

Final Report of the Baltimore County Solid Waste Work Group

June 17, 2021



In cooperation with
Northeast Maryland Waste Disposal Authority
www.nmwda.com



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List of Common Acronyms

Acronym	Meaning
AD	Anaerobic Digestion
SWMP	Baltimore County Solid Waste Management Plan
BRESCO	Baltimore Refuse Energy Systems Company (also called Wheelabrator Baltimore)
BSWM	Baltimore County Bureau of Solid Waste Management
CAF	Central Acceptance Facility (Baltimore County)
C&D	Construction and demolition
CH ₄ or CH ₄	Methane
CO ₂ or CO ₂	Carbon Dioxide
EPS	Baltimore County Department of Environmental Protection and Sustainability
ESL	Eastern Sanitary Landfill Solid Waste Management Facility
EPA or U.S. EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FS	Food scraps
FY	Fiscal Year
GHG	Greenhouse Gas
GO	General Obligation, as in General Obligation bonds
HH	Household
HHW	Household Hazardous Waste
MDE	Maryland Department of the Environment
MRF	Material Recovery Facility
MES	Maryland Environmental Service
MTCO ₂ E	Metric tons of carbon dioxide equivalent
MSW	Municipal Solid Waste
MWP	Mixed Waste Processing
NGO	Non-Governmental Organization
NMWDA	Northeast Maryland Waste Disposal Authority
RDOC	Resident Drop-Off Center
SMM	Sustainable Materials Management
SS	Single stream
SRF	Solid Recovered Fuel
SSO	Source-separated organics
SWMP	Solid Waste Management Plan
TPY	Tons per year
URDL	Urban-Rural Demarcation Line
WAF	Western Acceptance Facility (Baltimore County)
WARM	Waste Reduction Model
WM	Waste Management, Inc.
WTE	Waste-to-Energy
YM	Yard Materials

1 Executive Summary

Baltimore County Executive, John Olszewski, Jr., created the Solid Waste Work Group in October 2020 *to examine existing waste collection and disposal practices, and make recommendations for a more sustainable future*. The Executive Order charged a Work Group with examining the County’s current solid waste collection and disposal practices and making recommendations for implementing innovative industry practices and trash diversion strategies to reduce the overall volume of trash produced in Baltimore County.

The GBB Team (GBB, Inc. and EA Engineering, Science, and Technology, Inc., PBC) was competitively selected by the Northeast Maryland Waste Disposal Authority (NMWDA) to assist Baltimore County, MD (County), with facilitating the Work Group and developing recommendations for Baltimore County’s Recycling and Solid Waste System (“Report”). The resulting Report here represents an end-to-end review of the Recycling and Solid Waste System (“System”) along with a set of recommendations, timelines, and estimated cost of implementation for improving the System over the next five (5) fiscal years.

After an eight (8)-meeting schedule from November 2020 through March 2021, the 18-Member Solid Waste Work Group held its final meeting on March 4, 2021, featuring a presentation of the Proposed Work Group report Strategies (Strategies) and verbal feedback from members of the public (25 total who attended and were able to speak). Other public feedback was submitted to the dedicated Baltimore County email address for this Report, some throughout the entire Work Group effort.

The recommendations presented herein reflect the background work performed; Work Group Member feedback from Briefing Memos and presentations; the added Hauler Subgroup effort; an online digital survey with 6,777 respondents; and public comment. The nineteen (19) recommendations are grouped into five (5) categories and the recommendations for each are summarized as follows:

Collection

1. Consider Service Agreements
2. Consider Eliminating Plastic Bags for Yard Materials
3. Consider Technical Assistance to Haulers
4. Consider Recycling Carts
5. Consider Pilot Projects

New Programs & Services

6. Consider Bulk Items (including mattresses) collection services with reuse/recycling
7. Consider Zero Waste Education and Outreach Strategies (Zero Waste Strategies)

Infrastructure & Disposal

8. Consider Transfer of 215,000 tons from ESL Annually
9. Consider Mixed Waste Processing
10. Consider Outsourcing Organics Processing to a Third Party for Pilot Projects
11. Consider ESL Vertical Expansion
12. Consider future planning for WAF as currently in flood plain
13. Consider Yard Material Transfer at CAF
14. Consider MRF Maintenance and Future Replacement

Financial & Contracts

15. Consider Solid Waste Full Cost Accounting
16. Consider New System Funding Mechanisms
17. Consider Regional Collaboration (all consulting)
18. Consider Plan for Long-Term Process for Collection

Other Considerations

19. Consider Organizational, Staffing and Equipment Review

For all recommendations, below is cost summary by fiscal year, as further detailed in Tables 5 and 6 in Section 9:

	FY22	FY23	FY24*	FY25	FY26
Capital	\$400,000	\$23,550,000	\$13,050,000	\$54,350,000	\$1,500,000
Operating	\$21,081,200	\$21,480,680	\$26,331,330	\$25,304,669	\$25,176,648
Total	\$21,481,200	\$45,030,680	\$39,381,330	\$79,654,669	\$26,676,648

***Not included is a FY 24-26 estimated range presented in Table 5 of \$100M to \$250M for the Mixed Waste Processing recommendation which could be private investment or a public-private partnership, not necessarily solely County cost.**

Each recommendation is presented and reviewed with more detail also in Section 9, including:

- Community Views/Input
- Work Group Feedback
- Policy/Legislative Impact
- Cost-Benefit
- Pros and Cons
- Other Considerations

Zero Waste Strategies are indicated throughout with green text and an asterisk (*); there is a demarcation on each recommendation summary as “Zero Waste” as well.

As recognized during this project, the County’s Solid Waste System is challenged by historical disinvestment. A system that was initiated decades ago, today it is in a precarious position without adequate capacity, infrastructure, hauler compensation or organizational veracity. To achieve a sustainable system closer to best practices, many decisions need to be made in the near term, with continued annual focused activity by the County to achieve the goals outlined in the Report.

In the original Executive Order establishing the Solid Waste Work Group, the County Executive noted: “Our residents expect and deserve a Baltimore County that will remain vibrant and livable for generations to come, and that means we must find more sustainable practices that protect our planet and reduce the amount of garbage we create,” Olszewski said. “This group will help us map a path forward for the future.”

The *Final Report of the Baltimore County Solid Waste Work Group* herein is respectfully submitted to create that pathway **to less waste, and a more inclusive, livable, and vibrant Baltimore County.**

2 Baltimore County Enterprise Strategic Plan 2019 - 2022¹

The County has experienced significant demographic shifts (adding 150,000 residents in the last 30 years) and is looking to make transformative, strategic steps in policy and infrastructure that will meet the community's current and future needs with increasingly diverse residents, economic opportunities, and shrinking natural resources. County leadership is passionate about bringing change to the community.

The Strategic Plan is a comprehensive planning document that identifies the County's top goals for the next four years. The underpinning of the County's work is guided by the Mission, Vision, and Core Values.

- **Mission:** Baltimore County government delivers the highest standard of service to residents, businesses, and visitors and ensures effective, efficient, and ethical stewardship of County resources.
- **Vision:** Baltimore County is a national leader in delivering exceptional service and is an inclusive place to live, work, visit, and thrive.
- **Core Values:**
 - People want to live, work, play, and age in Baltimore County.
 - Residents have pride in Baltimore County.
 - Schools are strong, and communities are safe.
 - People have a positive experience doing business with Baltimore County.
 - Residents see a return on investment for County resources.

The Strategic Plan incorporates recommendations and a broad array of input from stakeholders into action. This work will be further defined through data-driven efforts as County Departments align their operations with the Strategic Plan. The Strategic Plan will be updated at the end of each year.

The Strategic Plan is comprised of six core goals and key strategies. The six goals reflect the County's strategic direction for FY 2019-2022. The key strategies are organized by year (timeframe) in which the action will be implemented. The Strategic Plan also includes critical success factors that will inform the County's progress toward meeting the goals.

- GOAL 1: VIBRANT COMMUNITIES
- GOAL 2: EDUCATIONAL EXCELLENCE AND LIFELONG LEARNING
- GOAL 3: EQUITABLE DECISION-MAKING
- GOAL 4: SUSTAINABILITY GOAL
- GOAL 5: GOVERNMENT ACCOUNTABILITY
- GOAL 6: WORKFORCE EMPOWERMENT

The County's SUSTAINABILITY GOAL (Goal 4) focuses on ensuring all residents have access to high-quality and affordable housing, cultural and recreational opportunities in safe communities, with five strategies below:

1. Prepare a comprehensive master community facilities and infrastructure plan for the Capital Improvement Program (CIP), and sustainability against climate change;
2. Develop enhanced land and use management process;
3. Expand the County's transportation infrastructure to promote connectivity, reduce gaps, and promote multi-modal options;
4. Reduce county government energy consumption by 50% by 2030;
5. Build and enhance resiliency amongst all county infrastructure development.

¹ Link: <https://www.baltimorecountymd.gov/departments/executive/strategicplan.html>

3 Statewide Legislative Initiatives

There are recent examples of statewide legislation that will inform the management of materials considering the pathways for disposal, and even material types that may be handled in the future. In some instances, there are several successive bills that were introduced to move the larger discussion forward in lieu of a one-stop shop type of bill that may have traded short-term efficacy for long-term viability and success.

In 2013, the General Assembly of Maryland passed a bill ([HB 1440](#)) enabling the Maryland Department of the Environment (MDE) to establish regulations for composting operation in the state. This followed on [HB817 of 2011](#), which created a study group to review and report on processes to improve composting in the state. A multi-faceted work group was convened under 1440, and the group undertook technical, policy and regulatory research to develop a regulatory framework for approval. This effort ultimately led to the promulgation of regulations for composting operators to use when developing and operating their facilities. Subsequent support for the larger policy of organics management in the state came under a bill to direct the State Highway Administration to include the use of compost in its specifications ([2014 House Bill 878](#), State Highway Administration - Compost and Compost-Based Products – Specification); where a detailed inventory of capacity and potential sources was identified in the state ([2017 HB 171 Ch. 384 - Environment - Yard Waste, Food Residuals, and Other Organic Materials Diversion and Infrastructure – Study](#)), and a bill to address compostable products ([2017 House Bill 1349](#), Environment - Compostable, Degradable, and Biodegradable Plastic Products – Labeling). This year, [HB 264](#) (Solid Waste Management – Organics Recycling and Waste Diversion – Food Residuals) was introduced to establish a source separation requirement for organics based upon the volume of material generated and the availability of capacity within the region.

In 2019, the General Assembly of Maryland passed a polystyrene ban for the state ([SB 285](#), Chapter 579 ([Sections 9-2201 through 9-2207](#) of the Environment Article, Annotated Code of Maryland)). This will reduce the volume of materials collected for recycling and or disposal. This also removes the need for polystyrene collections for recycling in many areas, although this product is still used in certain shipping applications and therefore management is still required.

In 2021, bills were introduced ([SB 650](#) and [HB 1094](#)) at the request of the Baltimore County Administration to direct MDE to convene a study group to look at the development of a regional waste disposal facility while looking at recycling and other policy decisions. These bills were wrapped into [HB807](#), which calls for the creation of a Task Force to study solid waste management statewide in Maryland. While this proposed legislation did not pass this year, the County can still engage with NMWDA or MES and regional partners to develop a facility (or facilities) that move the County, and the region, towards a more sustainable future. This more local process can proceed without the state level mandate for reporting that may yield a more County-centric product that better benefits the residents. [HB 264](#) did pass both chambers this year, and once enacted will place a requirement on entities producing a certain number of organics to separate the materials and send them to a reclamation, composting or anaerobic digestion facility. The County may have more zoning reviews to perform for new composting/anaerobic digestion facilities. The County's planning efforts may be informed in the future by other state-led initiatives (e.g., specific material bans, landfill bans, bottle redemption programs or new mandated recycling/diversion targets). County staff and leadership will need to be involved in these conversations moving forward.

4 Work Group Report Project Methodology

Baltimore County Executive, John Olszewski, Jr., created the Solid Waste Work Group in October 2020 *to examine existing waste collection and disposal practices, and make recommendations for a more sustainable future*. After an eight (8)-meeting schedule from November 2020 through March 2021, the 18-Member Solid Waste Work Group held its final meeting on March 4, 2021, featuring a presentation of the Proposed Strategies and verbal feedback from members of the public (25 total who attended and were able to speak). Other public feedback was submitted to the dedicated Baltimore County email address for this Report, some throughout the entire Work Group effort.

As further outlined in the sections that follow, recommendations presented herein reflect the background work performed; Work Group Member feedback from Briefing Memos and presentations; the added Hauler Subgroup effort; an online digital survey with 6,777 respondents; and public comment. This effort was supported by the Northeast Maryland Waste Disposal Authority (NMWDA) and advisors Gershman, Brickner & Bratton, Inc. (GBB), solid waste management consultants and EA Engineering and Technology, Inc., PBC. Figure 1 - Baltimore County Solid Waste Work Group report Inputs to Inform Decision Making below presents the process visualization of the Work Group.



Figure 1 - Baltimore County Solid Waste Work Group report Inputs to Inform Decision Making

As the process advanced, the initial 18-Member Solid Waste Work Group was augmented by a Hauler Subgroup, including a set of three (3) meetings and an All-Hauler meeting to bring feedback to the Work Group specific to residential collection. Two additional haulers and an outside advisor who were not on the Work Group were added to the Hauler Subgroup, in addition to certain Work Group members.

Throughout its meetings, the Work Group was guided by the following questions:

- How to prevent, reduce, reuse?
- What to recycle / divert?
- How to collect and process?
- What to do with what is left?
- How to finance?

Additionally, the Solid Waste Work Group defined the three (3) pillars of the Zero Waste concept for the County:

- 1.) Reduction and reuse of materials, e.g., EPR/Product Stewardship (also to increase recycling), food capture and distribution, bulky material collection for reuse/donation, promotion of refill/reuse packaging models at stores;
- 2.) Increased recycling, e.g., current curbside materials, food scraps, mattresses, electronics, paint; and
- 3.) Use of a sustainability lens for what is left.

Zero Waste Strategies are indicated throughout with green text and an asterisk (*); there is a demarcation on each recommendation summary as “Zero Waste” (see image to the right).



Zero Waste Strategy

Following the March 4, 2021 meeting, the County then requested the Work Group’s input on the Proposed Work Group report Strategies using an online Prioritization Poll (17 of the 18 Members participated). For each of the Strategies, Work Group Members were asked to select a priority level for inclusion in the Work Group report: "I Do Not Advise", "Low Priority", "Medium Priority" or "High Priority". Interim recommendations for FY 22 were presented in Mid-March and are presented in Appendix 10.5.

This final report reflects the summary of all nineteen (19) Strategies considered by the Work Group as possible recommendations for consideration.

4.1 Project Management Team, Solid Waste Work Group and Hauler Subgroup

There were 18 Members of the Solid Waste Work Group initially designated by the [Executive Order](#) on October 16, 2020. County Administrative Officer (CAO) Stacy Rodgers was the Chair of the Solid Waste Work Group and was supported by a Project Management Team including NMWDA and GBB team members.

As the process advanced, the Hauler Subgroup effort was initiated with a set of three (3) meetings (chaired by Ms. D’Andrea Walker, Acting Director, Department of Public Works and Transportation (DPWT)) and an All-Hauler meeting to bring feedback to the Solid Waste Work Group related specific to collection. Two additional haulers and one additional outside advisor who were not on the Work Group were added to the Hauler Subgroup, in addition to certain Work Group Members.

See Table 1 - Project Management Team, Solid Waste Work Group and Hauler Subgroup, on the next page for a complete list of members involved. *A note of gratitude to all involved for the dedication to this project on a condensed timeline.*

Table 1 - Project Management Team, Solid Waste Work Group and Hauler Subgroup

Member Names	Project Mgmt Team	Solid Waste Work Group	Hauler Subgroup
Stacy L. Rodgers , County Administrative Officer (Chair)	✓	✓	
D’Andrea Walker , Acting Director for DPWT (Chair Hauler Subgroup)	✓	✓	✓
Ed Adams , Vice President, JMT; Former Director of DPWT		✓	
Eric Addison , Citizen Representative		✓	✓
Mike Beichler , DPWT Solid Waste Bureau Chief	✓	✓	✓
James Benjamin , County Attorney		✓	
Sara Bixby , Deputy Executive Director, Solid Waste Association of North America		✓	
Seth Blumen , County Energy and Sustainability Program Coordinator		✓	
Matthew Carpenter , Office of Budget and Finance	✓	✓	
Shane Robinson , Executive Director, Trash Free Maryland		✓	
Willie Goode , President/CEO, Goodie Companies, Inc.		✓	
Michelle Grace , Owner, Shelz Sanitation		✓	✓
Cara Hill , Citizen Representative		✓	
Lois Jacobs , Chair, Baltimore County Advisory Commission on Env. Quality		✓	
Steve Lafferty , Director of the Office of Planning and former County Chief Sustainability Officer		✓	
Chaz Miller , Board Member, Maryland Recycling Network		✓	
Israel "Izzy" Patoka , County Councilman, District 2		✓	✓
Robert Singleton , General Partner, Cockey's Enterprises, Inc.		✓	✓
Robin Ennis , former Montgomery County, MD Chief of Collection			✓
Jim Haden , J&J Trash Removal Inc. dba Eagle Transfer Services			✓
Tim Merson , Mercorp Services, Inc.			✓
County: Sevetra Peoples, Special Assistant to the CAO	✓		
NMWDA: Chris Skaggs, Executive Director; Andrew Kays, Deputy Director; Kitty McIlroy, Project Manager	✓		
GBB: Jennifer Porter (*), Vice President, <i>Project Manager</i> ; Steve Simmons, President; Harvey Gershman, Strategic Advisor; Paige Davis, Consultant I	✓		
Additional Subject Matter Experts: GBB - Sam Lybrand (collection, transfer, drop-off); David Seader (fiscal/accounting); Brad Kelley-GBB (MRF); Corinne Rico-GBB (organics); Ashlea Smith-GBB (survey); EA - Laura Jo Oakes (ESL/disposal) *Jennifer Porter holds a Zero Waste Principles and Practices Certification issued jointly by California Resource Recovery Association (CRRA) and SWANA.			

4.2 Sustainable Materials Management

The Work Group also used a sustainable materials management (SMM) hierarchy to guide its work. A SMM or waste hierarchy (see Figure 2 below) is a tool used to establish preferred management practices for waste materials – so that waste generation is prevented in the first place. This hierarchy is in line with GBB’s vision and mission to use discarded materials as resources rather than allowing them to be wasted. Such a strategy has significant environmental, economic, and social benefits.

By using this hierarchy as a guide to prioritize action, the County can consider the entire lifecycle of materials and the importance of the choices that society makes about these materials, starting with preventing material usage, rethinking the policies and incentives for materials and waste, and redesigning products to facilitate actions such as reuse, remanufacturing, and recycling farther along in the material lifecycle.

Achieving these goals will require collaboration across the entire value chain, and across multiple departments of government.

Sustainable Materials Management Hierarchy

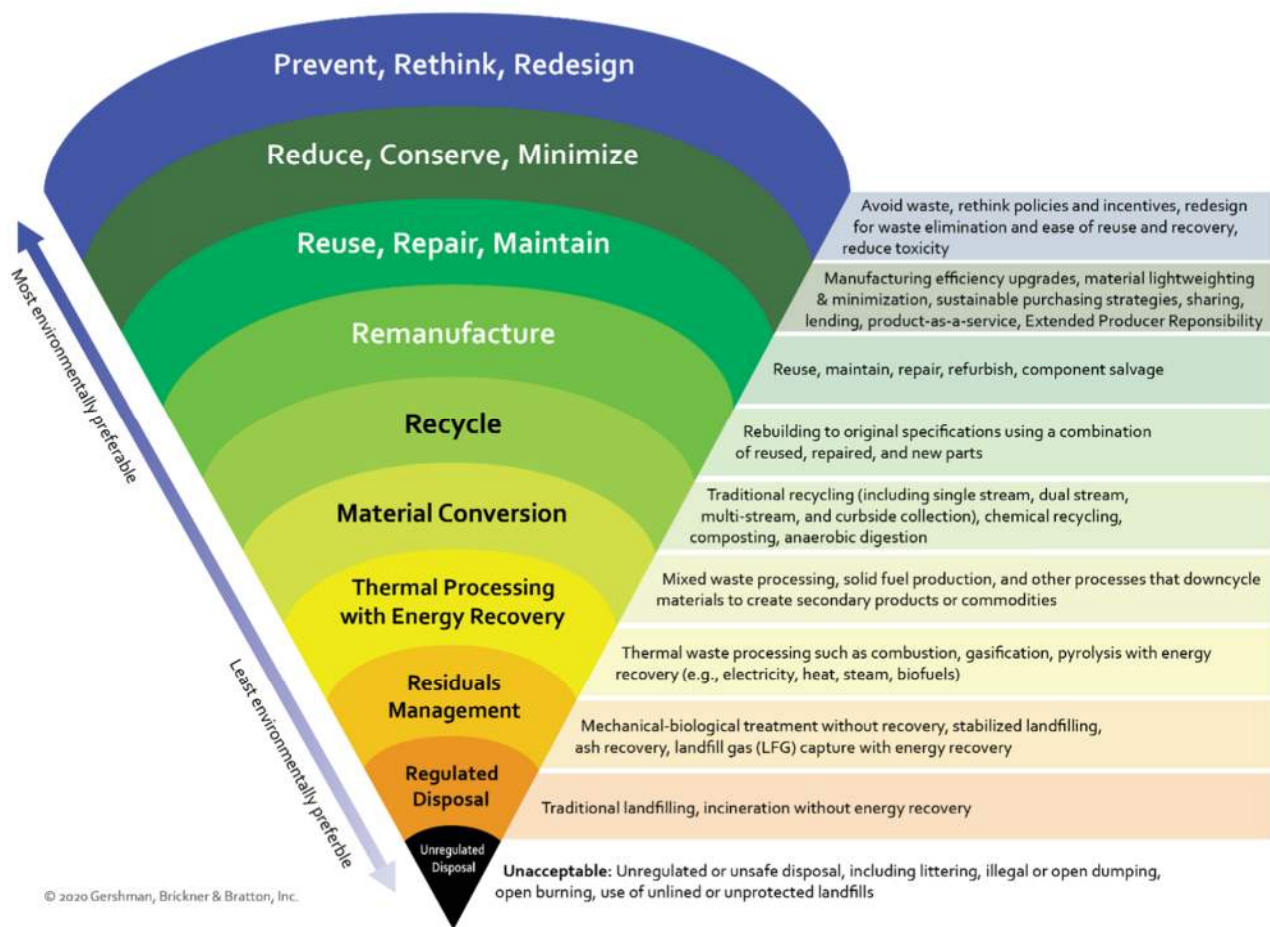
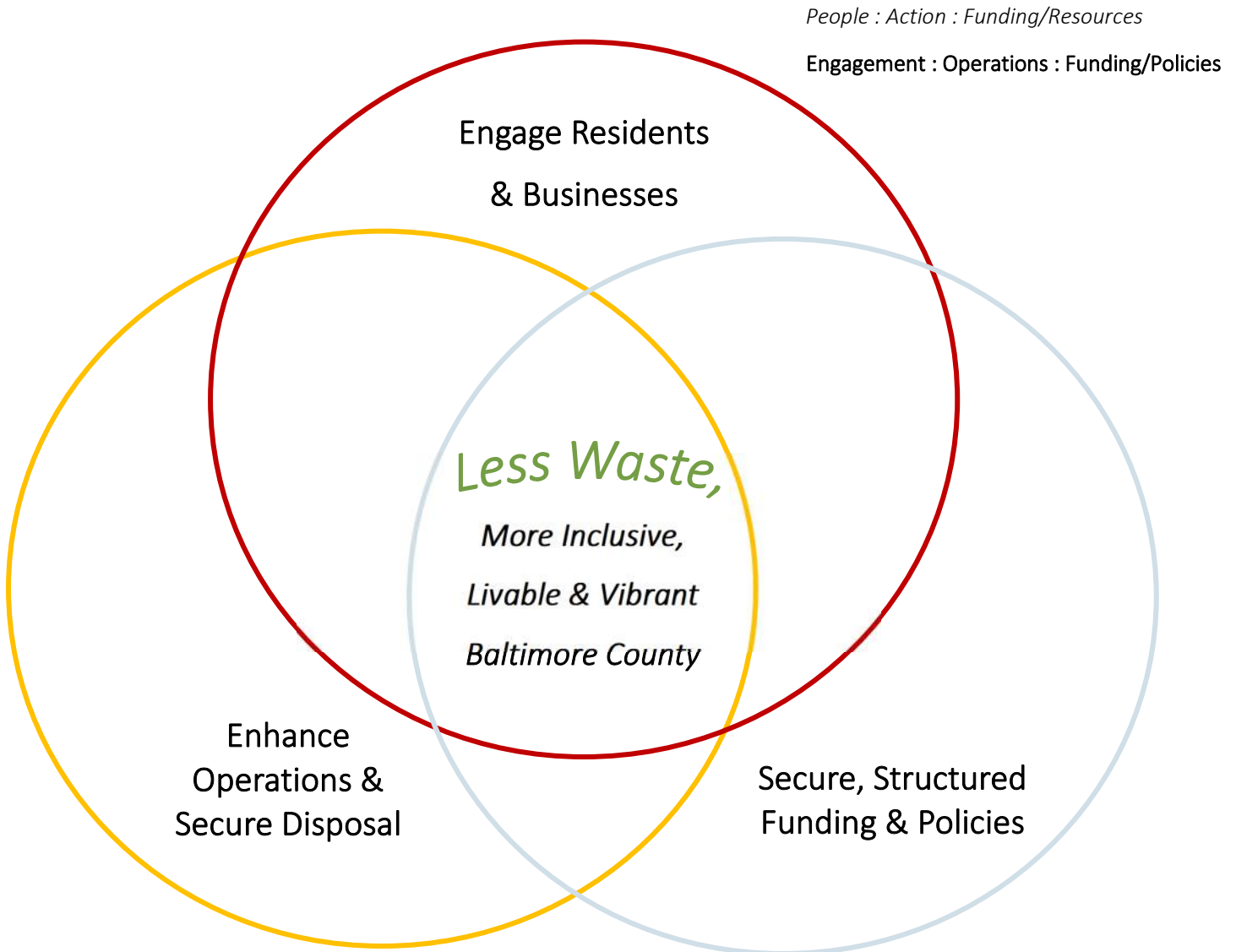


