluorescent and compact fluorescent lights that contain mercury;
6. Recycling – Apartment Buildings and Condominiums Act (2012): Requires Counties to revise their Plans to address collection and recycling at apartment buildings and condominiums as well as a method for implementing a reporting requirement, and requires building owners, managers, and councils with ten or more dwelling units to provide for recycling for residents on or before 1 October 2014;
7. Recycling Rates and Waste Diversion – Statewide Goal Act (2012): A revision to the 1988 MRA, this act requires Counties to revise their Plans to achieve an increase in the countywide recycling rate to 20% (counties with populations below 150,000) or 35% (counties with populations above 150,000) of the county's solid waste stream by 1 July 2014, with full implementation by 31 December 2015; and
8. Recycling – Special Events Act (2014): Requires Counties to revise their Plans to address collection and recycling by organizers of certain special events, with implementation required before 1 October 2015.
9. Environment – Recycling – Office Buildings Act (2019): Requires Counties to revise their Plans to include an Office Building Recycling Program (OBRP) to address recycling from office buildings with 150,000 square feet of office space or greater.
10. Organic Waste – Organics Recycling – Collection and Acceptance for Final Disposal (2019): 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.
11. Expanded Polystyrene Food Service Products Ban (2020): Imposes a ban on the sale and use of food service products composed of expanded polystyrene.
12. Food Scraps Management (2021): 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 capacity and willingness to enter into a contract.

State Ambient Air Quality Control Laws

(Environment Article of the Annotated Code of Maryland §§ 2-101 through 2-614)
This title of the State Code authorizes the regulation for the construction, modification, operation, and use of sources and controls over emissions. It authorizes the adoption of rules and regulations for air

pollution control including testing, monitoring, recordkeeping, and reporting. It allows for the identification of air quality control areas and mandates that MDE set emission and ambient air quality standards for air quality control areas. Training for municipal solid waste incinerator operators is required under these provisions of the law.

Control of Incinerators

(COMAR 26.11.08)
Air emissions and operation of incinerators, which thermally destruct municipal solid waste, industrial waste, special medical waste, and sewage sludge, are regulated by this section of COMAR. The regulations require continuous monitoring of air emissions. Incinerators must also comply with general emission standards in COMAR 26.11.06.01 – 12 and 40 CPR § 60.

Voluntary Cleanup Program

(Environment Article of the Annotated Code of Maryland §§ 7-501 through 7-516)
One problem arising from CERCLA was the extreme difficulty involved with the redevelopment of "Brownfields". Brownfields are abandoned or underutilized properties where redevelopment is complicated by real or perceived environmental contamination. Recognizing this problem, EPA devised the **Brownfields Economic Redevelopment Initiative**. This program is designed to empower states to assess, safely cleanup, and vitally reuse brownfields. From this initiative, the State of Maryland established its Voluntary Cleanup Program which provides a streamlined remediation approval process, changes the liability scheme for prospective developers, and clarifies liability for all participants in the program.

Maryland Water Pollution Control Regulations

(COMAR 26.08)
These regulations contain:

1. Water quality standards that specify the maximum permissible concentrations of pollutants in water, the minimum permissible concentrations of dissolved oxygen and other desirable matter in the water, and the temperature range for the water;
2. Effluent standards that specify the maximum loading or concentrations and the physical, thermal, chemical, biological, and radioactive properties of wastes that may be discharged into the waters of the State;
3. Procedures for water pollution incidents or emergencies that constitute an acute danger to health or the environment; and
4. Provisions for equipment and procedures for monitoring pollutants, collecting samples, and logging and reporting of monitoring results.

As part of this regulatory scheme, these regulations require a discharge permit for discharges of wastes, wastewater, and stormwater into the waters of the State. Sanitary landfills and incinerators receive special attention to determine whether they contribute pollution to stormwater runoff.

Legislation Not Passed or Repealed

The State Legislature has previously considered but not passed bills related to recycling of solar photovoltaics; prohibiting restaurants from providing single-use plastic straws to customers; recycling/diversion of paint; and encouraging recycling of mattresses and box springs. These are listed here as a reminder that they may remain in consideration in upcoming sessions.

In December 2014, MDE published a guidance document titled "Zero Waste Maryland: Maryland's Plan to Reduce, Reuse, and Recycle Nearly All Waste Generated in Maryland by 2040," which set an overall 80% recycling goal and 85% waste diversion goal by 2040. Although the Zero Waste Plan was subsequently repealed, it may be reissued in the future.

City Codes and Ordinances

The City has enacted several ordinances and codes pertaining to solid waste management, recycling, air quality, and water quality.

Septage Management

Article 25 of the Baltimore City Code provides the mechanism for the City's Waste Hauler/Scavenger Program. Under the program, any company wishing to dispose of septage to the City wastewater system must first apply for and obtain a Scavenger Vehicle Permit Tag for each vehicle and pay an annual permit and tag fee.

Health Code of Baltimore City, Title 7

Title 7 of the Health Code deals directly with the handling and transportation of solid waste by private enterprises that choose to do so in the City of Baltimore. Synopses of the more pertinent subtitles in this article are listed below.

- **Subtitle 2: Solid Waste Collection** - Requires the Commissioner of Health to issue permits for private parties engaged in the collection and disposal of solid waste. City collection activities are exempt. These sections also regulate collection methods and times and provide for inspection of vehicles.
- **Subtitle 4: Landfills** - Requires private landfill operators to obtain an operating permit, obtain City approval of engineering plans, and post security against hazardous or unsafe operation. However, the City zoning laws do not permit anyone to operate a sanitary landfill except City government.
- **Subtitle 7: Littering-** Provides a penalty for the disposal of trash in other than a proper receptacle or a manner approved by the City. It provides for the issuance of citations by police or an enforcement officer.

Mayor, City Council, and Municipal Agencies, Article 1, Baltimore City Code, Subtitle 40

Subtitle 40 establishes an Environmental Control Board to adjudicate civil citations issued for violations of City Code provisions pertaining to sanitation.

Baltimore Clean Air Act

Commented [C(73]: We need to get an accurate statement about this law; Wheelabrator was successful in getting the court to strike down the air quality requirements of this law as the City cannot set more stringent limits than the State, as setting air quality permit limits is a function of the State; I do not believe this law is enforceable

The Baltimore Clean Air Act (BCAA), introduced as Council Bill 18-0306, was approved by the City Council on 11 February 2019 and signed by then Mayor Pugh on 7 March 2019. The BCAA requires commercial solid waste incinerators in Baltimore to conduct continuous monitoring of multiple pollutants, including dioxins, furans, nitrogen oxides (NOx), sulfur dioxides (SOx), particulate matter, polycyclic aromatic hydrocarbons, and several heavy metals. It also establishes significantly stricter emission limits for mercury, NOx, SOx, and dioxins/furans than are required under Maryland regulations.

Expanded Polystyrene Foam Ban

Baltimore City Council passed ordinance 18-0125 in April 2018 banning expanded polystyrene (EPS) foam food containers. The law prohibits the use of EPS (or Styrofoam) as disposable food serviceware or packaging. Items such as foam cups, clamshells, bowls, and plates will thus no longer be allowed in Baltimore. The ban went into effect on 19 October 2019 and applies to all food service facilities, including restaurants, grocery stores, hospital cafeterias, mobile food carts, bars/taverns, market stalls, public and private schools, caterers, special event food vendors, summer camps, bakeries, and congregation kitchens.

Single-Use Plastic Bag Bill

The City Council passed ordinance 19-0401 on 18 November 2019 (signed 13 January 2020) to ban the distribution of single use plastic bags at the point of sale, and place a fee of a nickel for any other type of single use bag, including paper and compostable bags. The program went into effect on 1 October 2021.

Zero Waste Resolution

The Judiciary and Legislative Investigations Committee approved 17-022R, a resolution calling for City agencies and experts to meet and begin discussing "the development of a Zero Waste plan for Baltimore that will advance sustainability, public health, and job creation." The resolution was adopted June 2017. A follow-up resolution 18-0086R was adopted in May 2018. In April 2019, an advocacy group led by United Workers, a nonprofit organization based in Baltimore, hired Zero Waste Associates (ZWA) and the ILSR to "assist the City of Baltimore to develop a zero-waste scenario for the city's long-range recycling and solid waste management master plan." ZWA and ILSR have worked on a Baltimore Zero Waste Plan (BZWP) under contract to United Workers to make zero waste a key priority to mitigate climate change, reduce climate emissions and other environmental and public health impacts, save money, support economic mobility, create good jobs and small businesses in all sectors of Baltimore, and sustain this work through culture change.

Commented [C(74]: Just an FYI: City Council resolutions are an expression of their desires, but have no force of law. It is an important distinction to note.

John F. Chalmers Sr. Act

The John F. Chalmers Dr. Act requires certain holders of permits issued by the Department of Housing and Community Development to submit a disposal plan with the permit application, requires permit holders to submit proof of disposal to the Department within a certain period of time after the permit work has concluded, and establishes citation amounts.

Net Zero Operations Bill

Mayor Brandon Scott signed the Net Zero Operations Bill into law on The City Council passed Ordinance 22-131 on 22 April 2022, which requires City operations to achieve net-zero emissions of greenhouse gases by 2045.

Flexibility in Existing Regulations and Ordinances

Placeholder subsection, maybe this goes better in 2.3 or 2.4?

We need to discuss what (if any) flexibility exists in state law and city zoning to have a "blanket" approval for a new composting facility in a designated location, so the City doesn't have to reopen the SWMP every time a new facility is proposed. We'll have to discuss that with MDE.

This likely needs to also get wrapped into Section 5.

Commented [mo75]: @Meghan.Resler@baltimorecity.gov
Just a reminder that we need to craft some language for this section to run by MDE.

2. BACKGROUND INFORMATION

2.1 City Population

]Section 2 of this Plan provides estimates of Baltimore City's present and projected population, identifies federal facilities within the City, discusses zoning codes pertinent to solid waste management, and discusses the City's comprehensive land use plan. These subjects are addressed in Sections 2.1, 2.2, 2.3, and 2.4 of this Plan, respectively. Table 2-1 below summarizes actual and projected population and household estimates in Baltimore City from 2020 – 2045.

Table 2-1. Baltimore City Population Projections

Year	Population* (ppl)	Number of Households* (hh)
2020	585,708	236,600
2021	576,498	232,876
2025	594,530	240,300
2030	596,390	245,175
2035	596,920	248,775
2040	599,220	251,725
2045	603,440	253,475
AVERAGE ANNUALIZED GROWTH	0.12%	0.28%

*Based on Maryland Department of Planning and U.S. Census actual and projected data.

According to the U.S. Census Bureau, Baltimore's population in 2020 was 585,708. It is estimated that the City's population decreased to 576,498 in 2022[3]. However, the Maryland Department of Planning projects that the City's total population will increase by 0.30% from 2020-2025, by 0.06% from 2025-2030, and by 0.02% from 2030-2035. The overall growth rate from 2020 through 2045 is projected to be 0.12%[4].

The Maryland Department of Planning also developed household projections over the period covered by this Plan[5]. The number of households for 2020 was 236,600 while the projected number of households for 2035 is estimated to be 248,775. The number of households for 2021 (232,876) was estimated using the 2021 population estimate from the U.S. Census by assuming the number of people per household in 2020 (2.47) was the same in 2021.

Commented [H(76]: Add sentence on why this info is relevant to this plan.

Commented [H(77R76]: from MoCo plan: Trends in population, consumption, and employment are indicative of the amount and the composition of waste generated. Land use practices and conditions influence solid waste planning and may place constraints on the location of solid waste facilities.

Commented [H(78]: put this in a table of contents format with the sections listed next to the content

Commented [H(79]: add map showing population growth projections/density by neighborhood?

[3] https://www.census.gov/quickfacts/baltimorecitymaryland
[4] https://planning.maryland.gov/MSDC/Documents/popproj/PreliminaryTotalPopProj2050.pdf.
[5] https://planning.maryland.gov/MSDC/Documents/popproj/HouseholdProj.pdf

2.2 Federal Facilities in the City

Baltimore City is the largest and only incorporated municipality in the State that is also a designated subdivision. There are eight major federal facilities located in the City of Baltimore. These facilities are shown on the map in Figure 2-1.

Figure 2-1. Major Federal Facilities in Baltimore City

As indicated in Figure 2-1, the major federal facilities located within the City are:

1. G.H. Fallon Federal Building
2. Garmatz Federal Courthouse
3. Federal Reserve Bank of Richmond
4. US Veterans Medical Center
5. US Post Office- Baltimore City Main
6. U.S. Customs & Border Protection
7. U.S. Coast Guard Yard
8. Fort McHenry National Park

Other federal agencies with facilities in Baltimore include the Department of Treasury, the Department of Labor, the Army Corps of Engineers, the Veterans Administration, the General Services Administration, the Office of Personnel Management, the Federal District Court, the Bankruptcy Court, the Social Security Administration, the Department of Agriculture, and the Department of Commerce- International Trade Administration.

Private contractors collect solid waste generated at all federal facilities in Baltimore City.

2.3 Zoning Requirements

This plan shall not be used to create or enforce local land use and zoning requirements. Baltimore City zoning regulations dictate the permitted location of solid waste management facilities, including composting facilities, materials recovery facilities, transfer stations, incinerators, and landfills. Typically, solid waste facilities are confined to industrial and commercial districts and designated as a conditional use. Each proposed facility site must be considered individually either by the City's Board of Municipal and Zoning Appeals or City Council.

The zoning code referenced for the sake of this plan was last enacted & corrected in June 2017 and last amended in 2022.

A summary of the zoning for solid waste facilities, recycling facilities, and organics management facilities under the current zoning code can be found in Table 2-2. As indicated in Table 2-2, commercial or

municipal incinerators are prohibited in all zoning districts. Baltimore City zoning code prohibits construction of any new sanitary landfills or incinerators, but allows landfills and incinerators constructed prior to 5th June 2017 to be classified as "lawful nonconforming structures". As lawful nonconforming structures, existing landfills are able tocan pursue expansions of no more than 35% in additional land area if expanding onto property that is no more than 750 feet from the landfill's property line, and onto the portion of that property closest to the existing use. Prior to June 5th, 2017, a City ordinance was required for approval of a new commercial or municipal incinerator.

Table 2-2: Summary of Zoning for Solid Waste Facilities

Solid Waste, Recycling, & Organics Management Facilities	Permitted Zones	Code	Condition
Incinerators (Commercial or Municipal)	Prohibited in all zoning districts	1-209	"Lawful nonconforming" if constructed before 5 June 2017; SWMP; Applicable Permits; Zoning Board Approval
Sanitary Landfill (Accepting Mixed Refuse)	Prohibited in all zoning districts	18-310	"Lawful nonconforming" if constructed before 5 June 2017; SWMP; Applicable Permits; Zoning Board Approval
Landfill: Industrial	I-2	14-318	SWMP, Applicable Permits, Zoning Board Approval
Recycling Collection Station	All Zones	15-515	Zoning Board Approval
Materials Recovery Facility	I-2	14-324	Applicable Permits
Recyclable Materials Recovery Facility	I-1, I-2	14-333	Applicable Permits
Recycling and Refuse Collection Facility	IMU-2, I-1, I-2	I-312	None
Resource Recovery Facility	I-2	14-335	Applicable Permits
Commercial Composting Facility	IMU-2, I-1, I-2	14-305	Applicable Permits

To operate in Baltimore, solid waste facilities must:

- Obtain zoning approval;
- Obtain a relevant permit from MDE; and
- Be amended into the Ten-Year Solid Waste Management Plan via legislation passed by the Baltimore City Council.

Industrial landfills must follow the above rules for solid waste facilities and may not accept residential or municipal solid waste, or rubble or land-clearing debris. Industrial landfills are allowed in I-2 industrial districts.

Recycling collection stations are conditionally allowed in all zones throughout the City, with Zoning Board Approval. Stations are defined as portable receptacles, usually trailers or roll-offs, for the collection of

paper, cans, aluminum scrap, other non-ferrous metal scrap, glass bottles, and plastics. Larger processing centers are conditionally allowed in industrial areas to facilitate recycling.

Materials recovery facilities are conditionally allowed in the I-2 industrial district with all applicable permits. All loading and unloading at a materials recovery facility must be screened from public view, and all other operations must be performed within an enclosed building. Recyclable materials recovery facilities may operate within I-1 and I-2 industrial districts, with applicable permits.

Commented [H(80]: omit information that is already shared in the chart above

Recycling and refuse collection facilities are facilities whose primary purpose is the collection, storage, and transference of solid waste, yard waste, or recyclables. Recycling and refuse collection facilities do not include incinerators, junk, scrap, or storage yards, sewage treatment sites, landfills, or vehicle dismantling facilities. Recycling and refuse collection facilities are allowed to operate within I-1 and I-2 industrial districts, as well as IMU-2 (industrial mixed-use).

Resource recovery facilities are defined as facilities that process solid waste to produce valuable resources, such as steam, electricity, or refuse-derived fuel, and achieve a volume reduction of at least 50% of the waste that is being processed. Resource recovery facilities do not include any facilities that process hazardous materials, any facility that is licensed by the State or City as a junk dealer, scrap metal processor, or scrap metal dealer, or any junk or scrap storage yard. Resource recovery facilities are permitted in I-2 districts.

Commercial composting facilities are conditionally allowed in IMU-2, I-1, and I-2 districts with state regulatory and permit compliance. Facilities performing indoor methods of composting (such as in-vessel methods) are conditionally allowed in the Waterfront Industrial Area outside the buffer. All commercial composting facilities must be operated and maintained in a manner that protects adjacent properties from nuisance odors and the attraction of rodents or other pests.

Composting is allowed on areas permitted under open-space farm and urban agricultural districts as long as the compost piles are located at least three feet away from any lot line, adjacent properties are protected from odors and the attraction of pests, and the resulting organic product is not sold. Bin composting is allowed within residential rear-yards, if kept at least three feet from lot lines.

The City's Critical Area is defined as a 1,000-foot-wide strip measured adjacent to the mean high tide around the Chesapeake Bay and its tributaries. No solid waste facilities, including recycling facilities, are permitted in the Critical Area. In Baltimore City, the Patapsco River, Gwynns Falls, Jones Falls, and Colgate Creek tributaries contribute to the Critical Area.

The City's comprehensive zoning regulations also accommodate facilities for managing special categories of solid waste. For example:

- Management, discharge and disposal of radioactive and hazardous waste is conditionally allowed, with Zoning Board approval, in compliance with all applicable federal, state and local laws, and regulations that generally govern such waste. Composting of sewage sludge or yard waste is also an industrial use. These facilities require MDE and City Council approval.

- Dismantling, processing, and storing of scrap metal and discarded automobiles are conditionally allowed, with a pollution prevention plan approved by the City and MDE. These uses are distinguished from materials recovery facilities because they require outdoor storage of large

A summary of the City's zoning regulations is included in Appendix C.

2.4 Comprehensive Planning and Land Use

Because Baltimore is Maryland's premier metropolitan area and presents unique land use challenges, the City, in its entirety, is designated as a Priority Funding Area by the State. The revitalization of the City's neighborhoods and preservation of their unique community character are major policies of the City, as articulated in the City's Comprehensive Plan. Implemented in 1976 and most recently revised on September 9, 2009, the City's Comprehensive Plan provides the policy basis for guiding redevelopment and revitalization of the City's developed neighborhoods. Many other programs and urban renewal plans have been adopted and are *de facto* components of the plan. The City is currently in the process of creating a new Comprehensive City Plan ("Our Baltimore"). As the "Our Baltimore" Plan is still under development, this SWMP does not reference it.

Commented [H(81]: @Richardson, Ava (DOP) is this up to date?

3. EXISTING SOLID WASTE MANAGEMENT SYSTEM

This chapter analyzes the solid waste generation, import and export of waste, source reduction, diversion, collection, and disposal systems for the City of Baltimore. Existing facilities and methods for solid waste reduction, diversion, collection, and disposal in Baltimore are presented, and regional facilities are discussed. Impacts of the COVID-19 pandemic on existing solid waste management systems are also presented.

3.1 Overview of Existing Solid Waste Management System

The key characteristics of the existing solid waste management system in Baltimore City are its mixed public/private system and its regional scope. The City primarily provides collection of waste and recyclables from single-family residences and condominiums under contract with the City (the public system), while private contractors provide collection services to most multi-family residences and commercial and industrial establishments (the private system). A summary of the existing solid waste stream in the City is depicted graphically in the flow diagram on Page 49, separated into residential waste (handled by the public system) and commercial waste (handled by the private system).

Public System

The public system in Baltimore City refers to all waste and recyclables collected by DPW. The disposal facilities operated by DPW and the contracts held by DPW for the handling, recycling, and disposal of waste and recyclables generated within the public system are presented below.

Residents' Drop-off Facilities

DPW operates a total of five residents' drop-off facilities throughout the City where residents may dispose of various materials, including bulk trash, mixed recycling, rigid plastics, scrap metal, scrap tires, household appliances, waste oil and antifreeze, household hazardous waste (HHW), electronics, and oyster shells. Additionally, the Department of General Services (DGS) operates three convenience centers that accept commingled recyclables. Not all facilities accept all materials on a year-round basis: an up-to-date guide on the locations and operating hours of drop-off facilities, as well as a listing of materials accepted, is available here.

Baltimore City Residents can dispose of their Household Hazardous waste on designated collection dates (about 14 per year) at the Northwest Convenience Center on 2849 Sisson Street. Accepted materials include automotive fluids, batteries, glycols (e.g. Antifreeze), household cleaning products, insecticides/pesticides, thermometers, florescent light bulbs, solvents, fire extinguishers, oil-based pain, varnishes and stains. Clean Harbors Environmental Services, Inc. exports HHW for proper processing and disposal.

Mixed Recyclables

Commented [H(82]: map?

Commented [H(83]: create chart detailing tons/types of waste per year?

Commented [H(84R83]: Create map showing how contracter services are divided across the City?

DPW contracts with the Waste Management Recycle America (WMRA) facility in Elkridge, MD and the World Recycling (WR) facility in Baltimore for processing of single stream recyclables (SSR), hard plastic, and mixed recyclables collected curbside by DPW and at residents' drop-offs.

Other Recyclables

Targeted recyclables collected as part of the bulk collection program and at residents' drop-off locations are sent to private companies for processing:

1. Scrap metal (including appliances) and scrap tire disposal is provided by Auston Contracting (Harford County, MD);
2. Scrap metal recycling is also provided by Goode Company;
3. Electronics recycling is provided by eRevival (Columbia MD);
4. Waste oil recycling is provided by MDE (Baltimore, MD);
5. Recycling and disposal of household hazardous waste (e.g., fluorescent lightbulbs, batteries, and mercury-containing devices) is provided by Clean Harbors (Laurel, MD); and
6. Oyster Shells are recycled by Oyster Recovery Partnership (Annapolis, MD). 160 tons of oyster and clam shells were recycled in 2021.

