Closing Montgomery County's Incinerator and Implementing Zero Waste

Prepared for
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Montgomery County, Maryland

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Introduction

Montgomery County is poised to transition from incineration as a primary strategy for managing discarded materials to more sustainable systems, including reducing generation and maximizing recovery through Zero Waste strategies.

The County has evaluated a number of Zero Waste strategies through the development of its *Aiming for Zero Waste* Plan prepared in 2019. Several of these strategies have been incorporated into the County's Comprehensive 10-Year Solid Waste Management Plan as required by Maryland Law and approved in 2021. However, both of these plans rely on the continuation of incineration for residual waste. We can do better!

Without counting the residual ash from incineration sent to Virginia and used as landfill cover, the County's recycling rate is 41.1%.[1] By 2040, the County estimates that the recycling rate would increase by 11% with the implementation of new programs (from the options identified in these plans) to approximately 52%. Again, we can do better!

This *Plan for Closing Montgomery County's Incinerator and Implementing Zero Waste* changes the dynamic. By committing to Zero Waste as the ultimate aspirational goal, closing the incinerator, and aggressively pursuing waste reduction, greater recycling, and composting, the County can realize the environmental and economic benefit of a Zero Waste system as many forward-thinking cities and counties across the United States have done.[2]

This plan presents disposal system improvements that will boost Montgomery County's employment; generate new sources of income for all levels of government from taxes and fees; create new businesses and widespread economic development with innovative and convenient material handling protocols; provide reduced cost disposal services for unwanted and surplus goods and materials; and help the county meet environmental goals that its well-informed citizens have said with their votes that

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[1] *Montgomery County Comprehensive Solid Waste Management Plan 2020 – 2029*, p. 5-38. Maryland law previously permitted waste incineration to count toward counties' waste diversion goals and incineration ash to count toward counties' recycling rates. House Bill 280 (Charkoudian), which was enacted in 2021 ended these credits.

[2] Including: Austin, TX; Boulder, CO; Broomfield, CO; Fort Collins, CO; Dallas, TX; Palo Alto, CA; Los Angeles, CA; San Diego, CA; San Francisco, CA; and Seattle, WA. Over 100 communities across the United States are pursuing Zero Waste.

they want and need. Zero Waste will change the climate impacts of the county's resource disposal system from net negative to net positive.

This plan is a call to action with specific programs and realistic timetables, not just another study to be put on a shelf. The County Executive's December 3, 2021 letter to the County Council stated that the incinerator would be closed in 12-18 months.[3] By taking the steps outlined in this plan, County staff from many departments can partner with new and existing small businesses to recover valuable materials now consigned to a one-way trip to the County's incinerator where they are turned into ash and air pollution. Changing from destructive disposal to conserving resources across all 12 market categories that are now wasted will allow the county to incrementally and immediately take the legal steps to close the incinerator within the specified 18-month timeframe and enable Montgomery County to become a leader in the Zero Waste movement.

This plan provides a month-by-month strategy for closing the incinerator and identifies several key programs for reducing waste and increasing recycling and composting, including:

- Reuse and Repair
- Universal Collection of Recycling, Organics and Trash for All Generators
- Deconstruction, Construction & Demolition Debris Recycling Requirements
- Resource Recovery Parks
- Comprehensive Organics Management Strategy

This plan provides a road map for reorienting the County's approach to managing discarded materials and begins the process of building the County's leadership in creating a world without waste.

This plan has been created by a team of consultants and several local citizen volunteers who have worked on waste reduction in the county for years. While it includes extensive review of current county plans and reports, research on a variety of Zero Waste program strategies and model examples, it is critical to acknowledge that future efforts to refine and implement the noted actions will need to include additional involvement of the community in order to co-create plans and programs to better meet the needs of all county residents and to advance racial equity and social justice.

[3] County Executive's December 3, 2021 letter to the County Council https://www.eneryjustice.net/md/2021-12-03letter.pdf

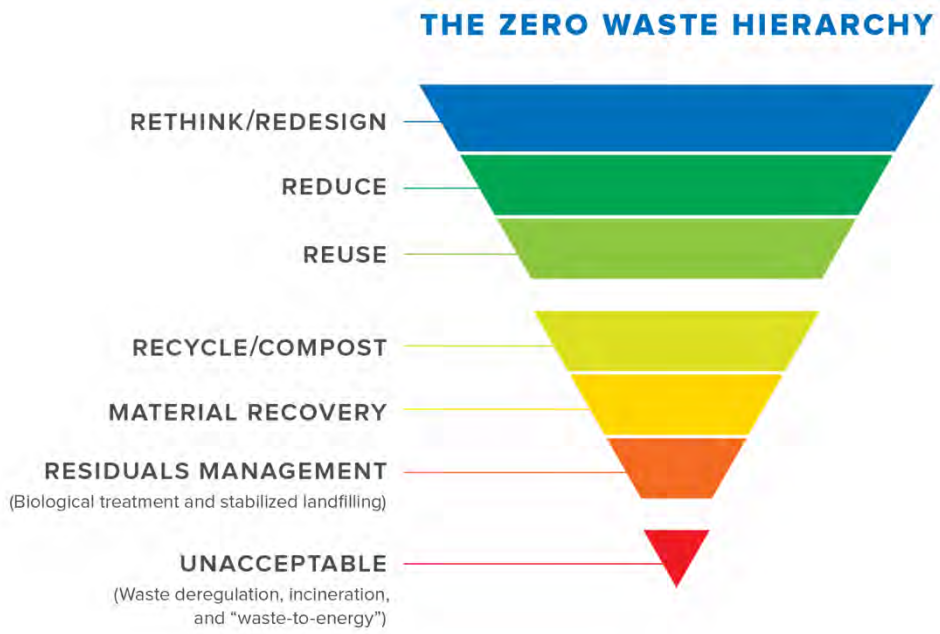
This report is not intended to be exhaustive in relation to the Zero Waste programs and strategies. Materials such as synthetic turf are not included and strategies such as beverage container deposit programs are examples of areas that need to be addressed.

County residents, organizations and businesses need to be included in the work to create Zero Waste programs and broad community representation and input is necessary to establish county recycling and resource management programs.

What is Zero Waste?

The internationally peer-reviewed definition has been curated by the Zero Waste International Alliance:

> Zero Waste is the conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health.[4]



The Zero Waste Hierarchy of Highest and Best Use describes a progression of policies, programs and infrastructure to support the development of a Zero Waste system, from highest and best to lowest use of materials.

[4]Zero Waste International Alliance, Zero Waste Definition https://zwia.org

The components of the Hierarchy are:

- **Rethink/Redesign** – Design and purchase products/materials from reused, recycled or sustainably-harvested renewable, non-toxic materials to be durable, repairable, reusable, fully recyclable or compostable, and easily disassembled.
- **Reduce** – Minimize quantity and toxicity of materials used. Reduce consumption.
- **Reuse** – Maximize reuse of materials and products.
- **Recycle/Compost** – Support and expand systems to keep materials in their original production loop and to protect the full usefulness of the materials.
- **Material Recovery** – Maximize material recovery from mixed discards and research purposes after extensive source separation.
- **Residuals Management** – Examine materials that remain and use this information to refine the systems to rethink, reduce, reuse, and recycle in order to prevent further discards. Biologically stabilize materials prior to landfilling.
- **Unacceptable** – incineration and other "waste-to-energy" or "waste-to-fuels" schemes.

Inadequacy of Waste Management Proposals

On October 11, 2021, Montgomery County Department of Environmental Protection (DEP) issued a Request for Information (RFI) to obtain information from organizations interested in operating the County's Shady Grove Processing Facility and Transfer Station and providing acceptance, processing, transportation, and disposal services for approximately 600,000 tons per year of acceptable solid waste.[5] The (RFI) was met with only two responses, neither of which would adequately address the county's needs. One proposed to transport the waste by rail to a landfill in a low-income majority Black community in Virginia where the county's ash was previously sent and used as landfill cover. The same respondent could have offered either truck or rail haul to other landfills that would be consistent with environmental justice criteria that the Department of Environmental Protection (DEP) pledged to use.[6]

The other proposal, which was submitted by a consortium of businesses, is not acceptable because it includes a combination of incineration and some experimental waste management processes that the consortium has never before implemented and which have not been proven on a large-scale system like Montgomery County's. It also contradicts Zero Waste principles by failing to include source separation of materials. It would also require marketing a contaminated, rather than a clean, organic fraction of municipal waste as soil amendments. For these and other reasons outlined in our Evaluation of Responses to Montgomery County RFI for Solid Waste Management Services[7] and in a separate evaluation done by Maryland Environmental Services, which was quite critical of that proposal and its risks, neither response to the RFI is sufficient. Finally, both responses planned for a time frame much longer than the one set out in the County Executive's December 3, 2021 letter to the County Council which stated that the incinerator would be closed in 12-18 months. This is because the RFI was written in a way that did not follow the County Executive's stated time frame, but instead solicited proposals for services that would start by April 1, 2026, under the assumption that the incinerator would be permitted to operate until the end of its contract instead of terminating the contract.

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[5] *Request for Information for Municipal Solid Waste Acceptance, Processing, Transportation, and Disposal Services* RFI #DEP-RRM-101121
https://www.montgomerycountymd.gov/DEP/Procurement/RFI-DEP-RRM-101121.html

[6] July 16, 2021 meeting between Zero Waste Montgomery County, staff and leadership of Montgomery County Department of Environmental Protection, and representatives of County Council and the County Executive's office.

[7] *Evaluation of Responses to Montgomery County RFI for Solid Waste Management Services*
https://docs.google.com/document/d/1SRxlv9KIqyd8_oUAu72aNuzxQgVJDPEr/edit?usp=sharing&ouid=116474703285444449758&rtpof=true&sd=true

Steps for Closing the Incinerator

The transition from incineration to Zero Waste in Montgomery County will be conducted through actions along two concurrent tracks: one focused on the tasks needed to end use of the incinerator; and the other focused on the steps needed to reduce, reuse, recycle and compost materials discarded in the county.

Incinerator Closure Track

It is no longer possible to end use of the incinerator within the 18-month time frame set in the letter from County Executive Elrich to the County Council on December 3, 2021. However, it does not need to take 2-4 years as DEP has proposed. With proper attention to the steps required, it can be accomplished within 12 months by following the timeline specified as follows.

Due to changes inserted by County Council into the County's 2021 Solid Waste Management Plan (SWMP),[8] requiring plan amendment and various analyses before the incinerator may be closed, the SWMP amendment process is now part of this timeline, designed to run concurrently with RFP and incinerator closure tasks in order to not cause further delay.

[8]Montgomery County 2021 Solid Waste Management Plan
www.montgomerycountymd.gov/SWS/programs/solid-waste-plan.html

RFP for Landfill Alternative

	Task	Days	Start Date	Finish Date
1.1	DEP incorporates feedback from Zero Waste consulting team on Request for Expressions of Interest (REOI) for disposal at an eligible landfill			Completed 2/3/2023
1.2	REOI responses received and shared with Zero Waste consulting team for review	2	5/8/2023	5/10/2023
1.3	Zero Waste consulting team provides feedback to DEP on REOI responses	10	5/10/2023	5/20/2023
1.4	DEP incorporates feedback into RFP	10	5/20/2023	5/27/2023
1.5	Procurement review and posting of RFP	14	5/27/2023	6/10/2023
1.6	RFP Responses due	90	6/10/2023	9/8/2023
1.7	Responses review in coordination with Zero Waste consulting team	30	9/8/2023	10/8/2023
1.8	Contract awarded	30	10/8/2023	11/8/2023

Implementation Plan & SWMP Amendment

	Task	Days	Start Date	Finish Date
2.1	County Executive arranges for independent financial analysis of the cost of using incinerator and of closing incinerator prior to April 2026, to be completed by 5/1/2023	7	4/1/2023	4/7/2023

	Task	Days	Start Date	Finish Date
2.2	DEP prepares their analysis for the SWMP amendment under Section 5.2.4. of the SWMP, covering "operational concerns" and "other major issues of keeping the RRF open versus changing the County's primary waste disposal from the RRF to landfilling" and provided any needed information to financial analysts and to the Zero Waste consulting team to complete the other parts of the required analysis (see division of labor below)	60	3/15/2023	5/14/2023
2.3	DEP develops Implementation Plan in coordination with Zero Waste consulting team	60	3/15/2023	5/14/2023
2.4	Zero Waste consulting team drafts amendments to SWMP, including adoption of the internationally peer-reviewed definition of Zero Waste and the Zero Waste Hierarchy and guiding principles	60	3/15/2023	5/14/2023
2.5	County Executive and Zero Waste consulting team review Section 5.2.4. analyses (including independent cost analyses), implementation plan, and SWMP amendments	30	5/14/2023	6/13/2023
2.6	County Executive submits Implementation Plan and SWMP Amendment (including SWMP Section 5.2.4. analysis) to County Council	30	6/13/2023	7/13/2023

	Task	Days	Start Date	Finish Date
2.7	County "governing body" submits SWMP amendment to planning agencies for comments per Md. Environment Code §9–506	30	6/13/2023	7/13/2023
2.8	County Council submits SWMP amendment to Maryland-National Capital Park and Planning Commission (M-NCPPC) and Washington Suburban Sanitary Commission (WSSC) for comments per Md. Environment Code §9–515	30	6/21/2023	7/21/2023
2.9	Advertise public hearing for SWMP amendment, including notice to the principal elected official of each affected municipality (10-14 days notice required) per Md. Environment Code §9–503(d) & §9–515	14	7/21/2023	8/4/2023
2.10	Public Hearing on SWMP amendment	1	8/8/2023	8/8/2023
2.11	County Council's review period will include T&E discussion, briefings, information requests and a full Council vote	30	8/8/2023	9/7/2023
2.12	10 days for County Executive to review and recommend changes	10	9/7/2023	9/14/2023
2.13	County Council submits SWMP amendment to MDE	1	9/19/2023	9/19/2023
2.14	MDE review and approval of SWMP amendment	60	9/19/2023	11/18/2023

Proposed division of labor for Task 2.2

Analysis	To be conducted by:
Short and long-term costs	Independent analyst with feedback from Zero Waste consulting team on externalized health and environmental costs (refining the life cycle analysis from Chapter 4 of the Beyond Incineration report to reflect specific landfills proposed in RFP process) and on projected cost savings due to Zero Waste efforts over time
Environmental and public health impacts	Zero Waste consulting team, drawing on research already conducted for the Beyond Incineration report
Racial equity and social justice implications	
Facility impacts	
Operational concerns	DEP to draft, with review by Zero Waste consulting team
Other major issues of keeping the RRF open versus changing the County's primary waste disposal from the RRF to landfilling	

Incinerator Closure

	Task	Days	Start Date	Finish Date
3.1	County Executive issues 180-Day Notice to the Northeast Maryland Waste Disposal Authority ("Authority") on 5/7/2023 to terminate for convenience the County's Service Agreement with the Authority, specifying that the termination shall be upon 180 days or at such time that the County is ready with a new contractor to manage 100% of the waste that previously was delivered to the incinerator, whichever is later. Negotiate for continued incineration only to the extent that a new contractor cannot handle 100% of the waste after the 180 days, eliminating any requirements that County waste must go to the incinerator during that negotiated time period. The notice to the Authority will request that it spell out the costs associated with termination and to transfer ownership of the incinerator to the County upon termination.	180	5/31/2023	11/27/2023
3.2	DEP and County attorneys vet the costs provided by the Authority to ensure that they're proper, and prepare a budget for the costs and to finalize the transfer of title from the Authority to the County.		Whenever Authority provides cost information	11/27/2023
3.3	Terminate the Service Agreement with the Authority and all other agreements not	35	11/27/2023	12/31/2023

	Task	Days	Start Date	Finish Date
	needed once the incinerator is closed, such as the ash disposal contract.			
3.4	County takes title to incinerator	35	11/27/2023	12/31/2023
3.5	County requests that MDE immediately and permanently rescind all permits for the operation of the incinerator.	35	11/27/2023	12/31/2023
3.6	Incinerator closed and new contract takes effect to transport waste to landfill		1/1/2024	
3.7	Publicly promote the change through public education and replace the pro-incineration signage on Silver Spring litter cans		1/1/2024	4/22/2024
3.8	Contract to deconstruct the incinerator, recycle the boiler, and reuse/recycle other materials and components. Ensure that the smokestack is safely dismantled and not demolished, guided by models of safe smokestack deconstruction.[9] Conduct testing and contract for site cleanup if necessary.	365	1/1/2024	12/31/2024

Cost Issues

The County would be obligated to reimburse the Authority for certain costs upon termination of the Service Agreement with Covanta and some related agreements. The 2017 Arcadis Governance Review[10] spells out some of the costs as such:

[9] See, for example, Demolishing Detroit's Incinerator, 2019 Clean Air Council. https://docs.google.com/presentation/d/1Prqaj-G_Y4OFoKZJSbbN1BuHd5wFgoXpFMVk_xsDf6k/edit

[10] Arcadis, *Waste Disposal Agreement Governance Review*, November 2017 http://www.energyjustice.net/md/ArcadisGovernanceReview.pdf

1) All reasonable and necessary costs and liabilities incurred by the Authority and associated with settling and paying termination claims under the Authority Component Agreements and other agreements entered into by the Authority with respect to the Authority Component and its performance by the Authority of its obligations under this Agreement.