Figure 2 - Sustainable Materials Management Hierarchy (GBB)

4.3 Strategic Work Group Report Framework

Finally, the Work Group designed Figure 3 - Baltimore County Work Group report Venn Diagram for Strategy Development as a framework to guide its Strategy development, with the center goal of **Less waste, and a more inclusive, livable, and vibrant Baltimore County**, reflecting the original charge from the Executive Order.

Figure 3 - Baltimore County Work Group report Venn Diagram for Strategy Development



5 System Review

5.1 Background Memo

The first and major task of this assignment was for the GBB Team to prepare a Background Memo to review the current elements of the County's System including:

- Waste and recycling collection
- Hauler compensation
- Residents drop off areas
- Materials recovery facility (MRF)
- Yard Materials Site
- County policies, programs, and education
- Review of major contracts
- Current disposal facilities, practices, costs, long-term needs
- Current diversion, waste reduction, and sustainability goals and programs

To prepare the background portion of the Background Memo, GBB and EA reviewed and analyzed data provided by the BSWM, made field visits to each of the County's facilities, interviewed County key management and staff, and researched information from related entities. Sections 1-6 of the Background Memo (see Appendix in 10.1) present the results of these efforts. Section 7 of the Background Memo (with 3 appendices) contains the full Best Practices review.

Baltimore County, MD has a diverse landscape. The County surrounds the City of Baltimore to the south, west, and east; has a significant coastline along the Chesapeake Bay and its tributary rivers to the southeast; and borders with Pennsylvania to the north; Harford County to the east; and Carroll County to the west (see Figure 4). Baltimore County is a mix of urban, suburban, and rural areas with the majority of its population within a band of urban areas, radiating several miles along the border with the City of Baltimore.



Also unique to Baltimore County’s System is the impact of the Urban-Rural Demarcation Line (URDL, pronounced “urdle”). The Baltimore County Planning Board established the URDL in 1967 to “maximiz[e] the efficiency of County revenues on infrastructure in urban areas and preserve important natural and agricultural resources in rural areas.” The URDL serves as the boundary for urban versus rural areas as well as defines the areas that receive certain waste collection services—those that live within the URDL (in urban areas) receive waste, recyclables, and yard materials collection; those that live outside of the URDL (in rural areas) receive the same services, except for yard materials which are not collected outside of the URDL. See Figure 4 for the areas that are within the URDL (indicated with a green line).

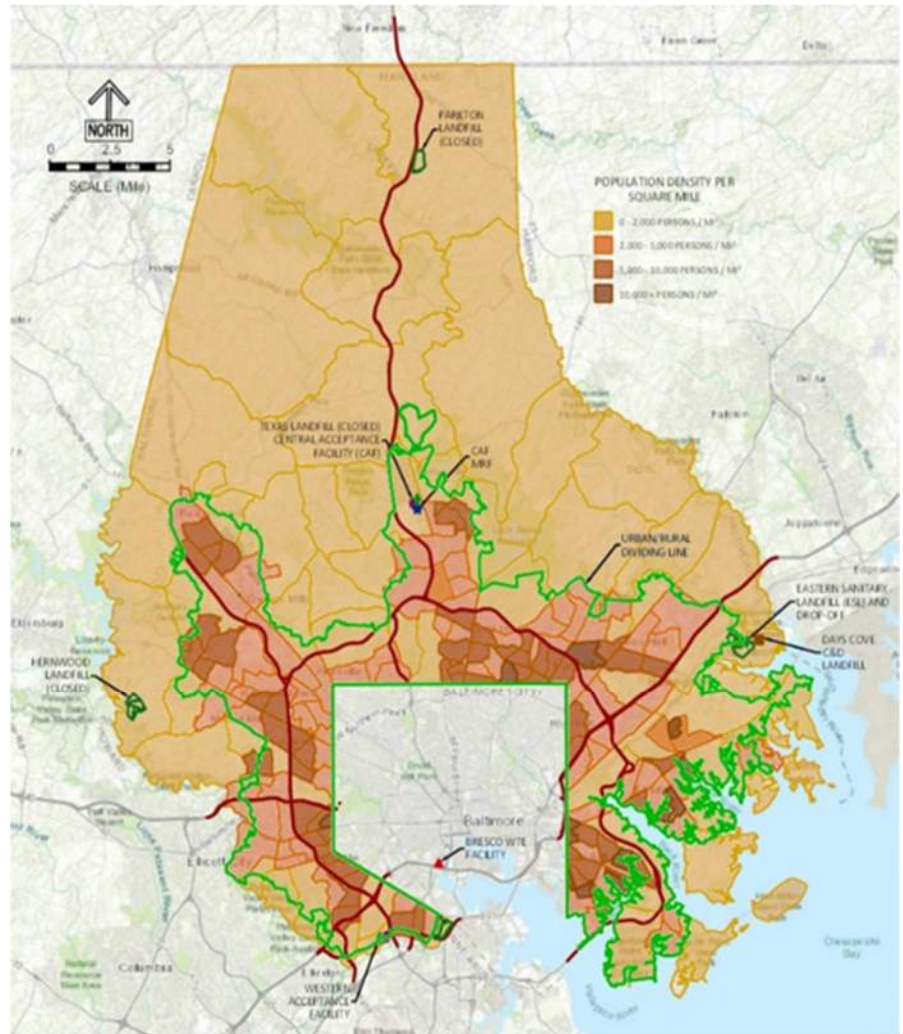


Figure 4 - Map of Baltimore County, MD, with Population Density, showing the URDL in green

Under the Department of Public Works and Transportation, the Bureau of Solid Waste Management (BSWM) is the County agency that is primarily responsible for solid waste management, particularly the residential sector. Major areas of responsibility include managing the County’s waste prevention and recycling program; collecting single family curbside residential trash, recyclable and yard materials as well as trash from multi-family units, large apartment buildings, condos, rental townhouses, County facilities, and religious properties; and operating the County’s solid waste management facilities: Eastern Sanitary Landfill Solid Waste Management Facility (ESL), the Central Acceptance Facility (CAF), and the Western Acceptance Facility (WAF) (See Figure 5).

More specifically, Baltimore County's solid waste management responsibilities include:

- Providing weekly recycling and trash collections for 334,000 households, and bi-weekly yard materials collection from April through December to 70% of these households;
- Providing collection services for multi-family units (81,061) and large apartment buildings (6,619), as well as County facilities and religious properties;
- Managing the County's waste reduction, recycling, and composting programs;
- Operating the active ESL, which includes two transfer stations, yard materials composting and mulching operation, and a RDOC and reuse/recycling center;
- Properly maintaining County-owned, closed sanitary landfills;

- Overseeing the operation of the two solid waste management facilities: Western Acceptance Facility (WAF) in Halethorpe and Central Acceptance Facility (CAF) in Cockeysville; both of which are transfer stations and include RDOCs. CAF also has a MRF for single stream recyclables, such as paper, and containers, bottles, and cans;
- Coordinating with the NMWDA in overseeing the operation of the Southwest Resource Recovery Facility, a waste-to-energy facility located in Baltimore City and operated by BRESKO;
- Entering into contracts for the management of waste, such as from Harford County, MD, and entering into private contractual relationships for access to transfer and disposal capacity (currently with Waste Management, Inc., and Republic Services);
- Preparing and updating the County’s recycling plan and solid waste management plan;
- Coordinating with other jurisdictions to formulate regional solid waste management and recycling plans.

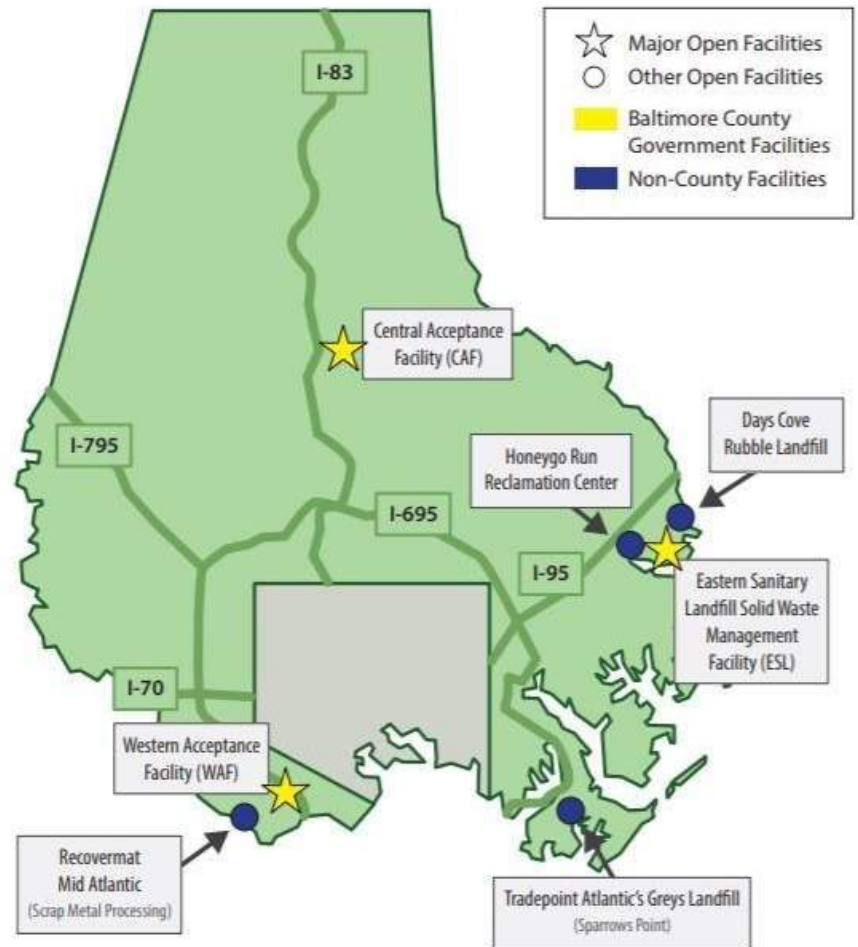


Figure 5 - Solid Waste Facilities used by Baltimore County and/or located in Baltimore County
(Source: Solid Waste Management Plan 2019-2028)

The County’s Department of Environmental Protection and Sustainability (EPS) also plays a major role in the County’s System, including but not limited to issuing an annual permit; minor, infrequent inspecting of solid waste facilities; minor, infrequent inspecting of collection vehicles; accepting certain materials for recycling or proper disposal; responding to hazardous waste emergencies; and reducing litter. The Maryland Department of the Environment conducts major, detailed and frequent solid waste facility inspections.

Thirty-nine (39) private collection companies—many of which are long-standing, family-owned businesses—collect residential trash, yard materials, and recycling on County-designated routes and then deliver the materials to County-designated facilities. Commercial trash and recycling collection is strictly a function of the private sector, although Baltimore County encourages commercial recycling and provides technical assistance and recognition to that sector.

In addition to its own disposal facilities, Baltimore County currently can use contracts for landfill disposal at out-of-county landfills for its residential trash with Waste Management, Inc. (WM) and Republic Services (“Republic”). Baltimore County also recently entered into a new contract with BRESKO to take a minimum of 215,000 tons of trash per year through 2026.

The County imports waste under a contract with Harford County, Maryland. Under this August 2013 agreement, Baltimore County currently accepts all of Harford County’s single stream recyclables for sorting at the CAF. In addition, Baltimore County receives approximately 153,000 tons of trash per year from Harford County. This imported trash is taken to ESL, where it is then transferred out-of-County to disposal sites (currently through a contract with WM). This arrangement is a revenue generator for Baltimore County.

Maryland Department of the Environment’s Annual Waste Diversion Goal for the state of 40% by 2030 is promoted through a source reduction credit system (SR), which acts as an incentive to counties to boost their waste diversion rate by up to 5%. Maryland achieved a statewide waste diversion rate of 48.4% in 2017 (the last year data is available). The 48.4% waste diversion rate was composed of a 44.1% Maryland Recycling Act (MRA) recycling rate and a 4.3% SR credit. In keeping with the state’s goals for waste diversion, Baltimore County implemented a goal of achieving 45% waste diversion each year starting in 2015. The County has not reached the 45% waste diversion in the 2015 – 2018 period (see Table 2 below for details).

Table 2 - Baltimore County, MD Waste Diversion Rates (2015-2018)

Year	Baltimore County Recycling and Waste Diversion Rates
2015	34.8% recycling rate; 39.8% waste diversion rate*
2016	36.5% recycling rate; 41.5% waste diversion rate*
2017	39.3% recycling rate; 44.3% waste diversion rate*
2018	34.8% recycling rate; 39.8% waste diversion rate*
<i>* Each year above includes the maximum 5% source reduction credit</i>	

5.2 Strengths and Weaknesses

The second meeting of the Work Group (see Section 7 for more details) on December 3, 2020, featured a presentation of a compilation of the overall comments developed during the creation of the Baltimore County Background Memo and covered the key elements of the County’s System: collections, contracts, transfer stations, MRF operations, yard material collection and processing at ESL, and waste diversion outreach and education.

Table 3 - Baltimore County Recycling & Solid Waste System Strengths and Weaknesses (presented by GBB Team, December 3, 2020) on the next pages displays the summary of strengths and weaknesses which moved the Work Group process forward in evaluating possible Strategies for change.

Table 3 - Baltimore County Recycling & Solid Waste System Strengths and Weaknesses (presented by GBB Team, December 3, 2020)

STRENGTHS	WEAKNESSES
Overall	
<ul style="list-style-type: none"> • Combined commercial and residential recycling rate 	<ul style="list-style-type: none"> • Low residential and multi-family recycling rate
<ul style="list-style-type: none"> • Convenient recycling program 	<ul style="list-style-type: none"> • Non-contract arrangements for County collection services
<ul style="list-style-type: none"> • Variety of drop-off recycling opportunities 	<ul style="list-style-type: none"> • General funds supported
<ul style="list-style-type: none"> • Few complaints 	
Contracts	
<ul style="list-style-type: none"> • BRESCO agreement provides capacity and attractive rate through 2026 	<ul style="list-style-type: none"> • Must provide disposal capacity to Harford County through 2034
<ul style="list-style-type: none"> • Out-of-state landfill capacity 	<ul style="list-style-type: none"> • Republic landfill deal expiring in 2024
<ul style="list-style-type: none"> • Transportation contracts 	
<ul style="list-style-type: none"> • Volume from Harford County 	
<ul style="list-style-type: none"> • Landfill gas to energy system contracted through 2045 	
Financials	
<ul style="list-style-type: none"> • Low overhead 	<ul style="list-style-type: none"> • Unknown true cost of services
	<ul style="list-style-type: none"> • Not in control of capital project financing
Transfer Station	
<ul style="list-style-type: none"> • Well designed 	<ul style="list-style-type: none"> • WAF in flood plain
<ul style="list-style-type: none"> • Efficiently operated 	<ul style="list-style-type: none"> • WAF utilizes old & worn compactor units
<ul style="list-style-type: none"> • Provides redundancy 	
<ul style="list-style-type: none"> • Good access roads 	
<ul style="list-style-type: none"> • Good locations 	
<ul style="list-style-type: none"> • Serviced by high quality transportation company 	
RDOCs	
<ul style="list-style-type: none"> • Well laid out 	<ul style="list-style-type: none"> • Requires continued management & oversight
<ul style="list-style-type: none"> • High level of service 	<ul style="list-style-type: none"> • 60,000 tpy of waste = significant expense
<ul style="list-style-type: none"> • Accepts multiple materials 	<ul style="list-style-type: none"> • WAF in flood plain
<ul style="list-style-type: none"> • Separate residential & truck traffic 	<ul style="list-style-type: none"> • CAF/WAF/ESL signage and onsite diversion program communication/direction could be improved

STRENGTHS	WEAKNESSES
Collection	
<ul style="list-style-type: none"> • Resilience working under challenging conditions • Long-term commitment from hauler group 	<ul style="list-style-type: none"> • Below market compensation • Truck performance/reliability
<ul style="list-style-type: none"> • Supports local collection companies • Low costs service for residents 	<ul style="list-style-type: none"> • Inconsistent cart system • No same day collection • Technology • Inefficient route sizes • No equipment investment • No consistent messaging • Oversight & enforcement • Service delivery at risk • No HHW and bulky collection
Outreach/Education	
<ul style="list-style-type: none"> • Informative website • Multiple innovative tools 	<ul style="list-style-type: none"> • English only • No info on products made from recyclables • Need to clarify which plastics accepted in recycling program
MRF	
<ul style="list-style-type: none"> • Cleanliness & maintenance • System operating well • Very clean commodity bales • Inventory well organized • Glass recovered again 	<ul style="list-style-type: none"> • Aging facility • No expansion/upgrade room • Loading dock area too small • Incompatible software • Volatile commodity pricing • Low recovery percentage • Not ideal for public education
Organics	
<ul style="list-style-type: none"> • Yard material collection • Free compost/mulch • Bulky yard material at ESL 	<ul style="list-style-type: none"> • Cannot handle large volume • Lack of enforcement ability • Missing opportunity to expand feedstock • Inconsistent compost & mulch availability • Missing revenue generating opportunity • No food scrap diversion • Plastic in compost/mulch due to collection in plastic bags
Eastern Sanitary Landfill	
<ul style="list-style-type: none"> • Fully compliant • Maximizing capacity • Capacity allows for planning 	<ul style="list-style-type: none"> • Permitted capacity ending • Expansion opposition • No alternate site identified

6 Best Practices for Baltimore County

The definition of “best practice” can vary widely depending upon the goals and objectives of the jurisdiction involved. In the Background Memo, there is a full benchmarking section looking at Baltimore City, Montgomery County (and their respective recent planning efforts) and other communities.

For purposes of the County Work Group report background work, GBB defined best practices as:

1. County diversion, waste reduction, and sustainability goals designed to achieve 60% (or more) diversion of all waste generated in the County for reduction, reuse, recycling, and composting; and directing the remainder to disposal infrastructure that minimizes the impact on the environment; such goals should be equal to or greater than that required by the State.
2. County regulations that synchronize with the goals and objectives for sustainable solid waste management, including code changes, development of contract or franchise agreements and administrative rules.
3. County organization that is structured to support and carry out the goals and objectives above and stands as an enterprise activity charging fees and collecting revenues from all types of generators adequate to fully support costs as well as fund necessary reserve and emergency accounts.
4. Diversion, waste reduction, and sustainability programs and education appropriately staffed and funded taking advantage of community partnerships (College/University or Non-Governmental Organization-NGO), the Internet of Things (IoT) and social media to meet and exceed the goals established by the County.
5. Contracts in place to provide for access to services and infrastructure that the County cannot provide for itself, including BRESCO; such contracts should have terms generally medium to long-term to assure reasonable access over a reasonable base term, e.g., 5 to 10 years; include revenue sharing provisions that share the risk of value of products sold; include adjustments for inflation; and to the extent possible not include put or pay provisions, unless County-favorable considerations are in the contract.
6. Waste and recycling collection
 - o *County provided* – that have in place a reliable, state of the art set of services² provided by private parties procured competitively to serve specific areas of adequate size to support services with an economy of scale. Such services should collect waste and materials in a way that matches the infrastructure to which delivery is intended with the goal of same-day collection for all materials for all streams. One-bin systems could be possible with appropriate processing infrastructure.
 - o *Privately provided* – that follow regulations that require collection of waste and materials in a way that matches the infrastructure to which delivery is intended, including franchising/contracting for these services.
7. Transfer Stations owned by the County located geographically convenient for both County and privately provided haulers licensed in the County to use and for the County to transfer to appropriate processing and disposal infrastructure efficiently.
8. RDOCs at County-owned sites that are geographically convenient for residents to access and use for a broad range of reuse, recycle, compost, HHW, and waste placement. Design of the site allows for the County to manage materials appropriately and direct to the appropriate infrastructure.
9. County owned Materials Recovery Facility (such as CAF) to process all County collected source separated recyclables for sale to the marketplace and reintroduction into making products for the economy.