Sewage Treatment Plant Sludge

Commented [H(85]: do we need to mention whats currently going on at back river?

Sewage treatment plant sludge (biosolids) from wastewater and drinking water treatment facilities in the City are sent to the Baltimore City Composting Facility (BCCF) in Hawkins Point, the Baltimore Patapsco Pelletizer (BPP), and the Back River Pelletech Facility (BRPF) for processing. The BCCF is owned by the Mayor and City Council but operated through a private-public partnership by Veolia Water North America. Biosolids received from the City's Back River Waste Water Treatment Plant (BRWWTP) are mixed with wood amendments to produce a Class A high organic compost product that is put to market. The BPP and BRPF are operated by Synagro, a private company that converts biosolids to granular fertilizer products through a proprietary drying and stabilizing process.

Food Waste

In July 2021, Baltimore City staff launched a pilot food waste drop-off program for residential food scrap collection at the 5 residents' drop-off centers. The pilot was funded by a grant agreement between the National Resources Defense Council (NRDC) and Baltimore City as part of the Food Matters regional initiative. Compost Crew, a Rockville, Maryland based food scrap collection company, provides, at a minimum, weekly food scrap pickup to the residents' drop-off facilities and brings food waste to the Prince George's County Organics Compost Facility in Upper Marlboro, Maryland for composting.

Wood Waste and Brush

Wood waste and brush collected from City parks and street right of ways are sent to the Camp Small facility for sale and reuse. The facility is operated by the Baltimore City Department of Recreation and Parks (BCRP).

Northwest Transfer Station (NWTS)

DPW operates NWTS for transfer of mixed refuse and SSR. Mixed refuse is sent to BRESCO or QRL while SSR is sent to WMRA. NWTS also serves as a residents' drop-off location and a disposal facility for licensed small haulers, accepting waste and mixed recyclables.

Quarantine Road Landfill (QRL)

Mixed refuse collected by DPW but not sent to BRESCO is sent to QRL for disposal. QRL also accepts waste from other City agencies, commercial waste from large haulers as well as the City's Small Hauler Program, grit screenings from the City's wastewater treatment plants, and waste-to-energy ash from BRESCO. Soil is used for daily and intermediate cover at QRL. A residents' drop-off facility is also sited at QRL, which provides free disposal and recycling services to Baltimore City residents.

BRESCO

DPW contracts with Wheelabrator Baltimore, the waste-to-energy (WTE) facility located at 1801 Annapolis Road, for disposal of mixed refuse. The facility is commonly referred to as BRESCO, an acronym for the original operator Baltimore Refuse Energy Systems Company. The term BRESCO is used consistently throughout this Report. Under the current contract with BRESCO, which runs through 2031, DPW disposes of most of its acceptable waste (generally mixed refuse, excluding hazardous waste and non-burnable waste) at BRESCO. BRESCO recycles back-end scrap metal collected after incineration of waste.

Commented [H(86]: update name

Commented [H(87]: not their name anymore? WinWaste?

Commented [H(88R87]: do we need to add details of the change in ownership

Commented [M(89]: We should probably mention that the ash gets buried at the landfill. The end of the line isn't incinceration, the ash has to go somewhere

Private System

The City has not attempted, as some jurisdictions have, to monopolize the solid waste market. Private haulers can dispose of waste generated in the City at any permitted disposal facility located inside the City limits. This is one element of the regional solid waste management system. A second element allows private haulers to dispose of wastes generated outside the City at waste acceptance facilities located within the City limits, such as BRESCO and QRL. The constraints for importing solid waste into the City (as for exporting wastes out of the City) are the capacities of acceptance facilities and market considerations, including tipping fees and hauling costs. Since BRESCO is privately owned and operated, as are most of the other waste acceptance facilities in the City, they are free to compete in the marketplace to provide waste disposal services in response to demand from their customers.

The private component of the solid waste management system operates regionally and independently of City government. Private companies perform the same basic waste collection and management functions as the government without conflict.

The fact that so much solid waste management is independently and privately handled has implications for the City's solid waste planning. The ability to quantify or precisely describe this privately managed solid waste and to determine how all of the solid waste within the City's boundaries is generated is limited to available data.

In an effort to comply with State regulations on comprehensive solid waste planning, this Plan has attempted to include regional considerations for privately collected waste generated within the City's boundaries and solid waste from outside its boundaries disposed of at solid waste facilities within the City.

Impacts of the Covid-19 Pandemic

The COVID-19 pandemic exacerbated already-steep competition for solid waste workers, particularly drivers and machine operators. This increased scarcity forced Baltimore City to end the "One PLUS ONE" program and reduce their single-stream recycling collection service levels from weekly to bi-weekly pick-ups. The City hopes to increase collection services to meet pre-pandemic levels in the future.

Commented [M(90]: We need to add information on what those steps are, what progress is being made, and how DPW is being held accountable to meet the collection needs of the city. We can also add some info on what our challenges were during the height of the pandemic, and the measures put in place for testing and employee safety. This can show what DPW is capable of in the event of another global pandemic.

Commented [mo91R90]: Hi Cara, we will add what we know of here - could you provided suggested language if you have specific data in mind to include?

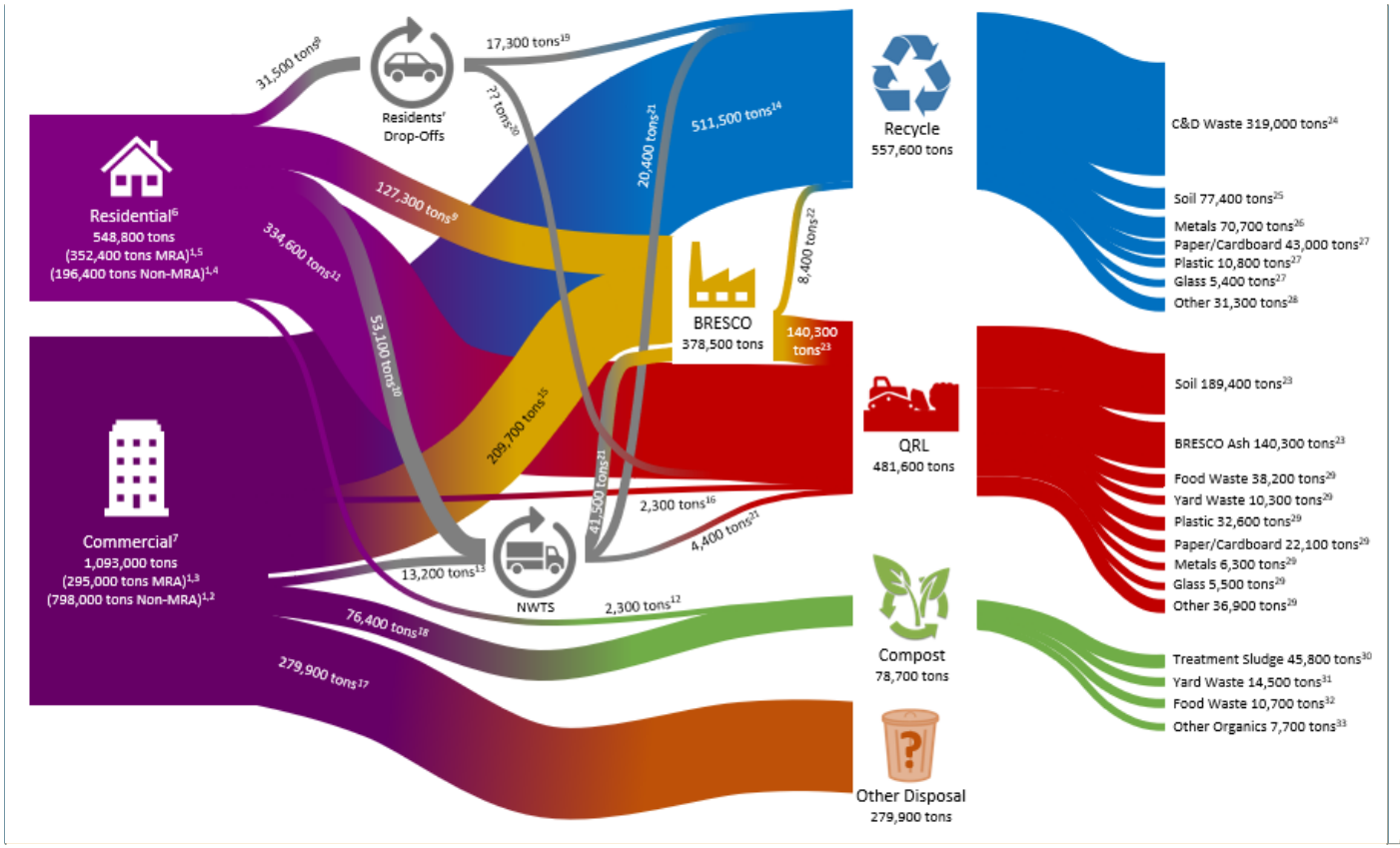


Figure 3-1. Baltimore City Waste Stream Flow Diagram

Commented [SO92]: Numbers and figure notes will be updated

Commented [M(93]: Is there a reason this figure is here, specifically. I'm not super clear on it's context.

Commented [H(94R93]: might be better above at the start of the sectioin

Notes for flow diagram on previous page:

1. See Section 3 of this report for a description of MRA and non-MRA waste.
2. Non-MRA Commercial waste tonnage is derived from 2017 Baltimore City MRA Report (non-MRA recyclables) and 2017 BRESCO tonnage report (commercial waste).
3. MRA Commercial waste tonnage is derived from 2017 Baltimore City MRA Report (MRA recyclables) and 2017 MDE MRA Report (total MRA waste).
4. MRA Residential waste tonnage is derived from 2017 Baltimore City MRA Report (MRA recyclables) and 2017 tonnage reports for NWTS, BRESCO, and QRL (mixed and residential waste).
5. Non-MRA Residential waste tonnage is derived from 2017 Baltimore City MRA Report (non-MRA recyclables) and includes soil, asphalt, waste oil, and millings.
6. Residential waste includes residential waste and waste from government buildings.
7. Commercial waste includes commercial, industrial, and institutional waste.
8. Waste flow to residents' drop-off locations is calculated as the difference in total MRA waste (2017 MDE MRA report) and all other residential waste streams (see also Notes 9-12).
9. Residential waste flow to BRESCO is calculated as the difference in total residential waste sent to BRESCO (2017 BRESCO tonnage report) and waste sent from NWTS to BRESCO (2017 NWTS tonnage report).
10. Residential waste flow to NWTS is calculated as the total waste flow to NWTS (2017 NWTS tonnage report) minus the total waste hauled by small haulers in 2017 (see also Note 13).
11. Residential waste flow to QRL is calculated as the sum of soil sent to QRL (presumably as daily and intermediate cover) and MSW sent to QRL (2017 QRL tonnage report) minus MSW sent from NWTS to QRL (2017 NWTS tonnage report, Note 23).
12. Residential organics tonnage includes recycled leaves as reported in 2017 Baltimore City MRA Report.
13. Commercial waste flow to NWTS is calculated from small hauler data (2017 Small Hauler Report). The small hauler program began in April 2017, so tonnages for January-March 2017 are back-calculated estimates.
14. The quantity of commercial recyclables is derived from the 2017 Baltimore City MRA Report (non-MRA recyclables, MRA recyclables) and includes all recyclables (MRA and non-MRA) not included in the organics waste stream (i.e. yard waste food waste, other organics, and treatment plant sludge). See also Note 18.
15. Commercial waste flow to BRESCO is derived from the 2017 BRESCO tonnage report.
16. Commercial waste flow to QRL is derived from the 2017 QRL tonnage report and includes Back River and Patapsco grit screenings.
17. Most commercial waste is hauled by private haulers and the City has no way to track this waste. It is assumed that many of these haulers take waste to private facilities not included in this diagram (e.g. rubble landfills outside the City).

18. Commercial organics tonnage is derived from the 2017 Baltimore City MRA Report and includes treatment sludge, yard waste, food waste, and other organics (e.g. wood waste).
19. The quantity of recyclables from residents' drop-offs is back calculated from the total recyclables included in the 2017 MDE MRA Report (557,600 tons with compostables and treatment sludge removed) and all other recyclable waste streams (see also Notes 14, 21, and 22).
20. Waste outflows from residents' drop-offs are unknown. It is assumed that DPW sends little if any of this waste to BRESCO.
21. Material outflows from NWTS to recyclables, BRESCO, and QRL are derived from the 2017 NWTS tonnage report.
22. The quantity of recyclables recovered at BRESCO is back calculated from total metals reported in 2017 MDE MRA Report and other metals reported in Baltimore City MRA Report. This value represents back-end scrap recovered from incineration of waste generated within the City.
23. The quantity of WTE ash and soil landfilled at QRL is from the 2017 QRL tonnage report.
24. Recycled C&D tonnage is from the 2017 Baltimore City MRA Report.
25. Recycled soil tonnage is from the 2017 Baltimore City MRA Report (commercial soil only, which does not include soil used as daily and intermediate cover at QRL).
26. Recycled metals tonnage is from the 2017 Baltimore City MRA Report (scrap metal and automobiles) and 2017 MDE MRA Report (all other metals, including back-end scrap from BRESCO)
27. Recycled paper/cardboard, plastic, and glass tonnages are from the 2017 MDE MRA Report.
28. Other recyclables include non-MRA recyclables (waste oil, antifreeze, oil filters, etc.) and MRA recyclables (tires, batteries, furniture, etc.) that do not fall in other recyclable categories.
29. Tonnages for MSW components are derived from the Task 0 Winter 2019 waste sort conducted by Geosyntec and the total MSW tonnage reported for QRL (2017 QRL tonnage report).
30. Treatment sludge tonnage is from the non-MRA recyclables category in the 2017 Baltimore City MRA Report.
31. Yard waste tonnage is from the compostables (yard) category in the 2017 Baltimore City MRA Report.
32. Food waste tonnage is from the 2017 Baltimore City MRA Report, and includes compostable food waste, food waste (non-mulch/compost), and food donations.
33. Other organics tonnage is from 2017 Baltimore City MRA Report and includes wood materials and other compostables.

3.2 Existing and Projected Waste Generation

COMAR 26.03.03.03 (D) requires that Chapter 3 contain a table that shows existing and projected annual generation of specified categories of waste within the City. Further, the basis for the data presented in the table must be discussed. COMAR 26.03.03.04 (B) states that projections shall be given for the succeeding ten-year period at intervals of not more than 5 years.

The last year from which complete waste generation data could be obtained is 2020. As such, 2020 is used as the baseline for this analysis. In compliance with the requirements of COMAR, waste generation projections in Baltimore City for 2023, 2029, and 2033 are presented in Table 3-1.

Table 3-1. Annual Waste Generation in Baltimore City 2020 – 2033

Annual Generation (Tons)				
Waste Category	**2020**	**2023**	**2028**	**2033**
Residential (MSW)	306,528	308,742	320,052	341,874
Commercial (MSW)	678,575	683,475	708,513	756,823
Industrial (Solids, liquid, etc.)	34,366	34,614	35,882	38,329
Institutional (schools, hospitals etc.)	0	0	0	0
Demolition Debris (C&D)	79,518	80,092	83,026	88,687
Land Clearing	0	0	0	0
Controlled Hazardous Substance (CHS)	0	0	0	0
Dead Animals	60	60	63	67
Bulky or Special Waste	17,563	17,690	18,338	19,589
Vehicle Tires	930	937	972	1,038
Treatment Plant Sludge	12,031	12,117	12,561	13,418
Wood	424	427	442	472
Asbestos	100	101	104	112
Soil	140,630	141,646	146,835	156,847
Special Medical Waste	26,063	26,251	27,213	29,068
Asphalt	48,000	48,347	50,118	53,535
Concrete/Brick	0	0	0	0
Septage	0	0	0	0
Total MRA & NON MRA Waste	**1,344,788**	**1,354,500**	**1,404,120**	**1,499,859**
Total MRA & NON MRA Recyclables	**381,369**	**483,859**	**565,511**	**655,863**
MRA Recycling Rate	**15%**	**20%**	**27%**	**35%**
Total Waste Generation	**1,344,788**	**1,354,500**	**1,404,120**	**1,499,859**

Projections (2023, 2028, and 2033 values) included in Table 3-1 use a 0.12% annual growth rate. This growth rate was selected as it is the average population growth rate from 2020-2045 in Baltimore City.

Sources of Solid Waste

The primary sources of solid waste generation in Baltimore are detailed below. In each category, it is indicated whether this waste is handled primarily by the public system (managed by DPW), or the private system. Tonnages presented for each waste category are generally sourced from DPW or MDE. The most recent calendar year for which complete records are available is 2020.

Residential Waste

Residential waste includes household trash, recyclables, and compostables generated by Baltimore residents. In Baltimore, DPW collects residential waste alongside waste generated at City-owned or City-leased properties. As such, residential waste is sometimes reported as "mixed waste", or MSW, by the City. The total amount of residential waste generated in the City in 2020 was approximately 306,528. This value includes recycled residential material as well as mixed or residential material disposed at QRL and BRESCO, less any tonnages deposited through the Small Hauler program at NWTS and QRL. All residential waste in Baltimore City is managed through the public system.

Commented [M(95]: pounds? Tons?

Commercial Waste

Commercial waste includes all recyclables, compostables, and trash generated by the private sector in Baltimore. This waste is almost exclusively collected by private haulers rather than DPW, so precise information on tonnages generated are not available. However, information on the total amount of waste generated in Baltimore City and the total amount of commercial waste disposed at BRESCO is available. Based on available data, an estimated total of 678,575 tons of commercial material was generated in the City in 2020. However, as commercial waste is part of the private system and is not tracked by the City, it should be noted that this value is a "best guess" estimate and may overestimate the true amount of commercial waste generated in the City.

In Baltimore City, commercial waste is collected by private haulers, and the City does not have precise information on the tonnages generated. In 2020, XXXX tons of commercial waste were delivered to Baltimore Refuse Energy Systems Company (BRESCO) for incineration. This amount includes commercial waste brought to BRESCO from outside of Baltimore City.

Commented [MM96]: Geosyntec will update year and tonnage data based on BRESCO Recycling Report

Industrial (Non-Hazardous) Waste

Industrial (non-hazardous) wastes are solids, liquids and sludge generated by manufacturing or industrial processes that are not regulated under Subtitle C of the Federal Resource Conservation and Recovery Act (RCRA). In general, the City does not collect information on the character and quantity of this waste from the generators. Several industries dispose industrial non-hazardous waste in Baltimore City. In 2020, 34,366 tons of industrial, non-hazardous waste was disposed at the W.R. Grace & Co. Davison Chemical Division and the Fort Armistead Road – Lot 15 facilities within the City.

Institutional Waste

Institutional waste includes all waste generated by institutions (e.g. schools, hospitals, and government buildings) in Baltimore. Most of this waste is collected by private haulers in the City (except for waste

generated at government buildings, which is collected by DPW alongside residential waste). As such, exact tonnages are not well quantified. In Baltimore City, waste collection is only provided to residential households and Baltimore-City owned or leased properties. As a result, institutional waste is mainly collected by private haulers. For this plan, institutional waste tonnages are included in commercial waste tonnage projections.

Construction and Demolition Debris

Construction and demolition (C&D) debris is refuse generated from demolishing buildings, streets and other improvements and clearing of sites to prepare them for new construction, rehabilitation, street improvements or utility installation. This refuse is primarily inorganic, consisting of concrete, brick, bituminous paving material, lumber, drywall, plaster, roofing material and insulation. The estimate for Construction & Demolition Debris shown in Table 3-1 was calculated by summing Small Hauler program tonnages and recycled C&D tonnages.

Large private demolition and construction contractors find it more economical to use private facilities to dispose of any such debris, given the current tipping fee of $67.50 per ton at QRL (includes $7.50 per ton surcharge). No information is available to the City on the amount of debris handled by the private sector and disposed of beyond the City's boundaries.

Land Clearing Debris

Land clearing debris is refuse generated from clearing of sites to prepare them for new construction, rehabilitation, street improvements or utility installation. In the City, with little undeveloped land, this category of waste is generally small enough to be included in C&D tonnages and is assumed to be zero for the period covered by this plan.

Controlled Hazardous Substances

Controlled hazardous substances are those wastes whose disposal is regulated under Subtitle C of the Federal Resource Conservation and Recovery Act (RCRA, see Section 1.3.1.1). Local governments in Maryland have not been granted authority to enforce federal or State regulations on the disposal of hazardous wastes. MDE, however, compiles information on the generators and the amounts of hazardous wastes being handled within Baltimore City limits and reports this information to EPA. MDE can enforce RCRA.

Each generator/facility is responsible for proper handling and disposal of its hazardous waste. These firms are required to use out-of-state processing plants or emplacement facilities. Though there are several closed hazardous waste landfill cells within Baltimore City, there is no landfill currently accepting hazardous waste within the city limits.

Dead Animals

Since Baltimore City is fully urbanized, most animal carcasses requiring disposal in the City are those of stray or unwanted cats and dogs. The division of Animal Control under Baltimore City's Department of Health is responsible for removing animal carcasses from public property and for removing live animals that are defined as strays under the law. Animal carcasses are currently collected for disposal by private

companies under contract with the City (see Section 3.2.5). In 2020, it is estimated that the City collected and sent to incineration approximately 60 tons of animal carcasses.

Commented [SO97]: This is based on old SWMP value from 2011, but we assume it has not changed significantly.

Animal carcasses collected by Animal Control are picked up by Valley Pets and transported to Greenlawn Cemetery where they are incinerated. The contract allows for a flat fee per pound of animal carcasses.

Bulky or Special Waste

Bulky or special wastes as cited in the State regulations are automobiles and large appliances. It is estimated that City residents generated 7,616 tons of scrapped vehicles.

The tonnage of white goods is taken from the City's MRA Report and is based on the number that is accepted by the Bureau of Solid Waste or deposited at one of the City's drop-off centers. In 2020, 9,943 tons were processed in the City. The tonnages for scrapped automobiles, white goods, appliances, and furniture are combined to equal a total bulk tonnage of approximately 17,563 tons in 2020.

Vehicle Tires

Commented [H(98]: should we include comment of how many tires were illegally dumped and the challenges associated with clearing dumped tires

There were 930 tons of tire waste generated in the City in 2020. This number is largely representative of tires that have been recovered by City forces at drop-off locations and collected by City forces at illegal dumping locations. Tires collected by the City are sent to Auston Contracting in Harford County for processing and recycling. It is assumed that this tonnage will fluctuate from year to year, but not change significantly over the next ten years.

Treatment Plant Sludge

Treatment plant sludge is the solids remaining after wastewater and raw drinking water treatment. The estimates presented in Table 3-1 represent the mass of sludge that was recycled in the City in 2020.