2) All reasonable and necessary storage, transportation, and other costs incurred by the Authority for the preservation, protection, or disposition of Authority Component equipment, materials, and facilities.

3) All reasonable and necessary costs incurred by the Authority for any accounting, clerical, or other expenses reasonably necessary for the preparation of termination settlement documents and supporting data.

4) All reasonable and necessary costs incurred by the Authority in terminating the operation of the Authority Component, including any severance pay and other reasonable and necessary costs incurred in terminating employees.

5) Any payments or other charges due and payable by the Authority under the Service Agreement, the Facility Site Agreement, the Energy Sales Agreement, or any other Authority Component Agreements that are incurred or payable as a result of the termination of this Agreement.

6) Any other costs or expenses incurred or to be incurred by the Authority as a result of the termination of this Agreement. Such costs include, without limitation, any costs or expenses necessary to decommission and dismantle the Facility in accordance with Applicable Law and the Authority Component Agreements and any costs or expenses reasonably necessary to avoid a default by the Authority under any Authority Component Agreement, Bond Document or other agreement relating to the Authority Component that remains in effect, in whole or in part, after the date of the Notice of Termination.

In a December 8, 2022 presentation, DEP presented the costs of closing the incinerator before the April 2026 contract expiration as indicated in the first two columns in the following chart. Some of these estimates seem quite speculative or run counter to contract language or statements from the Authority, and need more documentation, as indicated in the third column.

Item	Cost	Comments
Termination Convenience Payment	$4.5 million	NMWDA and service agreement say there is none.[11]
CSX liquidated damages	$350K per month for X number of months	Needs documentation. Contract has no termination for convenience clause, but CSX would still be used to transport yard waste and possibly food waste in future. It would be renegotiation, not termination.
Republic Ash Agreement	$3.9 million	Sections 2.11 and 7.3 of ash disposal contract indicate no fees once terminated for convenience.[12]
Additional costs (severance pay, materials, legal costs, electricity agreements, and renewable energy credits)	**TBD**	Needs documentation of costs and transparency as to whether these costs would be incurred (in the same or different amount) with early termination.
Open encumbrances	~$100 million (subject to claims / negotiation)	Needs documentation.

Note that two additional costs are listed by DEP: cleaning the pit and decommissioning the plant. These costs are the same whether the incinerator is closed early or not, and are not consequential to the decision of when to close the facility.

[11] See contract language as well as quotes from then Executive Director of the Northeast Maryland Waste Disposal Authority, Chris Skaggs, and from County Council staff, Keith Levchenko, compiled on page 23 in the Beyond Incineration report: www.energyjustice.net/md/beyond.pdf

[12] Id. at 24; www.energyjustice.net/files/md/montgomery/ashcontract.pdf No fees if termination results from ending the NMWDA Service Agreement.

We recommend that an independent accounting be conducted of the all-in costs of using the MCRRF incinerator (including landfilling ash in Virginia). This could be conducted either by appropriate county staff outside of DEP, or by a private entity. See Task 2.1 above. To be timely, this should be commissioned immediately so that these numbers could be reviewed by the County Executive and the Zero Waste consulting team in May 2023 and be available for delivery to County Council as soon as June 2023, when the SWMP amendment would need to be submitted to County Council in our recommended timeline.

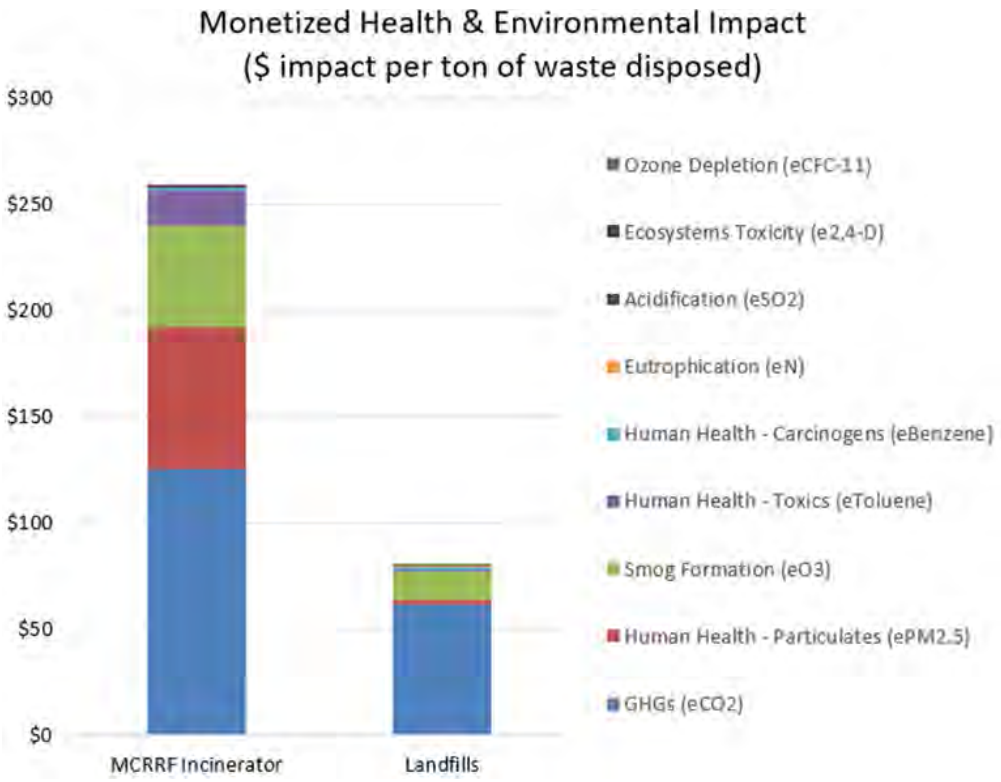
Such an accounting should include estimates of increased operations and maintenance (O&M) costs as the facility ages, as well as potential costs of new air pollution control requirements once EPA completes the process of updating regulations on large municipal waste combustors.[13]

Should the cost of direct landfilling still turn out to be higher than the current cost of incineration and landfilling ash, this does not mean the status quo is more affordable. The total cost of waste disposal will decrease with Zero Waste efforts. Even if the cost of processing recycling remains high, source reduction, reuse, and composting programs will generate overall cost savings that should more than offset any per-ton increase in disposal.

Furthermore, the life cycle analysis conducted in the Beyond Incineration report[14] showed that the overall monetized health and environmental impacts of incineration (and landfilling the ash) is 3.2 times greater than direct landfilling. (See summary chart below.) While these impacts may not be obvious on the county's balance sheet, they will impact the costs of public health and costs associated with the impacts of environmental degradation.

[13] EPA is required to update the municipal waste combustor (trash incinerator) Clean Air Act regulations every five years, but has not done so in 16 years. EPA is being sued over this and is currently working on the process of updating these regulations. The result could easily increase the cost of operations, as air pollution controls are a major cost center at such facilities.

[14] Beyond Incineration: Best Waste Management Strategies for Montgomery County, Maryland, www.energyjustice.net/md/moco; See Chapter 4 for details.



Proposed Landfill RFP Specifications for Hauling to an Eligible Landfill Starting as Soon as November 2023

For the reasons described above, the County should issue a new RFP for managing waste, and include the following requirements:

1. No minimum: No put-or-pay or minimums, as the County's intent is for this amount to be significantly reduced over a period of years due to enhanced source reduction, reuse, recycling and composting programs and initiatives.
2. Timing: If the proposer cannot take 100% of the county's solid waste at that time, they must specify the time frame for how much could be handled each month starting in November 2023 until ramped up to 100% based on current volume.
3. Title to waste: The contract will entitle the proposer to handle all solid waste after it is ready to leave the Shady Grove Transfer Station minus any amount (up to 100%) that is diverted to reuse, recycling, composting, material recovery, and/or biological treatment systems. Should any separate contractor operating a material recovery and/or biological treatment system haul their processing

residuals to an eligible landfill, the proposer shall have first right of refusal to handle those residuals.

4. Landfill eligibility:
    a. Landfills to be used must be specified and described as to their eligibility based on the criteria detailed below. Proposals offering access to multiple landfills that meet these criteria will be preferred.
    b. The RFP must specify that these agreed-upon[15] criteria are mandatory:
        - The non-Hispanic white population within a five-mile radius of the landfill shall not be lower than the national average of 57.8%.
        - The population within 5 miles of the landfill shall not exceed 20,000.
        - The population within 5 miles of the landfill shall not have a median household income under $35,000.
        - The landfill shall have in place a landfill gas collection system to capture methane, a potent greenhouse gas, and must not be operated as a bioreactor, where liquids are intentionally added to increase methane gas formation by helping bacteria break down the waste.
        -
    c. If any landfill to be used is owned by an entity other than the bidder/hauler, a capacity assurance agreement signed by the landfill owner must be provided to guarantee the capacity over the term of the contract.
    d. The following preferences will be applied for eligible landfills:
        - Shorter travel distance.
        - Lower annual rainfall.
        - Number and seriousness of environmental violations.
        - Flaring instead of using gas for energy production.
        - Longer-term (20+ years) capacity.
        - Material recovery and biological treatment processing at the landfill site as environmental mitigation measures and included as part of the costs of the proposed tipping fee.
        - Enhanced financial assurance beyond that required by U.S. Environmental Protection Agency regulations under the Resource Conservation and Recovery Act (RCRA), particularly that post-

[15] These criteria were agreed upon in the meeting between DEP and Zero Waste Montgomery County on 7/16/2021.

post-closure liability is addressed by insurance and included in the proposed tipping fee.

- Could meet European Union landfill performance standards including the 1999 Landfill Directive that included the phasing out of the burying of organic materials in landfills.
- No community opposition.

Outreach: DEP should urge reapplications from Republic as well as seek responses from other waste management companies that operate in the region, including WM (formerly Waste Management, Inc.), GFL Environmental, Unity Disposal & Recycling, and Ecology Services, and WB Waste Solutions.

We have provided proposed edits to the Request for Expressions of Interest (REOI) and recommend that they be incorporated into an RFP to be issued according to the above-stated timeline.

Montgomery County's Zero Waste Track

The concept of Zero Waste is disruptive to the status quo.

Traditional solid waste managers raise all kinds of objections, such as:

- How can we get to Zero Waste when we can't get folks to recycle right?
- There is too much "other waste" in our trash that we can't recycle or compost.
- We can't afford it.
- Residents won't do it.

Aiming for Zero Waste is about setting expectations.

Zero Waste is also about engaging the community and not anticipating the answers to questions before they are asked. All programs need to be tailored to be effective for all communities in the county and designed by and for diverse populations, demographics and income levels. We can all do Zero Waste.

The County is already doing some of the things identified in this Plan.

- There is a very extensive school recycling program.
- There is dedicated staff for recycling compliance at multifamily buildings and an extensive business recycling program.
- The County is exploring collection rate incentives (Save-As-You-Throw) and has an active food scraps collection program.
- The County is piloting curbside food scraps separation and collection from single-family homes.

This Plan asks us to do more and to do it more effectively. If we plan for 52% diversion by 2040, we may get there. But if we plan for *Zero* Waste by 2040, we may not actually get to zero, but we will likely get much closer to it.

There is also the opportunity to integrate Zero Waste into several other County plans:

- Integrating Zero Waste goals and metrics into the County Climate Action Plan to establish the greenhouse gas emissions baseline that counts emissions from the incinerator and sets as a goal to reduce or eliminate them.
- Identifying opportunities for the County to integrate Zero Waste goals and programs into the County's economic development plans, including expansion of green jobs and training opportunities for residents. The *High Road Economic Inclusion Framework for an Equitable Climate-Ready Economy*[16] is one of the opportunities the County needs to consider Zero Waste programs as part of the path to increasing green businesses and jobs.

[16] *High Road Economic Inclusion Framework for an Equitable Climate-Ready Economy* https://www2.montgomerycountymd.gov/mcgportalapps/Press_Detail.aspx?Item_ID=41979

Reuse and Repair

The reuse, repair and resale sector offers the County the biggest potential employment and economic stimulation than any other single type of recycling. Reuse is preferred over recycling because it preserves the embodied energy and labor in the product, avoiding the energy and waste involved in remanufacturing.


(Photo: Community Forklift)

A greater focus on reuse will attract new startups and small businesses to the County while expanding already existing businesses in reuse. These companies – dozens, perhaps hundreds of which are needed at all scales -- small, medium, and large -- provide good used "products without pollution" at the most efficient price points. Reuse, unlike recycling, can generate sales taxes.[17]

Resource trading companies dedicated to Zero Waste can provide jobs that pay family-supporting wages and benefits; generate valuable building materials for housing; shrink the digital divide; preserve and enhance the value embodied in reusable items that are "too good to throw away," and reduce recidivism through meaningful and rewarding work. A reused product is worth far more when sold "as-is" than when it is sold as a recycled commodity that can be made into something new.

Reusable goods embody energy, are often made of superior materials, and can be used in many ways from art to more functional uses. Reusing products saves labor and virgin material extraction costs (environmental and financial), as well as transportation and energy input costs.

[17] Urban Ore of Berkeley, California, for example, currently collects $30,000 in monthly sales taxes that it submits to the State Board of Equalization for distribution to governments. Community Forklift of Prince George's County, MD pays $12,000 monthly on sales of $200,000 at 6% of sales.

Urban Ore Case Study

Urban Ore (urbanore.com) is a mission-driven, for-profit, reuse enterprise located in Berkeley, California.

Urban Ore started with no capital and has developed a system for handling 230 categories of reusable goods, delivered to its facility by over 100 vehicles per day. Materials are sorted quickly, cleaned as needed, and put out for sale. Current income from reuse sales is over $10,000 per day.

Urban Ore creates many jobs and opportunities for providing workers with additional skill sets. Job training is both necessary and a key to profitability. Many employees become reuse specialists (e.g., for electronics, bicycles, hardware, doors and windows, etc.), and jobs such as directors, managers, and others are also valuable workforce additions to the county. Job satisfaction at Urban Ore is very high. The jobs are an interesting mix of physical and mental; many people like that mix much better than working in a cubicle located in a high rise and staring at a screen all day. Reuse enterprises, like Urban Ore are fascinating places to work.

Supply customers are pleased that someone will relieve them and their vehicle of unwanted stuff. Demand customers are happy to find unexpected treasures, or parts for their art, or tools that they can use, or furniture for their apartment.

The sociology of reuse is a critical factor in its success. Reuse enterprises become cultural and economic hubs where people gather for companionship with like-minded folks, learn to repair items, find hard to acquire items such as doors and fixtures and bring a date.

Urban Ore prospered during COVID as "essential businesses" for homeowners undertaking repairs and renovations.

Reuse Grant Program

The County DEP has a link on its "How do I Recycle" web page that provides a useful list of local reuse organizations.[18] Appendix A of this plan includes a list of 50 reuse organizations operating in Montgomery County. The county could provide grants to these organizations as well as access to a reimagined Shady Grove Transfer Station for

[18] *How do I Recyce,* Montgomery County https://www2.montgomerycountymd.gov/DepHowDoI/search.aspx

additional donations of reusable goods. It could start by holding an outreach workshop to hear from these organizations on the best ways to divert more materials to reuse.

A good model for Montgomery County is the reuse program operated by the Chesapeake Bay Trust and the District of Columbia Department of Energy and Environment. Their Donation and Reuse Award Program provides funding for donation and reuse projects, programs, and services for increased donation and reuse opportunities of materials otherwise headed to the waste stream in the District. The awards may also fund education and engagement efforts to increase the public's understanding of the importance of donation and reuse and increase awareness of current donation and reuse opportunities and best practices. Up to $15,000 is awarded to nonprofit organizations, faith-based organizations, government agencies, universities/educational institutions, or private enterprises.[19]

StopWaste, a countywide agency in Alameda, California offers a Reuse and Repair Grant Fund for innovative projects that incorporate reuse, repair, deconstruction, product or process redesign, reduction, recovery, and redistribution of goods, and other materials. The goal is to minimize the need for wasting or recycling, and instead foster waste reduction to support environmental sustainability and conservation of natural resources, and stimulate economic activity in the reuse and recovery sectors. Grants of up to $20,000 are available to nonprofit and for-profit organizations.[20]

Expanding Reusable Food Ware Ordinance

Montgomery County's Disposable Food Service Products and Packaging Materials legislation adopted in 2016, bans all expanded polystyrene food service ware and loose fill packaging and requires all food service ware to be recyclable or compostable.[21] The County also passed legislation in 2020 banning plastic straws and polystyrene (#6) plastic containers from retail sale or in food service businesses.[22]

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[19] District of Columbia Donation and Reuse Award Program
https://cbtrust.org/grants/district-of-columbia-donation-reuse/
[20] StopWaste Reuse & Repair Grants
https://www.stopwaste.org/at-work/stopwaste-grants/reuse-and-repair-grants
[21] Ban on Expanded Polystyrene Food Service Ware and Loose Fill Packaging
https://www.montgomerycountymd.gov/sws/expanded-polystyrene/
[22] Montgomery County's Ban on Single-Use Straws
https://www.montgomerycountymd.gov/SWS/skipthestraw/
Ban on Polystyrene Food Service Ware and Loose Fill Packaging
https://www.montgomerycountymd.gov/SWS/switchfromsix/

Building on this legislation to require reusables for on-site dining and transitioning to reusable systems for food to-go will further reduce waste and litter, stimulate new businesses, and demonstrate leadership in Zero Waste. The "Ditch the Disposables" grant program sponsored by the District of Columbia Department of Energy & Environment provides grants to support the transition from disposable to reusable food ware at restaurants and food-serving entities.[23] The Food Service Ware ordinance adopted by Palm Springs, California bans single-use plastics and requires reusable food service ware for dine-in.[24] Upstream has developed a Model Single-Use Foodware and Litter Reduction Ordinance which recommends the following elements:[25]

1. Makes on-site ("sit-down") dining disposable-free, and creates environmental standards for take-out disposables.
2. Phases in a 25-cent fee on disposable to-go cups and containers to discourage use, and level the playing field for reuse services for take-out and delivery.
3. Creates incentives for food service businesses to develop or utilize reusable take-out and delivery services and build convenient infrastructure for customers returning used cups and containers.
4. Incentivizes BYO (bring-your-own) for coffee cups.