² State of the art services can include elements such as automated or semi-automated collection of rolling carts with attached lids; on-board customer service functionalities (RFID systems for service verification or denial certification, as well as for pay-as-you-throw weight/volume based tracking for later use if desired, once the current system optimization has matured); optimized computer-generated routes; larger route areas; contracts awarded via bidding/proposal process; non-diesel fuel for trucks, i.e. Compressed Natural Gas (CNG) or electric to minimize environmental footprint; etc.

10. A Yard Materials Site owned by the County with infrastructure modified to accommodate a robust amount of food scrap, in addition to the current supply of yard materials; a private operation should be considered to help process and market the material from any expanded operations that could put the site over capacity.
11. Existing Landfill capacity redesigned to maximize capacity siting footprint using mechanical stabilized walls; expanding the footprint should also be considered along with relocation of existing facilities.
12. System's revenue, operation, capital funding, and reserve funding through an enterprise arrangement set up separate from the County's General Fund. In this way, fees and charges can be established to fully fund and support ongoing and future functionalities. Additionally, system revenue bonds can be used to keep long-term debt separate from County general obligation debt.

There are other elements of solid waste management systems that GBB considers best practices that the County system does not include and should be aware of, such as:

- Mixed waste processing for higher levels of organics and materials separation and recovery (typically with separate recyclables and organics collection programs)
- Expanded services at RDOCs and expanded RDOC locations for such things as reusables and non-curb-side recyclables such as textiles and clothing, HHW, paint, electronics, C&D, furniture, housewares, and other materials.
- Commercial Collection Franchises/Contracts.
- Utilizing closed landfills for new infrastructure sites/public beneficial use such as parks (like at the County's Southwest Area Park, a closed landfill in Halethorpe, MD), RDOCs, and/or location of renewable energy production from wind and solar energy.
- Construction, deconstruction, and demolition permitting regulations that encourage commercial and residential diversion through reuse and recycling of C&D materials to at least a 75% level.
- Access to energy conversion from waste infrastructure for disposal of non-recyclable, non-compostable waste, and non-divertible waste for a long-term period, e.g., 20 years.
- Partnerships with the for-profit business community to co-create the pathway to publicly stated sustainability and resiliency goals.
- Circular economy, upstream policies including single-use material bans at the retail level, disposal bans for certain commercial generators (e.g., food scraps at institutions/restaurants, mattresses at hotels), extended producer responsibility, promotion of reusable/refillable packaging models at stores, procurement/purchasing with recycled content, and product stewardship.
- Public education at infrastructure locations, including community gardens paired with composting.
- Bulky material collection services for residents with reuse functionality and partnering with NGOs for repair cafes.
- A headquarters office building located at one of the infrastructure locations that includes public education functionality.
- Use of CNG for transportation fuel or electric conversion for collection vehicles and transfer trailers.
- Solid Waste Advisory Committee made up of representatives from a cross section of stakeholders in the Solid Waste System to advise the County.

7 Work Group Presentations & Innovative Technologies

The specific goals for the Work Group were to review the County’s current state of solid waste management; to examine national industry best practices, innovative technologies in waste reduction/diversion, disposal, and outreach efforts; and to identify opportunities for improved performance, increased waste diversion/reduction and stable long-term operations. Toward those goals, the GBB Team presented during all WebEx meetings in Table 4; Industry experts as invited guests were added for Meetings #3-5 as detailed below.

Table 4 - Solid Waste Work Group Meeting Schedule and Topic Area Discussed

Meeting #	Date	Work Group Meeting Topic	Meeting Time
1	November 19, 2020	Residential Collection and hauler compensations	5PM -7PM
2	December 3, 2020	County system strengths and weaknesses	5PM-7PM
3	December 17, 2020	Best Practices from other Counties	10AM – NOON
4	January 7, 2021	Innovative ideas: Best practices for diversion, outreach & policy changes	10AM – NOON
5	January 21, 2021	Innovative ideas: Disposal technologies	10AM – NOON
6	February 4, 2021	Innovative ideas: System revenues, expenses, and financing	10AM – NOON
7	February 18, 2021	Facilitated discussion of best practices to be incorporated in the County system/Public Survey Report/Prioritization Activity	5PM – 7PM
8	March 4, 2021	Presentation to Stakeholders of draft Work Group Recommendations; Public testimony shared	5PM – 7PM

7.1 Invited Speakers

Meeting #3: Best Practices from Other Counties – Dec. 17, 2020

- **Delegate Terry L. Hill, M.D.**
Maryland House of Delegates, District 12
- **Matthew Young**
President, Sustainable Services, Mattress Recycling in Maryland
- **Rob Taylor**
Director of Grants & Community Development, The Recycling Partnership
- **Eric Monsen**
Vice President of Regional Sales, Environmental Solutions Group, 3rd Eye Systems

Meeting #4: Innovative ideas: Best Practices for Diversion, Outreach & Policy Changes – Jan. 7, 2021

- **Mel Gilles**
Recycling Education & Outreach Specialist, North Carolina Department of Environmental Quality
- **Baraka Poulin**
Sales Engineer, Engineered Compost Systems
- **Norma McDonald**
North America Sales Manager, Organic Waste Systems, Inc.

Meeting #5: Innovative ideas: Disposal Technologies – Jan. 21, 2021

- **Emily Dyson**
Director, Science Research & Development, BioHiTech Global
- **Pat Sears**
Corporate Development Officer, KilnDirect, LLC
- **Bridgett Luther**
Director of Sustainability, Continuous Materials, LLC
- **Rick Cochrane**
Senior Vice President - Business Development, Continuous Materials, LLC

Meeting #6: Innovative ideas: System Revenues, Expenses, and Financing – Feb. 4, 2021

- **Thierry Boveri, CGFM**
Senior Manager, Raftelis
- **Henrietta Locklear**
Vice President, Raftelis
- **Kari Ann Hodgson, P.E.**
Director, Solid and Hazardous, Waste Management Division, Collier County, Florida

Full presentations from all Work Group meetings, including those with invited speakers and otherwise, as well as Briefing Memos and supporting materials for each meeting: agenda, meeting notes, WebEx chat response, and email responses received to the dedicated email solidwasteworkgroup@baltimorecountymd.gov by both Work Group Members and non-Work-Group attendees are in the Appendices 10.2.1 through 10.2.8 herein. There was also an established project website which provided public information and project status at all times: <https://www.baltimorecountymd.gov/boards-commissions/executive/solid-waste-work-group>.

8 Additional Stakeholder Input

8.1 Hauler Subgroup

The County Executive (CE) held an online meeting with all haulers January 4, 2021 and announced that he has authorized a 2% payment increase for trash haulers for the second half of the fiscal year (January 2021 to June 30, 2021). This effort is part of the County's pandemic "economic recovery efforts." In addition, the CE advised that he is committed to aggressively advocating for funding in the FY22 budget to continue this 2% payment increase and looks forward to other recommendations from the Work Group regarding residential collection and solid waste operation overall.

At the same time, the Solid Waste Work Group created a breakout Hauler Subgroup to focus on collection specific issues. There was a series of three (3) WebEx meetings in January 2021, and a second all-hauler meeting on February 10, 2021. The Goal of Hauler Subgroup was to provide feedback on the Work Group's potential recommendations for how the County's collection services through the haulers should be changed to meet the County's needs overall. Feedback from the Hauler Subgroup recognized the needs of the haulers and especially cost implications.

The second meeting of the Hauler Subgroup featured guest speakers presenting program options for consideration:

- City of Portland, OR - Bruce Walker, Waste Collections Program Manager
- City of Ft. Worth, TX - Robert Smouse, Assistant Director – Solid Waste Services

Copies of all presentations are included in the Appendices 10.3.1 through 10.3.4.

The feedback from the Hauler Subgroup was presented to the Work Group during Meeting #7 on February 17, 2021 and was incorporated into the Strategy development for the Work Group Prioritization Poll.

8.2 Online Digital Survey

For the Online Digital Survey for residents and businesses, the County received 6,777 responses: 6,668 from residents and 109 from businesses. The surveys were open from January 5th to February 7th. The respondents had to be a resident or own a business in the County. The marketing efforts that took place to advertise the surveys included print advertisement at the RDOCs, on the County's and the Project's website locations, and on social media accounts (see Figure 7). The Work Group Members also encouraged their contacts and listservs to participate. All current Baltimore County residents above age 18 and businesses were eligible to participate. Full survey responses as well as all survey questions are in the Appendix 10.4.

Regarding key demographics of the survey, there was adequate representation of respondents in terms of age and zip code as respondents mirrored the County's stratification. The survey was representative for household size, age, and Baltimore County zip codes, but a higher percentage of homeowners responded to the survey compared to actual homeownership in the County. With online surveys, there is also self-selection bias given non-randomized surveys; however, the high number of responses helps to generalize results. The County received responses from a range of businesses, the highest being healthcare and social assistance, professional/scientific, and accommodation/hospitality. The following key findings were reviewed during the meeting:

1. Generally, respondents believe that they are provided with enough information to know what is not recyclable (47% agree, 40% somewhat agree), and the vast majority (91%) regularly recycle where they live. For those who do not recycle periodically, the most common reasons are that they are unsure of how to recycle or do not wish to (25%) or recycling is not available (23%).

2. There is more diversity in the way that residents manage their yard materials than how they manage trash or recycling. While 57% of respondents participate in curbside yard materials collections, 22% undertake backyard composting, 10% have a landscaper, and 8% take their materials to a drop-off site.
3. There is a strong preference for rolling carts for trash and recycling and a slight preference for a rolling cart for yard materials. There is a near split opinion for yard materials collection: using a rolling cart (38%), the service remaining as is (30%), or no preference either way (32%).
4. The vast majority (85%) of respondents are satisfied with the collection schedule the way it is, however, a majority (58%) of respondents would be supportive of consolidating the collection days for different material types (for instance, one day for the multiple material types).
5. Respondents prefer weekly trash (76%) and weekly recycling (86%) collection and have a split preference for yard materials collection between every-other week collection (51%) or weekly collection (47%)
6. Respondents indicated a general satisfaction (somewhat to very satisfied) with curbside collection services for trash (83%), recycling (82%), and yard materials (71%); similar and still general satisfaction with drop-off sites: trash (83%), recycling (78%) and yard materials (76%).
7. Respondents indicated that they are interested in expanding the list of materials collected using curbside collection services. Respondents highly requested the custom items, Residential Bulk Items (28%) and Plastic Bags & Flexible Plastic Film (26%). Additionally, respondents indicated a general willingness to pay for Bulk Items and Food Scraps.
8. The most common way that people would like to receive future information about waste management services are through a user-friendly website dedicated to waste management (25%), which aligns with the most frequent way people currently access information about waste management in the County.
9. Other than using the website, respondents rarely reach out for waste management information from other sources. This highlights the need to improve recycling education on the County’s website for all age groups.
10. 96% of respondents do not need special assistance with taking out their solid waste. However, 4% reported that they require assistance and many write-in answers suggested that they know someone who does. This equates to approximately 34,000 people (when applied to the County population) who need this special assistance in collection service.



Figure 6 - Solid Waste Survey Advertisement at Resident Drop-Off Center

- Most respondents answered the survey on a mobile device (63%). This indicates the prevalence of smartphone and tablet usage and supports the notion of considering more advanced apps for education and text-based waste management notifications.

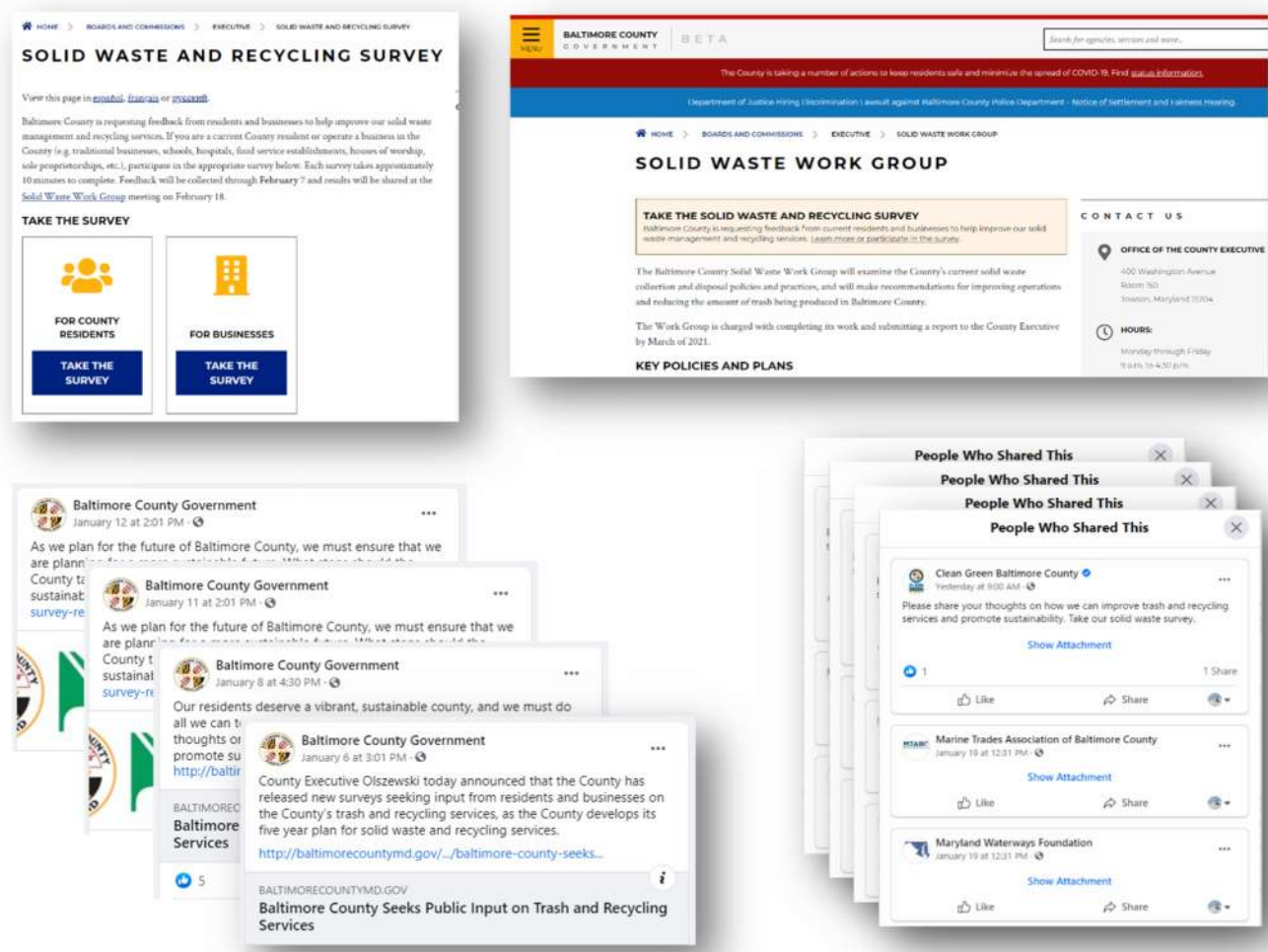


Figure 7 – Examples of advertising and sharing of the Baltimore County Waste Survey

8.3 Public Comment

The Project Management Team facilitated the public comment period of the Solid Waste Work Group Meeting #8. The public comment period was designed for the Solid Waste Work Group Members to receive comments from the public for consideration, not for immediate response. Each registrant had a maximum of two minutes to speak. The County provided a 2:00 minute timer on the screen and provided a verbal reminder when the two-minutes had expired. The speakers gave comments in the order that they registered. Fifty public members registered to speak in total; one registrant contacted the County and indicated that they no longer would be able to attend. By the end of the evening, twenty-five people provided comments, while the remainder of those who had signed up to speak were not present or unable to due to technical difficulties. See Appendix 10.2.8 for a full synopsis of comments provided during the public comment period in the Meeting #8 notes, as well as incorporated into the recommendation summaries that follow.

9 Recommendations

The tables on the following pages present information about the final recommendations. In Table 5, the *Recommendations Summary Table*, each recommendation is listed along with information about its capital and operating costs over the next five (5) fiscal years along with highlights of the benefits and staffing impacts on the County's solid waste organization. In Table 6, the *Recommendations Summary Table with Work Group Prioritization*, the ranking of the Strategies from the Solid Waste Work Prioritization Poll effort are provided, as well as the FY22 cost requirements and an overview of comments on benefits and considerations. The nineteen (19) recommendations are grouped into five (5) categories:

Collection

1. Consider Service Agreements
2. Consider Eliminating Plastic Bags for Yard Materials
3. Consider Technical Assistance to Haulers
4. Consider Recycling Carts
5. Consider Pilot Projects

New Programs & Services

6. Consider Bulk Items (including mattresses) collection services with reuse/recycling
7. Consider Zero Waste Education and Outreach Strategies

Infrastructure & Disposal

8. Consider Transfer of 215,000 tons from ESL Annually
9. Consider Mixed Waste Processing
10. Consider Outsourcing Organics Processing to a Third Party for Pilot Projects
11. Consider ESL Vertical Expansion
12. Consider future planning for WAF as currently in flood plain
13. Consider Yard Material Transfer at CAF
14. Consider MRF Maintenance and Future Replacement

Financial & Contracts

15. Consider Solid Waste Full Cost Accounting
16. Consider New System Funding Mechanisms
17. Consider Regional Collaboration (all consulting)
18. Consider Plan for Long-Term Process for Collection

Other Considerations

19. Consider Organizational, Staffing and Equipment Review

In the pages that follow, each recommendation is presented and reviewed.

Note: Zero Waste Strategies are indicated with green text and an asterisk in the tables on the next two pages. Zero Waste Strategies are also demarcated on each recommendation with the green label shown to the right.

Zero Waste Strategy

Table 5 - Recommendations Summary

Proposed Recommendations for the Baltimore County's Solid Waste System																	
#	Recommendation <i>(Zero Waste Strategies Indicated in Green and with *)</i>	Capital Costs					Annual Operating Costs					Benefits				Staffing	
		FY22	FY23	FY24	FY25	FY26	FY22	FY23	FY24	FY25	FY26	Revenue Increase	Cost Reduction	Increased Recycling and/or less Disposal = LF Life Extension	Less GHG (MTCO ₂ E)	+ or - County/Bureau FTEs	
Collection																	
1	Consider Service Agreements*						\$4,700,000 agreements; \$1,200,000 tippers; \$100,000 advisors	\$4,794,000	\$4,889,880	\$4,987,678	\$5,087,431						+1
2	Consider Eliminating Plastic Bags for Yard Materials*						\$50,000	\$35,000	\$25,000			Yes					
3	Consider Technical Assistance to Haulers						\$70,000	\$150,000	\$51,000	\$52,000	\$53,060		Yes		Yes		+1
4	Consider Recycling Carts*		\$13,800,000				\$20,000	\$40,000	\$1,818,316	\$1,788,316	\$1,798,316			16,688 tpy	(44,357)		+1
5	Consider Pilot Projects*		\$1,200,000 - \$2,400,000+				\$50,000	\$50,000	\$25,000			Yes	Yes for disposal costs	Yes	Yes		+1
New Services/Programs																	
6	Consider Bulk Items (including mattresses) collection services with reuse/recycling*						\$255,000	\$581,600	\$2,609,170	\$2,661,353	\$2,714,580			628 tpy	(1,808)		+1
7	Consider Zero Waste Education and Outreach Strategies*						\$753,000 - \$1,004,000; \$204,000 HHW	\$768,060 - \$1,024,000; \$208,080 HHW	\$783,421 - \$1,044,562; \$212,242 HHW	\$799,090 - \$1,065,453; \$216,486 HHW	\$815,071 - \$1,086,762; \$220,816 HHW	Yes	Yes	Yes	Yes		+3
Infrastructure/Disposal																	
8	Consider Transfer of 215,000 tons from ESL Annually						\$12,900,000	\$13,158,000	\$13,421,160	\$13,689,583	\$13,963,375			+6-9 years			
9	Consider Mixed Waste Processing*		\$100,000,000 - \$250,000,000				\$150,000	\$150,000						150,000 tpy	(90,021)		
10	Consider Outsourcing Organics Processing to a Third Party for Pilot Projects*							\$500,000	\$510,000	\$520,200				10,000 tpy	(6,131)		
11	Consider ESL Vertical Expansion		\$250,000	\$250,000	\$250,000	\$500,000 - \$1,400,000								+11-48 years			
12	Consider future planning for WAF as currently in flood plain	\$300,000	\$15,100,000	\$700,000	\$14,100,000	\$100,000							Yes		Yes		
13	Consider Yard Material Transfer at CAF*	\$100,000	\$100,000	\$2,500,000 - \$4,000,000										Yes	Yes		
14	Consider MRF Maintenance and Future Replacement*				\$40,000,000		\$93,200	\$640,000	\$1,280,000					Yes			
Financing/Contracts																	
15	Consider Solid Waste Full Cost Accounting						\$100,000										
16	Consider New System Funding Mechanisms						\$50,000										
17	Consider Regional Collaboration (all consulting)						\$10,000	\$50,000	\$100,000	\$100,000	\$100,000						
18	Consider Plan for Long-Term Process for Collection (all consulting)							\$50,000	\$320,000	\$223,600	\$152,308		Yes		Yes		+1
Other Considerations																	
19	Consider Organizational, Staffing and Equipment Review (all consulting)						\$125,000	\$50,000	\$25,000								

NOTES: 1. GHG is calculated using EPA WARM model Version 15. 2. The Recycling Partnership provided the tonnage and GHG modeling for Recycling Carts columns.