In 2020, the Back River Wastewater Treatment Plant (BRWWTP) generated approximately 50,000 wet tons of sludge. Through City contracts, private firms utilize the majority of the sludge. The Baltimore City Compost Facility (BCCF) in Hawkins Point, a private company, utilizes approximately 30% of the treatment plant's sludge on a dry weight basis for production for horticultural compost. The Baltimore Pelletech Facility (BPF) processes the remaining 70% of the sewage sludge into a pelletized product for fertilizer and as soil amendment. Any sludge not sent to BCCF or BPF is sent to QRL for disposal.

Commented [SO99]: This value needs to be confirmed.

The number of wet tons of sludge generated at the Patapsco Wastewater Treatment Plant (PWWTP) increases each year as the population it serves grows. In 2011, the average daily flow was about 62.8 million gallons per day (MGD) and the plant wet sludge generation grew to about 19.25 wet tons (3.06% solids content).[6] The wet sludge is then heat dried for stabilization. Synagro Water Technologies of Baltimore handles sewage sludge for PWWTP.[7]

Commented [MM100]: We need the 2020 Annual Sewage Sludge Generator Report to update these values.

The Bureau of Water and Wastewater expects sludge generated at PWWTP and BRWWTP to increase by less than 5% over the next ten years. This increase will result mostly from growth in the surrounding

[6] 2009 Annual Sewage Sludge Generator Report for Patapsco WWTP
[7] 2008 Annual Sewage Sludge Generator Report for Patapsco WWTP

counties and is not expected to be attributable to City residents. It is expected that the population served by both wastewater treatment plants will increase by approximately 5%, with less than 1% of that increase occurring within the City limits. Furthermore, BRWWTP currently operates near peak capacity and there are no planned improvements that would generate additional sludge production.

The City operates three water treatment plants: Montebello I, Montebello II, and Ashburton. The facilities are currently generating 2,211.1 tons per year of sludge. Montebello I is responsible for approximately 646.8 tons, Montebello II approximately 604.1 tons and Ashburton approximately 960.2 tons.

Sludge production at the three water filtration plants is not expected to increase appreciably. An increase in water demand is expected to be approximately 6% between 2011 and 2023. Baltimore City water demand is expected to remain flat over the next 15 years, while growth is anticipated in Anne Arundel, Baltimore and Howard Counties.

Commented [MM101]: Geosyntec will update pending input from City on tonnages of sludge generated at each of the water treatment plants.

Commented [SO102]: Geosyntec will require input from the City to update this estimate.

Wood

Commented [H(103]: does this include #s from Camp Small?

Wood tonnages are considered recyclable MRA materials. 424 tons of wood materials were recycled in 2020, 100% of which were from the private system.

Asbestos

Materials containing friable asbestos are not permitted to be disposed of at QRL. Any debris containing friable asbestos that is generated in the City must be exported for disposal, since there are no waste acceptance facilities in the City at this time that accepts this material.

Soil

In 2020, 55,921 tons of soil were used as daily cover at the QRL. Additional soil tonnages included were gathered from 2020 MRA reports. The 2020 MRA report included an additional 19,000 tons of recycled soil from residential sources and 65,630 tons of recycled soil from commercial sources. Altogether, 140,630 tons of soil were generated in Baltimore City in 2020.

Special Medical Waste

Special medical waste generated within Baltimore City is taken to the Curtis Bay Energy facility for incineration and the incinerated ash is exported to Haw River, North Carolina, for proper disposal. In 2020, the Curtis Bay Energy facility processed approximately 26,063 tons of medical waste.

Asphalt

In 2020, the QRL did not dispose of any asphalt from residential sources. However, 48,000 tons of asphalt from commercial sources were recycled.

Concrete/Brick

In 2020, no concrete/brick tonnages were recorded for the City.

Septage

The city's waste hauler/scavenger program was implemented on January 1, 1987. Under the program, any company wishing to dispose of septage into the city wastewater system must obtain a waste hauler permit, vehicle permit tag for each vehicle, and pay annual permit and vehicle tag fees. The program is regional in scope, recognizing programs developed cooperatively with the City program in Baltimore, Howard and Anne Arundel counties. The program dictates the types of wastes to be accepted, allows for city sampling of the septage, and reserves the city's right to refuse acceptance of any load. Any violation of the program conditions can result in fines, revocation of permits and/or prosecution of the permit holder.

Septage is only accepted at the Back River Wastewater Treatment Plant. The septage discharge becomes part of the plant flows and is subject to the same treatment processes. The solids also become part of the overall sludge production and are subject to the same solids processing and disposal. The cost for disposal is $.05/gallon.

MRA Waste and Recyclables

Under Maryland law, solid waste generated in Baltimore is broken down into different categories by type based on classification under the Maryland Recycling Act. The Maryland Recycling Act (MRA) requires each jurisdiction in Maryland to develop and implement recycling programs. Since December 2015, Baltimore City and all counties with a population greater than 150,000 are required to attain a 35% recycling rate, which is calculated by dividing the tons of material recycled by the tons of materials generated, which in turn is defined as the tons of material recycled plus the tons of material disposed. Counties with a population less than 150,000 are required to attain a 20% recycling rate.

To allow fair comparison between different jurisdictions, only certain materials can be included when calculating a county's MRA recycling rate, which must be reported to MDE each year. These include paper, plastic, glass, metal, compostables, and a broad category of miscellaneous materials (in 2021, the miscellaneous materials reported by Baltimore City as part of its recycling rate included vehicle tires, textiles, wood and pallets, and batteries). Specific materials that are excluded from the calculation of the recycling rate include antifreeze, asphalt and concrete, coal ash, construction and demolition (C&D) debris, land clearing debris, scrap automobiles, scrap metal, sewage sludge, soils, waste oil, and a host of other materials. Although the tons of these materials recycled are not counted when calculating the county's MRA recycling rate, they are still reported to MDE each year. This division of waste and recyclables into MRA and non-MRA materials is important in the context of understanding reported recycling and waste diversion rates for counties in Maryland.

The MRA also allows counties to take up to a 5% recycling credit for recovering energy from waste (considered resource recovery) if the county "achieves a reduction of at least 5% in the volume of its waste through the utilization of one or more resource recovery facilities in operation as of January 1, 1988." Baltimore City recovers energy from waste and thus takes this credit.

In addition to the MRA recycling rate, the City reports a waste diversion rate to MDE on an annual basis. The waste diversion rate includes the calculated MRA recycling rate plus up to 5% credit for specific source

reduction activities (the City's source reduction activities are discussed in Section 3.3). In 2020, the City earned a 5% credit in recognition of its source reduction efforts.

MRA Waste

MRA waste includes MSW and industrial waste from non-private, industrial waste landfills. It does not include recycled or disposed MSW ash or backend scrap metal (i.e. metal recovered at WTE facilities post-incineration). A total of approximately 804,000 tons of MRA waste was generated in Baltimore in 2020. Of this, approximately 80,000 tons of material was recovered (see discussion on MRA recyclables below) while 724,000 tons was sent for disposal.

Based on the MRA waste values reported above, the City's unadjusted MRA recycling rate in 2017 was 10%, although the City's reported MRA recycling rate for 2017 was 15% after adding the additional resource recovery credit. The City's reported waste diversion rate for 2017 was 20% after applying the 5% source reduction credit. These figures compare to the statewide average MRA recycling rate of 38% and waste diversion rate of 42%.

Commented [H(104]: Can we make a chart that clarifies mra waste/mra recyclables, non mra waste/recyclables, definitions & sources for each?

Commented [H(105]: we have updated better numbers we can put in here

Commented [H(106R105]: is there a reason why were using 2017 figures here?

MRA Recyclables

MRA recyclables include compostables (yard waste and other organics), paper, plastic, metal, glass, and other materials recovered or diverted from the waste stream prior to disposal. MRA categories are summarized below.

Paper and Cardboard

Recycled paper includes corrugated cardboard, newspaper, mixed paper, magazines, and office/computer paper diverted from the waste stream.

Plastic

Recycled plastic includes high density polyethylene (HDPE) and polyethylene terephthalate (PET/PETE) bottles and containers, film plastics, and other mixed plastics diverted from the waste stream. Note that PET/PETE and HDPE are classified as No. 1 and 2 plastics, respectively, in many recycling programs.

Metal and Glass

Recycled metal includes aluminum cans, tin/steel cans, and metal household appliances (e.g., washers, dryers, refrigerators, etc.) diverted from the waste stream. Recycled glass includes mixed glass and fluorescent light tubes diverted from the waste stream.

Yard Waste and Other Organics

Yard waste includes brush, branches, grass, and leaves diverted from the waste stream and composted. Other organics diverted from the waste stream mainly include food waste, wood materials, and donated food. This material may be composted, donated, or recycled by other means (e.g. anaerobic digestion, mulching, etc.).

Other

This is a broad category of materials that count towards MRA recycling, including animal proteins/fats, electronics, textiles, tires, toner cartridges, batteries, and furniture.

Non-MRA Waste and Recyclables

Non-MRA waste and recyclables include all categories of waste disposed in Baltimore that do not classify as MRA waste or recyclables as defined above.

Non-MRA Waste

Non-MRA waste includes MSW collected from commercial sources as well as C&D debris, soil, and a wide range of other materials that are ultimately diverted for recycling.

The vast majority of non-MRA waste in Baltimore is collected by private haulers. As such, limited information is available for generation of this material. The quantities of non-MRA waste listed below include recycled non-MRA waste reported in the 2020 MRA report for the city (including non-MRA recyclables as well as soil disposed at QRL) as well as other non-MRA waste generated in the city (e.g., C&D waste). A total of 541,000 tons of non-MRA material was generated in Baltimore in 2020, of which about 240,000 tons was sent for disposal at BRESCO or QRL.

Non-MRA Recyclables

Approximately 301,500 tons of the 541,000 tons of non-MRA materials generated in the City in 2020 were reported to be recycled. The predominant categories of non-MRA recyclables include C&D debris, soil, sewage sludge, and scrap metal.

Construction and Demolition Debris

This category of materials includes asphalt, concrete, bricks, sheetrock, plaster, siding, wood pieces, and roofing, as well as general land clearing debris generated in Baltimore.

Soil

Recycled soil includes soil that has been put to beneficial reuse by DPW (i.e., as fill material in City projects). For this Report, however, soil used as daily and intermediate cover material at QRL is not included in this category.

Scrap Metal

Recycled scrap metal includes materials left over from product manufacturing and consumption such as vehicle parts, building supplies, and surplus metals. DPW provides scrap metal recycling at five of the residents' drop off facilities.

Sewage Sludge

Sewage sludge is the semi-liquid waste obtained from the processing of municipal wastewater sewage. In Baltimore, this material is composted or converted into a pelletized soil amendment or fertilizer by two private companies, Veolia and Synagro.

Other

Other types of recycled non-MRA waste in Baltimore include antifreeze, waste oil, oil filters, industrial fluids, millings, and a host of miscellaneous materials.

Projected Waste Generation

The projections for 2023, 2028, and 2033 in Table 3-1 were derived from 2020 waste collection data recorded by the City and waste growth projections derived from the population data detailed in Section 2. Specifically, an average annual growth rate of 0.12%, the same as the expected population growth rate between 2020 and 2045, was used to estimate waste generation for 2023, 2028, and 2033.

The MRA recycling rate is projected to increase over the planning period as the City is committed to meeting the state mandated 35% recycling goal. Section 4.2 contains additional information on the City's plan to achieve 35% recycling.

3.3 Existing Source Reduction and Reuse Programs

Source reduction efforts in the City exist in both the public system (operated by DPW) and the private system. This section describes both public and private source reduction and reuse programs in the City.

Public Education and Outreach

The City provides information about waste disposal and recycling programs, what materials can be recycled, locations of Residents' Drop-off facilities, disposal of household hazardous waste, and source reduction initiatives on the City's website (www.baltimorecity.gov) and on DPW's social media outlets (Facebook, Nextdoor, and Twitter). Waste reduction and reuse is promoted at City-organized spring and summer festivals and at special events throughout the year. DPW also places recycling memos and information in a monthly newsletter provided with the water bill sent to all residents. More information on specific education and outreach programs is provided below.

Commented [H(107]: do we actually do this?

Commented [mo108R107]: @Meghan.Resler@baltimorecity.gov Hi Meghan, could you confirm if this method of outreach is still occurring?

Source Reduction Programs

According to the 2020 Source Reduction Report published by MDE, Baltimore participated in the following source reduction initiatives:

Commented [H(109]: can we link to media/webpages for as many of these as possible

1. Conducting an ongoing, multi-faceted public education program promoting grass-cycling and/or home composting of yard trimmings;
2. Distributing publications exclusively promoting and describing how to utilize grass-cycling and/or home composting of yard trimmings to at least 30% of single family households within the last three years;
3. Conducting an ongoing multi-faceted, public education program promoting food donation and food composting;
4. Hosting a source reduction event for the general public;

5. Incorporating source reduction information into a county website;
6. Promoting source reduction in schools on an ongoing basis;
7. Including a source reduction curriculum or ongoing activity in schools;
8. Integrating source reduction into ongoing county employee training and education programs;
9. Distributing source reduction materials to at least 30% of residents within the last three years;
10. Distributing source reduction materials to at least 30% of businesses within the last three years;
11. Developing or updating a solid waste reuse directory within the last three years;
12. Conducting a focus group or a survey of residents about source reduction within the last three years;
13. Developing or maintaining a system for referring people to a materials exchange program;
14. Working with a targeted sector of the business community to achieve source reduction;
15. Conducting a source reduction training session, workshop, or presentation at a business, institutional or community event;
16. Conducting workshops demonstrating proper food composting techniques;
17. Developing or maintaining permanent food composting demonstration sites;
18. Operating a program to promote pallet reuse;
19. Establishing or maintaining a City procurement policy advancing the purchase of materials that result in reduced waste generation;
20. Incorporating green building codes/requirements in City construction, remodeling, and maintenance bid specs and contracts; and
21. Holding team meetings, at least quarterly, that included representatives from major City departments, in which source reduction was discussed as a formal part of the agenda.

Recycle Right and Social Media

The Office of Recycling is looking at using and improving digital technologies to help educate the public. In addition to utilizing DPW's Facebook and Twitter accounts to promote source reduction, the office of recycling developed a "recycle right" webpage that gives guidance on recycling and promotes source reduction.

Artscape

Artscape is America's largest free arts festival held within the Mount Royal Avenue and Cathedral Street, Charles Street, Bolton Hill, and Station North Arts and Entertainment district neighborhoods. This event hosts more than 150 vendors and attracts over 350,000 attendees over a period of three days. The Baltimore City Department of Public Works has their own booth at Artscape that provides information about waste reduction and encourages visitors to reduce, reuse and recycle. The Artscape 2016 booth provided a water bottle refill station to encourage visitors to fill their water bottles as opposed to buying plastic water bottles.

Commented [M(110]: There is no "office of recycling". We can refer to DPW, DPW communications, or Office of Waste Diversion. (or a combo)

Commented [H(111]: link

Commented [M(112]: We can add more about how material is created and managed by the communications office.

Commented [M(113]: Artscape hasn't been held in a couple of years, due to COVID, right? This blurb isn't adding much to the report.

Electronic Timekeeping System

In 2020, the city implemented an electronic timecard system, called Workday. This citywide system eliminated the need for paper time sheets, overtime slips, and leave slips. It has reduced vast quantities of timekeeping paperwork.

Electronic Invoice Processing System

Since 2016, the City of Baltimore has been transitioning to a paperless process for reviewing and approving invoices from consultants and contractors. In the past, each invoice, which can be several hundred pages long, had to be submitted as a paper copy for review every month. If there was an issue or something was missing, a revised version had to be printed and submitted. This was a great amount of paper, considering the enormous number of active contracts. The Department of Public Works, the Department of Transportation, and the Department of General Services, which are the three largest agencies with consultants and contractors, are now using an electronic, paperless invoice review process.

Polystyrene Ban

Under Ordinance 18-125, food service facilities in Baltimore will be prohibited from using disposable food service ware made from polystyrene (Styrofoam) in October 2019. According to the City's SWMP, the ban is intended to force businesses in the City to replace polystyrene containers with recyclable or compostable alternatives. The City is working with a coalition of environmental non-profits to provide educational material to local businesses and residents about alternatives to polystyrene and the best way to dispose of carry-out containers.

Plastic Bag Ban

On July 9, 2021, the Comprehensive Bag Reduction Act, also known as the Plastic Bag Ban, went into effect. The Act prohibits grocers and other retailers from supplying customers with plastic bags at point of sale, pickup or delivery. It specifically applies to plastic "check out" bags that have a thickness of less than 4 mm. Paper bags and compostable plastic bags are permitted. However, compostable plastic bags must be recognized as meeting ASTM D6400 standards, as well as capable of biological decomposition. The use of any accepted single use bags is accompanied by a fee of at least five cents charged to the customer. Of these five cents, one cent is paid to the city of Baltimore, with the rest retained by the business. The City has also distributed free reusable bags to residents.

Plastic bags are not accepted in curbside recycling due to the damages these materials cause to machinery. Plastic bags and bagged materials are the largest contributors to contamination in single stream recycling. The comprehensive bag reduction act assists with the removal of plastic bags from the recycling stream, as well as decreasing plastic pollution in our streets, parks, and waterways.

Commented [H(114]: who is doing this work?

Commented [H(115]: @Richardson, Ava (DOP) can you or Amy provide any data related to the ban that would be compelling?

Commented [M(116R115]: We could likely reference the info that Amy put together for BC's request to inform their ban efforts.

Commented [mo117R115]: @Cara can you provide this info?

City Initiatives to Combat Food Wastage

In September 2018, the City began working with the Natural Resources Defense Council (NRDC) and the Rockefeller Foundation to implement strategies laid out in the BFWRS by establishing the Food Matters pilot food waste management project in which local establishments are awarded grants of up to $10,000 to support the City's goals of reducing food wastage. To date, eleven applicants have been awarded grants.

Additionally, in June 2019 the NRDC issued a request for proposals (RFP) for a food waste financing and funding assessment in Baltimore to evaluate opportunities to leverage financing and/or funding strategies to support the food waste reduction strategies laid out in BFWRS.

The City has implemented a free food scrap drop-off program for residents. Locations are placed at DPW's five residential convenience centers, the downtown farmer's market and bazaar, and the Waverly farmer's market. While at the farmer's market, the program makes a consistent effort to educate the public on strategies relating to food waste reduction and broader environmental stewardship. At the beginning of the program, each person weighted their scraps and were offered the opportunity to provide information about their demographics, housing type, housing location, and similare questions in a short survey. From there, the food scraps are then donated to two local farmers, who use it for compost and animal feed.

This program also included implementing the "Save The Food Campaign" in Baltimore City. The "Save The Food Campaign" is a large-scale consumer campaign targeted at food waste prevention at the household level. The campaign was launched with an event series consisting of five events focused on food waste issues, including a movie screening about food waste reduction. Ten food waste reduction community sessions were held across the city to connect with key community stakeholders, in order to promote in-home composting. These small, intimate community gatherings were integral to raising awareness of food waste challenges. In addition to these events, the campaign has a video and website. The website includes tips on how to store food to preserve it longer, recipes for utilizing parts of produce that is often discarded, information on the harm of food waste, and more. In addition, the project is working with institutions on food waste prevention and compost, supporting enhanced community composting, educating the public about food waste prevention, and is supporting the Maryland Food Bank in food rescue options.

Donation and Food Rescue Organizations in Baltimore

The largest and most established food rescue/donation organization in Baltimore is the Maryland Food Bank. Other, smaller organizations include Food Rescue Baltimore, the Food Recovery Network, Helping Up Mission, Paul's Place, the Franciscan Center, and Hungry Harvest. As a result of these food rescue/donation efforts, it is estimated that 5,750 tons of food was distributed to food insecure Baltimore residents in 2018 (NRDC 2019).

In addition to major food rescue organizations, there are some other establishments offering possible synergies regarding food waste work in the Baltimore region. These include:

Commented [M(118]: Change to waste?

Commented [H(119]: also resulted in the support of a network of community composting sites

Commented [H(120R119]: explored different types of in vessel systems, created additional ed materials to target source reduction, create awareness on the connection of compost + local food systems, etc.

Commented [H(121]: link

Commented [H(122]: Move this paragraph down, feature these programs more prominently, emphasize higher level reuse (edible food rescue for hogs), include plans to expand food scrap drop off locations,

Commented [H(123]: Add a section on food scrap hauling orgs in baltimore? like we do for donation & food rescue below

Commented [H(124]: @Richardson, Ava (DOP) would Abby be able to provide a list of additional orgs? I know this is not comprehensive

Commented [H(125R124]: Bmore Community Food, Our Daily Bread, community fridge @ hidden harvest,

1. Center for Eco Technology: A national non-profit supporting food waste prevention and diversion at the local and state level. They support the development of a wasted food diversion marketplace.
2. Food Rescue US/EAT Management: Operated by a former chef/restaurateur turned food waste consultant. Currently supporting the advancement of the Food Rescue US platform designed to increase food rescue efforts with volunteer support.

Reuse Programs and Facilities

Although they are generally not part of the City's formal waste management system, several reuse and repurposing facilities in the City provide residents and businesses with opportunities to reduce the amount of material sent into the solid waste system.

Second Chance

Second Chance, Inc. is a non-profit deconstruction and building material reuse center in Baltimore that employs displaced or unemployed members of the community and trains them in deconstruction methods. Second Chance focuses on deconstructing and salvaging valuable building materials from homes and other structures that are to be demolished. These materials are then sold for reuse or repurposing. The center also accepts donations of building materials and household fixtures and appliances. Through March 2019, Second Chances reports having diverted over 2.2 million lbs. of waste from landfill disposal.

The Loading Dock

The Loading Dock, Inc., a non-profit building materials reuse center, reports to have diverted approximately 12,000 truckloads of materials from landfill disposal since 1984. The center accepts paint, lumber, plumbing fixtures, appliances, doors, cabinets, windows, caulks, moldings, and other reusable materials from the home building industry. Donated materials can be dropped off at the center.

Habitat for Humanity of the Chesapeake

Habitat for Humanity of the Chesapeake (HHC) is a non-profit organization focused on bringing investment to underserved communities in the Baltimore area through the construction and renovation of homes. In addition to constructing/renovating homes, HHC also operates six ReStores which sell new and gently used furniture, building materials, and appliances at discount prices. ReStore locations accept donations of furniture, appliances, cabinets, building materials, houseware, hardware, lighting/electrical, flooring, plumbing, doors, and windows.

Reuse and Repurposing of Clothing and Textiles

Goodwill and the Salvation Army operate multiple locations within Baltimore for the donation and resale of clothing, shoes, and household items. Additionally, Donation Town, an online resource, will help to connect Baltimore residents with local charities that will pick up donations from residents' homes.

Commented [H(126]: more here: 2021 through 2022 Reuse Directory (baltimorecountymd.gov)

Commented [H(127R126]: would only want to pull the baltimore based ones--

Commented [H(128]: Sew lab-- others?

