Montgomery County Solid Waste Master Plan

Aiming For Zero Waste Plan
A Vision for Sustainable Materials Management

Discussion with Task Force
March 12, 2020
Objectives

Present results on evaluation of disposal alternatives for “What’s Left” after options to reduce waste and increase recycling have been implemented

• Improvements and new facilities needed to manage materials
## Master Plan Options (Task 5 Report)

<table>
<thead>
<tr>
<th>Reduce Waste &amp; Reuse Items</th>
<th>Recycle</th>
<th>Compost</th>
<th>Convert Waste to Energy</th>
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</thead>
<tbody>
<tr>
<td>• Food waste reduction campaign</td>
<td>• Textiles</td>
<td>• Commercial, School and Residential Food Waste</td>
<td>Education, Outreach and Enforcement</td>
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<td>• Fix-it/repair clinics</td>
<td>• Mattresses</td>
<td>• Backyard and Community Composting</td>
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<td>• Materials exchange network</td>
<td>• Carpets</td>
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<td>• Reuse events</td>
<td>• 2nd Cart to capture more commingles</td>
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<td>• Sharing libraries</td>
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<td>• Reuse centers</td>
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- Expand Trash Collection to Sub-district B
- C&D Materials Management
- Standard Trash Container

- Bulk Trash
- Regulatory Mechanisms
- Other Supporting Initiatives

- Landfill
Reduction and Reuse

• Low tons diverted
• Easy to implement
• Critical component of Zero Waste Plans
• Benefits more difficult to quantify

• Reuse Center ~5,000 tpy
• Food waste reduction campaign ~2,000 tpy
• Other options ~ 20-60 tpy
• Annual GHG emission reduction ~38,000 MT CO₂ e (depending on what materials are reduced/reused)
• Each option <$0.50/hhld for education and outreach
Recycling More Materials

- Textiles ~ 5,000 tpy
- Carpets ~ 1,500 tpy
- Mattresses ~ 600 tpy
- Replace blue box with a recycling cart for commingles in Sub-districts A&B to capture more materials ~ 2,000 tpy

Annual Costs
  - Textile/Carpet recycling <$.60/hhld (includes costs for storage, hauling, processing, education and outreach)
  - Mattress recycling ~ $2.00/hhld (includes costs for storage, hauling, processing, education and outreach)
  - Second recycling cart for commingles ~$10/hhld (includes cost of cart, education and outreach)

Annual GHG emission reduction ~ -27,000 MTCO$_2$e/year
Mandatory Commercial Organics Diversion

• Commercial sector estimated to generate approximately 80,000 tpy food waste
• Estimated to capture approximately 50% - 41,000 tpy
• Annual GHG emission reduction ~ -1,200 MTCO$_2$e
• Annual Cost ~ $250/ business generating >2 tons of food scraps /week (County costs for education, outreach and enforcement – businesses would be responsible for costs for containers and collection)
Residential Organics Diversion

Recommendations
• Pilot Program
• Full-scale Program
  • Waste audits before and after
  • Roll out to both Sub-districts
  • Roll out to Multi-family once single family program fully established
• County needs to provide trash collection in Sub-district B to ensure a successful organics program and divert more materials
• Food scraps collected separately from yard trim
• Trash disincentives to encourage participation
• Ordinance for Multi-family diversion
• Education and enforcement is critical

Considerations
• Availability of processing capacity
• High support from residents (County survey – 31% of respondents indicated high interest in County providing curbside collection of food scraps)
• Estimated to divert ~17,000 tpy food scraps and non-recyclable paper
• Annual GHG emission reduction ~ -500 MTCO₂e
• Annual Costs ~ $14/hhld (includes cost of containers, education, outreach and enforcement)
Supplementary Organics Diversion
Community Composting, Backyard Composting, Food Scraps Diversion at Schools

Recommendations

• Implement backyard and/or community composting
• Support backyard composting through changes in County Code and provision of subsidized backyard composters
• Support food scraps diversion at schools

Considerations

• Low tons (~600 tpy for Backyard Composting, ~20 tpy for Community Composting, ~900 tpy from schools)
• Minimal GHG emissions reductions
• Annual Cost ~$1.00/hhld, ~$.50/student (primarily education and outreach)
• Contributes to awareness of importance of organics diversion
• Low cost and low level of effort by County
How to Get People to Divert More Materials
- Trash Disincentives

Reduce Trash Allowance at the Curb

- Residents of Sub-district A can set out up to 5 containers weekly – up to 225 pounds/week
- Residents of Sub-district B contract privately for trash collection – no limits

Phase in reduction of number of trash containers collected

County controls trash collection in Sub-district B through expansion of service
Trash Disincentives to Get People to Divert More Materials