Table 6 - Recommendations Summary Table with Work Group Prioritization

Strategy #	Strategy	# Work Group Members Ranked Med & High Priority (of 17 total)	FY22 Cost	Benefits	Considerations
7	New Services/Programs: Zero Waste Education & Outreach*	17	\$1,208,000	Tied for highest ranked Strategy; Creates foundation of sustainable system	Ongoing annual cost once started
16	Financial/Contracts: New System Funding Mechanisms (Enterprise Fund)	17	\$50,000	Tied for highest ranked Strategy; Allows for future sustainable system funding plan	Would increase fees for residents
1	Collection: Service Agreements	16	\$6,000,000	Reflects Work Group and Hauler Subgroup input on best path forward	Ongoing annual cost increases
2	Collection: Eliminating Plastic Bags for Yard Materials*	16	\$50,000	Could see revenue from improved compost/mulch sales; Service cost increase included in Service Agreements Strategy	Increases service costs for collection
14	Infrastructure/Disposal: MRF Maintenance and Future Replacement	16	\$93,200	Allows for maintenance increase and feasibility initiation	Requires combining funds with WAF Strategy; initially was tied as add-on to the MWP Strategy
15	Financial/Contracts: BSWM Full Cost Accounting	15	\$100,000	Allows for future system planning	Does not address full system funding issues
17	Financial/Contracts: Regional Collaboration	15	\$10,000	Can move forward regardless of legislative bills under consideration	Long-term horizon
18	Financial/Contracts: Long-term Competitive Process for Collection*	15	-	No FY 22 cost	Will be significant change in future
19	Other Considerations: BSWM Organizational, Staffing and Equipment Review	15	\$125,000	Aligns with Goal 4 of Enterprise Strategic Plan	Additional operating costs
11	Infrastructure/Disposal: ESL Vertical Expansion	14	-	No FY 22 cost	Expensive capital project
12	Infrastructure/Disposal: Future planning for WAF as currently in flood plain	14	\$300,000	Significant operating issues from flooding occurrences	Should be concurrent with other feasibility planning
6	New Services/Programs: Bulk Items Collection*	12	\$255,000	Allows for initial program planning	High-cost service to provide in future
8	Infrastructure/Disposal: ESL Decision on Transfer of 215,000 Tons	12	\$12,900,000	Saves 6-9 years at ESL to develop disposal capacity in a regional project or otherwise; represents half of annual disposal at ESL	Greenhouse gas increases from additional trucking (unless waste is sent to waste-to-energy facilities which reduce greenhouse gas emissions compared to landfilling)
13	Infrastructure/Disposal: Yard Material Transfer at CAF*	14	\$100,000	Improves greenhouse gas emissions from less truck miles traveled	Plan with other infrastructure changes and potential collection changes such as weekly organics/yard material collection and/or plastic bag elimination for yard materials
10	Infrastructure/Disposal: Outsource Organics Processing to a Third party for Pilot Projects*	13	-	No FY 22 cost	Public interest expressed to expand current site or build new expanded facility
5	Collection: Consider Pilot Projects		\$50,000	Allows for testing of collection and material streams for long-term collection changes being considered	Ranked lower priority by the Work Group
	Pilot Project #1*	13		Same-day collection services for all materials with the same set outs except County supplying a new recycling cart.	
	Pilot Project #2*	12		Same-day collection services for all materials using new carts for each material, including food scraps.	
	Pilot Projects #3*	6		Food scraps collection outside URDL.	
4	Collection: Recycling Carts*	13	\$20,000	Revenue increase; landfill life extension; public interest	Adds material to MRF which is already at capacity; potential for increased contamination; \$13.8M capital investment for carts in coming years for entire County
3	Collection: Technical Assistance to Haulers	12	\$70,000	Supports technological and efficiency advancements for haulers	Ranked lower priority by Work Group
9	Infrastructure/Disposal: Mixed Waste Processing*	11	\$150,000	Significant greenhouse gas benefits compared to landfilling; could be a centerpiece processing facility to significantly reduce need for disposal	Great deal of public concern with perception that MWP is a prelude to more incineration and replacement of single stream program
TOTAL			\$21,481,200		

9.1 Recommendations: Collection

9.1.1 #1 - Consider Service Agreements

Establish Hauler 5-year Service Agreements starting July 1, 2021; current areas remain as-is with Trash/Recycling

Schedule	Description	Cost
FY22	<ul style="list-style-type: none"> • Tippers for 139 Hauler Trucks • Yard Material service: Hauler compensation increase • Trash and Recycling service: Hauler compensation increase • Advisors 	<ul style="list-style-type: none"> • \$1,200,000 • \$2,100,000 • \$2,600,000 • \$100,000
FY22-FY27 when Long-term contracting solution would start	<ul style="list-style-type: none"> • Service Agreement compensation pool increase 	<ul style="list-style-type: none"> • \$4,700,000 + CPI 2%

Community Views/Input:

- The majority (85%) of survey respondents are satisfied with the collection schedule the way it is; however, a majority (58%) of survey respondents would also be supportive of consolidating the collection days for different material types (for instance, one day for the multiple material types).
- Survey respondents are ready for change when it comes. For now, the collection schedule is not perceived negatively, but respondents seem to be supportive of consolidation of materials to be collected on the same day.
- Survey respondents prefer weekly trash (76%) and weekly recycling (86%) collection and have a split preference for yard materials collection between every-other-week collection (51%) or weekly collection (47%).

Workgroup Feedback:

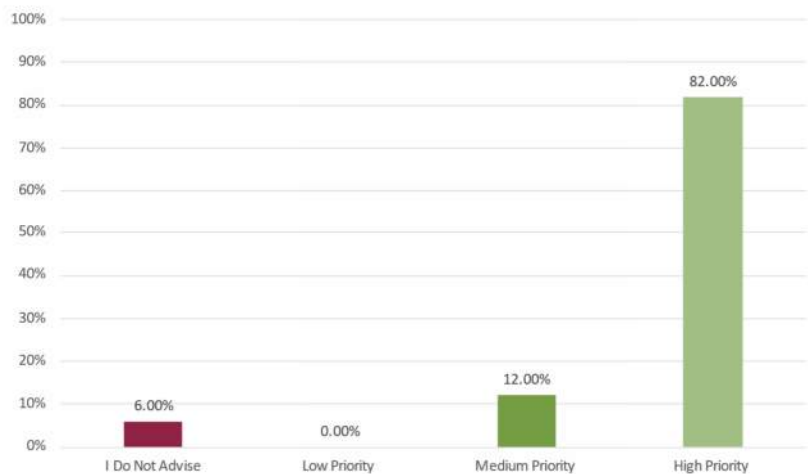
- Ranked highly by Work Group.
- Noted to be a longstanding concern to be addressed as a top priority, long overdue.
- Noted a need to address the concerns of family run haulers who are worried new practices might threaten their businesses.

Policy/Legislative Impact: Baltimore County will need to adopt budgetary practices to support the funding of the formal Service Agreements and the designated Pilot Projects. Changes to the existing Solid Waste Regulations regarding cans, containers, weight, etc. will be required as well.

Cost Benefit: To be determined.

1. Consider Service Agreements with haulers

16 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



Mean : 3.706 | Confidence Interval @ 95% : [3.339 - 4.073] | Standard Deviation : 0.772 | Standard Error : 0.187

Pros and Cons: Service agreements will establish collection performance requirements with commensurate hauler compensation, aligned with industry standards. There are significant annual service cost increases associated with service agreements.

Other Considerations: The proposed Strategy reflects Work Group and Hauler Subgroup input on the best path forward for the County. This Strategy underpins many others as it is the foundation of the sustainability for the system. Important note regarding stand-by haulers: for abandoned route, BSWM's past practice has been to reassign areas to adjacent operating hauler(s), with a preference of MBE/WBE if possible.

To provide new contracting opportunities and be prepared for additional cessation of additional hauler services during the service agreement term, it is proposed in this Strategy that the County conduct a procurement to prequalify companies to be ready to step in for vacated areas, with preference given to County located, small MBE/WBE firms. Overall, regarding Service Agreements, in the Prioritization Poll, one Work Group Member noted that "advancing the Zero Waste system requires changes in the collection system and a funding approach that supports the desired system. The only way to effectively do this is through service agreements that commit all parties to the new approaches for both collection and funding over a pre-determined period. I consider this step critical to the success of the Zero Waste approach."



9.1.2 #2 - Consider Eliminating Plastic Bags for Yard Materials

Eliminate plastic bags for yard materials; transition to allowing only kraft paper bags for yard materials, containers marked for ‘yard materials’, and/or bundled brush for curbside collection or drop-off.

Schedule	Description	Cost
FY 22	Initiate public education and communication program for residents	\$50,000 ³
FY 23	Establish start date and follow through with initiation of change from current collection practices. Continue public education, communication program and enforcement	\$35,000
FY 24	Transition to long-term plan as determined by the County’s Work Group Report	\$25,000

Community Views/Input:

- Of the three waste streams, survey respondents reported lowest satisfaction with current yard materials services.
- There is more diversity in the way that residents manage their yard materials than trash or recycling. While 57% of survey respondents participate in curbside yard materials collections, 22% reported participating in backyard composting, 10% have a landscaper, and 8% take their materials to a drop-off site.
- Public comment supported use of only kraft paper yard materials bags.

Workgroup Feedback:

- Ranked highly by Work Group.
- Identified as a “must do” action by a number of Members, including haulers.

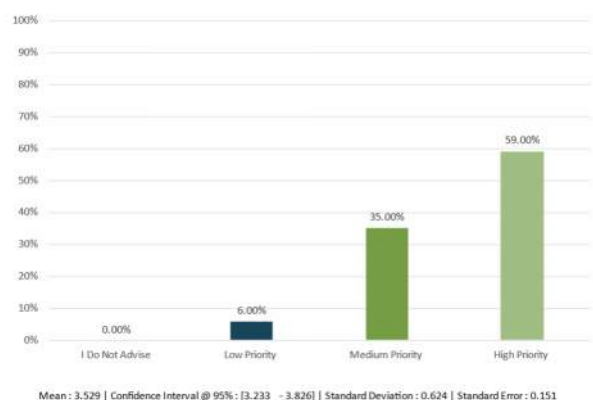
Policy/Legislative Impact: Requires adjustments to the County yard materials collection rules.

Cost Benefit: To be determined.

Pros and Cons: Elimination of plastic bags for yard materials provides the County with the opportunity to produce an improved compost product with a possible resale value. Residents would have to purchase the large kraft paper bags for yard materials, utilize other paper bags, containers with County provided ‘yard materials only’ sticker, or an organics cart if the food scrap/yard material Pilot Project is conducted and approved to move County-wide.

Other Considerations: Increased collection costs for this Strategy are included in the Service Agreements Strategy. Building a yard materials transfer site at CAF is extremely important and connected to this Strategy since haulers will need to collect all yard materials set out, due to the fast decomposition of paper bags when wet. Some haulers had stated they would not have time to do all the necessary runs if this were to occur without a convenient, closer transfer station, especially if yard material collection is to be moved to a weekly schedule. Public education, communication and enforcement needs to ensure residents understand the requirements and the goals of new programs; provide ‘yard materials only’ stickers for customer containers; and promote online kraft paper bag coupons at initiation which would have to be developed.

2. Consider Eliminating Plastic Bags for Yard Materials Collection*
16 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



³ The increased collection costs associated with this change are captured in the Service Agreements strategy.

9.1.3 #3 Consider Technical Assistance to Haulers

To provide haulers an opportunity to become familiar with state-of-the-art advancements capable of improving the efficiency, quality, and safety of their current collection operations

Schedule	Description	Cost
FY22	Establish the structure of the Hauler Technical Assistance Program and determine the level of support which will be provided	\$20,000
FY22	Implement routing support and technical assistance agreements with contractors to establish and manage the Hauler Technical Assistance Program.	\$50,000
FY23	Develop routing options for all designated service areas.	\$75,000
FY23	Support Haulers with implementing selected routing options.	\$25,000
FY23	Ongoing management of the Hauler Technical Assistance Program	\$50,000
FY24	Ongoing management of the Hauler Technical Assistance Program	\$51,000
FY25	Ongoing management of the Hauler Technical Assistance Program	\$52,000
FY26	Ongoing management of the Hauler Technical Assistance Program	\$53,060

Community Views/Input:

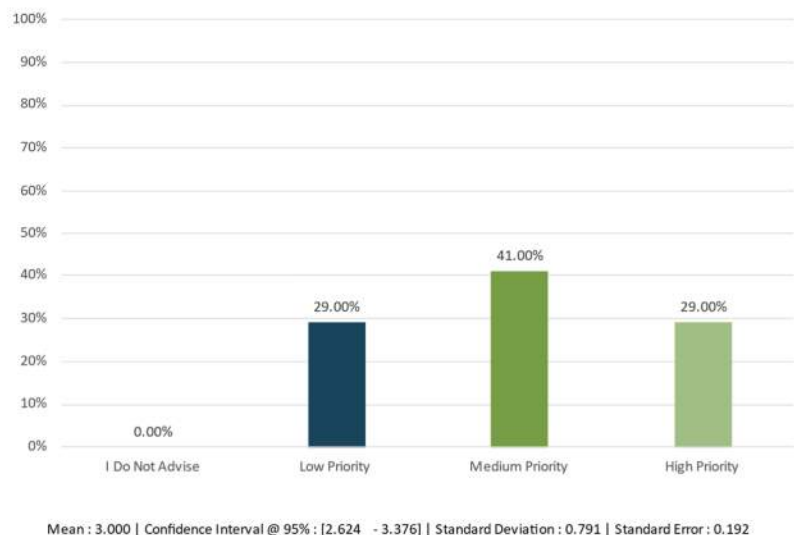
- Not directly contemplated by the survey or public comment.
- Survey respondents ranked “timely and clean collection of all materials” as the top feature of a world-class solid waste management program.

Work Group Feedback:

- Ranked highly by the Work Group.
- Members noted technical assistance could be linked to Service Agreements in the near-term.
- One Member noted: “Technical Assistance would be highly effective. It would be nice to be able to monitor my trucks, the driver, help in accident investigations, safe driving and route the trucks so that its efficient, and many other reasons. I think it would solve many issues on complaints from residents and would be beneficial in helping the county. I would like to see the county help fund this.”

3. Consider Technical Assistance to Haulers

12 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



Policy/Legislative Impact: Baltimore County will need to provide adequate funding to support and implement this recommendation. It will also need to establish in-house personnel or subcontractor arrangements to support the program.

Cost-Benefit: To be determined

Pros and Cons: Benefits include generating more efficient collection routes developed using routing software; reducing greenhouse gas emissions with trucks traveling less road-miles and possibly operating for less hours; improving vehicle availability and reduces maintenance costs with the ability to receive real-time information concerning the operating performance of collection vehicles; identifying unsafe driver habits and results in improvements in the safety of collection operations with the capability of monitoring the drivers' performance; and reducing customer service-related issues with the ability to provide service verification. A downside is that this would be a new program, thus an additional operating expense for the County.

Other Considerations: In this recommendation, the County would provide haulers with technical support for the evaluation of several routing and business software platforms to determine which platform may be the most beneficial to the improvement of the efficiency of the current collection operations. As an option to the haulers procuring a routing software platform, Baltimore County may choose to purchase a platform and offer technical assistance by providing routing options for consideration by the haulers. This could include telematic systems which track the operating performance and location of the collection vehicles and the driving performance of the drivers could also be offered. This could also include the evaluation of the types of available semi- and fully automated collection trucks and the ability to utilize such trucks to significantly reduce labor costs and provide a safer operating environment for the haulers' employees and the public.



9.1.4 #4 - Consider Recycling Carts

County purchases new carts (64 or 96 gallon) for recycling collection to start in FY23; grants available to support, estimated 17,000 ton increase in recycling annually (estimated by The Recycling Partnership)

Schedule	Description	Cost
FY22	Apply for grant(s) to support purchase of the carts.	\$20,000
FY23	Procure carts as part of a competitive bidding process. Assumes a purchase price of \$55.00 per cart. Grants may be available to offset part of the cost, as well as for recycling outreach and education.	\$13,800,000
FY23- FY24	Distribute carts to residents through the MBE/WBE-selected vendor for cart maintenance.	\$40,000
FY24 annually +2%CPI	Cart maintenance contract	\$500,000
FY24 and for at least 10 years	First full year of recycling carts; additional revenue from 16,688 tons per year increase in tonnage @ \$57.98 per ton ⁴	Revenue: \$967,570
	Annual Debt Service for purchase of carts; assume all carts purchased 10-year term at 3% interest rate. Loans may be available to provide zero percent interest for some of the purchase.	\$2,245,886
		Net annual cost: \$1,278,316

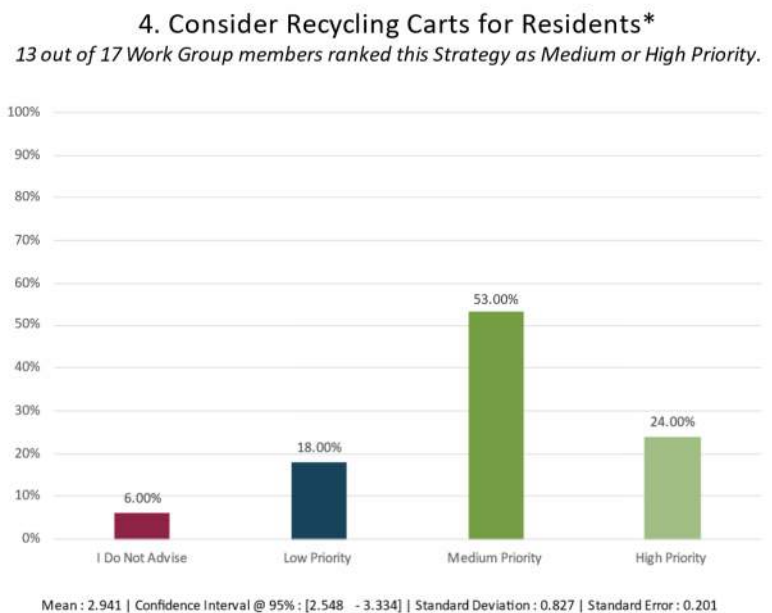
Community Views/Input:

- There is a strong preference for rolling carts for trash/recycling, and a slight preference for yard materials carts.
- There is split opinion for yard materials collection: using a rolling cart (38%), service as is (30%), and no preference either way (32%).
- Public comment supported use of recycling carts.

Workgroup Feedback:

- Ranked medium-high priority by Work Group.
- Members identified that Service Agreements and infrastructure challenges should be addressed first.

Policy/Legislative Impact: County will need to budget to support the designated Pilot Projects and the purchase of 251,000 rolling carts to be used as part of the single-stream recycling program.

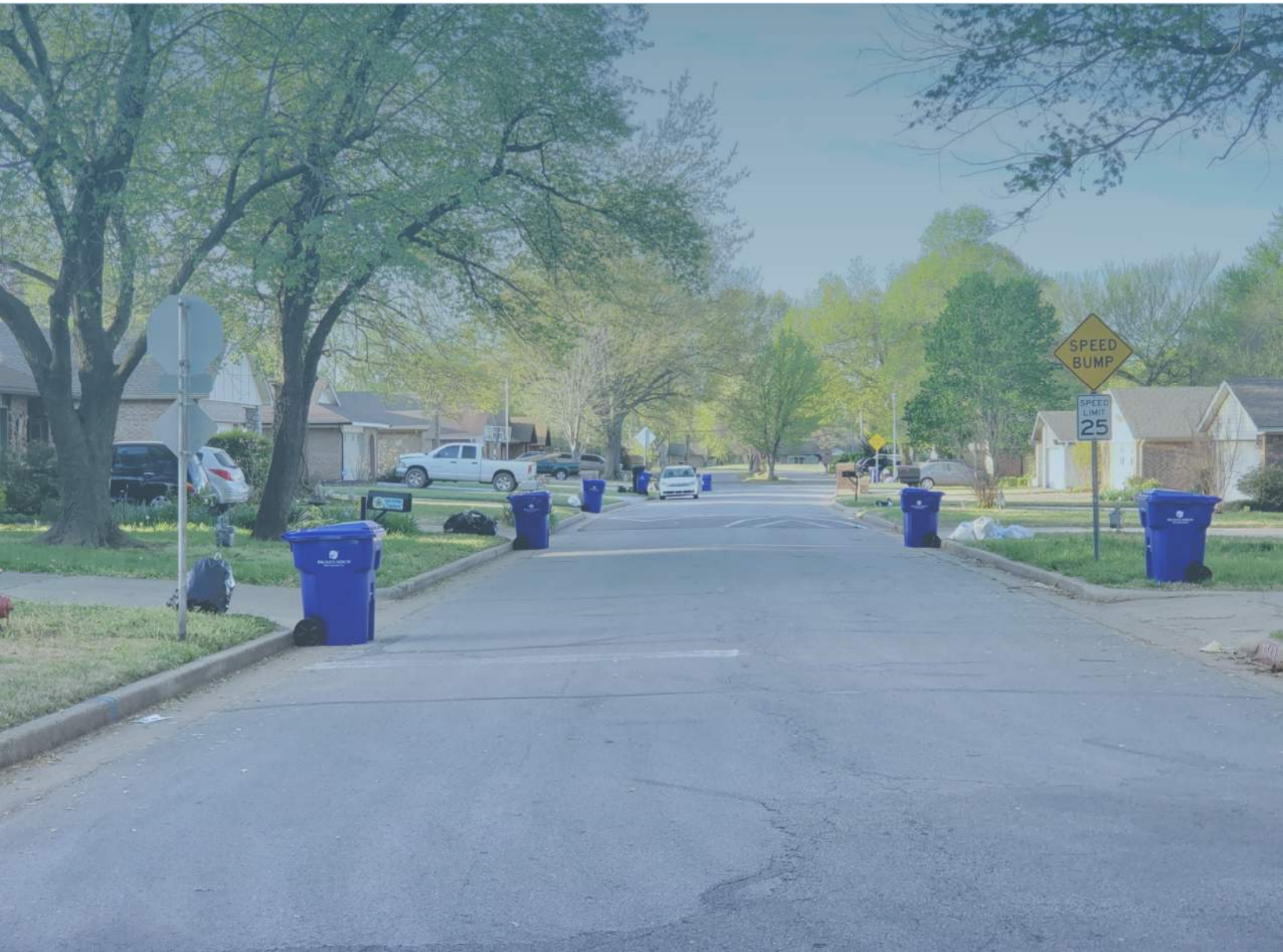


⁴ Recycling revenue varies with market conditions; this value used as a placeholder and should be updated annually. Over the past 83 months, recycling revenue has been \$64.57/ton and the cost of residue disposal at \$6.59/ton = net revenue of \$57.98/ton

Cost Benefit: To be determined.

Pros and Cons: There is grant support available from the Recycling Partnership or a similar organization to reduce acquisition costs associated with purchase of the carts. The County will have to create policies and procedures concerning the maintenance / replacement / storage of carts. This strategy adds material to the MRF which is already at capacity and there is a potential for increased contamination from use of the recycling carts. This was ranked medium priority by the Work Group.

Other Considerations: Tied closely with the MRF Strategy. It is recommended that a new MRF be built before implementation of the recycling carts strategy (see Strategy #14). If a new MRF is not built before the recycling cart distribution, the increased recyclables will have to be shipped to another site for processing, which increases greenhouse gas emissions and expenses to the County. A portion of the purchase may be able to be funded with some of the new American Rescue Act Federal funding. The Closed Loop Foundation may be able to provide interest free loans for part of the purchase. The Recycling Partnership may also be able to provide additional grant funding for recycling outreach and education.