We recommend against furthering use of single-use compostable plastics for the reasons detailed in Appendix B.

Fix-It Fairs

In April 2022, the Gaithersburg's Environmental Affairs Committee sponsored the County's first Fix-It Fair with support from the Montgomery County Department of Environmental Protection.[26] Residents were invited to bring broken small appliances, lamps, jewelry, and textiles/clothing to the event where volunteer "fixers" showed them how to repair the damaged items. Fix-It Fairs (also known as Repair Fairs or Fix-It Clinics) are community-based workshops where neighbors help neighbors to value

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[23] District of Columbia, Department of Energy & Environment, Ditch the Disposables https://doee.dc.gov/disposables

[24] Palm Springs Food Ware and Single-use Plastic Waste Reduction Program https://www.palmspringsca.gov/services/sustainability-and-recycling/single-use-plastics

[25] Model Single-Use Foodware & Litter Reduction Ordinance https://static1.squarespace.com/static/5f218f677f1fdb38f06cebcb/t/5fd39666f1546547d77fc79e/1607702127304/UPSTREAM_Model+Single+Use+Litter+Reduction+Ordinance.pdf

[26] Gaithersburg Fix-It Fair https://www.gaithersburgmd.gov/Home/Components/Calendar/Event/19753/2671

reusable materials and learn how to be self-reliant. Monthly Fix-It Fairs held throughout the County, can help transition from the take-make-waste approach (where broken items are discarded in favor of new, cheap products) to Zero Waste, by keeping readily repaired materials out of incinerators and landfills. Fix-It Fairs can also be social gatherings and networking opportunities and support resilient neighborhoods and the sharing economy.

Tool-Lending Libraries

Tool-Lending Libraries are physical locations, which can be sponsored by a non-profit community organization or incorporated into a municipal library. Hand tools, power tools, gardening equipment and cookware are lent out to community members. The Station North Tool-Lending Library in Baltimore offers over 3,000 tools, 30 classes, a public woodworking shop, a dedicated DIY workspace, and a home repair classroom.[27] The Tool-Lending Library sponsors Fix-It Fairs and seeks to foster creative, self-reliant people empowered to reduce waste, gain skills and share knowledge.

The Baltimore Community ToolBank further provides equipment, tools and expertise to qualifying organizations working to benefit communities and shared spaces. With more than 10,00 tools in the organization's inventory, the ToolBank has served more than 750 member agencies while increasing accessibility to highly subsidized construction resources.

Promisingly, equipment lending mechanisms are already underway in the county and incorporating additional tool lending libraries would complement the existing reuse landscape. For instance, the Montgomery County Public Libraries sponsors a thermal camera borrowing program for residents over the age of 14 with library cards who desire to complete home self-inspections using infrared technology enabled by the thermal camera. Organizations like Rent My Power Tools, Gaithersburg Rental Center, Rental Center Gaithersburg and others in the county have emerged with for profit models advancing their varied missions to let contractors, home owners or do it yourself crafters and average individuals access the right tools to complete their projects efficiently and effectively while saving costs. Larger chains run truck and tool rental programs as well with Home Depot rental centers in Aspen Hill, Bethesda, Rockville, Gaithersburg and Silver Spring MD for instance.

[27] Station North Tool Library https://www.stationnorthtoollibrary.org/

Reuse and Repair Program Implementation Schedule

Initiative	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Reuse Grant Program				
Expand Food Service Ware Ordinance				
Tool-Lending Library and Fix-It Fairs				

Implementation Tasks/Costs

The County staff would provide County operations and municipalities with ongoing technical support. Other County staff activities are included below.

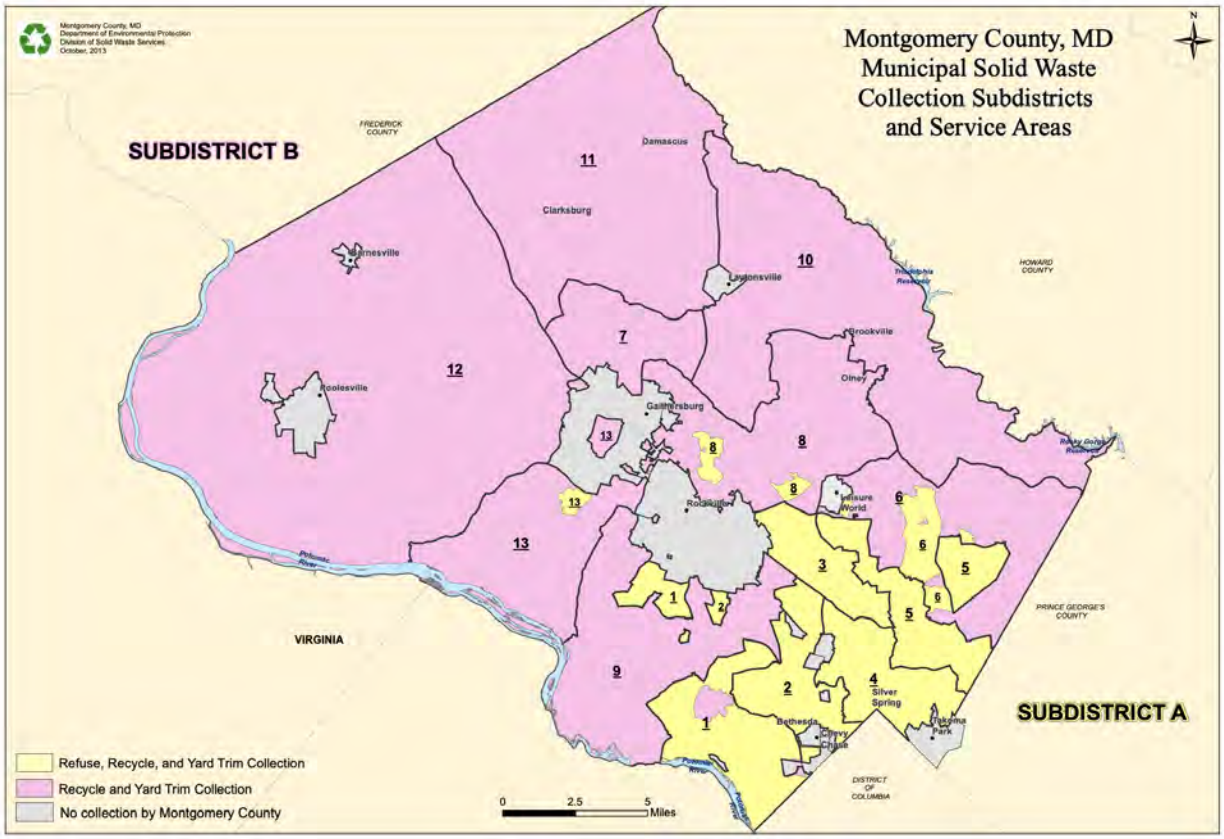
Reuse & Repair Program County-Level Staff Actions	Estimated Impacts FTE = Full Time Equivalent $ = Hauler/Contractor/ Consultant Support	
	FTE	$
Establish a reuse grant program for small reuse enterprises and provide technical assistance and support to reuse enterprises that would like to operate within the County	1.0	150,000
Expand food service ware ordinance to require reusables for on-site dining and support systems for reusables to-go	0.25	50,000
Establish a tool-lending center to act as a 'lending library' for residents and host monthly Fix-It Fairs.	1.0	50,000
Annual Impact	2.25 FTE	$250,000

Universal Collection of Recycling, Organics and Trash for All Generators

"Universal" collection means that all generators (single family, multifamily and commercial businesses) receive collection services for all materials (recycling, organics and trash) and are required to sort materials appropriately.

Arlington County, Virginia, a suburban area similar to Montgomery County, implemented countywide curbside food scrap collection in 2022 (Photo: Arlington County)

Montgomery County Department of Environmental Protection contracts for collection services for single-family households in most of the more densely populated "downcounty" areas of the county, including Bethesda, Kensington, Silver Spring and Wheaton. In these areas, known as "Subdistrict A," the County provides recycling, yard trimmings and trash collection. In "Subdistrict B," the County provides recycling and yard trimmings collection only. Licensed haulers provide trash collection for single-family households in Subdistrict B and for multifamily complexes and commercial business throughout the county.



The 19 incorporated municipalities including Rockville and Gaithersburg are responsible for the collection of trash and recyclables within their jurisdictions. The County should consider coordinating efforts countywide and supporting the municipalities by transitioning to a countywide uniform collection system for all materials and generator types. This approach has the potential to take advantage of countywide outreach and education (where programs are consistent and can be promoted countywide using shared resources). The County may also elect to cooperate with the municipalities on joint collection procurements and contracts. Transitioning to uniform programs countywide creates the opportunity for Zero Waste culture change. Montgomery County's Zero Waste goal can be adopted throughout the county and in every municipality. This will require outreach and consensus-building as discussed below.

To increase waste diversion from incineration, the County should change its approach to regulating the licensed haulers by requiring them to provide "universal" recycling and organics collection services to all residential and commercial generators, with corresponding requirements for generators to participate in such programs.

Provisions can be made to support local, small-scale services providers by dedicating routes or services areas designed for smaller-scale operations and by carving out single-service provision markets such as composting routes for existing compost haulers to allow them to keep and build market share without having to also enter into the business of hauling trash and recycling.

The lack of uniformity between the two collection subdistricts is a legacy from a time when Subdistrict A was considered more suburban and Subdistrict B was considered more rural. But, certain areas in Subdistrict B, such as Germantown, have become much more suburban in the last few decades.[28] Meanwhile, many residents of Subdistrict B receive twice-weekly trash collection further adding to the inefficiency of the system. To achieve universal collection and the corresponding economies of scale, the County should merge Subdistrict A and B to provide uniform collection services. This change would reduce the number of trucks in the neighborhoods, lower tailpipe pollution, increase efficiency, and, potentially, reduce costs for residents.

The County Council's Office of Legislative Oversight, in its November 2019 report, *Trash and Recycling Collection: An Evaluation of Current Policies,*[29] recommended a ballot process to ensure community consensus for consolidating the subdistricts. However, it is also possible to move forward through community outreach and education, leadership, negotiation with small haulers, and legislation.

Developing Community Consensus

The County has laid the groundwork for moving away from incineration by commissioning numerous reports for planning and implementation of new policies and programs, including the *Aiming for Zero Waste* Plan prepared in 2019, and the Comprehensive 10-Year Solid Waste Management Plan prepared under Maryland Law and approved in 2021. However, both reports still assume continuation of the status quo, including incineration. Developing community consensus for changing the status quo requires a dedicated effort. We recommend that DEP move forward with the following initiatives:

- Announce the Campaign for Zero Waste – announce that the County is pursuing Zero Waste and closing the incinerator. Be bold and show leadership!

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[28] *Montgomery County Trends, A Look at People, Housing and Jobs Since 1990*, January 2019 https://montgomeryplanning.org/wp-content/uploads/2019/01/MP_TrendsReport_final.pdf, Map 3

[29] *Economic Indicators for Montgomery County and Surrounding Jurisdictions*, January 15, 2019 https://www.montgomerycountymd.gov/OLO/Resources/Files/2019%20Reports/OLOReport2019-1.pdf

- Conduct Listening Sessions and Stakeholder Meetings – meet with stakeholders (school representatives, environmental groups, faith organizations, haulers, business groups, homeowner associations) throughout the county to get their perspective and generate interest and enthusiasm in changing the current system and to test out and determine what campaign messaging would be most effective (such as job creation, environmental health, reduced taxpayer money subsidizing wasting, climate protection).

- Conduct Public Workshops throughout the County – conduct a series of workshops to inform residents and business representatives of potential new changes and to hear their ideas and concerns, and to learn what messages would resonate with them.

- Conduct Meetings with Elected Officials – meet with municipal and county leaders to understand opportunities for collaboration and cooperation in pursuing Zero Waste countywide.

Negotiating New Contracts

Compact, efficient services areas are essential for providing universal collection of recycling, organics and trash. Approximately 20 licensed haulers operating in the county provide collection services to a variety of generators. It is possible through consensus and negotiation to keep each of the operators whole, while also providing uniform, universal service for recycling, organics and trash in compact collection districts. We recommend that DEP:

- Conduct a series of pre-competitive meetings with the local haulers to understand their current business models and their ideas for transitioning to uniform universal collection.

- If deemed appropriate, conduct a multiparty negotiation or conduct a competitive procurement for all 13 collection areas in Subdistrict A and design a new collection area in Subdistrict B to provide collection for single-family, multifamily, commercial and commercial collection for recycling, organics and trash.

- Reserve the right to bid out and contract food scrap collection separately to incorporate the wide range of collection providers that have proliferated in the region and have already begun developing decentralized composting infrastructure.

- Consider exempting small food scrap collection providers and waste generators who want to self-haul from the restrictions of these contracts, while also

protecting a generator's right to reduce their food waste via source reduction, on-site composting, and donation to community-based projects. Community composting sites should be encouraged to charge a tipping fee if desired.

- The County and entities within the county (homeowner associations, property managers, individual homeowners) currently have numerous existing contracts with differing timeframes, terms and conditions. These contracts can be sunsetted through either multiparty negotiation (and reassignment of contracts where necessary) or by providing a notice period and change in law to trigger contract termination provisions.

- The new collection system provides the opportunity to benefit all players. The purpose of the pre-competitive meetings and negotiations is to find the win-win for all parties.

Implementing Universal Services

Change is hard, but creating a disruption to the status quo wakes people up, increasing awareness and participation in new programs. Zero Waste doesn't happen on its own; it requires action and behavior change. For each generator sector, the County should employ the tools of Community-Based Social Marketing (CBSM).[30] CBSM uses social psychology to engage targeted sectors or targeted demographics (whose behavior you want to change) to understand the barriers and opportunities for changing behavior (such as reducing contamination, increasing recycling participation, and implementing organics recovery). We recommend that DEP move forward with the following initiatives:

- Roll-out universal recycling, organics, and trash collection to all generators countywide.

- Provide uniform collection in color-coded wheeled carts or cubic yard bins (blue for recycling, green for organics and gray for trash).

- Ensure that all carts and bins are color-coded and labeled appropriately.

- For multifamily and commercial customers with shared service in cubic yard bins, require they follow the four Cs (color, clarity, capacity, and convenience).

[30] *Quick Reference: Community-Based Social Marketing*
https://savetheirl.org/wp-content/uploads/CBSM-Quick-Guide.pdf

- Study other CBSM strategies and identify additional methods to integrate into programs in order to increase sustained behavior change and the impact of programs.

