Ontario County
NEW YORK

LANDFILL ALTERNATIVES ANALYSIS

Report

September 16, 2024

Prepared by

MSW CONSULTANTS

Civil & Environmental Consultants of New York, Inc.

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1. INTRODUCTION

1.1 BACKGROUND

Ontario County is a rural county located within the heart of New York State's Finger Lakes Region, approximately 40 minutes southeast of Rochester. Roughly 112,000 residents live within the 26 municipalities located within the county's border. The Ontario County government seat is located within the City of Canandaigua, with additional County campuses located within the Town of Hopewell and City of Geneva.

The Board of Supervisors is the legislative body for the County of Ontario with one Supervisor representing each of the 16 towns, two Supervisors representing the City of Canandaigua, and three Supervisors representing the City of Geneva. Each Supervisor is allocated a certain number of weighted votes which is determined by the population of the Town, Village, Ward, or District he/she represents. The Board has multiple standing committees that oversee various departments and agencies including solid waste management and presents resolutions for approval by the full Board on behalf of those departments.

The County owns a 2,999 tons per day Municipal Solid Waste (MSW) Landfill located within the Town of Seneca, which (via discrete phases), has been in operation since the early 1970s. In 2003 the County entered into a 25-year lease agreement with a private company, Casella Waste Services of Ontario LLC (Casella), to operate the landfill on the County's behalf.

Additionally, a single stream Materials Recovery Facility (MRF), also operated by Casella, is located on the landfill property. The landfill and MRF serve as strategic endpoints in Casella's regionally distributed, vertically integrated network of waste management collection services and transfer stations. As operator of these waste management facilities, Casella has been able to import waste and recyclables from all over the state of New York and beyond.

At the current time, the lease agreement including operations of both the landfill and the MRF with Casella is set to expire in 2028, which is also roughly the projected date by which the landfill will have reached its currently permitted capacity. In anticipation of the impending closure and conclusion of the lease, the County has identified the need to thoroughly evaluate a wide range of options associated with the future of solid waste management. The County retained the Project Team of MSW Consultants, J&L Consulting, and Civil & Environmental Consultants, Inc. (CEC) to undertake a comprehensive and ambitious evaluation of the current system, with a focus on defining and forecasting near and long term options for waste disposal and recyclables processing.

In collaboration with County, the Project Team identified and conceptualized potential alternatives for both waste disposal and for recyclables processing. Future waste disposal options that were explored include:

- Expanding the existing landfill to extend its useful life and determining the best means of operating the expanded facility.
- Building a new landfill in the County to replace the current facility when it reaches capacity.
- Building a new waste-to-energy facility in the County to recover energy from disposed municipal solid waste once the current landfill reaches capacity.
- Closing the existing landfill outright.
- Closing the existing landfill and developing an on-site county-wide transfer station to access more distant disposal capacity.

Similarly, this evaluation included future options for processing recyclables, including continued use of the current MRF as well as exporting recyclables to more distant MRFs for processing. Additionally, the

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County identified an interest in potential opportunities to divert organics from the landfill waste stream, including development of (on-site) anaerobic digestion or composting facilities, or accessing such facilities within the region. Finally, the study sought to identify innovative opportunities to utilize the current landfill site under any of the potential alternatives.

This report attempts to assemble the wide-ranging research and analysis performed to assess these alternatives. It is important to note that the focus of this engagement has been to compile both quantitative and qualitative information to inform the County Board of Supervisors and other County stakeholders in the decision-making process. The Project Team has sought to present verifiable data and factual reports wherever possible; although in some cases it has been necessary to supplement such factual information with professional judgment and expertise on related projects and circumstances.

1.2 COUNTY WASTE MANAGEMENT SYSTEM

This section provides a concise overview to the County's materials management system.

1.2.1 DEMOGRAPHIC OVERVIEW

Detailed tabular data about Ontario County's 26 municipalities is extensive. As a consequence, much of the underlying tabular data compiled in this report for the purpose of evaluating impacts to the municipal level is contained in Appendix G for reference. A municipal-level detail of the population (112,550) and households (46,853) reported by the 2020 US Census can be found in Table G-1.

Ontario County is also reported to have almost 2,900 employer establishments, is home to a variety of agricultural and manufacturing activities, and several of its municipalities are recognized access points to Canandaigua, Seneca, Honeoye and Hemlock Lakes, as well as the broader Finger Lakes region.

1.2.2 WASTE AND RECYCLABLES COLLECTION

Ontario County has taken a non-centralized stance on waste management insofar as it no longer actively engages in does not engage in any collection of materials, and has outsourced the operation of its landfill and MRF. Accordingly, residential and commercial waste generators in the County mostly rely on a network of private haulers to collect wastes and recyclables, and to deliver such materials to its landfill and MRF.

Residential curbside collection is provided by the public works departments of the City of Canandaigua and the Village of Victor, and funded by general taxes. However, these are the only two municipalities that have gone the route of establishing exclusive residential curbside collection. Households in the rest of the County may subscribe for curbside refuse and recycling collection with any of the licensed haulers and pay the haulers directly for the services received.

Pursuant to Local Law 1992, 6-1992, source separation of recyclables is mandatory, all county residences should be provided recycling containers, and recyclables are banned from the landfill. Subscriptions for curbside collection service consequently include separate collections for both refuse and recycling. Table G-2 shows the residential collection systems in each municipality.

1.2.3 MUNICIPAL TRANSFER STATIONS

A total of 14 municipalities have established some form of transfer or drop off station. It is important to note that these facilities are configured as residential convenience centers, with access and various containers to receive self-hauled materials. These are not commercial transfer stations designed to consolidate high volumes of waste for long distance transport. Table 1-1 lists the municipal transfer stations operating in the County and indicates the range of materials accepted at these facilities.

Each municipality is responsible for the maintenance and upkeep of their transfer station, and also for arranging to haul filled containers of material to the landfill for disposal, or to the MRF for recycling, or to other processors of special materials.

Table 1-1 Municipal Transfer Stations in Ontario County

Facility	MSW	Recyclables	Bulk Waste	Yard Waste	C&D	Electronics	Tires	Scrap Metal	Other Items
	Materials Accepted								
Town of Victor	X	X	X	X	X	-	X	X	X
Town of Farmington	-	-	X*	X	X*	X*	X*	-	X
Town of Canandaigua	X	X	X	X	X	X	-	X	X
Town of Manchester	X	X	X	X	-	X	X	X	-
Town of Gorham	X	X	X	X	X	X	-	X	X
Town of Hopewell	X	X	X	X	-	X	X	X	X
Town of Geneva	X	X	X*	X	X*	-	-	X	X
Town of Richmond	X	X	X*	X	X*	-	-	X*	-
Town of West Bloomfield	-	-	X	X	X	-	-	X	X
Town of Seneca	X	X	X	X	X	-	-	X	X
Town of Naples	X	X	X	X	X	-	X	X	-
Town of Bristol	X	X	-	X	-	X	-	X	X
Village of Phelps	X	X	X*	X	X*	-	-	X	-
Town of South Bristol	X	X	X	X	X	X	-	X	X

Source: *Solid Waste Management Program Assessment and Facility Consolidation Study*, March 17, 2021.
* Indicates material acceptance is conditional based on seasonal availability and other factors.

1.2.4 County Facilities

The Ontario County landfill has been in operation in phases since 1973 and covers a 158-acre footprint. The landfill has two closed phases, but the largest and still active phase was constructed with modern liner, leachate management, and landfill gas systems. The peak permitted elevation of the landfill is 1,106 ft, will rise to a height of roughly 260 ft for those looking on from nearby ground level when capacity is reached.

The Ontario County landfill currently holds over 17.1 million tons of waste in place, dating to 1992 when tonnage-based (not cubic yardage-based) recordkeeping began. The landfill has a permitted fill rate of 916,000 tons per year, although in recent years the fill rate has been closer to 700,000 tons. In 2023, Ontario County contributed roughly 97,000 tons per year, or 14 percent, to this annual total. It is important to note that the landfill accepts virtually all waste types as defined in New York State:

- **Municipal Solid Waste (MSW)**, which consists of routinely generated household and business garbage and trash.
- **Construction and Demolition Debris (C&D)** which includes the wastes generated from the construction, demolition and renovation of residential and commercial structures.
- **Industrial Wastes** include solid wastes originating from manufacturing or industrial processes such as electric power generation, leather and leather products, chemicals, plastics and resins manufacturing, textile manufacturing, etc.
- **Asbestos-containing Wastes**, which are remediated from old structures
- **Biosolids**, otherwise known as wastewater treatment plant sludge.
- **Beneficial Use Determination (BUD)** material which can be used as fill or cover material within the landfill.

Figure 1-1 shows an aerial photograph of the landfill. As shown in the photo, the entrance road is to the upper left (Northwest) corner of the parcel, where inbound truck traffic passes the scalehouse and the

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MRF, and then a closed landfill phase, to reach the active landfill face which occupies the entire right side of the photo. Although not evident in the photo, an unnamed tributary to Flint Creel flows south to north through the center of the parcel, between the closed phase and the active phase.

Landfills in New York State are required to submit detailed quarterly and annual reports to the State's Department of Environmental Conservation (DEC). These reports contain extensive data about the annual and cumulative waste receipts, landfill gas systems, leachate systems, groundwater monitoring, fill rate, and remaining capacity. This report almost exclusively cites data from the 2022 landfill annual report.

Figure 1-1 Landfill Aerial

Of particular interest, Figure 1-2 highlights the New York counties and other states that generated more than 15,000 tons of waste in 2023 that was imported into Ontario County for final disposal. This map illustrates the strategic importance of this landfill to Casella, which was able to capture or internalize wastes from significant distances to the Ontario County landfill.

The MRF located at the landfill property and operated by Casella serves a similar role as the landfill. According to DEC reports, the facility processed over 37,000 tons of single stream materials, and total of almost 45,500 tons of all recyclables. Ontario County's share was reported to be almost 7,300 tons of recyclables, or 16 percent of the annual total. Figure 1-3 is a photograph of the processing line housed within the MRF. As shown, this facility has been outfitted with a sophisticated mechanical and optical-enabled processing line to separate and bale secondary materials for shipment to market.

Figure 1-2 Sources of Wastes Disposed at County Landfill (2023)

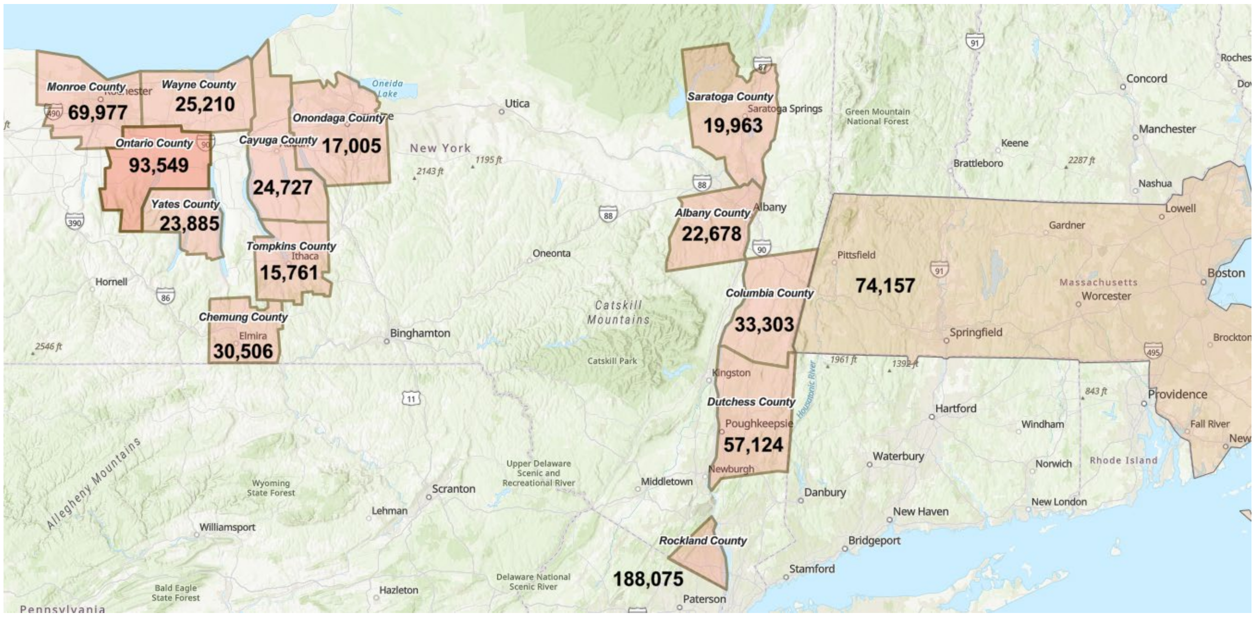
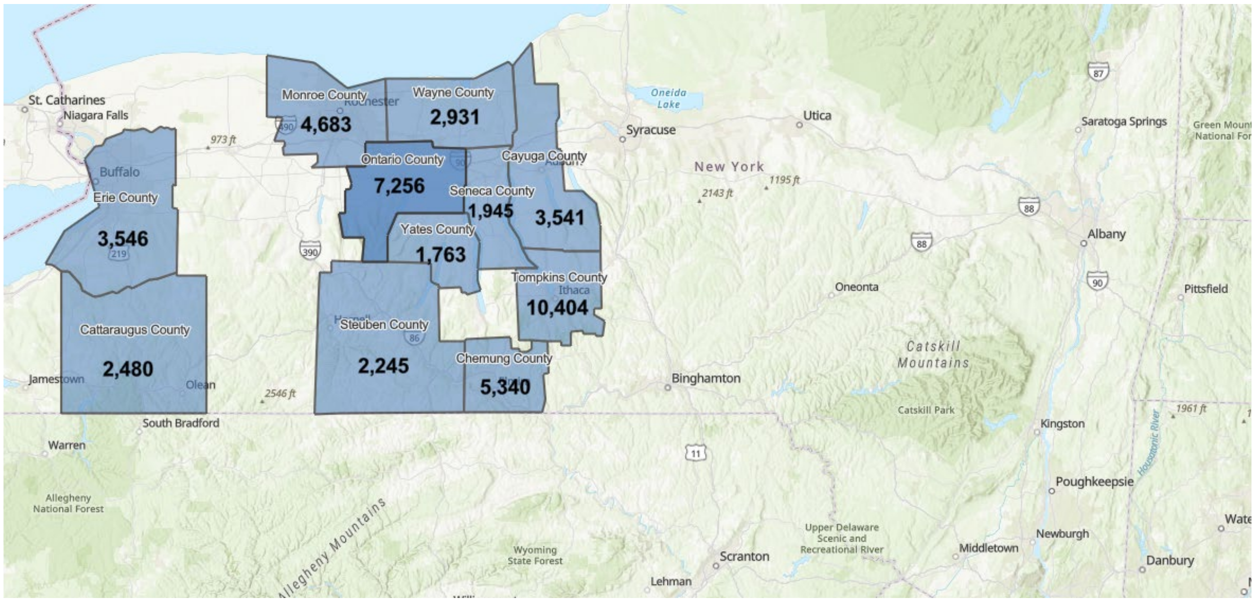


Figure 1-3 MRF Processing Line

Figure 1-4 identifies the counties in New York that supplied at least 1,000 tons per year to the MRF. Similar to the landfill, the MRF has served as central processing hub for regional recycling efforts.

Figure 1-4 Sources of Wastes Disposed at County MRF (2022)



1.2.5 OMLA

Ontario County and Casella first executed the Operation, Management and Lease Agreement (OMLA) in November 2003 and processed amendments in October 2007 and July 2015. The OMLA grants Casella the ability to operate the landfill in compliance with all local, state and federal regulations and extends a range of benefits to Ontario County and the host community of the Town of Seneca. These benefits are itemized in Table 1-2, and in 2022 the estimated value of the benefits was $6.672 million.

Table 1-2 Benefits to Ontario County Stakeholders

Benefit Type	Specific Benefit (Annual)	Notes
Direct Payments to County	Base Lease Payment	Annual flat fee
	Permit Success Payment	Annual flat fee
	Revenue Share (2022)	Variable
	Excess Tonnage payment	$3.27/ton for tons in excess of 612k
	Misc Benefits	Scholarship, reimbursements
Direct Payments to Seneca	Host Community Fee	Per ton Payment
	Free Refuse Disposal	Avoided tip fees
System Benefit	Value of Free Recycling	Avoided recyclables processing fee

Casella is singularly responsible for complying with all Federal, state and local regulations in managing the landfill. Of particular importance to the County is that the OMLA assigns the responsibility for proper landfill closure and all post-closure maintenance and care to Casella. This obligation survives the termination of the OMLA in 2028.

As a result of this arrangement, the County, its municipalities, and all waste and recycling generators have enjoyed (at least in recent years) below-market costs of waste disposal and recyclables processing, as well as the system efficiencies that come with having locally sited facilities to receive wastes and recyclables.

1.2.6 Town of Seneca's Position

However, the landfill has not served all municipalities in the County equally. Although the Town of Seneca has benefited financially from its host community fee and free disposal, its residents and businesses have felt the impact of having a large regional landfill in their community. Among the downsides to hosting such a large landfill are:

- The landfill's elevation makes it visibly noticeable when traveling the Town.
- With the majority of wastes imported, an average of 75 to 80 tractor trailers carrying trash generated in other counties and states pass through the Town every day[1] to get to and from the landfill, generating noise in addition to air emissions potentially impacting pavement maintenance.
- Of particular note, odors associated with the landfill's operations are most intensely experienced by Seneca residences and nearby municipalities to the east.

Table 1-3 summarizes the odor complaints over the last five years. At a glance, this table suggests that the odor problem has recently diminished following a Consent Order between Casella and the NYSDEC, and it is true that the facility faced pressure from DEC to remediate a measurable problem several years ago. However, odor complaints are likely underreported.

Table 1-3 Odor Complaints in the Last Five Years

Year	# of Odor Complaints
2019	503
2020	186
2021	31
2022	9
2023	19
2024	8

With these concerns, the Town of Seneca administered a public outreach effort in 2022. The Town hired Causewave Community Partners as a consultant to engage Town residents and businesses about their opinion of the landfill. This engagement process incorporated three public informational sessions in late June 2022, and also included a survey of Town residents that generated 506 responses.

After the conclusion of their public outreach efforts, the Town Board voted unanimously to close the landfill at the end of the current lease. Details are contained in Resolution #78-22, passed on Oct. 18, 2022.

1.2.7 Waste Generation & Composition

Annual DEC landfill and recycling facility reports contain a detailed accounting of the wastes originating from Ontario County and disposed in landfills or processed in MRFs. A review of these reports confirms the vast majority of Ontario County materials are disposed or recycled in-county. There is some export

[1] Based on a 12 month scale report from the landfill.

of wastes and recyclables to facilities in surrounding counties, but most County-generated wastes and recyclables are delivered locally.

As shown in Table 1-4, 104,000 total tons of solid waste material were received by the landfill and MRF, all but 7,256 of which were disposed in the landfill. High Acres Landfill, Seneca Meadows Landfill, and Chaffee Landfill reported receiving limited tonnage from Ontario County, and some recyclables went to an out-of-county private recycling facility for processing. In total, the County generated approximately 105,800 tons of waste and another 7,450 tons of recyclables for almost 113,300 tons solid waste. Only 60,000 tons of this total (57 percent) consisted of municipal solid waste; the remainder included other waste types.

Table 1-4 Ontario County Waste Generation (2022)

Acceptance Facilities	MSW	Recycling	C&D	Industrial	Asbestos	Biosolids	BUDs	Total
Ontario County LF and MRF Tons [1]	54,475	7,256	9,815	9,573	7	5,865	17,342	104,334
High Acres LF [1]	5,344			2,399	137			7,880
Chaffee LF [1]				608				608
Seneca Meadows LF [1]	223				47			270
Alpco (Town/Village of Victor) [2]		195						195
Grand Total	**60,042**	**7,451**	**9,815**	**12,580**	**191**	**5,865**	**17,342**	**113,287**
Tons/Capita	*0.53*	*0.07*	*0.09*	*0.11*	*0.00*	*0.05*	*0.15*	*1.01*

(1)NY DEC 2022 MSW, Industrial or Ash Landfill Annual Reports.
(2)Reported by Ontario County.

The landfill and MRF reports to DEC are highly detailed. However, these reports do not include a separate breakdown of inbound tonnage generated by residential and non-residential sources within Ontario County. Further, there is little concrete data about residential generation rates in the County. As a consequence of the lack of information, MSW Consultants relied on its substantial internal database of residential generation rates to estimate the amount of MSW and recyclables likely originating from the residential sector. These calculations are shown in Table 1-5, which estimates that approximately 62 percent of MSW and 79 percent of single stream recyclables originate from the residential sector.

Table 1-5 Estimated Residential MSW Generation (Annual Tons)

	MSW	Recycling
Households (2020)	46,853	46,853
Estimated Household Generation Rate (Lbs/Yr) [1]	1,600	250
Estimated Household Generation Rate (Tons/Yr) [1]	0.80	0.13
Lbs/HH/Week	30.8	4.8
Estimated Residential Generation (Tons)	37,482	5,857
Total Generation (2022)	**60,042**	**7,451**
Percent Residential	*62%*	*79%*

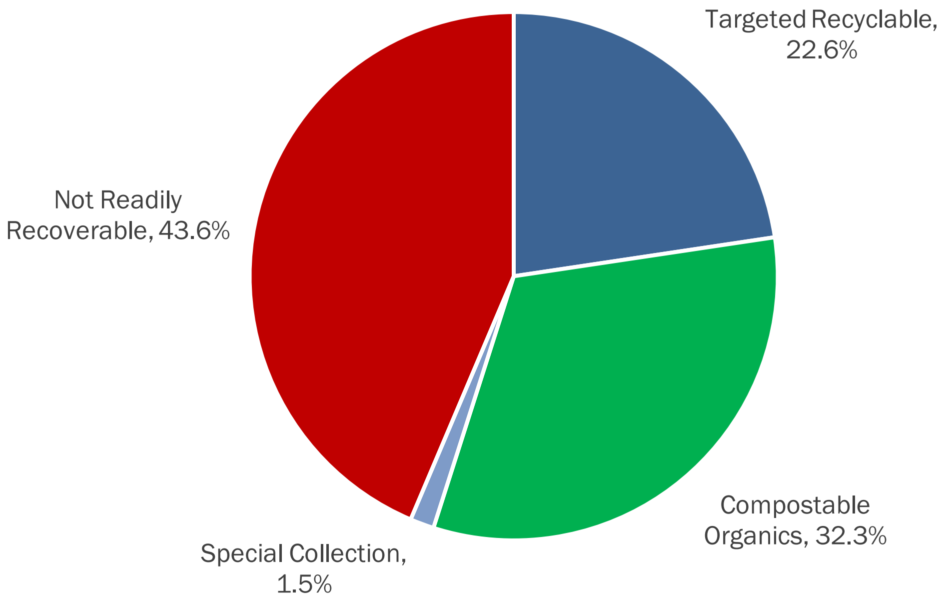
(1) MSW Consultants Estimate

In 2022, the County performed its first-ever waste composition study.[2] This study focused on disposed MSW originating from within Ontario County and encompassed both residential and commercial loads of waste. Although this 2022 Study did not estimate County-wide waste composition at the time, the

[2] *Ontario County Waste Characterization Study*, Final Report, November 23, 2022.

supplemental analysis of waste generation shown above provided a sufficient basis to update the 2022 Study and apply the composition results to estimated Ontario County MSW generation. The resulting estimate is shown in Figure 1-5.

Figure 1-5 Disposed MSW Composition



This pie chart illustrates that, on the surface, over 22 percent of the materials being disposed could be diverted to recycling, and another 32 percent are compostable green wastes and food scraps that could be composted. However, it should be noted that this graphic omits the impact of contamination (soiled or compromised recyclable material; or organics intermixed with plastic, glass or other undesirable constituents), and as a practical matter it is not possible for all the potentially divertible materials to actually be diverted. For example, newspaper used as pet bedding is too soiled for recycling but would have been classified as recyclable newspaper in the waste composition study. Unemptied food jars, bottles and cans that would be recyclable if they had been emptied and rinsed and would have been classified as targeted recyclables in this study, but would not be recoverable at the MRF. These and other instances of degradation and contamination that occur to otherwise recyclable materials illustrate the various challenges inherent in materials recovery processing and achieving any sort of "perfect" recycling.

The small percentage labeled "Special Collection" refers to certain items – mattresses, tires, film retail bags, e-waste and HHW – which have alternative outlets within the County outside of traditional recycling programs. Again, although these special items are recyclable under certain conditions, contamination and degradation (e.g. liquid or particulates adhering to film retail bags; badly soiled mattresses) would still drive a meaningful fraction of these items to end up being disposed.

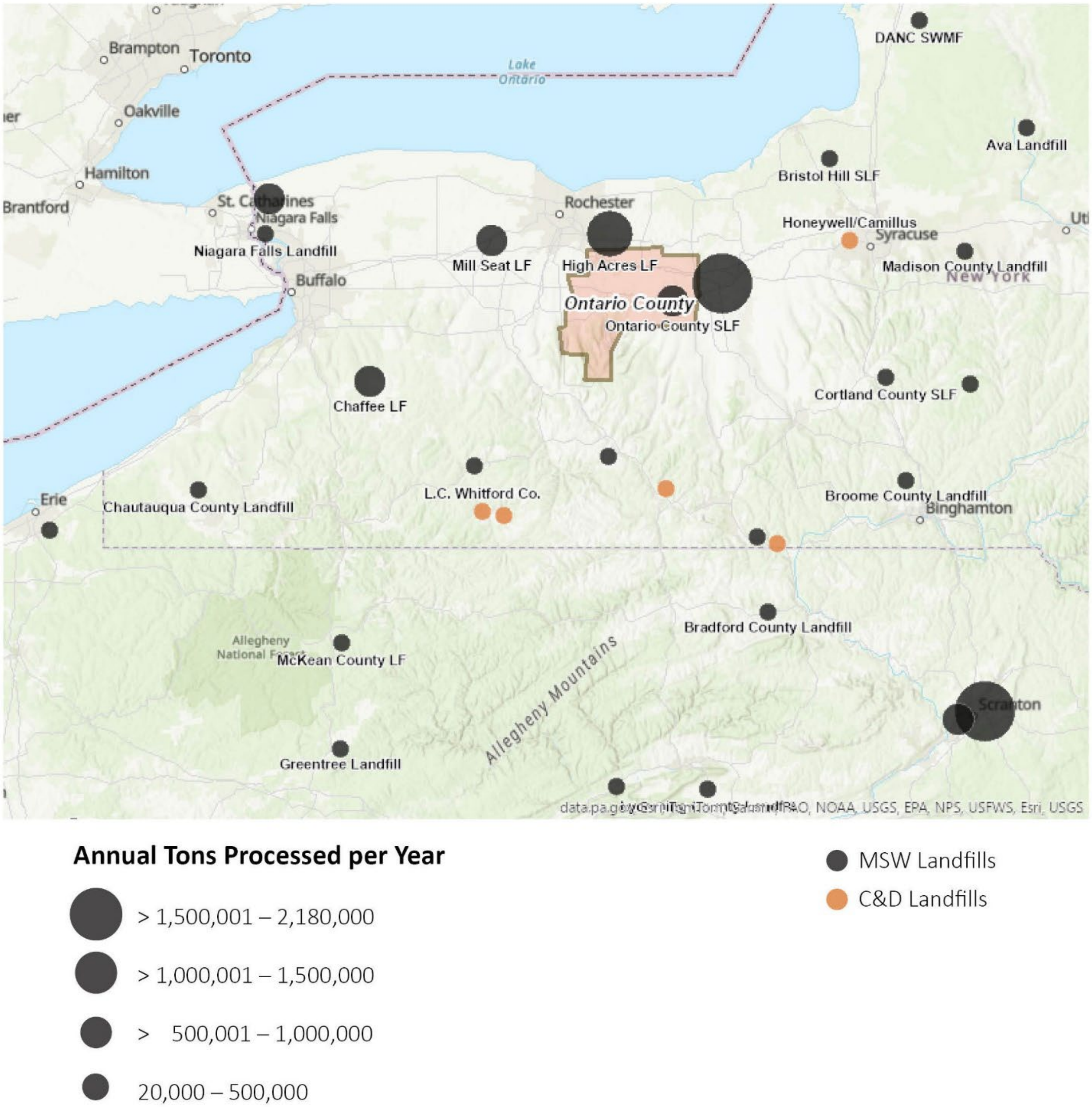
Finally, almost 44 percent of Ontario County-generated wastes are not readily able to be diverted and recycled or otherwise recovered. These items – as well as contaminated and soiled recyclables and organics, as described above – require a sanitary landfill or waste-to-energy facility for proper disposal. Although source reduction, recycling, and organics management programs are all important components of materials management, having a facility for true unrecoverable wastes is equally important and will be for the foreseeable future.

1.2.8 Northeast Region Waste Management Market Dynamics

While it was beyond the scope of this report to exhaustively document the waste generation, solid waste facility inventory, market forces, and policies/regulations that have driven the evolution of waste management in the Northeast and in New York State, this section provides an overview of critical developments that influence disposal and recyclables processing availability and pricing.

Although there is currently extensive landfill capacity in close proximity to Ontario County due to the existence of Seneca Meadows Landfill, this facility's permit expires in 2025. Furthermore, although this facility is currently seeking a permit for expansion, there can be no assurance that the expansion materializes, and the extension of capacity is uncertain at best. Figure 1-6 shows the landfills (both MSW and C&D) in the region and illustrates the amount of wastes that will need to find a new disposal outlet if both the Ontario County and Seneca Meadows landfills close.

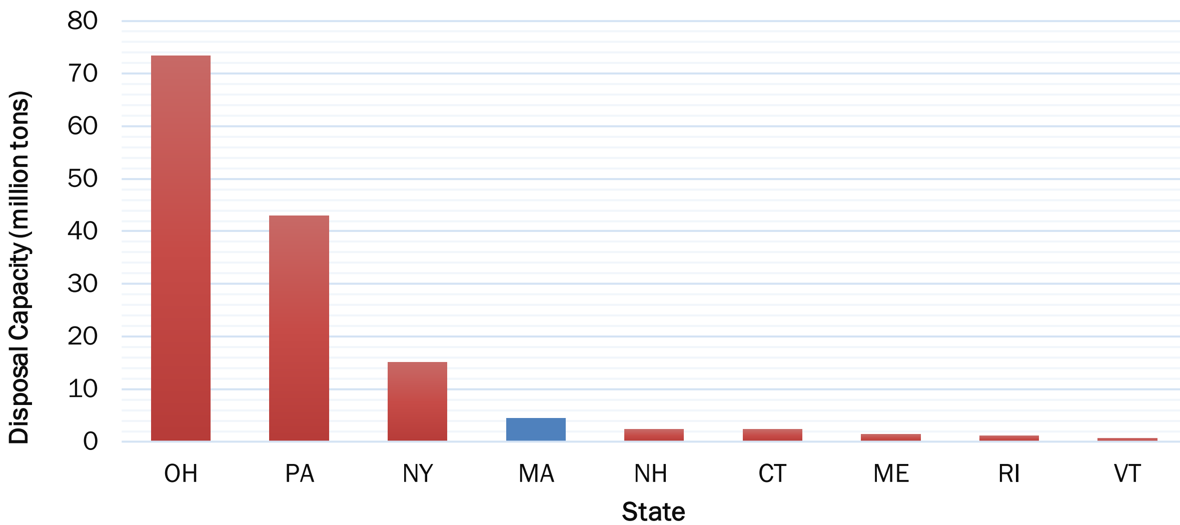
Figure 1-6 Regional Landfill Map



This dynamic is playing out all over the Northeast, where landfill capacity is scarce and dwindling. Connecticut has no in-state landfills; Massachusetts will close its last municipal solid waste landfill by approximately 2028, and remaining landfills in Rhode Island, New Hampshire, and Vermont are undergoing prolonged efforts to expand their limited permitted capacity with no guarantee of success. Figure 1-7 shows the available landfill capacity by state for the region, from a recent study performed by the Massachusetts Department of Environmental Protection.[3]

[3] *Massachusetts Materials Management Capacity Study* Final Report, MassDEP, February 11, 2019.

Figure 1-7 Remaining Landfill Capacity in the Northeast



Due to the landfill scarcity, state, county, and local governments across the region, including to the south in Pennsylvania, are evaluating and attempting to incentivize alternatives to landfill disposal. A primary reason is that landfills have negative consequences, including increased heavy truck traffic, odor, dust and littering, and may contribute to commensurate loss of property values in the immediate vicinity. These impacts are discussed in more detail in Section 6. Further, despite the growth of landfill gas recovery systems, landfills are the third highest contributor to anthropogenic sources of methane emissions, behind agriculture (including certain crop cultivation and enteric fermentation that takes place in the digestive systems of ruminant animals such as cattle, sheep and goats) and energy production (oil, natural gas and coal).[4] Although the Ontario County landfill has installed landfill gas recovery, it imposes these consequences on surrounding communities. Despite the critical need for disposal capacity, these reasons are often cited as a basis to close existing landfills and prevent development of new landfills.

Traditional curbside recycling programs have undergone an expensive reboot since the prolonged downturn in secondary material values from 2017 to 2021, and collection providers continue to deal with labor shortages and supply chain disruptions. For the past several years, the industry has identified food wastes and other organics as the next materials that are favorable to divert away from landfill and into composting or digestion facilities to recover nutrients and energy; yet comprehensive organics source-separation and collection is costly and not widespread. Such options are evaluated later in this report.

Although not as negatively perceived as landfills, other recycling and "waste" processing facilities also struggle to obtain support from local communities, especially in the absence of holistic considerations that take into account environmental justice. Ontario County, with its 3,000 ton-per-day (tpd) landfill, sits in the eye of these competing issues of increasing diversion, minimizing local impacts, and maximizing economic efficiency.

1.3 RESEARCH SUMMARY

In an effort to distill the critical underlying details and supporting data needed to inform County decision makers about options for the future of materials management, the methodology for this project subdivided the research and analysis into four phases:

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[4] *Data Highlights, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022*, US EPA document 430-F-24-003.

- **Phase 1 – Discovery**: The initial phase of research focused on gaining a baseline understanding of the current County materials management system and also the dynamics of the surrounding region. This phase included a review of the OMLA, compilation of community demographics and waste generation, and assembly of selected financial and pricing data.
- **Phase 2 – New Facility Development**: It was determined to initially evaluate the prospects for new solid waste facilities, including a new waste-to-energy facility, a new landfill, and new organics processing facilities. This research also encompassed a review of Federal, State, County and local regulations.
- **Phase 3 – Landfill Expansion, Closure and MRF Alternatives**: This phase defined various alternatives associated with expanding or closing the landfill (and the MRF), by extension, and developed pro forma estimates of the financial and operating impact on the County and its municipalities of each option.
- **Phase 4 – Impact Analysis on Municipalities**: The final phase incorporated the findings of the preceding phases and assembled a detailed, municipal-level impact analysis so that each city, town and village in the County could individually evaluate specific impacts affecting their communities under each alternative. This phase also supplemented prior research with a preliminary evaluation of landfill-based solar, wind, and battery storage opportunities for the current landfill site.

1.4 REPORT ORGANIZATION

The remainder of this report attempts to concisely summarize the degree of research and analysis performed, and to capture key presentations, and developed for the analysis. Remaining chapters in the report include:

- **Section 2** – New Disposal Facility Alternatives
- **Section 3** – Landfill Expansion Alternatives
- **Section 4** – Waste Export Alternatives
- **Section 5** – MRF Alternatives
- **Section 6** – Municipal, Residential and Other Customer Impacts
- **Section 7** – Conclusions and Recommendations

Finally, the report includes numerous appendixes to house stand-alone deliverables and the tabular data that informed the analysis.

- **Appendix A** – Centralized Digestor Feasibility Study
- **Appendix B** – Composting Operation Preliminary Feasibility Study
- **Appendix C** – Regional Organic Management Facilities Study
- **Appendix D** – Preliminary Evaluation of Landfill-Based Solar, Wind, and Battery Storage Projects
- **Appendix E** – Board of Supervisors Presentation, March 28, 2024
- **Appendix F** – Board of Supervisors Presentation, June 28, 2024
- **Appendix G** – Tabular Exhibits
- **Appendix H** – Landfill Expansion Schedule
- **Appendix I** – Municipality Impact Summary Exhibits.

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2. NEW FACILITY ALTERNATIVES

2.1 INTRODUCTION

Ontario County acknowledges that closure of the current solid waste landfill is a legitimate potential outcome at the conclusion of the OMLA when the currently permitted capacity will be substantially filled. Accordingly, the County directed that the potential for developing new solid waste facilities be evaluated and incorporated into this comprehensive assessment.

One possible direction for such an analysis would include detailed engineering planning cost work-ups to understand the economics of new solid waste facilities. However, the Project Team's experience suggests that expending effort on determining the costs of new landfills or new waste-to-energy facilities is not necessary nor valuable to evaluating the potential for new facilities. This is because there are numerous "softer" barriers to new solid waste facility development that, taken together, impose great challenges to successful project development.

This section compiles and evaluates these barriers, which span both regulatory constraints and non-regulatory financial, risk management, and market dynamics. In so doing, the Project Team offers likely conclusions about new landfill and waste to energy (WTE), facility development.

This section also introduces the work performed by Project Team member J&L Consulting to evaluate the potential for development of new organics processing facilities in the County, and researches the ability to leverage existing organics processing capacity in the Greater Rochester region.

2.2 RELEVANT FEDERAL, STATE, LOCAL POLICIES & REGULATIONS

As a first step, the Project Team researched Federal, New York State, and Ontario County legislation to identify regulations that impact solid waste facility siting, and whether there are limits on expansion to existing facilities. This section itemizes the specific rules and regulations included in the review, with the qualifications that the research was not exhaustive and not every section of each citation below is directly relevant to solid waste facility siting. However, these citations convey the degree of regulatory and legal complexity in developing a new solid waste facility, especially the restrictions placed on new landfills and waste-to-energy facilities.

2.2.1 REGULATIONS IMPACTING RECYCLING & DIVERSION

A perusal of almost any news source that follows current events will uncover articles and stories about the benefits of recycling, increased landfill methane emissions, the urgency for conversion to a circular economy, and the move away from landfill disposal and WTE incineration, which renders raw materials unavailable for recovery into the stream of commerce. Federal and state policies and plans generally tout waste diversion as the primary focus of materials management. The Project Team believes that these priorities are appropriate for the materials management industry and in fact team lead MSW Consultants' business model is based on helping public sector and private sector organizations maximize recycling and diversion.

The following policies, plans and regulatory actions are relevant to Ontario County's situation:

- **US EPA National Recycling Strategy**: At the Federal level, the US EPA has announced the National Recycling Strategy: Part One of a Series on Building a Circular Economy. The strategy focuses on enhancing and advancing the national municipal solid waste (MSW) recycling system. The five main objectives of the strategy are:
  - Improving markets for recycled commodities
  - Increasing collection of recyclable materials and improving recycling infrastructure

- Reducing contamination
- Enhancing policies and programs
- Standardizing measurement and increasing data collection

According to the EPA, "[a] circular economy, as defined in the Save Our Seas 2.0 Act, means an economy uses a systems-focused approach and involves industrial processes and economic activities that are restorative or regenerative by design, enable resources used in such processes and activities to maintain their highest value for as long as possible, and aim for the elimination of waste through the superior design of materials, products, and systems (including business models)."

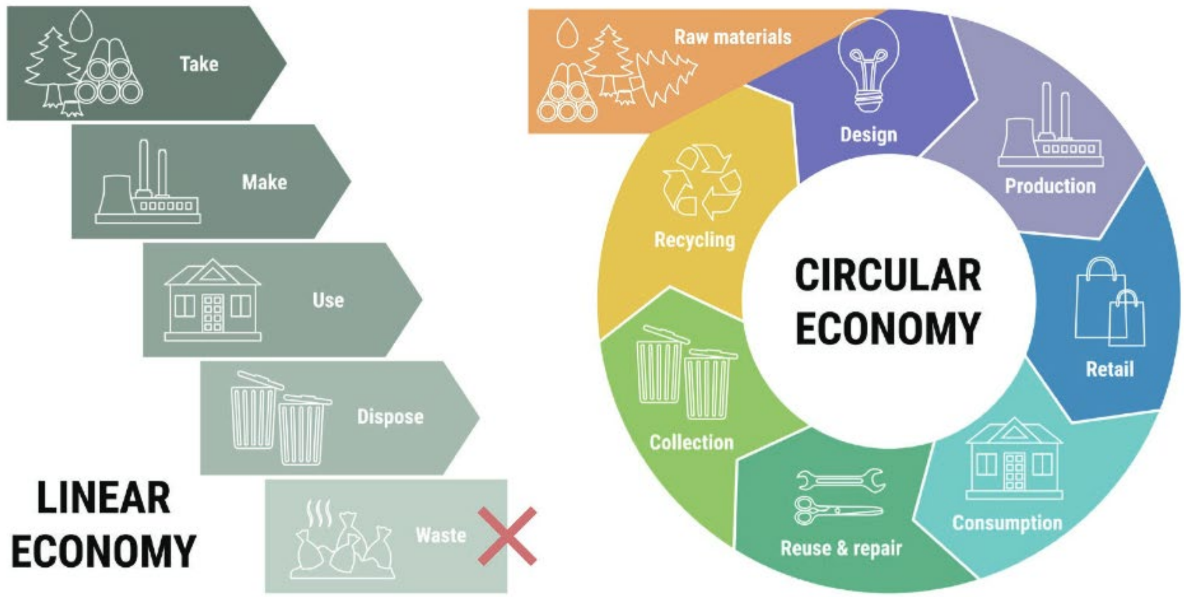
- **Infrastructure Investment and Jobs Act**: The Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act), enacted in November 2022, authorized the EPA to issue grants under the following grant programs for local governments:
  - **Solid Waste Infrastructure for Recycling (SWIFR) Grant Program** to "improve post-consumer materials management and infrastructure, including collection, transport, systems, and processes related to post-use materials that can be recovered, reused, recycled, repaired, refurbished, or composted." SWIFR grants to states, tribes, and municipalities totaling $160 million have been awarded.
  - **Recycling Education and Outreach (REO) Grant Program** to "improve post-consumer materials management and infrastructure, including collection, transport, systems, and processes related to post-use materials that can be recovered, reused, recycled, repaired, refurbished, or composted." A total of $55 million has been awarded through this program.