9.1.5 #5 - Consider Pilot Projects

Plan and implement Pilot Projects in areas with approximately 5,000 to 10,000 dwellings for evaluation to include in the long-term recommendations of the Work Group report. *Pilot #1*: Same-day collection services for all materials with the same set outs except County supplying a new recycling cart. *Pilot #2*: Same-day collection services for all materials using new carts for each material, including food scraps collected with yard materials. *Pilot #3*: Food scraps collection outside URDL.

Schedule	Description	Cost
FY22	Design and Planning of Pilot Projects	\$50,000
FY23	Increased compensation for haulers reflecting the Pilot Project services ⁵	To be determined
	Implementation of Pilot Projects Support	\$50,000
	Purchase of Carts - Pilot #1	\$300,000 to \$600,000
	Purchase of Carts - Pilot #2	\$900,000 to \$1,800,000
FY24 to FY27	Purchase of Carts - Pilot #3	To be determined
	Evaluation of Pilot Projects	\$25,000
	Additional Compensation to Pilot Haulers	To be determined

Community Views/Input:

- The survey indicated consolidating the collection days for different material types (for instance, one day for the multiple material types) as well as interest in rolling carts for collection.
- Approximately 10% of survey respondents were interested in food scraps collection and 60% of those respondents said they would be or might be willing to pay for the service. There would need to be additional outreach to residents regarding the benefits and implications of this Strategy; lessons can be learned in the Pilot Projects for the long-term collection planning.

Work Group Feedback:

- Work Group ranked the Pilots as medium-high priority (1 & 2) and low priority (3)
- Desire expressed to configure Service Agreements and infrastructure as first priorities before Pilots.
- Noted to consider Pilots 1 & 2 in tandem, so that the efficiency of both can be reviewed together and that Pilot #3 appears to strongly align with the County's goals and the public comment received.

Policy/Legislative Impact: Baltimore County will need to adopt budgetary practices to support the designated Pilot Projects and the purchase of the rolling carts; establish Service Agreement amendments for the Pilot in cooperation with participating haulers; Implement a public education program pertaining to Pilot Projects; and modify/waive existing Solid Waste Regulations as required.

Cost Benefit: FY 22 cost is \$50,000 to plan the Pilot Projects, an efficient means to test the options being considered for long-term collection changes.

⁵ Note: Haulers participating in the Pilot Projects would need their Service Agreements amended to reflect scope of collection services required and the associated compensation reflective of the required services

Pros and Cons: The implementation of Pilot Projects with additional related compensation will allow the County to evaluate the applicability of the program-related services and provide an example of the service platform model should the County move forward with establishing similar services as part of a Countywide program.

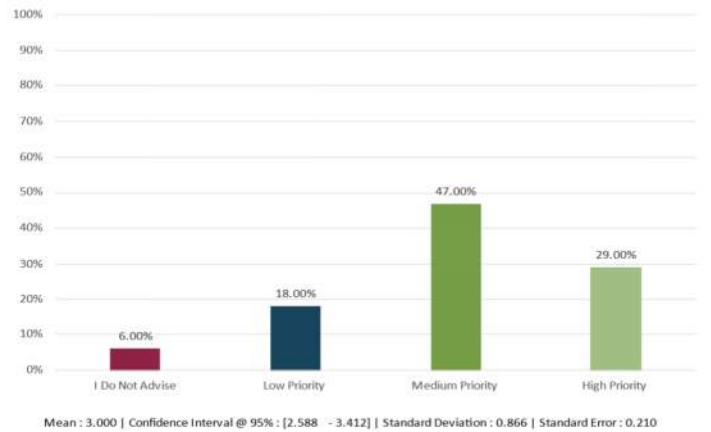
Pilot # 1 Provides residents with a simplified service schedule and an improved opportunity for participation in the single-stream recyclables and yard material recycling programs, likely resulting in a higher level of diversion of material from the waste stream and reduced quantity of waste which would need to be disposed because of increased participation in these programs; Lowers GHG emissions because of reduced need for disposal; Reduces potential employee work-related injuries associated with emptying overweight containers with the assistance of cart tipplers.

Pilot #2 Provides residents with a simplified service schedule and an improved opportunity for participation in the single-stream recyclables and yard material recycling programs, a new opportunity to divert food scraps, and safer operations than the current collection mode since there is a reduction in potential work-related risks and hazards to which haulers may be exposed.

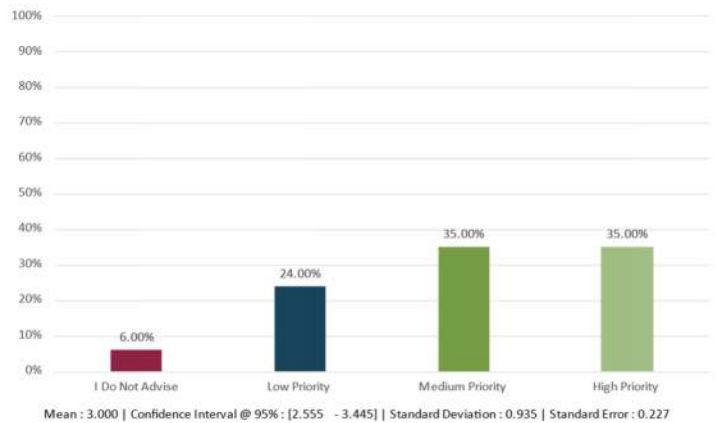
Pilot #3 provides an opportunity for more diversion from waste with segregation of food scraps. This was rated as low priority or “I do not advise” by 11 of 17 Work Group Members.

Other Considerations: The collection of food scraps will need to be coordinated with the establishment of the necessary food scrap processing infrastructure. More than 1/3 of what is disposed is organic material. The Zero Waste Education & Outreach Strategy includes the recommendation for backyard composting and grasscycling/leafcycling. Currently, Baltimore County prohibits the backyard composting of any food scraps in compost piles or bins. A recommendation in the Zero Waste Education & Outreach Strategy is to allow backyard composting to include certain food scraps.

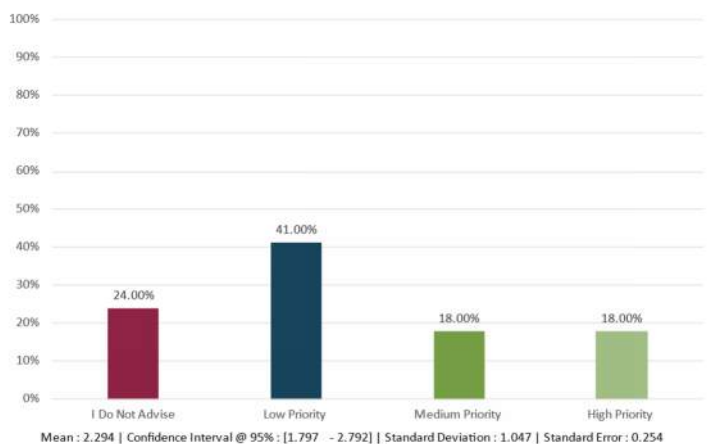
5.A - Pilot #1 - Same-day collection services for all materials with the same set outs except for a new Recycling Cart*
13 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



5.B - Pilot #2 - Same-day collection services for all materials using NEW carts for each material; food scraps added to yard materials*
12 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



5.C - Pilot #3 - Consider food scraps collection only outside URDL where there is no yard materials collection. *
6 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



9.2 Recommendations: New Services & Programs

Zero Waste Strategy

9.2.1 #6 - Consider Bulk Items Collection Services

Advance a Zero Waste Strategy approach for bulk items (including mattresses) and enhance the current reuse market already in place in Baltimore County; planning and procurement for bulk items (including mattresses) collection services with reuse/recycling opportunities; new receiving areas at County RDOCs; County reserves the right to award in phases/one area at a time to pilot and allow to expand slowly as it is very difficult to predict the demand for this service. The cost estimate for implementation represents one pick-up per household, annually, assuming 10% of households utilize the service

Schedule	Description	Cost
FY22, Q1	1 - Hire Bulk Materials Coordinator	FY22 \$80,000 (#1, includes benefits) \$25,000 (advisors for #2)
FY22, Q2	2 - Planning for processing and resale locations and grants for NGOs and repair cafes	\$75,000 (#3) \$75,000 (#4) Total: \$255,000
FY22, Q3	3 - Planning and procurement of collection services	FY23 \$81,600 (#1, includes benefits) \$500,000 (#5 grants to NGOs and repair cafes)
FY22, Q4	4- Purchase back-room hardware and software	
FY23	5 - Grants to NGOs and repair cafes	FY24 \$83,232 (#1, includes benefits) \$2,525,938 (#6 annual cost starting in FY23 + CPI in following years)
FY24 and annually	6- Operations	Total: \$2,609,170

Community Views/Input:

- There is significant interest from residents that a bulky materials collection service be provided.
- Many of the benchmarked communities provide differing ways to provide this service and whether the resident is charged, and how.
- When discussed with current County haulers, they indicated their unwillingness to have this service included within the scope of the services they currently provide.
- Community feedback supported a County sponsored service with opportunities for reuse/repair/recycling for the flow of these materials so that a significant portion of these materials can be diverted from disposal.
- The Hawthorne Civic Association, representing homes in Middle River, has completed a community petition for implementing a bulky material collection program. The petition is available on the internet.

Work Group Feedback:

- Ranked medium-high priority by Work Group.
- Noted there are private options available and that this is a high-cost service for the County to provide.

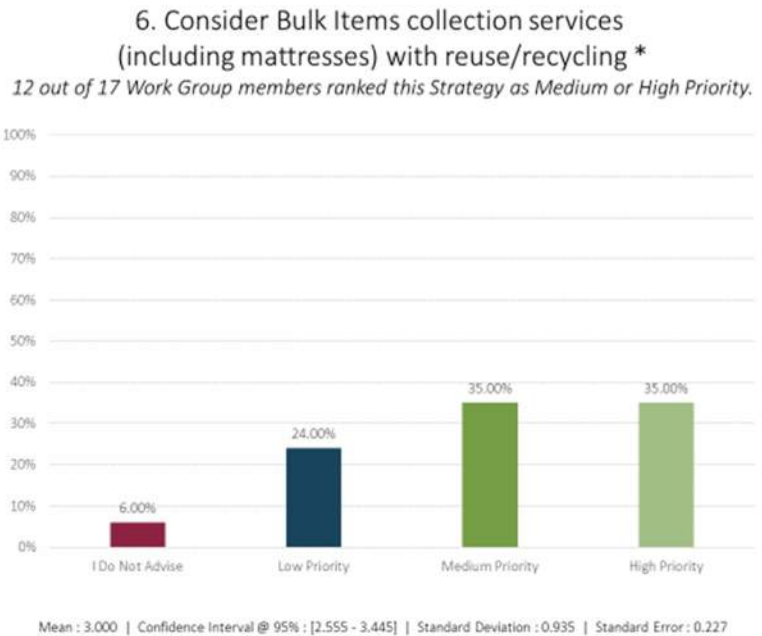
Policy/Legislative Impact: The County would need to adopt rules and regulations for residents to follow regarding this new service. Additionally, the County should consider providing grants to NGOs and private parties who are willing to take on repair, reuse, and recycling activities in support of this new service.

Cost-Benefit: To be determined.

Pros and Cons: The benefit of diverting approximately 627.5 tons per year from disposal results in a small impact on landfill life or the transferring of waste; however, in terms of greenhouse gas implications, moving 627.5 tons of bulk items from landfilling to reuse/recycling is a greenhouse gas savings of (1,808) MTCO₂E annually, which is equivalent to removing annual emissions from 383 passenger vehicles (source: EPA WARM Model Version 15). The bulk trucks could also be called upon to clean up illegal dumping. Trash/recycling hauler crews from the residential reuse routes could help by spotting illegal dump sites and notifying the County bulk materials supervisor of the location and, when possible, the contents, and possibly offenders. Ranked lower priority by Work Group; Private sector options in place (but without required reuse/recycling); High-cost service to provide in future.

Other Considerations: Many charitable, non-profits and community organizations accept donations for resale in second-hand shops, and there is a robust system for receiving and processing that material. There are many examples of thrift shops and reuse centers, with some operated by religious groups, in the greater Baltimore region, such as those operated by Goodwill, Salvation Army, St. Vincent De Paul Society, Habitat for Humanity, Second Chance and the Loading Dock. Note the issue of bulk items came up in almost every virtual budget town hall that the County hosted in late Winter 2021.

The cost estimate for implementation represents one pick-up per household annually, assuming 10% of households utilize the service in a year. It is recommended that the County award in phases/one area at a time to pilot the bulk item collection service and allow to expand slowly as it is very difficult to predict the demand given the significant County public interest, while also balancing how bulk item collection is utilized in other jurisdictions.



9.2.2 #7 - Consider Zero Waste Education & Outreach Strategy

Implement a Zero Waste Education and Outreach Strategy Program to educate residents and commercial entities about the Zero Waste Strategies in support of the Work Group report. The program can be an extension of the Office of Sustainability and BSWM’s current public outreach programs with three (3) additional full-time employees to provide program development/support.

Schedule ⁶	Description	Cost
FY22	<ul style="list-style-type: none"> \$3-4 per household (to cover new staff and all outreach materials) 	<ul style="list-style-type: none"> \$753,000 - \$1,004,000 for new staff and outreach materials \$204,000 HHW Expansion
FY 23		<ul style="list-style-type: none"> \$768,060 - \$1,024,000 for new staff and outreach materials \$208,080 HHW
FY 24	<ul style="list-style-type: none"> Expansion of current HHW budget (2x FY 21 budget) 	<ul style="list-style-type: none"> \$783,421 - \$1,044,562 for new staff and outreach materials \$212,242 HHW
FY 25		<ul style="list-style-type: none"> \$799,090 - \$1,065,453 for new staff and outreach materials \$216,486 HHW
FY26		<ul style="list-style-type: none"> \$815,071 - \$1,086,762 for new staff and outreach materials
		<ul style="list-style-type: none"> \$220,816 HHW

Community Views/Input:

- Survey respondents believe that they are provided with enough information to know what is not recyclable (47% agree, 40% somewhat agree) and the vast majority (91%) recycle regularly where they live.
- For those that do not recycle regularly, the most common reasons why not are because they are unsure of how to recycle or do not wish to (25%) or recycling is not available (23%).
- Business respondents reported needing more information about recycling.
- As a new item to recover, survey respondents ranked plastic bags and flexible plastic film as second highest.
- Of survey respondents who managed yard materials, 22% did so in their backyards.
- Survey respondents ranked “Protection and preservation of the environment with focus on 3 R’s: reduce, reuse, recycle” as the second highest feature of a world-class solid waste management program.
- Significant public comment favoring Zero Waste Strategy education and program development.

Work Group Feedback:

- Tied for highest ranked Strategy.
- Substantial interest to model the North Carolina Department of Environmental Quality RECYCLERIGHT program.
- Noted that this is clearly needed based on feedback from the haulers and members of the public.

Policy/Legislative Impact: To implement the backyard composting addition of food scraps, Baltimore County Code updates would be needed as it currently prohibits residents from composting food scraps in backyard composting piles or bins. This regulation was established roughly 30 years ago due to concerns regarding rodents and other animals and has not been reexamined since, up until recent discussions between the Bureau of Solid Waste and Code Enforcement.

⁶ Each FY is escalated by CPI adjustments annually @2%/yr.

The County permits backyard yard material composting and vermicomposting of food scraps, and backyard burial of food scraps. Additionally, the County encourages grasscycling and leafcycling to divert waste. The County should ensure that its regulations allow for backyard composting of food scraps, paired with educational outreach about how to compost to avoid odor and vermin issues. Additionally, the County can consider implementing local plans to support a zero-waste goal.

Cost-Benefit: To be determined.

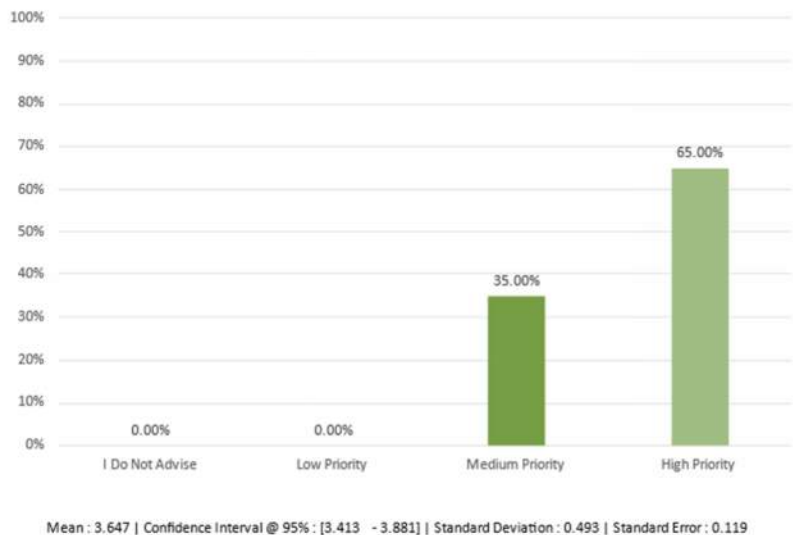
Pros and Cons: A comprehensive, ongoing Zero Waste Education & Outreach Strategy program is an essential building block to a successful program for all jurisdictions, including Baltimore County. The annual cost for education and outreach should not shrink year to year, as messaging must be continually refreshed; investing in this Strategy for the long-term is important as the results build over time. That said, this is a significant ongoing, annual cost.

Other Considerations: Currently, Baltimore County prohibits the composting of any food scraps in compost piles or bins. As part of this Strategy recommendation, it is suggested that Baltimore County allow backyard composting to include certain food scraps. Community-based flexible plastic collection programs are very popular and align with survey findings. Baltimore County can modify the HHW collection operations used by County residents at RDOCs, and include televisions and computer monitors in its electronics recycling program again by providing the required funding to do so. The County can begin by extending hours at the RDOCs to match other publicly owned solid waste facilities in the region. The County can continue to modify the program by expanding the types of materials collected. Zero Waste Strategy program elements discussed in particular:

- *Enhanced education and outreach program*
- *Zero waste programs for businesses*
- *Backyard composting of food scraps/yard material and grasscycling/leafcycling expansion and promotion*
- *HHW collection expansion*
- *Addition of television/computer monitor recycling*
- *Extended Producer Responsibility/Market Development*
- *Promote refill/reuse packaging models at stores*
- *Decentralized food scraps processing at schools and businesses*
- *Food capture for donation program*

7. Consider Zero Waste Education & Outreach *

17 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



9.3 Recommendations: Infrastructure & Disposal

9.3.1 #8 - Consider Transfer of 215,000 tons from ESL Annually

The County currently landfills County residential waste at the Eastern Sanitary Landfill (ESL) which is estimated to reach capacity by 2029. Several different options were developed for the vertical expansion of ESL that were estimated to add an additional 5.5 million to 13.7 million tons of landfill capacity, with the anticipated cost ranging from \$63.5 million to \$162.9 million. In FY20, almost 165,000 tons of residential waste was transferred from CAF and 60,000 tons from WAF to ESL for disposal. To extend ESL landfill life, residential waste that is currently collected at CAF and WAF could be transferred for disposal to a non-County disposal source. Transferring at a rate of 215,000 tons annually would extend the life of the landfill approximately eight (8) years, until 2037.

Schedule	Description	Cost
FY22 - FY26 with CPI	215,000 tons per year @ \$60/ton for Transfer and Disposal (escalated at 2%/year)	\$12.9 million per year +2% CPI annually

Community Views/Input:

- Rapid pace that ESL is filling up in recent years is unsustainable.
- Climate change noted as a primary driver against landfills.
- Noted desire to reduce County dependence on landfilling and incineration.

Work Group Feedback:

- Ranked a medium-high priority by Work Group; however, three (3) Members ranked "I do not advise."
- Noted that projected life at current disposed annual tonnages at ESL does not provide enough time for planning, funding, and permitting of an alternative disposal option.
- Noted that additional transfers from ESL could be possible but the GHG emissions for transfer outweighs the value.

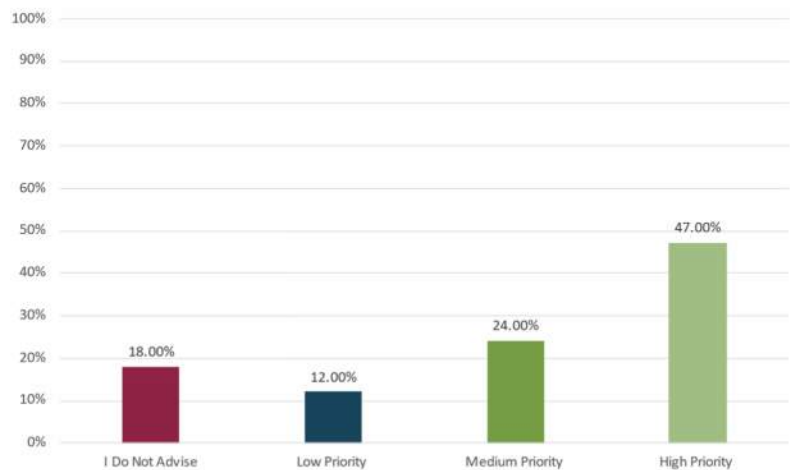
Policy/Legislative Impact: Residential waste that is currently hauled from CAF and WAF would be transferred to another facility for disposal. An agreement would need to be made for disposal to another facility.

Cost-Benefit: Transferring at a rate of 215,000 tons annually would extend the life of ESL approximately eight (8) years, until 2037, for an FY 22 cost of \$12.9 million.

