

Recycling Food Waste in Montgomery County: A summary of potential food waste composting and anaerobic treatment facilities

The Montgomery County Food Council is an independent council formed and led by individual community members and representatives of local businesses, government, non-profit organizations, and educational institutions. Our mission is to bring together a diverse representation of stakeholders to improve the environmental, economic, social and nutritional health of Montgomery County, Maryland through the creation of a robust, sustainable, equitable local food system. This document was created in May 2019 by two members of our Environmental Impact Working Group, Adam Diamond and Walter Mulbry, with support from our Working Group co-chairs Susan Eisendrath and Susan Kornacki, and Food Council staff, as a resource for County leaders, environmental stakeholders, and residents, and summarizes the potential for Montgomery County to expand food waste composting. The Environmental Impact Working Group continues to advocate for a diversified approach to composting that will include municipal programs, as well as community-level efforts. This document focuses on the existing large scale composting facilities in our region, as well as the opportunities to build a large scale facility in Montgomery County.

Biological treatment of food waste via composting and anaerobic digestion offers considerable environmental, public health, and economic benefits to Montgomery County and is the focus of the County's Composting Strategic Plan.¹ The purpose of this document is to summarize regional composting and anaerobic digestion facilities that are the most likely candidates for treating portions of the County's food waste in the near term (2-4 years), and thus diverting significant quantities of waste from incineration at the Covanta facility. Although preference should be given to in-county facilities, to minimize greenhouse gas emissions caused by waste transportation, out-of-county facilities are also listed.

Estimates of food waste generation in Montgomery County

A report prepared for the Montgomery County Department of Environmental Protection indicates the County generates approximately 160,000 tons of compostable waste per year from all sources.² A comparable estimate of food waste generation (147,000 tons/year from all sources) is cited in the

¹ Department of Environmental Protection, Division of Solid Waste Services Montgomery County, Maryland. Strategic Plan to Advance Composting, Compost Use, and Food Scraps Diversion in Montgomery County, Maryland. April 2018. 82 pp.

² HDR. Baseline Review and Current State Assessment. Montgomery County Master Plan (Aiming for Zero Waste Plan). Technical Memorandum #1. October 17, 2018. 72 pp. The total compostable waste value was calculated using the fraction of food waste, non-recyclable paper and yard waste in the total waste stream (from Table 2-4) and the tons of materials disposed in 2017 from residential, commercial and institutional sources (Table 3-6).

County's composting strategic plan.³ Assuming a participation rate of 50-70%⁴, approximately 75,000 to 110,000 tons are likely to be "capturable" via voluntary food waste collection programs.

Achieving progress towards County food waste diversion goals

The County has a goal of diverting 70% of all municipal solid waste from disposal in landfills or incinerators by 2020. The County gets a 5% credit for waste reduction efforts, which, combined with the 56% recycling rate gives an overall diversion rate for the county of 61% for 2017, corresponding to 616,732 tons of recyclables diverted for the year.⁵ If 110,000 tons of food waste were composted annually this would increase the recycling rate to 66%, and the diversion rate to 71%, assuming the overall generation rate remained constant. One caveat that needs to be made is that projections of recycling rates are highly uncertain given the rapidly changing recycling marketplace. Nonetheless, food waste recycling represents one of the most readily available strategies for increasing the County's recycling rate, up to and beyond its 70% diversion goal.

Capturable food waste and implications for capacity requirements and technology choices

For aerobic composting, food waste needs to be mixed with yard waste or wood chips in approximately a 1:1 ratio by weight; for anaerobic digestion, no mixing with carbon rich sources is required. This means that total capacity needed for composting the capturable food waste/yard waste mixture is between 150,000 and 220,000 tons annually.