  This funding represents the first time the federal government has allocated significant, direct financial incentives and benefits to the materials management industry.

- **New York State Solid Waste Management Plan (2023-2032)**: New York State's guidance on the subject of sustainable materials management is captured in this plan, subtitled "Building the Circular Economy Through Sustainable Materials Management." This plan articulates key goals of materials management in New York going forward, including:
  - Reduce landfilling and combustion by 85 percent by 2050.
  - Realize the circular economy.
  - "Waste" becomes a concept of the past.
  - Widespread waste reduction and reuse efforts are equitable, inclusive, and accessible.
  - Thriving markets that are responsible and resilient.

  The Plan includes Figure 2-1 to illustrate the migration from a linear to a circular economy. All of these objectives are important and virtually all state-level materials management plans include a similar focus on circularity.

Figure 2-1 Transitioning from a Linear to a Circular Economy



Source: New York State Solid Waste Management Plan, December 2023

- **Ontario County Solid Waste Management Plan**: Although now 10 years old, Ontario County's last Solid Waste Master Plan contains tinges of earlier solid waste management priorities. Like virtually every Local Solid Waste Management Plan (LSWMP) plan for the past 10 years, the County's plan advises to follow the NY State Waste Hierarchy then in effect, which places waste prevention, reuse, and recycling above disposal; and municipal waste combustion (MWC) over landfilling. However, at that time the Plan concluded that the County should continue landfilling as the County's primary disposal option for all non-recyclable or non-recoverable waste, but advised that by 2023 the County should review alternative waste disposal technologies and explore feasibility of implementation, provided resources are available. Additionally, as referenced in the Plan's two – year extension request to DEC, the County recognizes the importance of this evaluation in informing meaningful policy making and providing subject matter to consider for the Plan's next 10 year term.

Collectively, these Federal, state and county plans and actions encourage the growth of sustainable materials management in concept. Nonetheless, despite the funding and focus on recycling and organics diversion, the need for landfills in the Northeast (and across the US) has not been fundamentally reduced by the above plans and policies.

As mentioned in Section 1 of this report, landfill and installed WTE capacity in Northeastern population centers is increasingly scarce or nonexistent. Although recycling and diversion from landfill would seem to be obvious outlets for waste materials, long-haul and rail haul transportation to large scale private landfills in distant states has thus far proven to be more economical at leveraging a waste management infrastructure that is predominantly in the hands of private corporations. As a result of the higher cost of longer transportation, and the equally high cost of recycling (to be discussed in Section 5), existing landfills in New York State are experiencing upward pressure on their tip fees.

2.2.2 Regulations Impacting New WTE Facility Development

Waste-to-energy facilities are regulated at the federal and state level. Key regulations include:

- **Section 129 of the US Clean Air Act** directs the EPA to develop regulations limiting emissions from solid waste incineration units. The EPA sets emissions standards based on the best-performing facilities in each source category. The "Maximum Achievable Control Technology" (MACT) defines the level of control required. Of particular importance, the new source performance standards (NSPS) and emission guidelines (EG) for commercial and industrial solid waste incineration (CISWI) units have been recently updated to be more stringent.
- **NY State Finger Lakes Protection Act**: In New York, this act took direct aim at limiting the allowable footprint for development of new WTE facilities. The Act prevents new WTE construction where all of the following criteria exist:
  - There is at least one landfill or other solid waste management facility permitted by the department of environmental conservation and operating or located within a fifty-mile radius of the incineration facility.
  - The incineration facility is within 10 miles of a priority water body as designated by the Department of Environmental Conservation, pursuant to section 17-1407 of the environmental conservation law.
  - The incineration facility is within the Oswego River/Finger Lakes Watershed

The specific constraints on new WTE facility development imposed by these regulations is presented later in this section.

2.2.3 Regulations Impacting New Landfill Development or Existing Landfill Expansion

Similarly, federal and state regulations govern the siting and development of new landfills.

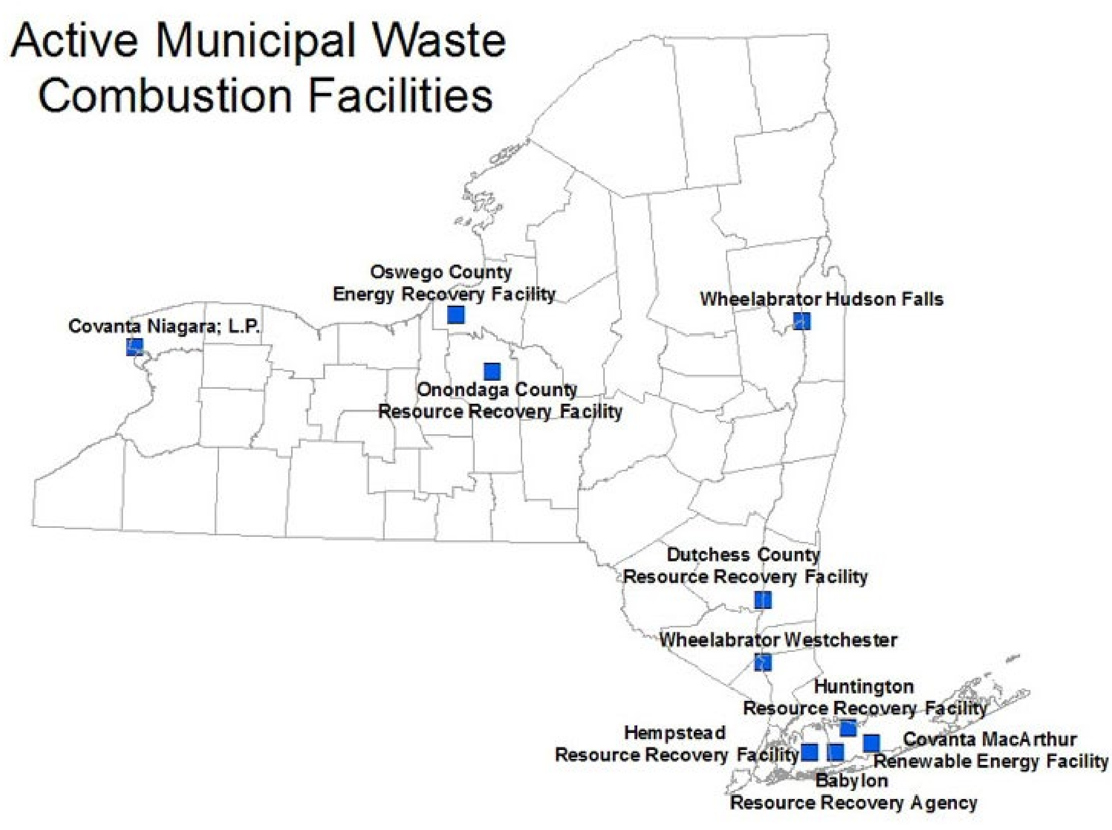
- **Resource Conservation and Recovery Act (RCRA)**, 40 CFR Part 258 Criteria for Municipal Solid Waste Landfills, establishes minimum criteria for landfill siting, including location restrictions near airports, floodplains and wetlands. RCRA is also the basis for the well established pollution control measures required at landfills, as well as the requirement to fund and perform closure and post closure care of landfills.
- **Federal New York Solid Waste Management Facility Regulations**, Part 363 Landfills, places limits on new or expanded landfill development. In New York, new landfills cannot be developed (nor can they be expanded) on top of primary water supplies, wetlands, or agricultural districts; within 10,000 feet of an airport; or within 1,000 feet from a residence or school. Landfills are also subject to height restrictions if they could impact air safety according to FAA determination.
- **NYS Climate Leadership & Community Protection Act (CLCPA)**: Enacted in 2019 as a means to fight climate change, this regulation requires New York to reduce economy-wide greenhouse gas emissions 40 percent by 2030 and no less than 85 percent by 2050 from 1990 levels. The Act has had sizable implications associated with landfill permitting, and has increased permitting timeframes significantly.
- **NYS 6 NYCRR Part 664, Freshwater Wetlands Jurisdiction and Classification:** Proposed in July 2024, this new regulation will also have sizable implications associated with landfill development and permitting and allows for Major Projects with an existing Boundary Validation (BV)/ Jurisdictional Determination (JD) or an Approved DEC permit and SEQR Approval or Local Approval prior to January 2025 to be grandfathered in until July 1, 2028 (3.5 years). Highlights of the proposed rule change include:

- Any wetland over 12.4 acres will automatically be claimed by NYSDEC on January 1, 2025. On January 1, 2028, the threshold will drop to 7.4 acres. There are other smaller types of unique wetlands which can be claimed as well.
- Wetlands will be categorized by classes, I, II, III, IV; I is the highest quality or importance (and likely most difficult to permit in or around).
- Urban Wetlands are located wholly within, or partially within, an urban area as defined and identified in the '2020 Census Qualifying Urban Areas and Final Criteria Clarifications By The United States Census Bureau' (December 2022).
- Two or more areas identified by the department as freshwater wetlands, pursuant to this Part, shall be classified and regulated as a single wetland if they are hydrologically connected, either on the surface or sub-surface, and no more than 50 meters (approximately 164 feet) apart.
- There are clearly defined timelines for BV/JDs and also Appeals.

2.3 FEASIBILITY OF NEW WASTE-TO-ENERGY FACILITY DEVELOPMENT

WTE facilities are not new to New York State, which has 10 such facilities currently in operation, as shown in Figure 2-2. However, these facilities have been in place since the 1980s and 1990s. Since the adoption of new regulations, new WTE development has become much more constrained.

Figure 2-2 Waste-to-Energy Facilities



Siting a new WTE facility in Ontario County was evaluated within the RCRA and Finger Lakes Protection Act constraints. In particular, the three stated criteria that collectively prohibit new WTE development are mapped in the following Figures. Figure 2-3 draws a 50-mile radius round the Ontario County landfill, and also around the two closest landfills outside the County (Seneca Meadows and High Acres). As shown, the entirety of Ontario County falls within the radius of all three of these landfills, and even if the Ontario County and Seneca Meadows landfills close, High Acres currently has 32 years of capacity remaining according to its most recent DEC Landfill Annual Report.

Priority water bodies also prevent the development of new WTE facilities. New York State has designated priority water bodies in its Waterbody Inventory/Priority Waterbodies List (WI/PWL) dataset, housed in a publicly available geographic information system (GIS). Figure 2-4 shows a map of priority water bodies in Ontario County – essentially every creek and stream in the state, not to mention the Finger Lakes. As shown in this figure, the entirety of the County meets this criterion.

Finally, the Oswego/Finger Lakes Watershed, also available in GIS format through the State, is overlaid on Ontario County in Figure 2-5. This watershed covers the majority of the County's eastern and central areas, but omits three noncontiguous pockets on the western side of the County.

The union of these three above criteria prohibits new WTE development in most of the County. Figure 2-6 illustrates the potentially acceptable locations were the County to pursue a new WTE facility. Although not shown in Figure 2-6, this exercise confirms that Towns of Bristol (partial), Canadice, East Bloomfield (partial), Richmond, Victor (partial) and West Bloomfield would be candidates to host a new WTE.

Figure 2-3 Constraints to WTE Siting from Landfill Proximity

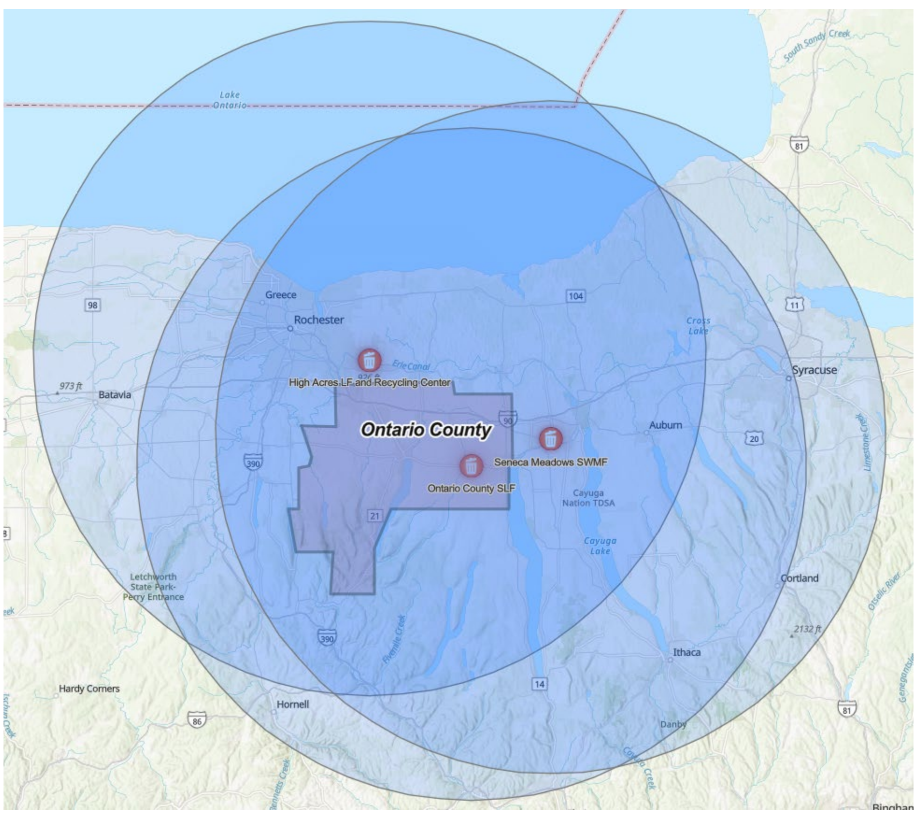


Figure 2-4 Constraints to WTE Siting from Priority Waterway Proximity

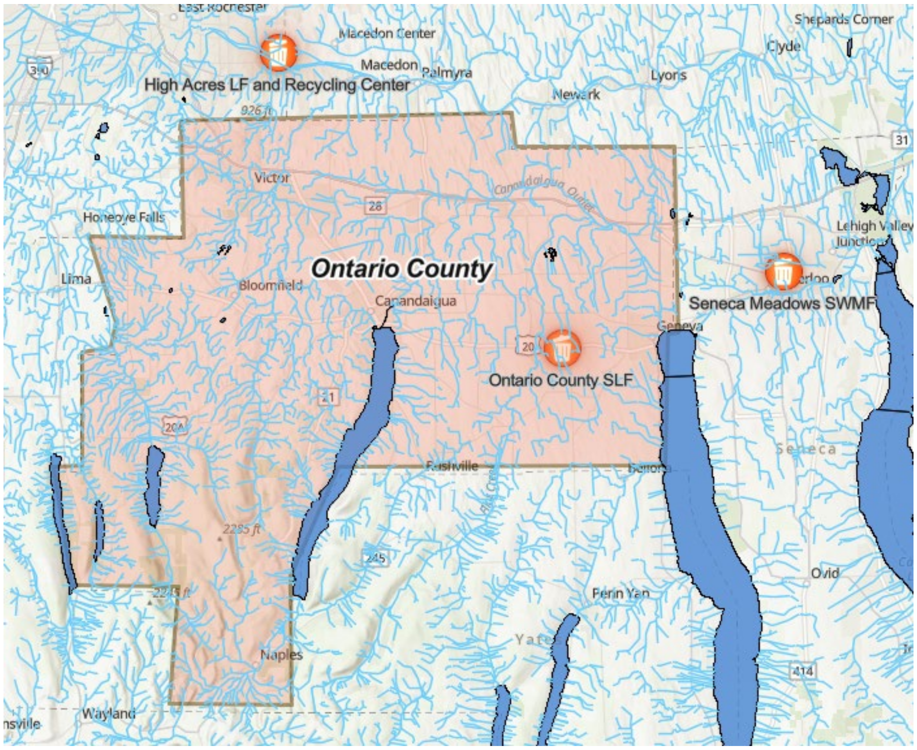


Figure 2-5 Constraints to WTE Siting in Oswego/Finger Lakes Watershed

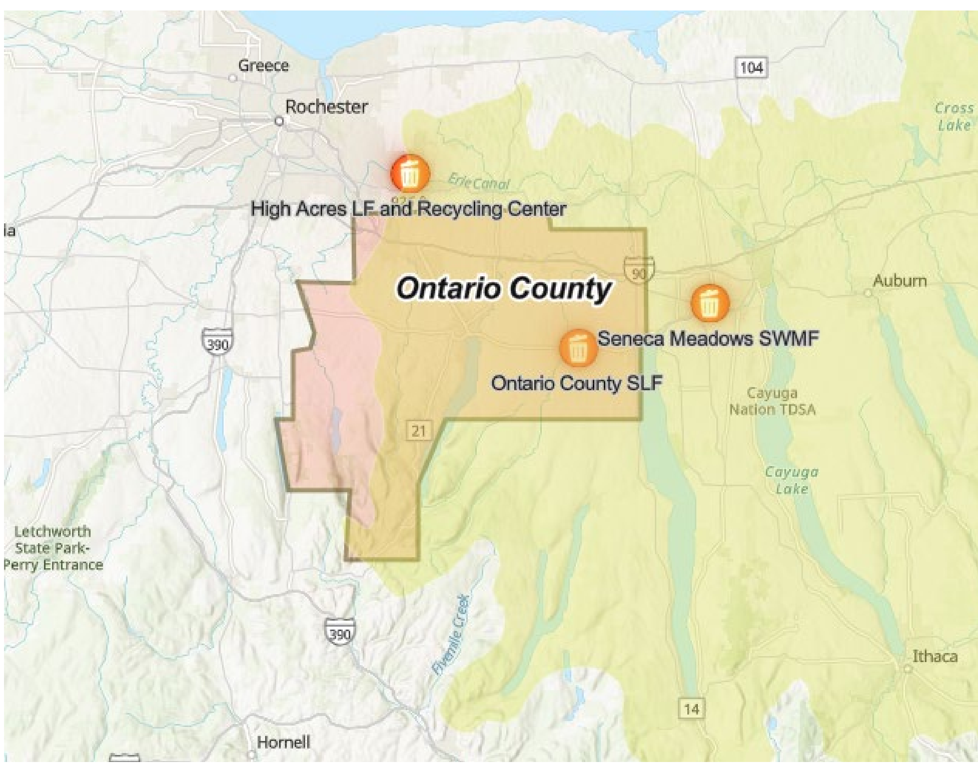
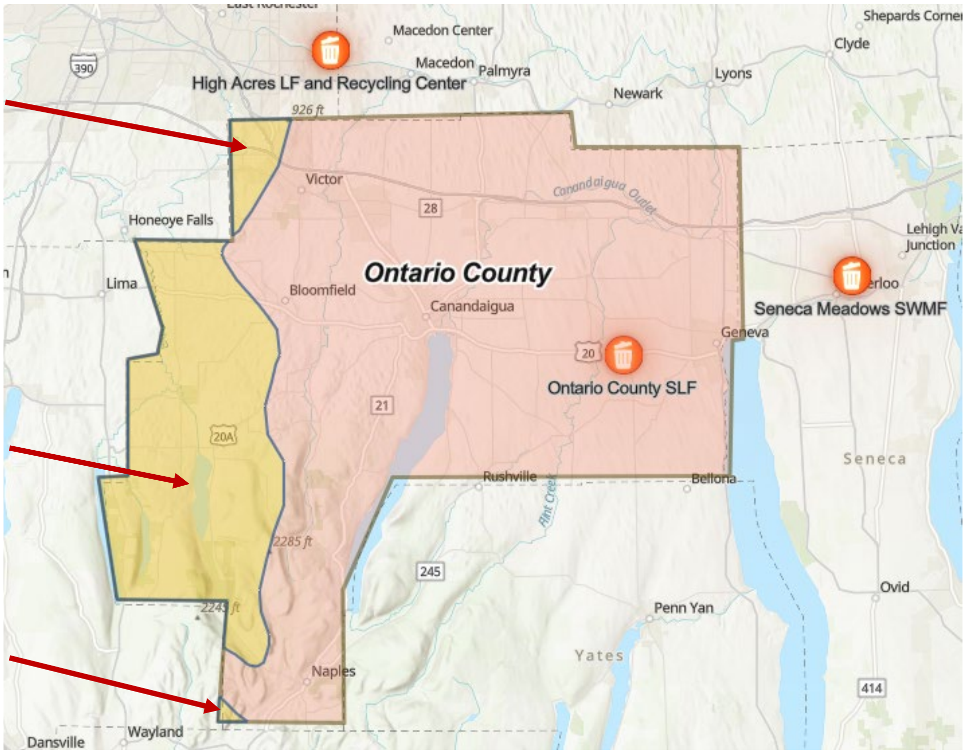


Figure 2-6 Eligible Locations for New WTE Siting in Ontario County

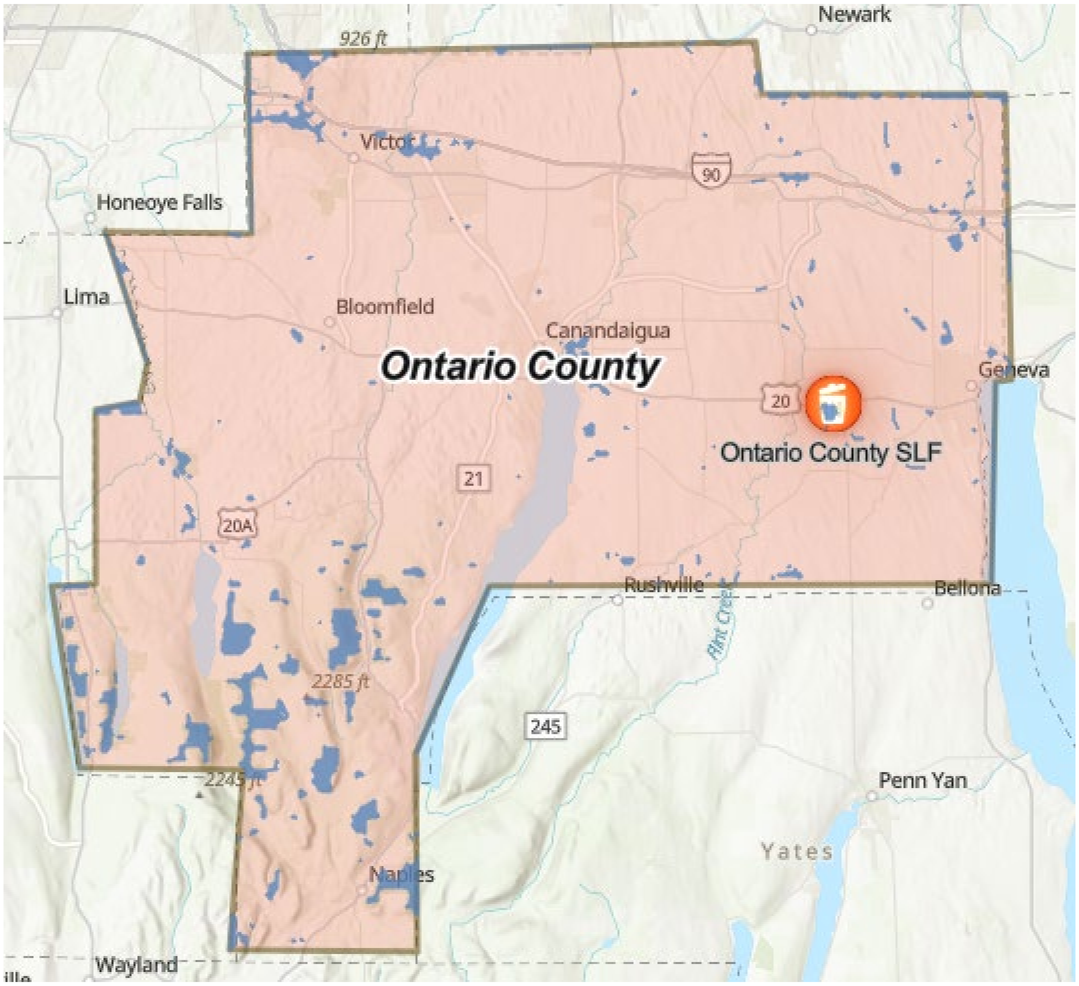


2.4 FEASIBILITY OF NEW LANDFILL DEVELOPMENT

A similar exercise was undertaken to determine the potential for siting a new landfill in Ontario County. Unlike WTE siting, which prevents the development of a new facility when at least three criteria are met, new landfill development is curtailed if any of a number of single criterion are found. As described above, new landfills must avoid or have set-backs of various sizes from residential households, wetlands, primary waterways, agricultural districts schools, and airports.

The Project Team loaded these attributes into a GIS database to filter out ineligible land in the County. Figure 2-7 shows the outcome of this exercise, with orange shading for the ineligible land area and mottled gray areas for eligible locations. As shown, there are scattered pockets of land (in the absence of future studies such as geotechnical investigation) that could host a new landfill, again clustered on the western side of the County, although some small pockets are strewn elsewhere in the central and eastern regions.

Figure 2-7 Eligible Locations for New Landfill Siting in Ontario County



2.5 NON-REGULATORY CONSTRAINTS TO NEW FACILITY DEVELOPMENT

Even if there were a supportive regulatory, legal and policy environment, there are still substantial challenges to develop a new waste-to-energy (WTE) facility or landfill in New York State and the Northeast US but, also, essentially, nationwide. Regarding WTE facilities:

- There have been no successful efforts to develop a completely new WTE facility in the US since 1993 when a public/private consortium developed, constructed, and now operate a 500 ton per day (tpd) mass burn facility in Lisbon, CT.
- Approximately 10 years ago, however, the Palm Beach County (Florida) Solid Waste Authority (SWA) spent $675 million to develop and build a second 3,000 tpd waste-to-energy plant next to their existing one.
- Most recently, Pasco County, Florida approved $290 million for a 515 tpd expansion of their existing waste-to-energy facility.

Landfill expansions are more common, but still require years to develop environmental assessments and studies, overcome potential local opposition, secure permits and local host agreements, and initiate new construction. In New York, Steuben County has been seeking expansion since 2019, and Waste Management is in the process of expanding their Chaffee Landfill in Erie County. Of particular interest, the 6,000 tpd Seneca Meadows landfill to the east of Ontario County, owned by Waste Connections, is seeking to expand beyond its current permit through 2025, in hopes of adding 15 more years of capacity. The last successful effort to develop a new landfill in NY State was the Oneida/Herkimer landfill, which was built in 1994 after a ten-year project development period.

Business and market risk exist throughout the life of a solid waste facility development project, which includes the following phases from conceptualization to closure/retirement.

- Development,
- Construction, and
- Operations.

The development phase spans from conceptualization to siting to permitting to construction groundbreaking. The project development period for a new waste-to-energy facility or landfill is considered to be approximately 4-6 years. During this period, significant effort must be extended before the developer (public or private) will know if permits will be issued. This includes whether sufficient waste supply will be contracted, and if other elements of the project will materialize to support financial investment. Budgets for these development tasks for a 500-2,000 tpd facility are typically estimated to be in the $3 to $6 million range. The entirety of this investment is at risk and would be lost if the project is not completed.

Construction encompasses the engineering, procurement and construction (EPC) of the new solid waste facility. Developers and project investors typically require that a fixed price, turnkey contract with substantial liquidated damages for the EPC of a new waste-to-energy facility be executed with a financially substantial EPC contractor. Conversely, because landfills are built cell by cell with construction capital required throughout the life of the landfill, developers and project investors do not require that a fixed price, turnkey contract cover the entire build-out of a new landfill.

It should be noted that WTE facilities cost an order of magnitude higher than landfills. It is not feasible to develop a WTE facility in the absence of a secured long-term supply of waste tonnage. Conversely, landfills are more often operated as merchant facilities without all aspects of future operation locked in, like a waste-to-energy facility would require. However, in Ontario County, with its relatively low population and waste generation, both facilities would require the scale and waste supply network that could only be provided with either a regional public sector supply agreement, or as part of a vertically integrated private company capable of providing the supply.

Finally, since the pandemic, construction costs for both types of facilities have risen substantially and supply chains have only recently started to become more stable and predictable after a multi-year period of uncertainty.

Once these facilities are operational, risks continue. While capital cost overruns would typically be borne by the fixed price turnkey waste-to-energy EPC contractor, three operating period risks will typically be borne by the public or private sector owner of a waste-to-energy facility.

- Operating cost overruns (in particular ash transport and disposal costs for WTEs), are a substantive risk typically borne by the facility owner.
- Similarly, waste supply misses (quantity and price) are also typically borne by the facility owner.
- Finally, change of law risk is nearly always a risk borne by facility owners.

For US waste-to-energy facilities, a specific potential change of law (tougher federal maximum achievable control technology (MACT) requirements must be considered. As described in Section 1, these facilities are regulated under Federal Clean Air Act section 129, wherein the EPA sets standards based on the best-performing facilities in each source category. The MACT "floor" is the minimum degree of control required of all such faculties. Numerous organizations are currently urging EPA and the White House to tighten air rules for all US waste-to-energy facilities.

For a new landfill, there can be inherent environmental risks throughout the life of the facility controlling groundwater contamination, pollution, littering, odors, etc.; and the creation of closure and post-closure obligations that survive closure of the landfill by another 30-plus years.

2.6 ORGANICS PROCESSING OPTIONS

Ontario County's 2022 waste characterization study[1] found that County residential and commercial sectors generate roughly 11,000 tons per year of food waste. Food waste, as well as various green wastes from landscaping and other activities, is highly compostable or otherwise processible as an organic material feedstock.

Project Team member J&L Consulting is a local expert on organic waste processing, and prepared individual analyses on three (3) potential outlets for source-separated food scraps generated in Ontario County, including the development of new anaerobic digester and commercial composting facilities, as well as export of food scraps to nearby processing facilities.

In all cases, it is important to note that, although some municipalities have source-separated organics (SSO) drop-off, organics recovery of meaningful volumes requires new collection, storage and potentially transportation infrastructure. Given Ontario County's reliance on subscription collection for regular refuse and recyclables, there is no immediately clear path to efficient SSO collection service. (Observations on the prevailing collection system in Ontario County that support this statement are provided in Section 8 of this report.)

Figure 2-8 shows a stock photograph of a digester, and the analysis of developing a centralized digester at the current landfill site is evaluated fully in the report contained in Appendix A. Research into this option identified eight (8) prospective facility developers, and estimated the capital cost for a 10,000 ton per year (tpy) anaerobic digestion facility to be approximately $10 million. Such a facility would generate renewable natural gas (RNG) valued at $9 to $80 per MMBtu.

[1] *Ontario County Waste Characterization Study*, Final Report, November 23, 2022.

Figure 2-8 Anaerobic Digestor

Composting of food scraps and green waste is a long-proven means of recovering nutrients. Figure 2-9 shows a commercial compost facility using windrow technology, although other composting technologies include static pile and in-vessel composting. The report in Appendix B contains a detailed review of the development of a composting facility at the County landfill site, where there is sufficient usable acreage, synergies with the existing approach and scalehouse, and where the County could contractually engage a private contractor to operate the compost facility.

Figure 2-9 Windrow Composting Facility

Alternatively, the County could explore exportation of food scraps to nearby organics processing facilities, which have seen slow but steady market development in the Greater Rochester Region for larger processors. Within a reasonable radius of Ontario County there are four (4) anaerobic digestion facilities, one (1) compost site, and one (1) vermiculture (worm composting) site.

This report, contained in Appendix C, found that Generate Upcycle's digester in Auburn, NY, roughly 35 miles east of the County landfill, has capacity available and also has the ability to depackage or separate organics. Depackaging is often necessary to divert food wastes from larger food processors that supply a steady flow of contained foods. Additional details are provided in Appendix C.

2.7 CONSULTANT OBSERVATIONS

This section summarized focused research on the critical factors that influence the development of new solid waste facilities. Although this evaluation did not delve into detailed capital and operating costs of the various options, in the opinion of the Project Team such detail is not necessary for the following observations.

The majority of waste materials generated in Ontario County at present, and for the foreseeable future, will require end of life disposal or combustion with energy recovery. The regulatory and non-regulatory barriers to new landfills and WTE facilities make it highly unlikely that a new facility of either type can be developed in Ontario County.

Conversely, organics processing facilities require less capital investment and may be easier to develop in the County. However, there is very limited infrastructure for organics separation and collection, both of which are precursors to successful organics diversion along with processing. Although grass roots organics diversion is currently occurring and can grow on a limited basis, there are significant challenges to scaling the capability to meaningfully divert wastes from landfill.

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3. LANDFILL EXPANSION OPTIONS

3.1 INTRODUCTION

As anticipated with the signing of the OMLA, the County landfill will be substantially full in 2028. Through the contract end date, it is assumed (barring an extraordinary event) that Casella will continue to accept all Ontario County-generated waste (MSW, biosolids, C&D, etc.) at contractual rates. Based on existing fill rates the potential exists that approximately 100,000 tons of capacity may remain, which is roughly equivalent to the capacity needed to accept one additional year of Ontario County generated waste.

Based on the expectation of the landfill closing in 2028, significant research and analysis was performed to understand the potential for expanding the facility. Specifically, there are two options for obtaining additional capacity at the landfill:

- **Vertical Expansion**, which would involve placing additional wastes (under a new or amended permit) on top of the currently permitted acreage.
- **Lateral (Horizontal) Expansion**, which would require new cell development on existing parcel acreage to expand the landfill footprint (under a new or amended permit).

This section describes the potential for landfill expansion from a technical perspective, and also identifies constraints to any expansion. Finally, this section comments on the potential complexities that may be encountered for a new operator (i.e., other than Casella), who would potentially need to share certain environmental risks with Casella and consequently require special negotiations or concessions before entering a new lease agreement with the County.

3.2 VERTICAL EXPANSION

Project Team member Civil & Environmental Consultants, Inc. (CEC), a New York state solid waste engineering firm, provided a planning-level estimate of the likely capacity that would be achievable were the landfill permitted to expand vertically. Starting with a CAD drawing of the currently permitted landfill, CEC conceptually modeled an extension of the current landfill elevation up to a likely maximum elevation.[1]

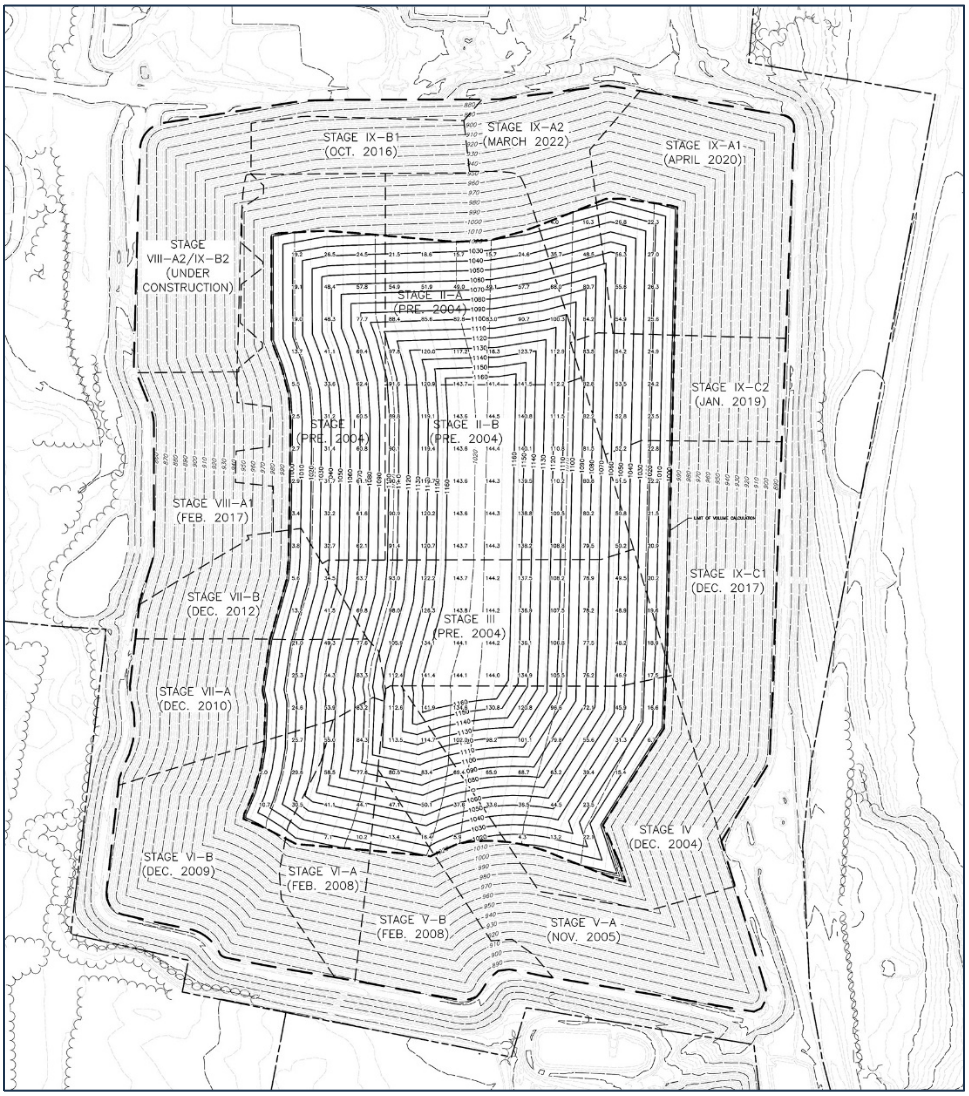
Figure 3-1 shows the conceptual vertical expansion drawing. Based on the simplified assumptions used for this analysis, it is estimated that the potential additional capacity for the Ontario County landfill would be 5.9 million tons, with all new waste placement over existing cells. Under this scenario, the landfill would take on another 144 feet over its currently permitted elevation, which represents an over-50 percent increase in the height of the 200-foot+ waste mass from ground level.

For a typical vertical expansion, beyond the cost of interior cell engineering to integrate gas and leachate management systems from the old to the new waste placement, there is little to no additional cost for closure and leachate management. During construction, there would be a need for extension and

[1] The conceptual top of intermediate cover elevations is considered preliminary and for planning purposes only, and represent an approximate 30 percent design. This conceptual drawing does not reflect a detailed engineering design, waste or soil stability analysis, structural pipe integrity analysis, or elevated temporary and permanent leachate, landfill gas, and stormwater management systems. Further, the design and evaluation of these proposed environmental control systems, existing environmental control systems, and integration of the two systems may impact the technical feasibility of the vertical expansion grading used in the conceptual plan, which could result in diminished available airspace. No subsurface investigations to determine depth to groundwater, bedrock, or underlying soil types, which may impact technical feasibility of the vertical expansion grading shown and impact the estimated available airspace. This preliminary design assumes that a supplemental liner is not required above existing grades, although more stringent liner regulations were enacted in New York in 2017 and 2023.

possible relocation of existing landfill gas wells and lateral lines, and some wells would likely be abandoned (and reinstalled) upon the new final grades being met. Further, closure accrual has largely occurred because a vertical expansion does not add any acreage that would require significant additional cost to cap, and the same is true for long term care accrual. That is, the groundwater and other monitoring systems planned for long term care do not change significantly with no change in the waste footprint in a vertical expansion.

Figure 3-1 Vertical Expansion Schematic

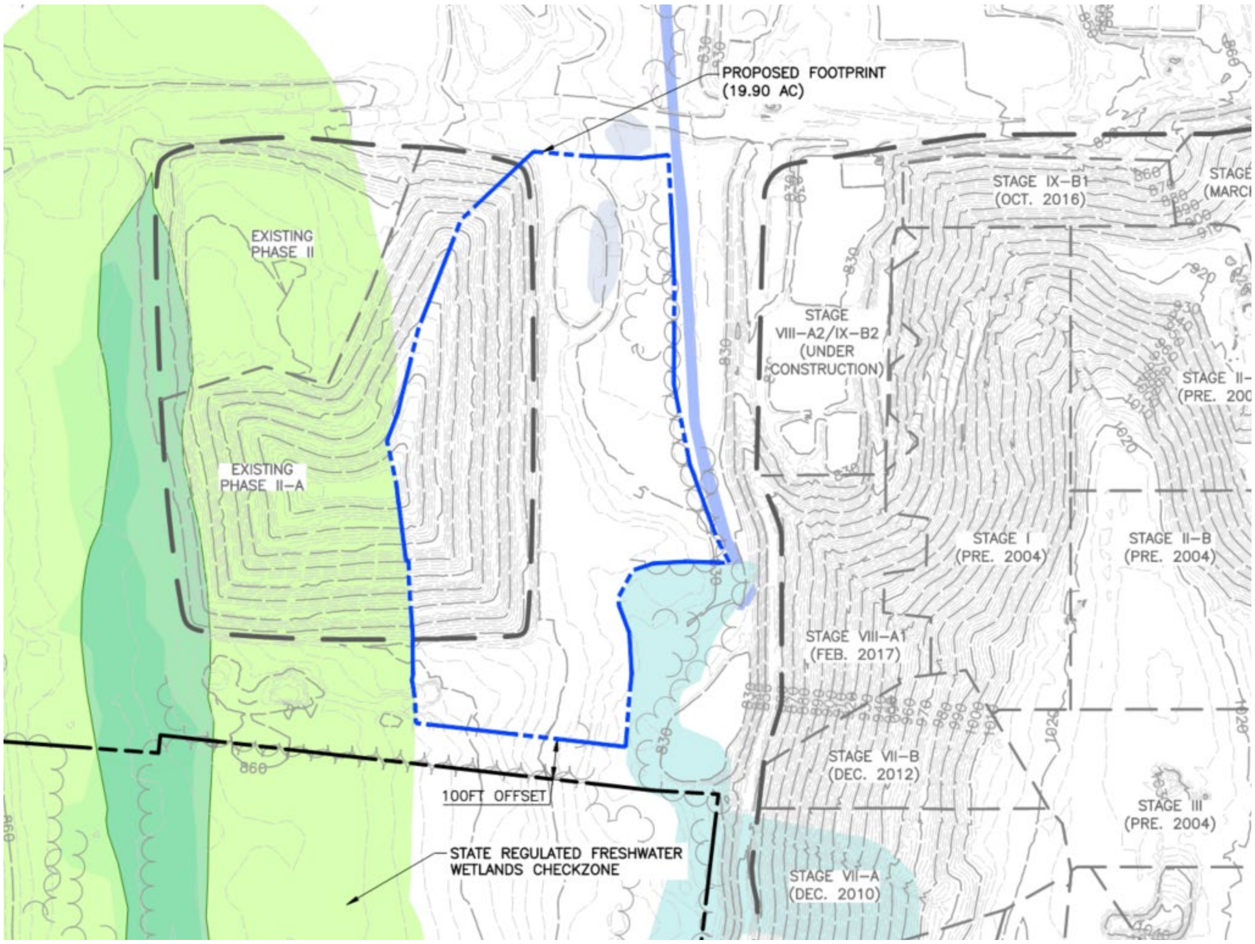


3.3 LATERAL (HORIZONTAL) EXPANSION

A lateral expansion was also considered on the current parcel. In evaluating the lateral expansion, a primary objective was identified to determine the available capacity that might be useable without having to undertake significant environmental remediation or to engage in extraordinary measures like mining, wetland mitigation, and/or refilling older landfill phases. Given the closed phases already occupying the parcel, and because there is a jurisdictional waterway currently flowing through the landfill property, it was readily determined that limited opportunity could be found for a lateral capacity expansion.