Pros and Cons: Allows for additional time for the permitting and planning associated with the vertical expansion of ESL (or other disposal option) by transfer residential waste that would typically be landfilled at ESL from CAF and WAF

8. Consider Transfer of 215,000 tons from ESL Annually

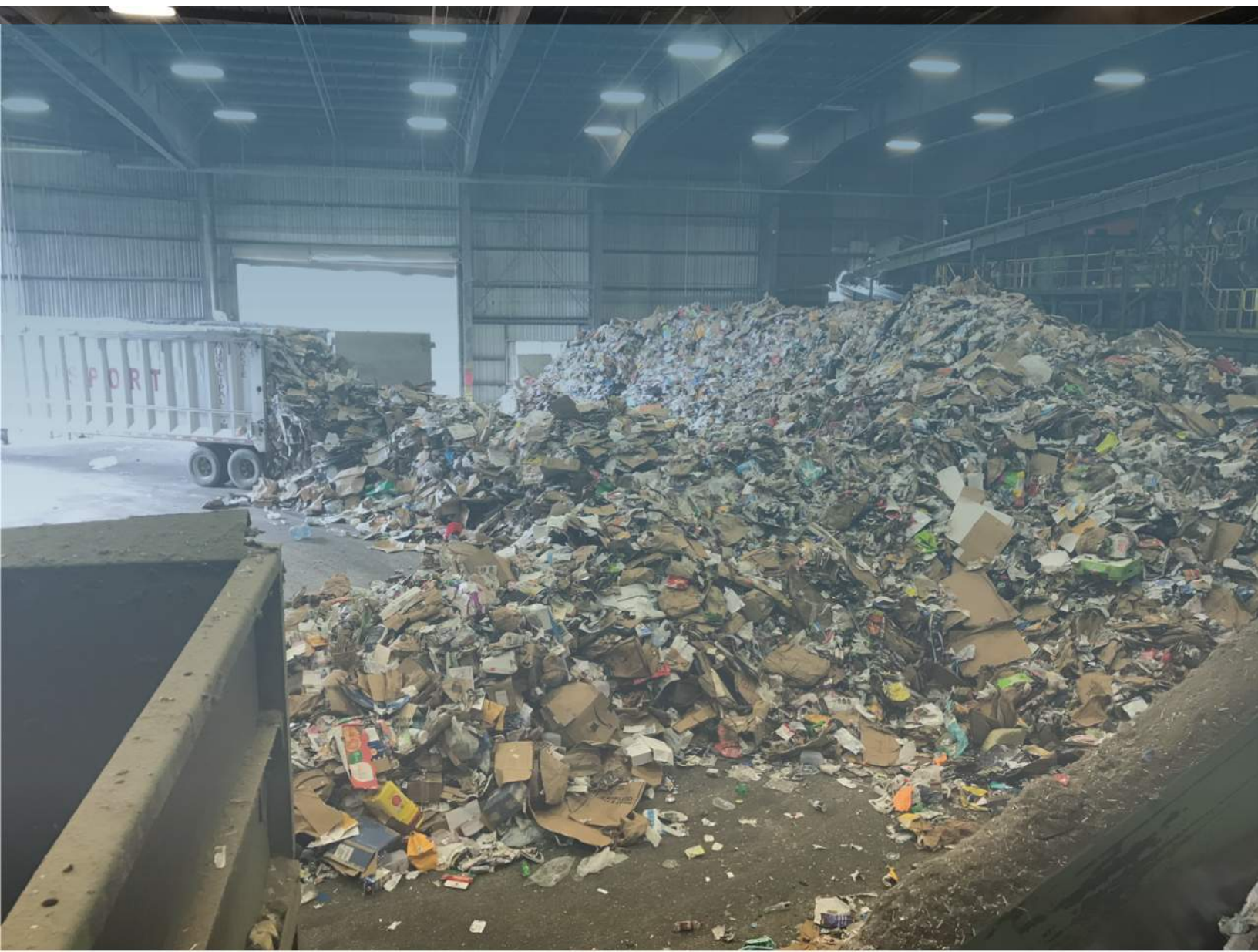
12 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



Mean : 3.000 | Confidence Interval @ 95% : [2.443 - 3.557] | Standard Deviation : 1.173 | Standard Error : 0.284

to another facility. There would be additional greenhouse gas emissions associated with the transfer of waste for out of County disposal, depending on the distance. The average tons per trailer of residential waste recorded at ESL is 24 tons. At 165,000 tons per year from CAF and 50,000 tons per year from WAF, that is 6,875 and 2,085 trips per year, respectively. Assuming waste is transferred to the distance of a landfill in Pennsylvania, an additional 2,000 metric tons of CO₂ would be produced for this scenario. This number would vary depending on where the waste originated (CAF or WAF), where it was transferred for out of County disposal, and whether it was delivered to a waste-to-energy (WTE) facility versus to a landfill. There would be greenhouse gas emissions reductions associated with the transfer of waste out of County if the transferred waste were processed at a WTE facility instead of being landfilled.

Other Considerations: Because multiple Work Group report initiatives would be implemented concurrently, additional time to develop processing or disposal options may be desired in the interim, which this Strategy would allow. Processing waste through WTE or MWP, when compared to landfilling directly, provides for significant GHG savings while at the same time diverting materials from ultimate disposal.



9.3.2 #9 - Consider Mixed Waste Processing

Establish a mixed waste processing (MWP) facility at a location to be determined within the County to provide increased landfill diversion through the recovery of additional recyclable materials, and organic material contained within the trash stream. The residual non-recyclable waste may be converted into useful engineered fuel (solid recovered fuel or “SRF”) or other products, like construction board.

Note: This facility could also be designed to include the capability to process single-stream recyclables in lieu of building a separate new MRF as described in a separate Strategy.

Schedule	Description	Cost
FY22	Conduct a feasibility study looking at potential sites within Baltimore County, applicable technologies, system configuration and integration, conceptual costs, and financing methods	\$150,000
FY23	Conduct a procurement for a design, build, and operate contractor for a mixed waste processing facility	\$150,000
FY24 through FY28	Project contracting, design, construction, and operation; and possible revenue bonding through NMWDA. County responsibility for capital expenditures dependent on financing method (public, private, public-private partnership).	\$100 to \$250 million

Community Views/Input:

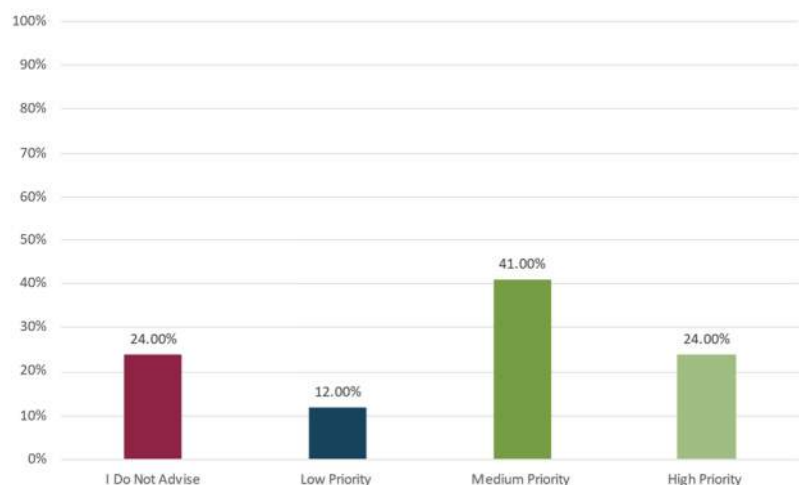
- Great deal of public concern with perception that MWP is a prelude to more incineration and/or replacement of the County’s single stream recycling program.
- Concerned about a mixed waste processing facility without more details being provided first.
- Discouraged the County from mixed waste processing facilities (noting that they have a track record of diverting less than half of waste).
- Noted that the County should not implement Strategies related to expanding landfills or constructing mixed waste processing facilities.

Work Group Feedback:

- Work Group Members were mixed on prioritization. Four (4) Members ranked “I do not advise.”
- Members cited the significant public concern expressed during the public meeting.
- Noted low ranking given “far more pressing issues with the Landfill and MRF.”
- One Member noted: “Most of the alternative disposal technologies / facilities have an element which receives waste material from collection vehicles, and which conducts initial screening and segregation processes to recover valuable recyclables which were inadvertently placed into the

9. Consider Mixed Waste Processing *

11 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



Mean : 2.647 | Confidence Interval @ 95% : [2.117 - 3.177] | Standard Deviation : 1.115 | Standard Error : 0.270

disposal stream; increase recovery of recyclable material; find other sources/uses for material that would otherwise be landfilled and convert to fuel or energy sources to create sustainable economic model. Europe should be looked to as a model although the U.S. does have a very different set of regulatory, scale, legacy and economic considerations.”

Policy/Legislative Impact: Capital will need to be raised with GO bonds or revenue bonds from sources such as NMWDA like Montgomery County’s process for its RRF. It will be necessary to prepare a cost/benefit analysis to quantify the financial impact on Baltimore County solid waste operations and greenhouse gas emissions reductions.

Cost-Benefit: To be determined

Pros and Cons: Increases the recovery and recycling of traditionally recycled materials such as bottles/containers, plastic, glass, metal, and fiber as all waste would be subjected to recovery operations prior to disposal; Provides Baltimore County with a food scrap recovery option that does not require additional waste collection routes. This avoids additional truck routes through neighborhoods, which would result in a reduction of collection truck miles, street wear and tear, and greenhouse gas emissions. With the implementation of anaerobic digestion technology, organic material such as food, yard trim, non-recyclable paper, etc., may be converted into renewable natural gas for use as a low carbon transportation fuel or to generate renewable electricity. Removing food scraps and other organic materials from the residual waste stream disposed of into landfills reduces landfill GHG emissions. The production/use of SRF, which is approximately 50% biogenic material, in industrial applications such as cement kilns reduces overall societal greenhouse gas emissions as it displaces fossil fuels such as coal and natural gas, and would create local jobs. A 1,000 ton per day MWP facility would employ 50 to 100 individuals. Initial estimates project 300,000 tons per year of waste processed (with a 50% recovery rate and 50% landfill rate), replacing a 100% landfill rate, creates a greenhouse gas (GHG) savings of more than 90,000 MTCO₂E annually, which is equivalent to removing annual emissions from 19,000 passenger vehicles (source: EPA WARM Model Version 15)

WARM GHG Modeling Notes: The EPA Waste Reduction Model (WARM) GHG modeling underestimates the GHG savings obtained when using SRF in an industrial heat application such as cement kiln. The WARM model simulates MSW combustion in a mass burn waste to energy facility producing electricity which displaces the mix of grid generation sources; fossil, solar, wind, and nuclear. A large percentage of the avoided electricity may be from these zero carbon resources resulting in zero credits for WTE electricity. In an industrial heat application, the SRF offsets 100% fossil fuel. In the EPA WARM model WTE analysis, the net GHG reduction is almost all attributable to landfill methane avoidance. An SRF application equally achieves the per ton landfill methane reductions plus an undetermined GHG reduction through the avoidance of coal combustion on a 1:1 BTU basis for the biogenic fraction of SRF, approximately about 50% of total SRF carbon.

Other Considerations: The Baltimore County Solid Waste Work Group defined the three pillars of the Zero Waste Strategy concept for the County as: Reduction and reuse of materials; Increased recycling; and Use of a sustainability lens for what remains. Processing waste, when compared to landfilling directly, provides for significant GHG savings while at the same time diverting materials from ultimate disposal. This Strategy is connected to other Work Group report Strategies, including the WAF and MRF Strategies.

9.3.3 #10 - Consider Outsourcing Organics Processing to a Third Party for Pilot Projects

The proposed Pilot Projects (#2 and #3) would increase the amount of Yard Material/Compostables collected for processing at the Yard Materials Site. The addition of food scraps to the mix and the overall increase in materials collected as projected during the Pilot Projects will necessitate updates to the current site or (as recommended) outsourcing to a third-party processor.

Schedule ⁷	Description	Cost
FY23 through FY25 until other processing feasibility studies are complete	\$50/ton for 10,000 tons	\$500,000 (increase at 2%/year +2% CPI annually)

Community Views/Input:

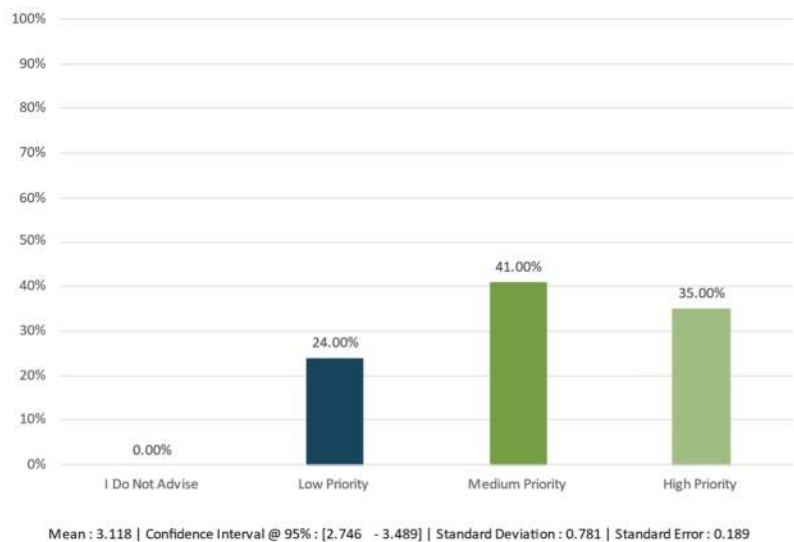
- Public comment supported backyard composting and aerobic composting, along with a desire for the County to expand its own composting facility or partner on a regional project.
- 12 of the 25 speakers during the public meeting mentioned support of composting.
- The *Zero Waste Education & Outreach Strategy* includes the recommendation for expansion and promotion of backyard composting and grasscycling/leafcycling. Currently, Baltimore County prohibits the composting of any food scraps in backyard compost piles or bins. A recommendation in the *Zero Waste Education & Outreach Strategy* is to allow backyard composting to include certain food scraps.
- More than 1/3 of what is disposed is organic material.
- Approximately 10% of survey respondents were interested in food scraps collection and 60% of those respondents said they would be or might be willing to pay for the service. There would need to be additional outreach to residents regarding the benefits and implications of this Strategy; lessons can be learned in the *Pilot Projects* as proposed.

Work Group Feedback:

- Ranked medium-high priority by the Work Group.
- One Member noted: “County has identified potential private sector partners who could play a substantial role in helping the County transform its current operation into an advanced organics diversion program. Replacement of MRF to a more efficient system is vital to handle an increase in material that will be achieved through the other strategies.”
- One Member noted: “In lieu of creating our own organics composting or anaerobic digester system, sending these materials to an MES facility or the [BioDevCo] facility would be great.”

10. Consider Outsourcing Organics Processing to a Third Party for Pilot Projects *

13 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



⁷ Schedule and cost indicated are for third-party processing during Pilot Projects #2 and #3

Policy/Legislative Impact: Baltimore County Code currently prohibits residents from composting food scraps in backyard composting piles or bins. This regulation was established roughly 30 years ago due to concerns regarding rodents and other animals and has not been reexamined until recent discussions between the Bureau of Solid Waste and Code Enforcement. The County permits backyard yard material composting and vermicomposting of food scraps, and backyard burial of food scraps. Additionally, the County encourages grasscycling and leafcycling to divert waste. The County should ensure that its regulations allow for backyard composting of food scraps, paired with educational outreach about how to compost to avoid odor and vermin issues. If not outsourced, food scraps processing at the current Yard Materials Site would involve a new permit by MDE and public hearings for ESL.

Cost-Benefit: To be determined

Pros and Cons: Currently 31,000 tons of yard materials are processed annually at the Yard Materials Site. Capturing only 15% of the estimated food scraps disposed in Baltimore County would double the current processing volume need at the Yard Materials Site.⁸ The modest assumption being used in this modeling is that with Pilot Projects #2 and #3 impacting 10,000-20,000 households, 10,000 tons annually could be outsourced for processing, and/or handled by residents in their backyards. When disposed in a landfill, organic material will decompose anaerobically and will produce methane which has 86 times more global warming potential over a 20-year period and 34 times more global warming potential over a 100-year period compared to CO₂. Landfill gas collection systems cannot entirely capture and control it; maximizing organic/food scraps diversion at all points of the supply chain is essential. Moving 10,000 tons of food scraps from the landfill to composting is a greenhouse gas savings of (6,131) MTCO₂E annually, which is equivalent to removing annual emissions from 1,300 passenger vehicles.

The County has identified potential private sector partners who could play a substantial role in helping the County transform its current operation into an advanced organics diversion program. The County has previously received proposals from Sacyr Rooney for mixed waste processing and from PEH Organics for AD. Also, BioDevCo has pursued developing a relationship with the County regarding securing additional feedstock for its AD facility in Jessup, MD, which recently broke ground for construction and is focused on commercial food scraps. The County should pursue an agreement with a third-party processor to process the materials from Pilot Projects #2 and #3.

Other Considerations: The County could modify its Yard Materials Site (currently processing yard materials and land clearing debris into compost and mulch) to process a combined flow of organics (food scraps and vegetative material) from proposed Pilots #2 and #3 by using a new technology. However, at 13 acres, the site is too small for expansion into a more advanced system. Further, there are currently no food scraps outlets in Baltimore County. Since this option would require a significant investment, and there are other Strategies in development (see recommendations for Mixed Waste Processing feasibility, MRF and WAF), it is recommended that the County should instead opt to outsource food scraps collected during the Pilot Projects to a third-party processor. The County can use these Pilots' success for the basis of future capital expenditures for decision making regarding new technology. Advanced composting or AD technology modifications would be a significant investment⁹.

⁸ According to the 2016 Baltimore County Waste Characterization summary, the weighted average MSW and Single Stream Recycling Composition for Organics was 34%. The organics fraction included food scraps, yard material, compostable paper, and diapers. Without the diapers, the organics fraction would be 31%. Taking the percentage of organics without diapers from the 2016 Baltimore County Waste Characterization Study and the CY 2019 tonnage of Baltimore County waste collected and managed by the County, it is estimated that the potential amount of organic material that Baltimore County disposed in CY 2019 totals more than 185,000 tons.

⁹ While the disposal cost of MSW is \$41 per ton, according to a recent GBB study, advanced composting can have capital expenditures ranging from \$67 to \$116 per ton processed and AD technology can have capital expenditures ranging from \$150 to \$700 per ton processed. Advanced composting O&M costs ranged from \$0.40 to \$0.85 per ton processed (with some exclusions for costs such as equipment fuel and select utilities) and AD O&M costs ranged from \$7.35 to \$59 per ton processed. If located at the landfill, the biogas from an AD facility could be fed into the existing landfill gas system, which uses three 1 MW engines (with a 4th coming online) to produce electricity for Baltimore County facilities. Other potential uses for the biogas are combined heat and power, upgrading into vehicle fuel, and upgrading for direct pipeline injection depending on the AD facility's anticipated scale and viable market outlets for the biogas.

The Maryland Environmental Service (MES) has significant experience operating and maintaining composting sites in the region notably for Montgomery County and Prince George's County, and successfully markets the compost products that result from those operations. The Prince George's operation was recently modified to include food scraps along with yard materials. MES should be contacted regarding its ability to take the pilot project flows as well as advise the County on its current operations to improve product quality and marketing as well as modification for future expanded organics composting.



9.3.4 #11 - Consider ESL Vertical Expansion

ESL is estimated to reach capacity by 2029. Two alternatives were evaluated for vertical expansion, with two different permitted elevations: without Mechanical Stabilized Earth (MSE) wall and with a MSE wall.

Schedule	Description	Cost
FY 23	Planning/Permitting	\$250,000
FY 24	Permitting	\$250,000
FY 25	Permitting	\$250,000
FY 26	Permitting/Design	\$500,000 - \$1,400,000

Community Views/Input:

- Not directly contemplated by the survey or public comment.
- Public concerns may include increased visibility of the landfill due to the increased height of the landfill (elevation 250 feet for alternative 1 and elevation 375 feet for alternative 2). For comparison purposes, the nearby Honeygo Run Landfill was permitted for a vertical expansion in 2009 to raise the top landfill elevation from 202 to 276 feet.

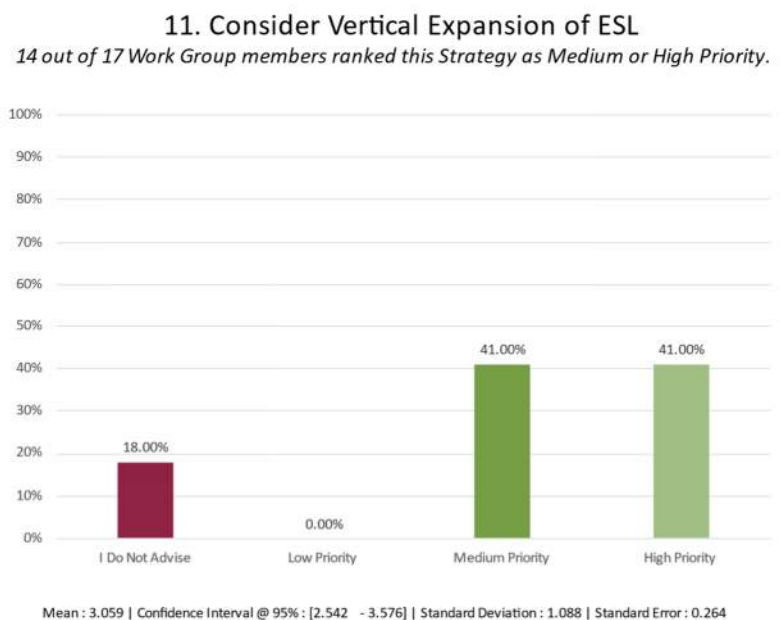
Work Group Feedback:

- Ranked highly by Work Group; however, three (3) Members ranked "I do not advise."
- Noted interest to explore vertical expansion feasibility to preserve a crucial element of the County's Solid Waste System.
- Noted that "alternatives to landfilling and incineration" will take a long time so shorter-term solutions such as vertical expansion are needed.

Policy/Legislative Impact: Expanding the landfill will require a major permit modification to ESL's Refuse Disposal Permit. This process includes developing permitting documents (Phase I, II, and III Reports), a public hearing, and approval from various agencies, primarily MDE. Federal Aviation Administration (FAA) approval is also required to confirm that the landfill does not pose risks to air travel.

Additional investigations and evaluations will be required to confirm the suitability of a vertical expansion approach on top of the existing landfill such that the existing landfill systems are not negatively impacted. Planning, permitting, and design of the landfill expansion may require up to three (3) years or more to complete before construction and additional waste can be placed at the site. As part of the modification to the Refuse Disposal Permit, public meetings and hearings will be required to present the proposed design and solicit feedback.

Once a decision is made regarding whether to expand ESL and at what height, using current funding methods, a General Obligation Bond will be needed, and Council approval obtained.



Cost-Benefit: For the vertical expansion without an MSE wall, the capital cost is expected to be approximately \$63.5 million, including design and permitting. The vertical expansion with an MSE wall has an anticipated capital cost of \$162.9 million, including design and permitting.

1. Vertical Expansion Alternatives Without MSE Wall	Estimated Capacity (Tons)	Additional Useful Life (Years)	Additional Life with Transfer* (Years)
Alternative 1 - Top Elevation of 250 Feet	5,506,700	11	19
Alternative 2 - Top Elevation of 375 Feet	11,326,100	22	40

**Note: Additional Life with transfer/diversion assumes 215,000 tons of residential waste transferred/diverted instead of landfilled at ESL each year.*

2. Vertical Expansion Alternatives With MSE Wall	Estimated Capacity (Tons)	Additional Useful Life (Years)	Additional Life with Transfer** (Years)
Alternative 1 - Top Elevation of 250 Feet	7,759,200	15	27
Alternative 2 - Top Elevation of 375 Feet	13,716,400	27	48

***Note: Additional Life with transfer/diversion assumes 215,000 tons of residential waste transferred/diverted instead of landfilled at ESL each year.*

Pros and Cons: Allows for the continued use of the existing landfill with less of an impact to operations than other alternate methods of waste disposal (e.g., a new landfill and/or transfer station); maintains the same landfill footprint and does not require any additional property purchase; extends the life of the landfill from 11 years up to 48 years, depending on the alternative selected and whether the County transfers/diverts an additional 215,000 tons of residential waste annually. Landfill gas at ESL is collected and conveyed to a landfill gas to energy facility and blower flare station. If waste is transferred and landfilled offsite instead of at ESL, there would be a greenhouse gas emission increase, if the offsite facility does not have landfill gas to energy, since traditionally flared landfill gas emits more MTCO₂E, compared to landfill gas to energy, which is performed at ESL. However, if the waste is transferred to a WTE facility, there would be greater greenhouse gas reductions compared to landfilling. In addition, the transfer of waste for disposal offsite adds greenhouse gas emissions associated with the hauling to another location outside of the County or current region.