Commented [M(129R128]: Helpsy and Planet aid have bins in the city

Other Reuse Facilities

In addition to those listed above, multiple other reuse organizations exist within Baltimore. For example, the Lions Club in Baltimore will accept donations of old eyeglasses for distribution to others in the City. Vehicles may be donated at Vehicles for Veterans or St. Vincent de Paul in Baltimore. Other facilities exist for donation of books, furniture, electronics, musical instruments, sports equipment, and other items.

3.4 Existing Diversion and Recycling Programs

The City currently offers multiple diversion and recycling programs to encourage residents to divert material from disposal. These programs are highlighted below.

Recycling Programs

DPW has undertaken many recycling programs to improve participation in curbside recycling programs, comply with state law (e.g., by monitoring recycling efforts in office and apartment buildings), and educate constituents on the importance of recycling.

One PLUS ONE Program

The City began the One PLUS ONE Program in July 2009. Through the program, the City reduced residential refuse collection frequency from twice weekly to once weekly and set the maximum amount of refuse collected to 96 gallons per household per week. The City simultaneously increased the collection frequency for SSR from twice monthly to weekly collections with no limit to the amount of SSR collected. As part of the program, the City also rerouted the collection schedule to account for population shifts and created a yard waste collection program (yard waste is currently collected with mixed refuse when it is bagged separately and labeled; however, yard waste collected in this way is handled with the trash stream). The One PLUS ONE Program greatly improved efficiency of collection, reduced the amount of trash generated in the City, and increased recycling participation. Through the duration of the One PLUS ONE program, curbside recycling tonnages doubled. However, as previously described, the One PLUS ONE Program was discontinued in 2020 during the COVID-19 pandemic due to staffing shortages. After the One PLUS One Program was discontinued, curbside collection of SSR was reduced to twice monthly. DPW is currently working to reinstate the One PLUS ONE program.

Municipal Can Program

In 2016, the City provided every household subject to trash collection by DPW with a 65-gal. wheeled trash can specifically for mixed refuse. By providing all households with a trash can with a tight-fitting lid, DPW aimed to reduce wind-blown litter, prevent rodents and other animals from foraging in trash cans and standardize trash collection in the city to reduce the strain on trash collection workers. The program was also launched with the intent of reducing total trash generation in the City by providing all residents with a standardized bin size that is considerably smaller than the maximum collection volume of 96 gallons mandated under the One PLUS ONE program.

Commented [H(130]: can we add a part that describes current recycling collection methods?/contractors

Commented [S(131]: @Resler, Meghan (DPW) - shouldn't we also include the recycling collections for BCPS here?

Commented [H(132]: Does mention of the rubicon report have a place here?

Commented [M(133R132]: Also, the only element of the program that was discontinued was the recycling collection frequency, and it was changed, not discontinued. The name for the program isn't even really used any more, since the changes made in 2009 have become institutionalized. This section seems like the wrong way to describe our recycling collections/trash/yard waste collections and could stand to be re-framed.

In September 2021, the City launched delivery of nearly 200,000 65-gallon curbside recycling carts to City residents. This initiative was conducted in coordination with the Recycling Partnership, the American Beverage Association's Every Bottle Back Initiative, Closed Loop Partnership, Dow, the Baltimore Civic Fund, and Rehrig Pacific. The goal of this initiative was to increase access to curbside recycling and improve recycling participation. Delivery of recycling carts was completed in February 2022, and DPW is monitoring the impacts of the rollout through reporting required through the agreements with the program's lending partners.

City Agency Recycling

In compliance with the Drive to 35 Executive Order, the Department of Public Works will implement a pilot program to ensure that all leased or owned city agency buildings are recycling. The pilot will designate one facilitator per office per building to educate and monitor the office's recycling participation. Responsibilities of the recycling facilitator include:

- Provide orientation to, and overview of, recycling with the identified work area (i.e., office, yard, etc.)
- Provide literature and signage related to the program;
- Ensure recycling containers are marked and placed throughout the work area;
- Monitor recycling area ;
- Audit recycling container contents on a quarterly basis, and;
- Report tonnage recycled and level of participation to the mayor's office every quarter of the calendar year.

Recycling Partnership Grant for City-Recycling Campaign

Baltimore City received a cash grant of $250,000 from the Recycling Partnership to support resident engagement in curbside recycling and improved quality of materials. In addition, the Recycling Partnership will provide access to campaign materials, staff time, and other in-kind services with a total estimated value of $125,000.

Residents are often confused about which materials are recyclable and how to properly prepare recyclables for collection. In response, the city seeks to provide targeted, specific outreach to residents to encourage recycling, provide guidance about what can be recycled, and implement other programmatic elements with the goal of decreasing the contamination rate of curbside recycling.

Campaign elements included an informational card mailed to all households in Baltimore in order to make sure each household receives current, accurate information about the recycling program. Supportive messaging and campaign materials were placed throughout communities on various structures. In addition to providing outreach directly to households and in public spaces, City staff hand out informational items and discuss the proper way to recycle at various community events. Social media advertisements are also used to help increase reach and to engage with residents. Outreach materials promote the city's "Recycle Right" webpage. Targeted recycling routes with high levels of contamination

Commented [H(134]: ?! news to me.

Commented [M(135R134]: I am not familiar with this, and am pretty sure that it's not being implemented. This section may just need to be removed.

receive extra outreach. Recycling crews place "Oops" tags on recycling that is contaminated or set out in a plastic bag. This helps remind residents of the opportunity to recycle right.

Recycling Initiatives in City Schools

DPW participates in multiple school initiatives to encourage and promote recycling. These include:

1. Conducting recycling presentations in schools that discuss waste reduction and reuse, what is and is not recyclable, and recycling at home;
2. Providing schools that recycle properly and consistently with 65-gallon recycle bins (this program is planned and has not yet been implemented).
3. Working with Baltimore City Public Schools to design school specific recycling posters; and
4. Piloting gravity locks for two schools with dumpsters to reduce contamination.

Additional information on the Baltimore public school recycling program can be found in Appendix D.

Apartment Building and Condominium Recycling Program

Per Maryland Code, Environment Article 9-1711, each property owner or manager of an apartment building or a council of unit owners of a condominium that contain 10 or more dwelling units shall provide recycling collection and removal for the residents of the dwelling units. The apartment building and condominium recycling plan is provided in Appendix E1, and a list of all eligible apartment buildings and condominiums is provided in Appendix E2.

Baltimore City provides recycling roll-off container collection for condominiums with 50 tenants or more, but recycling collection is provided at the discretion of the condominium council of unit owners. Recycling roll-off container collection is also provided for apartment buildings, regardless of tenant size, at the discretion of the property owner or apartment manager.

Special Events Recycling Program

Per Maryland Code, Environment Article 9-1712, all special event organizers are required to provide recycling at special events that meet the following criteria:

- Includes temporary or periodic use of a public street, publicly owned site or facility, or public park;
- Serves food or drink; and
- Is expected to have 200 or more persons in attendance.

In addition, special event organizers are required to provide all labor or equipment necessary to facilitate recycling; place recycling bins adjacent to each trash can; ensure recycling bins are easily distinguishable from trash receptacles; ensure recyclable materials are collected and processed for recycling; and pay any costs associated with recycling at the event. The Special Events Recycling Plan is provided in Appendix F1, the special events location list is provided in Appendix F2, and the special events recycling flyer is in Appendix F3.

Commented [mo136]: @marcia.collins@baltimorecity.gov
Just checking in on this outstanding data request. Could we get any info you have on city school recycling initiatives, such as gravity locks, eco-warriors, etc?

Commented [R(137R136]: @Jordan, Kaliyah (DPW) will you please look over this Recycling Initiatives in School's section and make any additions/edits needed?

Commented [J(138R136]: I am not aware of a pilot program for gravity locks.

Commented [J(139R136]: The Eco Warriors Challenge is a competition among city schools for students, families, and the school as they work to combat environmental issues. Students earn badges and service learning hours. The top 3 Elementary, Middle, and High Schools with the most badges win a cash reward.

Baltimore City will provide recycling receptacles and collection for eligible special events, but only if the special event organizer requests for it. Otherwise, special event organizers will hire private haulers to provide recycling services.

Office Building Recycling Program

During the December 2019 legislative session, the Maryland General Assembly passed Senate Bill 370, Environment – Recycling – Office Buildings which requires the County Recycling Plan to address, by October 1st, 2020, the collection and recycling of recyclable materials from buildings that have 150,000 square feet or greater of office space. Owners of office buildings that meet the criteria will be required to provide recycling receptacles for the collection of recyclable materials by October 1, 2021. The office building recycling plan is provided in Appendix G.

Owners of buildings that have 150,000 square feet or greater of office space are responsible for providing all containers, labor, and equipment necessary to fulfill recycling requirements, either directly or through contracting with a private sector company. The office building owners and tenants shall recycle corrugated cardboard, mixed paper, acceptable plastic bottles and jugs, and tin/aluminum beverage containers.

The City is working on notifying building owners about the legislation. For future construction or renovations that result in buildings meeting the criteria, DPW will work with the City's department of housing and community development and department of planning to notify building owner, developers, or others who are seeking building permits and occupancy permits about the legislation.

Monitoring of the collection of recyclable materials required in office buildings will be conducted by the owner, corporate management company, or tenants of each applicable office building. The city will request the office building owner to submit an annual Maryland Recycling Act (MRA) report detailing the recycling tonnages removed from the office building(s) and the name of the markets or legal recycling destinations for the materials.

Commented [H(140]: we are?

Commented [H(141R140]: for things like this, it seems like we should provide a more fleshed out plan of action, provide target metrics associated with the legislation, and identify additional resources needed to make it successful

Commented [M(142R140]: I seem to remember this section as a whole appendix or amendment to the previous plan, since the State required some language on addressing office building recycling. The common thread is that it's not something we're enforcing, as DPW isn't an enforcement agency and DHCD doesn't have the capability to enforce.

Commented [M(143]: The MRA reporting documents don't require the names of the markets/destination of recyclable materials. We don't collect that info.

Cigarette Butt Recycling

In 2016, the Waterfront Partnership, an environmental non-profit, partnered with Terracycle, a waste solutions company, to recycle cigarette butts as a part of the Waterfront Partnership's Healthy Harbor initiative. Fifteen cigarette recycling receptacles were installed near bars, restaurants, movie theaters, and coffee shops, in the Harbor East neighborhood of the City, and a reported 55,000 cigarette butts were collected within the first six months of the initiative. The cigarette butts were collected by Terracycle and processed into compost and shipping pallets. Although the City received a grant in 2018 through BMore Beautiful, the City's peer-to-peer beautification program, to install 90 terra urns and provide marketing outreach on cigarette recycling, the cigarette butt recycling program has since ended.

In addition to the cigarette butt recycling program, the City of Baltimore and Baltimore Mayor Brandon Scott filed a joint lawsuit in November 2022 to hold cigarette manufacturers accountable for cleanup costs associated with tobacco product litter.

Recycle Coach

DPW partnered with Recycle Coach, a mobile application from Municipal Media, to make recycling information readily available to Baltimore residents. The application allows residents to keep track of trash and recycle collection days and receive weekly reminders for trash and recycle pickup. The application launched for Baltimore residents on 14 January 2019.

Other Recycling Programs

To promote paper recycling with residents and businesses in the City, DPW holds shredding events three to four times per year, plastic bag take-back events two to three times per year, and an annual "Clean Your Files Day." During these and all other DPW events, educational materials on recycling and source reduction are provided to participants.

Organics Diversion Programs

Currently, there is no centralized large scale organics diversion program in Baltimore. Organics diversion (mostly composting) is available through local community collectives, small-scale farm-based initiatives, small-scale privately contracted collection, or personal backyard compost systems. In the LWBB Plan survey provided to stakeholders in 2018, 7% of respondents stated they perform some form of backyard composting while 8% participate in a community composting initiative. However, these rates are unlikely to represent citywide averages as survey takers were self-selected and thus more likely to be interested/involved in waste reduction.

Food Matters Program

In September 2018, the City began working with the Natural Resources Defense Council (NRDC) and the Rockefeller Foundation to enact strategies laid out in the BFWRS by establishing the Food Matters pilot food waste management project in which local establishments are awarded grants of up to $10,000 to support the City's goals of reducing food wastage. To date, eleven applicants have been awarded grants.

Grass-cycling

Baltimore City provides comprehensive information that encourage residents to practice Grasscycling and on-site composting of yard trim materials. Educational efforts to promote Grasscycling and composting include:

- Grasscycling presentations provided during community association meetings;
- Distribution of informational flyers and pamphlets during free city-wide festivals, like the African American heritage festival, Artscape, Book Festival, and Ecofest;
- Inclusion of grasscycling tips in the department of public works calendar, which is mailed to all city residents; and
- Distribution of educational materials on DPW social media accounts.

Community Composting Programs

Commented [H(144]: Did we keep up with this?

Commented [M(145R144]: This section can be removed.

Commented [H(146]: do we have data we can support this with?

Commented [M(147R146]: We have records of the tonnage collected at the events and the # of cars that drive through.

Commented [mo148R146]: @Cara could you share those records?

Commented [H(149]: include diversion tonnage potential from sites funded:

Commented [H(150R149]: ILSR Supports Community Composting in Baltimore – Institute for Local Self-Reliance

Small-scale community composting programs also operate within Baltimore. Charm City Farms and Whitelock Community Farm allow residents to bring food scraps for composting, while the Baltimore Compost Collective provides weekly food scrap collection from homes in South Baltimore and composts the material at the Filbert St. Community Garden in Curtis Bay. Compost Cab provide a home pickup service for compostables in the Baltimore/Washington area. Mundea, a small private company, offers all-in-one waste management solutions for compost, recyclables, and residual waste. They are currently engaging with Baltimore area restaurants to help reduce their waste stream through composting and recycling.

Commented [H(151]: no longer exists, include other farms composting (listed above) include other haulers Veterans compost, Waste Neutral, Compost Crew, others?

Curbside Organics Collection

A pilot curbside composting program is reportedly underway in the City. A compost bin pilot study is being planned, in which three different types of bins will be testing for their utility and serviceability for collecting source separated organics.

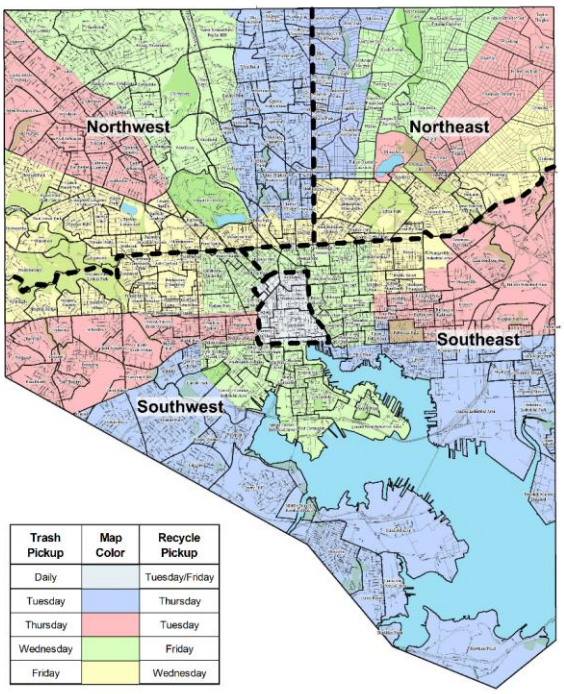
Commented [H(152]: ????????

Commented [M(153R152]: Remove this section

3.5 Existing Waste Collection System

COMAR 26.03.03.03 (D) (4) requires that Chapter 3 of the comprehensive solid waste management plan includes a description of existing solid waste collection systems, including service areas. The description is presented below, with more detail provided on the public than the private collection system.

Under Article 23 of the Baltimore City Code, the City is responsible for collecting all "mixed refuse" from dwelling houses, apartment houses, tenant houses, boarding houses, hotels, restaurants, hospitals and other places where such refuse is accumulated. Residential waste collection services are offered to over 210,000 homes in Baltimore. These services include curbside collection as well as access to eight residents' drop-off centers.



Trash Pickup	Map Color	Recycle Pickup
Daily		Tuesday/Friday
Tuesday		Thursday
Thursday		Tuesday
Wednesday		Friday
Friday		Wednesday

Figure 3-2. Map of DPW's Collection Quadrants

Public System

Solid waste collection services in the City are managed geographically using the quadrant system, which is divided into Northeast, Southeast, Northwest, and Southwest (see Figure 3-2). Routine Services, Special Services, and Property Management services are included within each quadrant division. Routine services provide mixed refuse and single-stream recyclables (SSR) collection from City residences and small businesses. Special Services provide dirty alley and street cleaning, graffiti removal, and bulk pick up. Property Management handles vacant properties, providing boarding, cleaning, and removal of high grass and weeds. In addition, Property Management provides rat abatement services on rights-of-ways and on private properties with the property owner's permission. Quadrant Division Chiefs report directly to the Head of the BSW. The downtown area (Central District) is not in one of the four quadrants and is managed separately by the Chief of Marine Operations and maintained in collaboration with the Downtown Partnership.

The Bureau has operations seven days a week, excluding holidays, and residential collections occur Tuesday through Friday. Collection services are not provided on New Year's Day, Martin Luther King's Birthday, Presidents' Day, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, General Election Day, Veterans Day, Thanksgiving Day, and Christmas Day, and are rescheduled for make-up collections. Operations include both collections, and operation of public drop-off locations.

While the Bureau of Solid Waste is primarily responsible for trash collection in the City, agencies such as the Department of Housing and Community Development and the Department of Education collect waste from their respective facilities.

Mixed Refuse Collection

Residential mixed refuse collection is provided by the Bureau of Solid Waste's Environmental and Routine Services Division to over 210,000 homes. Since July 2009, regular mixed refuse collection services are provided once a week by the City to each location served, Tuesday through Friday with Saturday being a make-up day for missed holiday collections. This service change is referred to as One PLUS ONE.

Commented [M(154]: We no longer use this term? It was used for the change in 2009 and is no longer needed.

With the implementation of One PLUS ONE the following changes have been made to mixed refuse collection:

- Effective July 13, 2009, trash and recycling are collected once per week;
- Maximum waste volume limit of mixed refuse reduced from 160 gallons of waste per address per week to 96 gallons;
- Unlimited volume of recycling accepted; and
- Re-routed service zones – most neighborhoods will have one collection schedule, whereas prior to One PLUS ONE routes had not been changed since 1970.

The Bureau of Solid Waste's collections operations operate on the quadrant system (shown in Figure3-2). As shown in Figure 3-2, collection services are divided into four quadrants: Northeast, Northwest, Southeast and Southwest.

The City's Environmental and Routine Services Division collects all mixed refuse generated at City parks, single-family residences, and City litter baskets. In its residential operation, the City utilizes three-person crews on two different-sized rear load packer vehicles: 16 cubic yard trucks and 20 cubic yard trucks.

The Special Services Division provides mixed refuse collection services for those multi-family residences (generally condominiums) that the City is obligated to service through the utilization of front-end loaders. This operation is based out of 111 Kane Street.

The Special Services Division also provides regularly scheduled cleaning of business districts, streets and alleys and some City-owned lots and parks. These operations are coordinated by the same borough supervisors responsible for the residential mixed refuse operation.

Commented [H(155]: @Resler, Meghan (DPW) verify w chiefs

The amount of residential mixed refuse collected by City crews varies by season. Generally, collected waste tonnage is higher in spring and summer compared to the winter season, with the largest amounts collected in May and July.

Single-Stream Recycling Collection

DPW provides curbside SSR collection twice per month, Tuesday through Friday, to each single-family residence located in Baltimore. There is no maximum amount of recyclable material that can be collected from each residence. Materials accepted in the SSR collection program include aluminum and steel/tin cans, cardboard, glass containers, mixed paper, and plastic bottles and jars. A full listing of acceptable and unacceptable materials is available here. The City is currently trying to reinstate the One PLUS ONE program and provide once weekly SSR collection.

Bulk Trash Collection

Bulk trash collection in Baltimore is coordinated via the quadrant system and occurs once per month at all serviced residential locations. To arrange for bulk trash collection, residents must make a service request to 311 two to three months prior to their desired bulk trash collection date. Pickup may not be available on the requested date depending on the backlog of pickup requests. Materials accepted for bulk collection include furniture, appliances, and tires (without rims). C&D debris (e.g. sheetrock, concrete, siding, wood pieces, and roofing) is not eligible for bulk trash collection.

Collection of Yard Waste and Leaves

Residential yard waste is collected by load packers along with mixed refuse on trash collection days throughout the City. Residents may place as many as five bags of leaves per household for curbside collection each week. Additionally, from October through January, residents may make a service request to 311 for special Monday pickups of as many as 20 bags of yard waste. Yard waste is disposed at BRESCO. Leaves on City streets and other lots are collected using mechanical sweepers and load packers (although the sweepers are not specifically designed for this purpose) and disposed of at BRESCO or QRL.

Residents' Drop-off Centers

City residents may drop off waste and recycling for free at the Residents' Drop-off Centers located at QRL or NWTS as well as three other full-service convenience centers – Western Sanitation Yard (Reedbird Ave), Eastern Sanitation Yard (Bowleys Lane), and NW Citizens Convenience Center (Sisson St). These facilities provide additional disposal capabilities to city residents and accept bulk trash, commingled recycling, rigid plastics, scrap metal, scrap tires, appliances, waste oil and antifreeze, electronics, and oyster shells on a year-round basis. In addition, DGS operates three convenience centers that only accept commingled recyclables – York Road Substation, Calverton Road Substation, and Lewin Substation. A listing of acceptable materials at each drop-off facility is available here. Figure 3-3 shows the locations of the residents' drop-off centers.

Commented [H(156]: do we need to go in more detail here on the challenges of weekly vs biweekly collection?

Commented [M(157R156]: I think that would be appropriate, and we can just call it a return to weekly recycling.

Commented [H(158]: where does it go?

Commented [H(159R158]: tonnages?

Commented [H(160]: Where does it go? Data collected?

Commented [M(161]: We should also include Christmas tree pickup. Also, I believe leaf pickup is not year-round.

Commented [H(162]: chart with tonnages of materials collected & projections?

Commented [M(163R162]: Also need to include HHW at Sisson, timeframe. Pretty sure not every convenience center takes oil and antifreeze.