Figure 3-2 reflects a simple conceptual boundary for such a lateral expansion, which would abut the unnamed tributary on the east and an older phase on the west. Due to footprint constraints of this option, only about 700,000 tons of additional capacity was estimated to be available under a lateral expansion. This represents one year of fill under the current operating standards under Casella's management, and roughly seven years of capacity for Ontario County-only waste.

Figure 3-2 Lateral Expansion Schematic



It is important to note that a lateral expansion will require new cell construction over new acreage on the landfill parcel. As a consequence, the costs of a lateral expansion are higher than a vertical expansion. Any lateral expansion will require full engineering design, construction with a double liner system as foundation (consistent with recently revised state regulations), groundwater drain, additional leachate capture system, landfill gas system, and importantly, renewed financial assurance to accrue closure and long-term care (LTC) obligations. Once this new lateral phase is filled, it will require capping followed by 30-plus years of post-closure care and monitoring, along with the environmental risks associated therewith.

3.4 REGULATORY & LEGAL COMPLEXITIES

3.4.1 PERMITTING A LANDFILL EXPANSION

Any expansion will require permitting. Obtaining a permit for a new or expanded landfill is a time-consuming process, and the timeframe can vary greatly depending on a number of factors. An expansion permit would require preparation of an Environmental Impact Report and an Engineering Design/Part 360 Permit Application in addition to a public comment period. The Project Team believes that NYSDEC will require a two-year review time once the application is submitted. Absent unforeseen delays, the total process could take from three to five years or more before a permit is granted.

It is also noted that community opposition can delay the process. Other New York State landfill expansions have incurred extensive pushback from local and environmental groups, and more recently environmental justice interests. No attempt was made as part of this engagement to predict the potential for delays, but the Project Team believes that the County should initiate the process as soon as possible if it is determined that expanding the landfill is a potential option for the Board of Supervisors.

The Project Team notes that there is at least a chance that expansion of the landfill may be impaired by State law. NY-CRR Subpart 363-5 5.1(k) states that any landfill expansion is prohibited within 1,000 feet of a school or a residential household (excluding residences or schools that are owned by or which have entered into legal agreement with the landfill owner or operator). The prohibition states "In terms of residences, the 1,000 feet distance in the below requirements *is measured from the closest location on the landfill property where waste will be placed to the residence building and managed landscape* (italics added)."

No schools are in the vicinity of the landfill. The County reports that Casella owns many of the residences in close proximity to the landfill. However, a preliminary review of residences via GIS indicates there may be one or two residential parcels that require further investigation.

3.4.2 OMLA Long-term Care Guarantees

It is important to note that the OMLA obliges Casella not only to operate the landfill for the term of the lease, and through full capacity, but also to retain full responsibility for all long-term care. The following clauses are from OMLA paragraph 3.5:

> **(a)** [Casella] shall be solely responsible to perform and pay the costs of all present and future Closure and Post Closure Care of (i) all portions of the Landfill closed as of the [date on which the OMLA is executed an in force]; and (ii) each phase of the Landfill to the extent that the capacity of such phase is exhausted during the term of this Agreement.
>
> **(d)** [Casella] shall be responsible for all environmental remediation...no matter when caused including without limitation any required by [federal and state law]...These obligations survive the termination or expiration of this Agreement except…(ii) [Casella] shall not be liable for any environmental conditions or liability created or exacerbated as a result of any actions by any party after such termination.

These paragraphs are clear about assigning lifelong obligations for landfill closure and long-term care, including any emergent chemical risk such as might be incurred for PFAS.. However, there is an exception when the County or another party creates or exacerbates an environmental condition after termination of the agreement. This term would seem to generate the following dynamics for entities considering a landfill expansion:

- Casella, by virtue of already being responsible for the long-term care, and who has direct technical knowledge of the landfill's condition and potential for expansion, would not incur additional risk in the event it has an opportunity to enter into a new contract or lease agreement.
- The County, or any other party contracted to operate an expanded landfill, may presumably have greater risk of creating or exacerbating environmental conditions or liability after termination of the OMLA. This is especially true were the landfill to be expanded vertically and with no intermediate liner between the current grade and the new capacity. Such risk may or may not be decreased were the new operator to install an intermediate liner to separate the wastes placed by Casella and the

wastes placed by the new operator. It is possible that such risk could be incurred even with a lateral expansion by a new party.

The Project Team notes that ultimately the interpretation of the OMLA and any future contractual considerations needed to mitigate the risk of new parties taking on operating responsibility will likely require legal counsel. No member of the Project Team is qualified to provide a legal opinion, and as such it is highly recommended that the County retain qualified legal counsel should it opt to progress through the process of landfill expansion.

3.5 FUTURE TIP FEE PROJECTIONS

3.5.1 Basis for Forecasting

The complexities described in the prior section complicate the ability of anyone to forecast the likely tip fees that would be charged at the landfill in the event of an expansion. A clean vertical expansion (i.e., an expansion by the current operator requiring no extraordinary engineering and construction) would be the most economical means of expansion, but it is difficult to avoid the likelihood that a new operator placing waste on top of wastes managed by Casella will enable clear-cut delineation of long-term care and remediation should problems arise at the facility after OMLA termination.

Conversely, developing a lateral landfill expansion is akin to building a new landfill, with all of the requisite cell construction, leachate management, closure and post-closure cost obligations. As a result of these complexities, for the sake of conservative estimation, the Project Team has generally opted to forecast future tip fees assuming that any expansion would be closer to new construction. However, because of the limited additional airspace available for a lateral expansion (that avoids wetland mitigation and/or mining and relining old phases), the projected capacity associated with the vertical expansion scenario (5.9 million tons) is assumed for the projections in this section.

In practice, if regulatory constraints and legal/business risks can be overcome, a vertical expansion would be less expensive than a lateral expansion, and it is hypothesized that the ensuing tip fees able to be negotiated by the County would be lower under a vertical expansion scenario.

3.5.2 Landfill Expansion Scenarios

The Project Team, with input from the County, ultimately contemplated three scenarios for the fill rate of an expanded Ontario County landfill, up to the estimated maximum 5.9 million additional tons:

- **100% of Current Fill Rate**: Maintain current import level (700,000 tpy)
- **50% of Current Fill Rate**: Limit imports to cut fill rate by 50% (350,000 tpy)
- **County Waste Only**: Eliminate waste imports and reserve the landfill airspace for Ontario County wastes only (100,000 tpy)

Table 3-1 summarizes the expected life of the expanded landfill based on these fill rate scenarios. (The table incorporates additional scenarios assuming that only half of the maximum expansion is permitted, although no further analysis has been expended on the 50 percent expansion scenarios.) As shown, there are dramatic differences in useful life between the high and low fill scenarios. Were the County to prohibit imports (and obtain a new or modified permit), the full expansion of the landfill would extend the life for roughly 55 more years (barring unforeseen population growth or major changes to the disposed waste stream). Conversely, if the County continues with the status quo, the expanded landfill would be filled in another nine years after termination of the OMLA.

Table 3-1 Landfill Expansion Scenarios

Scenario	Annual Tonnage	Year of Closure at Max Expansion	Year of Closure at 50% Expansion
1) 100% of Current Fill Rate	700,000	2037	2033
2) 50% of Current Fill Rate	350,000	2045	2038
3) County Wastes Only	100,000	2083	2057

Appendix H contains a detailed schedule of the fill rate scenarios summarized in Table 3-1. This exhibit uses a compaction ratio of 1.0 tons per cubic yard. For perspective, the Ontario County landfill reported a compaction rate of 1.12 tons per cubic yard in their 2023 Landfill Report to DEC, and other landfills in the State have reported compaction ratios of 0.7 to 1.2 tons per cubic yard.

3.5.3 Tip Fee Estimation by Analysis of Casella Operating & Financial Data

As a first step in estimating the likely tip fee to be charged by a third party contracted to manage and operate the expanded landfill, the Project Team first compiled known data about the tonnage and tip fees currently charged at the landfill. Although much of this information is proprietary to Casella and not available for analysis, the exercise is nonetheless informative for inferring the reasonableness of current tip fees. This is relevant to the scenario of maintaining the status quo.

First, Table 3-2 summarizes the economic value of the benefits Casella is obligated to pay to the County, The Town of Seneca as its host community, and to residential recyclers at large pursuant to the OMLA. As shown, these benefits are estimated to cost Casella almost $10 per ton, which must be built into their overall revenue model along with direct operating expense, depreciation and amortization, closure/post-closure accrual, and profit.

Table 3-2 Cost of OMLA Benefits to Casella

Benefit Type	Line Item	Benefit Amount
Direct Payments to County	Base Lease Payment	$2,000,000
	Permit Success Payment	$1,307,559
	Revenue Share	$523,534
	Excess Tonnage payment ($3.27/ton over 612k)	$228,641
	Misc Benefits to County (scholarship, reimbursements)	$42,500
Direct Payments to Seneca	Host Community Fee	$2,066,465
	Value of Free Host Community Refuse Disposal	$63,685
System Benefit	Value of Free Recycling	$439,247
	Total Benefits Attributable to OMLA	**$6,671,631**
	Tons	779,668
	Benefit $/Ton	**$9.77**

Second, the Project Team estimated the gross revenue potential implied by the reported inbound tonnage, and by professional estimates of the likely tip fees charged given market conditions. Table 3-3 summarizes the tons and tip fee assumptions used to build a revenue projection. As shown, total revenue is estimated to be over $38 million, with a normalized tip fee of almost $49 per ton.

Table 3-3 Current Revenue Build

Source	Waste Type		Tons	Revenue/ Ton	Total Revenue
Ontario Co	MSW - Residential		34,007	$41.58	$1,414,018
	MSW - Commercial		20,468	$46.29	$947,456
	C&D		9,815	$45.70	$448,546
	Industrial		9,573	$55.00	$526,497
	Asbestos		7	$120.00	$884
	Biosolids		5,865	$55.00	$322,600
	BUD		17,342	$44.00	$763,053
		Subtotal	**97,078**		**$4,423,054**
Imported	MSW - Combined		389,079	$46.29	$18,010,451
	C&D		44,501	$45.70	$2,033,710
	Industrial		37,615	$55.00	$2,068,846
	Asbestos		22,953	$120.00	$2,754,382
	Biosolids		41,440	$55.00	$2,279,219
	BUD		147,002	$44.00	$6,468,088
		Subtotal	**682,591**		**$33,614,696**
Total	MSW		443,554		$20,371,925
	C&D		54,316		$2,482,256
	Industrial		47,188		$2,595,343
	Asbestos		22,961		$2,755,266
	Biosolids		47,306		$2,601,819
	BUD		164,344		$7,231,141
		Total	**779,668**		**$38,037,750**
		Gross Revenue ($/ton)			**$48.79**

By deducting the OMLA benefits from the revenue build, we can gain insight into the rough tip fee likely to be charged at the facility. This is shown in Table 3-4. Netting out the OMLA benefits and allowing for a modest profit suggests that the unburdened tip fee is in the mid $30s, or $36.57.

As a final step, we compared the implied, contractual tip fee with the County's preferred customer rates. This is shown in Table 3-5. Interestingly, this calculation suggests that Casella may not be making customary profits on the tip fees associated with the in-County waste tip fees. The Project Team acknowledges that there are many assumptions incorporated into this exercise, but believes the outcome is informative at evaluating future tip fees if the landfill were to be expanded and maintain its current fill rate.

Table 3-4 Net Cost per Ton and Tonnage Rate Estimate

Line Item		All Waste
Gross Revenue (Est)		$38,037,750
Benefits Attributable to OMLA		($6,671,631)
Net Revenue		$31,366,119
	Profit 10%	($2,851,465)
Full Cost Estimate		$28,514,654
Imported Tons		779,668
	Net Cost per Ton	**$36.57**
	Cost of County Benefits	$8.55
	OMLA-Equivalent Tonnage Rate	**$45.13**

Table 3-5 Comparison of Implied to Current Tip Fee

		Tip Fee ($/ton)	Profit (Loss)	
			$	Pct
Implied Tonnage Rate		$45.13		
Current Tip Fee	County Municipal MSW	$41.58	($3.55)	-7.90%
	County Private MSW	$46.29	$1.16	2.60%
	County Municipal C&D	$41.06	($4.07)	-9.00%
	County Private C&D	$45.70	$0.57	1.30%

3.5.4 Tip Fee Estimation by Technical Case Studies from Other Landfills

As a second method to project landfill tip fees, the Project Team researched other landfill models and analyses, both from within internal project files and from recent publicly available data. These case studies are summarized below.

- **Madison County, NY**: In a 2021study, Madison County investigated the development of a new 60,000 tpy landfill to dispose of its county-generated waste. The all-in cost per ton from this feasibility study, escalated to 2024, comes to $91 per ton. This estimate reflects a small, municipally run (and unbonded) landfill with low throughput, which means that the fixed costs of cell development are spread over fewer tons. This landfill would be relatively comparable in size to expanding the Ontario County landfill and accepting County waste only.
- **Sullivan County, NY**: Although dating back to 2006, Sullivan County commissioned a study of a new 80,000 tpy landfill. Detailed engineering estimates at the time escalated to 2024 arrive at a tip fee of $82 per ton. This is another instance of a small landfill with a low fill rate, also similar to the Ontario County-waste-only scenario.
- **Private sector landfill in Ohio**: On the opposite end of the landfill size spectrum, the Project Team reviewed and escalated the 2011 pro forma estimates for developing a new regional large-scale landfill in Ohio. This facility was being developed to maximize tonnage to spread landfill fixed costs as much as possible. The calculated tip fee for this 1.3 million tpy facility, when escalated, was found to be $29 per ton.

These case studies served to bracket the high and low tip fees likely to be charged at the County landfill under slow and fast fill rates. The Project Team believes these are reasonable and informative to the study.

3.5.5 TIP FEE ESTIMATION BY PLANNING-LEVEL PRO-FORMA MODEL

As a final step, the Project Team prepared a list of staff and equipment that would be needed to operate small, medium and large landfills, and also estimated the cell development, closure and post closure costs. Assumptions for building and closure/post closure costs are shown below:

- **Cell development**: $1 million per acre
- **Closure**: $400,000 per acre
- **Post-closure**: $400,000 per acre

Based on the planning-level estimates, plus profit, the estimated tip fees to be charged under the three fill rate scenarios are shown below. As shown, projected tip fees increase as fill rate decreases. This is driven by the economies of scale that can be achieved when maximizing the disposed tonnage over permitted acreage.

Table 3-6 Pro Forma Landfill Cost Estimates

Line Item	100% of Current Fill Rate	50% of Current Fill Rate	County Waste Only
FTEs	38	25	13
Tons per Year	700,000	350,000	116,936
Operating Cost (Mil $)	$11.2	$9.2	$7.1
Operating Cost ($/ton)	$16.00	$26.21	$60.53
Cell Development ($/ton)	$11.50	$11.50	$11.50
Closure/Post Closure ($/ton)	$9.00	$9.00	$9.00
Estimated Tip Fee	$36.50	$46.71	$81.03
Ranges	**$35-45**	**$45-60**	**$75-85**

3.5.6 FORECASTING TIP FEE RANGES

Table 3-6 below brings forward all of the various tip fee forecasts from the preceding three sections. This table lists the annual tonnage disposed in each of these cases, sorted from highest to lowest, and provides a range within which the tip fee has a high likelihood of falling. This table further highlights the dynamics of landfill economics: unit disposal cost decreases as throughput increases.

Table 3-7 Summary of Tip Fee Estimates

Method	Landfill Throughput (tpy)	Range (+/-)
Technical Case Study – Large LF	1,300,000	$30-$40
Pro Forma – 100% (Existing) Fill Rate	700,000	$35-$45
Analysis of Current Landfill Data	700,000	$40-$50
Pro Forma – 50% Fill Rate	350,000	$45-$60
Pro Forma – County Waste Only	116,000	$75-$85
Technical Case Study – Small LF	60,000 to 80,000	$80-$95

The Project Team necessarily has tried to simplify these findings for the purpose of projecting financial impacts under different landfill expansion scenarios. Despite the use of tip fee ranges in Table 3-6, we have used the specific tip fees in Table 3-7 for purposes of comparing the cost of different options. Generally, we have used the mid to upper bound of tip fees for the three expansion fill rate scenarios. Also, the table shows that we have eliminated the tip fee differential between MSW and C&D debris for all modeling of future landfill costs, and instead defaulted to the higher, private sector tip fee currently in effect if the landfill were to expand and continue at its current fill rate of 700,000 tons per year.

Table 3-8 Tip Fees Used for Analysis (Municipal and Private Tonnage)

	MSW		C&D	
Scenario	Muni	Private	Muni	Private
Current	$41.58	$46.29	$41.06	$45.70
100% of Current Fill Rate	$46.29	$46.29	$45.70	$45.70
Vertical Expansion, 50% Fill Rate	$60.00	$60.00	$60.00	$60.00
Vertical Expansion, County only	$80.00	$80.00	$80.00	$80.00

3.6 PROSPECTS FOR CONTINUED BENEFITS

Although the current OMLA contains financial benefits to County stakeholders (as shown in Table 3-2), it is important to note that no attempt has been made in this Section to incorporate the impact of obtaining continued benefits were the County to expand the landfill and enter into a new operating contract and under a new or modified permit. In the professional opinion of the Project Team, the prospects for continuing the same level of benefits as are in the OMLA are slim.

The following changes are likely in any new operating contract or lease:

- Free recycling for residential single stream recyclables is assumed to be reduced or eliminated in all scenarios (see Section 5 for further details)
- If the landfill operator also operates the MRF, then it is possible that this operator may extend a slight discount to processing if the fill rate is high. However, for the 50% of Current fill rate and County Waste Only fill rate scenarios, or if a different entity operates the MRF, no discounted recycling will likely be offered.
- The direct payments to the County could be continued at some level in the 100% of Current Fill rate scenario, but would be expected to be much lower or largely eliminated for lower fill rates. County payments are likely to be reduced even in a high fill rate scenario.
- Host community benefits are likely to continue at some level for the Town of Seneca.
- Within the Host community benefits, access to free or discounted disposal may be achievable for the Town of Seneca if the landfill is expanded.

3.7 OTHER SITE DEVELOPMENT OPPORTUNITIES

Team member J&L Consulting was also tasked with evaluating other opportunities to develop revenue-generating projects on the County landfill parcel. Whether or not the landfill is ultimately expanded, or if it remains closed, there are existing synergies available at the Ontario County Landfill that would be an advantage toward the development of renewable energy projects at the site. Three renewable energy projects were evaluated:

- **Solar**: There are several acres of open space available at the County landfill, including the Phase I landfill and the southern facing portions of the Phase II/IIA and Phase III landfills. When the landfill is ultimately closed, panels could potentially be placed on the upper (flat) surface of closed Phase III cells.

- **Wind**: Based on wind resource mapping for the landfill parcel, the eastern portion of the site could potentially host small scale wind generation, although height and turbine density restrictions in Town of Seneca may need to be amended.
- **Battery Energy Storage**: Battery energy storage is a technology that enables power system operators and utilities to store energy for later use. A battery energy storage system (BESS) is an electrochemical device that charges (or collects energy) from the grid and then discharges that energy at a later time to provide electricity or other grid services when needed. BESS is becoming popular in New York State.

All of these renewable energy projects would require interconnection with a local utility or in the case of solar or wind, could be used as a source of power for ongoing operations at the landfill (if expanded) or MRF (if operated beyond the OMLA). Appendix D contains a full discussion of these projects, concluding that the County should explore attracting third party development companies to lease the required property and maintain responsibility for the project.

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4. WASTE EXPORT

4.1 INTRODUCTION

Most of the coastal areas of the US, as well as virtually every highly populated metropolitan area, long ago closed its nearby landfill (which in many cases was an unlined dump) and instead permitted one or more transfer stations to serve as the primary solid waste disposal facility. Transfer stations enabled wastes from densely populated areas to be unloaded from compacting garbage trucks near their collection routes and loaded onto trailers for long distance hauling to more remote landfills. New York City, Washington DC, San Francisco and Seattle all export their wastes beyond municipal borders (including hundreds of miles by rail in the case of Seattle and NYC). The State of Connecticut recently reported that roughly 40 percent of its waste was exported, and as reported in Section 1, Massachusetts exported almost 75,000 tons to the Ontario County landfill in 2022.

Should Ontario Conty opt to close its landfill, it too would evolve from a landfill-centered materials management system to a system of waste (and possibly recycling) export. This section describes two forms of waste export that could apply to Ontario County, and identifies the challenges and uncertainties of relying on distant landfills for ultimate disposal:

- **Direct Haul** export, and
- Export via development of a **Commercial Transfer Station**.

A direct haul waste export system requires its local commercial collection trucks to drive longer distances to a slightly more distant landfill. The City of Canandaigua, Village of Victor, and private haulers offering curbside subscription or commercial waste collection service, as well as construction and demolition debris (C&D) waste haulers, would all have to find alternative locations to tip. If Ontario County opts not to expand its landfill, it would leave the logistics of waste disposal to the municipalities and private haulers, who might have to curtail their routes so they could accommodate longer drive times. Because tip fees at landfills and transfer stations are often discounted for larger supply commitments, this option would leave the County completely fragmented as a supplier of waste.

Conversely, the County could pursue the development of a commercial transfer station, which would replace the landfill as the local point where collection trucks could tip their wastes, and also leverages the total supply of County waste in procuring or negotiating disposal rates at the final disposal facility (WTE facility or landfill). A transfer station relies on the following sequence of operations from the point when local residential and commercial trash trucks unload their wastes:

- **Transfer (Handling)**: Transfer stations receive wastes from commercial garbage trucks and other vehicles on a reinforced concrete tip floor. Once the wastes are tipped, facility staff inspect the loads and may remove problematic materials (e.g., propane tanks) and potentially a small amount of recyclable items (e.g. scrap metal). Tipped wastes are loaded into containers or onto trailers, and further compacted to maximize payload. Once the container or trailer is loaded, it is ready to be transported to a landfill or waste-to-energy facility for disposal or combustion to energy. Throughout this section, the terms "transfer" and "handling" may be used interchangeably, and refer to the operations that occur within the transfer station to receive inbound direct-haul loads and consolidate them for transportation.
- **Transportation**: The term "transportation" refers to the conveyance of the filled trailers or containers from the transfer station to the ultimate disposal facility, either a landfill or a WTE facility. Note that this term is not intended to refer to the non-productive driving that a commercial compactor truck incurs as it travels from the collection route to the solid waste disposal facility. (The concept of non-productive drive time will be revisited later in this section.)

- **Disposal**: This step refers to the ultimate disposition of the material at a landfill or WTE facility that receives the inbound transfer trailer (or rail car).

This section investigates the operational requirements and costs of a waste export system, both with and without a commercial transfer station to handle County wastes (and potentially, recyclables). Additionally, conversion to waste export would have a potentially significant impact for special wastes such as biosolid and certain industrial wastes which are not conducive, and generally not able to be permitted for consolidation, at a commercial transfer station.

In the case of a central County transfer station, no presumption is made about the ultimate ownership of the facility. In practice, the County will need to determine whether and how to develop the transfer station, but the dynamics of a waste export system based on transfer, transportation and disposal (TT&D) are the same.

4.2 WASTE TRANSFER

A commercial transfer station sized to process MSW and even C&D generated in Ontario County would need to accommodate 65,000 tons of wastes per year. Figure 4-1 shows a transfer station designed to handle 100,000 tons per year, which is somewhat larger than Ontario County. Commercial transfer stations are typically enclosed facilities with multiple truck bays for inbound garbage trucks to empty on an elevated tip floor. Once tipped, wastes are loaded into trailers, often spotted on a lower level so that wastes can simply be pushed off the edge of the elevated floor for gravity assisted loading. This section does not attempt to provide a primer on the various configurations and mechanical equipment and loading technologies in use at transfer stations.

Figure 4-1 Commercial Transfer Stations

Figure 4-2 shows a conventional tractor (semi) and trailer used for long distance waste hauling. Trailers can have 80 to 130 cubic yards of capacity to enable maximum waste payload given gross vehicle weight (GVW) limitations on various roadways between the originating transfer station and the ultimate disposal facility location. Transfer trailers can carry roughly 28 tons of material under certain conditions in New York State (and this is the average weight of transfer trailers arriving at the Ontario County landfill from distant transfer stations).

Figure 4-2 Tractor & Transfer Trailer

4.2.1 CASE STUDIES

Project Team member MSW Consultants reviewed detailed cost-of-service studies for its public sector clients to investigate the full cost[1] of transfer stations that are roughly equivalent in throughput to a facility sized to accommodate all Ontario County transferable wastes. These case studies are summarized below:

- **Liberty County, GA**: This rural county to the south of Savannah owns and operates a simple 2-level transfer station that processes roughly 56,000 tons per year. The full cost of transfer/handling at this facility escalates to $16/ton in 2024 dollars.
- **City of Logan, UT**: The City of Logan recently constructed and now operates an 83,000 tpy transfer station to ship wastes to a newly constructed landfill in the outskirts of the surrounding county. The full cost of transfer/handling at this facility escalates to $15/ton in 2024 dollars.
- **City of Fayetteville, AR**: Fayetteville owns and operates a transfer station that is well positioned to intercept direct haul wastes that would otherwise have to make a longer drive through the City to the privately owned landfill on less populated west side. The 81,000 tpy facility was found to have full costs of transfer/handling of $18.40 in 2024 dollars.

These facilities are representative of the scale and likely configuration that would be developed for a commercial transfer station sized to accommodate all transferable wastes generated in Ontario County.

4.2.2 NEW ONTARIO COUNTY TRANSFER STATION

If Ontario County were to develop a countywide commercial grade transfer station, the facility would expect to process annual throughput of approximately 65,000 tons, consisting of 55,000 tons of MSW and 10,000 tons C&D.[2] It is important to note that a County transfer station would not be able to receive and

[1] Full cost is defined as the sum of direct operating expense, annualized capital cost, and debt service. Excludes profit.

[2] However, certain C&D loads, especially those containing broken concrete, block, brick, and other materials that could damage the tip floor or the transfer trailers during loading, would need to be prohibited from tipping and would be compelled to direct haul to a disposal location.

transfer biosolids, asbestos, BUD, and some industrial wastes. Generators of these waste types would incur higher direct haul costs associated with disposal at an out of county landfill or WTE facility.

It should also be noted that if a transfer station is developed, the ultimate tip fees to be charged may drive some percentage of County MSW and C&D to be direct hauled to adjacent landfills. No attempt has been made to estimate the loss of direct hauled material.

For purposes of modeling the cost of transfer/handling at a new transfer station in Ontario County, it has been assumed that the facility would be privately operated (potentially under contract with the County), and as such there would be return-on-investment (ROI) targets applied to contractor-owned equipment, and profit targets established for the overall operation. The Project Team has assumed that the approximate cost of transfer/handling at a County commercial transfer station would be $20 per ton. The costs of transportation and disposal are discussed in the following sections.

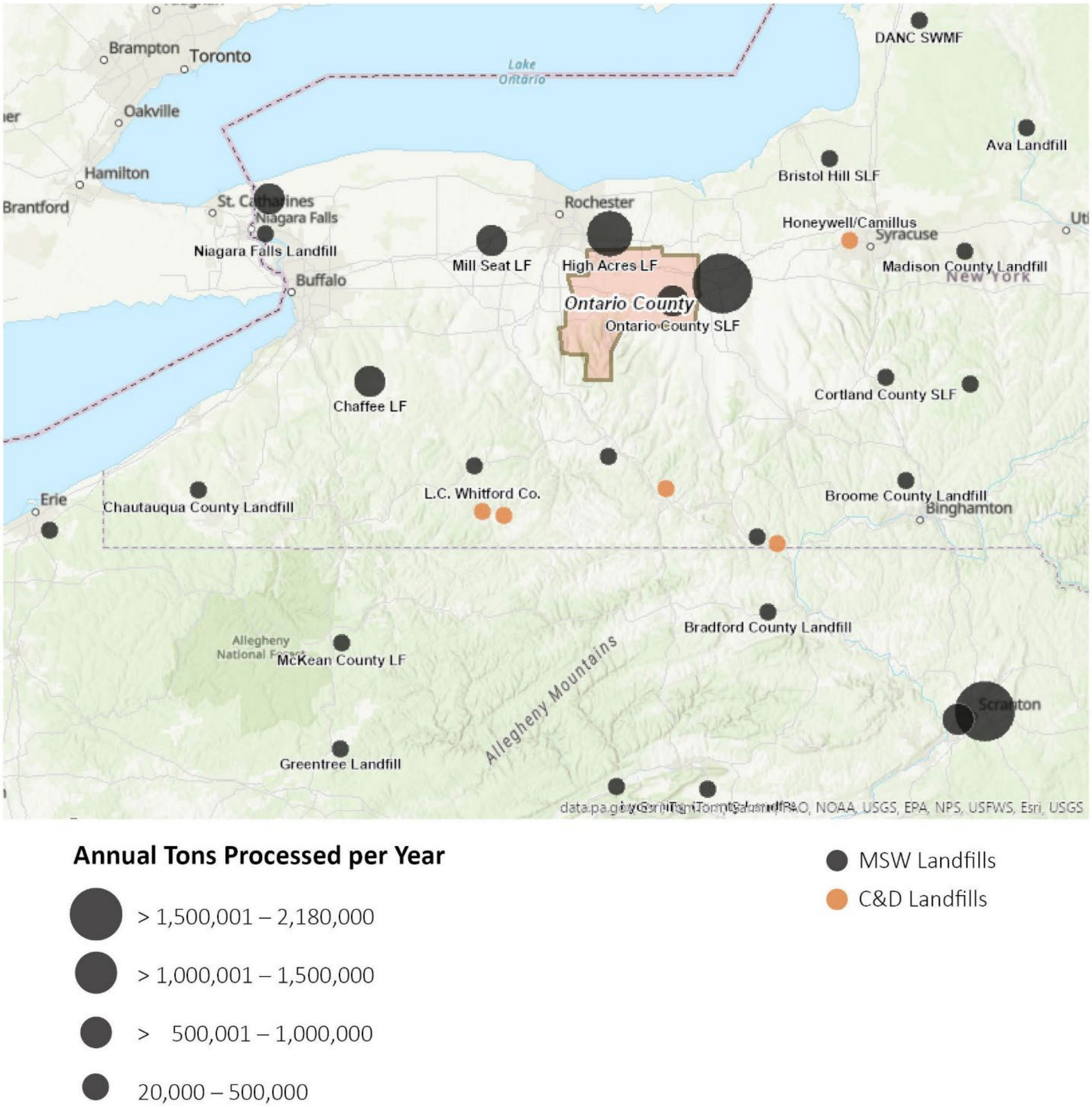
4.3 LONG HAUL TRANSPORTATION

Transportation of wastes in a semi-trailer is the lowest cost over-the-road transport option. This method requires investment in the semi, as well as a supply of trailers that can be filled and queued for transport at the originating facility. The costs to transport waste therefore include:

- Depreciation of the cost of the semi and trailers,
- Labor cost (wages and benefits) for the commercial driver,
- Vehicle operating and maintenance expenses, including tires, motor oil, regular preventive maintenance and repair,
- Fuel, and
- Profit.

These cost parameters lead to a linear cost structure for long haul of wastes, with the total cost per ton based on the mileage between the originating transfer station and the destination landfill or WTE. So, as a first step, it is necessary to scan surrounding landfills to determine potential outlets for exported County wastes. Figure 4-3 (also shown in Section 1) identifies potential landfills, and Table 4-1 specifies the mileage between the Ontario County centroid and each landfill. As shown, there are three relatively nearby landfills: Seneca Meadows, High Acres and Mill Seat. Beyond these three, the drive distances increase.

Figure 4-3 Regional Landfill Map



Project Team member MSW Consultants maintains a pro forma transportation model that estimates the cost of long haul based on cost factors as listed in the above bullets. Table 4-1 groups the landfill in to increasing radius around Ontario County. This table shows the estimated transportation cost that would be incurred for landfills within each band. As shown, transportation costs increase in linear fashion as the haul distance increases.

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Table 4-1 Landfill Proximity & Transportation Cost Ranges

One-way Mileage	Transportation Cost ($/ton)	No. of Landfills within Radius Band		Cumulative No. of Landfills within Radius Bands	
		NY	PA	NY	PA
0-25	$0-$7	2		2	
26-50	$8-$14	2		4	
51-75	$15-$21	6		10	
76-100	$22-$28	4		14	
101-125	$29-$35	2	1	16	2
126-150	$36-$42	5	2	21	3
151-175	$43-$49		2	21	5

The above model is used to estimate transportation costs for waste export throughout the remainder of this section

4.4 DIRECT HAUL WITHOUT TRANSFER & TRANSPORTATION

Should Ontario County close the landfill and also decide not to establish a County-wide commercial transfer station, then municipalities and haulers would have no choice but to drive their commercial garbage and recycling trucks longer distances to reach disposal and processing facilities. Commercial garbage trucks, three of which are shown in Figure 4-4 (rear loader, front loader, roll-off truck), are heavy-duty vehicles with extensive hydraulics and are built for the specific task of collecting materials within a local area. As a consequence, these vehicles are expensive to operate, and provide a much more costly solution to long haul transportation.

Figure 4-4 Direct Haul Vehicles

4.4.1 Current Residential Collection Service Levels & Costs

In order to determine the impact on local collection systems of direct haul export of wastes and recyclables, it is first necessary to understand the cost of current collection systems. Three sources of data on Ontario County residential curbside collection have been compiled for this analysis:

- Village of Victor budgeted residential collection cost,
- City of Canandaigua budgeted residential collection cost, and
- Survey of subscription rates in the rest of Ontario County.

The Village of Victor reported that it serves 1,099 households. The Village provides weekly refuse collection and weekly recycling collection, and also provides large item collection two times per year. Table 4-2 presents the reported cost of the Village's residential curbside collection service. As shown, the Village's total budget is just shy of $180,000, which translates to a cost of $13.52 per household per month.

Table 4-2 Village of Victor Collection Costs

Material Stream		Cost [1]
Budgeted Refuse Cost		$122,664
Budgeted Recycling Cost		$55,591
	Total	**$178,255**
Households [2]		1,099
Cost per Household per Month		*$13.52*

[1] Reported by Village of Victor
[2] 2020 U.S. Census

The Project Team believes this cost captures direct operating expense, but it is possible that the full cost is understated and may not include vehicle replacement (or depreciation), nor has Village management and administrative overhead been allocated. Nonetheless, the analysis of impacts to the Village of Victor has used the above cost as a baseline.

The City of Canandaigua provides residential curbside collection to its 2,918 households. The City collects refuse on a weekly basis, and alternates between every-other-week recycling and every-other-week yard waste collection. Yard waste collection occurs seasonally from spring until fall, and is briefly operated in January to collect holiday trees.

Table 4-3 summarizes available cost data about Canandaigua's curbside service. As shown, the City reported $754,000 in collection system operating expense, and paid another $103,000 in disposal fees to deliver refuse to the County landfill at the municipal preferred rate. Recyclables were delivered for no charge. As shown, this data suggests that it costs the City $24.46 per month to deliver these services to its households, with the vast majority of the cost attributable to collection service, and relatively little to cover the cost of disposal. As with the Village of Victor data, these costs may not capture vehicle replacement nor management and administrative overhead. The monthly cost per household has nevertheless been used as a baseline when comparing the City of Canandaigua's status quo against various waste export alternatives.

Table 4-3 City of Canandaigua Collection Costs

Expense Item		Cost	Percent of Total	Tons
Budgeted Operating Expenses		$753,506	88%	
Disposal @ $41.58		$102,869	12%	2,474
Recyclables Processing @ $0/ton		$0	0%	693
	Total	**$856,375**	**100%**	**3,167**
Households		2,918		
Cost per Household per Month		*$24.46*		

Finally, County staff were canvassed to obtain a non-statistical sample of the cost of subscription fees for curbside refuse and recycling collection. Recent subscription fees were reported for three of the County's licensed haulers. The reported fees are shown in Table 4-5. Note that service levels were not reported for all haulers, but it is assumed that both refuse and recycling collection are provided, and in the case of Casella it was reported that recycling collection frequency was every-other-week. These rates do not include any other service (such as yard waste or large item pickup, as are offered in Victor and Canandaigua).

Table 4-4 Reported Subscription Rates in Ontario County

	Reported Rates ($/Mo)			Est Mkt
Hauler	**Low**	**High**	**Avg**	**Share [1]**
Casella	$40	$48	$44	75%
WM	n/a	n/a	$63	20%
Dependable	n/a	n/a	$70	15%
Weighted Average $/mo	**$44**	**$70**	**$56**	
Annual Average	*$528*	*$840*	*$672*	

[1] No actual market share data is available. The Project Team assumed these values based on the range in pricing (i.e., lower priced service will generally have a higher market share).

The Project Team understands that although these reported fees do not reflect a comprehensive survey of County households (which was beyond the scope of this engagement), County staff indicated that these ranges were consistent with their knowledge of the local collection market. For the remainder of this section and for the purpose of comparing alternatives to the status quo, we have retained both the low end ($44/month) and high end ($70/month) of the range to give a complete picture of the potential cost increases. It is hoped that by providing a range, municipalities and other stakeholders that review this report can evaluate their specific impact based on where their current subscription rate falls within the range.

Although it was not explicitly included in the scope of services for this project, it is Project Team member MSW Consultants' professional opinion that residential curbside collection rates borne by customers of subscription services in Ontario County are high compared to exclusively-served areas in New York and in other states. We observe that the totally unregulated residential curbside collection system is not providing a high level of service for the prices being charged. This is common in a non-exclusive residential collection system, where multiple haulers serve the same communities on the same days of the week, and do not enjoy efficient routing because they are passing by many non-customer households to service their customers.

It is noteworthy to compare Ontario County residential curbside service levels and rates with the publicly-provided, exclusive collection system in the City of Poughkeepsie.[3] Poughkeepsie provides a very high level of service to their residents, picking up refuse two times per week, recycling once per week, and yard waste once per week (on a seasonal basis). Bulky items are picked up for an additional fee (which is common in exclusive collection systems). The City incurs a $97 per ton tip fee to dispose of their wastes the Dutchess County Resource Recovery Facility, and pays $120 per ton at a nearby single stream MRF to process their recyclables.

Poughkeepsie is able to provide this higher service level, in a much more expensive tip fee and processing fee environment, for $43 per household per month. Certainly, Poughkeepsie is a more densely populated service territory than most of Ontario County, which would serve to make collection routes more compact and therefore more efficient. But it is striking that refuse collection is twice as frequent, disposal costs twice as much, and recyclables processing is at a market rate, yet the full cost to provide curbside collection is comparable to the lowest reported subscription rate for weekly refuse and weekly recycling collection in Ontario County.

[3] MSW Consultants has performed financial analysis for the City and has drawn from this detailed understanding of Poughkeepsie's collection system and services.

4.4.2 Residential Collection Economics

In order to estimate the financial impact of closing the County landfill and requiring local haulers to direct haul to more distant facilities, it is first necessary to have a basic understanding of residential collection economics. Residential compacting trucks are specifically designed to hold as much material as possible given GVW standards, and to collect individual waste (and recycling) setouts as efficiently as possible. When these trucks are in neighborhoods actively collection from house to house (driveway to driveway), this reflects "productive" time.

Conversely, when the truck is full and has to depart the collection route to drive to the landfill or MRF to tip, wait in line at the scale house, queue on the landfill face, and drive back to the route, this is "non-productive" time. Garbage trucks also incur non-productive time when they are driving from the fleet yard to the route in the morning; when they drive from the disposal facility back to the fleet yard in the afternoon; and if they take any breaks during the workday. All collection routes have some inherent fraction of non-productive time, but the general objective of efficient collection systems is to minimize this non-productive time and maximize the productive time servicing customers on route. Having convenient, local disposal and recycling facilities is therefore conducive to maximizing productive time.

Project Team member MSW Consultants built a pro forma model to quantify the baseline collection system in each municipality in Ontario County. The model generalizes productive and non-productive time, and also assumes an average number of households served per day. In practice, these estimates may vary in the Village of Victor, the City of Canandaigua, and among private haulers due to different route configurations. However, Table 4-5 is intended to establish reasonable assumptions to perform a manageable analysis of all Ontario County municipalities.

Table 4-5 Collection Productivity Assumptions

	Metric
Workday (Hours)	8
Productive Time (Hours)	5.5
Non-productive Time (Hours)	2.5
Households/Route	500
Households/Productive Hour	90.9
Seconds/Stop	39.6

To estimate the likely changes in residential household collection rates in Ontario County, it is first necessary to disaggregate the collection and disposal/recyclables processing portions of the monthly subscription rates. Table 4-6 separates the disposal and processing portion based on estimated residential households generation rates. As shown, on a monthly basis, the cost to dispose of refuse and process recyclables from an average residential household is $3.70.