Other Considerations: Planning and permitting for vertical expansion of the County's ESL is necessary unless an alternate method for waste disposal is identified. If this is going to be a longer-term consideration, the County would need to start the feasibility study in FY 22. This Strategy is a significant cost but less than relying on transfer to other facilities and makes the County more self-reliant and able to competitively negotiate disposal costs, if transferring its 215,000 tons out of County.

9.3.5 #12 - Consider Future Planning for new WAF: Currently in a Flood Plain

Design, permitting and construction of a new Western Acceptance Facility (WAF) due to the location of the existing WAF within a flood plain and the related environmental and operational issues. Determine viability of complementing the new WAF with necessary infrastructure to conduct waste-by-rail operations.

Schedule	Description	Cost
FY22	Identify and evaluate available property located within the general area of the existing WAF which has the potential for accommodating the necessary infrastructure needs to allow for development of the new WAF, waste by rail operations and possibly a new MRF. Site due diligence.	\$100,000
FY22	Prepare a project development plan with established milestones such as identifying a new location, property evaluation, property valuation, facility design, permitting and construction	\$100,000
FY22	Prepare detailed project budget estimates for the development of the new WAF	\$100,000
FY23-FY24	Secure funding for the new WAF	\$100,000
FY23	Identify and acquire property for new WAF Purchase subject to completion of Phase I and Phase II evaluations	\$15,000,000
FY25	Complete design of new WAF	\$500,000
FY25	Complete permitting of new WAF	\$200,000
FY26	Issue RFP for construction of new WAF and select contractor	\$100,000
FY26	Initiate and complete construction of the new WAF with a RDOC	\$14,000,000

Community Views/Input:

- Not contemplated by the survey or public comment.

Work Group Feedback:

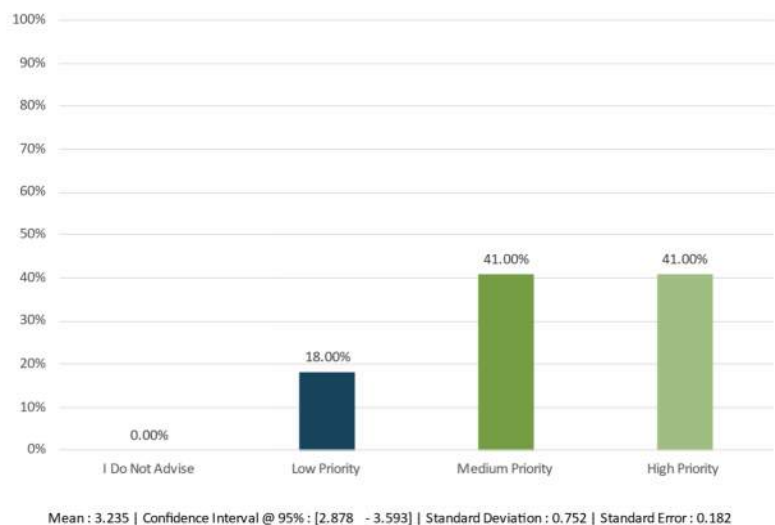
- Ranked highly by the Work Group.
- Noted that climate change will continue to threaten the WAF so there must be planning to find an alternative to its current site.

Policy/Legislative Impact: Prepare a project development plan with established milestones such as identifying a new location, property evaluation, property valuation, facility design, permitting and construction; prepare detailed estimated budget for the project development of the new WAF. Under current funding method, General Obligation Bond approval subject to Referendum and Council approval. Evaluate other potential funding options.

Cost-Benefit: The FY 22 feasibility study of \$300,000 can be added to the MRF

12. Consider future planning for Western Acceptance Facility (WAF) because it is currently in a flood plain.

14 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



Strategy feasibility study. There are parcels of land near the current WAF that are available. This could be advanced as a regional project in connection with that Strategy. This is a significant capital project.

Pros and Cons: Provides potential location for a new regional recycling/disposal facility; eliminates flooding concerns at the current facility and the related environmental risk issues and operating difficulties, as well as possible operating permit violations such as standing water and litter issues; provides the ability to divert additional waste from ESL and extend the site's life with the increased operational flexibility to utilize waste-by-rail transportation (a GHG reduction compared to trucking) and disposal options; increases transportation payload, as compared to the current compactor units, with the use of top loading transfer trailer for recyclables and yard materials; allows for additional opportunities for increased diversion of residential drop-off materials and the extension of the ESL's life. A significant planning effort is required and capital investment for a new site and associated infrastructure.

Other Considerations: It is necessary to plan for the ESL, WAF, MRF, and CAF infrastructure changes concurrently. All Infrastructure/Disposal Strategies should be considered together to ensure the availability of transfer/recycling services to Baltimore County on a consistent basis. Key assumptions for WAF Strategy as proposed include Transfer capability: 1,000 to 1,500 TPD; Transfer Method: Top loading transfer trailer and intermodal container for rail transportation; Rail Access: If available; Acreage: 15 acres; Accepted Materials: MSW, yard material, bulk, single-stream recyclables, and resident drop-off materials including certain C&D items, for reuse and/or disposal.



9.3.6 #13 - Consider Yard Material Transfer at CAF

Yard material transfer capability at Central Acceptance Facility (CAF) would provide the Baltimore County haulers with a drop-off location which will allow them to develop more efficient collection routes within the area of the CAF compared to delivering to ESL.

Schedule	Description	Cost
FY22	Evaluate siting and design options for a yard material transfer facility including project assumptions; Determine any applicable permitting requirements for development of the yard material transfer facility	\$100,000
FY23	Evaluate financing options for the yard material transfer facility, develop yard material transfer facility design and complete any applicable permitting requirements	\$100,000
FY24	Construction of yard material transfer facility	\$2.5 million to \$4 million

Community Views/Input:

- Increasing efficiency of the yard material program may allow for weekly collection.
- Survey respondents ranked the yard material program as lowest satisfaction compared to trash and recycling.
- A portion of the County receives yard material collection every other week during April through mid-December.

Work Group Feedback:

- Ranked highly by the Work Group.

Policy/Legislative Impact: To fund significant capital costs, under current funding method, General Obligation bonds will be needed and are subject to Bond Referendum and Council approval.

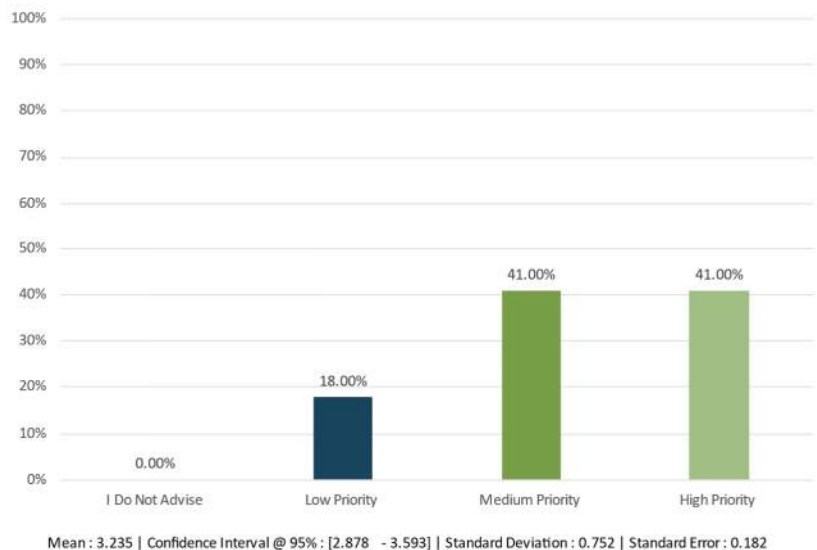
Cost-Benefit: To be determined.

Pros and Cons: Creates more efficient yard material collection routes for many haulers since they will be able to unload the material at CAF instead of delivering to ESL; Utilizes transfer trailers which can transport higher payloads of yard material to ESL. The use of a more efficient method of transportation of yard material to ESL will result in less road mileage by collection vehicles and contribute to a reduction of GHG emissions; Results in increased diversion of yard material from disposal and contributes to an extension of the life of ESL.

Other Considerations: It is necessary to plan for the ESL, WAF, MRF, and CAF infrastructure changes concurrently. All Infrastructure/Disposal Strategies should be considered together to ensure the availability of transfer/recycling services to Baltimore County on a consistent basis.

13. Consider Yard Materials Transfer at Central Acceptance Facility (CAF). *

14 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



9.3.7 #14 - Consider MRF Maintenance & Future Replacement

The current single stream processing system was designed and constructed in a pre-existing building that was not designed as a material recovery facility. As such, there are some severe limitations on the building site and the MRF operations that inhibit any growth or increase of incoming tonnages.

Schedule	Description	Cost
FY22	<ul style="list-style-type: none"> Maintenance budget: 10% increase = \$43,200 Feasibility Study for new facility (120,000-ton capacity), conducted as add-on to another infrastructure Feasibility Study 	<ul style="list-style-type: none"> \$43,200 \$50,000
FY23	<ul style="list-style-type: none"> Transfer out from recycling carts increased tonnage (8,000 tons @ \$80/ton transfer and processing - estimate to regionally located MRFs 	<ul style="list-style-type: none"> \$640,000
FY24	<ul style="list-style-type: none"> Transfer out from recycling carts increased tonnage (16,000 tons @ \$80/ton transfer and processing to regionally located MRFs = \$1,280,000 	<ul style="list-style-type: none"> \$1,280,000
FY 25	<ul style="list-style-type: none"> Stand-alone new MRF on existing County property (10 acres) 	<ul style="list-style-type: none"> \$40 million

Community Views/Input:

- Consistent public comment provided in support of a new MRF.

Work Group Feedback:

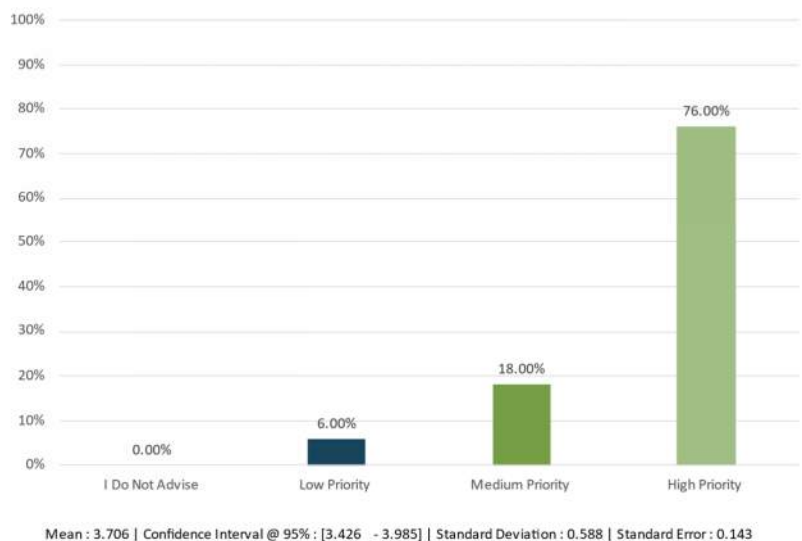
- Highly ranked by the Work Group
- Commented that dealing with the MRF is critical prior to recycling carts implementation.
- Noted that replacement of the MRF to a more efficient system is vital to handle an increase in material that will be achieved through other Strategies.

Policy/Legislative Impact: To fund significant capital, under the current funding method, General Obligation bonds will be needed and require Council approval. If an Enterprise Fund were to be implemented, the Enterprise Fund could issue revenue bonds or seek the same from an alternative source such as NMWDA or MES.

Cost-Benefit: To be determined.

Pros and Cons: If other initiatives are successful, such as providing carts to residents and the Zero Waste Strategies, there will be an increase in single stream recyclables tonnage that the existing system cannot process. Until the new processing system is built and becomes operational, some single stream may need to be transported to alternative processing locations. The County will need to explore which alternative locations may have processing capacity for the additional tonnages and what the cost would entail. As some incoming single stream materials are already in transfer trailers, it would be ideal to not tip and reload them but instead divert them directly to the alternative location(s). If this is not practical, a method and space for reloading unprocessed single stream will need to be created. Expanding the tonnage processed at the current CAF location will be difficult. The existing equipment has

14. Consider MRF Maintenance and future replacement *
16 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



had lapses in adequate maintenance in the past, leading to additional wear and tear on the parts. Adding a second processing shift will likely lead to inadequate maintenance time and will lead to premature system failure.

There are several options for the existing system once the new MRF is built and operating. A few select pieces of equipment could be reused at the new MRF, especially the new baler and perhaps any newer optical units. Some of the remaining equipment could be reconfigured to offer alternative processing to certain streams or to clean-up and bale source separated materials prior to sale. Or the building could be re-purposed as a “last-chance” buy-back center and repair training location or something similar that could reuse and repurpose bulk material recovered items. This could involve the community to both find items that still have use and to help teach valuable skills for the repair of the recovered items. Finally, the future planning should develop an additional MRF storage plan with another building, or trailers stored on site or a separate lot.

Other issues that would limit expanding the tonnage processed at this facility include the limited size of the tip floor and the bale storage areas, as both are inadequate for a MRF of this size. Unfortunately, the MRF building is situated between the closed Texas Landfill and the Baltimore RailLink light rail line, negating much room for expansion. Even if a second processing shift is added, the lack of storage space at both the front and back-end of the system would still limit the total tonnage processed per day.

It is likely that much of the next five (5) years will be required to perform the tasks necessary to build and start-up a new facility. The new single stream system should be versatile in the materials it can process and recover and should be built robust enough to easily accommodate and process the tonnage of recyclables projected to be collected in the County as well as potentially serving as a regional processor for other regional local governments. During that time, there are changes to the existing facility that can improve efficiency and help extend the life of the equipment. Some are already planned while others may need additional funding and approval:

- Increase in maintenance and inventory budget
- Increase efficiency and maintainability
- Explore alternative loading-dock access for inventory storage
- Explore compatible inventory software options
- Explore bale storage alternatives

Other Considerations: The current MRF equipment is on a normal timeline and will begin to approach the end of its full-time processing life in the next five (5) years. This timeline suggests that a new single stream processing system should become operational in the next five (5) years to take over for the existing MRF. The new MRF could be a stand-alone facility or part of a multi-material processing system, a MWP facility, that could also process MSW or even C&D. This Strategy requires combining funds with another infrastructure strategy, e.g., the WAF Strategy. There are short-term maintenance options for the MRF; however, a long-term approach is needed. In addition to the maintenance items outlined, increased processing capacity will be needed to process the estimated 20% increase in curbside materials expected from recycling cart implementation County-wide.

9.4 Recommendations: Financial & Contracts

9.4.1 #15 - Consider Solid Waste Full Cost Accounting

Understanding the full cost of BSWM operations and administration will help evaluate the cost-effectiveness and efficiency of operations, and position the BSWM to charge fees that will support the administration and operations of the BSWM more completely

Schedule	Description	Cost
FY 22	Conduct Full Cost Accounting Review	\$100,000 – Advisor

Community Views/Input:

- Not contemplated by the survey or public comment.

Work Group Feedback:

- Ranked highly by the Work Group.

Policy/Legislative Impact: This will require the County to review current full cost accounting of its services as well as financial support from other County departments since some BSWM costs are budgeted for by other departments in the County, e.g., cost of fringe benefits, cost of insurance, costs for closure/post-closure of landfills, and capital costs. To help identify potential efficiencies and provide a more comprehensive approach to managing the budget and finances associated with the BSWM., this Strategy should take into consideration the impact of future funding, rate setting, as well as the potential creation of an Enterprise Fund for the BSWM.



Cost-Benefit: Based on the BSWM’s current accounting structure, it is difficult to determine the true cost associated with individual facilities and/or operations. Reorganizing of the accounting would allow for a more comprehensive understanding of capital and operational costs and allow for unit costs to be determined (e.g., cost of a ton of waste landfilled or ton of recyclables processed) and help the County to make more informed decisions when it comes to cost benefit analysis associated with both existing and future operations.

Pros and Cons: This Strategy will provide insight into whether there are areas for efficiency gains as well as provide additional insights when comparing to benchmarks from other communities, and pricing that regional private processors can offer. However, this Strategy does not address full system funding. BSWM has an annual budget in the \$60 plus million level while collecting revenues for its services in the \$20 million level. Remaining funding to support its administration and operations comes from the General Fund.

Other Considerations: Some BSWM costs are budgeted for by other departments in the County, e.g., cost of fringe benefits, cost of insurance, costs for closure/post-closure of landfills, and capital costs. Funding to support BSWM comes solely from the County’s General Fund while revenues that BSWM collects from tipping fees, payments for services from other jurisdictions, and the sale of recyclables from its operations accrues directly to the General Fund. This Strategy should be considered in tandem with the Strategy focused on creation of an Enterprise Fund.

9.4.2 #16 - Consider New System Funding Mechanisms (Enterprise Fund)

As a self-funding entity Enterprise Fund model, BSWM would operate more like a business employing full cost accounting with revenues generated by fees charged to users of services adequate to cover all costs and funding for reserve funds, while retaining full control over employees, policies, regulations, and services.

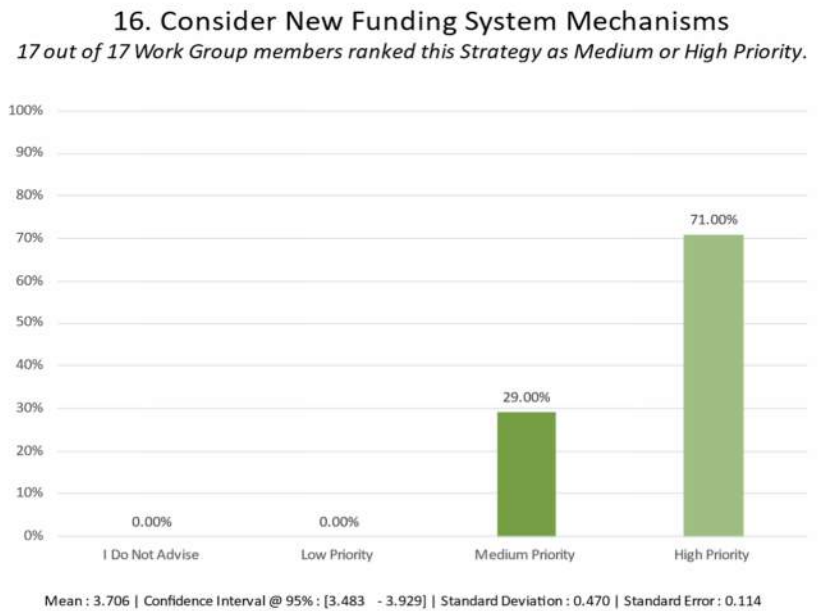
Schedule	Description	Cost
FY22	Determine the process required for Baltimore County to establish an Enterprise Fund for its Solid Waste System	\$50,000 advisor County legal assistance

Community Views/Input:

- Respondents in the survey reported interest to expand the acceptable materials list for services, and some willingness to pay for such additions. Willingness to pay is associated with identified services, which could be detailed in an Enterprise Fund.
- Concerns expressed about paying additional fees and charges for solid waste management including for diversion programs or disposal.

Work Group Feedback:

- Tied for highest ranked Strategy.
- Noted that world-class system cannot be met without Enterprise Fund.
- Noted as urgent and top priority.



Policy/Legislative Impact: Implementing an Enterprise Fund model for BSWM will require County and State legislative approvals.

Cost-Benefit: This effort would help the County to make long-term, sustainable decisions when it comes to cost benefit analysis associated with both existing and future operations.

Pros and Cons: In an Enterprise Fund model, the capital required for infrastructure improvements can be raised through system backed Revenue Bonds, relieving the County’s General Obligation Bond demand. Furthermore, in an Enterprise Fund model, user rates are set through an annual public rate setting process. Typically, a five (5)-year projection is prepared of system operating expenses; miscellaneous system revenues such as recycling sales, landfill gas sales, out of system waste acceptance fees, etc.; debt repayment obligations; and a set of user fees are approved.

This process provides knowledge and transparency to the residents and businesses who are users of the system. An Enterprise Fund can provide a more direct link between the level of waste management services provided to County residents and the cost they perceive / incur for those services. For example, the charge for residential waste collection can be tied to the size of the resident’s container and the frequency of collection. Residents who practice aggressive waste reduction actions can pay less for a smaller container, commonly called a “Pay-As-You-Throw,” frequently utilized under Zero Waste Strategies. The BSWM financing system used today does not provide residents with this type of feedback. This Strategy would increase fees to residents and businesses.

Other Considerations: Currently, the County funds the BSWM operations through General Fund allocations. All revenue received for waste acceptance fees, the sale of recyclables or any other source is forwarded to the General Fund. On a net basis, the Bureau is a net expense of the General Fund. Direct system operating expenses are accounted for in the Bureau budget, but many indirect expenses are contained within other department budgets. It is difficult to determine what the total cost of providing solid waste management services is to County residents. Capital investment needed to support BSWM operations is provided through the County's bi-annual General Obligation bonding proceeds. An Enterprise Fund is a best practice employed by many communities across the country, including the Counties of Anne Arundel, Howard, Montgomery, and Prince George's in Maryland.



9.4.3 #17 - Consider Regional Collaboration

Regional collaboration for a waste disposal facility and emerging legislative initiatives, via cooperative agreements with other jurisdictions in the mid-Maryland region, will help shape resource management in central Maryland for decades to come.