Current or prospective regional food waste treatment sites

- **Montgomery County's Dickerson yard waste composting facility.**

The facility currently composts 66,000 tons/year of yard waste using 49 acres of the 118 acre site. The capacity of the Dickerson facility could be increased by installing an aerated static pile composting system similar to that of the Prince George's County Western Branch facility (described below). Such a facility could handle the majority of Montgomery County's capturable food waste with the same or an even smaller footprint than is now used with the turned windrow system in place at Dickerson. Approval from the Sugarloaf Citizens Association is needed to

³ Department of Environmental Protection, Division of Solid Waste Services Montgomery County, Maryland. Strategic Plan to Advance Composting, Compost Use, and Food Scraps Diversion in Montgomery County, Maryland. April 2018. p 1

⁴ The 70% participation rate value comes from results the Takoma Park food waste collection program. Starting with a pilot program in 2013, Takoma Park has operated a curbside program for residential food waste. According to results from 2015, approximately 70% of residents in the program put out food waste in any given week. The calculated weekly amount is about 10 lbs per household. Nima Upadhyay, Special Projects Coordinator, Takoma Park Public Works, personal communication.

⁵ HDR. 2018. Baseline Review and Current State Assessment Montgomery County Master Plan: Technical Memorandum #1, Montgomery County, MD, October.

allow expansion into food waste composting, as well as to expand the limit on the total volume of feedstock that can be processed at the facility.

For comparison's sake, the Cedar Grove Composting facility in Washington State is processing 280,000 tons per year of yard and food waste on a pad comparable in size to the Dickerson site. In order to save space at Cedar Grove, compost feedstocks and finished compost are not stored on-site.⁶ Other companies are developing even more productive composting designs, including created by Green Mountain Technologies which allows for the composting of 110,000 tons of feedstock on only 6 acres using a mass bed ring design.⁷

Upgrading the Dickerson site to include food waste is a very logical option because it already has substantial composting infrastructure in place, and is located next to a rail line that connects with the Shady Grove Transfer station. This rail line is currently used to transport trash to the incinerator and yard waste to the Dickerson facility for composting (approximately 20 miles). It could also be used to transport food waste.

- **Prince George's County Western Branch facility (Upper Marlboro, MD)**

The facility completed a two-year expansion of their composting operation in 2018 in order to accept 32,000 tons/year of food waste and 56,000 tons of leaves/yard trimmings. However, even with this expansion, there is significant space to expand capacity even further. Current composting operations use only 52 acres of 220 acres, including the storage area for yard waste (12-14 acres) and new aerated static pile compost bunker system (6 acres)⁸. The facility is approximately 45 miles from the Shady Grove Transfer station.

- **BTS Technology is building an anaerobic digester at the Maryland Food Center (Jessup, MD)**

This facility is projected to accept 100,000 tons/year of food waste starting in late 2019. They expect to receive 75% of food waste within 3 miles of the facility. Sources of the remaining 25% of food waste have not yet been determined.⁹ The facility will be approximately 30 miles from the Shady Grove Transfer station.

⁶ Steven Birchfield, MES site manager at the Western Branch facility, personal communication, December 13, 2018.

⁷ Jeffrey Gage, Senior System Designer, Green Mountain Technologies, personal communication, January 30, 2019.

⁸ Steven Birchfield, MES site manager at the Western Branch facility, personal communication, December 13, 2018. His Sept 20, 2018 presentation at MWCOG Recycling committee meeting can be accessed using the link: https://www.mwco.org/events/2018/?F_committee=162&F_Event=pe

⁹ Vinnie Bevivino, Director of Organics, BTS, His Sept 20, 2018 presentation at MWCOG Recycling committee meeting can be accessed using the link: https://www.mwco.org/events/2018/?F_committee=162&F_Event=pe and links to other recent articles about the BTS project:

<https://www.biocycle.net/2018/06/07/anaerobic-digest-84/>

<https://news.maryland.gov/mea/2018/05/18/celebrating-marylands-newest-food-to-waste-energy-plant/>

- **Prince William County’s Balls Ford facility (Manassas, VA)**

This facility is upgrading their yard waste composting facility with the goal of accepting 100,000 tons of food waste starting in 2020 through a combination of aerobic composting (20,000 tons/year food waste) and anaerobic digestion (80,000 tons/year food waste).¹⁰ It is located 44 miles from the Shady Grove Transfer station.