• Standard Trash Container – 16,000 tpy through reduction and increased capture of recycling and organics
• Annual GHG Emission Reduction ~ -40,000 MTCO$_2$e
• Annual Costs
  • Standard trash container ~ $11/hhld/year (includes cost of container, education, outreach and enforcement)
  • Base cost for collection of this container would be included in system benefit charge.
Bulk Trash

Bulk Trash Pickup Recommendations
• Limit number of items collected at each pickup
• Reduce number of annual collection events

Bulk Trash Drop-off Recommendations
• Reduce limit from 500 lbs
• Institute a flat or minimum rate for a certain weight (e.g. 200 lbs)

Considerations
• Potential for illegal dumping at outset of changes to services
• High degree of education and enforcement required
• Determine an average load weight dropped off by residents at Transfer Station to set allowance
Changes to How Materials are Collected

• Expansion of Trash Collection to Sub-district B
  • Potential to divert an additional 2,000 tons of recycling and organics
  • Annual GHG emission reduction ~ - 4,700 MTCO$_2$e
  • Annual Cost ~$100/hhld in Sub-district B (includes collection and education, outreach and enforcement)

• Change to Every Other Week Collection of Trash
  • Potential to divert an additional 23,000 tons of recycling and organics
  • Annual GHG emission reduction ~ - 30,000 MTCO$_2$e
  • Annual Cost ~ $2.50/hhld (includes education, outreach and enforcement)
Regulatory Options – Additional Materials

- Ban single-use plastic shopping bags & increase fees
- Reduce single-use plastic water bottles
- Reduce single-use food service ware
- Reduce single-use plastic film packaging
- Reduce EPS through extended ban

- Potential to divert/reduce ~ 3,000 tpy
- Annual GHG emission reduction ~ -9,000 MTCO$_2$e
- Annual Cost ~ $.30/hhld/option for education, outreach and enforcement
C&D Recycling

Recommendations

- Encourage use of private C&D recycling facilities by:
  - Increasing tipping fee for some C&D materials
  - Stop accepting some or all C&D materials at Transfer Station
- Enforce existing ordinance and consider regulations such as a deposit program (financial incentive to recycle)

Considerations

- Reduction in revenue at Transfer Station if no longer accept materials
- Offset costs due to wear and tear on equipment at Transfer Station
- Would free up capacity at Transfer Station
- Tons diverted do not count towards MRA recycling rate
- Potential to divert an additional 46,000 tpy
- Annual GHG emission reduction ~ -9,300 MTCO₂e
- Annual Cost ~ $.60/unit or hhld (for education, outreach and enforcement)
Changes to Recycling Rate
What’s Needed to Manage Materials?

• New facilities for composting and recycling
  ▪ Current MRF cannot handle existing materials
  ▪ Limited private options

• Transfer Station improvements

• Disposal facility – RRF or landfill?

• “Site 2” as well as the Composting Facility, both located in Dickerson, are currently only County-owned options for expansion or new capacity
What was Considered?

- Organics Processing Facility
  - Aerobic Composting (at Dickerson or new site)
  - Consider Anaerobic Digestion in the future
- Mixed Waste Processing
  - Not recommended for the County at this time
- Alternative Processing Technologies
  - Gasification/Pyrolysis – unproven and too risky at this time
Disposal Options – After Improvements to Waste Generation and Recycling/Reuse

• Continued use of the RRF
• Closure of the RRF
  ▪ Rail haul to landfill located outside the County
  ▪ Truck haul to landfill located outside the County
  ▪ Develop “Site 2” as a landfill
• Challenging decisions
• Require further analysis
Lifecycle Cost Analysis – 2020-2040
Cost per Ton – Breakdown by Scenario

- **RRF Operation (2020 Through April, 2026)**
  - Transfer Station Processing Cost: $10.00
  - Capital Costs: $6.50
  - Transportation Costs: $4.47
  - Net Processing/Disposal Cost: $8.50
  - Total: $32.77

- **RRF Operation (2020 Through 2040)**
  - Transfer Station Processing Cost: $10.00
  - Capital Costs: $6.50
  - Transportation Costs: $6.85
  - Net Processing/Disposal Cost: $35.96
  - Total: $59.31

- **Site 2 LF (2026 - 2040)**
  - Transfer Station Processing Cost: $10.00
  - Capital Costs: $11.50
  - Transportation Costs: $15.06
  - Net Processing/Disposal Cost: $23.00
  - Total: $59.56

- **Long Haul Via Rail to LF in VA (2026 - 2040)**
  - Transfer Station Processing Cost: $10.00
  - Capital Costs: $13.60
  - Transportation Costs: $9.80
  - Net Processing/Disposal Cost: $53.48
  - Total: $88.35

- **Long Haul Via Truck to LF in VA (2026-2040)**
  - Transfer Station Processing Cost: $10.00
  - Capital Costs: $11.48
  - Transportation Costs: $0.14
  - Net Processing/Disposal Cost: $42.36
  - Total: $53.48