Table 4-6 Residential Household Disposal/Recycling Cost

Material	Household Generation Rate (tpy)	Tip Fee ($/ton)	Annual Cost	Annual Cost with Mark-up (20%)	Monthly Cost
Waste	0.80	$46.29	$37.03	$44.44	$3.70
Recycling	0.13	$0	$0.00	$0.00	$0.00
Total	**0.93**		**$37.03**	**$44.44**	**$3.70**

By subtraction, the remainder of monthly subscription fees apply to the cost of collection. Table 4-7 calculates the collection portion on an annual and monthly basis. As shown, the collection portion of monthly subscription rates vastly outweighs disposal and processing cost under the OMLA municipal rates, with over 90 percent of subscription fees being retained by the subscription haulers. In contrast, the City of Canandaigua's implied monthly cost estimated that disposal and processing was 12 percent (Table 4-3).

Table 4-7 Estimated Split Between Collection and Disposal Portion of Monthly Subscription Cost

			$/Month		Percent of Total Rate	
Scenario	Total Annual Rate	Collection Cost ($/Yr)	Collection Cost	Disposal Cost	Collection	Disposal
Low	$528	$484	$40.30	$3.70	92%	8%
High	$840	$796	$66.30	$3.70	95%	5%

The rate breakdowns above are used in Section 6 to estimate the impact on residential households under the various landfill alternatives analyzed in this report.

4.5 DISPOSAL

4.5.1 DISPOSAL OF MSW

Whether wastes are transferred and transported via semi-trailer, or direct hauled out of Ontario County for disposal, it will be necessary to pay the receiving solid waste facility a market-based tip fee. This section compiles the landfill tip fee capacity and tip fee research for potential receiving landfills.

The focus on landfill research was on the nearest landfills to Ontario County, simply because these would be the most convenient outlets from a geographic standpoint. Table 4-8 identifies the closest landfills to Ontario County and shows the remaining permitted capacity at these facilities. As shown, High Acres, Mill Seat and the Steuben County landfill have extensive capacity based on current projections.

Table 4-8 Remaining Capacity of Nearest Landfills

					Est. Remaining Life (Inc. Permitted Not Const.)		
Name	Tons Permitted/ Year	Existing & Planned Capacity Under Permit	Remaining Capacity Current Constructed (CY Airspace)	Permitted Not Const. (CY Airspace)	Years	Months	Potential Expansion (CY Airspace)
Ontario County Landfill	920,693	4,192,167	1,877,281	2,314,886	6	3	0
High Acres Landfill	1,074,500	42,197,000	1,397,000	40,800,000	24	5	0
Seneca Meadows Landfill	2,190,000	2,942,636	2,942,636	0	1	5	0
Mill Seat Landfill	598,650	28,768,821	1,568,821	27,200,000	34	11	0
Steuben Landfill	256,700	9,453,530	1,653,530	7,800,000	39	2	3,400,000

However, the Seneca Meadows landfill is currently not permitted to accept inbound wastes beyond 2025. Like the Ontario County Landfill, Seneca Meadows imports wastes from numerous origination points. At a disposal rate of 6,000 tons per day, closure of this landfill will have potentially massive implications for the Northeast and New York State waste disposal market. If this capacity is lost at Seneca Meadows, these tons will be diverted to remaining landfills and WTE facilities, potentially with a dramatic tightening of the available disposal capacity in the region.

It is not possible to predict the impact on landfill tip fees due to this closure, other than to acknowledge that they may rise significantly faster than historical trends. Should Ontario County's landfill also close, exported County wastes would have to compete with redirected Seneca Meadows wastes for scarce capacity. More plainly put, in the scenario where both landfills close, Ontario County's 100,000 tons of waste will have to compete with approximately 2.5 million tons in the market for the lowest disposal rates and associated capacity.

Table 4-9 compiles information about gate rates at the nearest landfills to Ontario County. Gate rates are the tip fees that are posted on the landfill web pages and reflect the spot market price they are willing to charge for a random truck deciding to deliver on any given day. As shown, these gate rates are currently all substantially higher than Ontario County's tip fees required under the OMLA.

Table 4-9 Reported Tip Fees at Nearby Landfills

Landfill	City	Distance from Ontario Co (mi)	Reported Gate Rate*
High Acres	Fairport, NY	18	$58
Seneca Meadows	Waterloo, NY	23	$100
Chemung County	Elmira, NY	62	$65
Mill Seat	Bergen, NY	40	$60
Modern Landfill	Model City, NY	93	$76

Despite these posted gate rates, most landfills offer tip fee discounts to suppliers who commit a meaningful level of inbound tonnage for a long period of time. However, there can be no guarantee that a long term supply agreement would secure meaningful reductions in tip fee in the current market. For this reason, the analysis of different landfill closure alternatives has retained the rates in Table 4-10. As shown, there is an assumption that a long-term supply agreement for all transferred Ontario County MSW is $5/ton lower than if County wastes are direct hauled by municipalities and subscription haulers.

Table 4-10 Landfill Tip Fees Used for Waste Export Impact Analysis, County-wide Supply v Direct Haul

		Tip Fee Used for Analysis	
Landfill	Range	County-wide Waste Supply Commitment	Direct Haul by Municipalities and Private Haulers
Current	$46.29	$46.29	$46.29
Seneca Meadows	$80-$90	$80	$85
High Acres	$58-$68	$58	$63
Mill Seat	$60-$70	$60	$65
Generic Distant Landfill	$65-$100	$80	$85

As stated above, should Seneca Meadows not extend their permit, these prices could be significantly higher as the market adjusts and absorbs displaced wastes.

4.5.2 Disposal of Other Waste Types

The prior section focuses on MSW and at least a subset of the C&D debris generated in Ontario County. However, other waste types would also need to be exported:

- **Construction & Demolition (C&D) Debris**: This waste type is widely accepted in landfills across NY State, including at all 10 landfills within 75 miles from Ontario County. For this reason, C&D debris is assumed to have the same outlets and expected disposal tip fee as MSW (and there are several C&D-only landfills that may be able to accept this material).

- **Industrial Waste, including Asbestos**: Both Seneca Meadows and High Acres, as well as three additional landfills within 75 miles of Ontario County, were found to have accepted these materials. No attempt was made to estimate the impact of Ontario County landfill closure on these waste types, but generators of these wastes should expect to incur tip fee increases at least as significant as those shown in this Section for MSW and C&D.
- **Biosolids**: Biosolids are the least widely accepted material type at other landfills in the State. Table 4-11 highlights the only three landfills within 150 miles that either reported accepting biosolids on their landfill reports, or else are known by the County to accept biosolids. Specifically, the Steuben Landfill currently accepts Village of Naples biosolids, which is known to the County despite being mis-labeled on the Steuben Landfill NYSDEC Annual report. The other facilities accepted biosolids in 2021.

Table 4-11 Acceptance of Special Wastes at State Landfills

Landfill	County	Mileage from Ontario County	Owner
Steuben County Landfill	Steuben	46	Steuben Co
Chaffee Landfill	Eria	75	WM
Chatauqua Landfill	Chatauqua	150	Chataqua Co

Biosolids have become an increasingly difficult waste type to dispose of because they are known to contain the emerging contaminant per- and polyfluoroalkyl substances (PFAS). The US EPA reports: "PFAS are a group of manufactured chemicals that have been used in industry and consumer products since the 1940s because of their useful properties. There are thousands of different PFAS, some of which have been more widely used and studied than others. PFAS are long lasting chemicals, components of which break down very slowly over time. Biosolids may contain PFAS and other contaminants that WWTPs receive from upstream dischargers includes industrial facilities, landfills, and homes."[4]

The tip fee for exported biosolids used for estimating impacts of closing the Ontario County landfill is $80 per ton. There can be no guarantee that exported biosolids can attain this tip fee, and it is possible that actual biosolids tip fees will be materially higher.

4.6 TRANSFER, TRANSPORTATION AND DISPOSAL FULL COST

The combined impact on residential household subscription rates, municipal transfer stations, commercial businesses, and biosolids generators are presented in Section 6. Key assumptions for this impact analysis are found throughout this Section.

[4] https://www.epa.gov/biosolids/and-polyfluoroalkyl-substances-pfas-biosolids

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5. RECYCLING

5.1 A BRIEF HISTORY OF RECYCLING

The U.S. recycling industry has changed dramatically since the onset of residential curbside collection programs in the early 1990s. In order to keep valuable secondary materials clean and saleable to end markets for recycling, a premium was placed on keeping like materials separated during collection and processing. Curb-sort collection programs were established in many communities across the country. In these programs, a collection truck, sometimes towing a trailer, required the crew to manually sort recyclables into six or even more compartments, separating glass by color, steel and aluminum cans, cardboard, newspaper, mixed paper, and plastic #1 and #2 bottles. The recyclable commodities recovered from curb sort systems contained virtually no contamination and could be sold at top dollar for this reason. There are still a small number of communities that provide curb sort recycling to this day, and who consequently have had little to no problems selling their recyclables during market downturns.

Manual curb sorting is not an efficient form of collection. Dual stream collection programs soon became the prevalent form of collection. These curbside programs separated all grades of fiber – cardboard, newspaper, magazines, junk mail, phone books, paperboard boxes, etc. – in one compartment on the collection truck; and separated metal cans, plastic bottles and glass bottles in a second compartment. Material recovery facilities (MRFs) were developed to apply basic mechanical and manual sorting methods to separately parse out grades of paper on one processing line, and to separate the containers on a second processing line. Sortation required basic mechanical system integration and manual sorters. Dual stream programs significantly increased collection efficiency over the manual curb sort systems, but because dual stream collection was still a manual process using small (18 to 22 gallon) bins, contamination rates remained low, typically between 5 and 8 percent. Highly contaminated recycling bins could be spotted by the collection crew, quickly tagged, and not emptied into the truck to contaminate other recyclables.

The modern residential recycling system emerged and rapidly expanded in the 2000s as haulers sought further improvements in collection efficiency and championed single stream recycling. Because all paper and container recyclables could, for the first time, be collected in a single truck compartment, automated collection vehicles and standardized 64- or 96-gallon carts could be used. The larger cart volume immediately enabled households to store more recyclables in their container, and recovery rates for paper and large format plastic bottles – e.g., laundry detergent, 2-liter soda, gallon milk jugs – increased. These commodities brought in significant revenue.

In parallel with single stream collection, MRFs necessarily became more complicated and capital intensive, having to now separate paper from containers in a first screening step. Existing screening and separation technologies were improved and refined to meet this new need on the front end of recyclables processing lines, although retrofitting existing dual stream MRFs was often difficult due to space constraints and cost. Despite these challenges, the first single stream MRFs were constructed/retrofitted and began receiving largely clean recyclables that were either still being set out in separate bins under dual stream set-out policies, or else had just been converted to automated carts with residual attentiveness to minimizing contamination. The greatly reduced collection unit cost, along with the additional revenue potential from higher paper and plastic volumes, were cited as justification for single stream conversions all over the country.

Before single stream recycling, contamination had never really been a problem in the residential recycling industry. The use of collection crews and open topped recycling bins provided ample opportunity to identify and avoid contamination in loads of recyclables. The lidded, automated carts distributed to residents as single stream recycling rapidly spread changed the contamination calculus. No longer could collection crews observe the condition of recyclables and leave contaminated materials in the bin at the curb. With only a single operator seated in the cab of the collection vehicle, using an automated arm to tip lidded carts, contamination was masked and whatever a resident placed in their cart was mixed into the load of recyclables.

Contamination and glass separation have emerged as the two biggest challenges to single stream recycling programs. Contamination specifically includes plastic retail bags and other plastic bags, which have a strong tendency to become wrapped up in mechanical sorting equipment requiring maintenance of the system (resulting in lost production time).

- **Contamination**: While some communities – including Ontario County – were able to maintain manageable levels of contamination after their conversion to single stream recycling with residue rates around 8 percent in 2022, many other communities across the nation found their contamination rates immediately spike to 20 percent, 30 percent, or even higher. Only in the past 3-5 years has there been definitive research showing that, despite public education and outreach programs, a subset of residential households use their recycling carts as simply another trash container. Garbage bags placed in a recycling toter massively contaminate otherwise clean secondary commodities properly set out by compliant recyclers. Figure 5-1 shows two examples of the types of contamination (bagged materials, tanglers, non-targeted plastics) found in carted single stream recycling programs.
- **Glass**: In curb sort and dual stream programs, glass was typically sorted into three colors, where it could be sold to bottle manufacturers in many regions of the US for bottle-to-bottle recycling and generate positive revenues. Glass recycling, and even color-sorted glass (as was the case with Casella's recycling operations in Ontario County starting in 2008), has always been impaired by its low recoverable value, combined with its high density that makes transportation over long distances uneconomical. However, glass is highly problematic to sort in a single stream system, and as a result glass containers are removed as an early step in the single stream sorting process. Single stream MRFs have defaulted to crushing glass into mixed color cullet, which cannot be recycled back into glass bottles, and so glass from single stream recycling programs is generally downcycled or used as alternative fill at landfills. The devaluation of glass from bottle to mixed cullet is shown in Figure 5-2.

Figure 5-1 Contamination in Recycling Toters

Figure 5-2 Recyclable Glass Containers to Mixed Cullet

At the MRF, contamination and mechanical processing constraints further impaired the efficient recovery of single stream recyclables. Certain materials – especially plastic bags (as noted above), but also improperly separated items like metal hangers, plastic garden hoses, bulky items, and electric cords, which some people wishfully recycle – tangle around the axles of or otherwise clogging mechanical screens, ultimately shutting down MRF processing lines until the tanglers can be manually removed in what is a time consuming and dangerous task.

As a result, modern MRFs now employ a wide range of mechanical, optical, manual, and robotic sortation technologies to combat the deluge of contamination arriving at their MRFs. Further, most MRFs still typically employ manual sorters to remove the most egregiously problematic items arriving in loads of single stream. As a result, proper sortation of single stream recyclables, including the removal of higher levels and more problematic forms of contamination, is expensive.

5.2 RECYCLING IN ONTARIO COUNTY

Ontario County's recycling program has evolved in similar fashion, culminating in the construction and operation of the single stream MRF in 2008 that is co-located on the landfill property. This MRF contains the full range of single stream processing equipment and manual sorting support needed in a modern single stream MRF. A photo of the County MRF is shown in Figure 5-3.

Figure 5-3 Ontario County MRF

Courtesy of Ontario County

When the OMLA was executed, recyclables were still being collected in a manner that kept them clean and free of contaminants, and the level of processing required was not so great.

Ontario County's residential households and municipal transfer stations have enjoyed favorable recycling terms under the OMLA. At the current time, Casella is obligated to accept Ontario County residentially generated recyclables at no charge. The facility currently charges approximately $80 per ton for mixed commercial recyclables, and offers a rebate of $35 per ton for delivery of clean cardboard. The Project

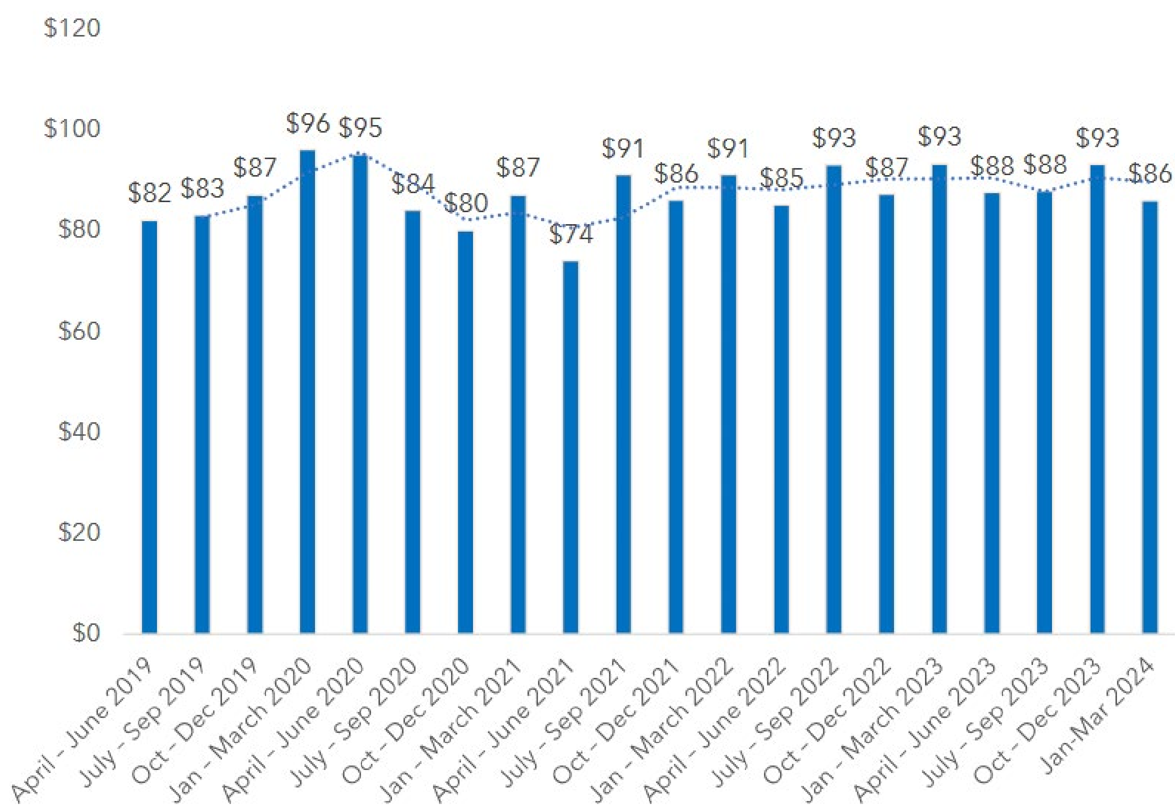
Team's review of recent procurements for recyclables processing outside of Ontario County, determined that no other contracts exist where residentially generated recyclables are accepted at a MRF at no cost.

5.3 PROCESSING COSTS

The Northeast Recycling Council (NERC) publishes a quarterly report on the state of recycling in the region. The most recent quarterly report includes responses to at least some questions from 13 MRFs in ten of the 11 NERC states, of which New York is one. The responding MRFs included single stream, dual stream and even curb sort MRFs.

Figure 5-4 presents a time series of the full cost to process a ton of recyclables from the responding MRFs. While the report relies on a relatively small subset of MRFs (which are not disclosed in the report due to confidentiality), it does reflect processing costs that are more in line with the commercial mixed recycling rate being charged at the Ontario County MRF. It should also be noted that the inclusion of any dual stream or curb sort MRF in the average shown in Figure 5-4 would bring the averages down compared to single stream MRF processing costs, which are higher as a general rule.

Figure 5-4 Average Processing Cost per Ton in Northeast Region

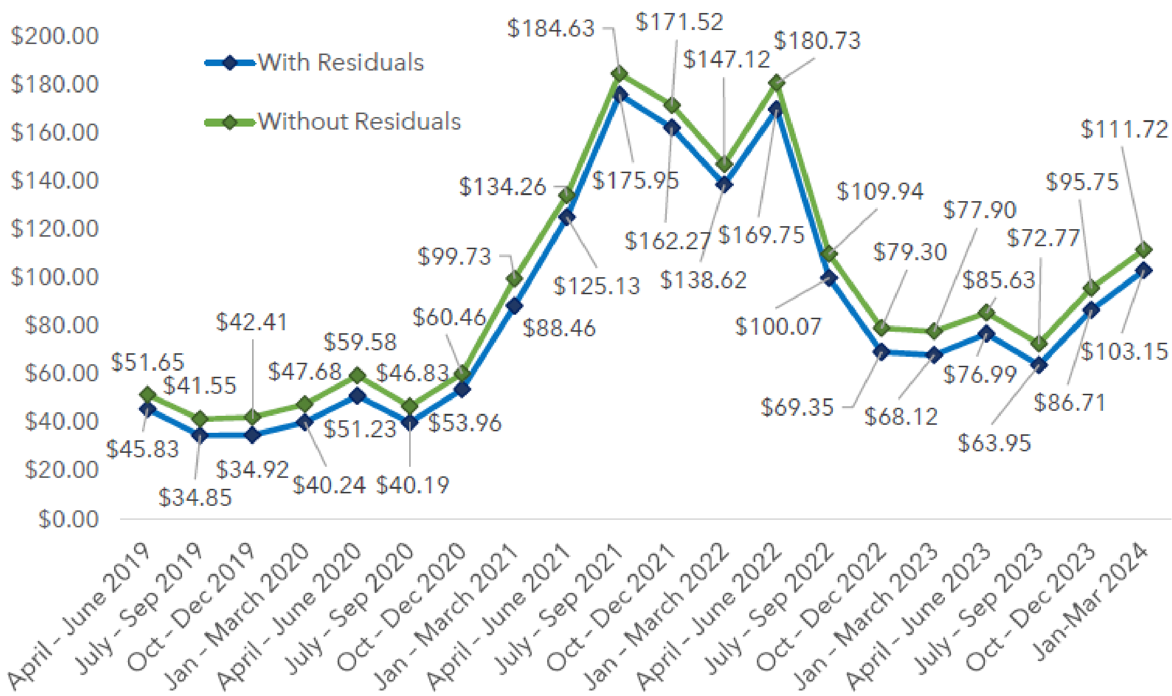


Source: Northeast Recycling Council, Northeast Materials Recovery Facilities (MRF) Commodity Values Report, January 1 – March 30, 2024

Although processing costs are high, the sorted materials can then be sold to end markets to generate revenue that offsets the processing costs. However, secondary materials are commodities, and the prices that can be realized on the commodities market vary dramatically depending on market conditions. So, while the cost of processing is level over time, the potential offsetting revenue fluctuates.

The value of single stream recyclables in the Northeast region is shown in Figure 5-5, which comes from the same source. As shown, recycled material value hit a low of $34.85 per ton over this period, which means that MRFs accepting recyclables at no cost lost roughly $50 per ton given their $85 per ton average processing cost. Conversely, mixed recyclables hit a high of $184.63 in this same period, which means that MRFs accepting recyclables at no cost would have earned almost $100 per ton in incremental revenue after covering their processing cost.

Figure 5-5 Value of Single Stream Recyclables



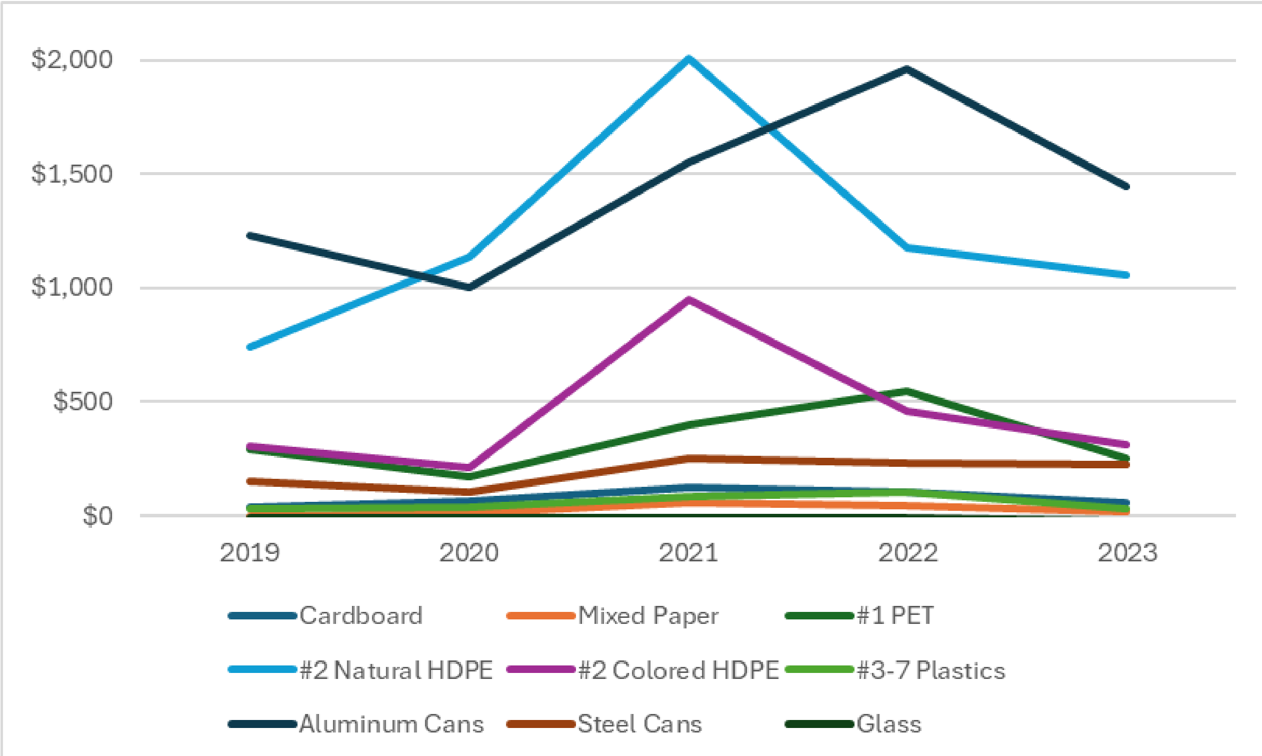
Source: Northeast Recycling Council, Commodity Values Report, January 1 – March 30, 2024

Figure 5-6 is provided for informational purposes, and shows similar information about the value of recycled materials individually. An important point illustrated by this figure is that aluminum cans and #1 and #2 plastic bottles are the most valuable commodities on a revenue-per-ton basis. However, these commodities make up only a small fraction of all single stream recyclables. Additionally, in New York State, a significant percentage of aluminum cans and #1 plastic (carbonated and water) bottles are covered by the State's container deposit law or "Bottle Bill", which means they are more likely to be returned through the deposit system and not mixed in single stream recyclables. New York's MRFs therefore suffer a loss of the most valuable containers in their single stream facilities, further impairing the economics of their business.

Conversely, cardboard and mixed paper (until recently) revenue-per-ton are relatively low. However, there is a lot more cardboard and paper in the single stream, and so these materials are critical to recycling program success because of their higher volumes. More recently paper mills have adapted their production lines to where waste paper is once again starting to become a valued commodity.

The economics of recyclables processing is therefore governed by high processing costs and wildly fluctuating commodity revenues. As shown in Section 5.4, these dynamics have spurred a long-overdue move to more rational pricing in recyclable material processing agreements.

Figure 5-6 Individual Commodity Values



Source: RecyclingMarkets.net, Northeast region

5.4 PROCESSING TERMS & CONDITIONS

The Solid Waste Association of North America (SWANA) and the National Waste and Recycling Association (NWRA)are the two national trade associations for the materials management industry. These organizations jointly issued guidance on the design of contracts for the processing of municipal recyclables.[1] The Project Team believes that this guidance document generally identifies best practices for structuring recyclables processing agreements.

Such contracts typically specify a pricing framework that (a) enables the processor to establish a profitable business by covering known fixed costs, and (b) allows the supplier to earn rebates when high commodity market prices exceed the underlying processing cost. The contractual terms in such contracts include:

- **Processing Fee**: This is afee per ton of inbound material that will be charged to the supplier. As shown in the previous section, the full cost for processing in the Northeast region is in the mid-$80s per ton, which may or may not include profit. It is customary for the processor to build reasonable profit into this fee.
- **Revenue Share/Rebate**: This is the formula that governs whether the processor is obligated to rebate the supplier with the excess value of the sorted recyclable materials when sold as secondary commodities in high markets. Futhermore, this is a floating rate that changes based on published

[1] Joint Advisory on Designing Contracts for Processing of Municipal Recyclables, NWRA & SWANA Joint Advisory 4/17/2015 amended 8/1/2018, plus attachments.

pricing indices, and may even be updated annually or from time to time as to the underlying mix of recyclables.

In current processing agreements, the value of the underlying recyclables needs to be routinely updated to align with market prices. There is consequently a need to incorporate an agreed-upon composition of inbound single stream recyclables, and to have a mechanism to assign ongoing values to this composition. Processing contracts therefore incorporate the basis for calculating the blended or Average Material Value (AMV). An example of an Average Material Value is shown in Table 5-1.

Table 5-1 Average Material Value

	2023		
Material	**Market Value ($/Ton)**	**Material %**	**Average Market Value ($/Ton)**
Cardboard	$55.42	23%	$12.75
Mixed Paper	$14.88	28%	$4.17
#1 PET	$251.27	4%	$10.05
#2 Natural HDPE	$1,056.35	3%	$31.69
#2 Colored HDPE	$309.21	4%	$12.37
#3-7 Plastics	$28.21	1%	$0.28
Aluminum Cans	$1,446.78	2%	$28.94
Steel Cans	$226.29	7%	$15.84
Glass	-$20.59	10%	-$2.06
Contamination	-$46.29	18%	-$8.33
Total		**100%**	**$105.69**

Sources: Market values from RecyclingMarkets.net, Northeast region. Composition data is from MSW Consultants internal project files from an actual MRF composition audit.

Together, the Processing Fee and incorporation of an AMV to determine eligibility for rebate enables a fair and transparent basis for the financial transaction between the supplier and the processor during the ongoing processing and recovery of recyclables. In addition to the pricing configuration described above, it is important to note that processing agreements also address contamination in several ways, as briefly described below.

- **Deduction to AMV due to disposal of contaminants**: Note that in Table 5-1, the last row reflects that the MRF will have to pay a landfill to accept and dispose of non-recyclable materials that remain after processing. The current Ontario County commercial tip fee of $46.29 is reflected in this table, which therefore shows an estimated contamination rate of 18 percent.
- **Load rejection or downgrade fees**: Processing agreements will usually allow the processor to inspect inbound loads of single stream recyclables, and either reject the loads outright or else apply some additional fee or a deduction in rebate potential due to high contamination. It is important to note that processors are becoming increasingly stringent with contamination, especially with the increase in lithium-ion batteries making their way into the recycling stream and causing serious fires at MRFs across the nation.

As a final note, there is one problematic side effect to applying these processing terms and conditions in agreements between very small recycling generators. As the above discussion illustrates, determination of the baseline recycling composition is costly, and tracking the commodity price indices and customizing monthly invoices using the recommended framework is time consuming and incurs extra administrative cost. For these reasons, most processors will not extend such pricing terms to small suppliers (i.e., customers who do not generate a lot of recyclables), simply because the cost to establish the billing parameters and manage the contract payments is greater than the potential benefit of having fair processing terms.

In the context of Ontario County, this suggests that it would be worthwhile, and a third party processor would be willing, to establish a processing fee and floating revenue share if the processing agreement covered all of the County's residential single stream recyclables, which are estimated at roughly 5,800 tons per year. However, if each transfer-station-owning municipality ends up having to negotiate individual processing agreements with a processor, it is more likely that each municipality would expect to pay a processing fee but receive little to no rebate in return.[2] This is because individually, none of the transfer stations generate enough single stream recyclables to warrant the investment needed to establish the recommended pricing structure.

5.5 RECYCLING IN ONTARIO COUNTY IN 2028 AND BEYOND

Based on the recycling industry dynamics, pricing practices, and Ontario County customer demographics summarized in this Section, the Project Team can identify likely changes to recycling after termination of the OMLA. The following changes will be felt regardless of the expansion or closure of the landfill:

- **Market Rate Processing Fees**: Recycling generators in the County should expect to pay market rate processing fees to whichever MRF ultimately receives Ontario County single stream recyclables. So, even if the landfill tip fee rises 20, 50 or even 100 percent, the fee to process recyclables will likely be higher than the cost to dispose of wastes. For purposes of modeling the impact on Ontario County municipalities in Section 6, a processing fee of $100 per ton is assumed to be the baseline.
- **Revenue Share for County-wide Program Only**: If the County is able to retain the MRF on the landfill parcel (or to develop another local MRF) under terms that guarantee all of the County's residential recyclables be delivered to this MRF, then the committed tonnage would likely be sufficient to warrant the establishment of processing fee less rebate pricing model. Under such a model, the County would want to invest in a baseline recycling composition audit to inform itself and the processor about the mix of recoverable commodities, as well as the prevailing contamination rate, that should be used in determining the terms of the processing agreement. However, if it is not possible to establish a County-level recycling program, and instead each municipality and small private hauler is required to make their own arrangements, then the processor will not likely offer meaningful rebates and instead will accept recyclables and charge a processing fee that is higher than the tip fee for disposed/landfilled wastes.
- **Recycling Export will Further Impair Ontario County Recycling Economics**: If it is not possible to retain a MRF in the County, then the cost to recycle will increase even more due to the added cost of transportation. Transportation costs and dynamics are described in Section 4 at length and are not repeated here. However, given that recyclables cannot be compacted to the same degree as wastes (compaction causes even greater degradation of recyclables), and given that more distant MRFs will abide by the same processing considerations as a MRF in the County, the processing of single stream recycling would rise well into the mid $100s per ton if is necessary to transfer them to a more distant MRF.

Assuming that County stakeholders agree to the prospect of keeping a MRF in Ontario County, there will also be a decision process associated with who owns and operates the MRF. For the current MRF

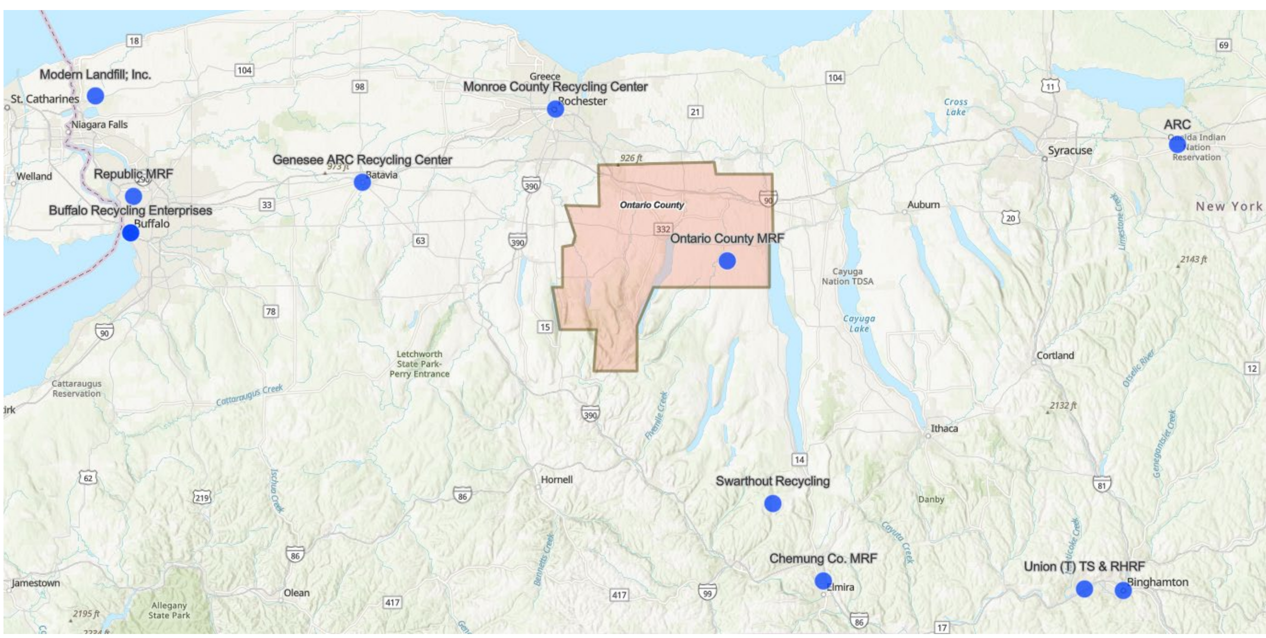
[2] Or, if the processor does offer a rebate, the processor will provide its default recycling composition data, which in the experience of the Project Team is so significantly skewed in favor of the processor, there will be little meaningful revenue rebated.

building located on the County landfill parcel to continue operation, the County will have to issue an RFP (either separately or integrated with a landfill expansion RFP) and undertake a procurement process to secure an operator at this building. Casella owns the processing equipment within the County MRF, so if Casella is awarded the MRF operating contract as a result of any procurement, then the existing equipment could be used and Casella's recycling operations could presumably continue. However, if another company is awarded the MRF operating contract, the Project Team understands that Casella would have the right to vacate (or liquidate) the MRF contents of the building. Therefore, the awarded (new) processor would either have to reconstruct the processing line as it sees fit, or perhaps acquire the equipment from Casella. The County may or may not want to contribute financing to the acquisition of new equipment, or to any incentives that might attract a processor. It is beyond the ability of the Project Team to assess the final outcome for the MRF given the complexity of the situation.

The Project Team,, however, can comment on potentially negative ramifications should it not be possible to maintain a commercial single stream MRF serving Ontario County, or if the County MRF ends up in the hands of a private operator with no County supply commitment. In this case, every municipality and private hauler will be beholden to the MRF operator and will most likely have to accept subpar terms for processing single stream material. Certainly, the new MRF operator would wish to attract County-generated (and likely externally generated) single stream materials, but given the scarcity of MRFs in the region – and given that Casella already transports single stream recyclables from elsewhere in the region to Ontario County as its processing hub – there would not be many options.

Figure 5-7 identifies the locations of other single stream processors that might be candidates to receive Ontario County recyclables. With the exception of Monroe County's recycling center in Rochester, which is operated by WM (another large private company), there are no nearby options.

Figure 5-7 Nearest Single Stream MRFs



If the cost of processing single stream recyclables rises, it is also possible that recycling programs take a step backwards in Ontario County. Municipal transfer stations will face further cost increases, and subscription curbside recycling collection may not be economically feasible due to the extended direct haul distances.

It is beyond the ability of the Project Team to predict the ultimate dynamics, but it is difficult to imagine that Ontario County will be able to sustain its current level of recycling if local single stream processing evaporates, and that any remaining recycling would come at a higher cost than the current arrangement.

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6. IMPACTS TO WASTE GENERATORS

6.1 SUMMARY OF ALTERNATIVES

The preceding sections provided extensive details about various alternatives for County stakeholders and decision makers to consider as the end of the OMLA approaches and the Ontario County landfill reaches permitted capacity. The Project Team undertook wide ranging research and analysis to establish a defensible basis for the numerous assumptions that are needed to forecast future system costs under a variety of complex circumstances. In this section, the Project Team assembles the data from each of these alternatives, and applies the resulting system impacts to each of the County's municipalities.

In brief, Ontario County can retain a local landfill to provide convenient waste disposal capacity for its residents and businesses, or transition to a waste export system. If the County opts to extend the landfill permit, this report estimates the impact at three different fill rates for the expanded landfill. If the County opts to close the landfill, this report compares waste export via a commercial transfer station with waste export via direct haul. In both waste export scenarios, the same underling landfills have been included in the comparison. Table 6-1 summarizes the three primary alternatives and 11 sub-alternatives described in this report.

Table 6-1 Disposal Alternatives

Primary Landfill Alternative	Sub-alternative	County Landfill Status
Landfill (Vertical) Expansion	100% of Current Fill Rate	Open Through 2037
	50% of Current Fill Rate	Open Through 2045
	County Wastes Only	Open Through 2083
Waste Export with Commercial Transfer Station	Transfer to Seneca Meadows	Closed
	Transfer to High Acres	
	Transfer to Mill Seat	
	Transfer to Generic Distant Landfill	
Waste Export by Direct Haul	Direct Haul to Seneca Meadows	Closed
	Direct Haul to High Acres	
	Direct Haul to Mill Seat	
	Direct Haul to Generic Distant Landfill	

6.2 IMPACTED WASTE GENERATORS

In collaboration with the County, and in response to the objectives of this research as directed by the Board in its original RFP for landfill consulting services, the impacts of each of these scenarios has been estimated for each of the following waste generating stakeholders.

- **Municipalities that Operate Transfer Stations**: Each of the 14 municipalities that operates a transfer station is paying for collection from its transfer station to the County landfill, and is also paying for the disposal of MSW and C&D at current, reduced tip fees. Recyclables can be delivered to the MRF for no charge. The increased cost of municipal transfer station operation has been calculated based on the tonnage of wastes each municipality manages through a transfer station.[1]

[1] It is noted that some of the municipalities have privatized their transfer station operations and would not directly incur the operating cost increases; rather, the costs would be borne by the contracted facility operator, who would presumably pass on these cost increases in customer user fees.

- **Residential Households Receiving Curbside Collection**: In the Village of Victor, City of Canandaigua, and for all households that subscribe with a private hauler for curbside service, the subscription rate will increase under each of these options. (In the case of the two publicly-provided systems, which are tax funded, the cost per household will increase, although this increase has the potential to be obscured because the services may be covered through the use of general funds.)
- **Commercial Businesses Receiving Collection Service**: Commercial and institutional organizations will see their trash bills increase, from a combination of disposal and recyclables processing cost increases, and through higher collection costs in the case of direct haul waste export.[2]
- **Biosolids Generators**: Finally, five municipalities in Ontario County rely on the County landfill for biosolids disposal as shown in Table 6-2. These municipalities will incur significantly higher cost to transport biosolids a further distance, in addition to a likely higher tip fee.

Table 6-2 Current Biosolids and Other Waste Generation and Tip Fees

Material	Municipality	Tons	Tip Fee
Biosolids	C. Canandaigua	2,988	$30.00
	C. Geneva	154	$78.86
	T. Farmington	2,572	$63.04
	V. Bloomfield	10	$79.28
	V. Victor	141	$50.00
Industrial	County-wide	9,573	Unknown
Asbestos	County-wide	7	Unknown
BUDS	County-wide	17,342	Unknown

Note: V. Naples and V. Phelps haul their biosolids to another disposal facility.

6.3 FINANCIAL IMPACTS

6.3.1 MODEL INPUTS & ALGORITHMS

There are many parameters to calculate the impacts on waste generators for each alternative. For the landfill expansion and Countywide commercial transfer station options, there are no impacts to the local collection systems, and financial impacts are confined to changes to the tip fee under different landfill scenarios (and to the sum of transfer/handling, transportation and disposal for the commercial transfer station). If the County closes the landfill and does not develop a transfer station, then the County collection system will be impacted as municipal collection systems and private haulers providing subscription and commercial collection will face increased direct haul expense as well as higher disposal fees. In all scenarios, it is assumed that generators of single stream recyclables will pay a market processing fee of $100 per ton.

There are numerous inputs needed for each municipality to make these calculations. The following municipal-level inputs are summarized in Appendix G, or else have been discussed in earlier sections of this report.

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[2] Note that the financial impact to businesses does not attempt to estimate the collection cost increase due to the wide range of collection service levels provided to commercial customers who have varying container sizes that can be collected anywhere from one time to seven times per week. Ultimately the costs borne by businesses and institutions would be higher than shown in this report.