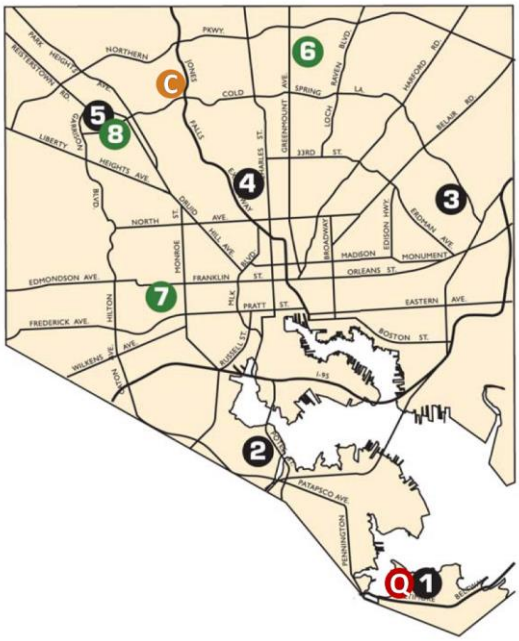


Figure 3-3. Map of Residents' Drop-off Centers

Rodent Eradication

DPW has operated the Rat Rubout Program in Baltimore since 2010. The goal of the program is to reduce the rat population in the City to prevent property damage and to limit the spread of disease. Under the program, City pest control workers inspect and bait active rat burrows at residential properties as a result of either a citizen complaint (via a service request to 311) or as a proactive blitz. In 2018, the City performed approximately 167,000 proactive inspections and 4,500 inspections as a result of citizen complaints. In addition to inspecting and baiting active rat burrows, City pest control workers in the program educate residents on how to keep their properties free of the trash and debris that attract rats.

Christmas Trees

The City allows residents to drop off Christmas trees at multiple locations throughout the City where residents are given the option to mulch their trees and collect the mulch. Any mulch not taken by

Commented [M(164]: Include dates, this is not offered year-round.

residents is disposed at QRL or BRESCO. The City also collects trees in curbside collection of mixed refuse and allows trees to be left at residents' drop-off locations. Trees collected via curbside or residents' drop-off are sent to QRL or BRESCO for disposal.

Waste from City Parks

DPW services the trash cans from 262 parks and 43 recreation centers on a weekly basis. Parks and recreation centers are also able to schedule bulk trash pickup by request. Waste from the parks and recreation centers is included in the residential waste stream.

Animal Manure and Carcasses

The main producer of animal manure is the Maryland Zoo in Baltimore. The City collects manure from the zoo multiple times each week. Approximately 850 tons of manure is removed from the zoo annually and sent to QRL for disposal. Most animal carcasses collected in the City are those of stray cats and dogs. The Health Department collects animal carcasses and sends them to Valley Pet Crematory located at the Greenlawn Cemetery in Williamsport, Maryland for incineration.

Cleanup of Illegal Dumping

Illegally dumped waste remains a persistent issue in the City with an estimated 10,000 tons of waste illegally dumped annually. DPW responds to 311 service requests to investigate and clean up illegal dumping. However, dedicated alley and lot cleaning crews have recently been able to address illegal dumping "hot spots" without relying solely on 311 complaints. According to a December 2018 report by DPW, the City's cyclical response to illegal dumping incurred costs of over $22.6 million in FY2016 on right-of-way cleaning services, which includes street and alley cleaning, mechanical street sweeping, marine operations, and cleaning of business districts. DPW's Office of Communications and Community Affairs is actively engaged in educational outreach to engage residents in preventing and reporting illegal dumping.

Commented [H(165]: reference blight eradication report

Commented [M(166R165]: Our office puts together an annual report, as required by the city, on illegal dumping remediation. It contains details on the program and tonnage/SRs addressed.

Marine Debris

The City provides cleaning services for the inner harbor and surrounding waterways via DPW's Marine Operations Unit, which operates seven days a week. The Marine Operations Unit uses four skimmer boats and five bass boats to remove debris from harborways. Skimmer boats are designed to skim the waterways for debris and store the debris on-board while bass boats are smaller boats that are used by operators to remove debris using a net. As a side note, Baltimore City is the first City in the nation to use skimmer boats for debris removal.

The City also receives assistance from Waterfront Partnership and their trash wheels (e.g. "Mr. Trash Wheel") to collect marine debris. Trash wheels are solar-powered watercraft that intercept trash at the end of a river, stream, or other outfall. There are currently three trash wheels installed in the inner harbor, Harris Creek, and Masonville Cove.

Street and Sidewalk Sweeping

The City operates a fleet of mechanical street sweepers in addition to human sidewalk sweepers to collect litter and dirt from the main streets and sidewalks in Baltimore. Mechanical sweepers operate 74 routes

Commented [M(167]: Would this be an appropriate place to detail the effects of COVID on the service, and where we are now with re-instating it?

on a weekly basis while sidewalk sweepers and ATLVs operate daily primarily within the business district and gateway areas. A total of over 7,000 tons of dirt and debris is collected by street and sidewalk sweepers annually.

Treatment Plant Sludge

The City expects that three quarters of the 12,000 dry tons of sludge generated annually at the Back River Wastewater Treatment Plant will be treated and stabilized at the onsite heat/drying pelletization plant. Of the remaining sludge, approximately 25 percent is processed at the Baltimore Composting Facility and converted to compost. The remainder is disposed at QRL. It is expected that the approximately 16,000 dry tons of sludge generated at the Patapsco Wastewater Treatment Plant will continue to be heat dried on site prior to distribution and marketing. The City plans to complete several capital improvement projects that will optimize water treatment plant process residual (sludge) collection and conveyance to wastewater treatment plants for processing and subsequent disposal.

Commented [MM168]: Geosyntec to confirm with the City what these improvement projects were and whether or not they have been completed.

Community Programs

DPW supports two notable community programs aimed at improving waste collection and reducing litter in the City. The Community Pitch-In Program empowers residents to tackle the trash problems in their neighborhoods. Community associations can request up to four roll-off dumpsters yearly to aid in such cleanup efforts. The Mayor's Annual Spring and Fall Cleanups are multi-agency, citywide events that encourage residents to clean up their communities. DPW offers bags, roll-off dumpsters, and same-day bag collection to participating community organizations and business organizations.

The BMORE Beautiful Program, introduced as the Clean Corps program in 2015, is a collaboration between the Mayor's Office, Office of Sustainability, DPW, Department of Housing and Community Development, the Environmental Control Board, and non-profit partners including Baltimore Green Works and the Waterfront Partnership. It utilizes the core principles of community-based social marketing and peer-to-peer networking to engage, educate, and motivate residents, businesses, schools, and neighborhood associations to change their behavior toward litter, trash, and proper waste disposal. The goal of the pilot program is not only to change behaviors and attitudes toward the beautification of the City, but also to encourage residents, businesses and organizations to become directly involved in activities and projects that will keep their neighborhoods clean. To meet this goal, the City works closely with neighborhoods on their unique beautification projects and cleanliness challenges, and provides educational literature, outreach materials and other resources. A resident in each piloted neighborhood volunteers to be the block captain, following the ROLE model of engagement. They are responsible for RECRUTING neighbors to sign the pledge and participate in the program, ORGANIZING ongoing beautification and cleaning activities, LEADING others to change their negative behaviors regarding neighborhood cleanliness, and EDUCATING their neighbors on how to comply with City Code requirements and how they can keep their neighborhoods beautiful through simple, easy-to-follow behaviors.

Additionally, BMORE Beautiful supports community beautification goals by offering small and innovative grant programs that address an array of neighborhood beautification and engagement needs. Current grant

opportunities include: Love Your Block, Say YES! (Youth Environment Stewardship) Program, and Care-A-Lot Grant.

Commented [H(169]: is this up to date?

Commented [M(170R169]: We can reference the language in the Illegal dumping report; plus we contacts that can confirm.

Smart Cans

Solar powered trash compactors fitted with sensors and communications devices that let DPW know when they need to be emptied have been deployed in the City. Bigbelly cans, sponsored by Waste Management and Under Armour, have been in service in the Inner Harbor for several years. In 2018, 64 ECUBE Smart Cans were deployed in South Baltimore in conjunction with attached recycling cans. Installation of these smart cans was funded by grants from the Casino Local Development Council and the Maryland Port Administration.

Inmate Cleaning

Inmates clean the wooded shoulders (i.e. the tree lined areas along streets in the City) of tossed trash and debris from cars and pedestrians within all four City Quadrants on Monday, Wednesdays, and Fridays each week.

Commented [H(171]: I didn't think we were still doing this

Camp Small

Camp Small is a wood waste collection yard operated by the Baltimore City Department of Recreation and Parks. The five-acre site is in the Jones Falls Valley north of Cold Spring Lane. City crews and contractors can bring their logs, chips, and brush to Camp Small for processing, and the processed wood products are sold back to Baltimore City residents and businesses.

Commented [H(172]: include some of the challenges, opportunities for collaboration with BSW?

Special Events

Per Maryland Code, Environment Article 9-1712, all special event organizers are required to provide recycling at special events that meet three main criteria: includes temporary or periodic use of a public street, publicly owned site or facility, or public park; serves food or drink; and is expected to have 200 or more persons in attendance.

DPW will provide cleaning services, trash removal, and recycling services to any special events meeting these criteria in the City that request solid waste services. If the event organizer does not request solid waste services from DPW, they will need to contract with a private hauler.

Encampments

While residents remain at a homeless encampment, DPW will remove trash from the site until the Department of Health can provide residents with temporary housing. DPW also provides cleanup services to areas used as homeless encampments after residents have been provided alternative housing.

Private System

Property owners whose accumulated solid waste is not collected by the City are served by the private waste collection system. The private system consists of numerous haulers who contract individually with

property owners to provide collection services (and who also may contract with waste acceptance facilities). However, a small amount of commercial recycling in the City is handled by DPW. As the City is largely uninvolved in the management of the private waste collection system, discussion is limited in scope.

Mixed Refuse Collection

DPW will only collect waste from addresses that generate less than 96-gal. weekly. As a result, commercial mixed refuse is predominantly collected via the private system, with individual waste haulers contracting directly with businesses and institutions in the City.

DPW and MDE have few means of determining the exact types, quantities, and disposal fate of all mixed refuse collected in the private system. However, it is estimated that roughly half of commercial mixed refuse collected in the City is disposed at BRESCO.

Commented [H(173]: where do these estimations come from?

Commented [M(174R173]: Likely the graphic at the top of this section, with data from LWBB.

Small Hauler Program

In April 2017, the City extended the successful Small Hauler Program at QRL to allow small haulers to also use NWTS. Small commercial waste haulers include those who contract with others for collection, transportation, or disposal of solid waste; or engage in the collection, transportation, or disposal of solid waste. The program was designed to encourage small haulers to apply for a City permit, reduce instances of illegal dumping, and allow for more efficient disposal of commercial waste. Small haulers may dispose of their loads at NWTS and QRL for a disposal fee of $20 per load up to 7,000 pounds and $3.38 per 100 pounds above 7,000 pounds. In 2020, approximately 31,500 tons of waste was delivered to NWTS and QRL under the small hauler program.

Recycling Collection

Most commercial recycling occurs through the private system, however, DPW collects SSR material from some Baltimore businesses. Most participating businesses set out recyclables for once-a-week pickup. As of 2018, 150 businesses are on the SSR collection route in the City. However, the exact number of businesses that participate in the City's recycling program is unknown as many simply place their recycling out with residential SSR for curbside pickup.

Commented [M(175]: Not sure that this is true.

3.6 Import and Export of Solid Waste

Chapter 3 of the comprehensive solid waste management plan discusses the types and quantities of solid waste, if significant, which are entering or leaving the City for processing, recovery or disposal. In compliance with this requirement, the types and quantities of solid waste imported to the City for disposal which are known to be significant are discussed below. These wastes include residential mixed refuse, commercial/institutional mixed refuse, scrapped automobiles, special hospital waste, and wastewater treatment plant sludge. Wastes believed to be exported are also listed; however, the City has very little information concerning exported waste amounts.

Commented [H(176]: cut all COMAR/compliance related preambles. as long as we are in compliance with what we are discussing we don't need to say it

Commented [H(177]: defined what we mean for both imported and exported waste

Types and Quantities of Waste Imported

Mixed Refuse

The BRESCO incineration facility accepts waste from Baltimore City, and Harford, Howard, Anne Arundel, Montgomery, and Prince George's Counties. In 2020, BRESCO accepted XXX tons of commercial and residential refuse. A majority of this waste, XXX tons, is mixed MSW from Baltimore City. All of the ash produced by processing the waste at BRESCO is delivered to QRL. In 2020, BRESCO generated approximately 125,000 tons of ash, which was disposed and used as alternatively daily cover at QRL. Approximately 40% of the net weight of material disposed at QRL was BRESCO-produced ash.

Commented [MM178]: Geosyntec to update with BRESCO tonnage data – BRESCO Recycling Report

Commented [H(179R178]: adjust all language around "BRESCO" to reflect new name "WinWaste"

Scrap Automobiles

Scrapped automobiles from wrecking yards throughout the metropolitan area are imported to the 11 licensed automobile scrap processors and recyclers located in the City. Although metal from these automobiles is ultimately reused inside or outside the City, processing also generates 0.3 tons per automobile of non-recycling material (fluff) that requires disposal. Fluff is no longer accepted at QRL. Scrap metal collected by Baltimore City at the convenience centers are imported to United Iron & Metal for recycling.

Commented [H(180]: can we find out more about their end markets

Scrap Tires

The major tire recycler in the City is Emanuel Tire Company (Emanuel). Emanuel has the capacity to process 6 million scrapped tires annually. Approximately half of the scrap tires that Emanuel processes are non-Maryland scrap tires.

Commented [H(181]: Do we also work with Austin tire?

Commented [H(182R181]: Include what the end use for these tires are

Commented [M(183R181]: Pretty sure Auston is the main vendor

Special Medical Waste

Special medical waste and mixed refuse from medical facilities is imported to the Curtis Bay Energy facility for incineration. The ash residue remaining after incineration is exported to Haw River, North Carolina, for disposal.

Household Hazardous Waste

Household hazardous waste collected by Baltimore City is imported to a vendor, currently Clean Harbors Environmental Services, Inc., (Clean Harbors) for proper processing and disposal. Clean Harbors serves as a treatment facility for a variety of industrial wastewater and as a transfer station for other industrial waste including flammables, oxidizers, poisons, and reactives.

Types and Quantities of Waste Exported

Commented [H(184]: can we generate graphic detailing quantities imported vs exported

Residential Mixed Refuse

Most of the City's exported waste is hauled by private waste collectors. It is assumed that a percentage of the waste collected by private waste haulers is exported. This assumption is based on the limited number of disposal facilities available within the City and the amount of waste collected by private haulers.

Residential Recyclables

All residential recyclables collected by Baltimore City are exported to waste management's material recovery facility in Elkridge, Maryland. In 2020, Baltimore city collected and exported 18,200 tons of recyclables to Waste Management. Recyclables collected by private haulers within the city are also exported.

Commented [H(185]: waste management, world recycling

Scrap Tires

Scrap tires collected by Baltimore City are exported to Auston Contracting in Harford County for recycling and disposal.

Electronics

Electronics collected at Baltimore City convenience centers are exported to Cyclepoint from Source America for recycling.

Controlled Hazardous Substances

Controlled hazardous substances generated within the City are exported for processing or disposal.

Animal Carcasses

Animal carcasses collected by the City are exported to Valley Pet Crematory in Williamsport, Maryland, for incineration.

Special Medical Waste

Stericycle exports incinerated special medical waste to Haw River, North Carolina, for disposal.

3.7 Existing Waste Transfer Facilities

Commented [H(186]: can we include tipping fees / projection s

Commented [H(187R186]: create map

Figure 3-4 contains a map showing the location of all permitted solid waste transfer stations in the City.

Commented [H(188]: its impossible to imagine that all Baltimore's waste will be processed in city. does it make sense to document/inventory surrounding waste processing facilities within a certain mile radius

Northwest Transfer Station

(N 549,500; E 890,000)

The 6.595-acre Northwest Transfer Station (NWTS) at 5030 Reisterstown Road is owned and operated by the City. The station's design capacity is 600 tons of mixed refuse per day. In 2010, the City renewed the facility permit for the NWTS with a capacity of 150,000 tons per year. In 2020, the facility accepted and transferred 59,858 tons of material. The current permit for this facility expires in 2026.

To assure the long-term vitality of this solid waste institution, improvements to the Northwest Transfer Station (NWTS) were completed in September 2012. These improvements included a total tipping floor reconstruction and replacement of push pits/compactors as well as ancillary site work. Another construction project was completed 2020. This project was primarily focused on the exterior walls of the facility and the roof. The facility has an anticipated service life of more than 20 years.

Triumvirate Environmental Medical Waste Transfer Station

(N ; E)

This environmental and medical waste acceptance facility, located at 2300 Sun Street in Curtis Bay, accepted and transported 12 tons of waste in 2020. The facility is located on 20 acres and its permit expires in 2025.

Stericycle, Inc.

(N 500,000; E 921,500)

Stericycle Inc., formerly Med Net and MEDEX, is a privately-owned autoclave facility located on a 2.4-acre site at 5901 Chemical Road. The facility has an annual capacity of 22,800 tons[8]. Before 2004, the site was used as an incinerator which accepted red-bag waste; today the site still accepts chemotherapeutic, pharmaceutical, and pathological waste, however that waste is then shipped to its facility in Haw River, North Carolina where it is incinerated.[9] The facility accepted 20,856 tons of waste in 2020. The facility has an anticipated remaining service life of over 20 years.

Daniels Sharpsmart

(Latitude/Longitude 39.2701/-76.5305)

The Daniel's Sharpsmart facility is located 6611 Chandlery Street. In 2020 this 0.939 Acres site accepted 2,073 tons of medical waste. The facility's current permit expires in 2024 and its anticipated remaining service life is at least twenty years.

3.8 Existing Waste Processing and Recycling Facilities

Figure 3-5 contains a map showing the location of permitted solid waste processing and recycling facilities in the City.

BFI Baltimore Processing and Transfer Center

(N 500,000; E 920,500)

The Baltimore Processing Center is a privately owned and operated facility located at 5800 Chemical Road. The processing center is both a materials recovery center and a waste transfer station located on 15.6 acres. The facility accepted 147,723 tons of waste in 2020. The facility's current permit expires in 2024 and its expected service life is unknown.

World Recycling Company

(N ; E)

Commented [H(190]: Recycling Directory - Recycling Maryland - Recyclables, waste reduction, reuse (mdrecycles.org)

Commented [H(191R190]: Materials – P. Flanigan & Sons, Inc. (pflanigan.com)

Commented [H(192R190]: ^ concrete recycler

Commented [H(193R190]: create map

[8] Medical Waste in MD, 2004 http://www.policyarchive.org/handle/10207/bitstreams/5161.pdf
[9] Stericycle Inc, http://www.chwmeg.org/asp/search/detail.asp?ID=6071

This privately owned and operated facility located at 2740 Wilmarco Avenue accepts recyclables for processing. The City contracts with this facility to accept SSR and hard plastic. However, the facility often does not have capacity to accept loads from the City.

L&J Processing Facility

(*Latitude 39.17.27, Longitude 76.39.38)*

L & J Waste Recycling, LLC is located at 222 North Calverton Road, on a 0.932-acre site. The facility accepts and process construction and demolition waste for reuse. The facility started accepting waste in October 2011, and in 2020 it accepted 31,586 tons of waste. The facility's current permit expires in 2022.

Commented [H(194]: update?

Baltimore Recycling Center, LLC

(N 535,000; E 920,000)

The Baltimore Recycling Center, formerly the Edison Processing Facility is located on the western side of the former Armco Steel Property at 1030 Edison Highway. Currently this 12.5-acre site, accepts only construction and demolition debris. The facility's current permit expires in 2024 it and accepted 162,037 tons of waste in 2020. The anticipated remaining service life of the facility is over 20 years.

Camp Small

(N ; E)

Camp Small is a wood waste collection and recycling yard located in the Jones Falls valley just north of Spring Lane and operated by BCRP. All logs, branches, wood chips, leaves, and brush collected from City parks and street right of ways are brought to Camp Small for processing. Under the Camp Small Zero Waste Initiative, prime logs, wood chips and brush are sorted and made available for purchase by City residents and businesses. Approximately 7,700 tons of wood waste was processed at Camp Small in 2017.

Commented [MM195]: Does the City have an update on the amount of wood waste processed at Camp Small in 2020?

Commented [mo196R195]: @Ava.Richardson@baltimorecity.gov
Just bumping this outstanding data request.

Baltimore City Compost Facility

(N 501,000; E 928,000)

The Baltimore City Composting Facility is located at 5800 Quarantine Road on seven and a half acres of the 157-acre QRL site. The plant itself is privately owned by Veolia Water North America Operating Services. The facility is permitted to receive sewage sludge generated at the City's Back River and Patapsco Wastewater Treatment plants. The plant has a design capacity of 200 wet tons per day. The sludge is mixed with wood chips and aerated to produce 75,000 cubic yards/year of biosolids compost that is marketed in the Mid-Atlantic region to landscapers, nurserymen, contractors, topsoil manufactures, golf courses, and commercial growers.[10] In 2011 the facility accepted 28,038 wet tons of bio-solids and generated 33,968 cubic yards of compost to market. The facility could potentially provide twenty-plus years of additional service.

Commented [MM197]: Geosyntec to update with latest tonnage information. This data is not in the 2020 MDE report.

Commented [mo198R197]: @Ava.Richardson@baltimorecity.gov
Just bumping this outstanding data request.

[10] Baltimore City Composting Facility http://www.orgro.cc/about/index.html

Back River Pelletech Facility

(N ; E)

Synagro operates the Back River Pelletech Facility (BRPF) at BRWWTP for processing sewage treatment sludge generated at BRWWTP. BRPF is a heat drying and palletization facility that processes liquid and semi-liquid treatment sludge into a pelletized product that is marketed as a fertilizer and soil conditioner. BRPF processes roughly 70% of the treatment sludge generated at BRWWTP on a dry weight basis.

Baltimore Patapsco Pelletizer

(N ; E)

Synagro operates the Baltimore Patapsco Pelletizer (BPP) at the Patapsco Wastewater Treatment Plant (PWWTP) for processing sewage treatment sludge generated at PWWTP. BPP is a heat drying and pelletization facility that processes liquid and semi-liquid treatment sludge into a pelletized product that is marketed as a fertilizer and soil conditioner. BPP processes all of the treatment sludge generated at PWWTP on a wet and dry weight basis.

Other Recycling Companies and Facilities

MDE does not require recycling facilities in Maryland to be permitted as waste acceptance facilities. As such, it is difficult to determine exactly how many recycling facilities exist in Baltimore City. A list of City-based recycling facilities and programs is included in Appendix H.

3.9 Existing Waste Disposal Facilities

Commented [H(199]: map

Figure 3-6 contains a map showing the locations of all permitted waste disposal facilities in the City

Quarantine Road Landfill

Commented [H(200]: permitting restrictions, compliance issues, tipping fees,

(N 500,000; E 925,000)

The Quarantine Road Landfill (QRL) is located at 6100 Quarantine Road on a 153-acre site in Hawkins Point, 126 acres of which is utilized as a landfill. It is owned by the Mayor and City Council of Baltimore and operated by the City's Department of Public Works, Bureau of Solid Waste.