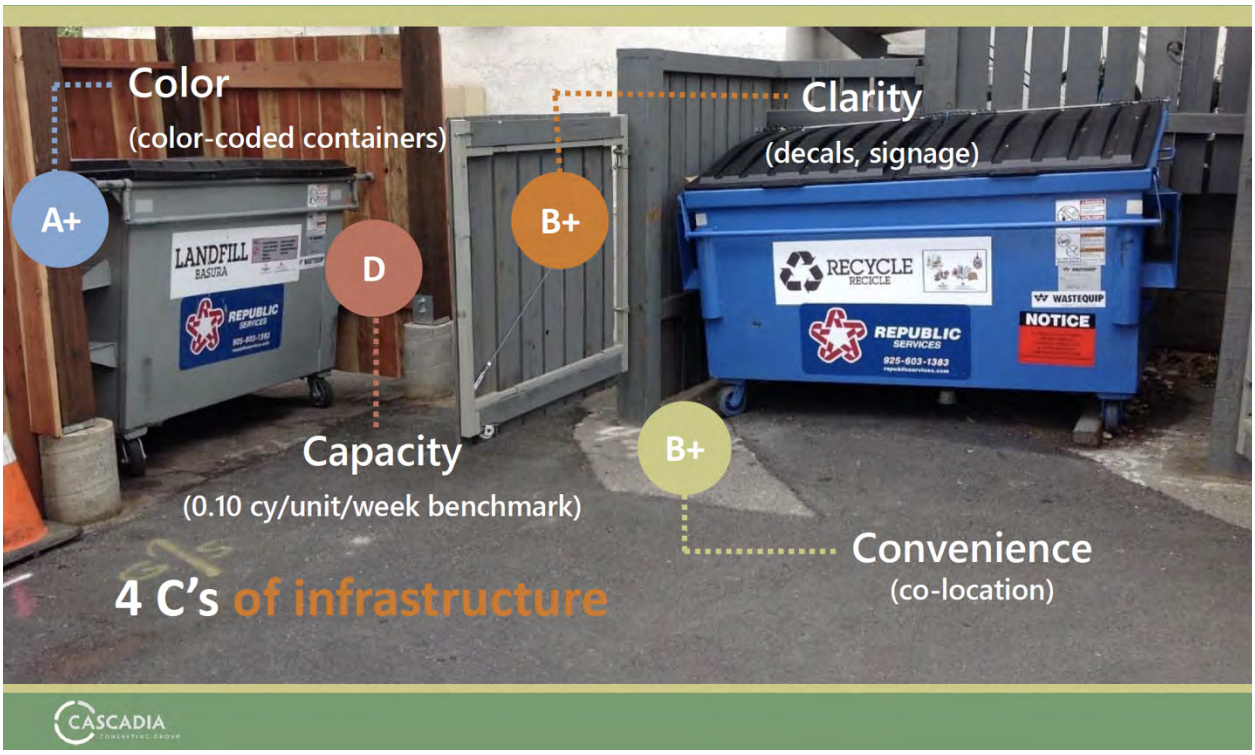
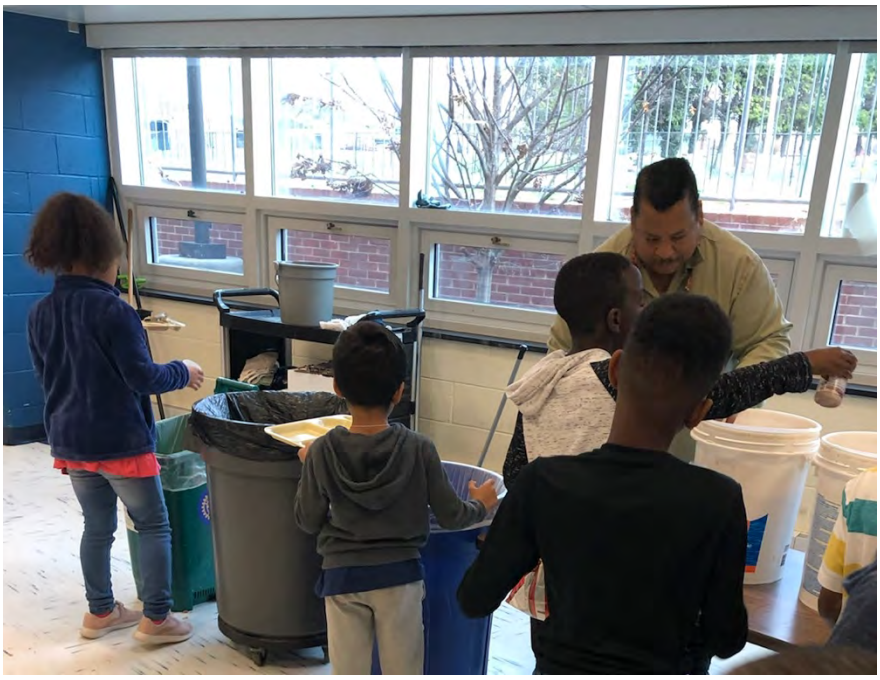


Illustration courtesy of Cascadia Consulting Group

Outreach, Education and Reinforcement

Zero Waste requires sustained, dedicated efforts and "boots on the ground" to conduct outreach, education, training, enforcement and reinforcement. DEP should examine its current allocation of staff and managers within the Recycling and Resource Management (RRM) Division to ensure that education and training tools to increase waste diversion are maximized through:

- Community-Based Social Marketing: Using these concepts, DEP staff should re-examine and redesign outreach and training programs specific to each generator type (restaurants, schools, multifamily buildings).
- Provide full-time outreach staff to visit every school, government building, multifamily complex and commercial business annually. Provide technical assistance to property managers in configuring appropriate placement of carts and bins and distribution of outreach materials.



Composting and recycling in action at Frederick County, MD public schools
Photo Credit: Joe Richardson, Bar-T Mountainside Education and Enrichment

- Obtain service volumes (the cubic yards of recycling, organics and trash) for each customer from the licensed haulers. Establish a benchmark 75% recycling rate for each customer based on service volumes. Work with each customer to "right-size" service (reduce the volume of trash and increase the volume of recycling and organics collection). Ensure that no customer has less than a 50% recycling rate.
- Provide annual, onsite training programs for custodians and janitorial staff.
- Offer internal containers (10-gallon deskside bins, 23-gallon slim jims, 32-gallon brutes) in appropriate colors (blue for recycling, green for organics) and with clear labeling to commercial businesses and schools.
- Offer kitchen pails (such as Sure-Close) for food scraps to all single-family residents and multifamily households.
- Use the lessons learned and best practices from the single-family food scrap collection pilot program currently underway in some Potomac and Silver Spring neighborhoods to educate residents about diverting organics. Provide different options for kitchen pails (which might be more appealing to residents), such as ceramic or steel containers to place on the kitchen counter for food scraps).

Door-to-Door Outreach, Oakland, California (Photo: Envirolutions)

Provide instructions about how to properly prepare food scraps for collection to reduce odors and impacts.

- Provide door-to-door outreach at multifamily complexes and multi-tenant properties. Provide language assistance, if needed (based on demographics of the complex or business). Conduct training regularly (due to high turnover) at restaurant kitchens to ensure that staff know proper sorting techniques.
- Ensure that all generators understand that not only is it the "right thing to do," proper separation of materials is required by law. Like seatbelt laws, solely knowing that it is a requirement is motivation enough for most people.
- Deliver information on food waste prevention and surplus food donation, set goals and track food waste prevention and donation.
- Use outreach efforts to inform residents and businesses of other County programs (e.g., Fixit Clinics, construction debris recycling, household hazardous waste drop-off, special collections for electronics or textiles).
- Conduct year-round "Feet on the Street" program. Follow up on the pilot program conducted in 2020. A recent study by the Solid Waste Association of North America (SWANA) concluded that to reduce contamination and increase recycling participation, regular door-to-door outreach and cart lid flips are needed to provide feedback directly to residents. Provision of "oops" tags guiding residents on proper sorting creates the feedback loop needed to change behavior.

Oops Tag, Solid Waste Association of North America, Applied Research Foundation

Universal Collection Program Implementation Schedule

Initiative	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Developing Community Consensus				
Negotiating (or soliciting) New Contracts				
Implementing Universal Services				
Outreach, Education and Reinforcement				

Implementation Tasks/Costs

Universal Collection Program County-Level Staff Actions	Estimated Impacts FTE = Full Time Equivalent $ = Hauler/Contractor/ Consultant Support	
	FTE	$
Collaborate with municipalities	0.1[1]	35,000[1]
Develop universal collection ordinance	0.4	50,000
Develop universal collection pilot program	0.4	50,000
Expand universal collection program countywide	0.5	50,000
Include Save As You Throw	0.1[1]	20,000[1]
Include reducing frequency of trash collection	0.1[1]	20,000[1]
Provide comprehensive outreach, education and technical assistance to support all generators countywide to reduce waste, recycle and compost	1.0	$250,000
Annual Impact	**2.3 FTE**	**$400,000**
[1]One-Time Cost	**0.3 FTE**	**$75,000**

Deconstruction, Construction & Demolition Debris Recycling Requirements

The County has adopted the IGCC (International Green Construction Code), which requires not less than 50% of non-hazardous construction waste to be diverted from destructive disposal. However, most construction and demolition debris generated in Montgomery County (61%, or over 100,000 tons per year) is burned or buried.[31] This discard stream includes reusable building materials (such as furniture, fixtures, windows, doors, and lumber) and recyclable commodities (including wood, metal, drywall, plastics, concrete, and asphalt). Burning painted and treated wood can be especially toxic.[32] The County's incinerator burns an average of 88,000 tons of construction and demolition debris annually, comprising 15% of the incinerator's incoming waste stream.

Deconstruction

Deconstruction is the selective dismantlement of building components for reuse and recycling. Specialists in deconstruction, such as Community Forklift in Hyattsville, and National Deconstruction in Clarksburg, can salvage up to 80% of a building's components and return them to the local economy. The County can support these efforts.

In 2016, the Portland, Oregon City Council adopted an ordinance that requires certain projects seeking a demolition permit to be fully deconstructed as opposed to mechanically demolished. The regulation has created a new industry in Portland. Sixteen Certified Deconstruction Contractors have hired dedicated staff and provided them with training in deconstruction (which also serves as training for construction trades). A similar training program was developed with the construction trades unions in Connecticut.

[31] *Montgomery County Comprehensive Solid Waste Management Plan 2020 – 2029*, page 3-34
[32] "Hazards of Construction & Demolition Waste Incineration," Energy Justice Network. http://www.energyjustice.net/incineration/cd.pdf

Deconstruction Crew, Portland, OR (Photo: City of Portland)

Recycling

At state-of-the art recycling facilities, clean loads of source-separated materials, including roofing materials, drywall, concrete, stucco, and carpet can be recycled at a 99+% rate. Commingled materials, including construction debris, demolition debris, and mixed debris can be recycled at an 82+% rate. The Recycling Certification Institute certifies construction and demolition debris recycling facilities to document recycling rates and lists certified facilities on its website.[33]

Building Materials Reuse Centers

Building materials reuse centers are central components of Zero Waste infrastructure for staging, storing and selling surplus or deconstructed building materials. A key opportunity within the county is to develop or contract for one or more building materials reuse centers for sale of salvaged building materials and used household items.

[33] Recycling Certification Institute
https://www.recyclingcertification.org/registered-facilities/

Community Forklift (Photo: Ed Jackson)

New Rules

Local rules create incentives and encourage reuse and recycling of construction & demolition materials, which can significantly reduce a community's discards. Construction & demolition reuse and recycling requirements may apply to construction, renovation, and demolition projects. Cities, counties, and states across the country have adopted ordinances and destructive disposal bans on construction & demolition debris.[34] Most construction & demolition material policies include recycling requirements for construction & demolition debris, specifications on types and quantities of materials that must be recovered, reporting requirements, and compliance tools including plans, fees and penalties for non-compliance. Destructive disposal bans are an effective tool for increasing construction & demolition debris diversion.

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[34] The City of Fitchburg, WI requires the reuse and/or recycling of materials from certain construction, roofing, remodeling, and demolition projects. Construction and demolition projects to which the ordinance applies will require a Preliminary Construction and Demolition Reuse/Recycling Plan, detailing the contractor or owners recycling efforts.
https://library.municode.com/wi/fitchburg/codes/code_of_ordinances?nodeId=TIIVSE_CH41SOWARE

In 2020, Pitkin County, CO adopted a Construction and Demolition Diversion Regulation ordinance, which creates a framework for the county's new construction and demolition debris recovery program. Through a collaboration between the Pitkin County Solid Waste Center and the Pitkin County Community Development Department, construction and demolition debris waste management requirements are now tied to the county's building and demolition permit process.
https://pitkincounty.com/DocumentCenter/View/26097/Ord0152020

Local requirements are important as construction managers might not see an economic advantage for separating materials at job sites or may feel that there is not enough space onsite for reuse and recycling. A key to successful recycling is to match the containers to the material, both in time and size. It is not necessary to have multiple containers on the site. Instead, containers are matched to each phase of the job and swapped in or out.

- When the framers are working, it's time for a wood box.
- When the wiring, plumbing, and appliances are being installed, it's time for a metal box.
- When gypsum drywall is being installed, it's time for a drywall box.

If the job is planned well from the construction side, most of the work required to recycle has already been done.

A dedicated County staff person would support the expansion of deconstruction, construction and demolition recycling requirements, and the development of building material reuse centers. This would be done in coordination with the Department of Permitting Services.

An early task (years 1-2) would be for the County staff to provide technical assistance to Montgomery County municipalities in developing a model deconstruction ordinance for inclusion in local building codes and updating the County's code to include deconstruction and more aggressive targets. This task could be initiated in one municipality interested in piloting this effort in the county. The County staff would coordinate the development process through engagement with municipal staff, local building industry stakeholders, and local existing or potential diversion service providers.

The County staff would support the adoption and implementation of the model deconstruction ordinance throughout Montgomery County (years 3-4).

A similar process and timeline would be followed to develop and implement model construction and demolition recycling requirements. In both cases, the timing of policy implementation must take into consideration the availability of services and infrastructure to support the requirements of the policy.

The County staff would work with the workforce development and diversion service provider communities to develop a grant program for enterprise development to support the growth of Montgomery County's deconstruction service and building

material reuse sectors (years 2-4). Grants would cover workforce development for deconstruction crews and building material reuse infrastructure. The County staff would then administer and oversee the grant program as needed.

Deconstruction, Construction & Demolition Recycling Program Implementation Schedule

Initiative	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Deconstruction & Recycling Rules				
Countywide implementation				
Workforce Development				

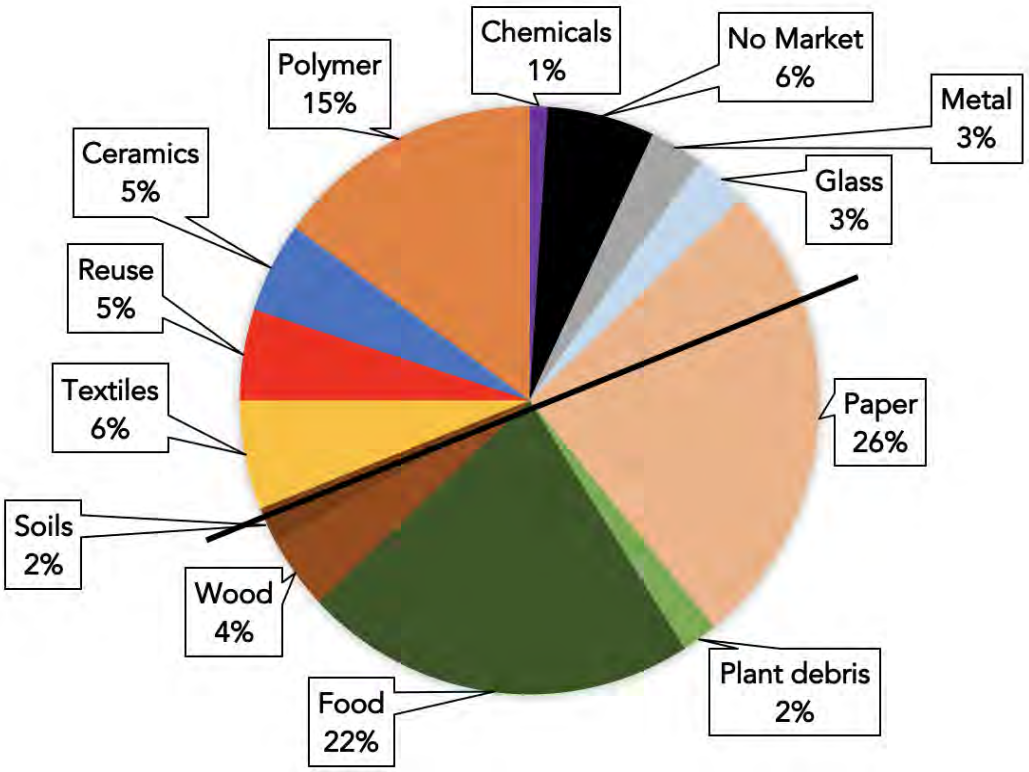
Implementation Tasks/Costs

The County staff would provide County operations and municipalities with ongoing technical support. Other County staff activities are included below.

Building Material Reuse & Recycling County-Level Staff Actions	Estimated Impacts FTE = Full Time Equivalent $ = Hauler/Contractor/ Consultant Support	
	FTE	$
Develop a deconstruction ordinance	0.1	50,000[1]
Support the growth of Montgomery County's deconstruction sector	0.3	0
Establish a grant or loan program	0.1	50,000
Adopt a destructive disposal ban for construction & demolition debris	0.1	50,000[1]
Adopt a construction & demolition debris diversion ordinance	0.1	50,000[1]
Support the growth of Montgomery County's construction & demolition diversion sector	0.3	0
Assist with planning for a County-owned building material recovery yard	0.3	0
Look for a site, including at local big box home stores (e.g. Home Depot or Lowe's) for a building material reuse center.	0.2	0
Assess municipally-owned properties to determine if a suitable site for development of a building material reuse center exists	0.2	0
Support the establishment of building material reuse centers in Montgomery County	0.3	0
Annual Impact	**2.0 FTE**	**$50,000**
[1]One-Time Cost		**$150,000**

Resource Recovery Parks

Resource Recovery Parks are places where materials can be dropped off conveniently for donation, buyback or a fee for service. Reuse, recycling, composting, collection, processing and manufacturing operations may be co-located there. When parks work to divert the greatest amount of materials possible, the public can bring materials from any of the 12 market categories of recoverable and discarded materials at one time.