**Total Cost per Ton**: $105.98
### Lifecycle Cost Analysis – 2020 - 2040

**Breakdown by Disposal Scenarios**

Undiscounted Dollar Value ($2019) — (includes costs to operate RRF until 2026)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Total Costs</th>
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<tbody>
<tr>
<td>Site 2 LF (2026 - 2040)</td>
<td>$617,380,000</td>
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<tr>
<td>RRF Operation (2020 Through 2040)</td>
<td>$635,740,000</td>
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<tr>
<td>Long Haul Via Rail to LF in VA (2026 - 2040)</td>
<td>$822,020,000</td>
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<tr>
<td>Long Haul Via Truck to LF in VA (2026-2040)</td>
<td>$947,290,000</td>
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#### Key Costs Breakdown

- **RRF Operation Through April, 2026**
- **Transfer Station Processing Cost**
- **Capital Costs**
- **Transportation Costs**
- **Net Processing/Disposal Cost**
Comparison of GHG Emissions
Disposing Trash at RRF vs Trucking to a Landfill after 2026

Status Quo - County-managed MSW sent to RRF, Non-County-managed MSW sent to LF

- Net GHGs emitted from LF - non-County-managed MSW, 47,198
- Net GHGs emitted from RRF - County-managed MSW, 8,005

RRF Closes in 2026 - All MSW sent by truck to LF

- Net GHGs emitted from LF - County-managed MSW, 171,330
- Net GHGs emitted from LF - non-County-managed MSW, 47,198

 Represents GHG emissions associated with disposing of ~454K tons of County managed MSW at RRF compared to LF.

RRF shows offsets from avoided emissions from displaced electric utility generation and avoided steel manufacture from steel recovery.
Analysis of Disposal Options - Conclusions

Continued Use of RRF
• Hauling trash by rail to RRF minimizes impacts to road networks and traffic and reduces GHGs.
• Least costly and disruptive option.

Site 2 Development
• Similar to continued operation of the RRF through 2040.
• Least expensive option to manage waste after 2026 compared to hauling to a LF in VA.
• Would allow the County to continue to manage waste generated within its own borders at the least cost to rate payers.
Rail haul to a landfill located outside the County:
• More costly than Site 2.
• Fewer GHGs compared to long-haul by truck.
• Rail haul to VA LF costs ~48% more than Site 2 or continued RRF operation through to 2040 (not including cost for rail-yard).
• Need feasibility study and costing for rail-yard development.
Analysis of Disposal Options – Conclusions cont’d

Long-haul by truck to a landfill located outside the County:
• Increases GHGs, noise and traffic in the areas near Shady Grove as well as roads outside the County and in communities near the host landfill.
• Increases number of transfer trailers at Transfer Station (from ~700 to 20,000 annually).
• Not aligned with the Priority Outcomes of this administration and its goal of a carbon-neutral County.
• More costly and risky due to driver shortages.
• Truck haul to VA LF costs ~78% more than Site 2 or continued RRF operation through to 2040.
Conclusions

• Montgomery County has the opportunity to build upon an already, world class integrated waste management system.

• Recommendations build on the current system and identify opportunities to divert more materials.

• Options set the County on a path to “Zero Waste” and consider a range of social, environmental and financial aspects.

• County will need to undertake more studies, costing exercises and procurement processes when selecting options to implement.

• County will need to make significant investments in infrastructure for collection, transfer, processing and disposal.
Next Steps

• Participate in OLO discussions on extension of trash collection services to Sub-district B.

• Start with short-term options such as waste reduction and reuse which are low-cost, low-effort for the County and enhanced regulations such as single-use plastics, including straws.

• Conduct feasibility studies: standard trash container, train/truck haul for out-of-the county disposal, community negotiations to develop Site 2 or/and modification of Dickerson composting facility.

• Development of food waste processing capacity.

• Retrofit MRF and continue process for a new MRF in the County or a regional facility.
Comparison of Tons and GHG Reductions

- Reduction of Wasted Food
- Fix/Repair Clinics
- Reuse Centers
- Opportunities for Materials Exchange
- Support Reuse Events
- Sharing Libraries
- Mattress Recycling
- Carpet Recycling
- Textile Collection and Recycling
- Full-scale SSO Program
- Community Composting
- Backyard Composting
- Diversion of Food Scraps from Schools
- Ban/Reduce use of Additional Materials
- C&D Ordinance
- Standard Trash Container
- Bi-Weekly Trash Collection
- Reduce Bulky Trash Collection
- Trash collection expanded to Subdistrict B

- Mattress Recycling
- Second Recycling Cart
- Recycling
- Community Recycling

- Textile Collection and Recycling
- Mattress Recycling
- Second Recycling Cart
- Recycling
- Community Recycling

- Standard Trash Container
- Bi-Weekly Trash Collection
- Reduce Bulky Trash Collection
- Trash collection expanded to Subdistrict B

- Reduction/Reuse
- Recycling
- Composting
- Other