The first cell of the landfill was constructed and began accepting waste in August 1985. Originally, the landfill was designed as six cells surrounding a central core that was to remain in place. The design capacity was approximately 11.2 million cubic yards with an expected 9.1 million cubic yards or approximately 5.4 million tons allocated for waste. The remaining volume was allocated for cover material. These calculations were based on an industry standard factor for MSW landfills of 1 ton of mixed refuse and bulk material occupying 1.67 cubic yards of landfill space. In 1989, QRL was redesigned to remove the central core and raise the overall landfill elevation. The capacity was thereby enlarged to approximately 18.3 million cubic yards. Using the same industry standard of 1.67 cubic yards/ton, it was anticipated that 15.8

million cubic yards or 9.4 million tons of solid waste could be placed. The expansion was necessary to accommodate future disposal volume.

In August 1994, the City extended the life expectancy estimate of the landfill. The life expectancy studies determined that the industry standard of 1.67 cubic yards/ton should not be applied at QRL due to the high percentage of ash accepted at the facility (ash is considerably denser than MSW). Actual operations indicated that 1 ton of QRL debris was occupying 1.12 cubic yards of volume. In October 1996, a second life-expectancy study was performed. Actual operations indicated that 1 ton of debris was occupying 1.08 cubic yards of volume. The estimated life of the landfill was revised to 2019 +/- a year. In 2010, an aerial life-expectancy study was performed that indicated that 1.18 ton of debris was occupying one cubic yard of volume, which would extend the life of the landfill under its current permit to sometime around 2026.

A lateral expansion of QRL onto the adjacent Millennium Landfill is currently planned, with submission of the Phase III permit application report to MDE occurring in October 2022. Based on the Phase III report, the lateral expansion will increase the landfill's total capacity by 5.7 million cubic yards and extend its service life through 2035.

In 2020, QRL accepted approximately 255,441 tons of waste. This included 130,180 tons of mixed MSW and 125,261 tons of MSW ash from BRESCO.

BRESCO

(N 523,500; E 905,000)

The BRESCO plant is located at 1801 Annapolis Road on 15 acres of land owned by the Mayor and City Council of Baltimore. The plant itself is privately owned and operated by the Wheelabrator Technologies, a subsidiary of Energy Capital Partners. It was constructed in 1984 and became fully operational in 1985. In 2022, BRESCO began upgrading its emissions technology to reduce air pollution. The upgrades are expected to be completed in late 2023. The anticipated remaining service life of the plant is over 20 years.

Commented [H(201]: was recently sold, WinWaste, update

The BRESCO plant is structured around three mass-burning, water wall furnaces. These furnaces can burn up to 2,250 tons of refuse per day at temperatures between 2,400 and 2,800 degrees Fahrenheit, thereby reducing the volume of waste by up to 90 percent.

This combustion process generates heat that is used to convert water into steam. Operating at full capacity, BRESCO can produce as much as 500,000 pounds of steam per hour. Part of the steam is used to drive turbines and generate electricity. The rest is sold to the district heating and cooling system operated by the Trigen Company located in downtown Baltimore.

During optimal conditions, approximately 10 percent of the waste by volume and 27 percent by weight remains in the form of ash residue after combustion, and ferrous and non-ferrous materials are removed. Ferrous and non-ferrous metals removed from this ash are sold to a scrap dealer. The ash is delivered to QRL.

Currently, the City disposes most of its solid waste at BRESCO pursuant to a contract with the Northeast Maryland Waste Disposal Authority. The BRESCO facility has contracted with the City to dispose of their

ash residue at QRL. In 2020, BRESCO accepted 661,516 tons of total waste, including 189,336 tons of residential Baltimore City waste collected by DPW and XX tons of commercial Baltimore City waste collected by private haulers. The facility generated 125,261 tons of ash in 2020.

Commented [SO202]: Geosyntec to update with data from BRESCO Recycling Report

Fort Armistead Road – Lot 15

(N ; E)

The Fort Armistead Road – Lot 15 Landfill is a 32-acre permitted industrial waste landfill located on a 65-acre site that currently accepts coal ash and other residues from the Brandon Shores, H.A. Wagner, and C.O. Crane coal power plants. In 2020, Lot 15 accepted 21,862 tons of material. The facility's current permit expires in 2023 and its total permitted capacity is 6.3 million cubic yards. The expected service life of the facility is greater than 20 years.

Hawkins Point Plant

(N ; E)

The Hawkins Point Plant Industrial Waste Landfill consists of two parcels. The first parcel contains a 28-acre industrial waste landfill which accepted 240 tons of material in 2016. The second parcel is permitted for industrial waste, but no landfill has yet been constructed. Constellation Energy has plans to develop 29 acres of this undeveloped parcel for use as a landfill for coal combustion residuals (ash) from its Brandon Shores, H.A. Wagner, and C.O. Crane coal power plants.

W.R. Grace and Co. – Davison Chemical Division

(N ; E)

The W.R. Grace and Co. landfill is a 10.7-acre industrial waste landfill located on a 157-acre site which solely accepts waste generated at the W.R. Grace and Co. manufacturing facility located on the same property. W.R. Grace is a major chemical manufacturer of silica-based absorbents, hydro-processing catalysts, polyolefin catalysts used in plastics and packaging, and fluid catalysts used in petroleum refining. In 2020, the facility accepted 12,504 tons of material. The facility is expected to run out of permitted capacity in 2029.

Curtis Bay Energy

(N ; E)

Curtis Bay Energy is also known as Curtis Bay Medical Waste Services (and used to be called Baltimore Regional Medical Waste Facility). Curtis Bay Energy is a 4-acre privately-owned medical waste incinerator (the nation's largest) located in Hawkins Point. The facility has a capacity of 62,050 tons of waste per year and accepted approximately 26,063 tons of material in 2020. Ash generated at Curtis Bay is shipped to North Carolina for landfill disposal.

4. ASSESSMENT OF NEEDS AND CONSTRAINTS

Chapter 4 i assesses Baltimore City's need to alter, modify, or add to existing solid waste disposal systems throughout the planning period. Specifically, the following components of the City's solid waste disposal systems are assessed:

1. Source reduction and reuse programs;
2. Waste diversion and recycling programs;
3. Waste collection systems;
4. Waste transfer facilities;
5. Waste processing and recycling facilities; and
6. Waste disposal facilities.

The assessment of each component of the solid waste management system contains two parts: a self-assessment by DPW (driven predominantly by data collected and recorded by the City), and a public assessment driven predominantly by comments collected at public meetings and hearings conducted as part of the development of this Plan.

Commented [H(203]: Produce graphic that maps current waste disposal and diversion activities against near and longterm target goals set in LWBB, Sustainability plan, FWRS, etc.

4.1 Source Reduction and Reuse

Source reduction and reuse programs coordinated by the City are described in Section 3.3 and evaluated below.

Assessment of Existing Source Reduction and Reuse Programs

Commented [M(204]: REference source reduction reports from MRA reporting.

*Require input from the City – which source reduction programs are working/not working? We do not have much data on source reduction programs (it is hard to measure) so this will likely be more of a qualitative evaluation.

*Include input from public comments and public meetings

Opportunities for Improvement

Opportunities for improving or expanding existing source reduction programs are taken from the LWBB Plan, the BFWRS, and other publicly available planning documents.

Opportunities for Reducing Food Wastage

Commented [H(205]: can the various efforts across plans be consolidated by rescue/reduction/reuse/recycling type and be organized into a phased plan? Reference opportunities to meet sustainability goals tied to organics diversion. identify barriers to implementing programs

Commented [H(206R205]: essentially organize these disparate recommendations into a strategy for implementation

Commented [H(207R205]: Mention HB 264

Improved food waste reduction can be achieved through a combination of food rescue and donation (e.g. via food banks) and true source reduction (e.g. educating consumers to purchase only the amount of food they need and hence generate less food waste). This will require a coordinated effort between the City, local food generators (businesses, universities, and residents), and local food rescue/donation organizations. The NRDC recently commissioned a report titled "Food Rescue in Baltimore: Assessing Current Landscape and Potential Growth" (26 March 2019) from Full Plate Venture LLC and the Maryland

Food Bank assessing the current landscape for food rescue in Baltimore and the potential for future growth (referred to herein as the NRDC report). Recommendations from this document as well as those provided in the BFWRS and LWBB are summarized below.

Recommendations from the BFWRS:

1. Conducting a needs assessment for the city's food recovery system;
2. Creating a "best practices" guide for businesses and institutions that wish to donate edible food in the city;
3. Creating a resource guide for individuals and businesses wishing to use produce "seconds" (i.e. ugly fruit and vegetables);
4. Supporting state legislation that extends liability protection for entities selling recovered food and donors that donate past-date foods;
5. Working with the Maryland Department of Agriculture to include food recovery at the Maryland Buyer-Grower Expo;
6. Creating a public awareness/marketing campaign for businesses around reducing food waste;
7. Supporting local and state legislation that calls for a phased-in food waste and organics landfill ban;
8. Creating and staffing a City government position tasked exclusively with managing food recovery and food waste reduction initiatives;
9. Creating incentive programs for food donation, or businesses sourcing recovered food;
10. Ensuring there are enough community partners to handle the volume of all donated food, and ensuring that these partners are adequately resourced (refrigeration, hauling, etc.);
11. Creating/supporting a waste audit program for commercial food waste producers;
12. Supporting existing business models that sell "seconds" produce and if gaps exist, supporting the creation of a "Vendors Market" for unsold produce from wholesale distributors; and
13. Creating/adapting an entity to coordinate and promote all food recovery activities citywide.
14. Supporting the development of a Food Recovery Network chapter in every higher education institution in the city;
15. Supporting the completion of waste audits at every higher education institution in the city;
16. Creating a public awareness/marketing campaign around food recovery for colleges and universities;
17. Working with colleges, universities, and institutional food providers to change the culture of campus cafeterias from one of required abundance to "it's ok to run out;"
18. Creating/supporting a public awareness and education campaign around household food waste;
19. Supporting community-based culinary education programs, with emphasis on food waste reduction;
20. Creating and implementing a voluntary household waste audit program, including incentives for participation;

21. Developing and implementing a system for tracking household food waste; and
22. Distributing "smart" trash cans to all city residents capable of tracking waste weight, creating a positive feedback loop by sending waste data to residents via water bill or other means.

Recommendations from the NRDC Report:

1. Convene meetings of stakeholders in the food rescue system, including the City, food donors, food rescue organizations, last mile organizations (LMOs; these refer to any entities such as shelters, soup kitchens, or food pantries that distribute donated food to food insecure individuals), and clients, on a regular basis to support relationship building and strategic planning;
2. Track food donations received from local sources each year at food rescue organizations to support progress tracking under the BFWRS;
3. Develop, in coordination with other stakeholders, a three to five-year strategic plan for expanding food donations and strengthening the food rescue system;
4. Hire a "sourcer" to cultivate relationships between prospective food donors and food rescue organizations;
5. Develop and distribute food safety guidance for licensed food facilities from the City's Health Department;
6. Develop policies and programs that incentivize food donation;
7. Distribute educational materials on liability protections and tax incentives to food donors;
8. Develop a citywide strategy to recruit the next generation of food rescue volunteers to support the effective training, management, and retention of volunteers in the food rescue system;
9. Develop a coordinated strategy to engage the local philanthropic and business communities to mobilize support for food rescue infrastructure, staffing, and other needs;
10. Identify organizational development resources to strengthen food rescue capacity for fundraising, management, and communications;
11. Evaluate strategies for making donated food more geographically accessible to clients;
12. Evaluate the need for potential technology solutions to connect clients and LMOs;
13. Elevate the voices of food assistance clients by including them in advocacy activities, volunteer opportunities, and community outreach;
14. Work with LMOs to gather input and feedback from clients on an ongoing basis;
15. Conduct a detailed study of the specific food security-related needs of people living with disabilities; and
16. Expand outreach to clients on ways to access food assistance.

Recommendations from LWBB:

1. Encourage the use of online food waste reduction tools: The U.S. EPA provides a food waste management cost calculator to estimate the cost competitiveness of alternatives to food waste disposal for food waste generators, including source reduction, donation, composting, and recycling of yellow grease.

Commented [H(208]: have we iinclude info from the RSS compost feasibility study conducted via Food MatterS?

2. Encourage food waste tracking: A private company GOODR provides a secure ledger that tracks an organization's surplus food waste from pickup to donation. The company aims to improve an organization's bottom line through charitable donations, reduce GHG emissions, and route edible surplus food to local communities in need. Hartsfield-Jackson Atlanta International Airport currently uses GOODR to help meet its zero-waste target.
3. Encourage the use of mobile apps: There are a number of smartphone applications meant to connect food rescue agencies with consumers. For example, Food Rescue's ChowMatch matches food donations with food assistance organizations while organizing volunteers to transport the food to those organizations. Another example is the Food for All app available in Boston and New York that allows customers to buy leftovers from restaurants at a discount.
4. Conduct educational campaigns: Education and outreach is critical to changing behaviors. Specific educational programs recommended in LWBB to reduce food wasage include educating students about composting, educating residents on the difference between "Sell By," "Use By," and "Best By" dates, and educating residents about purchasing food more sustainably.

Opportunities for Reuse of C&D Waste

The LWBB Plan details multiple policy options and strategies exist to encourage C&D waste reuse. These are detailed below.

1. City-Mandated Deconstruction of Existing Structures: Legislation that mandates all construction projects to "deconstruct" rather than "demolish" existing structures would reduce C&D waste generation and encourage reuse. Capacity for deconstruction and reuse of salvaged building materials already exists in Baltimore, which is home to multiple deconstruction companies and building materials reuse centers (Second Chance, the Loading Dock, Habitat for Humanity of the Chesapeake as well as the Baltimore Wood Project).
2. Establishing an Architectural Salvage Program: An architectural salvage program may be implemented in coordination with mandated deconstruction of existing structures to encourage reuse of building materials. An architectural salvage program could be implemented as an online database (similar in concept to dating apps such as "match.com") to match potential buyers with companies offering salvaged building materials. City facilities and/or existing resale companies could hold the material while it is advertised.
3. Encouraging Green Construction: A green construction policy would require new construction or major remodeling of existing buildings meet certain environmental and sustainability standards. The best-known example is the Leadership in Energy and Environmental Design (LEED) green building certification program, developed by the nonprofit U.S. Green Building Council and used worldwide as an objective measure of achievement. A green construction policy in Baltimore could also promote facilities certified as TRUE Zero Waste and encourage others to be certified.

Opportunities for Reuse of Bulk Waste

The LWBB Plan outlines three policy options and strategies to encourage reuse of bulk waste:

Commented [H(209]: can we provide legislative suggestions to support all proposed "opportunities" as mechanisms for achieving goals?

Commented [H(210R209]: would also like to provide insight on what this would cost us as detailed by LWBB

Commented [H(211R209]: might also be good to reference successful incentive programs

Commented [H(212]: provide more in depth analysis of what % of waste stream is C&D materials and how additional C&D capacity correlates with costs/capacity

Commented [H(213]: didnt we have a deconstruction contract?

Commented [H(214]: brick & board

Commented [H(215]: these dont read as policy options to me but i think there are policies to consider that would incentivize reuse

1. Investing in Programs that Turn Waste into Art: The City could donate abandoned buildings and bulk waste material to artists, sculptors, and recycling innovators to organize shows and contests that encourage the reuse of bulk waste materials.
2. Funding Fix-It/Repair Clinics: The City could help to fund clinics where residents can learn how to repair broken electronics, homewares, appliances, bikes, etc. rather than throwing them away. Fix-It Clinics are currently used as a way to reduce bulk trash in many cities across the country, including Austin, TX, Flagstaff, AZ, Minneapolis, MN, and San Diego, CA. The Baltimore Tool Library also holds fix it fairs a few times a year. These clinics are usually staffed by volunteers with skills to share, gained either professionally or through hobbies, and so are free of charge for attendees, although donations may be encouraged. Fix-It Clinics may be hosted by the City, local nonprofits, local businesses, or some combination of private and public entities. In Baltimore, clinics could be offered in coordination with, or in a similar manner to GROW centers, which offer tips and materials for greening and landscaping.
3. Holding Reuse and Swap Events: Reuse events allow residents to get rid of or obtain gently used materials (e.g., furniture, clothes, and toys) in a convenient and structured way in a formal or semi-formal setting. These managed events avoid contributing to uncleanliness or litter in the way that informal garage or yard sales may do, and also reduce the incentive for residents to simply dump used items on the street. Reuse events could include curbside giveaway events in common areas of multi-residential buildings, block parties for single-family neighborhoods, and swap events such as jewelry or clothing exchanges. Many counties and municipalities promote once or twice yearly curbside events, generally held in the spring or fall as people adjust and update their homes and closets.

Other Waste Reduction and Reuse Opportunities

Other waste reduction and reuse opportunities detailed in LWBB include:

1. Libraries and lending organizations: Opportunities for sharing items that are used infrequently are becoming more prevalent in many communities. The City could support organizations (e.g., non-profit organizations or public libraries) or develop partnerships with existing organizations to provide opportunities for the public to borrow items such as bikes, appliances, or tools. Items can be donated to the libraries or organizations can purchase and cover expenses through user fees.
2. Bans or restrictions on specific materials: Results from the survey of stakeholders conducted for the LWBB Plan indicated clear support for policies aimed at eliminating specific "bad actor" materials from the waste and recycling streams. For example, 86% of responders supported a ban on single-use plastics such as food containers, plastic bags, and straws. As an alternative to outright bans, however, some responders suggested taxing the use of single-use materials or introducing laws to incentivize reuse.
3. Extended Producer Responsibility (EPR): EPR is a government mandate for product stewardship that requires a manufacturer's responsibility for its product to extend to post-consumer management of that product and its packaging and/or upstream redesign/reduction. EPR policies therefore shift financial and management responsibility for waste management upstream to the

manufacturer and away from the public sector, while incentivizing manufacturers to incorporate environmental considerations into the design of their products and packaging. Applied effectively, EPR can be valuable in helping communities manage and fund the reduction/recycling/diversion of difficult materials.

4. Product Take-Back Programs: Similar to EPR programs, product take-back programs are a form of product stewardship for hard-to-recycle items and packaging. These initiatives are typically organized by a manufacturer or retailer to collect used products or materials from consumers and reintroduce them to the original processing and manufacturing cycle. A company may implement this program in collaboration with end-of-life logistics and material processing firms. For manufacturers and retailers, there are multiple benefits for implementing a take-back program, including stronger customer relationships, lower cost of goods sold due to secondary material supply, providing an alternative supply of critical raw minerals, mitigating risks associated with hazardous materials handling, and reduced environmental impacts. These benefits often result in no cost or discounts to consumers when they participate. Companies can estimate the success of their take-back programs by measuring the total mass of products sold against those collected each year.
5. Right to Repair Bill: Right to repair bills, typically focused on electronic devices and small appliances, refer to government legislation that is intended to allow consumers the ability to repair and modify their own consumer products, rather than being obligated by the manufacturer of such devices to use their (often expensive) repair or replacement services. Right to repair legislation has been introduced in 17 states.

4.2 Waste Diversion and Recycling

Waste diversion and recycling programs coordinated by the City are described in Section 3.4 and are evaluated below.

Plan to Achieve 35% MRA Recycling Rate

According to waste diversion data published by MDE, the City's 2020 MRA recycling rate was 14.94%, significantly below the 35% required by Maryland law. As a result, the City initiated an interim plan to achieve the state-mandated 35% recycling rate. This plan is detailed below.

Commented [M(216]: We should note that this was an anomaly year, since it was the pandemic. The previous year was more accurate, though we still need a plan to get to 35%

Contents of the Adaptive Management Plan

Commented [H(217]: what is this???

Commented [H(218R217]: remove this

Due to the uncertainty of the recycling industry's future there is an incomplete understanding of the system, which complicates how management strategies are chosen to achieve recycling goals. Adaptive management was chosen to address information gaps and reduce uncertainty over time by using an iterative approach to systematically incorporate learning into management. The following process will be used, as described by the USGS adaptive management technical guide :

- Management objectives that are regularly visited and revised as needed;
- A model of the system being managed;

- A range of management options;
- Monitoring and evaluation of outcomes of management actions;
- Mechanisms for incorporating learning into future decisions; and
- A structure for incorporating stakeholder involvement and learning.

Stakeholders

Adaptive management is not possible without the commitment of time, resources, and active engagement of stakeholders. Recognizing stakeholder interests and ensuring their involvement for the duration of the plan are requirements for learning-based management. It is essential to identify and engage the appropriate stakeholders to promote cooperation and reduce the likelihood of conflict.

The primary stakeholder for this process is DPW. Secondary stakeholders include the Department of Planning's Office of Sustainability, non-profit organizations, and community organizations.

Goal and Objectives

The goal of this interim plan is to increase the City's recycling rate to 35% through the implementation of objectives listed in Table XX overleaf. It is important to note that these objectives may change through time as resources, systems, and values change. In many cases, success in attaining objectives can be an ongoing process that involves refinement of objectives as understanding accumulates and stakeholder perspectives change.

Monitoring and Evaluation

A basic tenet of adaptive management involves the concurrent monitoring and evaluation of a system while the project is underway. When data evaluation indicates that objectives are not met, the first response is to evaluate the existing data and determine if additional data collection can address the issue. To accommodate this aspect of adaptive management, ongoing data collection, evaluation, and documentation are built into this program. The City will collect data on the measurable indicators identified in Table XX overleaf. The monitoring results are expected to provide the information needed to evaluate the adaptive management objectives.

At the end of each calendar year, an adaptive management report will be prepared, summarizing the work performed, the monitoring results for each goal, and the evaluations conducted. These reports will be shared with key partners and stakeholders, including the Baltimore Clean City Committee. These reports are further described below.

Adaptive Responses

Under the adaptive management approach, there are four general management alternatives if success criteria are not met:

1. Continue current monitoring;
2. Enhance data gathering;
3. Implement active response action(s) that will help the recovery process; or

4. Re-evaluate goals.

These alternatives may be used individually or together as discussed below. Decisions regarding the need for adaptive responses, and a description of any response(s) taken or recommended, will be documented in the annual adaptive management reports as described below.

Continued or Enhanced Data Gathering:

One possible response is to gather additional information, including continued or expanded monitoring under the existing program, additional monitoring using revised protocols, a review of relevant literature, consultation with experts, and experiments to evaluate specific aspects that are not currently addressed by monitoring data.

Additional information gathering may be appropriate to evaluate the extent to which city recycling rates are increasing. This is especially true early in the process. It is reasonable to assume that success will not be achieved in the first year or first few years of the project. Additional information-gathering may also be appropriate to investigate potential causes for unsatisfactory progress towards meeting measurable indicators of progress. This could include additional monitoring or experiments aimed at designing adaptive responses to accelerate the recovery process or to correct deficiencies. Monitoring and assessment will also have to include market factors, and where that may inhibit progress, or inform prioritization of waste streams and associated outreach and implementation.

