

#9 - Consider Mixed Waste Processing

Description

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

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

Benefits

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

Zero Waste Strategy



Relevant Connections

The Baltimore County Solid Waste Work Group defined the three pillars of the Zero Waste concept for the County as:

1. *Reduction and reuse of materials;*
2. *Increased recycling; and*
3. *Use of a sustainability lens for what remains.*

Processing waste, when compared to landfilling directly, provides for significant GHG savings while at the same time diverting materials from ultimate disposal.

This Strategy is connected to other Tactical Plan Strategies, including:

- Consider future planning for WAF because it is currently in a flood plain.
- Consider MRF Maintenance and Future Replacement.

Policy/Legislative Impacts

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

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

WARM GHG Modeling Notes

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The EPA Waste Reduction Model (WARM) GHG modeling underestimates the GHG savings obtained when using SRF in an industrial heat application such as cement kiln. The WARM model simulates MSW combustion in a mass burn waste to energy facility producing electricity which displaces the mix of grid generation sources; fossil, solar, wind, and nuclear. A large percentage of the avoided electricity may be from these zero carbon resources resulting in zero credits for WTE electricity. In an industrial heat application, the SRF offsets 100% fossil fuel.

In the EPA WARM model WTE analysis, the net GHG reduction is almost all attributable to landfill methane avoidance. An SRF application equally achieve the per ton landfill methane reductions plus an undetermined GHG reduction through the avoidance of coal combustion on a 1:1 BTU basis for the biogenic fraction of SRF, approximately about 50% of total SRF carbon.