- **Other possible food waste treatment sites within Montgomery County**

In addition to the currently operating or planned organic treatment facilities, the County could develop other County-owned land for this purpose. According to a recent report prepared for Montgomery County Department of Environmental Protection¹, the County owns 820 acres of land in Dickerson, Maryland to host a potential future in-county landfill. According to that report, the site is held “as a contingency in the event economic conditions change or the law no longer allows out-of-county waste disposal. This location is along Wasche Road and is known as ‘Site 2’. The County continues to allow this site to be used for agriculture purposes until a landfill is needed. It is anticipated that the footprint of the landfill would consist of 125 acres. The County could commence construction of the landfill at any time in accordance with the terms and conditions of the Refuse Disposal Permit issued by MDE for the site.” A portion of this site could be repurposed as a composting and/or anaerobic digestion site for food and yard waste.

Community Composting

Community composting can be an important component of the County’s composting program, especially with regard to promoting the practice of recycling organic wastes into compost and using that compost in local gardens and greening initiatives. Community composting sites are also relatively inexpensive compared to larger facilities. However, compared to large composting facilities, community composting sites have the capacity to treat only a small amount of food waste. New York City’s community composting program is one of the largest in the country and is comprised of about 250 small volunteer-run sites and about six larger sites (about 1-2 acres each) with city equipment and city employees.¹¹ Each large community composting site processes about 1000 tons per year of food waste. In comparison, one of the large-scale composting sites in the NYC area is permitted to treat approximately 100,000 tons of organic waste per year.¹²

¹⁰ Douglas Ross, CEO Freestate Farms. His Sept 20, 2018 presentation at MWCOG Recycling committee meeting can be accessed using the link: https://www.mwco.org/events/2018/?F_committee=162&F_Event=pe

¹¹ Nora Goldstein, 2013, Community Composting in New York City. BioCycle, Vol. 54, No. 11, p. 22 (one of a five-part series of articles on the NYC program). Available at : <https://www.biocycle.net/2013/11/18/community-composting-in-new-york-city/>

¹² Nora Goldstein, 2017, Big Apple Goes Big On Organics Recycling. BioCycle, Vol. 58, No. 1, p. 38. Available at <https://www.biocycle.net/2017/01/12/big-apple-goes-big-organics-recycling/>

Backyard Composting

The Institute for Local Self-Reliance recently completed a national study of backyard composting,¹³ which includes case studies of 11 municipal programs across the U.S. and Canada, and detailed analyses of effective compost education and outreach, and ordinances. Montgomery County’s Strategic Plan indicates the residential portion of all food scraps produced annually is 79,000 tons. Data from other jurisdictions indicates that additional training and support increases the diversion rate of home composting programs, with diversion ranging from 1,400 to 5,000 tons per 10,000 households.

If 10% of Montgomery County households (37,000) composted all of their organic waste this would divert approximately 7,900 tons from curbside collection. According to the Backyard Composting Project, municipal home composting programs cost between \$.70 and \$2.00 per participating household in bin costs annually, which saves approximately \$14.75 in tipping fees annually per bin.¹⁴ However, participation rates for backyard composting decline once curbside collection is offered. Therefore, backyard composting can serve as a complement to, rather than a substitute for, a comprehensive residential collection program for all County households.

Comparison of potential large scale treatment sites for Montgomery County Food Waste

Site	Potential capacity for Mont. Co. food waste (tons/year)	Distance from Shady Grove transfer station (miles)
Dickerson composting facility	65,000 ^a	20
Western Branch composting facility	32,000 ^a	45
Maryland Food Center	<25,000	30
Prince William’s County site	30,000 to 50,000 ^b	45

¹³ Brenda Platt & Colton Fagundes. 2018. *YES! IN MY BACKYARD: A Home Composting Guide for Local Government*. Institute for Local Self-Reliance. Washington, D.C.

¹⁴ Ibid.

Dickerson property (Site 2)	>65,000 ^a	25
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^a Values assume expansion and/or upgrading of current facilities

^b The facility is designed to accept 100,000 tons of food waste per year. Capacity to accept Montgomery County food waste is not known.