- Count of residential households
- Current range of subscription rates charged to County households
- Current reported collection cost for publicly-provided services
- Projected tip fees for landfill expansion scenarios
- Projected tip fees for waste export via development of a commercial transfer station
- Transfer/handling costs per ton for a commercial transfer station
- Long haul transportation costs from the commercial transfer station to a distant disposal facility (or MRF).
- Projected tip fees for waste export via direct haul
- Residential curbside collection productivity measures
- Mileage and drive times to various in-county and out-of-county disposal facilities

Specific to the analysis of impacts on residential households if haulers must direct haul to out-of-county landfills, the following algorithm was applied for each municipality.

1. Measure the mileage between each municipality and the Ontario Co Landfill
2. Calculate the incremental mileage to reach each of the more distant landfills
3. Convert additional mileage to drive time (based on posted roadway speed)
4. Calculate the reduction in households served due to the increase of non-productive time and the corresponding decrease of productive time
5. Calculate the rate increase that would be needed to achieve equivalent revenue per route

6.3.2 MODEL OUTPUTS

Appendix G contains detailed schedules customized for each municipality to show the impact of each alternative. These schedules contain blocks of summary information that attempt to break down the findings into logical pieces. For each municipality, there is an introductory table summarizing basic demographic and solid waste system parameters of that community. Table 6-3 shows this introductory table for the Town of Manchester.

Table 6-3 Municipal System Summary Table Example (T. Manchester)

System Element	Value
Population	4,387
Households	1,711
Operates Transfer Station	Yes
Transfer Station Used	Town of Manchester
Transfer Station Operator	Municipal
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

It should also be noted that Town impacts are presented in two ways: both excluding and including the population and waste generation of any villages located within the Town. The Village of Rushville straddles the Ontario and Yates County border, and therefore only waste attributable to the population residing in Ontario County is counted. The village of Clifton Springs, which straddles the Town of Manchester and the Town of Phelps, is allocated according to population located in each town. Any references to "municipality exhibits" therefore includes Town results both inclusive and exclusive of village generation.

There is a waste generation summary table for each municipality that compiles their most recent annual generation of different material types. An example is shown in Table 6-4, also for the Town of Manchester. The tonnage data segregates MSW, C&D, recyclables and biosolids; and also differentiates between the tonnage managed (i) through a municipal transfer station, (ii) through subscription curbside collection service (or public collection, in the case of V. Victor and C. Canandaigua),and (iii) direct collection from commercial (and institutional) establishments. The model also estimates the tonnage that is already being exported (which is excluded from further analysis because it is already managed outside the County landfill and MRF).

Table 6-4 Sample Baseline Tonnage Summary (T. Manchester)

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	53.3	4.8	31.0		**89.0**
Residents (Curbside)	1,315.5		182.9		**1,498.4**
Commercial	823.8	349.0	58.2		**1,231.1**
Total Tons to Landfill/MRF	**2,192.6**	**353.8**	**272.1**	**0.0**	**2,818.5**
Exported Tons	1,336.0		0.0		1,336.0

For each municipality, the model compiles the current disposal tip fees and the (currently zero) recyclables processing fee on residentially generated materials. The baseline tip fees are identical for all materials for each municipality with the exception of biosolids, where slightly different tip fees are charged to each of the five biosolids generators using the County landfill for disposal. Baseline tip fees are shown in Table 6-5.

Table 6-5 Baseline Disposal Tip Fees and Recyclables Processing Fees (T. Manchester)

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station)	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Finally, the baseline tip fees and processing fees are applied to the baseline tonnage to estimate the current full costs borne by different waste generators within each municipality. An example of the system cost summary is shown in Table 6-6. As shown in this table, the total cost to dispose all MSW and C&D, and to process all recyclables originating in the Town of Manchester is approximately $122,000. Manchester does not generate biosolids, or else there would be a disposal cost for biosolids in this table.

Table 6-6 Baseline System Costs by Waste Generator (T. Manchester)

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station)	$2,216	$197	$0	**$2,413**	
Residents (Curbside)	$60,895		$0	**$60,895**	
Commercial	$38,135	$15,949	$4,658	**$58,742**	
Total	**$101,246**	**$16,146**	**$4,658**	**$122,050**	**$0**

In addition to baseline data, the model generates similar tonnage and full cost tables for each scenario defined in Table 6-1. So that stakeholders can better compare the results, there are four summary tables that compile all alternative scenarios for easy comparison:

- Table 6-7 shows the impact of each alternative on that community's use of a municipal transfer station (its own or another municipality's).
- Table 6-8 shows the updated range of household subscription rates to be charged (or direct cost per household for publicly-provided collection programs).
- Table 6-9 captures the increases in commercial and institutional MSW and C&D disposal plus recyclables processing costs. As mentioned earlier, these amounts omit additional direct haul costs for the waste export/direct haul scenarios, meaning the amounts shown in this table are understated. (i.e., the cost impact to commercial businesses will be higher than shown).
- Table 6-10 shows the increased cost of longer transportation of biosolids and higher biosolids tip fees. This estimate is also potentially low because it assumes that all County biosolids will be accepted at the next closest landfill that historically reported biosolids disposal. Should the nearest landfill decline to accept Ontario County biosolids, then these costs could be substantially higher than shown.

Table 6-7 Impact of Each Option on Municipality (T. Manchester)

Scenario	Total Cost for Municipal Transfer Station Tons	% Change from Current System
Current System	$2,413	0.0%
Landfill Expansion, Maintain 100% Importation	$5,782	139.7%
Landfill Expansion, 50% Importation	$6,581	172.8%
Landfill Expansion, County Waste Only	$7,743	220.9%
Close Landfill/Build Transfer Station (SM) [1]	$9,137	278.7%
Close Landfill/Build Transfer Station (HA) [1]	$8,091	235.4%
Close Landfill/Build Transfer Station (MS) [1]	$8,730	261.9%
Close Landfill/Build Transfer Station (Distant) [1]	$10,182	322.0%
Close Landfill w/o Transfer Station (SM) [1]	$12,280	409.0%
Close Landfill w/o Transfer Station (HA) [1]	$10,809	348.0%
Close Landfill w/o Transfer Station (MS) [1]	$12,403	414.1%
Close Landfill w/o Transfer Station (Distant) [1]	$16,110	567.7%

Note: Estimated impacts are based on the Ontario County MRF staying open. If the MRF closes, system costs would increase more than shown.

[1]Fees include the all-in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Table 6-8 Impact on Residential Household Subscription Rate (or Direct Cost) per Household (T. Manchester)

			Estimated Curbside Residential Rate ($/Mo)			
Scenario	Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	Percentage Change from Current System Low Estimate	Percentage Change from Current System High Estimate
Current System	$60,895	0.0%	$44.00	$70.00	0.0%	0.0%
Landfill Expansion, Maintain 100% Importation	$79,186	30.0%	$45.04	$71.04	2.4%	1.5%
Landfill Expansion, 50% Importation	$97,221	59.7%	$45.96	$71.96	4.4%	2.8%
Landfill Expansion, County Waste Only	$123,531	102.9%	$47.29	$73.29	7.5%	4.7%
Close Landfill/Build Transfer Station (SM) [1]	$155,104	154.7%	$48.89	$74.89	11.1%	7.0%
Close Landfill/Build Transfer Station (HA) [1]	$131,424	115.8%	$47.69	$73.69	8.4%	5.3%
Close Landfill/Build Transfer Station (MS) [1]	$145,895	139.6%	$48.42	$74.42	10.1%	6.3%
Close Landfill/Build Transfer Station (Distant) [1]	$178,783	193.6%	$50.09	$76.09	13.8%	8.7%
Close Landfill w/o Transfer Station (SM) [1]	$130,109	113.7%	$51.21	$79.19	16.4%	13.1%
Close Landfill w/o Transfer Station (HA) [1]	$101,168	66.1%	$48.45	$75.68	10.1%	8.1%
Close Landfill w/o Transfer Station (MS) [1]	$103,799	70.5%	$53.21	$83.61	20.9%	19.4%
Close Landfill w/o Transfer Station (Distant) [1]	$130,109	113.7%	$74.65	$117.75	69.7%	68.2%

Note: Estimated impacts are based on the Ontario County MRF staying open. If the MRF closes, system costs would increase more than shown.

[1]Fees include the all-in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Table 6-9 Impact on Disposal and Recyclables Processing Costs for Commercial Generators (T. Manchester)

Scenario	Aggregate Disposal Cost to Commercial Generators	% Change from Current System
Current System	$58,742	0.0%
Vertical Expansion, Maintain 100% Importation	$59,907	2.0%
Vertical Expansion, 50% Importation	$76,192	29.7%
Vertical Expansion, County Waste Only	$99,649	69.6%
Close Landfill/Build Transfer Station (SM) [1]	$127,797	117.6%
Close Landfill/Build Transfer Station (HA) [1]	$106,686	81.6%
Close Landfill/Build Transfer Station (MS) [1]	$119,587	103.6%
Close Landfill/Build Transfer Station (Distant) [1]	$148,908	153.5%
Close Landfill w/o Transfer Station (SM) [1]	$105,513	79.6%
Close Landfill w/o Transfer Station (HA) [1]	$79,711	35.7%
Close Landfill w/o Transfer Station (MS) [1]	$82,056	39.7%
Close Landfill w/o Transfer Station (Distant) [1]	$105,513	79.6%

Note: Estimated impacts are based on the Ontario County MRF staying open. If the MRF closes, system costs would increase more than shown.

[1]Fees include the all-in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Table 6-10 Impact on Biosolids Transportation and Disposal Cost (C. Canandaigua)

Scenario	Aggregate Transport/ Disposal Cost	% Change from Current System
Current System	$89,644	0%
Vertical Expansion, Maintain 100% Importation	$239,051	167%
Vertical Expansion, 50% Importation	$239,051	167%
Vertical Expansion, County Waste Only	$239,051	167%
Close Landfill/Build Transfer Station (SM) [1]	$372,466	315%
Close Landfill/Build Transfer Station (HA) [1]	$372,466	315%
Close Landfill/Build Transfer Station (MS) [1]	$372,466	315%
Close Landfill/Build Transfer Station (Distant) [1]	$372,466	315%
Close Landfill w/o Transfer Station (SM) [1]	$372,466	315%
Close Landfill w/o Transfer Station (HA) [1]	$372,466	315%
Close Landfill w/o Transfer Station (MS) [1]	$372,466	315%
Close Landfill w/o Transfer Station (Distant) [1]	$372,466	315%

[1]Fees include the all-in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

In conclusion, each municipality is presented with a detailed breakdown of the financial impacts to their internal operations, to their households currently receiving curbside refuse and recycling collection service, to their businesses and institutions, and for disposal of their biosolids (if necessary). Impact summaries for each community are contained in Appendix I.

6.4 COUNTY BUDGET IMPACT

The Ontario County Board of Supervisors (BOS) has taken proactive measures to ensure that the decision regarding the operation of the landfill after the current contract concludes in 2028 does not simultaneously eliminate the County-led efforts to increase sustainable practices and waste diversion by employees and residents.[3] The four staff within the Department of Sustainability and Solid Waste Management are tasked with implementing the County's Local Solid Waste Management Plan[4] (Plan) by working with municipalities, businesses, and organizations to ensure the sustainability of the local environment. The Plan emphasized branding and public outreach efforts to make the public aware of the centralized web site for recycling, composting, and other waste reduction information, while also expanding public education efforts, and focusing on increasing participation in alternative waste collection events.

The vast majority of staff time is devoted to waste diversion and outreach strategies, per the Solid Waste Management Plan, which will remain necessary in 2029 and beyond. Of the four full time employees (FTE), it is self-reported that 20% of one staff person's time is spent on landfill-related activities, predominantly administrative oversite-related communication with landfill management and coordinating with New York State entities on landfill-related permits and reports.

The Department of Sustainability and Solid Waste Management budget has historically been fully covered by the Casella lease payment per the OMLA. The BOS decided to gradually move the department's budget to General Fund (tax levy) starting in 2023. In the 2023 Budget, costs associated with the four FTEs were

[3] https://www.ontariocountyny.gov/1700/Sustainability-Solid-Waste-Management.

[4] *Ontario County Final Solid Waste Management Plan*, March 2014.

moved to General Fund. In the 2024 Budget, one third of the remaining budget (program and outreach costs) was General Fund supported; the BOS anticipates having two thirds of the department budget funded by General Fund in 2025; and, the BOS plans for the full department budget to be supported by General Fund in 2026. This reflects the BOS opinion that the department is focused on waste reduction and diversion and educational opportunities throughout the county per the County's Solid Waste Management Plan, not landfill management.

As a result of the budgeting shift, the Casella contribution per the OMLA is increasingly going to the Sustainability Reserve Fund. In 2016 the BOS authorized the fund, via Resolution 587-2016, to implementation of the adopted Ontario County Solid Waste Management Plan or other such project, as determined by the Board of Supervisors, that furthers the goal of increased waste reduction, recycling, reuse, and/or diversion of solid waste from being placed in a landfill.[5] Since its creation, the reserve has been used to support countywide and municipal-specific diversion opportunities such as the capital investment in the construction of a vermiculture organics processing facility in the City of Geneva and the distribution of large single sort recycling bins to residents in the City of Canandaigua. If the landfill were to close, or a different contract were implemented with a future landfill operator, this reserve fund would be impacted.

The Department's Strategic Plan details an aspirational vision for 2045 in which "Ontario County will be a leader in creating a community where managing resources responsibly is second nature. We will cultivate a reputation for being on the forefront of cutting-edge solutions that reduce waste effectively, create synergies in product creation and waste reuse opportunities, and motivate residents and businesses to adopt responsible behaviors that benefit the individual, community, economy and environment". In order to move towards making this vision a reality the Department was tasked with advancing the following Key Focus Areas:

1. **Equal and Adequate Access** - Focuses on ensuring residents and municipalities have equitable opportunities and facilities for solid waste management.
2. **Funding to Advance Department Goals** – Focuses on advocating for and securing funding opportunities from various sources to move the Department and Strategic Plan forward.
3. **Legislation and Policies Aligned with County's Plans for Solid Waste Management** – Focuses on laws and policies that support current and future solid waste management priorities.
4. **Customized Education and Communications** – Focuses on improving and expanding audience-specific communications about solid waste management practices and updates.

6.5 OTHER IMPACTS

While financial impacts are important, there are other impacts associated with landfill closure.

6.5.1 ODOR

Although the Ontario County landfill has a landfill gas management system, the facility has experienced challenges with odor control over the years. Most recently, in late 2019 and early 2020 there were over 40 instances of the landfill exceeding ambient air quality standards in violation of its permit and State law, and it received notices of violation for excessive hydrogen sulfide (H2S) odor. H2S generation is associated with the disposal and degradation of gypsum drywall, a common constituent in construction and demolition debris, in landfills.

[5] *2024 Ontario County Budget*, Resolution No. 604-2023, October 26, 2023.

As a form of pollution, odor dissipates relatively quickly as the distance from the landfill increases. However, for residents and businesses in close proximity, or potentially further downwind, odors can be a confounding, recurring problem.

Unfortunately, it is difficult to quantify the impact of landfill odors. One possible record of odors at the landfill is the historical log of odor-related complaints made about the landfill, shown in Table 6-11. Odors were significantly reported in 2019 and 2020 when facility was found to be in violation of air quality standards, but have dropped off since. Complaints made to NYSDEC are passed on to the County, and residents are also encouraged to report complaints via the Casella hotline/ website, which also notifies DEC and the County on a timely basis. Complaints made via this process are responded to in order to verify the presence of odor, determine sources, and resolve the issue.

Table 6-11 Reported Odor Complaints to Ontario County

Year	# of Odor Complaints
2019	503
2020	186
2021	31
2022	9
2023	19
2024	8

The Project Team acknowledges that odor complaints are not necessarily a reliable indicator of odor problems, because many or even most individuals noticing odor from the landfill likely do not take the time to register a formal complaint. Further, we are aware that complaints can also be filed via one private organization has posted a website (itstinks.org) specifically for the purpose of taking complaints about the Ontario County landfill and two other landfills in the region. Because the data collected via that medium is not verified or followed up on, no data has been requested from that organization.

6.5.2 Semi-Trailer Traffic

The semi trailers hauling trash from out of county to the County landfill are a visible and quantifiable source of local impacts of the landfill, averaging between 75 and 80 per day based on Casella annual scale data. These are trucks that only traverse County roads because their destination is the landfill. If the landfill closes and the County converts to a waste export system, this truck traffic would no longer enter the County (or would be significantly less). However, it is important to note that closure of the County landfill would not eliminate this truck traffic, only shift the traffic to other thruways and roads as the wastes travel elsewhere for disposal at other landfills in and possibly beyond New York State.

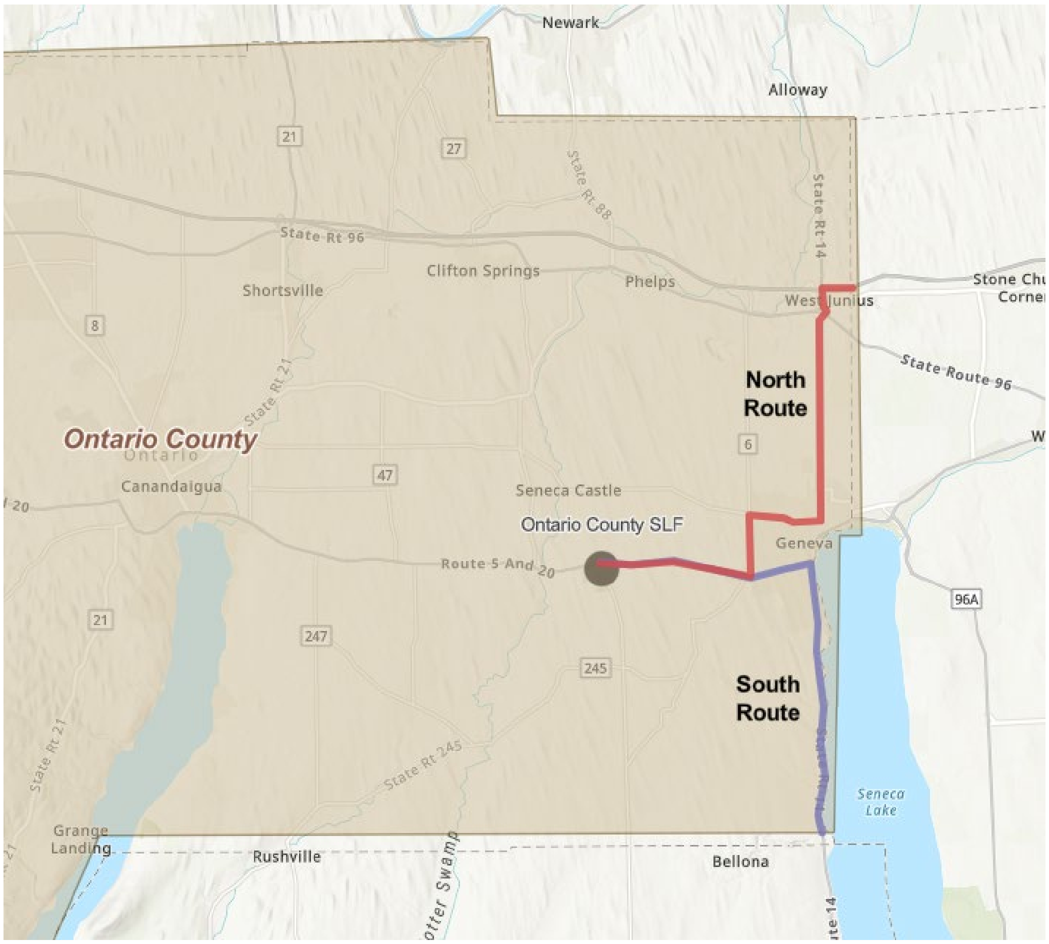
There are several measurable impacts in Ontario County from the steady flow of wastes imported to the landfill:

- **Roadway wear-and-tear**, as measured by heavy-duty truck vehicle-miles-traveled (VMT) on roads within the County.
- **Air emissions**, which include particulate matter (PM) from diesel engines, as well as some greenhouse gasses, and
- **Roadway safety**, which may be marginally diminished by the increased potential for ordinary drivers to encounter transfer trailers on roads within the County.

6. IMPACTS TO WASTE GENERATORS

Figure 6-1 shows a map of the eastern side of the County, with the primary northern and southern approaches from out-of-county to the Ontario County landfill highlighted. Transfer loads traveling westward across the NY State Thruway (I-90) can exit at NY State Road 14 (NY 14) and proceed south towards the landfill, traversing 26.4 round trip miles of roadway in Ontario County. Those approaching across I-86 from the south travel northbound on NY 14 and traverse 24.0 round trip miles of County roads. Both approaches could go directly through the City of Geneva, although bypasses are available.

Figure 6-1 Approaches for Imported Wastes to the Ontario County Landfill



Based on these approaches, and on reported tonnage of imported wastes received at the landfill, it is possible to quantify a range of impacts on Ontario County from this traffic. Each reported county (or state) of origin was mapped to either the northern or southern approach based on a GIS analysis of most efficient travel time. Imported tonnage was assumed to be loaded on full transfer trailers holding 28 tons of waste. Based on these data, Table 6-12 calculates the roadway and truck-related impact. As shown, in 2023 over 24,000 transfer trailers (equivalent to more than 450 per week) made deliveries to the landfill, traversing over 605,000 miles on roadways inside the County border.

Table 6-12 Transfer Trailer Vehicle Miles Traveled (Based on 2023 Tonnage)

Origin	Route	Total Tons	Transfer Loads	Transfer Miles
Rockland, NY	South	188,075	6,717	161,207
Monroe, NY	North	69,977	2,499	65,978
Dutchess, NY	South	57,124	2,040	48,963
Columbia, NY	North	33,303	1,189	31,400
Chemung, NY	South	30,506	1,089	26,148
Wayne, NY	North	25,210	900	23,769
Cayuga, NY	North	24,727	883	23,314
Yates, NY	South	23,885	853	20,473
Albany, NY	North	22,678	810	21,382
Saratoga, NY	North	19,963	713	18,822
Onondaga, NY	North	17,005	607	16,034
Tompkins, NY	South	15,761	563	13,510
Connecticut	South	157	6	135
Pennsylvania	South	66	2	57
Massachusetts	North	74,157	2,648	69,920
New Hampshire	North	155	6	146
Rhode Island	North	7	0	7
Vermont	North	539	19	508
Additional Tons from North	North	28,789	1,028	27,144
Additional Tons from South	South	42,651	1,523	36,558
Total		**674,736**	**24,098**	**605,475**

The County Engineering Department was queried about any potential impact on these approach roads that might be attributable to directly to waste transfer trailers. First, it was noted that approaches to the landfill are mostly on Federal highways and state roads, neither of which are maintained by the County. There are two county roads that incur heavy truck traffic:

- CR 6 has some sections that get over 10,000 vehicles per day, with 15 percent of that load being truck traffic. Many trucks in addition to waste transfer trailers are using the CR 6 corridor, especially with several commercial operations (stone quarry, steel plants, agriculture, etc) in that area. CR 6 was built and has been maintained to handle truck traffic, so it is difficult to ascertain if transfer trailers have had an inordinate impact.
- CR 49, however, was cited as needing more frequent maintenance than normal due to solid waste truck impacts. In 2011, the County reconstructed about 1,000 feet of CR 49 at a cost of $500,000. This work is estimated to cost approximately $1,000,000 in 2024 dollars. In 2021, the County spent approximately $32,000 for a surface treatment and another $25,000 in 2023 to shore up a small section south of where the 2011 project stopped. The County further reports being due for a repaving of the road in the next 5-7 years at a cost of approximately $30,000. Adding those numbers up and dividing by a 20-year time frame, CR 49 has cost the County approximately $54,000 a year to maintain the road surface.

Based on these responses from the County Engineering Department, it is possible that reducing transfer trailers could marginally reduce roadway maintenance on CR 49.

The above vehicle-miles-traveled data can be used to estimate the air emissions generated by transferred wastes within Ontario County. The US EPA posts a GHG Emission Factors Hub to provide organizations with a regularly updated and easy-to-use set of default emission factors for organizational greenhouse gas reporting. Diesel fuel generates 10.21 kg per gallon of CO_2, according to this source. Using an average of 6.5 miles per gallon of diesel by a semi, transfer trailers contribute roughly 1,300 tons of carbon dioxide to the air in Ontario County. As noted earlier in this section, were the landfill to close, these air emissions would not be eliminated. Rather, they would be deflected to other regions of New York State as the transported wastes went to a new landfill or WTE for final disposal.

6.5.3 Other Impacts

The Project Team acknowledges that there will be other impacts associated with whether to expand or close the landfill. Landfills impact the local community in other areas, including:

- **Road Closures Due to Low Visibility**: It was reported to the Project Team by a County Supervisor that traffic on State Highway 5 has experienced low visibility conditions from time to time due to windblown dust and debris coming off the landfill. No data were available on the incidence of this phenomenon, nor road closures that may have been caused by such low visibility
- **Local Employment**: Closure of the landfill will directly impact current employees at this facility. However, landfills are known to have relatively limited economic impacts compared to other materials management facilities and programs. The US EPA performed a national Recycling Economic Information (REI) report[6] that found the recycling industry generates significantly more economic activity compared to landfilling. This study reported that on a national average, there are 1.17 jobs, $65,230 wages and $9,420 tax revenues attributable, for every 1,000 (US) tons of recyclables collected and recycled (unadjusted from 2020). Conversely, the County landfill processes over 700,000 tons of waste per year with a relatively small number of employees and equipment. Even accounting for the indirect and induced effects, landfilling has a far lower economic impact than recycling.
- **Litter**: Studies have shown that the incidence of roadway litter is higher in the vicinity of landfills, ostensibly from the heightened garbage truck traffic. Although garbage trucks are designed to contain wastes, it is possible for materials to lodge in hoppers and be windblown onto roadsides. Litter can be freed during the tipping process and dislodged as empty trucks get up to speed once on roadways. Note that no attempt was made within the scope of this study to compare the incidence of litter near and away from the landfill.
- **Agriculture**: Landfills are designed to contain leachate, and must engage in groundwater monitoring to ensure the integrity of the liner systems. While these steps should minimize impact on agriculture, there is a non-zero risk to nearby agricultural businesses of landfill-driven pollution. From a business standpoint, consumers are hypothesized to prefer fruits and vegetables grown with no nearby landfill, although no data is offered for this hypothesis.
- **Tourism**: Similarly, tourists seeking to enjoy a vacation in the countryside to enjoy their natural surroundings are more likely to avoid any location with a large landfill in close proximity.

[6] *Recycling Economic Information (REI) Report*, November 2020, US Environmental Protection Agency.

7. CONCLUSIONS & NEXT STEPS

7.1 CONCLUSIONS

The scope of work that was identified by the Ontario County Board of Supervisors for this project was comprehensive and ambitious. The Project Team assembled for this work required expertise in waste generation and composition; state and federal solid waste rules and regulations; solid waste facility development in general, with specific expertise in landfills; recycling industry dynamics; MRF economics; residential, commercial and roll-off collection; waste transfer and transportation economics; organics processing and management; emerging landfill site development projects; and broad-based knowledge of the Northeastern and MidAtlantic regional waste market dynamics.

The bullets below are paraphrased from the scope of work for this project and summarize the range of objectives identified by the Board of Supervisors. It is the Project Team's sincere hope that these topics were addressed and that the quantitative and qualitative information provided herein, as well as in the presentations and workshops conducted during the Project, as contained in Appendices E and F, have informed the Board and other County stakeholders in their desire to create meaningful materials management policies in Ontario County going forward.

- Economic Impact Analysis of Landfill Closure
    - On residents and businesses
    - On private and municipal haulers
    - Benefits to County and residents of the OMLA
    - On recycling/diversion (assuming closure of MRF)
- Impacts of Continued Landfill Operation
    - Reduced tonnage limits
    - Remaining airspace
    - Viability for private operation
- Economic Impacts of Alternatives to Landfill
    - Development of new Waste-to-Energy
    - Creation of a centralized commercial transfer station
    - Development of new landfill site
    - Organics diversion

It should be noted that, due to the expansiveness of the topics included in this report, and due to the forward-facing nature of the analysis and projections, some of the estimates used and the resulting forecasts may prove to be less accurate than desired. In the experience of the Project Team, this is the nature of forecasting outcomes in complex systems. Although the Project Team believes that the reasoning and basis of the report findings are reliable for use by County decision makers, the following (in no particular order) are some (but not all) factors that could drive different outcomes in practice from the assumptions of projections made here:

- **Actual Availability of Regional Landfill Capacity**: As shown in this report, nearby landfills are demonstrated to have many years of useful life collectively. However, the possible closure of Seneca Meadows Landfill, by far the largest of these landfills, could single-handedly disrupt the waste disposal market more dramatically than anticipated. If Seneca Meadows closes, thousands of tons of imported wastes per day will have to be diverted to other disposal outlets. It is possible that a Seneca Meadows closure triggers heightened escalation of disposal tip fees in New York and even extending to more distant markets in Pennsylvania, Ohio, and beyond. Should such disruption occur, the projected cost of waste export in Ontario County could be higher than predicted.

- **Prevailing Tip Fees for Long-term Supply Commitments**: Related to the bullet above, there has always been a gap between posted landfill gate rates, and the actual disposal tip fees that could be secured with a long-term commitment of waste, with the latter being consistently lower. Given the potential closure of Seneca Meadows, and based on anecdotal information provided to the Project Team and to County staff about prevailing regional tip fees, the Project Team retained tip fees at or close to posted gate rates for this analysis. Hopefully this decision (using relatively higher gate rate tip fees) minimizes the risk of vastly underestimating actual tip fees in the region. But it is still possible that even the landfill gate rates used in this report end up being low as the market changes between now and 2029.
- **Change in Law**: As of the date of this report, five states have passed legislation and are in the process of implementing Extended Producer Responsibility (EPR) systems to increase recycling rates for packaging such as cardboard, bottles, cans, tubs, cartons and even other container and non-container packaging. EPR is a policy approach that assigns producers responsibility for recycling end-of-life products and packaging. While EPR program details vary widely, a primary selling point of such programs is that the financial responsibility and possibly the operational responsibility for end-of-life management (i.e., recycling) of packaging shifts from the public sector (like Town, City and Village governments) to the consumer packaged goods (CPG) industry, who are the producers of the packaging. In an EPR system, producers are required to provide funding and/or services that assist in managing covered products (i.e., cardboard, bottles, cans, cups, lids, trays, clamshells, etc.,) after they have been used and are ready for discard by the consumer. New York State has introduced EPR legislation, although there can be no assurance an EPR system is established. But this, and other changes in law, could significantly alter the projected costs in this report.
- **Competitiveness of Prospective Landfill Operators in the Regional Waste Market**: In the experience of the Project Team, if the private sector market for waste management services is healthy, there is no reason why multiple private sector entities would not be able and willing to operate the County landfill post 2028, and also to take on renovations and operations at the MRF. A healthy market implies that there are multiple capable companies that have the interest and wherewithal to take on landfill and MRF operations. The business strategy and financial case may differ for different companies, but in a healthy market, the County should expect to get reasonable proposals should it opt to permit an expansion at the existing landfill site. Conversely, if market competition has dried up over the past decades due to industry consolidation and other factors, there may be less competition to serve the County. The less competitive the regional waste service market is, the more likely the projections in this report underestimate future system cost.
- **Legal Interpretation of OMLA Terms**: As described in Section 3, there are several paragraphs in the OMLA associated with the level of long-term responsibility to be retained by Casella after termination that may ultimately require litigation to unravel the ultimate interpretation.
- **Expediency of Expanding the Landfill**: All current assumptions point to the landfill reaching permitted capacity (i.e., at least within 100,000 tons) just as the OMLA is expiring in 2028. While the Project Team cannot predict the exact time required to seek and obtain approval from DEC for revising the permit and expanding the landfill, all indications are that time is of the essence. Even if the County were to decide tomorrow to expand the landfill, there is legitimate risk that it would not be possible to complete all steps needed to secure the permit and undertake the new capacity planning, procurement of an owner's engineer, procurement of a contract operator, and required construction to maintain continuous operations at the landfill. Even if landfill expansion is ultimately pursued, a gap in availability of the landfill for Ontario County wastes would be expected to cause a spike in the cost of disposal in the short term, which is not factored into any projections in this report.

- **Other Unforeseen Issues**: Finally, a host of other unforeseen developments could impair the accuracy of projections in this report. Examples include: an economic downturn that reduces waste generation across the region for an extended period; site-specific environmental control failures at the landfill; and potentially a host of other issues.

In conclusion, the development of financial and other projections for the various alternatives included in this report are informative and reasonable for planning purposes, but may prove to over or underestimate certain outcomes as things develop.

7.2 NEXT STEPS FOR ONTARIO COUNTY

There is only one alternative evaluated in this report that requires little to no action by the County regarding waste disposal: should the County opt not to expand the landfill, and also decline to facilitate development of a commercial transfer station to convert to a waste export. This outcome would result in the County's complete exit from the business of waste disposal, although it may opt to engage in maintaining a local MRF.

The County's primary focus under this outcome would be to wind down the OMLA. However, maintaining a local MRF, and implementation of all alternatives associated with expanding the landfill or developing a commercial transfer station will require the County to undergo one or several procurements.

7.2.1 County Procurement Process

The County's procurement process requires development of technical specifications for the materials management services being sought. Such services could include: landfill expansion and operation, MRF retrofit and operation, commercial transfer station construction and operation, owner's engineering support, and development of any organics processing capability or alternative land use projects at the County landfill. The technical specifications should describe the one or several acceptable outcomes being sought.

The County would then need to develop and issue a Request for Proposals (RFP) for the services identified in the technical specifications. Development of the RFP will require significant lead time, as the County should plan to consult with multiple parties to support the process, including outside legal counsel regarding indemnifications, liabilities and compliance, etc.; a procurement advisor; and a solid waste engineer capable of assisting with the technical specifications. These members of the procurement team may need to be hired through their own RFP process.

Before the RFP is developed, it is recommended that the County expend some time and effort engaging with potential bidders for whatever solution is ultimately sought. The Project Team is under the impression that the New York State market for waste services could use some new players, and several of the potential alternatives in this report – especially if they allow some continued waste import and/or use of the MRF – could be attractive to new market entrants under certain circumstances. The County could consider making contact with other potential service providers beyond those that are known to be operating regionally, to introduce the opportunities of participating in the procurement process.

Once the RFP is developed, it is no longer possible to engage potential vendors, and the following steps must be incorporated into the process:

- **Duration of Listing**: The RFP should be posted for 30-45 days at minimum. However, more complex RFPs, such as those seeking complex solutions, requiring proposers to line up financing and/or their own engineering support, or otherwise having potential to invite significant questions and clarifications, the posting time could be 60 to 90 days.
- **Pre-bid Meeting and Site Visit**: For any landfill expansion, or for the development of a commercial transfer station to serve the County, vendors should be invited to a pre-bid site visit, which could be

held in conjunction with the pre-bid meeting. The pre-bid meeting and/or site visit could be mandatory or voluntary.

- **Questions**: All RFPs typically allow a round of questions from prospective vendors. Ontario County's procurement process requires questions to be due at least two weeks prior to the RFP due date. However, depending on the complexity of the services being sought, some procurements incorporate two cycles of question and answer, and this may be advisable for services involving landfill expansion and leasing.
- **Initial Evaluation**: Evaluation criteria will have to be pre-determined as part of the RFP so that respondents understand how their proposals will be scored. Ontario County will require an evaluation committee of five people to lead the evaluation, although the County may wish to retain legal and subject matter experts
- **Interviews**: The County may opt to interview the top two or three proposers to obtain clarification on details and to further inform the evaluation committee.
- **BAFO**: The County may opt to invite finalists to submit a best and final offer (BAFO) to include clarification of any details, and also to refine pricing.
- **Award**: The above steps ideally should lead to the ability of the County to make a final selection and award for the services within the RFP timeframe. However, the Board is not required to award a contract at the conclusion of this process.
- **Contract Execution**: The final step involves negotiating the contract with the selected operator, although ideally a draft contract should be included as part of the RFP package. The contract must be reviewed internally and pass through the County's Planning & Environmental Quality (PEQ) Committee, the Ways & Means (W&M) Committee, and a Board of Supervisors public meeting in order to receive approval.

7.2.2 Landfill Expansion

Should the County opt to expand the landfill, this process should be started immediately. In addition to the general RFP process to select an operator, described above, the following steps are specific to landfill expansion and may also require the County to retain engineers or other advisors.

- **Pre-permitting Studies**, including a hydrogeologic investigation, may be required depending on the development option selected.
- **SEQR**: The County will need to complete the State Environmental Quality Review (SEQR) process.
- **Permits**: Both State and Federal permits for landfill operation will need to be obtained. As mentioned in this report, permit approval for landfill expansion could take two or more years.
- **NYSDEC Approvals**: Once the permit is obtained, it will be necessary, at the appropriate time, to obtain NYSDEC approval for cell construction and for utilizing the newly constructed landfill cell or capacity.

7.2.3 Convert to Waste Export System

It is not clear at this point how or whether the County would get involved in the development of a countywide commercial transfer station. However, it would likely be necessary for County stakeholders to guarantee all County MSW and processible C&D debris be delivered to this facility, so that a private company could develop a workable business case to invest in and operate the facility with a reasonable assurance that there would be sufficient waste to amortize the investment. It was beyond the scope of this engagement to determine the best ownership configuration for a commercial transfer station.

7.2.4 LANDFILL CLOSURE

If the County opts not to expand the landfill, the pursuant to the OMLA, Casella is required to close and provide long-term care (LTC) at the facility. The closure process includes:

- Obtaining NYSDEC approval of closure construction activities.
- Capping the remaining area of the Phase III active landfill.
- Providing the following Post Closure monitoring activities:
  - Leachate Treatment,
  - Gas Collection & Monitoring,
  - Groundwater Monitoring,
  - Settlement Monitoring.

Note that the landfill gas to energy (LFGTE) facility contract with BP is separate from the OMLA and will continue pursuant to terms of that contract.

7.2.5 OTHER FACILITIES AND SITE DEVELOPMENT OPTIONS

Any of the other facility development options, including a central anaerobic digestor or commercial compost operation at the County landfill, solar or wind energy projects, or battery storage on the landfill parcel, would require similar procurement and consideration.

7.3 CONSULTANT OBSERVATIONS

Throughout this engagement, it has become clear to the Project Team that there are varying stakeholder opinions on the best direction for the future of materials management in Ontario County. The Project Team was specifically not asked to offer any recommendations, but to focus on compiling background information and providing thoughtful analysis. Nonetheless, Project Team lead MSW Consultants is compelled to offer some thoughts about the current situation which we hope lead to constructive decision making among the BOS.

- **Think of Materials Management as a Utility Service**: Just like water, wastewater and electricity, every household and business in the County generates wastes and recyclables and needs materials management service. Similarly, just as water and wastewater utilities require a water treatment plant with distribution and collection lines; and electric utilities require a large plant for electricity generation followed by a transmission network; so does solid waste require disposal/processing facilities and collection vehicles to deliver their utility service. Yet, water, wastewater and electricity operate in a utility model to achieve scale and efficiency and to regulate the monopoly; while materials management in Ontario County operates in fragmented fashion with inefficient, overlapping service providers and no scale to speak of. The Project Team suggests that the County could improve the function of a true materials management system by considering some or all of the alternatives below (which were not included in the scope for this project):
  - *Exclusive Collection is More Efficient*: As described in Section 4, the County's largely subscription-based collection system is overlapping, inefficient and expensive. While converting to exclusive collection is unpopular with haulers and even residents, this change would undoubtedly reign in collection costs across the County.
  - *Scale and Standardization of Service Levels Reduces Unit Cost*: Related to the previous bullet, standardization across municipalities in Ontario County would improve service delivery and enable scaling to combinations of cities, towns and villages. Waste and recycling collection can be provided more efficiently at scale.
  - *Direct Revenue Mechanisms Are Critical*: Finally, just like other utility customers pay rates to cover the utility system fixed costs, plus meter-based variable costs dependent on usage, so do materials

management services have both fixed and variable costs that should optimally be recovered through a direct revenue mechanism from the customers receiving service. Waste management user fees can piggy back on an existing utility bill, or incorporated as a flat fee on the property tax bills. Sullivan County has implemented such a Solid Waste Fee, and their ordinance indicates that this was authorized by New York State County Law § 226-b and 266 and New York State Real Property Tax Law § 1501. This revenue mechanism is considered an access fee and is not a tax. Ontario County may wish to investigate this revenue structure.

- **Recognize the Threat of Waste Disposal Scarcity**: It is important to realize the leverage that landfill owners will have as landfill capacity dwindles. For communities that do not own landfill capacity, this scarcity represents continuous upward pressure on disposal pricing. For communities that own a disposal facility, such facility will provide an insurance policy of sorts to ever-escalating disposal cost. Tightening landfill capacity in the Northeast does not appear to be slowing down any time soon.
- **Keep the County's Options Open**: Following from the prior bullet, regardless of the decision to expand or not, the County would be wise to keep its long-term options open. For example:
  - *Immediately Initiate Landfill Expansion Steps*: Even if Ontario County opts not to expand the landfill, a strong argument can be made to permit an expansion strictly as a contingency measure. Private waste management companies have been known to sit on permitted landfill parcels for years before development, waiting for disposal market forces to push prices to a satisfactory level to justify development. Although there will be some expense associated with this strategy that won't get covered by tip fee revenue for many years, it may be worth investigating.
  - *Verify Flow Control to a Commercial Transfer Station*: Recognizing that a countywide commercial transfer station would require some kind of public-private partnership involving investment in developing the new facility, it will be critical to guarantee the ultimate facility owner/operator a steady and predictable flow of wastes. If the County goes this direction, it will be important to establish a means of securing waste flow through the transfer station (unless the County imposes a Solid Waste Fee and can implement economic flow control).
  - *Prepare Municipalities to Facilitate Development of Smaller Transfer Stations*: If the County ultimately decides to exit the disposal business by closing the landfill and not facilitating a new commercial transfer station, the Project Team predicts that local haulers will begin approaching municipalities in hopes of finding a site for smaller transfer stations. The County may want to prepare for this likelihood.
  - *Investigate Small Scale Organics Processing*: As shown in Appendices A and B, there appears to be an opportunity to establish limited organics diversion. However, it would be much easier developing such a facility with a direct revenue mechanism to cover the cost of the facility – see the first bullet.
- **Immediately Engage Prospective Vendors In and Out of the Region**: As mentioned during the procurement process section, the Project Team recommends quickly reaching out to possible bidders. Beyond regional waste management companies, it is worth noting that several international waste management companies have made inroads into the US waste market in other regions of the country. Spanish company FCC Environmental has been very successful building vertically integrated systems in several markets from coast to coast. JJ's Waste & Recycling is an Australian company that has established business in Florida and Texas. There are also still small domestic solid waste facility operating companies in surrounding states that might be capable of providing landfill and MRF operations. The County may consider engaging these entities in an effort to attract additional competition to the regional market.