Montgomery County Materials Composition Study, 2017 (SCS Engineers)
Divided into the 12 Market Categories
As codified by Urban Ore and Richard Anthony Associates

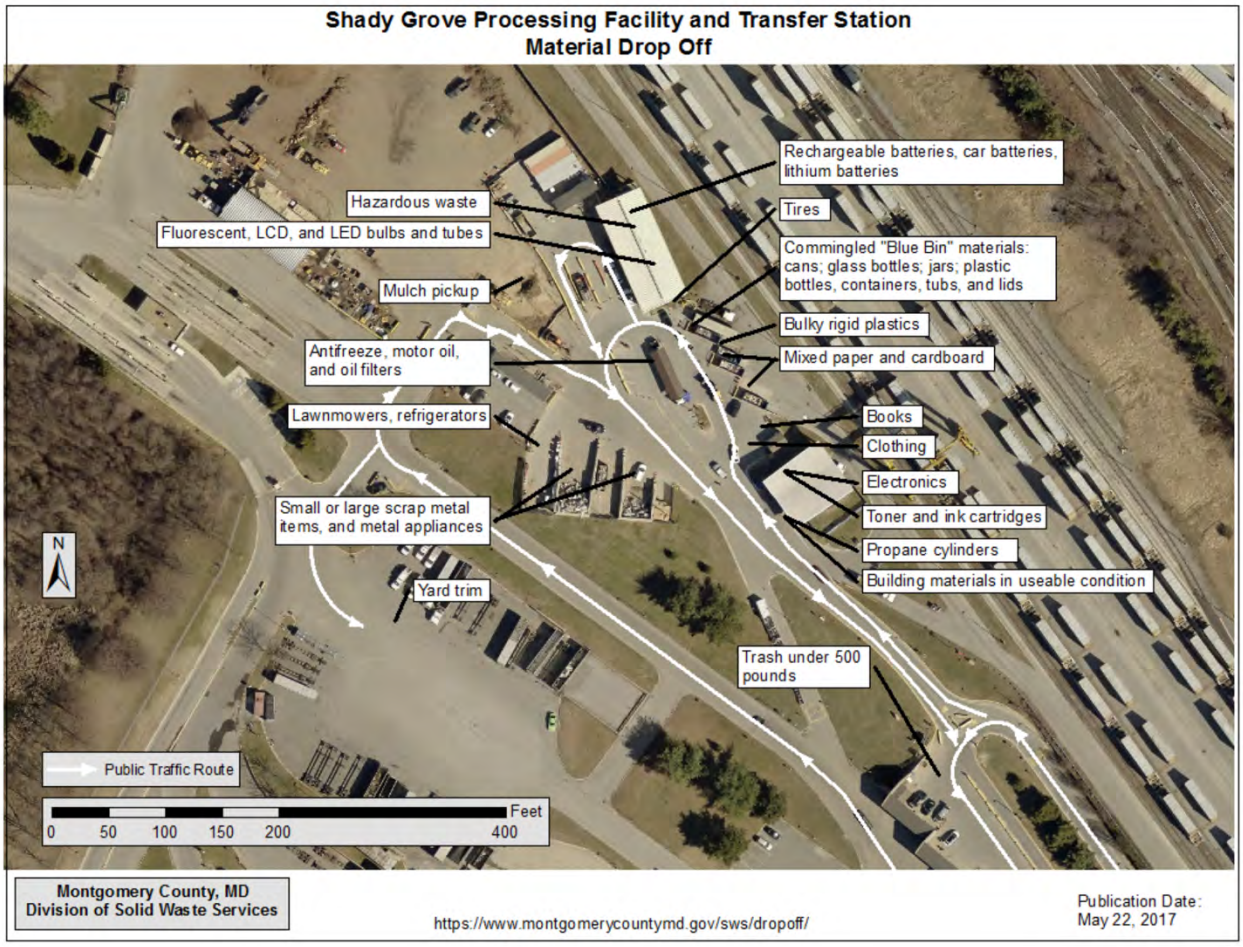
The Resource Recovery Park concept has been evolving naturally at landfills and transfer stations in the United States, such as at Texas Disposal Systems in Austin[35] and the Monterey Regional Waste Management District in Monterey, California.[36] These facilities can provide additional reuse, recycling and composting opportunities for self-hauled loads brought to "the dump." Landfills and transfer stations have been sited near the centers of discarded materials generation. A Resource Recovery Park can

[35] Texas Disposal Systems https://www.texasdisposal.com

[36] Monterey Regional Waste Management District in Monterey https://regenmonterey.org

make the landfill or transfer station more sustainable by diversifying revenue, conserving capacity, and extending the useful life of those facilities.

A significant fraction of materials delivered to the Shady Grove Transfer Station are from self-haul customers. These are the "missing tons," typically not included in municipal contracts or regulated by local ordinances.



Shady Grove has drop-off areas for some reusable and recyclable commodities (including bottles and cans, mixed paper, rigid plastics, building materials, scrap metal, clothing, electronics, yard trimmings, and household hazardous waste). Loads of concrete and asphalt are also separately managed at Shady Grove.

However, customers may be bypassing this area in order to directly unload their materials with regular trash to avoid paying tipping fees. There are several options for ensuring proper separation and recovery of reusable and recyclable commodities.

- **Provide a fee incentive**. Currently, there is no charge for trash loads under 500 pounds and $60 per ton for trash loads over 500 pounds. An alternative approach would be to increase fees to customers who do not separate

materials prior to disposal as trash (e.g., $60 for trash loads under 500 pounds and $120 per ton for loads over 500 pounds).

- **Engage a salvager**. Salvagers can assist customers with unloading at the tipping area and recover reusable and recyclable items. The County could provide an incentive to the salvager by paying them the equivalent of the tipping fee at the incinerator for every ton removed from the transfer station, which is done at the Berkeley, CA Transfer Station.[37]
- **Require separation**. Do not allow customers to bypass the drop-off area; require separation prior to disposal as trash.

The drop-off area at Shady Grove will need to be reconfigured for proper staging if all customers are required to separate materials or take additional time to do so. Areas for separation of additional reusable and recyclable commodities may also be needed, including organics such as food scraps and compostable paper, wood, and soils. Should it be infeasible to redesign the drop-off area for proper source-separation, the County would need to develop an alternative site for self-haul customers specifically designed for maximizing recovery. In addition, the County should aggressively step up its efforts to negotiate with private landholders of adjacent property to Shady Grove, such as the Casey tract. This is a key step to allow a much-needed expansion and transformation of the Transfer Station to become a true Resource Recovery Park.[38]

El Cerrito, California Recycling Center (Photo: City of El Cerrito)

[37] U.S. EPA, *Managing and Transforming Waste Streams – A Tool for Communities, Zero Waste Case Study: Berkeley* https://www.epa.gov/transforming-waste-tool/zero-waste-case-study-berkeley

[38] Conversation with Willie Wainer, December 9, 2021.

Resource Recovery Park Implementation Schedule

Initiative	FY 22-23	FY 23-24	FY 24-25	FY 25-26
Evaluate Shady Grove for redesign				
Redesign Shady Grove for separation				
Or develop an alternative site				

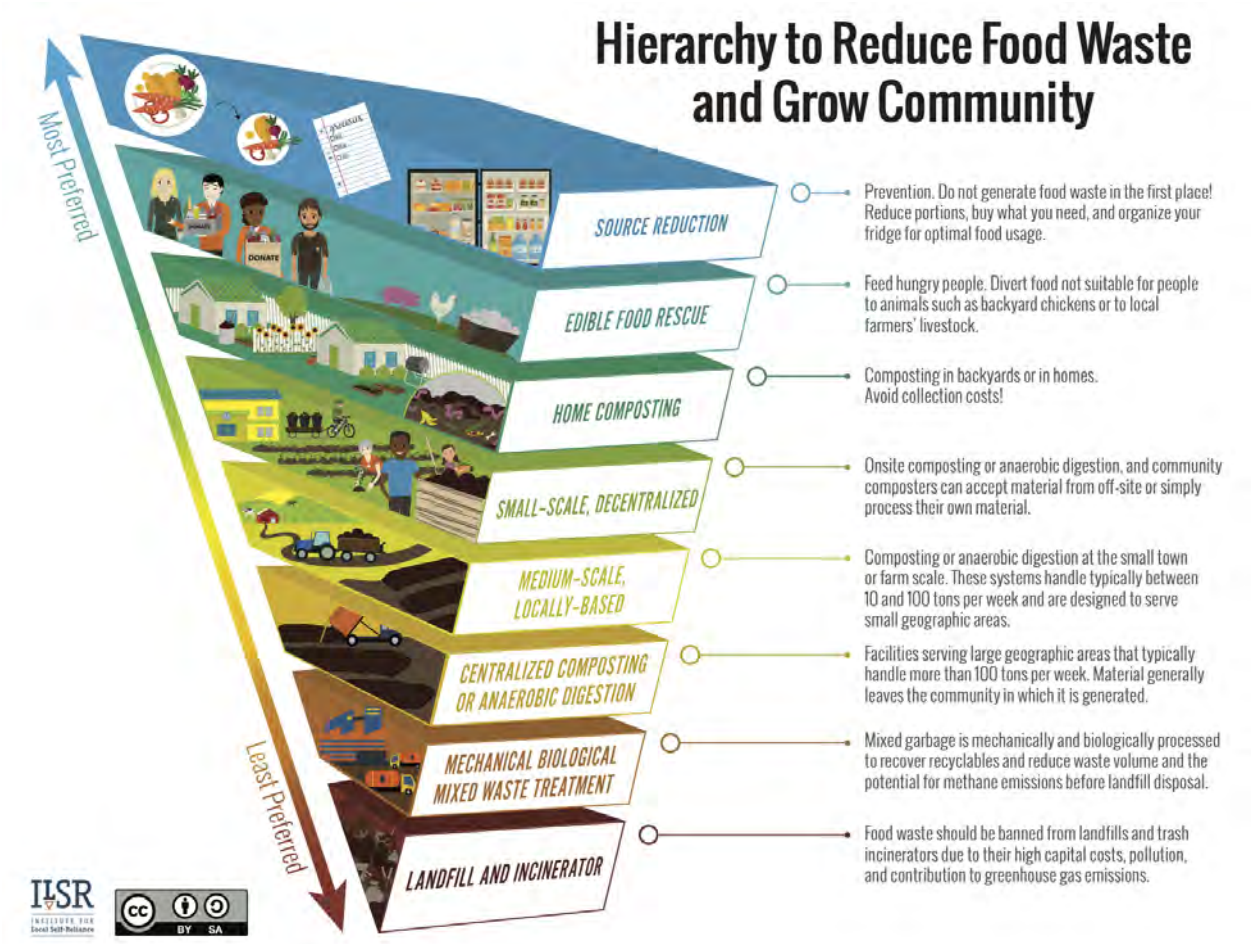
Implementation Tasks/Costs

Resource Recovery Park County-Level Staff Actions	Estimated Impacts FTE = Full Time Equivalent $ = Hauler/Contractor/ Consultant Support	
	FTE	$
Conduct stakeholder engagement with self-haul customers and determine appropriate incentives or disincentives to ensure separation of loads prior to disposing as trash	0.1	
Evaluate Shady Grove for redesign to ensure proper staging and expansion of reusable and recyclable commodities accepted	0.2	$50,000[1]
Redesign Shady Grove for enhanced separation or develop an alternative site for self-haul customers in the county	0.5	$2M-3M[1]
Negotiate contracts for salvagers or other operators (revenue neutral or revenue generating)	0.1	
Secure grants and funding opportunities	0.1	
Annual Impact	**1.0 FTE**	
[1]One-Time Cost		**$2M-3.05M**

Comprehensive Organics Management Strategy

In April 2019, the County adopted *The Strategic Plan to Advance Composting, Compost Use, and Food Scraps Diversion in Montgomery County ("Strategic Plan").* We propose the following activities and programs to build on the *Strategic Plan* to increase the recycling rate for the organic fraction of the municipal solid waste currently going to the Montgomery County Resource Recovery Facility. At the core of the plan is a multi-pronged approach for reducing food waste by emphasizing prevention, rescue and a distributed and decentralized infrastructure to process nonedible food. *The Hierarchy to Reduce Food Waste* developed by the Institute for Local Self-Reliance (ILSR) captures this approach, and also prioritizes composting based on scale, beginning with on-site, then community, then on-farm, and finally centralized. For Montgomery County's Comprehensive Organics Management Strategy, centralized aerobic composting is preferred over centralized anaerobic digestion in the hierarchy.

Composting can take place at many levels – backyard, block, neighborhood, schoolyard, community, and regional – and in urban, suburban, and rural areas. There are many methods and sizes. Large-scale centralized facilities can serve wide geographic areas and divert significant quantities of organic materials from disposal. Composting locally at the neighborhood or community-level yields many other benefits: social inclusion and empowerment, greener neighborhoods, improved local soils, enhanced food security and fewer food deserts, less truck traffic hauling garbage, more local jobs, and increased composting know-how and skills within the local workforce that are reinforced in the next generation. When composting is small-scale and locally based, community participation and education can flourish. When materials are collected and transported out of the community for processing, few if any of these benefits are realized at the local level. In addition, community-scale operations can move from concept to operation in a relatively short time frame. And community composting can build critical support for and participation in future countywide food scrap recovery programs.



Reducing Wasted Food/Channeling Food to Others

- Support the work of the Montgomery County Food Council Environmental Impact Working Group, MANNA, Community Food Rescue and others that are supporting food rescue throughout the county.
- Conduct an audit to understand what percentage of wasted food is edible (e.g., available for rescue) versus inedible (e.g. destined for recycling and composting).
- Evaluate how a mandatory food recovery program would work; how many and what types of establishments would participate; how it would work in real time and how it could be paid for.
- Develop a robust, pro-active education and outreach program aimed at food service providers and the general public about the importance of food recovery, how and where to donate, organizations and software that help food waste sources quantify and manage wasted food and guidance for catered events about the set-out of prepared foods (i.e., only set out what is going to be eaten soon so as not to foreclose on donating leftovers).

- Provide refrigerators in County schools so that unwanted foods can be safely stored and transported to other schools (or venues) where there is demand for additional food.
- Collaborate with County's food safety inspection officials to utilize on-site inspections as an opportunity to educate about donation of edible food.
- Review the examples and additional strategies of the Environmental Impact Working Group to fully implement the Strategic Plan.

Animal Feed

- After maximizing prevention and feeding people, evaluate suitability of upcycling clean food waste streams to animal feed.
- Engage in discussion with Maryland Department of Environment to consider creating a regulation like New York State Department of Environmental Conservation's allowance of diverting processed food scraps to animal feed (Part 361-3.5).[39]

Backyard Composting

- Invest in a major expansion of the County's home composting program that provides dependable multi-year funding for free or reduced-price composting bins to residents, personalized training, and that sets residents up for success. Home composting programs remain a cheap and effective way to reduce municipal garbage and engage more people directly in the composting process. The County can avoid the labor and costs of collecting and handling material, leading to considerable savings that will accumulate each and every year. A 2018 ILRS report, *Yes! In My Backyard: A Home Composting Guide for Local Government*, found that for every 10,000 households composting at home, between 1,400 and 5,000 organic tons per year could be diverted from curbside collection with potential savings in avoided disposal costs alone ranging from $72,000 to $250,000.[40] Composting at home also enhances soil in residential yards and gardens.

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[39] New York State, *Regulations for Organic Recycling Facilities, Animal Feed*
https://www.dec.ny.gov/chemical/97488.html#Animal_Feed
New York Codes, Rules and Regulations, Animal feed production facilities
https://govt.westlaw.com/nycrr/Document/Id4d62f2bdfe911e7aa6b9b71698a280b?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

[40] *Yes! In My Backyard: A Home Composting Guide for Local Government*
https://ilsr.org/yimby-compost/

- Provide home composting bins to residents: purchase in bulk through a contract with manufacturers and sell the bins at the wholesale prices; subsidize the price of the bins; or provide vouchers or rebates to give residents discounts on bins sold at local retailers.
- Educate and train: Offer education and training to enable home composters to succeed, troubleshoot on their own, and produce high-quality compost.
- Tie training to bin giveaways or distribution. Training ensures residents are exposed to the best management practices.
- Make education and training easily accessible in order to encourage participation. Offer training in multiple languages.
- Offer hot composting training and bins as well as vermicomposting training and bins. Vermicomposting, or worm composting, can be done by residents in apartments or by those with little or no yards.
- Develop strong outreach efforts and innovative marketing campaigns to increase program participation. Invest in a strong marketing push when launching a program to interest people right from the beginning. The City of Orlando launched its program around a "Get Dirty" campaign, which was effective in getting people to pay attention to the topic of wasted food.
- Review and modify existing archaic laws and rules to make sure they do not prevent home composting or pass new ordinances to support home composting. Chapter 48-17 of the Montgomery County Code specifically addresses Disposal by Use of Compost Pile: "The use of compost piles for the disposal of garbage is permitted only when the pile is completely rodent-proofed. Compost piles consisting entirely of leaves and dirt do not require rodent-proofing." This language is far too prescriptive, especially as there is no such thing as a rodent-proof bin. The District of Columbia's 2008 Home Composting Incentives Act, clarifies that an owner of residential property in the District may engage in composting on his or her residential property; provided that the composting system shall be conducted in a manner that does not promote the development, attraction, or harborage of vectors; or create a public nuisance.[41] The County should consider similar language. Regulations that stipulate a long list of prescriptive requirements are unnecessary and may unintentionally ban certain types of composting systems that work well. As long as the County's legislative language clearly outlines that residents shall not promote vectors of disease or other public nuisances, giving residents leeway in how to manage their home composting system is preferable. Provide an annual

[41] Washington, D.C. Home Composting Bill Unanimously Passes City Council https://ilsr.org/washington-dc-home-composting-bill-passes/

report, by July 1 of each fiscal year, updating the metrics of food waste diversion in the county and documenting the progress made towards achieving the goals of the *Strategic Plan* per Montgomery County Code Sec. 48-17B.