Active Response Actions:

Active response actions are split into immediate and additional response actions:

1. Immediate response actions: Immediate response actions will be conducted to correct obvious deficiencies. These are actions that will be undertaken at the time the condition is observed.
2. Additional response actions: Additional response actions are those that are appropriately performed at some point after the condition is observed. All responses to the measurable indicators of progress are additional response actions, since these responses are based upon an entire year of data. An example of an additional response action could be pursuing legislation to allow recycling enforcement.

Reevaluation of Goals:

Some goals may even be unrealistic. Reevaluating the appropriateness of such goals may occur when monitoring has shown that the measurable indicators of progress have not been met or are not likely to be met, despite efforts to achieve the indicators.

Success:

When the City completes a goal, adaptive management and its associated monitoring will end.

Table XX: Objectives to Achieve 35%

Objective	Action Plan In-depth description provided in Section 5.7	Measurable Indicators of Progress
Increase source reduction efforts	– Increase public outreach and education towards source reduction through community meetings – Engage residents through social media platforms – Provide non-profit organizations and community associations with recycling educational resources to provide to their networks	– Community liaisons bring source reduction material to at least 80% of all community meetings - Write social media posts once a week about source reduction - Track number of times hashtag is used - Track number of times links/tweets are shared - Number of educational materials provided to Clean City Committees
Increase the Residential Recycling Rate	– Increase public outreach and education towards residential curbside recycling through community meetings – Simplify the recycling flyer and recycling guide – Redesign the recycling website for easier access to information – Publish the City's Recycling Newsletter every month – Distribute recycling carts to every eligible residence	- Number of times Community Liaisons bring recycling materials to community meetings - Number of Recycling Website visits per year - Number of subscribers to the Recycling Newsletter - Number of new stores that sell recycling bins - Number of residents that accepted a City-owned recycling carts
Increase Business Recycling Rates	– Encourage businesses to sign up for MDE's Green Registry – Talk to health inspectors in BCH to see if they can also encourage businesses to sign up for Green Registry – Businesses that sign up for MDE's Green Registry can win an opportunity to get featured in the City's Recycling Newsletter - Create an incentive for businesses to recycle - Leverage business organizations about what, why, and how to recycle or increase recycling efforts	- Number of businesses contacted to join the Green Registry - Increase the amount of annual business recycling reports received by 5% per year - Number of businesses contacted annually
Implement the Apartment Building and Condominium Recycling (ABCR) Plan	– Contact apartment and condominium property managers to ensure recycling is provided via receipt of a Recycling Report – Visit 10 randomly selected buildings with over 101 units per calendar year to ensure recycling is provided	– Number of apartment and condo buildings with more than 101 units that are contacted on an annual basis to be reminded of the recycling program - At least 70% of inspected buildings provide recycling

Schedule and Reporting

DPW will prepare an annual adaptive management report by 31 January of each calendar year. Each report will present the data collected during the prior calendar year, including evaluations of the management benchmarks, assessment of progress towards meeting measurable indicators, and summary of any adaptive responses taken during the previous year. Each report will also include recommendations for additional adaptive response actions, continuation or revision of the data collection program, termination of monitoring successful action plans, or revisiting measurable indicators for certain action plans. The format of the annual report will include:

- Introduction: summary of work completed and objectives for the specific year;
- Action plans: describe the plan used to implement the objective;
- Results: graphs and tables summarizing the results of action plans;
- Discussion: summary of progress towards measurable indicators and the effectiveness of any adaptive responses, and recommendations for adaptive responses for the following year(s) (if necessary).

Commented [H(219]: is this somethign we currently do or is this new?

Commented [H(220R219]: remove all this! no one knows what this plan is 😅

Assessment of Plan to Achieve 35% Recycling Rate

*Require input from the City – assessment of current plan to achieve 35% recycling rate. What is working/not working?

Commented [H(221]: Rubicon report?

Assessment of Existing Recycling Programs

Include data from recycling sorts – contamination.

Analysis of MRA and non-MRA recycling data – what is working? What's not?

This has overlap with assessment of recycling facilities in Section 4.5

*Require input from the City – what recycling programs are working/not working?

*Include input from public comments and public meetings

Assessment of Existing Organics Diversion Programs

Analysis of MRA and non-MRA recycling data – what is working? What's not?

This has overlap with assessment of Camp Small and any other facilities in Section 4.5

*Require input from the City – what organics diversion programs are working/not working?

*Include input from public comments and public meetings

Opportunities for Improvement

Opportunities for improving or expanding existing waste diversion and recycling programs are taken from the LWBB Plan, the BFWRS, and other publicly available planning documents. These opportunities are included in addition to the strategies laid out in the City's plan to achieve a recycling rate of 35%.

Opportunities to Improve Organics Diversion

Numerous options and strategies are included in the BFWRS and LWBB Plan to improve organics diversion. These include:

1. Expand Use of Existing Processing Capacity: The BFWRS lays out a series of recommendations to expand existing capacity in Baltimore including improving access to backyard compost bins to residents, establishing school gardens at public schools to encourage on-site gardening and composting, supporting/incentivizing the creation of community composting locations in Baltimore neighborhoods. Other strategies included in LWBB include expanding the use of City-partnered organics processing facilities (e.g., BCCF, BRPF, BPPF, and Camp Small), encouraging on-farm composting (perhaps by expanding the Food Matters Program), encouraging backyard and community composting (e.g., by providing residents with subsidized backyard composting units and initiating education and outreach programs), and encouraging the use of in-sink disposal units to process food waste.
2. Provide and Encourage Curbside Collection of Organics: Recommendations from the BFWRS for the City to implement and encourage an SSO collection program including conducting a residential curbside collection pilot program, expanding curbside collection throughout the city (long-term), conducting a feasibility study for pay-as-you-throw (PAYT) and other incentive-based residential waste collection strategies, and implementing a residential food waste ban. Other recommendations from LWBB include expanding City collection services to include collection of source separated organics (SSO), contracting SSO collection from residents to a third party, providing drop-off centers for food and yard waste, implementing a save-as-you-throw (SAYT) program, implementing a food waste disposal ban, and reducing the frequency of trash pickup.
3. Implement a ban on commercial organics disposal in the City: Recommendations from LWBB include a phased approach to encourage organics diversion, beginning with a subsidy for organics diversion and surcharge pricing for organics disposal and moving toward a blanket ban on organics disposal from commercial entities in the City.
4. Revise collection frequency of trash pickup: By reducing the frequency of trash pickup in the City, residents may be encouraged to participate in existing or future organics diversion programs to reduce their trash volume.

Opportunities to Improve SSR Diversion

The LWBB Plan details several opportunities to improve SSR diversion in the City. These include:

1. Revise bin size and allocation: By reducing the size of the trash bin from 96 gallons to 35 gallons, the City could encourage people to reduce the amount of waste they generate and improve their

recycling habits. The City already offers free 65-gallon bins to all single family households (which was also recommended in the LWBB plan).

2. Revise collection frequency: By increasing the frequency of residential curbside SSR collection and/or reducing trash collection, the City could improve participation in the curbside recycling program.
3. Implement dual or multi-stream recycling: Switching from single stream to dual or multi-stream recycling has the potential to reduce contamination levels in collected recyclable streams and may reduce the amount of post-processing required at a downstream MRF (e.g., WMRA). However, switching to multi-stream recycling may actually decrease recyclable diversion as some City residents may be unwilling to sort their recyclables into multiple bins.
4. Implement SAYT program: A SAYT program would involve assessing a monthly charge to residents for their trash bin, with higher charges associated with bigger bins. As such, a SAYT program could encourage residents to reduce the amount of trash they generate by increasing participation in SSR recycling programs. However, SAYT programs have been associated with increased contamination in the recycling stream, so the City may have to consider increasing educational outreach as well as enforcement/citations for residents who do not properly recycle.
5. Improved education and outreach: By improving education and outreach, the City could encourage additional residents to participate in the SSR recycling program and also reduce contamination levels in the SSR stream. Education and outreach programs could be designed to teach residents what is and is not recyclable, encourage people to overcome social and cultural barriers to recycling, and teach residents about the economic, environmental, and social benefits of recycling.
6. Providing cash or rewards for recycling: The City could participate in national recycling rewards programs, such as verde or recyclebank, to reward residents and businesses that participate in curbside SSR collection programs or complete education and outreach programs.
7. Payment for goods or services using recyclables: The City could implement discount programs for public transportation tickets to residents that provide recyclables at the time of purchase. The City could also consider providing reverse vending machines that provide residents with cash or vouchers when they deposit recyclable materials, such as cans or bottles.

Commented [M(222]: define/spell out

Commented [M(223]: It could be argued that this is a regressive tax that unfairly burdens those who are lower income

Opportunities to Improve C&D Diversion

The LWBB Plan includes multiple recommendations to improve C&D diversion in the City. These include:

1. Mandatory diversion ordinance: The City could improve diversion by passing an ordinance that requires construction and demolition projects to divert a certain percentage of their waste from disposal.
2. Deposits as part of permitting: The City could require deposits during the permitting process for new construction and demolition projects that would be returned to the contractors if and when they provide documentation that the project has met a designated diversion threshold.

Other Opportunities to Improve Waste Diversion

The LWBB Plan details several opportunities for improving bulk and other waste diversion. These include:

1. Targeted recycling programs: The City could consider implementing recycling programs for mattresses, box springs, carpets and rugs, textiles, porcelain and ceramics, batteries, and other difficult to recycle materials. These programs would improve recycling while also keeping many of these nuisance materials out of the landfill.
2. Chemical recycling: Chemical recycling involves breaking down hard to recycle materials into their chemical constituents and converting them into useful products. The City could partner with a chemical recycling company to improve waste diversion. However, it is important to verify that byproducts and emissions are being properly managed and disclosed transparently before entering into an agreement with a technology vendor.

4.3 Waste Collection

The City's waste collection system is described in Section 3.5. Since 2000, the City has used CitiStat, a database-driven performance measurement tool, to monitor and assess public service delivery and operation. Solid waste management performance is evaluated in a branch of CitiStat called CleanStat, which assists DPW in deciding how to provide more efficient service. Continued use of CleanStat, and continued feedback from citizens and employees is essential in developing a proper assessment of the City's solid waste management needs now and, in the period covered by this Plan.

Assessment of Public Waste Collection System

*Require input from the City – what are the primary issues faced by waste collection systems? We know that there are staffing shortages (particularly with drivers)

Do we have CleanStat data to assess performance of waste collection services?

*Include input from public comments and public meetings

Mixed Refuse Collection

Single-Stream Recycling Collection

Bulk Trash Collection

Collection of Yard Waste and Leaves

Residents' Drop-off Centers

Special Waste Collection Programs

Add additional collection systems from Section 3.5 once finalized

Assessment of Private Waste Collection System

*Require input from the City – what is working/not working with respect to the private waste collection system?

*Include input from public comments and public meetings

Mixed Refuse Collection

Small Hauler Program

Recycling Collection

Add additional collection systems from Section 3.5 once finalized

Opportunities for Improvement

Opportunities for improving or expanding the existing waste collection system are taken from the LWBB Plan and other publicly available planning documents.

Opportunities to Improve Mixed Refuse Collection

Surveys conducted as part of the LWBB Plan indicated that most residents are satisfied with their curbside collection services. However, some residents complained that roads and alleys are littered due to messy waste collection practices and suggested providing collection crews with brooms and shovels to clean up waste dropped during collection. DPW may consider reviewing the efficiency and effectiveness of their existing collection system (including collection practices, routing efficiencies, and staffing efficiencies) to optimize their collection system.

Opportunities to Improve SSR Collection

The LWBB Plan outlines several strategies to improve and expand SSR collection in the City. These include:

1. Extend curbside collection to multi-family dwellings (MFDs): Currently, residents in MFDs rely on private haulers contracted by landlords for trash and recycling services. Reportedly, private haulers periodically reject recycling loads from MFDs and/or stop services altogether due to

Commented [M(224]: Need requirements to report, systems to allow reporting, and adequate enforcement of existing laws. Need updated contacts for the private sector and resources to maintain the list.

contamination issues (generally, because they may be fined or have their loads rejected at receiving MRFs if contamination is too high). This leads to inconsistent collection and contributes to low participation in recycling programs among MFD residents. By extending recycling services to MFDs, DPW could improve collection by creating a more stable recycling environment.

2. Design guidance/codes for multi-family dwellings: To improve recycling collection from MFDs, the City could issue guidance on how new developments or redevelopments must consider design of waste collection areas, including provision for diversion capacity and placement of waste containers. These design guidelines could provide direction to property developers and owners on how to incorporate recycling collection infrastructure into multi-family developments to make recycling as easily accessible to residents as trash receptacles.
3. Provide mobile collection units: The City could consider provision of mobile collection of recyclables and other materials using a modified trailer or truck. While DPW currently accepts these materials at residents' drop-off centers, residents must have the means to physically transport these materials. Provision of a more convenient way to accept these materials may encourage additional diversion.
4. Improve recycling in public spaces: Some stakeholders requested that more public trash and recycling cans be provided on streets, in parks, and in other public areas. In this regard, rather than simply provide a larger number of cans in more places, all of which would require additional emptying by collection crews, DPW could look for ways to embrace the smart transformation of waste operations in public spaces that many other U.S. cities have implemented. Not only does this keep streets noticeably cleaner, streets are calmer as fewer collection events mean less trash truck congestion and vehicle emissions.
5. Special event recycling: While DPW currently provides cleaning services, trash removal, and recycling services to qualifying events (if their services are requested), there is a range of additional support that DPW could provide to event organizers. This includes providing advice on setting up a recycling plan, provision of bins and containers, or developing self-assessment guides to help organizers manage and minimize waste generated at events (e.g., by requiring that food and drink vendors minimize single use serviceware).
6. Expand recycling services to the commercial sector: The City could improve diversion of SSR by providing collection services to the ICI sector. Collection could be achieved either through DPW (public service) or through a franchising agreement with a private hauler.

Opportunities to Improve Bulk Waste Collection

The LWBB Plan includes several strategies for improving bulk waste collection in the City. These include:

1. Collecting bulk waste for donation: DPW currently recycles or disposes of bulk trash collected at residents' drop-off locations and via curbside collection. Working with local charitable and reuse organizations (e.g. the Salvation Army, Goodwill, Habitat for Humanity ReStores) to offer donation of bulk items might encourage more participation in the program.
2. Charging residents for bulk waste collection: This would encourage reuse, repurposing, and resale of bulk items, although it could lead to increases in illegal dumping. As an example, Seattle, WA

currently charges residents $30 per item collected and $38 for items with refrigerants. However, this option could also encourage illegal dumping.

3. Reducing the amount of bulk trash that can be collected via curbside collection: The City already limits the amount of bulk waste per household to three items per household per month. However, this could be reduced to encourage residents to pursue other options (such as donation). Currently, many other cities (e.g. Washington DC and San Francisco, CA) have limits on the amount of bulk waste collected per household in order to reduce disposal of bulk waste. However, this option could also encourage illegal dumping.
4. Constructing a large, accessible recycling center for bulk waste: This facility would not need to be open every day, but its opening hours would need to be clearly communicated to residents to encourage recycling. This facility could be part of an expanded network of Residents' drop-off facilities (see below).

Opportunities to Improve Residents' Drop-off Centers

The LWBB Plan outlines several options to improve residents' drop-off centers in the City. These include:

1. Constructing additional capacity: This option would require DPW to either construct new facilities for both residents and small haulers to drop off waste, or expand existing DOCs to allow small haulers to use them in addition to QRL and NWTS. As most existing DOCs are on fairly compact lots, it seems unlikely that these locations could be expanded sufficiently to allow small hauler use (this would require a truck scale and larger throughput capacity, amongst other upgrades). As such, it is assumed that developing new capacity would require the construction of new DOCs.
2. Expanding reuse and diversion opportunities at existing facilities: This option would require reconfiguration of existing DOCs to allow for a larger number of materials to be handled and diverted. This would require increased staffing to direct residents and haulers to the correct location for each material. Additional materials to consider for acceptance include non-traditional recyclable/divertible items such as mattresses, carpet, furniture, homewares, textiles, household hazardous waste, and ceramics/porcelain, as well as items that are currently accepted but are not separated (e.g., C&D waste, bulky waste, appliances with large amounts of rigid plastic, and yard waste). This option could include a materials exchange network/partnership that would allow drop-off facilities to partner with nonprofits to expand donation of items such as bicycles, musical instruments, books, clothes, etc.
3. Constructing a resource recovery park (eco-park): The most practical option available for construction of an RRP would be to co-locate individual reuse and diversion facilities in one large, centralized location. The location of this facility would be subject to an extensive siting and feasibility study, although optimally it should be located close to QRL to minimize transportation of process residuals. Reuse and diversion facilities that could be located within the RRP include reuse facilities (such as a food bank, C&D salvage and reuse center, a thrift store, and a fix-it/repair clinic), a composting facility, a MRF for processing SSR, a MRF for processing C&D waste, or a residents' drop-off center that could serve small haulers.

Opportunities to Improve Street Sweeping and Litter Control

The LWBB Plan outlines multiple ways to improve street sweeping and litter control in the City. These include:

1. Education: Baltimore needs to build ownership to keep neighborhoods clean, which requires educating residents and schoolchildren on littering and what is recyclable (e.g., through anti-littering campaigns and PSAs).
2. Street Sweeping: The current street sweeping schedule is seen as intermittent and hard to understand. This could be improved by ensuring sweepers come as scheduled and by making the schedule simpler to understand. The efficacy of street sweeping could be improved by offering sweeping services in more places (e.g., alleys) and by enforcing parking rules for sweeping days.
3. Litter Crews: DPW could provide more litter cleanup crews, separate from curbside collection crews, or alternatively contract private organizations for street litter collection. One example is to have "on calls" for rapid cleanup of litter or illegal dumping by small hauling contractors.
4. Litter Collection Drives: The City could organize litter collection initiatives with local schools or communities, providing certificates for community service hours and/or offering awards for groups that clean up and recycle the most litter. This could be conducted as an extension of the biannual Mayor's Spring and Fall Cleanups in which participants earn credits towards their stormwater fee.
5. Responsible Businesses: The City could conduct educational campaigns to encourage businesses such as restaurants, cafes, and stores to collect litter from in front of their premises.
6. Residents' Litter Squads: The City could create jobs for those who need them by hiring squads to collect litter and bulk trash from the streets. Squads could be staffed by vulnerable and at-risk members of the community (e.g., youth and homeless people), connecting and organizing them with additional support services. Communities are less likely to tolerate littering and dumping in areas they have cleaned. Examples of U.S. cities that have programs to give homeless people and panhandlers jobs picking up trash, pulling weeds, and street cleaning include Albuquerque, NM, which started their program in 2015, as well as Los Angeles, CA, Chicago, IL, Denver, CO, and Portland, ME.

Opportunities to Reduce Illegal Dumping

Commented [R(225]: Should CleanCorps be mentioned?

The LWBB Plan highlights several opportunities to reduce illegal dumping in the City. These include:

1. Provide stronger enforcement of fines for illegal dumping violations equally throughout the city;
2. Offer more bulk trash pickup;
3. Use surveillance cameras in highly impacted areas to identify people illegally dumping their trash;
4. Remove fees for small haulers and residents using commercial vehicles (e.g., U-Haul vans) at QRL, NWTS, and the other residents' drop-off centers;
5. Contract residents and/or small haulers to pick up and transport illegally dumped waste in their private vehicles;

6. Increase DPW staff capacity to improve reliability of waste collection services and information and to provide better response to illegal dumping, including following up more promptly on complaints from 311 calls/website;
7. Identify common illegal dumping sites (e.g., in Carrollton Ridge, Shipley Hill, and Edmondson Village), place a dumpster there, and schedule regular collections;
8. Get input from local haulers who could help identify the culprits of illegal dumping;
9. Require small haulers of junk to report where they take the materials they collect;
10. Maintain a list of registered contractors to help track and identify where illegally dumped material is coming from;
11. Use social media to reward those reporting illegal dumping, and to publicize contractors and small haulers determined to be illegally dumping so others don't use them;
12. Establish a smartphone app that would provide credits or coupons to people who take verifiable pictures of illegal dumping in the act;
13. Work more closely with community development organizations, neighborhood business districts, conservation land trusts, BMORE Beautiful, small haulers, and other interested parties to explore and provide opportunities for the purchase and transfer of derelict land and buildings to residents and nonprofits to create public safe clean green spaces, reduce blight, and implement a vision of community led stewardship for the land;
14. Require absentee landowners to perform cleanups and make the site improvements required by the City, or forfeit their property under eminent domain for transfer to a Conservation Land Trust that is willing to make those site improvements; and
15. Transfer lands in public ownership (e.g. plots where public housing was torn down but not replaced) to Conservation Land Trusts to begin pilot programs.

Opportunities to Improve Administrative Functions

The LWBB Plan highlights several opportunities for the City to improve administrative functions to improve waste collection. These include:

1. Enforcement of existing statutes: As widely expressed at community meetings and in the public comments, the City's apparent non-enforcement of existing statues reduces residents' confidence in their willingness and ability to enforce future laws. Existing statues where the City could consider increasing enforcement include littering, the use of nets/tarps on haulage trucks to prevent debris from falling off, and increasing the number of zones where moving cars for street-sweeping is mandatory rather than voluntary.
2. Ensure fines are charged to the responsible party: For example, landlords should be fined if they fail to provide sufficient trash and recycling cans to apartment residents; residents should not be fined.
3. Empower community surveillance of waste laws: The City could post warning signs about laws including littering and landlord trash can requirements and launch a "see something, say

Commented [M(226]: Enforcement doesn't fall under DPW's purview, rather DHCD. This is probably not an opportunity for DPW, but the City, in a larger picture.

Commented [M(227]: Again, it should be clear that DPW would have to be empowered to enact fines.

something" campaign, or organize monthly walks with residents to identify and report dumping areas.

4. 311 Service: Several suggestions for improving the 311 service were provided by the public, most of which involved improving the service request rate and providing better and more prompt feedback about the status of a request.
5. Online and Social Media: Increase social media presence to help inform residents of service changes or updates in near-real time. This could include direct linkage to DPW's existing website and Recycle Coach app. The website and app could also promote upcoming special events (e.g., swap events, fix-it clinics) for residents to repair, reuse, or recycle materials.
6. Coordination: Cleanup efforts should be coordinated with other departments/offices (e.g., Police Department, Health Department, and DHCD).

4.4 Waste Transfer

Assessment of Existing Facilities

Assess each transfer facility with input from the City – what is working? What isn't?

Add public comments related to transfer facilities.