- **Get Expert Assistance Along the Way**: As a final note, there are experienced engineers, consultants, and attorneys who directly support municipal sector organizations in these efforts. The Project Team recommends that the County utilize qualified, independent advisors to support its decisions and initiatives going forward.

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APPENDIX A

CENTRALIZED DIGESTER FEASIBILTY STUDY

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CENTRALIZED DIGESTER FEASIBILTY STUDY
ONTARIO COUNTY LANDFILL

PREPARED FOR:

ONTARIO COUNTY, NY
JULY 2024

J&L CONSULTING

Executive Summary

The United States is among the world's top 10 food wasters. Americans threw away about a pound of food per person per day in 2017, totaling around 40 million tons per year (TPY). This represents between 30 and 40 percent of the nation's food supply. Californians alone throw away nearly 6 million tons of food waste every year, about 18 percent of all materials that end up in the state's 300 landfills, where it eventually decomposes and releases the potent greenhouse gas (GHG) methane into the atmosphere.

There is a national trend to reposition biogas-producing assets into renewable fuel production facilities. Biogas is typically used to produce thermal energy, electricity, or is sometimes just flared. With Renewable Identification Numbers (RINs), California Low Carbon Fuel Standard (LCFS) credits, Oregon Clean Fuel Program (CFP) credits, and rapidly developing voluntary carbon markets, interest in converting biogas to renewable natural gas (RNG) and injecting into a commercial natural gas pipeline is at an all-time high.

Anaerobic digestion is an excellent solution for extracting value from this organic waste, while additionally producing biofuels and soil amendment, reducing greenhouse gas emissions in the process. Digester technologies have been commercially available for decades; however, widespread installation and utilization of these systems until recently has been limited.

The primary driver behind many of these projects is monetization of the environmental attributes of the RNG produced. Generating RINs and LCFS credits combined with the commodity value of the natural gas can lead to very attractive payback periods, often less than 3 years. Depending on the feedstock used to generate RNG, values can range from $9 to $80 per MMBtu.

Since August 2022, the Inflation Reduction Act has unlocked the opportunity for companies to take advantage of large capital savings through unprecedented tax incentives. Wastewater projects including central digesters that have a renewable energy component, such as producing biogas, qualify for these programs. Companies who take advantage of this program can benefit from an expedited return on the initial investment while enhancing corporate sustainability.

The residential collection of household wastes within Ontario County is predominately done via conventional curbside subscription service by private haulers whom are not currently equipped to manage SSO. Furthermore, according to the estimates derived from According to the estimates derived from MSW Consultant's prior waste characterization study, food waste comprises ~19% of the MSW stream within Ontario County (~ 11,000 tons/year).

Commercial food waste is also generated within the County by producers including numerous breweries, wineries, and several food manufacturers (e.g., canning, pasta, sauces). The management of food wastes/SSO at a central digester located at the Ontario County Landfill will be challenging in the absence of cost effective management and collection methods. Capital costs range from about $10M for a 10,000 ton/year facility to about $50M for a 190,000 ton/year plant.

Contents

Introduction

J&L Consulting was retained by MSW Consultants to conduct a feasibility study for a centralized anaerobic digester (AD) facility at the Ontario County Landfill located in Seneca, New York which would use livestock manure and mixed organic wastes in proximity to the landfill. A number of social and environmental benefits for the local area would be realized with the implementation of an AD facility including organics diversion from the landfill, reduced solid waste management costs following closure of the landfill, reduction in nutrient runoff and destruction of pathogens in the manure and organic wastes prior to land application.

Food waste diversion from landfills is seen with increasing importance and represents an important tool to extend landfill capacity, reduce methane (CH4) emissions and create clean energy technology development. Food discards have a large potential energy content (up to 2% of U.S. energy consumption). Adding food waste to raw manure increases the biogas production of an anaerobic digester, as does adding plant matter.

Anaerobic digestion (AD) technology was initially developed to process municipal wastewater sludge and has since been used to process a wide variety of feedstocks outside of the wastewater industry. AD technologies and processes can vary widely depending on feedstock composition and quantity and the purpose of the facility. Experience with one process condition and feedstock does not directly translate to other process conditions and feedstocks. The most common purposes of AD are to reduce organic strength, volatile solids, and pathogen levels in the feedstock and to generate biogas fuel for electricity and heat production.

Food waste (also referred to as Source Separated Organics (SSO)) going into a wet AD system needs to be size reduced or slurry that can be pumped into a tanker truck. An increasingly common way to preprocess food waste is to run it through a depackaging unit. A depackager utilizes applied force (e.g., hammers, shears, extrusion) to produce a slurry, and to remove packaged foods from their containers and boxes. This equipment is located at the AD facility or at a food waste transfer station, which processes the food waste and then transports it by tanker truck to a digester. Other preprocessing options include food waste pulpers installed at commercial and institutional kitchens, and a garbage disposal-like system that discharges slurried food waste into a storage tank at the generator's site.

To improve the methane gas yield from the AD of animal manure, organic wastes can be added in a process known as co-digestion. Generally, the manure is high in nutrient and other waste may be nutrient deficient but high in biodegradable organic content. Therefore, the use of co-substrates can improve biogas yields due to positive synergisms established in the digestion medium and the supply of missing nutrients by the co-substrates. In addition, there are economic advantages derived from the sharing of equipment and economy of scale. The use of a co-substrate can also help to establish the required moisture contents of the digester feed. Other advantages are the easier handling of mixed wastes and the use of common access facilities. However, drawbacks also exist, mainly due to transportation costs and problems arising from the lack of harmonization of different policies governing the waste generators.

Significant effort has been dedicated in recent years to finding ways of improving the performance of anaerobic digesters treating different wastes, especially organic wastes, because of the link between successful pretreatments and improved methane gas yields. The economic aspects of digestion enhancement are very important to any commercial facility.

The residential collection of household wastes in Ontario County is predominately done via conventional curbside subscription service by private haulers whom are not currently equipped to manage SSO. Commercial food waste is also generated within the County by producers including numerous breweries, wineries, and several food manufacturers (e.g., canning, pasta, sauces). As is the case with SSO nationwide, the management of food wastes/SSO at central digester will be challenging in the absence of cost effective management and collection methods.

According to the estimates derived from MSW Consultant's prior waste characterization study, food waste comprises ~19% of the MSW stream within Ontario County (~ 11,000 tons/year). A large portion of this volume could conceivably be diverted from landfilling.

Approximately 14 commercial facilities within Ontario County that are subjected to the New York State Department of Environmental Conservation's (NYSDEC) food waste regulations which require that all producers of organic waste who generate more than two tons per week of food waste must use a disposal outlet other than a sanitary landfill (e.g., digester, compost facility, pig farm). Given that there are currently a limited number of commercial composting operations in the Greater Rochester Area, the SSO from these locations is taken to Onondaga County's composting facility in Syracuse, NY.

A number of Towns within the County maintain a resident drop off center. Wastes from these facilities are also transported to the Landfill predominately by the individual Towns. The collection of SSO from these locations would ideally provide the means for conveying organics to a central digester (as is the currently the case for the Town of Pittsford, NY as part of a pilot project with Natural Upcycling) or alternatively to a composting operation.

Given that a number of Towns (and a couple of Villages) within Ontario County do currently have customer drop off centers for the management of solid wastes, these sites could be easily be augmented to include a SSO drop off location as is currently in practice in the Town of Seneca Falls, Town of Victor, and Town of Pittsford. The most practical approach would be the use of multiple large toters (that would be collected on a routine basis) and could be conveyed to a central composting operation at the Ontario County Landfill.

In the towns noted above, 55 gallon buckets are commonly used by residents for conveying food scraps from their homes to the drop sites. The buckets can easily be dumped into a toter. It would be up to the individual user to maintain good practices not only regarding the items that are placed in an SSO container but also for maintaining the buckets in between disposal activities, etc.

Approximately eight times more biogas can be generated from a system digesting silage than manure since manure has been stripped of some of its organic matter energy potential by the cow that produced it. Baking wastes, waste grease, food waste, and brewer's grain silage have been proven to be the ideal substances with the highest potential biogas yields.

Significant regulatory and legislative requirements motivate dairy farm managers and owners to consider implementing improved manure management techniques. Given the current low value of milk, dairy operations have few options for funding these new programs. Current manure management practices will continue until changes are necessary, most likely by regulatory requirements.

Currently, typical manure management practices involve land application when equipment can safely access the fields. The result of this practice and the density of cows in the Town of Seneca (surrounding the Ontario County Landfill) could result in the distribution of nutrients to unintended soils, which is a great concern to several groups including farmers and regulatory agencies. Odor and over-the-road transport of manure in farm manure application equipment are also important issues that present significant local and community concerns.

The demand for pollution control equipment and services by large CAFOs is rapidly growing. Despite significant progress in reducing water pollution, serious water quality problems persist throughout the country. The Clean Water Act identified polluted runoff as the most important remaining source of water pollution and provided for a coordinated effort to reduce polluted runoff from a variety of sources. In 1999, the United States Department of Agriculture ("USDA") and the Environmental Protection Agency ("EPA") announced a Unified National Strategy for CAFOs aimed at reducing the impact of these operations on water pollution and public health. Previous voluntary plans to manage the impact of these operation's wastes became compulsory and new farmers are expected to be required to show that they are properly managing the animal wastes produced from their facilities under their permits pursuant to the National Pollutant Discharge Elimination System of the EPA.

AD technology can help CAFOs meet these regulatory demands by reducing the pollution from animal waste. Using AD technology, the facilities extract biogas from animal waste. This biogas is composed primarily of methane, a greenhouse gas that has 20 times greater environmental impact than carbon dioxide. Additionally, AD technology (a) reduces the amount of nitrogen and phosphates that can potentially impact water quality, and (b) eliminates the pathogens that exist in animal waste. Valuable by-products of this AD process include environmentally safer fertilizers, bedding materials, and garden mulches.

Pretreatment Process

Prior to entering the AD process, feedstocks typically require some pretreatment so the digestion reaction can occur faster and more completely to enhance methane gas yields. Selected pretreatment technologies that are of relevance include mechanical, chemical, and/or physical and thermal.

Site Synergies

In all likelihood, BP, in the capacity as owners of the Ontario Co Landfill gas rights, will (if they have not already) be transitioning from a gas to electric operation to a facility which purifies landfill gas into Renewable Natural Gas (RNG) for injection into a local natural gas distribution pipeline similar to the operation that is now in place at the Seneca Meadows Landfill. The opportunity to piggy back on this utility connection would be highly advantageous to a centralized anaerobic digester located at the landfill.

In the event that a RNG co-connection with BP is not feasible other options are very likely available for connecting either into National Fuel's Empire North Pipeline (which crosses Rte. 20 ½ mile west of the landfill) as well as a possible connection to the south of the site as a possible co-connection with the Lawnhurst Digester facility.

The Ontario County Landfill facility currently includes several existing infrastructure components and regulatory approvals that are favorable for the possible development of an on-site central digester facility including but not limited to existing:

- Site access roads
- Weigh scale
- Title V air permit
- NYS Part 360 solid waste permit
- Gas flare(s) – excess/unwanted digester gas
- Material Recovery Facility(s)
- RNG pipeline access (via BP LFG operations)

In addition to these advantages, the site is in close proximity to a number of large dairy farms, several of whom have expressed interest in utilizing a centralized digester for the treatment of their manure, a key ingredient necessary for the digestion of food waste. The proximity of these farms to the site coupled with local farmer interest in a central digester is another compelling benefit.

Farms surrounding the landfill that would benefit from the use of a central digester have freestall barns. The six local dairy operations that could supply manure have roughly 4,000 mature cows. Other feedstocks that could be available for processing within a centralized digester at the Ontario County Landfill include commercial food processing wastes, institutional food waste, restaurant food wastes and fats/oils/greases.

Incentives

The primary drivers of RNG development are federal and state incentives and policies to "decarbonize" the power generation and transportation sectors. On a federal level, the primary economic incentive for RNG development is the Renewable Fuel Standard (RFS) such that a certain volume of renewable fuel is required in order to displace or reduce the amount of transportation fossil fuels. Under the RFS, annual mandated volumes are established for four fuel categories including biomass-based fuel, cellulosic biofuel, advanced biofuel, and total renewable fuel all of which generate Renewable Identification Numbers (RINs) that are used to meet volume obligations. The goal of the RFS is to reach 36B gallons of renewable fuel in the "fuel pool" by 2022.

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Since August 2022, The Inflation Reduction Act has unlocked the opportunity for companies to take advantage of large capital savings through unprecedented tax incentives. Wastewater projects including central digesters that have a renewable energy component, such as producing biogas, qualify for these programs. Companies who take advantage of this program can benefit from an expedited return on the initial investment while enhancing corporate sustainability.

The premise behind RNG is that all natural gas regardless of its composition, emits the same amount of greenhouse gases (GHG) when combusted. However, since the climate impact of methane is greater than that of carbon dioxide, reductions in waste related methane emissions yields a reduction in GHGs when the resulting bio-gas is combusted in place of natural gas wherein the bio-gas would otherwise be emitted or flared to the atmosphere.

The RIN (Renewable Identification Numbers) system allows EPA to monitor compliance with the Renewable Fuel Standard (RFS), a federal program that requires transportation fuels sold in the United States to contain minimum volumes of renewable fuels. The EPA created the RIN system to track RFS compliance of obligated parties.

A RIN is a 38-character number assigned to each physical gallon of renewable fuel produced or imported. Obligated parties that produce or own RINs must register with EPA and comply with RIN record and reporting guidelines on a quarterly basis. RIN generation and transaction data is available from the EPA Moderated Transaction System.

In this case, RINs are also offsets wherein a seller of compressed natural gas or liquefied natural gas, for example must include in their portfolio, a certain supply of "green renewable gas". Under the current RIN program, RINs are available for the sale of qualified RNG until the end of 2022. It is very unclear at this juncture as to whether this initiative will be extended past this deadline.

The RIN market, similar to RECs, is also based on supply and demand and in this case is a direct function of the type of RIN being generated. For example, RINs that are generated from cellulosic biomass through the conversion of animal waste to energy are worth more (under what is known as a "D" rating system) than RNG produced from food waste. This is also the case with RNG produced from landfill gas.

Under the RFS, RNG from agriculture and separated MSW digesters provides the highest RIN value. RNG from waste digesters qualifies as an advanced biofuel which is not as valuable as cellulosic biofuels.

In addition to the temporary availability of RINs, select producers are able to also recognize additional state revenues through the sale of RNG into California to meet a state mandate which handsomely rewards producers for the "wheeling" of RNG into the state. Similar to the principles associated with RECs, the California market is a compliance program.

RINs are separated once the RNG is dispensed as CNG/LNG, again for use as a transportation fuel and then they are traded and ultimately retired by refiners and renewable fuel exporters.

The EPA has determined that each type of RIN must be compared to another through a comparison of its fuel value per unit volume to that of pure liquid ethanol fuel. Each gallon of ethanol has about 77,000 Btu (or 0.077 MMBTU), which is thus the definition of a RIN.

Low Carbon Fuel Standard (LCFS)

Originally adopted in 2009 and readapted in 2015, the Low Carbon Fuel Standard (LCFS) requires refineries and fuel suppliers in California to reduce the carbon intensity of its transportation fuels ten percent by 2020. Transportation fuels must meet an annual carbon intensity target that decreases each year. Refineries and fuel suppliers can meet these targets by mixing in fuels with lower carbon intensity (CI) values into their overall supply or by purchasing credits. The EPA resets the Renewable Volume Obligation (RVO) which establishes the number of RINs each obligated party must retire for the following calendar year.

The CI value is determined by adding all of the carbon emitted as part of the supply chain for the fuel including all the carbon that was dispersed as part of exploration, mining, collection, production, transportation, distribution, dispensing and burning the fuel where applicable. The units tied to a CI score are grams of CO2 equivalent emitted per megajoule of energy (or gCO_2e/MJ). The CI is then adjusted by an energy economy rate to arrive at a final adjusted CI score that quantifies the emissions from the use of alternative fuel compared to the conventional fuel that is displaced.

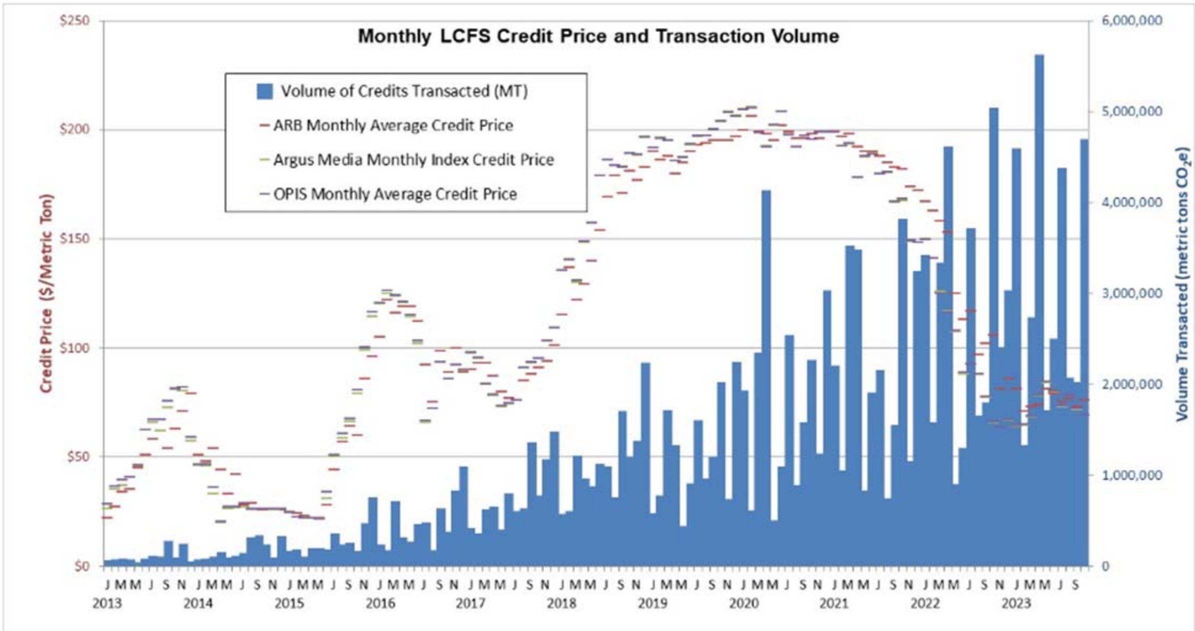
Fuels with CI below the target level (based on a lifecycle analysis) are able to generate credits. Under the rule, RNG is considered a low carbon fuel and can generate credits (see table below for the CI values used to calculate the credits).

Gas Source	**Carbon Intensity (g CO2e/MJ)**
California Natural Gas	78.37
Landfill Gas	46.42
Dairy Digester Gas	-276.24
WWTP	19.34
MSW	- 22.93

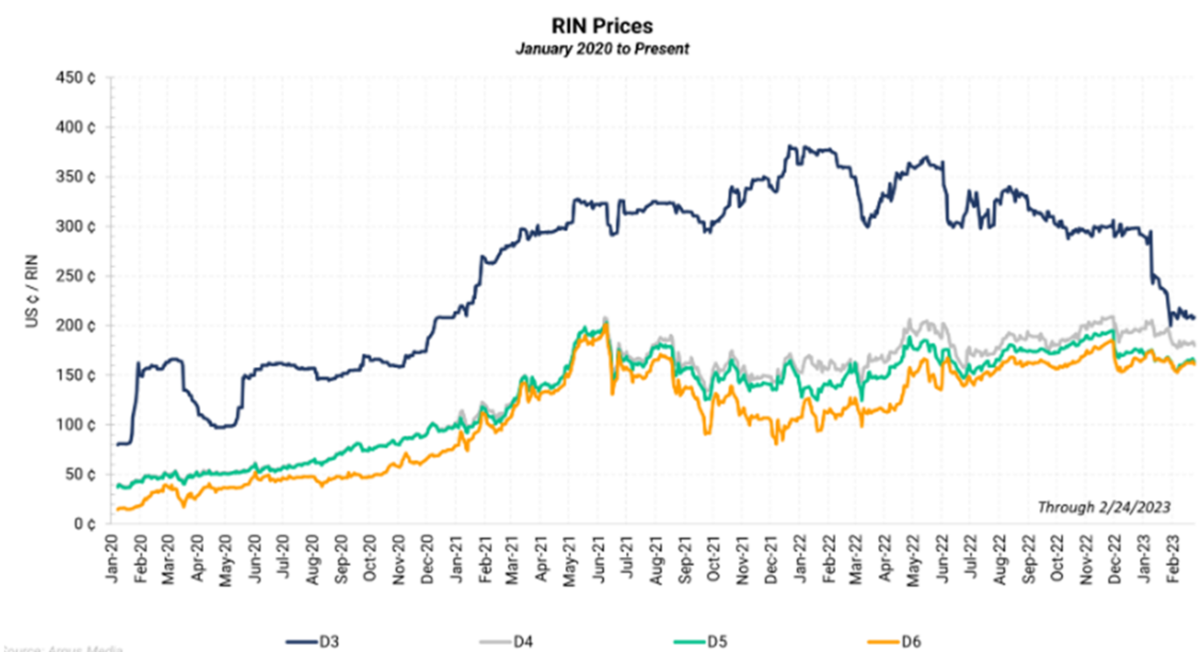
Note that while traditional natural gas also generates credits under the LCFS, RNG can generate substantially more credits per unit of gas. Very low CI scores are possible since they offset use of conventional fuels while mitigating methane releases from a present baseline emission.

Carbon intensity factors for projects which are hybrids to the above would need to work with the California Air Resources Board (CARB) as further described below in order to establish a project specific CI and pathway in the event RNG sales were made into the California LCFS market from the proposed project.

Revenues obtained from the LCFS are an addition to revenues that would be obtained from RIN sales summarized above. As seen from the chart below, the value or price of LCFS credit is a function of the market conditions and which has fluctuated considerably since hitting a peak price in late 2020 as the volume of total transacted credits also continues to increase.



Similarly and in contrast, as shown below, the value of the RINs started to rise sharply during 2020 which has flattened out and has since been declining.



In order to participate in the LCFS process, an upgraded biogas production facility must register and submit a request via the Alternative Fuels Portal. As part of this process all required information and documentation are required for a specified fuel pathway based on the CI classification provided above. Following staff review of the application materials, the applicant is notified to review and verify the accuracy of the suggested CI which is followed by an attestation process (e.g., letter) to accept the final CI value.

Once accepted there is then a process for classification of the fuel pathway either as a Tier 1 Pathway (simple) or Tier 2 Pathway (complex). The Tier 1 Pathway is for conventionally produced, first-generation fuels such as biomethane from landfills and digesters, biodiesel, ethanol, etc. whereas the Tier 2 path is for next generation fuels such as cellulosic alcohols, hydrogen, etc.

A Tier 1 pathway application would typically include 24 months of operational data such as the quantity of biogas captured and withdrawn along with the methane content before and after upgrading and all process energy used for biogas cleanup. Additional required information includes pipeline transmission distance including maximum distance from the source to the fueling station.

Manure Management

A digester's reliance on manure can be challenging and as such there are considerations that need to be addressed notably with respect to farmer manure supply agreements that will: 1) ensure steady manure volumes are available on a consistent basis, 2) ensuring that nutrient concentrations are maintained, and 3) and perhaps more importantly is a clear pathway for the management of the large volumes of liquid that is generated from a digester.

Farmers tend to be rather particular about surrendering their "good" manure due concerns about the potential for lost nutrients and costs for replacements on their fields (used to grow crops) in addition to farmers having limits as to when and how much can be spread on their fields. In addition to these potential challenges farmers would rather not have "foreign" nutrients applied to their fields. The acceptance of bio-solids at a digester facility can lead to potential challenges associated with nutrient management especially considering the recently heightened scrutiny surrounding PFAS compounds.

In addition to the need for ensuring the proper management (and disposal) of digester liquids, there is also a need for managing the digested solids that will be generated as a steady on going volume. These solids are commonly returned to farmers and used as animal bedding however farmers do also tend to be particular about the materials used for bedding to ensure compatibility with their manure management systems with high sand and grid tending to cause some the bigger problems.

It should be noted that digested solids can easily be blended to wood chips and/or saw dust and made into compost as a final management solution for these materials.

Capital Costs

The capital cost requirements associated with the development, procurement, and construction of a centralized digester are significant especially considering the ancillary equipment and infrastructure that is necessary to support the operation (e.g., gas cleaning system, crushing/depackaging, pasteurization, tankage, receiving station, etc.).

The following case studies are provided for off-farm commercial digesters as a means to provide an indication of the varying costs for developing and constructing these types of facilities.

Case Studies

Rhode Island BioEnergy Facility – Johnston, Rhode Island

An anaerobic digester in Johnston, Rhode Island opened in August 2017 but closed shortly after due to mechanical issues. The facility was reopened in 2018 and has the capacity to process up to 249 tons of organics each day up to 100,000 tons per year. The biogas generated is used to produce up to 3.2 MW of electrical output. Orbit Energy Rhode Island, which is co-owned by Blue Sphere and Entropy Investment Management initially developed the project which was purchased by Anaergia in 2021. The $18.9 million digester accepts shipments from grocery stores, schools and food manufacturers.

Fremont Regional Digester – Fremont, Michigan

Now owned by Generate Capital, the Fremont Regional Digester started operations in December 2020 and currently accepts upwards of 165,000 tons/year of farm, animal, food processing, and consumer food waste. The cost to complete the facility was $22M which includes a 2.85 MW engine.

BioEnergy Devco – Jessup, Maryland

BioEnergy DevCo's new food waste AD facility in Jessup (MD) is co-located with the Maryland Food Center, one of the largest wholesale produce terminals on the East Coast. The plant has capacity to recycle 110,000 tons of organics annually to produce renewable natural gas (a fossil gas equivalent) for energy and 16,575 tons of soil amendment for agricultural and other land use. Feedstocks accepted include all types of food waste, FOG, and industrial food and beverage processing residuals.

Liquid wastes are pumped directly into a storage tank. Solids are unloaded onto an enclosed tip floor and then pushed with a loader into a feeder pit that contains two large hoppers. The hoppers are equipped with triple augers that crush the feedstocks, including packaging, and move them to a depackaging unit. After biogas conditioning, the renewable natural gas is injected into the Baltimore Gas & Electric pipeline. The total cost of the facility was reported to be on the order of $50M.

Napoleon Biogas – Harrison, Ohio

Owned by CH4 Biogas, the facility is located directly across from a Campbell's soup plant in Harrison Township, OH, has capacity to digest 450 tons of mixed waste organic material a day, diverting it from local landfills. The facility went on line in January 2014 and cost approximately $10M. Waste from the Campbell's plant as well as area food processors, waste recyclers and local dairy farms is accepted at the facility. While the majority of organic material comes to the plant in a liquid form, the facility receives and processes other produce such as apples, oranges, onions, watermelon, cabbage, coconuts, potatoes, sweet corn and other seasonal produce. Biogas from the digester fuels a 2.8 MW engine which is used at the Campbell plant.

All incoming wastes will be pasteurized prior to anaerobic digestion. Post-digestion liquids will be dewatered, and the separated solids will be used as a soil amendment on regional farms.

Quantum Biopower – Southington, Connecticut

The Quantaum Digester originally went on line in 2018 after receiving both local and state approval and handles up to 140 tons as is located at the site of closed town landfill facility. A large part of the incoming volume consists of packaged food and beverage material which resulted in the need for adding a depackaging component to the facility. Quantum has contracted with a number of supermarkets, banquet halls, hotel kitchens and schools. One of the biggest suppliers of food waste to the facility is Yale University. Furthermore, Quantum initially anticipated that incoming packaged material would comprise 30% of the inbound stream which has been closer to 70%.

The original facility costs were on the order of $14M prior to the addition of the 25,000 ft3 depackaging operation. Biogas from the digester is used to fuel a 1.2MW electric generator and the output is sold to the host utility.

St. Bernard, Ohio (greater Cincinnati)

Synthica, backed by an investment from Goldman Sachs, is currently constructing a 190,000 ton/year central digester in St. Bernard, Ohio and will be predominately be accepting food waste from local manufacturers within the greater Cincinnati region. The $50M facility includes a depackaging system for plastic, paper, and metal packaged food and beverage waste and is expected to begin commercial operation in Q4 2024. The company is also in the process of developing similar projects in San Antonio and Houston. Biogas from the project will be purified into RNG and injected into the regional distribution system.

Conclusions

For the purposes of this evaluation it is assumed that Ontario County would not be in a position to fund the considerable investment that would be necessary in order to develop, design, and install a centralized digester at the Ontario County Landfill. The ideal arrangement for this type of facility would be one in which the County were able to attract a third party development company whom similar to Casella would lease the necessary property and related infrastructure for a project of this type. Furthermore, the County could possibly invoke a lease agreement that would afford the County with opportunities to participate in the upside sharing of RINs, tax credits, tip fees, incoming volume, etc.

Companies that would likely have interest in development and ownership of a centralized digester at the Ontario County Landfill include but are not limited to:

- Vanguard Renewables (Blackstone company)
- BP
- Shell (Nature Energy)
- Generate Upcycle
- Natural Upcycling
- Waste Management
- Bright Mark
- Anaergia
- Synthica

The County may wish to consider initially soliciting an Expression of Interest or Request For Information that would allow the County to gauge interest in the possible development of a centralized digester with the possibility of issuing a formal Request For Proposals. The County would be able to recognize revenues associated with leasing land and potentially assets (e.g., buildings, scales, etc.).

Another potential benefit associated with a centralized digester at the landfill relates to the management of solids (and liquids) that would be generated from the facility. The digested solids could easily be disposed within the landfill (in the event that the landfill were to continue operations beyond 2027) or alternatively be used as animal bedding or be composted in the event that a composting operation were to be developed at the site. Conversely, liquids generated from the facility could and should be returned to local farms and used a nutrient addition for farm fields. Some of the liquid substrate could also be used as a composting additive.

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APPENDIX B

COMPOSTING OPERATION PRELIMINARY FEASIBILITY STUDY

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FEASIBILITY STUDY
COMPOSTING OPERATION
ONTARIO COUNTY LANDFILL

PREPARED FOR:

ONTARIO COUNTY, NY
JULY 2024

J&L CONSULTING

EXECUTIVE SUMMARY

Considering over 25% of the US solid waste stream is typically made up of organics and decomposable materials such as paper and cardboard, organic waste composting represents a relatively simple to implement and generally cost effective, approach to waste management that also has significant environmental and social benefits. It could thus be better utilized and promoted as an integral strategy for improved waste management.

Three different types of composting techniques are examined in this report including:

1) Windrowing
2) Static Pile
3) In Vessel

Any one of these practices is possible for development and implementation at the Ontario County Landfill with windrowing being the least costly to implement and operate. A number of synergies exist relative to the existing County infrastructure located on the landfill property including material recovery buildings, weigh scales, access roads, etc. In addition, there will undoubtedly be a need for a significant amount of nutrient rich soil as part of the final cover (e.g., vegetative layer) requirements that will be put in place leading up and following the closure of the landfill.

While there is demand for composting in the area, the regional organics recovery infrastructure has not grown in proportion to this demand. This preliminary feasibility study examines the opportunity for developing an organics composting facility at the Ontario County Landfill located in Seneca, New York which includes estimates and associated with the initial capital and annual operating costs.

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INTRODUCTION

J&L Consulting was retained by MSW Consultants to develop a preliminary feasibility study associated with the development of a composting operation at the Ontario County Landfill including capital and operating costs.

While addressing a sizeable proportion of the solid waste produced, composting also reduces costs and the production of greenhouse gases (GHGs) (e.g., methane, NO_x, CO_2) through the diversion from landfills or incineration activities. Moreover, composting can provide local employment opportunities and produces an end-product that can be used to provide a valuable fertilizing resource.

Three types of composting techniques are outlined in this report including:

1) Windrowing
2) Static Pile
3) In Vessel

Any one of these practices is possible for development and implementation at the Ontario County Landfill with windrowing being the least costly to implement and operate. A number of synergies exist relative to the existing County infrastructure located on the landfill property including material recovery buildings, weigh scales, access roads, etc. In addition, there will undoubtedly be a need for a significant amount of nutrient rich soil as part of the final cover (e.g., vegetative layer) requirements that will be put in place leading up and following the closure of the landfill.

1 Core Principles of Composting

Composting is a managed, aerobic (requiring oxygen) process in which microorganisms decompose organic materials (e.g., leaves, manure, food scraps) yielding carbon dioxide gas (CO_2), heat, water and a stable soil-like product called humus or compost. In general, finished compost is highly regarded for its ability to improve soils and enhance plant growth and can reduce erosion, disease and weed germination while enhancing the nutrient and water retention capacity and overall productivity of soil. Though not normally marketed as fertilizer, compost does add valuable nutrients to soil. Even low grade, poorly sorted composts could be useful as a landfill cover component providing the necessary organic (top soil) materials that will be required as part of the closure of the Ontario County Landfill.

The biological process involved in composting typically occurs for 10 to 30+ days. Understanding the biological principles of composting enables a composting operation to control and optimize the process and in doing so, effectively destruct pathogens, seeds and weeds, manage odors, vermin, etc., and ensure the production of a quality end-product.

This is best be achieved by implementing a systematic and well-planned operation that includes quality controls and protocols as described herein.

1.1 Composting Benefits

- Increases overall waste diversion from final disposal (>50%)
- Produces a valuable soil amendment – important for sustainable agriculture
- Will lead to reduced GHG emissions, such as the reduction of methane from landfills and avoidance of transporting organic wastes over long distances
- Flexible for implementation under different scenarios and operating levels from simple to high tech
- Can be started with low capital and operating costs
- Potential to create a revenue stream (e.g., land lease payments to Ontario County).

1.2 Composting Constraints

- Inadequate attention to the biological process requirements can hinder composting success, produce excessive odors, attract vermin and lead to inadequate pathogen and weed suppression
- Poor feedstock which yields low quality finished compost, for example, includes high amounts of plastic or metal fragments (e.g., cutlery).

1.3 Composting Basics

Composting is a process carried out primarily by microorganisms that decompose organic materials such as Source Separated Organics (SSO). The main types of organism that are active during composting are bacteria, actinomycetes and fungi. Other organisms such as nematodes, protozoa and micro-arthropods also contribute to material breakdown.

Bacteria are the smallest living organisms and represent 80-90% of the microbes in a compost pile, which produce enzymes to break down organic matter. Actinomycetes (pronounced “ak-tin-oh-mahy-seetes”) create the “earthy smell” associated with compost or soil and degrade cellulose, lignin, chitin, and proteins including bark and paper and are further important during compost curing. These microorganisms look like grey spider webs in the compost. Fungi includes molds and yeasts and can break down tough organic matter including materials, which are dry, acidic, or low in nitrogen. Bacteria are numerous during the mesophilic phases when temperatures are highest, while most fungi thrive in the outer layer of compost. Lastly, protozoa and rotifers (contained in compost water droplets) play a relatively minor role in decomposition but will consume both fungi and organics.

All microbes need carbon to fuel their metabolism whereas nitrogen is important to produce the enzymes used in the decay process. Composting will occur through aerobic decomposition if enough oxygen is present throughout the bulk of the pile to support the reproduction of aerobic organisms. If the percentage of oxygen in part, or all, of the pile is insufficient, then the process will become anaerobic supporting a different community of microbes.

In order to minimize odors, the composting process must be carefully managed, largely through controlling the temperature and with sufficient aeration to promote aerobic decomposition. Temperature is one of the primary indicators of microbial activity and can reach up to 70^{o}C in the hot 'thermophilic' phase of the composting cycle. A high temperature is required to kill most weeds, seeds, and pathogens within the decomposing material however too high a temperature (>70^{o}C) will effectively stop the composting process. Temperature needs to be regularly monitored as it will indicate when the composting material should be turned and when the composting process is near completion and the curing phase should begin.

The control of the carbon to nitrogen (C:N) balance of the composting material is also important with a 25:1 to 30:1 C:N ratio ideal to help ensure rapid decomposition of the waste materials. C:N ratios below 20:1 tend to generate foul odors while extremely high C:N ratios simply increase the composting time.

Moisture is an essential element to both dissipate heat, and transport critical nutrients. Moisture content will vary depending on particle size and the physical characteristics of the feedstock materials with the preferred moisture content being between 50-60%. A low moisture content (<40%) will slow the composting process whereas excessive moisture (>65%) will restrict air movement, lead to anaerobic conditions and will produce significant leachates.

During the composting cycle the volume of the composting material will be reduced by approximately 25-50%. During this process, the mix of raw materials becomes more uniform with less biological activity while the color of the compost at this stage turns from brown to black.

1.4 Composting Methods

There are a variety of composting methods commonly employed across the world ranging from the most common heap and windrow composting systems, to slightly more sophisticated windrow designs to encourage improved aeration and protection from weather elements. In addition, more advanced composting solutions are available such as containerized systems with automated mechanical augers. Generally, the more sophisticated the system the shorter the composting cycle will be, but in parallel the costs for implementing the system may be higher, either due to the need to construct more infrastructure or the initial capital cost of the equipment required.

The composting options presented below are considered applicable for use under different scenarios based upon, but not limited to, the amount of generated organic material available land, labor resources and climatic conditions. Relevant considerations for each composting option are provided below:

1. Simple Open Windrow System
    - Lower initial investment and low operating costs
    - Windrows require regular turning
    - Potential for odors and vermin if not well managed
    - Takes up to three months for the composting cycle

2. Static Pile Windrow System
    - Medium initial investment and moderate lower manual operating requirements
    - Composting cycle will be shortened
    - Higher operating costs (e.g., electricity)
    - Less labor costs (e.g., does not require piles to be turned)
    - Better odor and vermin control

3. Containerised Auger Composting System
    - Higher initial investment but potentially lower operating costs
    - Smaller site area required
    - Less labor costs
    - Higher operating costs (e.g., electricity)
    - Better odor and vermin control
    - Shorter composting cycle between 14 - 21 days

1.5 Composting Feedstock ('The Recipe')

To ensure the reduction of contaminating materials such as plastics, glass, metals and hazardous items, collected SSO material should preferably be segregated at the source but should also undergo further sorting after transportation to the site to ensure any contaminants are removed prior to mixing the waste feedstock in the correct proportions for composting.

In order to ensure efficient breakdown of the composting material with low odor production and a high-quality end-product, it is important to ensure that the composting feedstock contains the appropriate mix of organic materials to ensure a well-balanced C:N ratio (25-30:1). Too much carbon will result in a slow composting process whereas too low will result in more nitrogen losses that will produce more odors.

The type of carbon that is present is also important, leaves, grass, and paper for example are mostly cellulosic and easy to digest whereas woody materials contain more lignin and are harder to break down. A good C:N ratio can be achieved by ensuring a well-balanced mix of clean organics and bulk materials that can include food scraps, vegetable and fruit waste, shredded paper and cardboard, garden waste, animal manure and bulking agents such as saw dust and woodchips. These materials provide structure while, keeping a compost pile from collapsing while maintaining pore spaces for air movement. In addition, amendments can be added to provide nutrients and moisture balance.

Moisture is critical to support microbial activity for composting success. Composting typically needs a minimum moisture content of 40% and requires careful consideration due to the high rates of evaporation during composting. Anything less than 40% will slow the composting process while a moisture content of more than 60% will clog air pathways and lead to potential anaerobic conditions and lower temperatures. The final compost product should ideally include 30-40% moisture.

Particle size also plays a key role for efficient composting with 0.5 – 1" being the optimum. A particle that is too large allows heat to escape and can slow composting through decreasing temperature and reduced moisture retention. Too small a particle size can conversely result in air clogging that can lead to unwanted anaerobic conditions.

The pH of the compost material also plays a key role in the process with an optimum range of 6.5 – 8.0 being most suitable for bacterial activity. At a pH below 6.5, fungi will dominate over bacteria and composting can be inhibited. This can be avoided by keeping oxygen levels greater than 5%. At a pH above 8.0, ammonia gas can be generated and microbial populations will begin to steadily decline.

A feedstock mix meeting the ideal C:N ratio range will include the following proportions of waste materials:

- Bulk materials (saw dust, leaves, grass, shredded paper/cardboard) = 50%
- Food scraps = 20%
- Vegetable and fruit waste = 20%
- Animal manure = 10%

Compost curing is a crucial final-step in the overall process. Once composted the material is stable however not completely mature. Curing the compost over a period of time is important to remove potentially phytotoxic compounds such as ammonia and volatile fatty acids which can produce odors. The extent of curing is largely defined by the end use of the product and the availability of storage space for curing. Following curing the compost humus material should be screened to remove large particles and any remaining contaminants can be landfilled.

2 Compost Designs, Operations and Costs

The most common forms of composting include: 1) windrowing, 2) static pile aeration, and 3) in vessel treatment. Example designs including capital and operating cost information are provided below.

A key first step in site planning and development for each composting option will be the calculation of the site capacity that is needed based on the projections of SSO, equipment needs and material handling activities.

Site selection will further depend on a range of factors including the total area available, site access, the distance from source generation, site conditions, proximity to residential development, and other market considerations.

2.1 Windrow Systems

This option is the simplest and most versatile composting system with organic waste materials placed into either long continuous or shorter divided parallel windrows that are regularly turned (based on temperature readings) along their length to mix and aerate the materials until the compost is ready for curing. Turning can be done by using a windrow-turning machine. A site layout example is provided in Figure 1.