For Valentine's Day 2016, Orlando invited residents to "Get Dirty with Their Valentine" by downloading one of these cards after signing up for a free Earth Machine™ bin as a Valentine gift. Source: JenHiatt.com

Community Composting

- Connect community composting with the county's growing community gardening movement, which is addressing social inequities, building healthy soil, actively working to plant native species, and fostering local seed exchanges. Urban gardens in Montgomery County need support and access to land and other resources. One way the County can commit to sustainable and equitable development is to support community composting as an accessory activity at urban farms and community gardens. Directly engage potential collaborators and partners such as IMPACT Silver Spring's first Community Garden, created by Kyree Clark "as part of a greenspace initiative to reduce local food insecurity and boost climate resiliency, a solution designed to mitigate socioeconomic disparities exacerbated by climate change and the more recent COVID Pandemic."[42]

[42] IMPACT Silver Spring, Our Staff: Kyree Clark
https://impactsilverspring.org/meet-our-staff/#1576956135749-c47f59b1-d720

- Modify Chapter 59-3 of the Montgomery County Zoning Ordinance to add "composting" to the definition of Community Garden (Sec. 3.2.3) and Urban Farming (Sec. 3.2.9), and to allow both Community Garden and Urban Farming as Permitted Uses in all zones.
- Engage existing community composters to understand their composting capacity and needs. Finance any infrastructure improvements necessary. This may include gravel pads, secure tool and materials storage, rat-resistant composting systems, and water access. Provide direct funding to cover staff to manage composting and provide Master Composter training. The New York City Department of Sanitation supports seven community composting sites as "host sites" for its NYC Compost Project. These sites serve as demonstration and training sites and process a good deal of the food scraps collected via the City's drop-off program. Big Reuse, for instance, works with 70+ food scrap drop-off sites to collect food scraps that it processes into compost at two sites.[43]
- Identify partners and stakeholders who might be interested in starting a community composting project and identify tracts of land that might be suitable for community composting sites (and additional urban farms and community gardens). Consider developing a program to support new and existing community composters modeled after the Community Compost Cooperative Network managed by the DC Department of Parks and Recreation.
- Develop and invest in a Master Composter Training Program to increase the pool of community leaders who understand the benefits of composting and who can train and inspire others to compost. The New York City Department of Sanitation offers a Master Composter Certificate Course, which is an advanced compost education and outreach program. The course has trained thousands of residents and has built a citywide network of educators, advocates and community composters to support the Sanitation Department's composting initiatives.[44] ILSR's Neighborhood Soil Rebuilders Composter Train-the-Trainer Program, developed with ECO City Farms in Prince George's County, could be replicated in the county. Graduates of the program have started composting companies (e.g., Loop Closing in the District and Key City Compost in Frederick) as well as volunteer-run composting programs (e.g., the Compost Cooperative in Greenbelt and Hidden Harvest Community Garden compost cooperative in Baltimore).

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[43] See Webinar: Government Support for Community Composting Part 1: Spotlight on New York City, https://ilsr.org/govt-support-for-community-composting-nyc/

[44] New York City, Department of Sanitation, Master Composter Certificate Course https://www1.nyc.gov/assets/dsny/site/contact/master-composter-certificate-course

- Engage MCPS to encourage and invest in composting as part of school gardens and outdoor educational programming, and to officially include composting as an approved activity for earning student service learning hours (72 SSL hours are currently needed per student to graduate high school).
- Modify Chapter 48-17 of the Montgomery County Code to change "disposal of garbage" to "diversion of source-separated food wastes" and to establish performance-based guidelines such as "thou shalt not create vectors or public nuisances," to replace the prescriptive requirement that compost piles need to be rodent-proof. Focus any new legislation or rule toward fostering successful and well-operated community composting rather than creating prescriptive requirements that may unnecessarily stifle the ability of sites to compost on site or at the community level.
- Provide an annual report, by July 1 of each fiscal year, updating the metrics of food waste diversion in the County and documenting the progress made towards achieving the goals of the *Strategic Plan* per Montgomery County Code Sec. 48-17B.

On-Farm Composting

The County's Office of Agriculture (OAG) is working to establish a distributed network of on-farm food scrap recycling hubs that transform food waste into easily accessible compost for farmers and community gardeners in order for them to grow local food more sustainably and economically in the County's densely populated urban/suburban community. The goal is to establish on-site food waste composting where food is grown — at local farms and community gardens — in order to increase producers' access to clean compost, reduce reliance on fertilizers, increase crop production and improve soil quality and health while reducing transportation and hauling, cutting greenhouse gasses, and increasing carbon sequestration.

- Support the Office of Agriculture's vision for establishing an on-farm composting training site at the County-owned Agricultural Farm History Park in Derwood (in the county's 90,000-acre agricultural preserve) and building a distributed network of on-farm food scrap recycling hubs in the county.
- Work with the Maryland Dept. of the Environment (MDE) to modify COMAR 26.04.11.06 to allow exemption from permitting for an active composting pad of 40,000 square feet (SF) or less (current regulation limits exemption to 40,000 SF of "area in support of composting" which includes more than the active composting pad).
- Modify MDE 5,000 SF exemption for on-farm food waste composting to be exclusively for the active composting area instead of being inclusive of all activities "in support of composting" and expand area exemption to 40,000 SF.

- Provide grant funds or low-interest loans to farmers to pay for shared infrastructure for on-farm composting (e.g. hardened pads for tipping material, extending electrical service, and installing gravel access roads).
- Consider hiring a contractor to provide an on-farm organics composting technology on a Design-Build-Own-Operate or Design-Build-Operate basis using one or more modular composting technologies.
- Collaborate with the USDA Natural Resources Conservation Service (NRCS) to assist farms in Montgomery County in implementing Conservation Practice Standard Soil Carbon Amendment 336, which offers financial assistance for use of compost.
- Expand the Office of Agriculture's Soil Amendment Program to provide up to five 40-cubic-yard loads of compost (either LeafGro, LeafGro Gold or compost produced at a Montgomery County farm or other composting facility) to interested farms at no cost annually.
- Modify Chapter 59-3 of the Montgomery County Zoning Ordinance to allow "Agricultural Processing" (which includes composting) as a Permitted Use rather than as a Conditional Use.
- Modify Chapter 48-17 of the Montgomery County Code to: a) modify "disposal of garbage" to "diversion of source-separated food wastes" and by establishing clear guidance on "rodent-proofing" compost piles.
- Provide an annual report, by July 1 of each fiscal year, updating the metrics of food waste diversion in the County and documenting the progress made towards achieving the goals of the *Strategic Plan* per Montgomery County Code Sec. 48-17B.

On-Site Institutional and Business Composting

- Modify Chapter 59-3 of the Montgomery County Zoning Ordinance to expand the definition of "Recycling Collection and Processing" to include on-site composting or anaerobic digestion (AD) of source-separated food wastes and to make on-site composting or AD a permitted use in all Employment and Industrial Zones.
- Work with MDE to create a permit exemption for small-scale (e.g., <100 tons/year) on-site composting operations.
- Support the development of one or two on-site commercial composting demonstration projects. Loop Closing is one DC-area based enterprise working with businesses to compost on-site.[45] For example, 4PFoods in Vint Hill, VA, is in the process of eliminating the hauling of food scraps. With the help of Loop

[45] Loop Closing https://www.loopclosing.com/

Closing, it recently installed a Ridan, which is a small in-vessel composting system. Loop Closing is also working with Equinox Restaurant in DC to start composting onsite.

- Survey businesses and institutions in the county to see which ones are interested in on-site and which ones are interested in curbside collection.
- Publish case studies of successful on-site composting systems both in the Mid-Atlantic region and nationally.
- Prepare an information document/website that explains the different on-site composting (and digestion) technologies, how they operate, and approximate costs.
- Provide grant funds or low-interest loans for the capital cost for the on-site composting technology for businesses and institutions interested in on-site food scraps management. Loans could be paid back from the avoided costs of not having to collect these materials as trash through appropriate right sizing of trash containers after implementing the on-site composting.
- For those electing to use on-site technologies, and who don't have the staff to manage the composting operation, the County should provide well-trained contractors (a.k.a. Circuit Riders) who would manage and maintain the system. This could be set up as a "standard service" with just system maintenance (and the food waste source providing trained staff to operate the system), or as a "premium" service, with the contractors both managing and maintaining the systems (the advantage of a "premium" service is better composting management and fewer potential vector problems).
- Modify Chapter 48-17 of the Montgomery County Code to: a) modify "disposal of garbage" to "diversion of source-separated food wastes" and by establishing clear guidance on "rodent-proofing" compost piles.
- Provide an annual report, by July 1 of each fiscal year, updating the metrics of food waste diversion in the County and documenting the progress made towards achieving the goals of the *Strategic Plan* per Montgomery County Code Sec. 48-17B.

Curbside Collection of Organics

- The County should survey businesses and institutions in the county to see which are interested in on-site and which are interested in organics collection.
- Expand the food scraps collection pilot test to four new areas in 2023, eight new areas in 2024 and across all residential customers in Subdistricts A and B in 2025, with the diverted organics going to the Prince George's County Composting Facility at Western Branch in the short-term and to in-county locations as they are developed.

- Support all municipalities in the county in making curbside source-separated organics to residences available beginning in 2024 and to require diversion for commercial and institutions within each municipality; for municipalities with less than 10,000 population, provide an option to meet organics diversion for residents with drop-off stations.
- Provide a network of food scraps drop-off stations at farmers markets, public libraries, government buildings, County parks, County schools and large privately-owned public gathering places (e.g., shopping malls).
- Negotiate an agreement with Prince George's County for an allocation of processing capacity at the Western Branch Composting Facility.
- Reduce the Base Solid Waste Charge under Montgomery County Code Sec. 48-32 (a)(1) to $25.00 per ton for source-separated organics.
- Consider providing a one-year tax relief on the Incremental System Benefit Charge levied against single-family and multifamily residences and nonresidential solid waste sources who: a) sign up for a County-sponsored curbside collection service for organics; b) register to receive access to a food scraps drop-off station; or c) enter into an organics diversion contract on their own.

Centralized Organics Management Facilities

- Develop a Facility Plan (with implementation timeline) to convert the Montgomery County Yard Trim Composting Facility from turned windrow to aerated static pile (ASP) or extended ASP (EASP) composting for food scraps composting. Alternatively, develop a stand-alone composting facility that can accept food scraps on another site to reduce the burden on the Dickerson area.
- Developing an anaerobic digestion (AD) facility in the county to make hydrogen for vehicle fuel is not recommended at this time for the reasons outlined in Appendix C.
- Consider entering into a short-term agreement with an existing organics processor to secure up to 25,000 tons/year of processing capacity for food scrap streams with minimal contamination; work with food scrap generators and concierge haulers to identify low-contaminant sources of diverted or divertible food scraps. Prioritize composting over anaerobic digestion.

Stimulating Compost Markets in Montgomery County

- Consider a program similar to Arlington County, Virginia for restoration of the soil profile to enhance rainfall infiltration and reduce stormwater runoff for developed sites undergoing substantial reconstruction.[46]
- Adopt a New Construction Development Ordinance that specifies a minimum soil organic matter content of 5% to promote rainfall infiltration and reduce stormwater runoff.[47]
- Consider developing a program for the use of compost as a soil amendment to improve carbon sequestration in soils in both landscaping and agriculture.
- Survey farmers in the county to understand their compost needs and to better understand the barriers to farmers using compost as a soil amendment
- Engage NRCS, Maryland Department of Agriculture, UMD Agricultural Extension Service, and other researchers to establish on-farm demonstrations for compost use to compare application rates of different types of compost and measure edge-of-field water quality to connect researchers, regulators and farmers. NRCS offers support for setting up edge-of-field monitoring.
- Require County agencies with land holdings, and all municipalities in the county with land holdings, to purchase and use products made from recovered organics, such as compost and mulch. The Natural Resources Defense Council and Environmental Law Institute developed a model compost procurement policy that can be used by jurisdictions like Montgomery County to encourage or require the use of compost products.[48]

Legislative Actions

- Support a re-introduction of HB 1070, the Solid Waste Disposal and Diversion and On-Farm Composting and Compost Use bill, to the Maryland General Assembly for Maryland's 2023 legislative session and support the bill's passage.[49]
- Work with the Maryland Congressional Delegation to support inclusion in the 2023 Farm Bill of the Community Compost and Food Waste Reduction Project (CCFWR) within the USDA Office of Urban Agriculture and Innovative

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[46] Coker, C., "Soil Organic Matter Mandates" and "Soil Profile Rebuilding Using Compost", BioCycle CONNECT, July 23, 2021 at https://www.biocycle.net/soil-organic-matter-mandates/

[47] Coker, C., "Soil Organic Matter Mandates" and "Soil Profile Rebuilding Using Compost"

[48] Breggin, L and D. Hoover, "Model Compost Procurement Policy With Commentaries," July 2021 at https://www.eli.org/research-report/model-compost-procurement-policy-commentaries

[49] https://ilsr.org/maryland-hb1070/

Production (UAIP) to provide funding for local governments to study and pilot local compost and food waste reduction plans.[50]

- Work with municipalities in the county to amend Appendix F of the County Zoning Ordinance to make all municipalities in the county subject to the requirements of Chapter 48 Solid Waste in the Montgomery County Code to facilitate consistent solid waste collection systems across the county.[51]

In order to close the incinerator, various pathways need to be explored immediately – such as securing capacity for food scraps at existing regional facilities. The proposed timeline for organics strategies reflects these needed steps to close the incinerator. This timeline might seem inappropriate in relationship to the recommended Hierarchy to Reduce Food Waste & Grow Community, which prioritizes preventing waste, home composting, and community-scale and farm-scale options. To be clear, this plan advises that the County pursue strategies in the long term that ensure waste prevention, rescue, and local solutions prevail over far-away centralized industrial options.

[50] Goldstein, N., "Prioritizing Food Waste Reduction in the 2023 Farm Bill", BioCycle CONNECT, May 10, 2022 at https://www.biocycle.net/prioritizing-food-waste-reduction-in-2023-farm-bill/

[51] https://codelibrary.amlegal.com/codes/montgomerycounty/latest/montgomeryco_md_comcor/0-0-0-24899

Organics Priorities and Proposed Schedules


High priority
Medium priority
Lower priority
Fiscal Year 2023
Fiscal Year 2024
Fiscal Year 2025
Fiscal Year 2026
Fiscal Year 2027
Organics Diversion Program Element
3Q23 Jan-Mar '23
4Q23 Mar-Jun '23
1Q24 Jul-Sep '23
2Q24 Oct-Dec '23
3Q24 Jan-Mar '24
4Q24 Mar-Jun '24
1Q25 Jul-Sep '24
2Q25 Oct-Dec '24
3Q25 Jan-Mar '25
4Q25 Mar-Jun '25
1Q26 Jul-Sep '25
2Q26 Oct-Dec '25
3Q27 Jan-Mar '26
4Q28 Mar-Jun '26
1Q27 Jul-Sep '26
2Q27 Oct-Dec '26
3Q27 Jan-Mar '27
4Q27 Mar-Jun '27
Curbside Collection of Organics
Survey County businesses & institutions
Support municipalities to provide diversion
Expand curbside collection in county
Provide network of drop-off stations
Reduced tipping fee for organics
Tax relief - Incremental SBC
Centralized Organics Management
Evaluate MCYTCF for food scraps
Secure capacity with existing organics recycling facility (w/ priority on composting)
Facility Plan for new composting facility
Stimulate Compost Markets
Soil profile restoration programs
Minimum soil organic matter content
Require use of products made from organics
Legislative Priorities
Re-introduce, support HB1070
Support CCFWR in 2023 Farm Bill

Implementation Tasks/Costs

Comprehensive Organics Management Strategy County-Level Staff Actions	Estimated Impacts FTE = Full Time Equivalent $ = Hauler/Contractor/ Consultant Support	
	FTE	$
Recovery Surplus Food: Outreach and education to surplus food generators and grant program for food recovery organizations	0.25	$50,000 (outreach) $100,000 (grants)
Animal Feed: Engage in discussion with Maryland Department of Environment to consider creating a regulation for diverting processed food scraps to animal feed	0.20	
Backyard Composting: Invest in a major expansion of the County's home composting program that provides dependable multi-year funding for free or reduced composting bins to residents, personalized training, and that sets residents up for success.	0.20	$100,000 (training) $100,000 (compost bins)
Community Composting: Connect community composting with the county's growing community gardening movement, engage community composters, provide Master Composter training and grant program.	0.25	$100,000 (training) $100,000 (grants)
On-Farm Composting: Support the Office of Agriculture's vision for establishing an on-farm composting, provide training and technical assistance and grant program.	0.20	$100,000 (technical assistance) $100,000 (grants)
On-Site Composting: Work to remove barriers to on-site composting, provide training and technical assistance and grant program.	0.20	$100,000 (technical assistance) $100,000 (grants)
Curbside Compost Collection (included in Universal Recycling & Composting section)		
Centralized Organics Management Facilities: Develop a facility plan and contract with an existing organics processor for 25,000 tons per year	0.75	$250,00 (plan)[1] $1M (tipping fee)
Stimulating Compost Markets	0.10	
Legislative Actions	0.10	
Annual Impact	**2.25**	**$1,950,000**
[1]One-Time Cost		**$250,000**

Cost Summary

Implementing the Zero Waste strategies included in this plan will require investment of staff time and external costs. The planning-level cost estimates for each Zero Waste strategy are summarized below.