Capacity, usage, estimated life, other operational factors/constraints

Northwest Transfer Station

As indicated in Section 3.7, NWTS is currently operated by DPW as a transfer station to consolidate mixed refuse and single-stream recycling (SSR) loads collected curbside by DPW's load-packer trucks into larger truckloads. It also serves as a drop-off point for the small hauler program and operates a residents' drop-off center. Mixed recyclables are sent from NWTS to the WMRA and World Recycling materials recovery facilities while trash is sent to QRL and BRESCO. NWTS has a permitted capacity of 150,000 tons per year; however, in 2021, only about 18,200 tons of recyclables and 45,900 tons of mixed refuse were handled at the facility. One reason for this lower throughput has been the success of the small hauler program at NWTS, which has limited the volume of loadpacker trucks that the site can easily accommodate. Currently the facility is used solely for transfer of recyclables due to a shortage of transfer truck drivers.

Expansion of NWTS is constrained by the location and size of the property and existing infrastructure. In order to process the permitted capacity of 150,000 tons per year, NWTS would have to expand operation to include more shifts and/or longer working hours (which may require a permit amendment from MDE). The small hauler program would also have to be significantly cut back or relocated to another drop-off center. In order to accommodate the small hauler program, any other drop-off center would not only need significant physical changes (i.e., more space, installation of truck scales and a scale house, etc.), it

Commented [SO228]: Include data from site visit, public comment, and input from DPW

Commented [SO229]: We are waiting on tonnage data for 2020 from NWTS. The spreadsheet given to us was labeled 2020, but seemed to be identical to the 2019 spreadsheet.

Commented [mo230R229]: @Meghan.Resler@baltimorecity.gov

Just bumping this outstanding item.

would also need to be permitted by MDE as a transfer station. Extending operating hours at NWTS and relocating the small hauler program are likely to be unpopular with local residents and small haulers.

List others from Section 3.7 once finalized

Opportunities for Improvement

Opportunities for improving or expanding the existing waste transfer system are taken from the LWBB Plan and other publicly available planning documents.

Reconfigure Northwest Transfer Station for Out-of-City Disposal

To reduce the City's reliance on BRESCO and conserve airspace in QRL, the LWBB Plan recommends upgrading NWTS to operate at its full permitted capacity of 150,000 tons per year (the facility processed XX tons in 2021) and reconfiguring the facility for out-of-City disposal. It is estimated that this would require adding additional shifts and equipment to keep the facility open for longer (potentially 24 hours a day, six days a week, depending on permit conditions and local neighborhood concerns).

Construction of an Additional Truck Transfer Facility

NWTS is ideally located as a transfer point for northern and, potentially, western parts of the City, allowing load packers to dump their loads and continue servicing neighborhoods without having to haul waste all the way to BRESCO or QRL. However, there is not currently a transfer point that allows load packers servicing the eastern part of the City to do the same. To provide a central transfer point to the eastern part of the City and increase the City's overall transfer capacity, the LWBB Plan recommends constructing an additional truck transfer facility in the eastern part of the City. The LWBB Plan includes a conceptual layout for the eastern transfer station at the Bowley's Lane residents' drop-off center.

Commented [H(231]: provide timeline for project

Commented [H(232R231]: currently funded and underway

Construction of a Large Rail Transfer Facility

The LWBB Plan recommends constructing a large rail transfer facility to reduce the City's reliance on BRESCO and conserve airspace in QRL (particularly given that the City's contract with BRESCO expires in 2031). Such a facility would be constructed so it could be operated as a truck transfer station but would be built along a rail spur to allow for containerization and rail shipment to suitable out-of-city landfills as the primary transfer mechanism. Rail would be the preferred method of transfer with trucking capabilities providing a backup. This option would allow the City to send waste to regional landfills or even more distant facilities as needed. Likely locations for a large rail transfer facility are QRL (rail lines currently run around the northern property boundary) or the Western Acceptance Facility in Baltimore County. If the Western Acceptance Facility is chosen for development, it will require a collaborative agreement with Baltimore County to construct the facility. Adding a rail spur at Western Acceptance Facility will likely be more challenging than at QRL.

Commented [M(233]: We could mention an anticipated timeline for this, since it is not really being evaluated right now

4.5 Waste Processing and Recycling

Assessment of Existing Facilities

Assess MRA and Non-MRA Recycling Data to determine if city needs additional processing capacity

Require input from the City – what facilities are working? Which aren't? We know that Word Recycling can't seem to ever take the City's recyclables, but WMRA is far and the City doesn't have enough drivers to keep driving down to Elkridge

Include input from public comments

Capacity, usage, estimated life, other operational factors/constraints

Waste Management Recycle America

Camp Small

List others from Section 3.8 once finalized

Opportunities for Improvement

Opportunities for improving or expanding the existing waste processing and recycling system are taken from the LWBB Plan and other publicly available planning documents.

Opportunities to Improve SSR Processing Capacity

The LWBB Plan includes several opportunities to improve SSR processing capacity in the City. These include:

1. Expanding existing MRFs in the City: The City may partner with existing MRFs in the City to expand in-City SSR processing capacity and reduce reliance on WMRA. Existing in-City MRFs include World Recycling, BRC, and L&J. Both BRC and L&J are older facilities that focus on providing recycling services to bulk customers, mainly in the construction industry. They are not equipped to handle high volumes of SSR. Further, the changing composition of SSR and markets for recovered materials requires MRFs to make regular upgrades to include newer technology into their facilities. While older facilities may be retrofitting with new technology, this is unlikely to be

economical for the owners of BRC or L&J unless the City was willing to help fund the upgrades. As indicated previously, the City currently contracts with World Recycling to process some of its recyclables, but the facility has been found to be unreliable and unable to accept much of the recyclables sent by the City. As such, World Recycling may also require investment by the City to upgrade or expand the facility to process the City's SSR.

2. Constructing a City-operated centralized MRF: The City could develop a new centralized MRF (either directly or by entering into an agreement with the private sector) to process SSR locally at a lower cost than offered by WMRA. However, it seems unlikely this would provide a more cost-effective solution, when considering all capital costs and marketing experience needed.
3. Constructing City-operated decentralized mini-MRFs: The City could develop a system of "mini-MRFs" to process SSR locally at a lower cost than can be offered by WMRA. This option offers flexibility, as the City can choose to construct some mini-MRFs while continuing to send excess recyclables to WMRA for processing. Mini-MRFs could be developed by community organizations in collaboration with experienced small haulers and licensed contractors, with the City potentially providing small business development grants. Due to their small operational footprint, mini-MRFs can relatively easily be installed within disused/abandoned warehouses or industrial buildings. With a smaller system, haulers would develop relationships with residents while mini-MRFs would also provide a source of jobs for the local community. Shorter haul routes could even allow investment in smaller trucks (ideally non-compacting) to reduce contamination and produce a higher quality product.

Opportunities to Improve Organics Processing Capacity

One central recommendation from the LWBB Plan and the BFWRS is the need to develop in-City organics processing capacity (either composting or anaerobic digestion). It is expected that organics diversion efforts in the City will increase over the Planning Period. To reduce the transportation costs associated with hauling organic waste outside of the City for processing, additional in-City processing capacity should be created. The LWBB plan offers three methods for the City to increase organics processing capacity:

1. Building, permitting, and operating its own organics processing facilities;
2. Partnering with private companies to design, build, and operate organics processing facilities under a public-private partnership (PPP); or
3. Contracting with other existing public or private entities to accept organics for processing.

The BFWRS provides further guidance on how to expand organics processing in Baltimore, including conducting a feasibility and cost-benefit analysis for establishing composting or AD facilities at City-owned sites; working with surrounding counties to identify viable locations for small, medium, and large-scale composting and AD facilities; and issuing joint RFPs for private organics management companies to develop processing facilities at selected sites.

To meet expand organics processing capacity, the City has two options:

1. Centralized facility: Site, permit, construct, and operate one large facility capable of processing all SSO collected from residential sources as well as City government and public schools. This facility would likely be sited at or near QRL.
2. Decentralized facilities: Site, permit, construct, and operate a series of small facilities to process SSO. These would be distributed around the city and developed sequentially as demand for additional SSO processing capacity builds.

The main advantage of the centralized option is economies of scale, as it would be less expensive in the long term to staff and operate one large facility rather than a series of small facilities. Another advantage is that a large facility requires only one plot of land while a decentralized would require multiple plots of land. Developing multiple facilities also entails more permitting and environmental monitoring effort.

The main advantage of a decentralized approach is redundancy. If there is some problem and one of the facilities has to temporarily (or permanently) shut down, capacity could be relatively easily transferred to the other facilities. If only one facility is constructed, a temporary or permanent shutdown of the facility would completely eliminate the ability to process organic waste. Decentralized systems are thus more robust to climate change impacts such as flooding or storms. Another advantage of decentralization is that capacity can be scaled up with time to match the demands of the SSO collection program. SSO collection would most likely be rolled out in phases; therefore, constructing a series of small organics processing facilities would allow processing capacity to match demand and require less initial capital and operational funding.

Opportunities to Improve C&D Processing Capacity

The LWBB Plan outlines three strategies for increasing C&D processing capacity in the City:

1. Construct and operate a MRF: This would allow the City to implement full control over all aspects of C&D recycling. However, it would also force the City to bear all the responsibility for any operational issues.
2. Construct a MRF in coordination with a private company under a PPP: With this option, the City would own the facility while the private company would operate it.
3. Allow private companies to expand existing facilities and/or develop a new MRF: Baltimore is already home to at least two large operational C&D MRFs (BRC and L&J). If increased C&D recycling is mandated, it is likely that private companies could expand capacity without any help or direction from the City.

Opportunities for Developing a Mixed Waste Processing Facility

The LWBB Plan considered the development of a mixed waste processing (MWP) facility to improve diversion. MWP facilities are complex operations that employ a multi-stage approach to sort and process the incoming mixed waste stream. A typical MWP facility includes a "dirty" MRF to recover recyclables and separate out undesirable materials prior to processing, an anaerobic digestion facility to convert organics separated from the MRF to methane, and other processing technologies (e.g., gasification) to convert plastics and other high calorific wastes to energy or fuel. It is noted that an MWP facility may not

include all these technologies or may employ different technologies in alternative configurations. However, the main goals of MWP are to generate energy, recover recyclables, create reusable products, and reduce the final quantity of waste that requires disposal.

Ultimately, the LWBB Plan did not recommend construction of a MWP facility in the City for the following reasons:

1. MWP technologies are largely unproven for use in the U.S;
2. MWP technologies also tend to be capital intensive and expensive to operate, especially when compared with other waste disposal options, such as continued use of BRESCO or constructing a transfer station;
3. MWP facilities work in opposition to reduction/diversion measures. In other words, mixed waste processing performs best when all organic and recyclable material is left in the mixed waste stream. MWP may thus be an inefficient, expensive, and highly centralized method of meeting diversion goals, which could be better achieved by implementing some of the reduction and diversion options detailed in Sections 4.1 and 4.2.

4.6 Waste Disposal

Assessment of Existing Waste Disposal System

Use input from public meetings and DPW to assess waste disposal facilities.

List other facilities from Section 3.9 once finalized

Quarantine Road Landfill

Capacity, usage, lateral expansion, potential for vertical expansion? Estimated life

Include notes from site visit – main issues discussed include people not paying (need for scalehouse improvements such as cashless system or a license plate reader), lack of skilled workers (particularly operators).

BRESCO

Capacity, usage, estimated life

Air emissions control technology improvements in 2022

City contract ends in 2031 – discuss plan for moving away from BRESCO

Opportunities for Improvement

Opportunities for improving or expanding the existing waste disposal system are taken from the LWBB Plan and other publicly available planning documents.

Commented [SO234]: I'm not sure this section is necessary – the City is not planning on constructing any new waste disposal facilities. We may want to include potential for vertical expansion of QRL here though?

4.7 Zero Waste Goals and Initiatives

The City's zero waste goals and initiatives are detailed in Section 1.1 and come predominantly from the BSP and the BFWRS. As indicated in Section 1.1, these goals and initiatives serve to guide solid waste strategy during the planning period.

Progress Toward Zero Waste Goals

Geosyntec to provide a table summarizing the goals presented in Section 1.1, the amount of each waste type recycled/diverted in 2021, and the progress toward these goals.

Opportunities for Improvement

Based on previous sections, assess which goals are furthest from being achieved – what are targeted programs/initiatives the City could implement to better achieve these goals?

Require input from City

Include public comment

4.8 Plan to Return to Pre-Pandemic Services

As discussed in Section 3.1, the City had to reduce services during the Covid-19 pandemic to accommodate significant staff shortages. As a result, the City has had to shift curbside recycling collection services from once a week to biweekly. The City is currently planning to re-establish weekly recycling collection by hiring additional staff (particularly drivers). Current efforts to provide job opportunities include training programs, open positions, job fairs, and other opportunities. These efforts will continue until the City can hire enough workers to provide weekly recycling pickup.

Commented [M(235]: John Land puts together monthly reports for City Council that detail the progress towards re-starting weekly recycling.

4.9 Potential Limitations on Development

This section contains information on the limitations for development of new solid waste management facilities in Baltimore. Solid waste management facilities considered in this section include transfer stations, solid waste processing facilities, and compost facilities. As indicated in Section 4.6, no new landfills or incinerators are planned in the City; as such, these facilities are not considered in this section.

Commented [H(236]: I'd like for us to provide an assessment of emissions associated with certain methods of waste disposal. would this be the place?

Geographic Considerations

Location and Topography

The location selected for development of any new solid waste management facility will likely need to be fairly flat to allow for site access and facility construction. The facility should also be located in such a way that it does not negatively impact any adjacent communities (e.g., by increasing traffic, generating noise, generating air or water pollution, etc.).

Land Use

The location selected for development of any new solid waste management facility should be consistent with historic land use for the site. As such, historically industrial sites should be considered first for development of a new solid waste management facility.

Zoning

Zoning requirements for solid waste management facilities are described in Section 2.3 and Appendix C.

Defined Critical Areas

Maryland's Critical Areas Law requires a buffer of at least 1,000 feet from tidal waters and tidal wetlands. Any proposed development of new solid waste management facilities should respect this buffer.

Geologic and Hydrogeologic Considerations

Soil Types and Characteristics

Soil types should be considered when siting a proposed solid waste management facility. Soil types and characteristics can have implications for stormwater management, infiltration, erosion and sediment control, and groundwater contamination and monitoring.

Geologic Conditions

Geologic conditions should also be considered when siting a potential solid waste management facility. Geologic conditions can determine the locations of aquifers (typically in coarse-grained or fractured, permeable geologic layers) and aquitards (typically in fine-grained, low permeability geologic layers). As such, geologic conditions can greatly impact the location and flow of groundwater at a site.

Aquifers

The location, depth, flow, and usage of aquifers at a proposed site should be considered when siting a new solid waste management facility. The facility should be designed in such a way as to minimize impacts to aquifers (particularly those that are used for drinking water) and groundwater monitoring wells should be located to monitor potential impacts to all aquifers potentially impacted by site development and operation.

Hydrologic Considerations

Site Water Management

A stormwater management plan for a potential solid waste management facility should be drafted and approved by DPW prior to construction of the facility. Stormwater should be managed consistent with the approved stormwater management plan.

Any contact water produced at the proposed solid waste management facility should be collected and treated in accordance with the approved operations and maintenance manual for the facility. Discharge to waters of the State should be limited to those allowable under permits governing solid waste disposal and water pollution control.

Surface Water

Proposed solid waste management facilities should be sited to minimize impacts to surface water sources. No water containing pollutants should be discharged from the site.

Wetlands

A proposed solid waste management facility should be sited to minimize impacts to non-tidal wetlands. If wetland impacts cannot be avoided, a Joint Federal/State Application for the Alteration of Any Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland should be filed with MDE.

Floodplains

Solid waste management facilities should not be sited within FEMA-designated floodplains.

Watersheds

Development of a proposed solid waste management facility should not significantly alter watershed drainage areas or cause potential impacts to downstream facilities.

Existing Water Quality

The existing water quality for a given site should be considered when siting a proposed solid waste management facility. Development of the proposed facility should not lead to significant impacts to existing surface or groundwater quality. Construction of monitoring wells may be required prior to site development to determine the existing water quality conditions for the site.

Planned Long-Term Growth Patterns

Long-term growth patterns should be considered when siting a proposed solid waste management facility. As previously indicated, solid waste management facilities should be located where they will not not negatively impact any adjacent communities. Similarly, long-term growth patterns should be considered such that the facility will not negatively impact any future communities over the proposed life of the facility.

4.10 Asbestos Disposal Capacity

The disposal of asbestos is largely unaddressed. Private companies that remove asbestos from older buildings in the City are mandated to transport it out of Baltimore for disposal. Asbestos removal from City owned buildings is contracted out to private firms.

4.11 Emergency Response Procedures for Hazardous Leaks and Spills

State regulations for the development of comprehensive solid waste management plans require that Chapter 4 evaluates programs and procedures for responding to the unplanned (emergency) spilling or leaking of hazardous wastes within the local jurisdiction. In compliance with this requirement, the City's emergency response system for hazardous wastes is summarized below.

Under the leadership of the Baltimore City Fire Department, which has the principle responsibility for responding to hazardous material emergencies in the City, Baltimore's Local Emergency Planning Committee developed a Hazardous Materials Action Plan. The plan includes instructions for handling hazardous material emergencies, sources of information, and parties to be notified.

The City's emergency response system is activated by telephone calls to 911. Callers are asked to provide as much information as possible about the nature of the hazardous material, impending danger, and location and extent of the incident. The facility where the incident occurred, or the transporter, is required to notify the National Response Center of the incident after calling 911.

The Fire Department responds to 911 hazardous materials calls by dispatching a hazardous material task force of fire engines/trucks and a rescue team. Other agencies and resources are notified as required. At the site of the incident, an operations command post is established, and the severity of the incident is determined based on the likelihood of public impact. Depending on the public impact and its probable extent, the incident commander may initiate "secure premises," "public relocation," or a "general information" procedure to protect the public until the hazard has been neutralized.

The entire response to the emergency is coordinated by the Fire Department, whose personnel are trained and equipped to handle hazardous material emergencies. Other agencies respond only at the direction of the Fire Department's incident commander, to avoid any duplication of efforts or confusion.

The City's DP3 Plan is incorporated by reference into this solid waste plan. The plan is available for public review in the Maryland Room at the Enoch Pratt Central Library in downtown Baltimore.

Commented [SO237]: I cannot find the emergency response plan for hazardous spills in the DP3 plan. Are we sure that there isn't a separate plan to address hazardous spills?

Commented [M(238R237]: OEM might be the right resource to check on this. Elise Major Whiteford has worked on Debris Management plans and may be able to assist.

Commented [R(239R237]: @Richardson, Ava (DOP)

Commented [SO240]: Updated this to DP3, although I could not find the emergency response protocol for hazardous spill in the plan.

Commented [R(241R240]: @Richardson, Ava (DOP) do we have an update on the DP3 plan hazardous spills info?

4.12 Adequacy of Local Zoning and Master Plan

As indicated in Section 2.4, the City's Comprehensive Plan provides the policy basis for guiding redevelopment and revitalization of the City's developed neighborhoods. Any proposed development of new solid waste management facilities will be conducted in accordance with this plan.

5. PLAN OF ACTION

5.1 Planning Period

10 years: 2024-2033

5.2 Source Reduction and Reuse Programs

Existing Source Reduction and Reuse Programs

Include all source reduction programs that are expected to remain in place over 10-year planning period. Note all waste streams that will be affected by these programs

Note any planned improvements to existing reduction programs or any programs that will be eliminated

Reference/list from Section 3.3 once finalized

Proposed Expansion of Source Reduction and Reuse Programs

Include all proposed source reduction programs that are expected to be implemented over 10-year planning period. Note all waste streams that will be affected by these new programs

5.3 Waste Diversion and Recycling Programs

Existing Recycling Programs

Include all waste diversion programs that are expected to remain in place over 10-year planning period. Note all waste streams that will be managed by these programs

Note any planned improvements to existing diversion programs or any programs that will be eliminated

Reference/list from Section 3.4 once finalized

Existing Organics Diversion Programs

As above

Plan to Achieve 35% MRA Recycling Rate

Any proposed changes to this existing plan?

Proposed Expansion of Diversion and Recycling Programs

Include all proposed waste diversion programs that are expected to be implemented over 10-year planning period. Note all waste streams that will be managed by these new programs

Mattress recycling – contract through NMWDA

Waste Diversion Programs

Recycling Programs

Organics Diversion Programs

5.4 Waste Collection System

Existing Waste Collection System

Include all waste collection systems that are expected to remain in place over 10-year planning period. Note all waste streams that will be collected by these systems

Note any planned improvements to existing collection systems or any systems that will be eliminated

Reference/list from Section 3.5 once finalized

Public System

Private System

Proposed Expansion of the Collection System

Include all proposed waste collection systems that are expected to be implemented over 10-year planning period. Note all waste streams that will be collected by these new systems. Include implementation schedules for new collection systems

Public System

ARPA funded projects, CIP projects (Reedbird)

Private System

5.5 Waste Transfer System

Existing Waste Transfer System

Include all waste transfer facilities that are expected to remain in place over 10-year planning period. Note all waste streams that will be managed by these facilities

Note any planned improvements to existing transfer facilities or any facilities that will be eliminated (if any will be eliminated, include closure date, projected use of each closed site, and the relationship of that use to the City's comprehensive land use plan)

Reference/list from Section 3.7 once finalized

Proposed Waste Transfer Facilities

Include schedules for permitting and construction, description of necessary actions and their timing

East Baltimore Transfer Station

5.6 Waste Processing and Recycling System

Existing Waste Processing and Recycling System

Include all waste processing and recycling facilities that are expected to remain in place over 10-year planning period. Note all waste streams that will be managed by these facilities

Note any planned improvements to existing facilities or any facilities that will be eliminated (if any will be eliminated, include closure date, projected use of each closed site, and the relationship of that use to the City's comprehensive land use plan)

Reference/list from Section 3.8 once finalized

Proposed Waste Processing and Recycling Facilities

Include schedules for permitting and construction, description of necessary actions and their timing

New Compost Facility

Yard waste compost facility mentioned in current SWMP, potential pilot-scale food waste composting facility? BIL grant for 5,000 ft^2 ASP or in-vessel system.

New C&D MRF

DPW mentioned this is in the CIP budget

5.7 Waste Disposal System

Existing Waste Disposal System

Include all waste disposal facilities that are expected to remain in place over 10-year planning period. Note all waste streams that will be managed by these facilities

Note any planned improvements to existing disposal facilities or any facilities that will be eliminated (if any will be eliminated, include closure date, projected use of each closed site, and the relationship of that use to the City's comprehensive land use plan)

Quarantine Road Landfill

BRESCO

Note that current contract with BRESCO expires in 2031 and City does not have intention to extend this contract. Indicate plan to move past BRESCO – combination of waste reduction efforts, QRL expansion, and out-of-City transfer.

List other facilities from Section 3.9 once finalized

Proposed Waste Disposal Facilities

Include schedules for permitting and construction, description of necessary actions and their timing