2.1.1 Site layout and design

Required resources include equipment storage, a feedstock processing/storage area, a receiving and sorting area, windrow area(s), curing and screening area, distribution and bagging area, and water supply.

Of the three main activities conducted at compost facilities, the approximate space requirement for each is allocated as follows:

1. Receiving/Sorting/Feedstock Mixing 20-30%
2. Processing 55-65%
3. Curing/Screening and Storage 10-20%

In terms of the working areas, a firm and relatively flat processing surface will be necessary. Moderate to well drained soils are satisfactory for some lower intensity composting operations while clay soils will be generally unsuitable or will require special attention to avoid drainage problems. Concrete or asphalt may be beneficial for special activity areas such as the receiving, sorting and feedstock mixing area, but will increase construction costs.

2.1.2 Site drainage

The area used for the windrows should be graded as a slope with the 'fall line' parallel to the windrows to ensure leachates flow to a properly lined leachate retention drain (e.g., tank or lagoon). During operation if pools of leachate or water form on the composting pad they can become anaerobic and pose significant odor or pollution risk. Collected leachate can be reintroduced onto the compost piles.

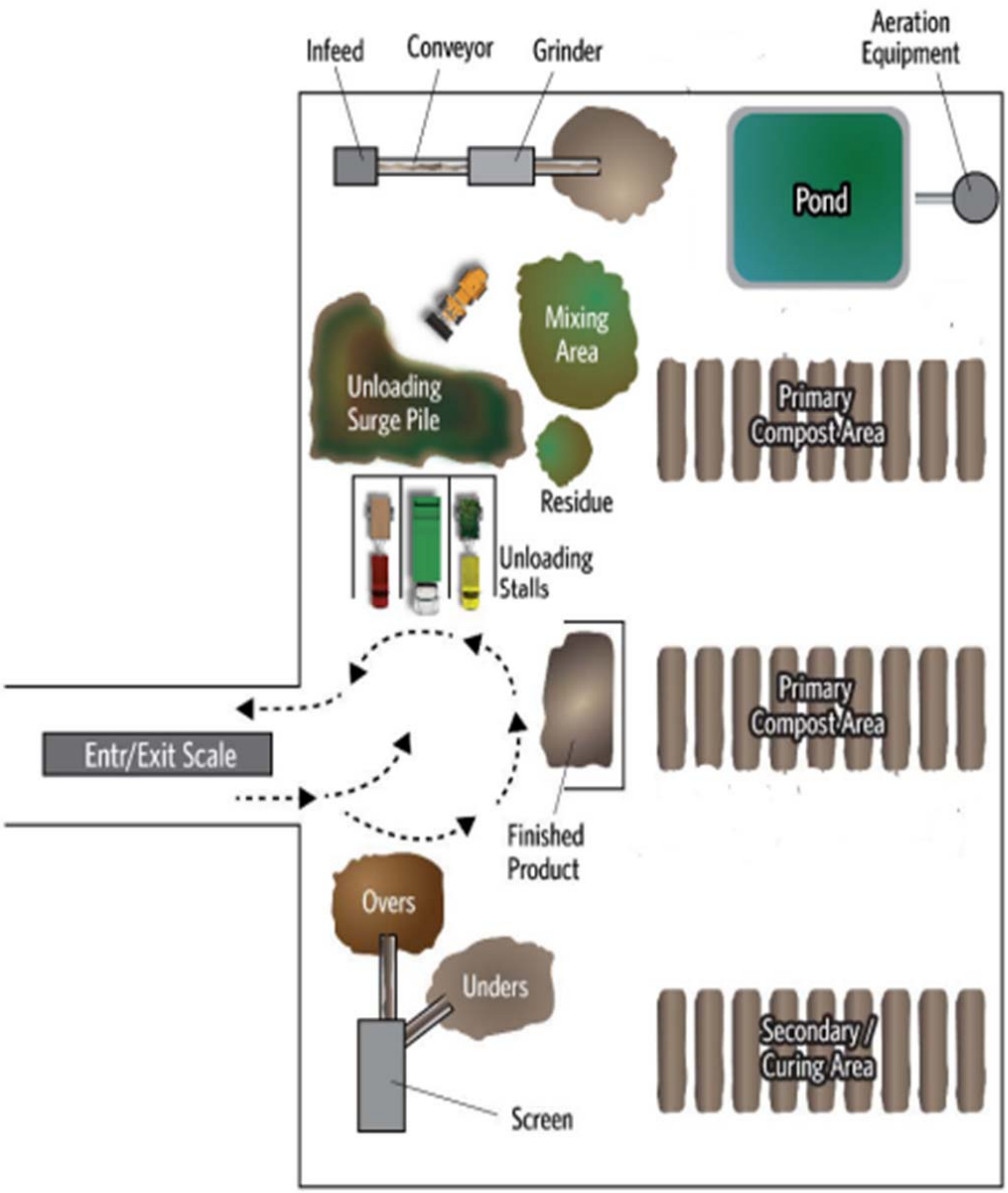

Figure 1 – Conceptual Layout

2.1.3 Pre-processing, vermin, and odor control

The goals of pre-processing include reducing the size of the materials to be composted (e.g., green material and branches), creating a homogenous feedstock mix and ensuring the mix has acceptable C:N ratios and moisture levels. When the SSO arrive at the site they will require the removal of contaminants such as plastics, metals, glass and other hazardous materials . It is critical that this is done well as it will directly influence the quality of the end-product produced.

To reduce particle size a shredder may be used but this should be restricted to relatively dry materials as wet materials will mean that the equipment must be more regularly maintained. Leaf and plant materials, shredded cardboard and paper, saw dust and wood chips are all suitable bulking agents which are then mixed with wet organics such as food scraps and vegetable and fruit wastes. These materials will help to provide an acceptable C:N ratio and further help to facilitate airflow through the compost pile.

The general rule of thumb for a feedstock mix is 2-3 parts bulking agents ("brown") with 1-2 of SSO ("green"). Different mixes should be analyzed prior to the start of composting operations to determine the most appropriate C:N ratios and mix recipe to improve the composting cycle and reduce odors.

In order to prevent the attraction of vermin and stray animals it is important to ensure the sorting and feedstock mixing platform/pad is cleaned at the end of each day. Furthermore, any unprocessed SSO should be stored in sealed containers and not left out in the open.

2.1.4 Compost production and odor control

Once the correct feedstock mix has been achieved this material can be placed in the composting area in windrows. If mechanized windrow turners are to be used the shape of the windrow will depend on the type of machine utilized.

As shown in Figure 3, windrows can be organized as long continuous or shorter broken parallel lines. Each windrow should be turned along its length and the order of turning should be organized so that space is always available at either end of the windrow for the next turning cycle and that the avenues between the windrows are kept clear.

Figure 2 - Windrows

The shape of the windrow encourages aeration through natural convection. Cool air flows up through the bottom of the pile through the hot center and out of the top due to the 'chimney effect'.

Turning of the compost also temporarily aerates the pile and ensures that all materials are located at the hot center, for a period of time where temperatures and microbial activity are highest. Turning should occur when the temperature at the center of the pile reaches 140^{o}F and should occur more frequently in the initial stages of composting (approximately every 5-6 days) and less frequently when the composting rate is slower (every 2-3 weeks). Temperature should be monitored regularly since it is the primary indicator of microbial activity and at the same time, the 'squeeze' method should be conducted to determine moisture levels. If more than a few drops of water can be squeezed out it may be too wet. As previously noted, dry bulking agents can be added to reduce moisture levels. If the compost does not feel moist then some water may be added.

Once the biological activity drops to a low level indicated by the failure of the compost pile to re-heat despite adequate moisture and aeration, the compost is ready for curing. The material should be moved from the windrow zone to the curing and screening zone. It is important to ensure that adequate moisture is uniform through the compost if curing is conducted using static piles.

Once the material is cured, after approximately two weeks, screening of the compost is ideally useful to remove any remaining large particles such as wood chips, twigs and bones prior to the off-site transport of the finished product. This is normally achieved using mesh rotary screens. Finished compost is a dark brown humic material with a fresh, sweet smell that cannot significantly degrade further.

2.1.5 Composting equipment

The types of equipment required for the simple windrow system includes:

- Shovels and rakes
- Wheelbarrows
- Mesh screens
- Hosepipes
- Watering cans
- Bins for disposal of contaminants
- Shredder/screener (optional however recommended)
- Skid steer
- Front end loader

Although composting operations appear to be relatively benign in nature, it is important that a contingency plan be developed to address:

- Equipment issues including corrosion protection
- Fires or spills
- Intake of undesirable materials and feedstock
- Dealing with hazardous materials
- Odor complaints
- Ventilation systems

2.1.6 Staffing

The number of staff will depend on the size of the composting operation and whether operations are conducted by hand or if some activities are mechanized (e.g., windrow turning). The range of staff include:

- General manager
- Operations manager
- Field staff used for sorting incoming materials, feedstock mixing, placement of windrows, turning of windrows, removal of compost for curing, and screening, drainage maintenance, water systems and general housekeeping of the site
- Maintenance personnel
- Record keeper to record incoming waste volumes and compost production rates.

All staff should be adequately trained to understand the basics of composting operations, to operate and maintain equipment, to monitor and sample compost piles, gate management as well as health, safety and security.

2.1.7 Capital & operating costs

The simple windrow composting system should require the lowest initial investment of the three options. This type of operation is very scalable and can be started with smaller volumes and smaller areas which can easily be expanded over time with the addition of new feedstocks, etc. Ample spacing is required for the front end processing of materials as well as for the storage of additives such as woodchips, leaves, sawdust, etc. and also for compost curing.

It is not necessary for all areas of the operation to have an impervious operating surface with the exception of the SSO processing area where there will be the most vehicle and equipment traffic as well as the need for ensure proper surface cleaning on a daily basis. The windrow areas and curing area surfaces can be completed using woodchips and mulch.

Capital costs are estimated and will ultimately depend on material availability and other factors such as site clearing and grading, and labor costs. In addition, facility capital costs for rented or leased equipment differs from equipment that is purchased new which could have a significant impact for both capital and maintenance costs.

For a 3.0 acre composting facility (on County owned land) annually managing up to 6,000 yd^3 of material the costs for the initial investment including some spare capacity is estimated to be:

ITEM	COST
Site Clearing/Grubbing	5,500
Site Grading/Compaction	2,200
Drainage System	4,500
Geotextile	8,700
Compost Pads (woodchip base)	7,800
Prepare SSO Receiving Area	2,300
SSO Receiving Pad (asphalt millings)	24,000
Sinage/Blocks/Fencing	15,000
Equipment	
Skidsteer	22,000
Loader	36,000
Screener	28,000
Shredder	31,000
Misc. Equipment	2,500
Office Trailer	5,000
Permitting/Design	28,000
Contingency	33,375
TOTAL	**$ 255,875**

The shredder and screener are considered enhancements to the composting operation that will reduce contamination introduced into the compost piles and also provide noticeable results in the quality of compost being produced. Shredding has been proven to provide enhancements such as minimizing pile retention times and also leading to a higher quality end product. In addition, costs have been included for the operating equipment that will be necessary to efficiently run the composting operation including at a minimum a skid steer and loader.

As noted above, a woodchip cover is assumed as the media used for development of the base layer for the facility. Other options include the use of gravel or pavement the use of which would increase the development costs for the facility.

The costs associated with site preparation will be a function of the area being considered for development. A site with tree cover and some slopes for example will have higher initial costs (e.g., clearing, grubbing, and grading) than a site that is other which devoid of trees and is on generally flat terrain.

The estimated annual operating costs associated with conventional windrowing are provided below.

ITEM	ANNUAL COST
Labor	
SSO receipt/processing	17,000
Grinding/shredding/mixing	42,000
Movement of SSO to pad	52,000
Movement of compost to curing	30,000
Sceening	25,000
Windrow turning	32,000
Movement of cured compost	35,000
Management	80,000
Contaminant disposal costs	15,000
Bulking agent costs	8,000
Land fees/taxes	50,000
Insurance	30,000
Water	12,000
Lab Testing	15,000
Fuel	52,000
TOTAL	**$495,000**

2.2 Static Pile Aeration

Aerated static pile (ASP) composting, using negative aeration and simple timer motor controls, was developed by the U.S. Department of Agriculture's Beltsville Agricultural Research Center in the 1970s in support of exploring the beneficial uses of sewage sludge. The "Beltsville method" was refined in the 1980s by Dr. Melvin Finstein at Rutgers University, who developed ASPs with positive aeration and a temperature feedback loop to maintain pile temperatures at a constant level. ASP composting has long been used for heavy wet feedstocks like sludges and manures, but it is getting a fresh look as composting facilities are starting to accept feedstocks like food scraps.

The purpose of aeration in composting is three-fold, 1) satisfy the oxygen demand from aerobic decomposition (known as stoichiometric demand), 2) remove excess moisture, and 3) remove excess heat. Of these, the aeration rate to keep a constant temperature by removing excess heat normally governs the aeration requirements of a composting system .

The quantity of air needed to remove moisture varies with the moisture content of the feedstocks, the desired moisture content of the final compost product, and the moisture-carrying capacity of the air stream (known as the specific humidity). Rates of biochemical reactions generally increase exponentially with temperature, but elevated process temperatures in composting quickly inactivate the microorganisms, so temperature becomes rate-limiting. Removing that heat is an important part of aeration. Some heat will be removed from a compost pile in the final solids, and some lost to the environment, but the majority of the heat loss is in the exhaust gases leaving the pile. Oxygen demand for heat removal is several times greater than that needed for biological oxidation or for moisture removal.

Insufficient aeration rates cause pile temperatures to increase due to the inability to provide enough oxygen for heat removal. This creates a tradeoff between the need for larger blowers (which cost more) versus pile temperatures that exceed a desired set point (like 140°F). Since composting does not completely stop until pile temperatures exceed about 165°F, there is some flexibility in system design.

The type of aeration control system used also affects the ability to meet peak aeration demands, as air is only supplied when the blowers are operating. While it is possible to simply leave the blowers on, this practice is not very cost-effective.

The two main controlled variables in ASP feedback systems are temperature and oxygen content. These systems are often linked to the motors controlling the blowers by a variable frequency drive unit, which adjusts the electrical voltage going to the motor, which, in turn, controls fan speed and thus air flow rates.

The benefits of using static pile aeration include:

- Capable of handling wetter than normal compost

- Faster degradation rates
- Easy to maintain system variables (e.g., O_2 and moisture) leading to better temperature controls
- Gradually reduces odors
- Management of large amounts of material in a smaller area

There are a few disadvantages however to using static piles including:

- Electricity requirements
- Additional materials (e.g., more mulch than otherwise)
- Materials must be mixed not layered
- Dries out faster and thus requires careful attention

2.2.1 Site layout and design

This system generally requires less space and area than the requirements necessary for conventional windrowing (where pile turning is required and as outlined above). The site layout would still require a receiving, sorting and feedstock preparation area as well as a curing and screening area.

2.2.2 Site drainage

In a similar fashion as conventional windrowing, the zone used for the windrows should be graded as a slope with the 'fall line' parallel to the windrows to ensure leachates flow to a properly lined leachate retention drain (e.g., tank or lagoon). During operation if pools of leachate or water form on the composting pad they can become anaerobic and pose significant odor or pollution risk. Collected leachate can be reintroduced onto the compost piles.

2.2.3 Pre-processing, vermin and odor control

Also similar to conventional windrowing, the goals of pre-processing include reducing the size of the materials to be composted (e.g., green material and branches), creating a homogenous feedstock mix and ensuring the mix has acceptable C:N ratios and moisture levels. When organics arrive at the site they will require the removal of contaminants such as plastics, metals, glass and other hazardous materials. It is critical that this is done well as it will directly influence the quality of the end-product produced.

To reduce particle size a shredder may be used but this should be restricted to relatively dry materials as wet materials will mean equipment must be more regularly maintained. Leaf and plant materials, shredded cardboard and paper, saw dust and wood chips are all suitable bulking agents which are then mixed with wet organics such as food scraps and vegetable and fruit wastes. These materials will help to provide an acceptable C:N ratio and further help to facilitate airflow through the compost pile.

The general rule of thumb for feedstock mix is 2-3 parts bulking agents with 1-2 parts food scraps and vegetable/fruit wastes. Different mixes should be analyzed prior to starting composting operations to determine the most appropriate C:N ratios and mix structure to improve the composting cycle and reduce production of odors.

In order to prevent the attraction of vermin and stray animals it is important to ensure the sorting and feedstock mixing platform is fully cleaned at the end of each day taking care to remove any food materials that may expel odors. Furthermore, any unprocessed food waste or organics prior to composting should be stored in sealed containers and not left out in the open.

2.2.4 Compost production

Once the correct feedstock mix has been achieved this material can be placed in the in vessel container.

Similarly, windrows can be organized as long continuous or shorter broken parallel lines. Each windrow should be turned along its length and the order of turning should be organized so that space is always available at either end of the windrow for the next turning cycle and that the avenues between the windrows are kept clear.

Temperature readings are a critical operational component in order to assess the timing in which air should be circulated into the windrow piles as well as the point at which the compost can be transferred for final curing.

2.2.5 Composting equipment

Using static pile aeration requires far less operational needs than conventional windrowing. As noted above, air fans (e.g., blowers) are necessary in order to circulate an adequate supply of air into the stationary compost piles.

The types of equipment required for an ASP system includes:

- Shovels and rakes
- Wheelbarrows
- Mesh screens
- Hosepipes
- Watering cans
- Bins for disposal of contaminants
- Shredder/screener (optional however recommended)

- Skid steer
- Front end loader
- Temperature gauges

Although composting operations appear to be relatively benign in nature, it is important that a contingency plan be developed to address:

- Equipment issues including corrosion protection
- Fires or spills
- Intake of undesirable materials and feedstock
- Dealing with hazardous materials
- Odor complaints
- Ventilation systems

2.2.6 Staffing

The number of staff will depend on the size of the composting operation. The range of staff include:

- General manager
- Operations manager
- Field staff used for sorting incoming materials, feedstock mixing, placement of windrows, ASP monitoring, removal of compost for curing, and screening, drainage maintenance, water systems and general housekeeping of the site
- Maintenance personnel
- Record keeper to record incoming waste volumes and compost production rates.

All staff should be adequately trained to understand the basics of composting operations, to operate and maintain equipment, to monitor and sample compost piles, gate management as well as health, safety and security.

2.2.7 Capital and operating costs

The static pile composting system should involve the least labor intensive operation of the three options. Costs are estimated, but these will depend on material availability and other factors such as site clearing and grading and labor costs. This type of operation is also very scalable and can be started with smaller volumes and smaller areas which can easily be expanded over time with the addition of new feedstocks, etc. Ample spacing is required for the front end processing of materials as well as for the storage of additives such as woodchips, leaves, sawdust, etc. and also for compost curing.

Similar to a windrowing operation, it is not necessary for all areas of the operation to have an impervious operating surface with the exception of the SSO processing area where there will be the most vehicle and equipment traffic as well as the need for ensure proper surface cleaning on a daily basis. The windrow areas and curing area surfaces can be completed using woodchips and mulch.

For a 3.0 acre composting facility (on County owned land) annually managing up to 6,000 yd³ of material the costs for the initial investment including some spare capacity is estimated to be:

ITEM	**COST**
Site Clearing/Grubbing	5,500
Site Grading/Compaction	2,200
Drainage System	4,500
Geotextile	8,700
Compost Pads (woodchip base)	7,800
Prepare SSO Receiving Area	2,300
SSO Receiving Pad (asphalt millings)	24,000
Sinage/Blocks/Fencing	15,000
Piping System	16,500
Equipment	
Skidsteer	22,000
Loader	36,000
Screener	28,000
Shredder	31,000
Blowers	22,500
Misc. Equipment	2,500
Office Trailer	5,000
Electrical Upgrades	38,000
Permitting/Design	28,000
Contingency	44,925
TOTAL	**$ 344,425**

The shredder and screener are considered enhancements to the composting operation that will reduce contamination introduced into the compost piles and also provide noticeable results in the quality of compost being produced. Shredding has been proven to provide enhancements such as minimizing pile retention times and also leading to a higher quality end product. In addition, costs have been included for the operating equipment that will be necessary to efficiently run the composting operation including at a minimum a skid steer and loader.

As noted above, a woodchip cover is assumed as the media used for development of the base layer for the facility. Other options include the use of gravel or pavement the use of which would increase the development costs for the facility.

The costs associated with site preparation will be a function of the area being considered for development. A site with tree cover and some slopes for example will have higher initial costs (e.g., clearing, grubbing, and grading) than a site that is other which devoid of trees and is on generally flat terrain.

The estimated annual operating costs associated with static pile aeration are provided below.

ITEM	**ANNUAL COST**
Labor	
SSO receipt/processing	17,000
Grinding/shredding/mixing	35,000
Movement of SSO to pad	23,000
Developing ASPs	45,000
Movement of compost to curing	30,000
Screening	26,000
ASP monitoring	21,000
Movement of cured compost	35,000
Management	80,000
Contaminant disposal costs	15,000
Bulking agent costs	8,000
Land fees	50,000
Insurance	22,000
Electricity	85,000
Water	12,000
Lab Testing	15,000
Fuel	19,000
TOTAL	**$ 538,000**

2.3 In Vessel Compost Systems

This option introduces automated technology in a containerized system that requires less operational space and results in a quicker turnover of the compost product through a continuous composting cycle. In addition, this form of composting is advantageous in areas with extended winter periods and offers the greatest amount of odor controls.

For this option, a conventional shipping container is specially fitted with stainless steel for a longer life and reduced corrosion along with an automated rail auger system. The auger runs across and along the length of the container ensuring complete mixing of the composting materials. Automated control panels further enable multiple mix patterns and programmable timer cycles to suit various specific composting scenarios. Example diagrams of a containerized auger system are provided in Figure 3.

2.3.1 Site layout and design

This system is ideally suited when space is limited and when maximum odor control is required. The site layout would still require a receiving, sorting and mixing feedstock area and a curing and screening area but the area for actual composting would be markedly reduced to one or more containerized systems depending on the amount of material to be composted. A single 20' container can process approximately 0.5 tons per day.

2.3.2 Site drainage

As the containerized system remixes any produced liquids there is no need for any special drainage requirements except those to protect the curing compost at the site.

2.3.3 Pre-processing, vermin and odor control

This option is equipped with a fully automated mixing, aeration and moisture addition system for optimal compost process management and odor control and as a result can tolerate a higher proportion of food scrap material in the feedstock mix. However, this option would require that any woody material used be shredded and materials such as plastic bags should not enter the system to ensure the automated auger system is not damaged or compromised.

Since the container is a sealed unit, vermin control requirements will likely not become an issue other than to ensure that the SSO processing area is keep in good working order.

2.3.4 Compost production

SSO and shredded cardboard, woodchips, or green waste material can be added daily at the loading end of the containerized system. For this system, an automated auger mixes the SSO into the hot compost, which rapidly breaks down as it moves towards the discharge end of the container. Composting of the materials through the vessel typically takes between 14-21 days and is the most rapid cycle of the three options. The compost can be unloaded on a weekly basis and is facilitated by the auger lifting out the compost once the discharge door is opened either into containers or the back of a pick-up truck. This material can then be taken to the curing and screening area.

2.3.5 Composting equipment

By using an insulated containerized system less equipment will be required both in terms of number and type. For example, fewer shovels, rakes, the skid skeet, and wheelbarrows will be required as they will only be used in the sorting and curing process and for final movement of the finished compost.

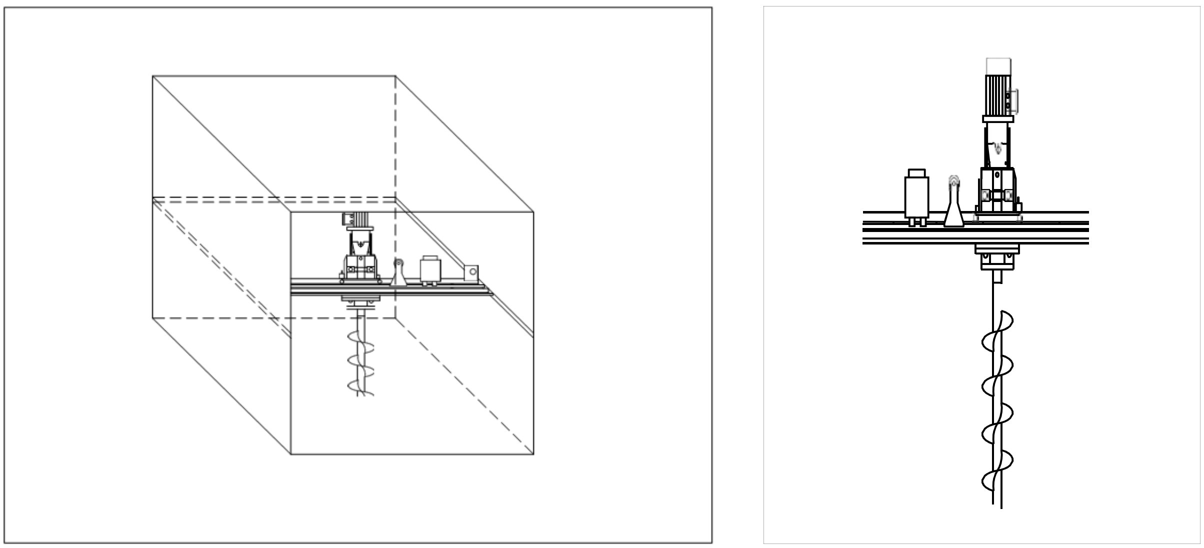

Figure 3: In vessel composting system

2.3.6 Staffing

Less staff should be required compared to conventional windrowing and will only be required for waste sorting, feedstock mixing and for the curing, screening and finishing compost loading for off –site utilization of the compost. Other personnel would remain the same. Specific training would be required on both the operation and maintenance of the containerized auger operating system.

2.3.7 Capital and operating costs

The containerized auger system requires more equipment than the other practices noted above but conversely costs less costs in terms of site preparation and on-going maintenance and operations.

For an in vessel composting facility (located on County owned property) annually managing up to 6,000 cy^3 of material the costs for the initial investment is estimated to be:

ITEM		COST
Site Clearing/Grubbing		$ 5,500
Site Grading/Compaction		$ 2,200
Foundation Pad		$ 15,000
Container/Lining		$ 18,000
Curing Pad (woodchip base)		$ 4,500
Prepare SSO Receiving Area		$ 2,300
SSO Receiving Pad (asphalt millings)		$ 24,000
Sinage/Blocks/Fencing		$ 15,000
Equipment		
Skidsteer		$ 22,000
Loader		$ 36,000
Screener		$ 28,000
Shredder		$ 31,000
Auger/motor/rails		$ 22,500
Controls		$ 3,400
Misc. Equipment		$ 2,000
Office Trailer		$ 5,000
Electrical Upgrades		$ 14,750
Permitting/Design		$ 19,000
Contingency		$ 40,523
TOTAL		**$ 305,173**

The shredder and screener are considered enhancements to the composting operation that will reduce contamination introduced into the compost piles and also provide noticeable results in the quality of compost being produced. Shredding has been proven to provide enhancements such as minimizing pile retention times and also leading to a higher quality end product. In addition, costs have been included for the operating equipment that will be necessary to efficiently run the composting operation including at a minimum a skid steer and loader.

As noted above, a woodchip cover is assumed as the media used for development of the base layer for curing and storage area for finished compost. The in vessel composting system will require electricity in order to run the auger and controls and will also involve a moderate amount of labor. The nearly finished compost can be removed from the end of the container with a skid steer via the entry way doors.

The estimated annual operating costs associated with in vessel composting are provided below.

ITEM	**ANNUAL COST**
Labor	
SSO receipt/processing	17,000
Grinding/shredding/mixing	35,000
Movement of SSO to container	16,000
Movement of compost to curing	30,000
Screening	26,000
Movement of cured compost	35,000
Management	60,000
Contaminant disposal costs	15,000
Bulking agent costs	12,000
Land fees	10,000
Insurance	10,900
Electricity	49,000
Water	12,000
Lab Testing	15,000
Fuel	11,500
TOTAL	**$ 354,400**

3 Revenues/Finished Product

Finished compost that has been developed using food waste has been proven to be a higher quality material than "standard" compost (e.g., derived from wood materials such as bark, leaves, etc.). Furthermore, there has been a higher necessity for quality compost with increased consumer demand within the organic food, landscaping, and more recent cannabis industries. The availability of high-quality compost in the Greater Rochester Area is diminishing and in turn costs for this type of material are rising. Local organic farms have been sourcing high-quality compost in some cases from distant locations such as Vermont.

Properly managed compost improves biological, chemical and physical characteristics of soil. When added to soil, compost can filter out urban storm water pollutants by 60-95%. More specifically, compost:

- Increases resilience to floods and droughts
- Improves ability to store nutrients
- Increases microbial activity
- Reduces the need for chemicals

- Enhances plant disease suppression
- Serves as a filter and sponge; immobilized and degrades pollutants while improving water quality
- Converts nitrogen into a more stable and less mobile form and phosphorus into a less soluble form

The sale of finished compost would be an additional source of revenue for the operation of a composting facility in addition to tipping fees that would be recognized on the front end of the operation. Predicting what these revenues streams may look like can be difficult and are predominately driven by market conditions including demand, fuel costs, competing landfill tipping fees, etc. Nonetheless it is likely that finished SSO compost could be sold in the range of \$8.00 - \$15.00/yd^3.

4 Conclusion

As an alternative to landfilling of organic wastes, each composting option outlined above has excellent potential for development and implementation as a viable composting operation at the Ontario County Landfill. The best option available to Ontario County may be one that involves a lease arrangement with a third party operator. Each of the options are relatively scalable and can commence at a smaller scale and be expanded as operations become established including the addition of organic feedstocks as they become available.

Given that a number of Towns (and a couple of Villages) within Ontario County do currently have customer drop off centers for the management of solid wastes, these sites could be easily be augmented to include a SSO drop off location as is currently in practice in the Town of Seneca Falls, Town of Victor, and Town of Pittsford. The most practical approach would be the use of multiple large toters (that would be collected on a routine basis) and could easily be conveyed to a central composting operation at the Ontario County Landfill.

In the towns noted above, 55 gallon buckets are commonly used by residents for conveying food scraps from their homes to the drop sites. The buckets can easily be dumped into a toter. It would be up to the individual user to maintain good practices not only regarding the items that are placed in an SSO container but also for maintaining the buckets in between disposal activities, etc.

With NYSDEC approval, it may also be possible to conduct a pilot project that involves the use of landfill leachate in lieu of storm water or ground water that would otherwise be used for moisture control. As shown below, and also with NYSDEC approval, the closed Phase 1 landfill site could be a suitable location for siting a composting operation.

Alternatively, assuming the landfill were to revert to limiting disposal to in-county material or even completely closing, the eastern section of the truck queueing area and areas to the east and south may also be suitable especially given that the current paved sections could be utilized for access and front end processing, etc.

5 Troubleshooting

5.1 Odor problems

Situation	Possible reason	Clues	Remedy
Ammonia odor	High nitrogen level	C:N ratio less than 20:1	Add high carbon ingredients
	Slowly available carbon source	Large woody particles, C:N ratio less than 30:1	Increase available carbon content via leaves, smaller particle woodchip
	High pH	pH greater than 8	Lower pH with acidic ingredients (leaves) or avoid adding more alkaline material
Hydrogen sulfide (rotten-eggs) ***Both odors indicate anaerobic conditions***	Material too wet	Low temperatures	Add dry bulking agent Turn to remove moisture (also releases odors)
	Poor structure		Add bulking agent
	Pile compacted		Remix pile and add bulking agent if necessary
	Insufficient aeration		Decrease pile size
	Pile too large	High temperatures	Remix pile so that it's smaller, change recipe
	Airflow uneven or short circuiting	Falling temperatures	Shorten time between turnings

5.2 Temperature problems

Situation	Possible reason	Clues	Remedy
Pile fails to heat up	Too dry	Can't squeeze water out from a handful of compost	Add water
	Too wet	Materials look soggy	Add dry material
	Not enough nitrogen	Large amounts of woody material	Add nitrogen-rich material
	Poor structure	Pile settles too quickly	Add bulking agent
	pH too low	pH <5.5, putrescible waste odor	Add lime or wood ash, remix
	Pile is too small	Compost piles 3' tall or less	Remix and combine piles
Temperature too high	Insufficient aeration	Pile is moist (as determined by squeeze method)	Turn pile more frequently or increase air flow
	Moderate to low moisture levels	Pile is dry (as determined by squeeze method)	Add water, continue turning
	Pile is too large	Height >8'	Decrease pile size

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APPENDIX C

REGIONAL ORGANIC MANAGEMENT FACILITIES STUDY

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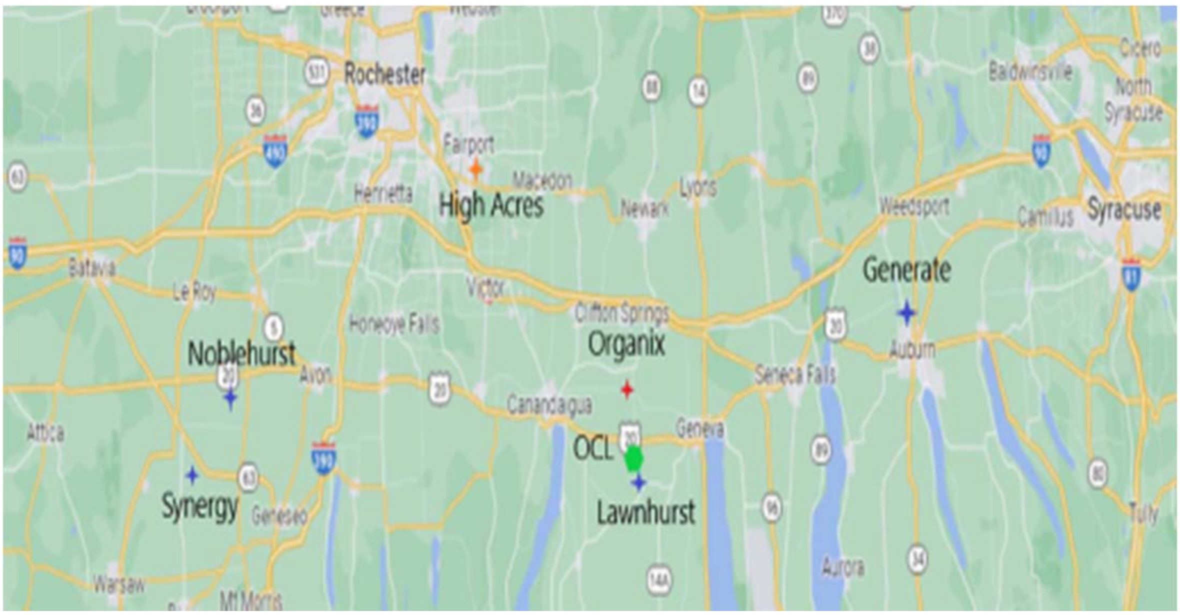
REGIONAL ORGANIC MANAGEMENT FACILITIES STUDY



PREPARED FOR:

ONTARIO COUNTY, NY
JULY 2024

J&L CONSULTING

INTRODUCTION

J&L Consulting was retained by MSW Consultants to conduct an evaluation of existing regional organic management facilities in proximity to the Ontario County Landfill including development of a summary report for each facility highlighting among other features the facility operating characteristics and requirements, existing and future intake capacities, waste acceptance criteria.

A number of successful organic waste processing facilities are operational within the region as outlined within this report including anaerobic digesters, composting operations, and a vermiculture facility. The introduction of New York State's food waste disposal ban in 2018 has arguably lead to a demand for these types of facilities which offer an outlet for organic wastes in lieu of landfilling these materials (which contribute significantly toward the production of methane which when released into the atmosphere is a harmful greenhouse gas).

Of the larger existing regional facilities that were investigated including four existing anaerobic digesters, one vermiculture, and one compost facility, Generate Upcycle's digester in Auburn, NY is likely to be the best fit for the possibility of diverting organics. The facility has available capacity including front end processing (e.g., depackaging) and with a addition of collection program (e.g., SSO co-collection, Town SSO drop sites) would be a means for Ontario County to divert materials prior to and after closure of the landfill.

DIGESTERS

CH4 BIOGAS – Synergy Dairy, Covington, NY (Wyoming County)

Located 51 miles to the west of the Ontario County Landfill, the Synergy Dairy digester began commercial operations in December 2012 and includes a herd size of ~ 2,000 milking cows as well as manure from other neighboring farms. Bio-gas from the digester fuels a 1.4 MW engine generator; the output is fed into National Grid's local electric system. Incoming organic waste includes whey, school food scraps, and bakery waste.

In 2020, in addition to manure, nearly 6M gallons of manure, over 13M gallons of food processing waste were received at the facility in addition to over 3M gallons of fats, oils, and grease and 1.5M gallons of liquid food processing waste.

The digester at the Synergy Dairy is owned by CH4 Biogas, a private digester development company based out of Connecticut. CH4 also owns and operates a digester in Ohio and is in the process of developing a new digester within the Genesee Valley Agri-Business Park in the Town of Batavia, NY, the development of which was started in 2014 and restarted earlier this year.

NOBLEHURST – Noblehurst Farms, Linwood, NY (Livingston County)

Located 46 miles to the west of the Ontario County Landfill, the Noblehurst Dairy initially began commercial operations in December 2001 and was significantly upgraded in 2014 (as part of an emission reduction project). The dairy has a current herd size of ~ 1,800 milking cows. Bio-gas from the EnviroTech digester fuels a 0.5 MW engine generator, the output is used to power the farm as well as a neighboring milk creamery.

Natural Upcycling (NU) was established in 2014 as part of the operations of the facility whom have established themselves as a successful independent organic waste hauler. Source Separated Organics (SSO) from local educational institutions (Rochester Institute of Technology and Hobart and William Smith Colleges), restaurants (Chipotle and Gimme!

Coffee), schools, whey waste from the creamery, consumer food manufacturing companies (Rich's and WhiteWave Foods), and more than 30 Wegmans Food stores are brought to the Noblehurst Digester on a regular basis by NU. This facility does have the capability for doing on-site depackaging.

Since placing the Noblehurst Digester on line, NU has grown to a large regional organic waste collection and hauling entity with operations in DE, MA, MD, NJ, PA and VA). Most recently the Town of Pittsford (500 first come first served residents) as well as the Monroe County Jail and Monroe Community Hospital initiated a pilot project for the collection of food scraps which are now being collected by NU and taken to the Noblehurst Farms digester. As part of the Town of Pittsford program, participants are provided with lidded buckets to contain food waste as well as educational materials. Participating residents are able to drop off their food scraps in a dedicated collection area at one of the Town's parks.

LAWNHURST – Lawnhurst Farms, Seneca, NY (Ontario County)

Located less than two miles south of the Ontario County Landfill, the Lawnhurst Dairy located initially began commercial operations in August 2013 and received sizable grant funding that made this project a reality. The dairy has a current herd size of ~ 1,500 milking cows. Bio-gas from the EnviroTech digester (their first US installation) previously fueled a 0.54 MW engine generator which powered the farm with the excess load being exported to the local power grid. Incoming organic waste at that time included yogurt processing waste and some SSO.

In November 2021, the digester was sold to BrightMark (a joint venture with Chevron and BrightMark Fund Holdings) and the facility was converted from making electricity to producing Renewable Natural Gas (RNG) which is injected locally and conveyed to California and sold as part of the state's Low Carbon Fuel Standard (LCFS). As a result of this conversion, organic waste is no longer being accepted due to nuances associated with California's LCFS and is now only utilizing manure for digestion.

BrightMark was founded in 2016 and has quickly established itself as a circular innovation company, developing anaerobic digestion and proprietary plastics renewal technologies solutions in agriculture, healthcare, manufacturing, and transportation. Brightmark operates 21 digesters across the United States with a large concentration of facilities in MI, MN, IA, and WI.

GENERATE – Auburn, NY (Cayuga County)

Located approximately 35 miles east of the Ontario County Landfill, the former Cayuga County Regional Digester initially began commercial operations in August 2008. Generate Capital purchased the former Cayuga County Regional Digester in 2016 and has since expanded the operation including installation of a new replacement digester, a larger engine (previously 0.625 MW now 1.2 MW) and a materials recovery facility including a depackaging operation.

Approximately 21,000 tons of food processing waste and 2,800 tons of SSO from Natural Upcycling (and generated from numerous Wegmans stores in the Finger Lakes Region) in 2020. The upgraded facility is capable of handling 60,000 tons per year and plans are in place for converting to Renewable Natural Gas (RNG).

In addition to the Auburn facility, Generate Upcycle (GU) also owns and operates digesters in Buffalo and in Lewiston, NY. Similar to the Cayuga facility, GU established their presence in North America through acquisitions of Stormfisher (CA) and Quasar (NY) assets.

GU is an operating division of Generate Capital (GC), a large private equity development company that started in 2014 and provides capital and operational knowledge to the more than 2,000 assets it owns around the world with clients including cities, companies and schools. GC raised $2B in funding in 2021 following a $1B raise in early 2020.

VERMICULTURE

ORGANIX VERMICOMPOST – Seneca Castle, NY (Ontario County)

Located approximately three miles north of the Ontario County Landfill, the Organix Vermicompost facility is a producer of vermicompost. Organix captures food and yard waste, along with biodegradable kitchenware as food for worms that create soil amendments. “Magix Soil Amendment” and “Magix Worm Ade” vermicompost products are currently sold in landscape stores, home and garden centers and hardware stores.

Food waste from a variety of residential and commercial clients is received at the facility which is combined with yard waste and a proprietary inoculant and placed in lined trenches that allow collection of liquids which are collected in an underground storage tank. The resulting liquid is a highly potent liquid fertilizer product. Cure compost from the upper layer of the trench is removed which Organix Green Industries packages and sells.

COMPOSTING

Located approximately 30 miles northwest of the Ontario County Landfill, the High Acres Landfill facility (owned by Waste Management (WM)) includes a food waste composting operation. WM receives yard waste from adjacent towns, as well as pre-and post-consumer food waste from a small amount of commercial clients including several local universities. The yard and food waste are composted on-site and the compost is provided for free pick up to The Town of Perinton residents.