Zero Waste Strategies	Estimated Impacts FTE = Full Time Equivalent $ = Hauler/Contractor/ Consultant Support			
	Annual FTE	One-Time FTE	Annual $	One-Time $
Reuse & Repair Program	2.25	-	$250,000	-
Universal Collection	2.3	0.3	$400,000	$75,000
Building Materials Reuse & Recycling	2.0	-	$50,000	$150,000
Resource Recovery Park	1.0	-	-	$2M-$3.05M
Comprehensive Organics Management	2.25	-	$1.950M	$250,000
Impact	**9.8**	**0.3**	**$2.650M**	**$6.75-7.80M**

Diversion Impact

Implementing the Zero Waste strategies included in this plan will also increase diversion from landfills and incinerators.

Montgomery County's diversion rate in 2017 was approximately 38%. Residents and businesses in the County recycled 577,028 tons (not counting incinerator ash recycling) and sent 937,256 tons to incineration and landfill.[52]

Using conservative estimates for capture rate by material type, full implementation of the Zero Waste strategies would result in an additional 637,000 tons per year diverted from landfills and incinerators, increasing Montgomery County's diversion rate to 80%.

As much as 44% of greenhouse gas emissions are attributable to materials management practices.[53] Implementing Zero Waste strategies will significantly decrease Montgomery County's greenhouse gas emissions, increase the quality of life for its residents, and positively impact the bottom line of its businesses.

[52] *Montgomery County Comprehensive Solid Waste Management Plan 2020 – 2029*, p. 3-2

[53] *Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response* https://www.epa.gov/sites/default/files/documents/ghg-land-materials-management.pdf

Appendix A: Reuse Outlets in Montgomery County

1) Habitat for Humanity ReStore Rockville
1029 E Gude Drive, Rockville, MD 20850
https://habitatmm.org/restore/restore.html

2) Habitat for Humanity ReStore Silver Spring
12006 Plum Orchard Drive, Silver Spring, MD 20904
https://habitatmm.org/restore/restore.html

3) Goodwill Industries of Greater Washington Retail Store
619 S Frederick Avenue, Gaithersburg, MD 20877
https://dcgoodwill.org/locations/gaithersburg-maryland-store-donation-center/

4) Goodwill Industries of Greater Washington Retail Store
4816 Boiling Brook Pkwy, Rockville, MD 20852
https://dcgoodwill.org/locations/rockville-maryland-store-donation-center/

5) Goodwill Industries of Greater Washington Retail Store
725 Rockville Pike, Rockville, Maryland 20852
https://dcgoodwill.org/locations/725-rockville-pike-rockville-maryland-store-donation-center/

6) The Salvation Army Store & Donation Center
18705 N Frederick Road, Germantown, MD 20876
http://www.satruck.org

7) The Salvation Army Family Store
11550 Rockville Pike, Rockville, MD 20852
http://www.satruck.org

8) Unique Thrift Store Hillandale
10141 New Hampshire Avenue, Silver Spring, MD 20903
https://stores.savers.com/md/silverspring/unique-thrift-store-5110.html

9) Unique Thrift Store Wheaton
12211 Veirs Mill Road, Wheaton, MD 20906
https://stores.savers.com/md/silverspring/unique-thrift-store-5108.html

10) New Hampshire Value Village Thrift Store
10121 New Hampshire Avenue, Silver Spring, MD 20903
http://www.valuevillage.com/donate

11) Urban Thrift
10730 Connecticut Avenue, Kensington, MD 20895
https://thearcmontgomerycounty.org/what-we-do/urbanthrift.html

12) Planet Aid Thrift Store
5520 Randolph Road, Rockville, MD 20852
https://www.planetaid.org/thriftstore

13) FullFillery in Takoma Park
7006 Carroll St, Ste 200, Takoma Park, MD 20912
https://www.fullfillery.com
FullFillery is a zero-waste store where customers can buy household goods and personal care products containing minimal reusable or compostable packaging. For a $2 credit, FullFillery bottles can be returned for reuse while other containers, mason jars, and Talenti ice cream jars can also be returned at the store.

14) Creative Reuse Silver Spring
33 University Blvd E, Silver Spring, MD 20901
https://www.happylittleartstudio.com/silverspringcreativereuse.html
A community project through the Happy Little Art Studio, Creative Reuse Silver Spring collects unwanted office and art supplies to donate to teachers for educational repurposing.

15) Leveling The Playing Field
9170 Brookville Road, Silver Spring, MD 20910 (301) 844-5622
http://www.levelingtheplayingfield.org
Accepting and redistributing donated sporting equipment to kids. Offering pick-up service, this Silver Spring nonprofit serves to provide underprivileged children with the opportunity to participate in youth sports through the donation of used sporting equipment.

16) Montgomery County Fire and Rescue Service Car Seat Program
Assorted county stations.
https://www.montgomerycountymd.gov/mcfrs-info/tips/parents/carseats.html

Different fire stations offering in person car seat checks are further able to salvage car seats that have not been in crashes for families in need while other car seats may be salvaged and used for training purposes.

17) Montgomery County Family Justice Center Foundation, Verizon Wireless Hopeline Foundation partnership
Assorted Rockville locations, nationwide Verizon retail stores
https://mcfjcfoundation.org/recycle-cell-phones/
Old cell phones can be donated to help survivors of domestic violence obtain emergency phones.

18) BikeMatchMoCo
Montgomery county and surrounding DMV region
https://www.montgomerycountymd.gov/dot-dir/commuter/bikeshare/bikematch.html
BikeMatchMoCo is connecting people in Montgomery County who have a bike to donate with people who need one.

19) Bikes for the World
11729 Parklawn Drive, Rockville MD 20852
https://www.bikesfortheworld.org/donate-a-bike/what-we-collect
Bikes for the World's mission is to make good quality, affordable used bicycles available to people in developing countries. Bikes for the World further generates specialized employment opportunities in bike repair and maintenance overseas, while providing environmental and humanitarian opportunities for individuals locally in the DMV region.

20) Housing Opportunities Commission of Montgomery County
10400 Detrick Avenue, Kensington, MD 20895
https://www.hocmc.org
Free furniture items available, pick up services offered.

21) Friends of the Library of Montgomery County
Randolph Hills Shopping Center 4886 Boiling Brook Pkwy Rockville, and Wheaton Library and Community Recreation Center, 11701 Georgia Avenue, Wheaton, MD 20902
https://www.folmc.org/bookstores/items-we-accept/
Collects donations of books, magazines, movies, music, and video games at bookstores in Rockville and Silver Spring.

22) Velocity of Books
5603 Oak Pl, Bethesda, MD 20817
https://www.velocityofbooks.org/contact
Accepts a wide variety of books, audiobooks, and magazines for people of all ages.

23) Small Things Matter
14516 Bauer Drive, Rockville, MD 20853
https://smallthingsmatter.org/books/
Seeks donations of new books for children.

24) Second Story Books Rockville Warehouse Store
12160 Parklawn Drive, North Bethesda, MD 2085
https://www.secondstorybooks.com/store-rockville.php
Used bookstore offering sell and trade programming.

25) Medical Loan Closet of the Lutheran Church of St. Andrew
15300 New Hampshire Avenue, Silver Spring, MD 20905
https://www.mystandrew.org/ministries/health-wellness-ministry/
Accepts walkers, bedside commodes, crutches, canes, wheelchairs. motorized carts, disposable underwear, dressings, prescription formulas, knee immobilizers, enteral feeding, stoma supplies/equipment and other items.

26) Amyotrophic Lateral Sclerosis (ALS) Association MD Chapter
30 W Gude Drive, Ste 150 Rockville, MD 20850
https://www.als.org/dc-md-va/local-care-services/medical-equipment-loan-closet
Loan closet of used and donated durable medical equipment free of charge to people living with ALS. Loan equipment includes a variety of low tech to high tech equipment, such as eye gaze communication devices. Serving Montgomery County, DC, Prince George's County, and Southern Maryland.

27) Equipment Connections for Children, Inc.
18906 Premiere Court, Gaithersburg, MD 20879
https://www.equipforchildren.org/how-it-works.html
A reuse organization that takes donated equipment and matches it to a child in need. Serve children in MD, VA, and DC. Online resource center helps children with disabilities obtain adaptive equipment at no cost to the families

28) Holiday Park Senior Center – Loan Closet
3950 Ferrara Drive, Wheaton, MD 20906

http://holidaypark.us/c_resources.php
Walkers, some canes and commodes available for short term loan (maximum of 3 months) for a fee of $5.00. Wheelchair loans are $10.00 per month, as available with a $50.0 refundable deposit required.

29) Laytonsville Lions Club Medical Equipment Loan Locker
Montgomery Country Club, Laytonsville, MD
https://www.e-clubhouse.org/sites/laytonsvillemd/projects.php
Assorted Lions Club locations accept and provide loaned medical equipment, such as: walkers, wheelchairs, canes, bathroom chairs, hospital beds, etc.

30) Lollipop Kids Foundation – Equipment Closet
7901 Beechcraft Avenue, Unit V, Gaithersburg, MD 20879
https://www.lollipopkidsfoundation.org/programs/equipment-closet
The Lollipop Kids Foundation's equipment closet collects Durable Medical Equipment (DME), refurbishes and then matches these items to children in need. DME supplies include adapted seating systems or bicycles, specialized wheelchairs, hospital beds, lifting devices, gait trainers, adapted standing devices, prone boards, portable ramps, adapted bathroom equipment and more.

31) A Wider Circle
9159 Brookville Road, Silver Spring, MD 20910
https://awidercircle.org/get-involved/donate-items/
Non-Profit organization that redistributes home goods and furniture to families and individuals needing assistance, including supporting those transitioning out of homeless family or domestic violence shelters.

32) Dress for Success
DMV area
https://www.dcdressforsuccess.org/the-suiting-experience-copy
Business professional and business casual women's clothing donations and redistributing.

33) African Community Center DC Metro
8121 Georgia Avenue, Ste 720, Silver Spring, MD 20910
https://acc-dc.org/donate/
Accepting and redistributing large furniture donations like mattresses, bed frames and couches to refugees newly settled in the region.

34) House with a Heart Senior Pet Sanctuary
6409 Stream Valley Way, Gaithersburg, MD 20882
https://housewithaheart.com/about-feed-fido-fluffy-pet-pantry/
Senior pet sanctuary accepting and redistributing unexpired and unopened dog or cat food donations.

35) Interfaith Works Clothing Center
751 Twinbrook Pkwy, Rockville, MD 20851
https://www.iworksmc.org/donate-now
Accepting assorted in kind donations including clothing, shoes, small appliances or household items, books, linens, toys, luggage and more.

36) Master Gardeners of Montgomery County
Demo gardens in Chevy Chase, Rockville, Derwood, Gaithersburg and Bethesda
https://sites.google.com/umd.edu/montgomerycountymg/home
Repurposing gardening equipment or tool donations including planters, hoses, shovels, rakes, and 5-gallon buckets.

37) Montgomery Avenue Women's Center
112 West Montgomery Drive, Rockville, MD 20850
https://mawc.tripod.com/mawc/donations.html
Toiletry, kitchen and office supplies, arts and crafts items, clothing, and other donation collections.

38) Montgomery County Coalition for the Homeless
405 E Gude Drive, Ste 209, Rockville, MD 20850
https://mcch.net/donate-other-items/
Clothing, household items, toiletries and cleaning supplies and other items.

39) The National Center for Children & Families
6301 Greentree Road, Bethesda, MD 20817
https://nccf-cares.org/in-kind-donations/
Furniture, clothing, assorted household items including computers, school supplies books and other items.

40) Organization for the Advancement of and Services to Individuals with Special Needs
24800 Dunnavant Drive, Gaithersburg, MD 20882
https://www.specialneedsoasis.org/donate

Farm equipment and other varied supplies can be donated to this organization providing training, social interactions and employment opportunities in the agricultural setting for qualifying families and individuals.

41) Rainbow Place Shelter
215 W Montgomery Drive, Rockville, MD 20850
https://www.rainbowplace.org/s/donate
Salvaging clothing items, toiletries, supplies and other shelter donations.

42) Shepherds Table
8106 Georgia Drive, Silver Spring, MD 20910
https://www.shepherdstable.org/clothing-closet/
Shoes, clothing, purses and other accessories donations available through clothing closet.

43) Stepping Stones Shelter
1070 Copperstone Court, Rockville, MD 20852
https://steppingstonesshelter.org/
Accepting household items, clothing for donation and redistribution.

44) Suited for Change
1023 15th St NW, Ste 601, Washington, DC 20005
https://www.suitedforchange.org/donate-clothing
Professional clothing attire, shoes, jewelry and handbags collections.

45) Wells/Robertson House
One Wells Drive, Gaithersburg, MD 20877
https://friendsofwells.org/individual_opp.php
Collecting business attire, clothing, household and kitchen items.

46) Montgomery County Public Libraries (MCPL) Thermal Cameras Borrowing Program
Chevy Chase, Olney, Quince Orchard & White Oak MCPL branches with thermal cameras while any location can borrow cameras with a hold.
montgomerycountymd.gov/library/services/thermal-cameras.html

47) Rent My Power Tools
Airpark of Gaithersburg off Shady Grove and RT 270/300, MD
https://rentmypowertools.com/about-us/

Private, for profit power and assorted specialty tool renting company.

48) Gaithersburg Rental Center
219 East Diamond Avenue, Old Town Gaithersburg, Gaithersburg, Maryland 20877
https://www.gaithersburg-rentals.com/

49) Rental Works Gaithersburg
8000 Queenair Drive, Gaithersburg, MD 20879
https://www.rentalworksofmd.com/locations/gaithersburg/

50) N & S Equipment Rentals Contractor Supply
19600 Frederick Road, Germantown, MD 20876
http://www.nsrentals.com/rentalequipment.asp

Appendix B: Concerns About Single-Use Compostable Products

The Institute for Local Self-Reliance (ILSR) has been raising concerns about single-use foodservice ware for more than a decade. ILSR was an early champion of banning polystyrene/styrofoam for foodservice ware products due to this resin's toxicity, impact on the environment, and non-recyclability. The organization played a pivotal role in banning styrofoam from Montgomery County schools and its use by foodservice venues in the City of Takoma Park, the District of Columbia, and then countywide in Montgomery County.

As compostable alternatives entered the marketplace, in 2011, ILSR released purchasing specifications for compostable foodservice ware: The Environmentally Preferable Specifications for Compostable Biobased Food Service Ware (aka The BioSpecs).[54] These specs provided the framework to enable buyers to assess the sustainability of these products during three stages of their life cycle: (1) biomass production, (2) manufacturing, and (3) end of product life. "Sustainability" encompasses issues of environmental protection, health, and social and economic justice, as well as material resources. The purpose of The BioSpecs was to encourage the market development of biobased foodservice ware that meets the highest sustainability standards and to prevent the "greenwashing" of partially or wholly biobased products that nevertheless fail to meet environmental, worker protection, and consumer standards.

Since the release of these purchasing specifications – which were the first to highlight the importance of sustainably grown biomass and products free of PFAs and other chemicals of concern – the number and types of compostable ware have grown, particularly in communities that have banned styrofoam for foodservice ware. Compostable products offer an alternative to fossil-fuel-derived plastics, which are non-renewable, often threaten public health, have devastating impacts on marine life, and increase reliance on imported feedstocks. ILSR investigated the development of bioplastics as it saw bioplastics' potential to mitigate these problems by offering renewability, biodegradability, and a path away from harmful additives. However, they are not an automatic panacea and, indeed, many issues of concern persist.

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[54] Platt, Brenda, *BioSpecs for Food Service Ware, Institute for Local Self-Reliance,* Institute for Local Self-Reliance, January 1, 2011, https://ilsr.org/biospecs-for-food-service-ware

Modern industrial agriculture creates a host of health, environmental, and social and economic justice issues, including the use of genetically modified (GM) organisms in the field, toxic pesticides, high fossil-fuel energy use, and the destruction of family farms. Increased demand for agricultural products to be used in the production of energy and materials may well exacerbate the problems posed by modern agriculture while increasing pressure on ecologically sensitive land and raising food security concerns.

In the U.S., compostable plastics are primarily made from genetically modified corn (92% of U.S. corn is GMO[55]), although there are resins alternatives that do not utilize corn (such as Danimer Scientific's PHA and Novamont's MaterBi). Reliance on GMO corn means increased spraying of herbicides such as Roundup (glyphosate), more associated cancers, deformed amphibians, and impacted farmworkers. Polylactic acid (PLA) is one compostable plastic typically derived from corn grown in the U.S. An analysis of estrogen-mimicking chemicals leaching from plastics found that PLA plastic is the second worst of them all (91% of samples were positive, only polycarbonate – plastic #7 – was worse, at 100%), so it's not even safe to eat with.[56]

The manufacture, use, and discard of products made from bioplastics can also create problems such as hazardous emissions, particularly if the bioplastic is mixed with fossil-fuel-based chemicals. While many bioplastic products are certified compostable, in many cases the requisite collection services and composting infrastructure have yet to be developed. The infrastructure necessary for collecting and processing recyclable bioplastic products may also be lacking, or these products may stress existing recycling systems.