Schedule	Description	Cost
FY22	Legislation/policy efforts: In house staff + Costs for education program	\$10,000
FY23	Legislation/policy efforts: In house staff + Organics feasibility study	\$50,000
FY24	Legislation/policy efforts: In house staff + Legal/Financial advisor	\$100,000
FY25	Legislation/policy efforts: In house staff + Legal/Financial advisor	\$100,000
FY26	Legislation/policy efforts: In house staff + Legal/Financial advisor	\$100,000

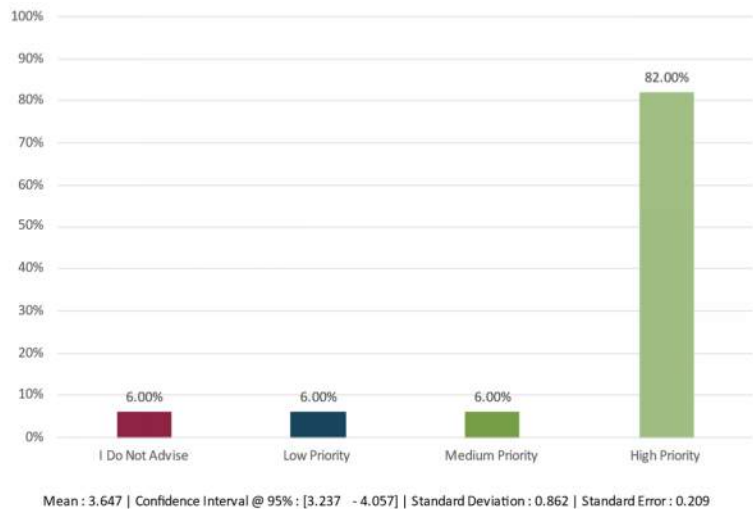
Community Views/Input:

- Public comment provided support of a regional composting facility.

Work Group Feedback:

- Ranked highly by the Work Group
- Noted to push for the passage of the current legislation to study a regional facility and approach.
- Noted that a regional approach will create economies of scale and allow unified and broad messaging for alignment of policies, types of materials accepted, and education/engagement. Allows for coordination of public policy.
- Noted that without a regional approach the restriction to one jurisdiction's capital and operating budget could lead to relying on larger commercial waste entities for solutions.

17. Consider Regional Collaboration
15 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



Policy/Legislative Impact: Regardless of the outcome of the specific legislative bills outlined in this Strategy, cooperation amongst the regional government bodies, and their respective legislative and public works bodies will allow for comprehensive planning at the tabletop level as well as at the formal public approval process.

Cost-Benefit: To be determined.

Pros and Cons: Allows for coordination of public policy that should, if considered fully, result in stable and fiscally sustainable infrastructure that can support material reduction, reuse, recycling, and diversion projects that will have a significant benefit to the residents of the region; Results in an extension of the overall “life” of the site vis-à-vis disposal capacity, depending on the design/implementation of the project/service and the active diversion of materials from ESL; Reduces confusion on the part of the resident with common terminology and branding; Creates a larger “resource-shed” for capture/marketing of material with a common intermediate processor.

Other Considerations: There are existing agencies in Maryland that can support a regional project, providing internal coordination for the development of the project, including financing and operations of the same. The Northeast Maryland Waste Disposal Authority (NMWDA) is a local government body that works on behalf of its members. The Maryland Environmental Service (MES) is a statewide service agency that undertakes projects on a fee for service basis. The Maryland Clean Energy Center has financing capabilities and may be a useful partner for certain renewable energy projects related to a regional project.

- **Statewide legislation:** There are recent examples of statewide legislation that will influence the management of materials considering the pathways for disposal, and even material types that may be handled in the future. In some instances, there are several successive bills that were introduced to move the larger discussion forward in lieu of a one-stop shop type of bill that may have traded short-term efficacy for long-term viability and success.

In 2021, bills were introduced (SB 650 and HB 1094) at the request of the Baltimore County Administration to direct MDE to convene a study group to look at the development of a regional waste disposal and/or diversion facility while looking at recycling and other policy decisions. Even if the proposed legislation does not pass this year, the County can engage with NMWDA or MES and regional partners to develop a facility (or facilities) that move the County, and the region, towards a more sustainable future.

- **Bond considerations:** Coordinated issuance of General Obligation Debt for multiple jurisdictions would be challenging on several fronts. While most of the potential Governmental partners have excellent bond ratings, the potential does exist for one or more of the partners to bear more cost due to the lower rating of other partners if the project/service is tied together. The underlying contracts for the project will need to reflect the commitment of each partner jurisdiction to the project/service and to the provision of funds for the project/service, as well as buyout clauses and default clauses. A long-term contract for the project/service through one of the above-named regional agencies who offer financing capabilities would shift some of the bonding risk from the participating counties and remove impacts to the bonding capacity of the individual jurisdictions. Project Revenue Bonds will require bond counsel, financial advisor, and investment banker involvement. Costs for these services are typical and include guidance for the financing of the project. Additional costs may involve a consultant's feasibility opinion and a certain trustee's costs.
- **Referendum:** Referenda for infrastructure improvements or regional projects do require timing for the work but bring the benefit of greater public support for the project. Coordination amongst the potential partners for the project/service timing will be challenging, and in some cases may fail due to different political views amongst the potential participating jurisdictions.
- **Solid waste policy:** For the host jurisdiction, the project/service will need to be included in the 10-year solid waste management plan. Control of residential solid waste/recyclables collected in the individual jurisdictions resides with the counties, and can typically be directed to a publicly held facility and not be in violation of interstate commerce clause of the US Constitution (see *United Haulers Association v. Oneida-Herkimer Solid Waste Management Authority*, 550 U.S. 330 (2007) for reference).

9.4.4 #18 - Consider Plan for Long-term Process for Collection

State regulations give local governments public health responsibilities, with administrative history dating back more than four decades. Per Maryland Code Title 9 – SS 9-503: each county shall have a plan for water supply, sewerage and solid waste acceptance and disposal systems. Additionally, per Maryland Code Title 26 SS 26.03.03: each county is required to have a comprehensive plan for adequately providing, throughout the county, the following facilities, and services:

- Solid waste disposal systems
- Solid waste acceptance facilities
- Systematic collection and disposal of solid waste

Schedule	Description	Cost
FY23	Decision on long-term mechanism	\$50,000 – Advisors
FY24	Planning and franchising/procurement activities.	\$120,000 - County – 1 FTE \$200,000 – Advisors
July 1, 2025	Award franchises or contracts.	\$123,600 - County – 1 FTE \$100,000 – Advisors
July 1, 2026 & beyond	Contractors start providing services.	\$127,308 - County – 1 FTE \$25,000 – Advisors

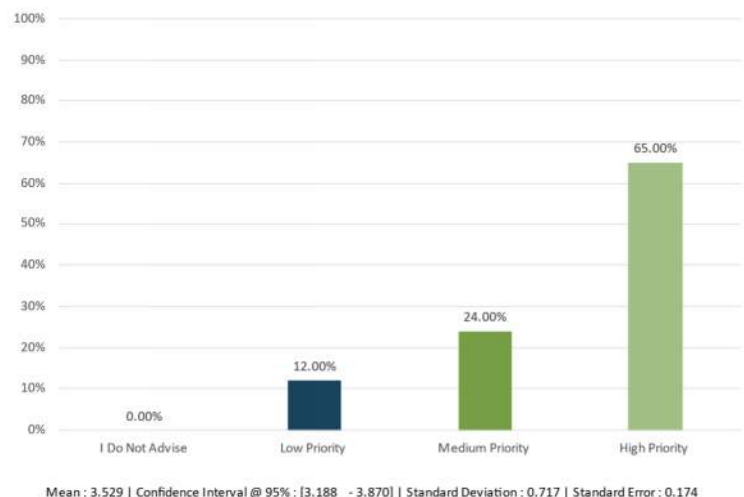
Community Views/Input:

- A Baltimore County long time family hauler business, dutifully collecting the County’s trash and recyclables, noted his appreciation for this effort to keep the County sustainable and applauds it as a taxpayer. He noted his concern for the haulers and recommended that the County reevaluate the option to bid routes as a long-term Strategy. He noted that implementing a competitive bid process for residential collection routes could be detrimental to the County's current haulers as well as to the County. He stated that the County haulers are local and invest in, employ, and thrive in the County, with some servicing fourth generation routes. A revolving door bid system would not have the County haulers’ decades of experience or their lowest service pricing either.
- Maryland Multi-Family Housing Association, representing rental properties, appreciates the efforts to modernize trash collection and infrastructure and would like to help the County develop residential collection education initiatives related to trash and recycling, but recommended that the County not require additional trash and recycling costs for multi-family properties, due to monthly rent increases which would be passed to residents.

Work Group Feedback:

- Ranked highly by Work Group.
- The Hauler Subgroup and the Solid Waste Work Group gave significant input on this Strategy regarding long-term collection changes.

18. Consider a Plan for Long-term Process for Collection
15 out of 17 Work Group members ranked this Strategy as Medium or High Priority.



- Current hauler customer service highly ranked.
- Noted that bidding out routes may get a low bid from a national or larger competitor which drives the legacy County haulers out of business.

Policy/Legislative Impact: Awarding franchises or contracts through a competitive procurement requires County Council approval. Additionally, awarding contract extension terms to the contracts also requires County Council approval.

Cost-Benefit: To be determined.

Pros and Cons: The benefits of changing the service agreements to franchises would be that the existing haulers would have more opportunity to continue providing services in the County. There would need to be significant changes in how their services are delivered based on the Pilot Project results. The benefits of conducting the long-term process in the options outlined in the table (see next page) should result in many of the existing haulers securing either a prime contract or subcontracting opportunities with other prime proposers. In some cases, haulers may decide to join and form a new organization to preserve business for themselves going forward.

A reduction of greenhouse gas emissions is possible from this Strategy due to established service areas which allow for more efficient routing of collection trucks and the resultant reduction of road miles being traveled by the collection trucks. The required use of electric, CNG or clean diesel fuels would also be beneficial to reduce greenhouse gas emissions.

The franchise procurement approach would allow for stipulations like a contract procurement. However, the franchise mechanism could be a pathway for current haulers to apply for initial approval as a franchisee and allow additional interested parties to apply.

Other Considerations: While there are no FY 22 implications, this will require significant attention and funding starting in FY 23 to prepare for changes after the proposed 5-year Service Agreements transition proposed in Strategy #1. Currently, the County has solid waste collection services from 39 different haulers operating in 51 different areas of the County. In the Service Agreements Strategy, the County is considering implementing transition Service Agreements with the current haulers to provide services to cover the period of July 1, 2021 through June 30, 2026 in the same service areas. For services beyond that period, the County needs to put in place longer term services that reflect the results of the Pilot Projects and best practices for a more sustainable System. The work done during the Five-Year Transition period of the Service Agreements Strategy would put in place additional stand-by haulers ready to be used for the long-term Strategy: e.g., if an existing hauler were unable to continue providing services or performance issues were to cause the County to no longer engage a particular poor performing hauler.

Of the two paths being considered for services starting on July 1, 2026, the procurement approach needs to be structured to provide more sustainable and efficient services and reflect the results of planned Pilot Projects also proposed to be undertaken during the transition period. For the second approach of franchising, the County can start to research the franchising concept for a long-term contractual engagement, benchmarking with Portland, Oregon, a model which granted 10-year franchise agreements to 69 haulers in 1992; through natural transitions (e.g., retirements, buy-outs), Portland now has 11 haulers providing service in the residential collection system.

At this time, characteristics of the long-term procurement mechanisms and the reasons for structuring in the manner suggested are as follows on the next page.

Topic for Consideration	Franchise Procurement	Contract Procurement
Services procured for residential properties (1-4 units) only, of which there are approximately 251,000 units ¹⁰ .	Yes	Yes
<i>NOTE: At present, approximately 25% (84,555 units) of the haulers' compensation value is for services to multi-family (5+ units), County buildings, and religious properties.</i>		
Service Areas	Could include up to current number of Service providers and be open to others	Recommend 10-12 contract areas; this is a greatly reduced number of areas so that the selected contractor (and its subcontractors) can provide the sustainable services with a reasonably significant fleet size and have economies of scale and efficiencies in so doing. The areas would be determined based on both the number of properties to be serviced and the road miles that would have to be travelled to serve them and deliver collected materials to the appropriate unloading location.
<i>NOTE: Number of Service Areas is the key difference between a Franchise and Contract Procurement</i>		
Maximum of one area awarded to any one prime contractor	Yes	Yes
<i>NOTE: This would result in a range of different prime contractors to have the opportunity to provide long-term services.</i>		
Small, Minority and/or Women Owned Business Participation Requirement	Yes	Yes
<i>NOTE: It could be stipulated that each prime contractor would be required to subcontract a certain percentage of contract value to a minority and/or women-owned business. Consider allowing no more than two (2) subcontracts to the same organization.</i>		
Evaluation methodology including weighting for Baltimore County based haulers	Yes	Yes
<i>NOTE: This would give Baltimore County based haulers, i.e., the current 39 haulers, preferential scoring if they propose as either a prime contractor or subcontractor.</i>		
Base term of the contract: 10 years	Yes	Yes
<i>NOTE: This length of term will allow for long-term financing of the significant investments in equipment such as trucks, hardware and software requirements that would be required to be purchased by the successful proposers.</i>		
Up to four 5-year extension terms included	Yes	Yes
<i>NOTE: These extensions would be at the sole discretion of the County and considered based on satisfactory performance during the base term. This provides the opportunity for the selected service providers to enjoy very long-term relationships with the County for providing these collection services. The County would determine this on an area-by area basis.</i>		
Small business friendly terms and conditions	Yes	Yes
<i>NOTE: The terms and conditions would be developed with small businesses in mind so as not to exclude the ability of the current 39 haulers in the County from proposing. For example, if two or more haulers decide to form a new company, the prior experience of each of the parties will be considered relevant in the experience evaluation criterion.</i>		

¹⁰ In the future long-term system, it could be modeled for current haulers to continue to provide the 5+ unit service and bill separately for those accounts.

9.5 Recommendation: Other Considerations

9.5.1 #19 - Consider Organizational, Staffing, and Equipment Review

Initiate organizational assessment to ensure succession plan for Solid Waste Operations; BSWM has embarked on a significant strategic planning effort that needs to result in significant changes in its infrastructure, services, and equipment. As such, its organization needs to be reviewed and adjusted so that the requisite planning and implementation can be effectively and efficiently managed and administered.

Schedule	Description	Cost
FY22	<ul style="list-style-type: none"> Engage HR consultant to conduct succession and organizational planning for the Bureau; start hiring additional management staff and training. 	<ul style="list-style-type: none"> \$100,000 for an HR consultant County HR department support New hires are outlined in each of the proposed Strategies; Allocation of \$25,000 for training of new hires
FY23	<ul style="list-style-type: none"> Start implementing plan of hire and training with assistance from HR consultant. Training and cross-training. 	<ul style="list-style-type: none"> \$50,000 for an HR consultant County HR Department support New hires are outlined in each of the proposed Strategies; Allocation of \$50,000 for training of new hires
FY24 +	<ul style="list-style-type: none"> Continue implementing plan of hire and training with assistance from HR consultant. Training and cross-training. 	<ul style="list-style-type: none"> \$25,000 for an HR consultant County HR Department support New hires are outlined in each of the proposed Strategies; Allocation of \$75,000 for training of new hires

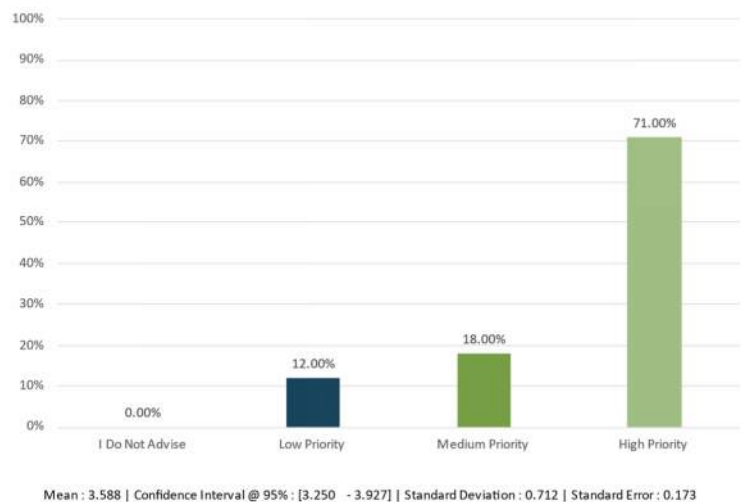
Community Views/Input:

- Survey respondents rated a key feature of a world-class solid waste management system as one that creates jobs that pay a living wage.

Work Group Feedback:

- Ranked highly by Work Group.
- Noted that at the end of five (5) years, almost the entire current leadership will have turned over.
- Noted that as of July 31, 2020, BSWM has an aging workforce (24% over age 60) and 15% of its 149 positions are vacant.
- Over the last decade, noted that budgetary constraints have resulted in a very reactionary, not forward-thinking approach: "An organization cannot succeed and thrive if it's only fighting one operational fire after another."
- For all the changes proposed, noted it is appropriate to review the organization's structure, staffing and compensation.

19. Consider Organizational, Staffing & Equipment Review
15 out of 17 Work Group members ranked this Strategy as Medium or High Priority.

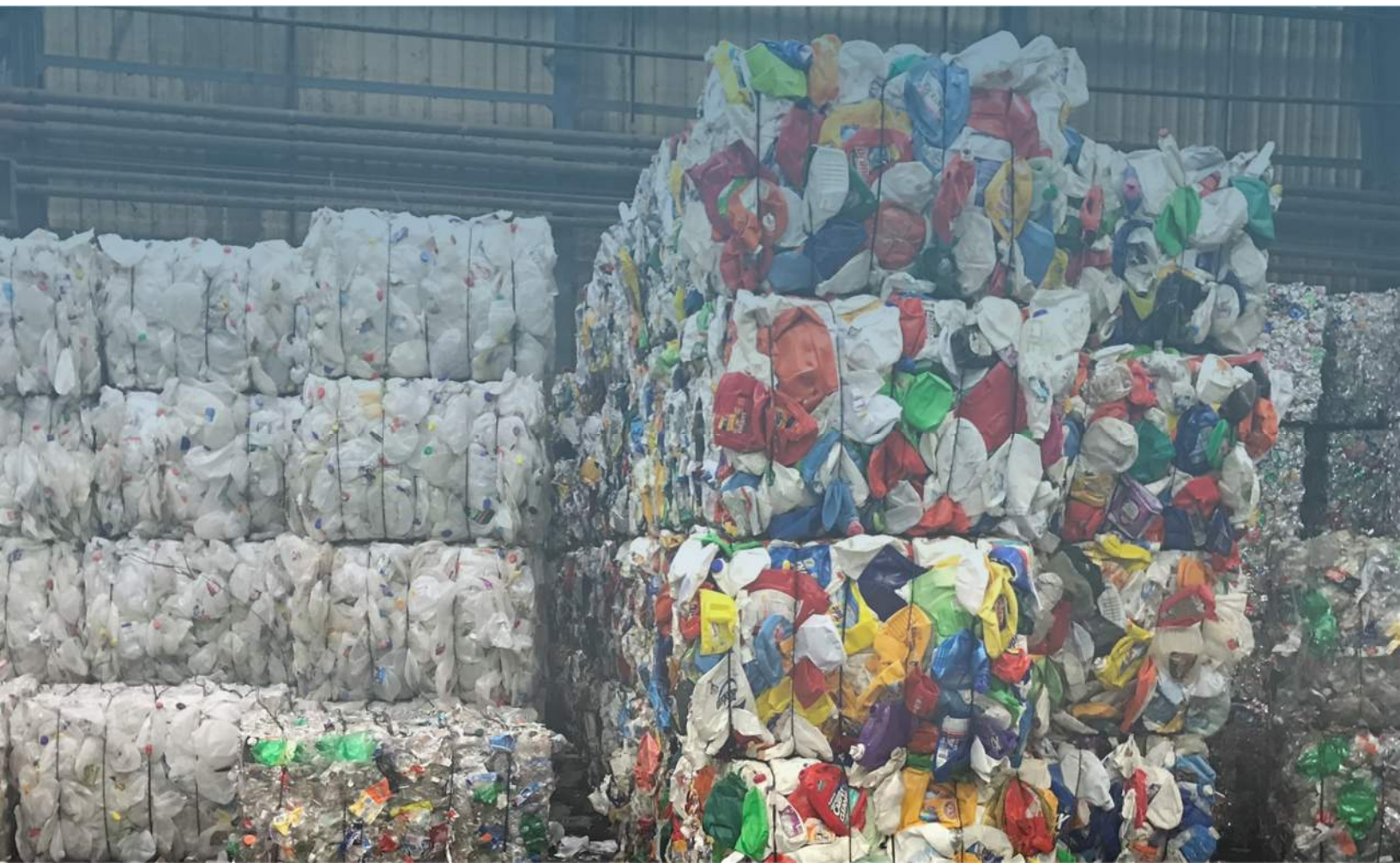


Policy/Legislative Impact: There would be no special state legislation, capital bonding, nor referendum implications of doing this work. The funding for the planning and subsequent hires would come from BSWM operating budget. Funding for new positions that would be needed to support new programs and services are included in the specific Strategies. For budgetary purposes, a cost of \$100,000 per employee that includes benefits can be used for budgetary purposes.

Cost-Benefit: To be determined.

Pros and Cons: An enlarged organization able to take on the changes from the Five-Year Work Group report; succession planning and hiring means the BSWM can seamlessly survive retirements that are coming up as well as ones that are overdue. Gives the ability to oversee, administer, and operate the various services and contractors in a manner that Baltimore County elected officials and County residents and businesses expect.

Other Considerations: Workforce development and succession planning tie into the County Enterprise Strategic Plan, Goal 6 Workforce Empowerment, to engage and empower County government employees to build a better Baltimore County. There may be staff resources requested in the FY22 budget. However, the review suggested this Strategy is for the existing organization to conduct succession planning, fill vacant positions, and plan for the transition and replacement of those that have reached retirement age and/or have chosen to retire. Additionally, efforts should be focused on recruiting new staff to take on additional responsibilities for the new functions and programs that come into play based on decisions resulting from this Work Group report. There is also a need for providing training/cross-training of current and future staff additions. Finally, BSWM relies on the use of a broad range of fixed and mobile equipment. To assure that it is both maintained in proper operating condition and runs efficiently, the Bureau should conduct annual reviews and determine where upgrades and/or replacements are needed and included in forthcoming operating funding and capital requests.



10 List of Appendices

10.1 Background Memo

10.2 Work Group

- 10.2.1 Meeting #1 Notes, Presentation, Supporting files
- 10.2.2 Meeting #2 Notes, Presentation, Supporting files
- 10.2.3 Meeting #3 Notes, Presentation, Supporting files
- 10.2.4 Meeting #4 Notes, Presentation, Briefing Memo, Supporting files
- 10.2.5 Meeting #5 Notes, Presentation, Briefing Memo, Supporting files
- 10.2.6 Meeting #6 Notes, Presentation, Briefing Memo, Supporting files
- 10.2.7 Meeting #7 Notes, Presentation, Briefing Memo, Supporting files
- 10.2.8 Meeting #8 Notes, Presentation, Briefing Memo, Supporting files

10.3 Hauler Subgroup

- 10.3.1 Meeting #1 Notes, Presentation, Supporting files
- 10.3.2 Meeting #2 Agenda, Presentation, Supporting files
- 10.3.3 Meeting #3 Agenda
- 10.3.4 All-Hauler Meeting Presentation

10.4 Online Digital Survey Report

10.5 FY 22 Interim Recommendations

10.6 Multi-family Dwelling Memo



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