Regarding disposal, it's often lose-lose-lose:

Composting: Many places using single-use compostable foodservice ware don't provide a composting option. Where a consumer can access a composting bin, it's often not clear whether it goes to a commercial facility that can handle this sort of

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[55] U.S. Department of Agriculture Economic Research Service, *Adoption of Genetically Engineered Crops in the U.S.* https://www.ers.usda.gov/data-products/adoption-of-genetically-engineered-crops-in-the-us/

[56] Park, Alex, *A Frightening Field Guide to Common Plastics*, Mother Jones, March 3, 2014 https://www.motherjones.com/environment/2014/03/guide-estrogen-common-plastics-bpa/

product. Workers at foodservice venues usually have no idea if you ask them if the compost goes to a place that can handle compostable plastics.

Recycling: It's usually hard to read whether "compostable" plastic cutlery is actually fossil-fuel-based plastic or a biobased compostable and – regardless – consumers don't typically know that actual plastic cutlery shouldn't be put in a recycling bin because it cannot be sorted by commercial material recovery facilities (MRFs) because it's too one-dimensional. Consequently, some compostable plastics will end up in recycling, where it's a contaminant.

Trash: l If burned in incinerators, bioplastics contribute to air pollution. When landfilled, they can break down and contribute to the release of methane, a highly potent greenhouse gas. [Ironically, conventional fossil-fuel-based plastics in landfills are credited with sequestering carbon.]

Many of these issues were highlighted in a 2019 statement released by Oregon composters, "Why We Don't Want Compostable Packaging and Serviceware." They also raised additional concerns including: "compostable" packaging and foodservice ware delivered to their facilities do not always compost, introduce contamination, hurt resale quality, and increase compost operators' costs and make their jobs harder. In addition, taking compostable plastics means they cannot sell to organic farmers.[57] In 2021, a Vermont solid waste district followed suit, citing the many problems posed by compostable products for its composting operations. It stopped accepting compostable items (with the exception of compostable bags used to collect food scraps).[58]

Better product labeling along with improved collection strategies and education and training at the point of discard could help address some of the problems with composting these biobased products. Indeed, there are several multi-stakeholder projects across the country working to address the inadequate infrastructure to accept

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[57] Oregon Composters Push Back Against Compostable Packaging, Northern California Recycling Association, website March 14, 2019: https://ncrarecycles.org/2019/03/oregon-composters-push-back/ Also see: https://www.oregon.gov/deq/mm/Documents/MessagefromComposter-En.pdf

[58] Why We Will No Longer Accept Compostable Foodware, Chittenden Solid Waste District, March 18th, 2021, https://cswd.net/community-announcements/why-we-will-no-longer-accept-compostable-foodware/

and successfully compost certified compostable packaging. But all these problems could be avoided in the first place by utilizing durable reusable products. Single-use compostable products, particularly for foodservice ware, – are not the solution. Ending single-use products is the solution and should be prioritized. The good news is that reuse is taking off and businesses that switch to reusable products are saving money. As Montgomery County invests in new zero waste infrastructure, it can seize this unprecedented opportunity to demonstrate the benefits of replacing single-use foodservice ware with reusable items.

Appendix C: Concerns About Converting Food to Fuel

Should food waste digester gas be used to provide hydrogen for a fuel cell bus fleet?

Our preliminary assessment of the proposed digester gas to hydrogen system found that it presents higher costs and risks, and potentially higher community impacts than keeping these energy and waste systems separate.

Background

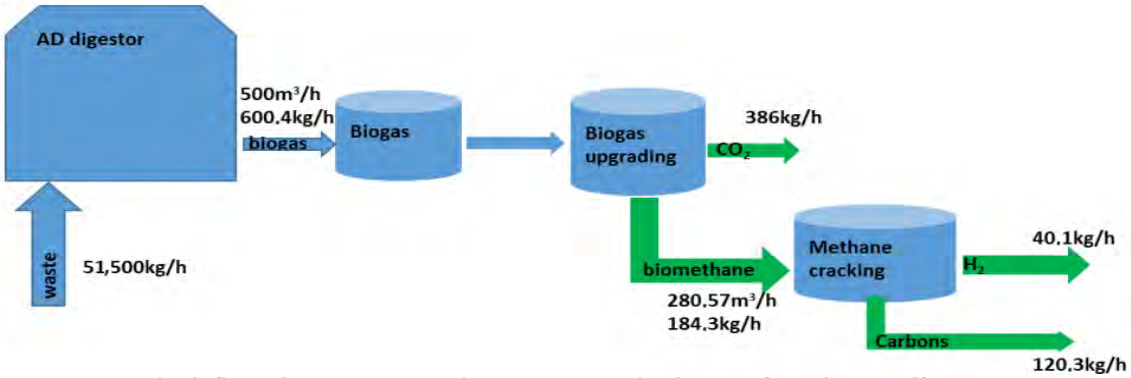
Green hydrogen is produced through wind or solar electricity used to electrolyze water. Turquoise hydrogen is produced through the decomposition of methane, resulting in the formation of hydrogen and solid carbon by-products.

Green hydrogen & aerobic composting of food scraps

- Wind / solar power: local production or purchase from grid
- Electrolysis of water to make hydrogen
- Aerobic composting system for food scraps

Turquoise hydrogen & aerobic composting of digested food scraps

- Food waste anaerobic digester
- Gas cleanup
- Methane cracking
- Aerobic composting system for digestate
- Potentially higher costs for hydrogen storage and transportation if production not co-located with bus fleet



Block flow diagram to produce turquoise hydrogen from biogas.[59]

[59] Swartbooi, Ashton, Kapanji-Kakoma, Kutemba K., and Musyoka, Nicholas M., *From Biogas to Hydrogen: A Techno-Economic Study on the Production of Turquoise Hydrogen and Solid Carbons*, MDPI, www.mdpi.com/2071-1050/14/17/11050/pdf, Figure 2

Green hydrogen would likely be cheaper. A September 2022 study just found that turquoise hydrogen production is not economically viable and would lose a substantial amount of money over time. In the two scenarios they looked at, the second involving sales of carbon black, the hydrogen production cost was $13.89 per kilogram of hydrogen produced and $8.88/kg where carbon black sales were possible. Over half of the cost is the cost of the AD system. Additional scenarios where there's already an AD system in place do not apply to Montgomery County. To reduce cost, it would need to be scaled up considerably. At the largest scales, the study found that the cost could be brought down to around $5.20 to $5.50 per kilogram of hydrogen produced.[60] On the other hand, a recent analysis by KPMG found that in the short-term, green hydrogen costs are being reported in the range of $2.50 to $6.00 per kilogram, and that this is projected to come down to $1.00 to $3.50/kg by 2050.[61]

Anaerobic digestion is quite expensive. In August 2021, the *Philadelphia Inquirer* reported that a food waste digester proposal was rejected by the Pennsylvania Public Utility Commission because the "renewable natural gas" would have been about five times more expensive than natural gas. The PUC's Bureau of Investigations and Enforcement called this gas "outrageously expensive" and could not justify increased costs to consumers.[62] This is just the cost of digester gas without the cleanup and processing steps needed to convert methane in the gas to hydrogen.

As the Air Products diagram below shows, gas cleanup is a complex process. Hydrogen sulfide (H_2S), water vapor, and CO_2 must be removed before methane can be converted to hydrogen.[63] Contaminants such as dust, oil and aerosols may also need to be removed, as indicated in the current biogas upgrading research out of Germany.[64]

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[60] *Id.*

[61] Caspersen, Michael, *The Hydrogen Trajectory*, KPMG home.kpmg/xx/en/home/insights/2020/11/the-hydrogen-trajectory.html

[62] Maykuth, Andrew, *PA Stymies Philadelphia Green-Energy Plan to Add Biogas to PGW's Fuel*, Philadelphia Inquirer, August 26, 2021 www.inquirer.com/business/pennsylvania-nixes-philadelphia-renewable-gas-pilot-pgw-20210826.html

[63] Biogas to Hydrogen Upgrading, Air Products and Chemicals, Inc. www.airproducts.com/-/media/airproducts/files/en/biogastohydrogen-vehiclefuel-whitepaper.pdf

[64] Dröge, Stefan, Power to Gas with biological Methanisation, WEKA Industrie Medien GmbH, September 6, 2022 waste-management-world.com/resource-use/power-to-gas-with-biological-methanisation-german-researchers-focus-on-new-biogas-upgrading-method/

Typical Biogas Upgrading System
Not to scale

There has been research into going straight from food waste digestion to hydrogen without producing methane, but this seems to still be in an early phase with no demonstrated effectiveness.[65]

Logistics

Anaerobic digesters require a clean, depackaged, decontaminated feedstock. The decontamination process has been found to introduce both micro- and nano-plastics into the recovered organics, with unknown environmental impacts.

Furthermore, anaerobic digestion may not be able to produce the volume of hydrogen needed for a bus fleet. The U. S Department of Energy's National Renewable Energy Lab studied biogas-to-hydrogen in 2014, concluding that landfills and wastewater treatment plants had greater fuel cell hydrogen potential than stand-alone AD plants.[66]

Risks of combining energy and waste management systems

Merging the food scrap management system with the hydrogen fuel cell bus fueling system risks both systems breaking down at once if the anaerobic digestion system fails for any reason. Keeping the systems separate avoids this "single point of failure" risk.

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[65] Lin, XiaoZhi, *Turning Organic Waste into Hydrogen*, Chemical & Engineers News, April 7, 2019 cen.acs.org/energy/hydrogen-power/Turning-organic-waste-hydrogen/97/i14

[66] Saur, G. and A. Milbrandt, "Renewable Hydrogen Potential from Biogas in the United States", USDOE/NREL Report No. NREL/TP_5400-60283, July 2014, at www.nrel.gov/docs/fy14osti/60283.pdf

So-called "waste-to-energy" projects often try to solve waste and energy problems with one solution, and in doing so, end up picking solutions that would not otherwise be chosen if looking at one system at a time. Trash incineration is the most glaring example, because it's the most expensive and polluting way to manage waste or to make energy. Turquoise hydrogen, while a better option than most, still stands in the way of the cleanest energy and waste solutions.

Green hydrogen and aerobic composting both avoid the need to produce methane, a greenhouse gas which is now understood to be about 82 times worse for the climate than CO_2.[67] Studies of farm-based anaerobic digesters have found that about 2-3% of the methane is lost to leakage.[68] In research comparing the global warming impacts of coal versus natural gas, some have found that a gas leakage rate as little as 2.3% is enough to make gas as damaging as coal for the climate.[69]

In addition, aerobic composting can be less costly if more decentralized while digestion is inherently expensive and centralized, and would require a certain amount of feedstock to keep operations optimal. This could remove the flexibility of diverting these organic materials to aerobic composting facilities. Also, digestion creates another step because it leaves a digestate that needs to be aerobically composted before it can be used as a soil amendment. If aerobic composting will be necessary in either scenario, it would be better to avoid the expense and inflexibility of adding anaerobic digestion to the waste management system.

Since storing and transporting hydrogen adds its own risks, it would make sense for any digester and gas cleanup and conversion processes to be co-located with the fuel cell bus refueling depot. However, while aerobic composting and small digestion projects can be decentralized and many can be located in rural areas, digestion coupled with hydrogen production needs to be centralized, if co-locating, with the bus refueling depot. That would require it to be more urban, raising concerns about land use and accompanying community impacts.

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[67] *International Panel on Climate Change Sixth Assessment Report*, 2021, Table 7.15 on p.1739 (7-125). www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf#page=1739

[68] Excerpted from *Lifecycle Greenhouse Gas Analysis of an Anaerobic Codigestion Facility Processing Dairy Manure and Industrial Food Waste*, Environmental Science & Technology, 2015, 49 (18), pp 11199–11208. DOI: 10.1021/acs.est.5b01331. pubs.acs.org/doi/abs/10.1021/acs.est.5b01331 See relevant portion of this study, and its citations, available here: www.energyjustice.net/digesters#leakage

[69] Rives, Karin, *Natural gas use may affect climate as much as coal does if methane leaks persist*, S&P Global Market Intelligence, December 27, 2021 www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/natural-gas-use-may-affect-climate-as-much-as-coal-does-if-methane-leaks-persist-68096816

For these reasons, we recommend that the county pursue aerobic composting and green hydrogen production over a food scrap anaerobic digestion methane to hydrogen system for powering fuel cell buses. If the county is to pursue a turquoise hydrogen system, we suggest that a study be commissioned to first examine the costs and risks of the two approaches before proceeding.

Appendix D: Contributors

Institute for Local Self-Reliance https://ilsr.org	
Linda Bilsens Brolis	Linda Bilsens Brolis is the Senior Project Manager for ILSR's Composting for Community Initiative. Her work focuses on advancing composting at the community level as a tool for reducing waste, regenerating soils, supporting local food production, and fighting climate chaos.
Toby Harris	Toby Harris is a Baltimore based researcher with ILSR's Waste to Wealth Initiative. Toby has a Master's in Environmental Health & Engineering at the Johns Hopkins University Bloomberg School of Public Health.
Brenda Platt	Brenda Platt directs ILSR's Composting for Community project, which is advancing locally based composting in order to create jobs, enhance soils, sequester carbon, reduce waste, and build more resilient and healthy communities. She has worked 33 years fighting trash burners and promoting waste reduction, reuse, recycling and composting, particularly recycling-based jobs.
Neil Seldman	Neil Seldman, Ph. D specializes in helping cities and businesses recover increasing amounts of materials from the waste stream and add value to the local economy through new processing and manufacturing facilities. He is a co-founder of the Institute for Local Self-Reliance and a program manager for Zero Waste USA.
BioCycle https://www.biocycle.net	
Nora Goldstein	Nora Goldstein is Editor/Publisher of BioCycle CONNECT® and BioCycle.net, the Organics Recycling Authority. She is also Director of BioCycle Associates. Nora has authored numerous articles on all facets of zero waste, food recovery and recycling, composting and anaerobic digestion, as well as organized many conferences on these topics.
Coker Composting and Consulting https://www.cokercompost.com	
Craig Coker	Craig Coker has over 40 years of experience in the planning, permitting, design, construction and operation of organics recycling facilities processing animal manures, animal mortalities, food wastes, biosolids, yard

	trimmings and source-separated organic solid wastes, as well as in the marketing and sales of compost and compost-amended horticultural products.
Energy Justice Network http://www.energyjustice.net	
Mike Ewall	Mike Ewall, Esq. is founder and Executive Director of Energy Justice Network, a national non-profit supporting communities to transition from polluting energy and waste facilities to clean energy and zero waste systems. With over 30 years of experience with waste incineration issues, Ewall is a leading national expert on the topic. He is the principal author of the 2021 report, "Beyond Incineration: Best Waste Management Strategies for Montgomery County, Maryland," which documented that incineration is more than three times as damaging to health and the environment than landfilling. In 2003, he developed the Zero Waste Hierarchy that was the basis for the Zero Waste International Alliance standard.
Urban Ore https://urbanore.com	
Dan Knapp	Dan Knapp, Ph. D is a co-founder of Berkeley's Urban Ore, whose self-described mission is "to end the age of waste." With a Ph.D. in sociology, he's been a teacher, academic writer, and community organizer. He is a leader in the practical development of recycling, composting and reuse enterprises.
Zero Waste Associates https://zerowasteassociates.com	
Ruth Abbe	Ruth Abbe is a Zero Waste practitioner with more than 25 years of experience in recycling and composting program and facility development. As president of Zero Waste USA and a principal of Zero Waste Associates, she works with municipalities across the U.S. to develop the social and physical infrastructure to achieve Zero Waste.
Richard Anthony	Richard Anthony has worked his entire career in environmental program management positions. As a manager he wrote and then implemented Solid Waste plans for Fresno (1979-87) and San Diego (1987-98) counties. He has participated in developing Zero Waste plans as a consultant since 1998. He is a founder and member of the Board of Directors of Zero Waste USA and Zero Waste International Alliance.

Gary Liss	A leading Zero Waste advocate, Gary Liss has helped more communities develop Zero Waste plans than anyone else in the U.S. He is a principal of Zero Waste Associates, a long-term board member of the Zero Waste International Alliance and Zero Waste USA.
Zero Waste Montgomery County	
Deborah Cohn	Deborah Cohn, Esq., a local advocate focusing on zero waste, sustainable development, building energy efficiency and renewable energy, is an active member of numerous state and local environmental groups and has contributed to long-range plans to eliminate incineration and pursue zero waste solutions.
Susan Eisendrath	Susan Eisendrath, M.P.H. is an Environmental Education and Program Consultant, Master Gardener and Master Composter. Susan provides the composting training for Montgomery County Master Gardeners and she is an urban organic food grower. She is the former co-chair of the Montgomery County Food Council Environmental Impact Working Group and is on the FC Racial Equity Committee. She is the Composting Lead for the Montgomery County Sierra Club Group and volunteers for the Climate Action Plan Coalition and Zero Waste Montgomery County.
Lauren Greenberger	Lauren Greenberger, M.H.Sc. vice president of the Sugarloaf Citizens' Association in Dickerson. She has served on the board since 2014 and was president from 2017 to 2020. She serves on the Zero Waste Montgomery County, the Dickerson Area Facilities Implementation Group and is a Master Gardener with the University of Maryland Ag Extension Service.
Amy Maron	Amy Maron, M.P.P. is an independent public policy professional, analyst, and program evaluator, specializing in environmental issues. Her positions included program evaluator with the U.S. Government Accountability Office, legislative assistant and projects director for U.S. Senator Frank Lautenberg (NJ), and environmental advocacy and consulting for several national environmental NGOs. She serves on the Montgomery County Solid Waste Advisory Committee and was the volunteer Zero Waste Lead for the Sierra Club - Montgomery County Group from 2019-2022.