WM utilizes a windrowing operation for composting and rely on the use of shared equipment (e.g., windrow machine) with Monroe County. WM currently has some limited ability to accept additional waste streams for compost however there is an opportunity that the facility would be expanded over time.

SUMMARY

There has been a slow but steady development of organic waste facilities in Western New York over the past 10 ten years. Several of the facilities that were investigated as part of this evaluation do have limitations either relating to lack of capacity for accepting additional SSO, infrastructure limitations (e.g., no on site depackaging capabilities). However, several facilities are in a position to serve as an outlet for the recovery of organics from within Ontario County.

Efforts to divert organics from the Ontario County Landfill will extend the life of the site. Several of the facilities included in this summary report could be utilized for the disposal of SSO that is generated within Ontario County.

Given that a number of Towns (and a couple of Villages) within Ontario County do currently have customer drop off centers for the management of solid wastes, these sites could be easily be augmented to include a SSO drop off location as is currently in practice in the Town of Seneca Falls and Town of Pittsford also being pilot tested in Gorham, Victor, and Canandaigua.

The most practical approach would be the use of multiple large toters (that would be collected on a routine basis) and could easily be conveyed to a central composting operation at the Ontario County Landfill including the use of compostable bags for ease in transporting.

In the towns noted above, 55 gallon buckets are commonly used by residents for conveying food scraps from their homes to the drop sites. The buckets can easily be dumped into a toter. It would be up to the individual user to maintain good practices not only regarding the items that are placed in an SSO container but also for maintaining the buckets in between disposal activities, etc.

APPENDIX D

PRELIMINARY EVALUATION OF LANDFILL-BASED SOLAR, WIND AND BATTERY STORAGE PROJECTS

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Preliminary Evaluation of Landfill-Based Solar, Wind, and Battery Storage Projects

Ontario County Landfill

PREPARED FOR:

ONTARIO COUNTY, NY
JULY 2024

J&L CONSULTING

Executive Summary

There are a number of existing synergies available at the Ontario County Landfill that would be an advantage toward the development of renewable energy projects at the site. These advantages include but are not limited to:

- Potential for connecting to the existing on site substation,
- There are several acres of open space available at the site including the Phase I landfill and the southern facing portions of the Phase II and Phase III that would be ideal for placing solar panels and/or a battery energy storage project. Furthermore, the upper (flat) surface of the Phase III landfill could at some point in the future also be an ideal location of the placement of solar panels,
- Existence of a long term electric load (e.g., material recycling facilities, landfill gas blowers, pumps, maintenance building, and landfill gas recovery facility) that will require (reliable) electricity for the next several decades,
- Existing landfill facility also includes features (e.g., screening berm) that would limit the visibility of a possible solar farm or battery energy storage system from view of the general public,
- The Inflation Reduction Act provides a tax credit "kicker" for the production of renewable energy on brownfields and landfill sites, and
- Since there are no property taxes, development at the Ontario County Landfill would be an attractive proposition to a renewable energy. The "savings" that would be recognized should afford Ontario County the opportunity to obtain a higher than normal lease rate.

Despite being located within a viable and attractive wind resource area, the Town of Seneca maintains a height restriction as part of their existing zone code. As such, the likelihood of developing a wind project at the Ontario County Landfill is very low. However, the opportunity to develop a solar project and/or a battery energy storage project is more promising.

Contents

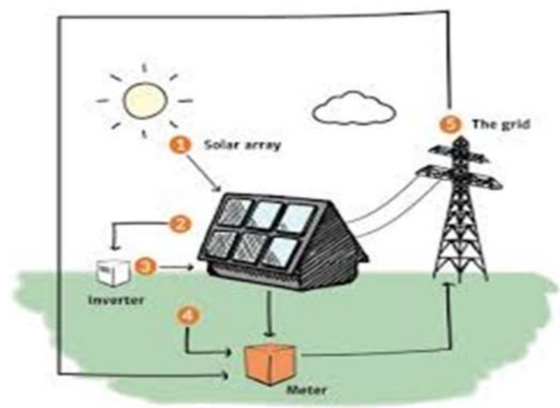
Introduction

J&L Consulting was retained by MSW Consultants to evaluate the possibility for wind, solar, and stand-alone battery energy storage projects at the Ontario County Landfill including a preliminary assessment of the site development and permitting requirements and opportunities for potential pubic private partnerships including land lease options.

Aside from being alternatives to the use of fossil fuels to make electricity, renewable energy projects have been proven to be a means for stabilizing the local electric grid, increasing system reliability, reducing line losses, and decreasing congestion. Furthermore, New York State has adopted one of the more aggressive US green power requirements with the goal of utilizing 70% renewable energy by 2030 and a zero emission electric grid by 2040.

Solar Energy

When the sun shines onto a solar panel, energy from the sunlight is absorbed by the photovoltaic (PV) cells in the panel. This energy creates electrical charges that move in response to an internal electrical field in the cell, causing electricity to flow. The current flows into an inverter, which converts the charges from DC (Direct Current) to AC (Alternating Current) electricity that is fed into the local electric utility (or used directly on site depending on the application).



There are several acres of open space available at the Ontario Co. Landfill including the Phase I landfill and the southern facing portions of the Phase II and Phase III landfills. Additional areas that could be utilized for the placement of solar panels in the future include the current soil borrow as well as the upper (flat) surface of the Phase III landfill.

A large number of community solar projects have been developed in New York State and this growth has been prevalent in the greater Rochester region. By their nature, community solar projects are structured as a means for residents, commercial entities, and governmental entities to purchase green power without the need for direct connections, having equipment on their property (or rooftops) or needing to be an on a continuous parcel.

Consumers who subscribe to a community solar project generally recognize a 7 -10% savings on their monthly electric bills (at no cost to them). The delivery of the electricity would still continue to be provided by a subscriber's host public utility. In reality however, the electricity from the project is consumed locally based demand by customers in the vicinity of the project (e.g., many of whom are not subscribers). The host utility however ensures that there is a true up as a necessary step to ensure that these type of projects are in the best interest of the consumer.

In addition to a community solar project (also referred to as distributed generation) there are other options for development including a "behind the meter" or as a utility scale project. In this case, the output from the project is used by an on-site entity and the Renewable Energy Credits (RECs) are not able to be sold as they would for a project that is "grid connected". There may however be an opportunity for selling emission "offset" credits rather than RECs for these types of projects.

A utility scale solar project is normally on the low end of 15 – 20 MW and on the high end can be several hundred MWs. A number of large utility scale solar projects have been approved by the Office of Renewable Energy Siting (ORES), the agency charged by New York State for overseeing the permitting for these large projects, including at least one project that is 500 MW in size (Cider Solar Project – Oakfield & Elba, NY). Approval of utility scale projects is not required at a local level. Given several hundred acres are needed the opportunity for a large scale solar project at the Ontario County Landfill is not feasible.

The value of a land lease associated with a solar project varies depending on several factors including but not limited to:

1) Property taxes
2) Existing conditions (e.g., prime farm land)
3) Usable land (e.g., slopes, wetlands, trees)
4) Proximity to utility interconnection
5) Costs for utility system upgrades
6) Zoning requirements
7) Subsurface conditions (e.g., rock)
8) Public acceptance
9) Tax credit availability (e.g., brownfield or coal community)

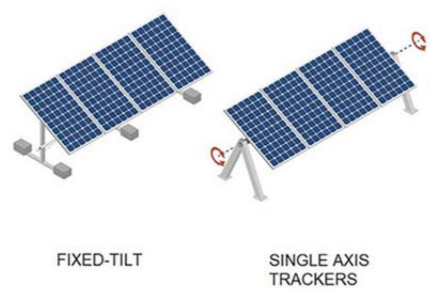
Solar project land leases are typically structured to include an option payment for a period of time (e.g., 1 year) to allow the developer the opportunity to evaluate the project (e.g., permitting and construction requirements) and more specifically to proceed with the initial utility interconnection process. Payment of a second 1 year option is also common. Rent payments generally commence at the time the project is placed into commercial operation and are structured on a per acre per year basis with an annual escalator. The term of most solar projects is 20-25 years.

A key component of a solar lease is the lessor's requirements for decommissioning the project at the end of the lease. This process is commonly dealt with via a performance bond or letter of credit which in the case of owner default would provide the financial means for restoring the property to its original condition with funds secured in the bond or letter of credit and thus removing the burden of responsibility from the landowner.

A general rule of thumb for the development of solar projects is 5 acres per 1 MW of panel coverage. This does not however account for additional land that must be included to account for property line setbacks, unusable space, access roads, storm water management, and construction laydown area(s). In addition, adequate spacing is a key design consideration to ensure that the panels do not shade each other. Given that community solar projects are commonly developed at 5 MW increments, a 45-50 acre site would generally be considered a good target point.

Fixed vs Single Axis Trackers

There are two types of solar projects currently being developed including a fixed frame as well as single axis trackers which follow the sun over the course of a day. There are pros and cons for using either of these technologies. Fixed frames are not as efficient but are cheaper to install. Trackers are conversely more efficient and more costly to install. In addition, trackers can be arranged as necessary to account for periods of heavy snow for example.



Wind Energy

Based upon NY wind resource mapping as shown highlighted below in blue, a section of the eastern portion of the landfill property is located within an attractive wind area.

The development of wind projects in New York State has also been advancing but has not been as prolific as solar energy growth. Wind projects tend to be more controversial due to the height(s) necessary for projects of this type. While most of the development within New York State has been on a large scale ("wind farms") there has been some advancement of smaller scale projects similar to the structure that is in place at Zoto's International located in Geneva, NY and Harbec Plastics in Ontario, NY.

Battery Energy Storage Systems

Battery energy storage projects are quickly becoming a very popular renewable energy technology, particularly in New York State and is a technology that enables power system operators and utilities to store energy for later use. A battery energy storage system (BESS) is an electrochemical device that charges (or collects energy) from the grid or a power plant and then discharges that energy at a later time to provide electricity or other grid services when needed. The current market for grid-scale battery storage in the United States and globally is dominated by lithium-ion BESS.

Utility-scale BESS can be deployed in several locations, including: 1) in the transmission network; 2) in the distribution network near load centers; or 3) co-located with generators. The siting of the BESS has important implications for the services the system can best provide, and the most appropriate location for the BESS will depend on its intended-use case.

BESS projects have the capability to provide a number of services including:

1) Arbitrage which involves charging the battery when energy prices are low and discharging during more expensive peak hours. This practice can provide a source of income by taking advantage of electricity prices that may vary throughout the day. One extension of the energy arbitrage service is reducing renewable energy curtailment.

   By charging the battery with low-cost energy during periods of excess renewable generation and discharging during periods of high demand, BESS can both reduce renewable energy curtailment and maximize the value of the energy developers can sell to the market.

2) Firm Capacity or Peaking Capacity: System operators must ensure they have an adequate supply of generation capacity to reliably meet demand during the highest-demand periods in a given year, or the peak demand. This peak demand is typically met with higher-cost generators, such as gas plants; however, depending on the shape of the load curve, BESS can also be used to ensure adequate peaking generation capacity.

3) Operating Reserves and Ancillary Services: To maintain reliable power system operations, generation must exactly match electricity demand at all times. There are various categories of operating reserves and ancillary services that function on different timescales, from sub-seconds to several hours, all of which are needed to ensure grid reliability. BESS can rapidly charge or discharge in a fraction of a second. The amount of installed capacity that can be relied upon to meet demand during peak periods or other high-risk periods.

4) Black Start: When starting up, large generators need an external source of electricity to perform key functions before they can begin generating electricity for the grid.

5) Grid-Scale Battery Storage: Appropriately sized BESS can also provide longer-duration services, such as load-following and ramping services, to ensure supply meets demand.

6) Transmission and Distribution Upgrade Deferrals: The electricity grid's transmission and distribution infrastructure must be sized to meet peak demand, which may only occur over a few hours of the year. When anticipated growth in peak electricity demand exceeds the existing grid's capacity, costly investments are needed to upgrade equipment and develop new infrastructure. Deploying BESS can help defer or circumvent the need for new grid investments by meeting peak demand with energy stored from lower-demand periods, thereby reducing congestion and improving overall transmission and distribution asset utilization.

To maximize tax credits under the IRA, energy storage projects must meet two labor requirements. The first ensures that developers and operators pay prevailing wages — as determined by the Secretary of Labor — during the construction and first five years of system operation. The second requires projects to meet registered apprenticeship requirements.

If projects meet the wage and apprenticeship requirements, they can then potentially boost the tax credit eligibility as high as 70 percent through three potential further incentives – domestic content, energy communities and low-medium income (LMI) projects.
One of the bonus incentives, worth an additional 10 percentage points, is for projects constructed with equipment and material produced in the U.S. This follows a long-term trend in U.S. policy previously bolstered by the Biden Administration in 2021 with the Infrastructure Investment and Jobs Act (IIJA). That law created a new Made in America

Office under the Office of Management and Budget (OMB), which is tasked with updating and streamlining how domestic content requirements will be calculated in the years ahead.

Utility Interconnection Process

Renewable energy developers start the utility interconnection process through a web based portal system that is administrated by the hosting electric utility which in Central New York is predominately either National Grid or NYSEG/RG&E. Data is entered that is specific to the (distributed) generator being proposed for the project, its associated size, and the location in which the system will connect to the electric grid.

The hosting utility will then conduct an initial study to evaluate the impacts and reliability that the project will have on the utility's electric system and the extent to which system upgrades may be necessary in order to safely connect the project to the grid. The utility's analysis is provided to the developer in the form of an impact study including an initial estimate of the required upgrades and their associated costs. At this point in the process the developer is required to opt out or proceed with the project by making an initial deposit and further securing the developer position in the interconnection queue. This becomes an important aspect of the project since the utility's system is only capable of handling a certain amount of injection capacity in the absence of significant upgrades to their systems (e.g., wires, transformers, switching, breakers).

Once the deposit is made the utility conducts additional studies and the parties start to negotiate an interconnection agreement which the utilities make publically available as part of their standard interconnection process. Ultimately if all goes well the utility an interconnection agreement (IA) is signed which stipulates the upgrades that the developer is held responsible for as a result of connecting to the host utility.

Once all deposits have been made and following execution of the IA, the host utility installs a series of utility poles which will include project specific metering, disconnecting, etc. The developer will connect to this point in the system as part of the commissioning of the project.

Projects of this type are a benefit to the host utilities in so much that distributed energy installations: 1) reduce line losses, 2) increase system reliability, 3) reduce congestion, and 4) increase system stability. Project developers are then paid based upon the amount of electricity (commonly known as energy payments) that is passed into the system via the NY power pool. The green attributes of the project are separately contracted between the developer and a third party buyer which in NY is typically the New York State Energy Research and Development Authority (NYSERDA). In addition to energy payments, developers are at times able to also contract for demand payments which require the facility to be capable of running at various times throughout the year.

Permitting Requirements

The permitting requirements that will be necessary in order for a third party private developer to site a renewable energy project at the Ontario County Landfill will predominately be under the purview of the Town of Seneca's local zoning code. While the code is different for each type of project (e.g., solar, wind, or BESS), a Special Use Permit (SUP) will be required.

With the exception of utility scale projects (as outlined above), renewable distributed energy projects are permitting on a local level and as part of the State's Environmental Quality Review Act (SEQRA) process. A developer would submit an application to the Town including the completion of an Environmental Assessment Form. It would be up to the Town, acting as lead agency, to determine if the project is determined to have potential impacts to the environment and in this instance a positive declaration would be provide in which case the applicant would be required to submit an Environmental Impact Statement (EIS) for public review. The EIS is used to analyze reasonable alternatives as well as opportunities to avoid or mitigate adverse impacts.

In the event that no impacts are determined than a negative declaration would be put in place.

On a state level, the NYSDEC regulates the management of activities associated with solid waste landfills. The Department issued a policy in 2012 (DMM-4 Guidance For Photovoltaic Solar Project At Closed Solid Waste Landfills) which has lead to the successful development of a number of solar project on closed landfills within New York State including but not limited to Lancaster Landfill, Town of Rotterdam Landfill, Mohawk Valley Landfill, Town of DeWitt Landfill, Town of Tonawanda Landfill, and the Town of Canandaigua Landfill.

Town of Seneca Zoning

The Town of Seneca maintains provisions within their Zoning Code that are applicable to renewable energy projects and specifically for solar and wind project development within the Town. At present, there are no zoning regulations that are applicable to BESS however the Town is currently in the process of amending their zoning codes to include BESS projects. It is unclear at this time as to whether the Town's new code will place a restriction of the size of BESS projects but will likely address fire protection requirements for BESS projects.

The Town of Seneca's zoning code for wind projects includes restrictions as to where wind projects could be located. The Town does have a wind energy overlay district where windmills are allowed and must not exceed a single turbine per 100 acres. Furthermore, the Town's code includes a wind turbine height restriction of no more than 330'.

Conversely, the Town of Seneca's zoning code for (commercial) solar projects includes restrictions as to where solar projects could be located. A major system or solar farm may be permitted in some districts (including agriculture) in the Town when authorized by Site Plan approval from the Planning Board subject to the several conditions. Furthermore, the Town has established a limit of the total cumulative installed capacity of major solar systems or farms within the Town to 16MW.

All major solar projects developed after January 1, 2018 shall only be permitted on land which is or has not at any time after January 1, 2013 been utilized for the production of agricultural products or for the grazing of animals as part of an agricultural operation.

The Town's zoning code also includes height limitations and property line setbacks for solar panels. Furthermore, a landscaped buffer is required around all equipment and solar collectors to provide screening from adjacent residential properties and roads. Following successful issuance of a Special Use Permit, the Town issues a building permit for the project.

Other permits that are generally required include:

- USFWS Nation Wide Permit and Water Quality Certification.
- Coverage under the NYSDEC SPDES General Permit via a Storm Water Pollution Prevention Plan (SWPPP) including submission of a Notice of Intent approximately 60 days prior to construction.

Facility Synergies

There are a number of existing synergies available at the Ontario County Landfill that would be an advantage toward the development of renewable energy projects at the site. With this in mind and in the event that BP elects to revert to producing renewable natural gas (RNG) rather than using landfill gas to produce electricity, there will then be upwards of 10+MW of capacity within NYSEG's system to support the interconnection of a distributed generator (e.g., solar farm, wind mill, etc.) directly on site at the substations adjacent to the existing power plants.

An additional benefit involves the existence of a long term electric load (e.g., material recycling facilities, landfill gas blowers, pumps, maintenance building, and a possible RNG facility) that will require (reliable) electricity for the next several decades. These needs can easily be satisfied by a distributed generation "behind the meter" system as one possible development option.

The existing landfill facility also includes features (e.g., screening berms) that would limit the visibility of a possible solar farm or BESS from view of the general public.

The Inflation Reduction Act provides a tax credit "kicker" for the production of renewable energy on brownfields and landfill sites. Several landfills within Western New York have been developed into solar facilities including the former Lancaster Landfill (Lancaster, NY), Tonawanda Landfill (Tonawanda, NY), and the Niagara County Landfill (Lockport, NY). The IRA tax credit is fueling developing at a number of other landfills across New York State.

In addition to the potential benefits noted above, the fact that there are no property taxes, development at the Ontario County Landfill would be an attractive proposition to a renewable energy development company despite the need from them to pay prevailing wages. The "savings" that would be recognized as a result of the lack of property taxes should afford Ontario County the opportunity to obtain a higher than normal lease rate for renewable energy projects develop on property at the landfill complex.

Conclusions

For the purposes of this evaluation it is assumed that Ontario County would not be in a position to finance, develop, design, and install renewable energy projects at the Ontario County Landfill. The ideal arrangement for these projects would be one in which the County were able to attract a third party development company whom similar to Casella would lease the necessary parcels for their project(s).

Companies that would likely have interest in development and ownership of renewable energy projects at the Ontario County Landfill facility include but not limited to:

- NexAmp
- AC Power
- EDF Renewables
- Genie Solar
- Norbut Solar

The County may wish to consider initially soliciting an Expression of Interest or Request For Information that would allow the County to gauge interest in the possible development of renewable energy projects as well as the possibility of issuing a formal Request For Proposals. The County would be able to recognize revenues associated with leasing land. Lease rates are typically paid annually and on a per acre basis. Rates will generally vary depending on several factors as noted above.

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APPENDIX E

BOARD OF SUPERVISORS UPDATE

MARCH 28, 2024

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1

Overview

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Phase 1 (Complete)
- Municipality Tonnage and Financial Baseline*
- Document Review (OMLA, etc)
- Template for Landfill Alternatives Economic Model

Phase 2 (Complete)
- Preliminary Evaluation of New WTE
- Preliminary Evaluation of New Landfill
- Review Federal and State Regulations
- Evaluate Residential Organics Options (Compost, AD, Export)

Phase 3 (In Progress)
- Evaluation of Landfill Alternatives
- Evaluation of MRF Options

Phase 4
- Impact Analysis on Municipalities
- Preliminary Evaluation of Landfill-Based Solar, Wind, and Storage Projects

* To be updated in Meeting 4

2

But First…

3

A discussion of Ontario County landfill's position in the context of the northeast regional waste and recycling market

3

Diversion vs Landfill

4

- Recycling and Zero-Waste-to-Landfill are at the forefront of materials management planning
  - ME, VT, CT, MA, NY, MD, RI, all have strong commitments to reducing waste to landfill

Conclusion

Recycling & Organics Diversion get the positive headlines!

4

Recycling at State & Federal Level

5

- US EPA's National Recycling Strategy
  - Solid Waste Infrastructure for Recycling (SWIFR) Grant Program ($100 million)
  - Recycling Education and Outreach (REO) Grants/Tribal Recycling Infrastructure Projects ($93 million)

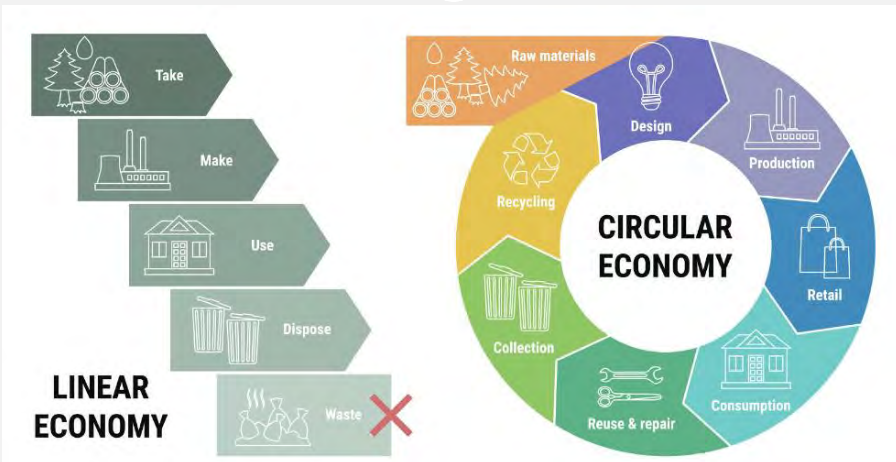
- New York State Solid Waste Management Plan: Building the Circular Economy Through Sustainable Materials Management (2023 - 2032)
  - Reduce landfilling and combustion by 85% by 2050
  - Realize the circular economy
  - "Waste" becomes a concept of the past
  - Widespread waste reduction and reuse efforts are equitable, inclusive, and accessible
  - Thriving markets that are responsible and resilient

Handout available upon request with further details about Federal, State and County regulations and legislation

5

Transitioning NY from Linear to Circular Economy

6



Source: NY State Solid Waste Management Plan 2023-2032 (Fig 2.1)

6

Ontario County Recycling Law

7

- Local Law 1992, 6-1992
  - Mandatory source separation of recyclables
  - Provided recycling containers to all county residences
  - Banned recyclables and reusables from the Ontario County Sanitary Landfill

7

8

How much recycling and diversion is realistic?

Simple Steps to Start Living a Zero-Waste Lifestyle

PRESS RELEASE

Healey-Driscoll Administration Awards $5.2 Million to Support Recycling and Waste Reduction by 283 Municipalities and Regional Groups

9/28/2023 Massachusetts Department of Environmental Protection, Executive Office of Energy and Environmental Affairs

The Future of Zero Waste Lies in the Circular Economy

Article Published: May 4, 2022 | Shannon Bergstrom, RTS

Austin, Texas, releases zero waste plan as population booms

The city's goal of achieving a 90% diversion rate by 2040 remains ambitious, but Austin

8

Ontario County Solid Waste Management Plan*

9

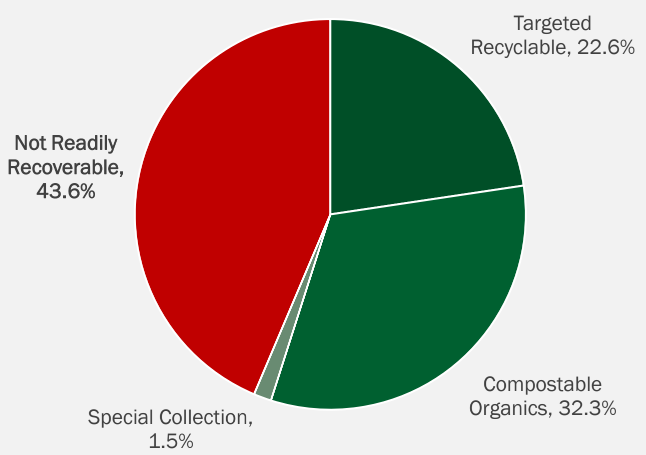
- "Continue Landfilling as Primary Disposal Option" for all non-recyclable or non-recoverable waste.
- In 2023, "Review alternative waste disposal technologies and explore feasibility of implementation, provided resources are available."
- Follow NY State Waste Hierarchy then in effect
  - Waste prevention, reuse, and recycling above disposal
  - Municipal waste combustion (MWC) over landfilling

* March 2014

9

How Divertible is Municipal Solid Waste?

10



Source: Ontario County Waste Characterization Study, November 2022

10

State of Recycling

11

- Recycling industry reboot following 2017 imposition of severe restrictions on US recyclables by Asian export markets
- Recyclables processing costs substantially more than landfill disposal on a $/ton basis
- Curbside single stream recycling programs have struggled to reduce contamination, making recycling even more expensive
- Secondary material revenue fluctuations demand better risk sharing between suppliers (i.e., local governments) and processors

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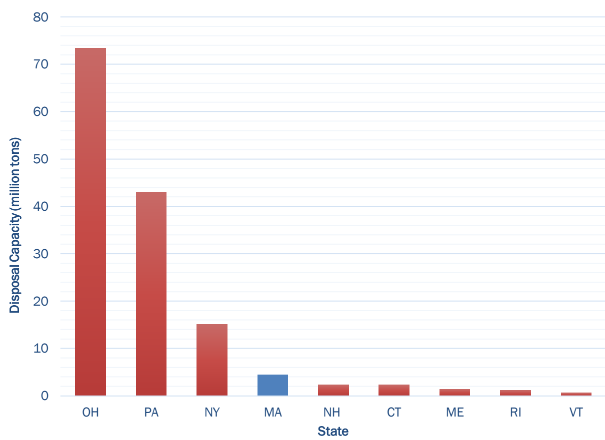
Remaining Landfill Capacity, Northeast

12



Source: MassDEP Capacity Study Report

12

Consultant Observations

13

- Despite the funding and focus on recycling and organics diversion, the need for landfills in the Northeast (and across the US!) has not been fundamentally reduced
- Landfill (and installed WTE) capacity in Northeastern population centers is increasingly scarce or nonexistent
- Accessing more distant landfill capacity incurs high transportation costs

∴

These factors are driving landfill values ever-higher

13

Preliminary Evaluation of a New WTE Facility in Ontario County

14

Legal/Regulatory Overview

Market/Economic Overview

14

Waste-to-Energy Facilities (Incinerators)

15

15

NY State WTE Map

16

Source: NY DEC

16

Relevant Federal Regulation

17

- Section 129 of the US Clean Air Act
  - Directs the EPA to develop regulations limiting emissions from solid waste incineration units
  - EPA sets standards based on the best-performing facilities in each source category. The "Maximum Achievable Control Technology" (MACT) defines the minimum degree of control required
  - Recently updated new source performance standards (NSPS) and emission guidelines (EG) for commercial and industrial solid waste incineration (CISWI) units

17

Relevant State Regulation

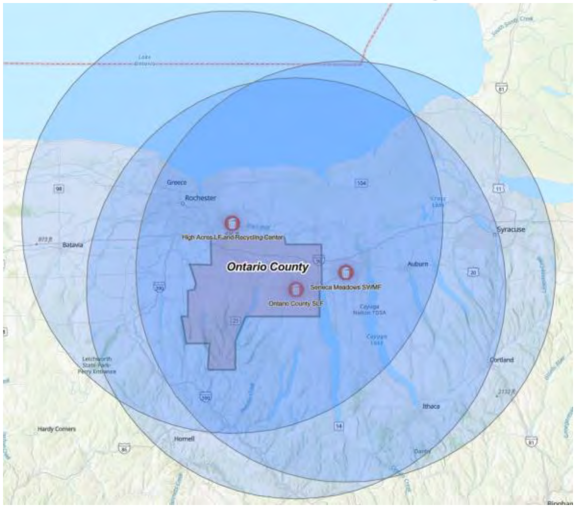
18

- NY State Finger Lakes Protection Act: Prevents new WTE construction where all of the following criteria exist:
  - There is at least one landfill or other solid waste management facility permitted by the department of environmental conservation and operating or located within a fifty-mile radius of the incineration facility.
  - The incineration facility is within 10 miles of a priority water body as designated by the department of environmental conservation, pursuant to section 17-1407 of the environmental conservation law.
  - The incineration facility is within the Oswego River/Finger Lakes Watershed

18

Siting Within 50 Miles of a Landfill

19



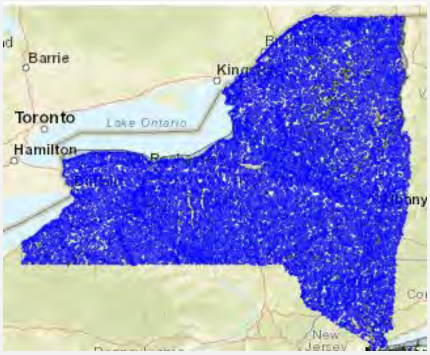
Conclusion

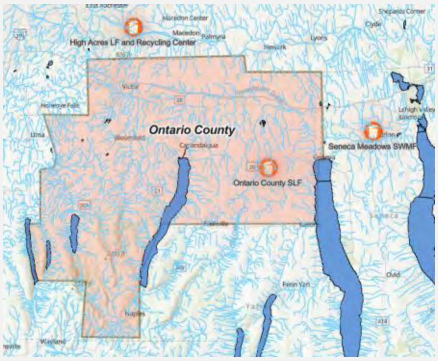
Entire County meets this criterion

19

Siting Within 10 Miles from Priority Waterways

20





Conclusion: Entire County meets this criterion

Source: Waterbody Inventory/Priority Waterbodies List (WI/PWL) dataset from data.ny.gov

20

Oswego/Finger Lakes Watershed

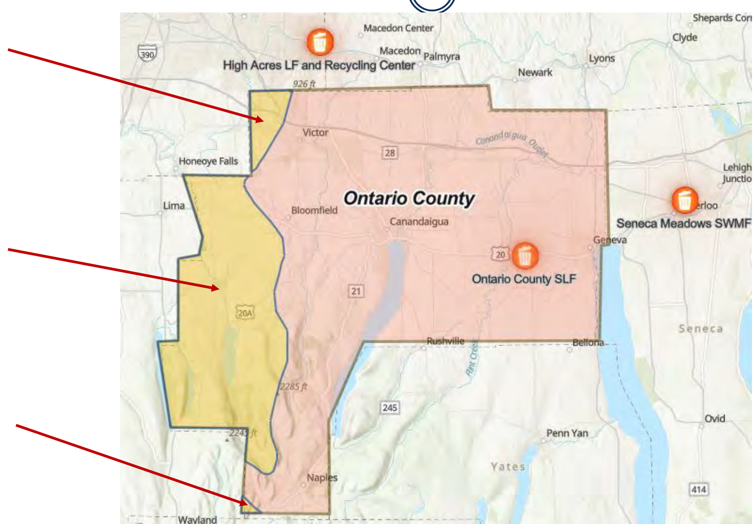
21

Conclusion: Most of the County meets this criterion

21

Eligible Locations for a New WTE in Ontario County

22



22

Non-Regulatory Factors to WTE Siting

23

- Even if there were a supportive regulatory, legal and policy environment, there are still substantial challenges to development of a new waste-to-energy facility in New York State and the Northeast US in particular but also, essentially, Nationwide.
  - No successful efforts to develop a completely new waste-to-energy facility in the US since 1993
  - In 2015, Palm Beach County (Florida) SWA spent $675 million to develop and built a second 3,000 tpd waste-to-energy plant next to their existing one
  - Pasco County (Florida) approved $290 million for a 515 tpd expansion of their existing waste-to-energy facility in Sep 2023

Handouts with further details on non-regulatory factors to solid waste facility siting are available on OneDrive

23

Non-Regulatory Factors to WTE Siting *(Continued)*

24

- Development
  - 5-7 years
  - Siting (which implies community acceptance!)
  - Permitting
  - Secure waste supply
  - Financing
  - Significant $ outlay with no assurance of success
- Construction
  - Developer/investor requirements are substantial
  - Since the pandemic construction costs have risen substantially and supply chains have become unstable

24

Non-Regulatory Factors to WTE Siting *(Continued)*

25

- Operations
  - Capital cost overruns typically borne by the EPC contractor, but operating period risks will typically be borne by the facility owner
  - Ash transport and disposal costs overruns are increasingly common
  - Waste supply misses (quantity and price) further impair economics
  - WTE facilities cannot accommodate all materials (biosolids, bulky items, C&D)
  - Change of law risk borne by facility owners (e.g. potential for tougher federal MACT standard)
  - Environmental justice and allied groups are currently urging EPA and the White House to tighten air rules for WTE facilities
  - Furthermore, environmental groups are suing EPA to force reviews of air toxics rules to force the agency to issue federal plans for states to implement tougher air pollution standards.

25

Preliminary Evaluation of a New Landfill in Ontario County

26

Regulatory Overview

Market/Economic Overview

26

Relevant Federal Regulation

27

- 40 CFR Part 258 Criteria for Municipal Solid Waste Landfills
  - Location Restrictions (airports, floodplains, wetlands)
  - Pollution Control
  - Closure and Post-closure Care

27

Relevant State Regulation

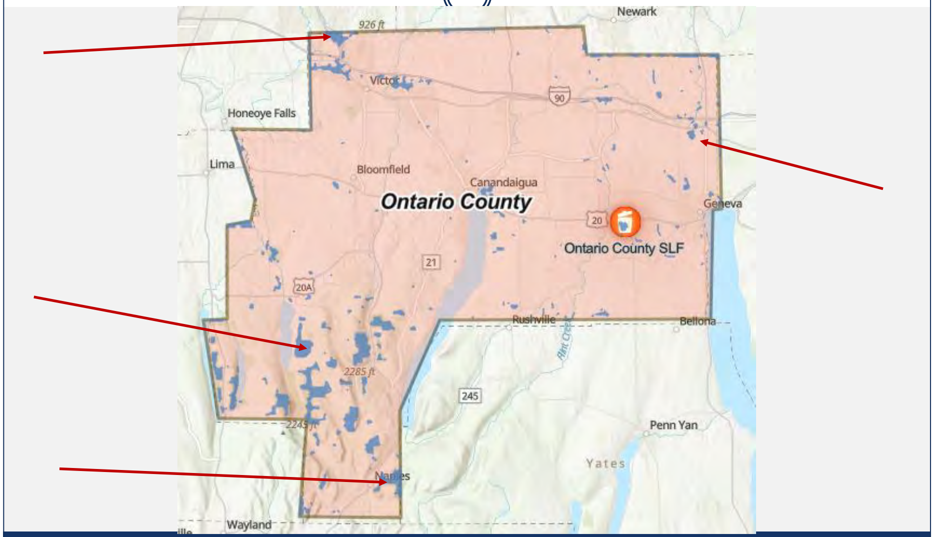
28

- Solid Waste Management Facility Regulations, 6 NYCRR Part 363 Landfills; Limits to new or expanded landfill development
  - Primary water supplies
  - 10,000 ft from Airports
  - Wetlands
  - Agricultural districts
  - 1,000 ft from residence or school
  - 200 ft height limit…unless FAA determines that it will not be an air safety hazard

28

Eligible Locations for a New Landfill in Ontario County*

29



Blue shaded areas preliminarily eligible for development of a new landfill in Ontario County

29

Relevant State Regulations (continued)

30

- Climate Leadership and Community Protection Act
  - Was enacted in 2019 as a means to fight climate change
  - Requires NY to reduce economy-wide greenhouse gas emissions 40 percent by 2030 and no less than 85 percent by 2050 from 1990 levels.
  - Has sizable implications associated with landfill permitting.
  - Permitting timeframes have increased significantly.

30

Non-Regulatory Factors to Landfill Siting

31

- Factors Impeding Landfill Siting are Similar to WTE
  - The last successful effort to develop a new landfill in NY State was the Oneida/Herkimer landfill which was built in 1994 after a ten-year project development period
  - There have been a limited number of expansions of existing facilities in the US – virtually all predated by years of conflict between the landfill owners and surrounding communities trying to prevent expansion


Justice

Environmentalists Sue to Block Expansion of New York State's Largest Landfill

Seneca Meadows is running out of space and wants a new permit to grow by 47 acres. The plaintiffs say the landfill emits a foul odor and violates their rights under the state's so-called Green Amendment.

By Peter Mantius
March 25, 2024

31

NYS Landfill Expansion Case Studies

32

- Region 9 - Waste Management of New York (WMNY) most recently received approval to modify and renew their Title V Air permit for a lateral and vertical expansion at the Chaffee Landfill in the Town of Sardinia. The approval includes a 20-acre lateral expansion to the south of the existing landfill, 10 acres of valley fill between the proposed new cell area and the closed NYS landfill, and a vertical expansion over currently permitted areas. The expansion extends the site life by approximately 7 years and adds ~5.1M CY^3 of disposal capacity.
  - Waste Management started discussions regarding the expansion with the Town of Riga in 2018 and permitting with the NYSDEC was started in 2020.
- Region 8 - Steuben County New York is in the final stages of gaining full approval of a lateral expansion which includes 70.9 acres of additional double composite lined landfill.
  - The County originally filed an Environmental Assessment Form for the expansion in 2019.

32

Non-Regulatory Factors to Landfill Siting *(Continued)*

33

- Development
  - 5-7 years
  - Siting (which implies community acceptance!)
  - Permitting
  - Secure waste supply
  - Financing
  - Significant $ outlay with no assurance of success
- Construction
  - Landfills are built cell by cell with construction capital required throughout the life of the landfill
  - Less construction period risk than WTE
  - Private sector model operates LFs as “merchant facilities”
  - Since the pandemic construction costs have risen substantially and supply chains have become unstable
- Operations
  - Waste supply misses (quantity and price) are typically borne by the owner
  - Change of law risk is nearly always borne by owner

33

Organics Diversion

34

New Compost Facility

New Anaerobic Digestion Facility

Organics Export

34

J&L Consulting

CENTRALIZED DIGESTER FEASIBILITY STUDY
ONTARIO COUNTY LANDFILL
(Key Findings Summary)

FULL DRAFT REPORT: ONTARIO COUNTY CENTRAL DIGESTER STUDY
(*AVAILABLE ON ONEDRIVE*)

35

J&L Consulting

- According to the estimates derived from MSW Consultant's prior waste characterization study, food waste comprises ~19% of the MSW stream within Ontario County (~ 11,000 tons/year).
- The residential collection of household wastes is predominately done via conventional curbside subscription service by private haulers whom are not currently equipped to manage SSO.
- Commercial food waste is also generated within the County by producers including numerous breweries, wineries, and several food manufacturers (e.g., canning, pasta, sauces).
- The management of food wastes/SSO at central digester located at the Ontario County Landfill will be challenging in the absence of cost effective management and collection methods.

36

J&L Consulting

- Given that a number of Towns (and a couple of Villages) within Ontario County do currently have customer drop off centers for the management of solid wastes, these sites could be augmented to include a SSO drop off location as is currently in practice in the Town of Seneca Falls and Town of Pittsford and also being pilot tested in Gorham, Victor, and Canandaigua.
- The most practical approach would be the use of multiple toters at the existing drop centers, however these collective (smaller) volumes would not support a central digester.
- Organics co-collection (using SSO bags) has been found to be successful on a pilot basis in the Northeast.

Possible Site Synergies:

- *Access Roads*
- *RNG connection*
- *Weight Scale*
- *Flares*
- *Existing Permits*
- *Manure Access*
- *MRFs*

37

J&L Consulting

Companies that would likely have interest in development and ownership of a centralized digester at the Ontario County Landfill include but are not limited to:

- Vanguard Renewables (Blackstone company)
- BP
- Shell (Nature Energy)
- Generate Upcycle
- Natural Upcycling
- Waste Management
- Bright Mark
- Anaergia
- Synthica

38

J&L Consulting

- A number of central digesters have recently been constructed or are under construction at several US locations.
- The primary driver behind many of these projects is monetization of the environmental attributes of the RNG produced. Generating RINs and Low Carbon Fuel Standards (LCFS) credits combined with the commodity value of the natural gas can lead to very attractive payback periods.
- All projects will qualify to receive a minimum tax credit of 6%. Most projects will likely qualify for 30% tax credit if it meets specific criteria. There is also the potential for additional tax credit bonuses, such as using domestic content and installing a system in a certain qualifying geographic area. These bonuses can boost savings by up to 50%.
- Depending on the feedstock used to generate RNG, values can range from $9 to $80 per MMBtu.
- Capital costs range from about $10M for a 10,000 ton/year facility to about $50M for a 190,000 ton/year plant.

39

J&L Consulting

PRELIMINARY FEASIBILITY STUDY
COMPOSTING OPERATION
ONTARIO COUNTY LANDFILL
(Key Findings Summary)

FULL DRAFT REPORT: ONTARIO COUNTY PRELIMINARY COMPOSTING ANALYSIS
(*AVAILABLE ON ONEDRIVE*)

40

J&L Consulting

- Three different types of composting techniques are feasible at the Ontario Co. Landfill including:

  1) Windrowing
  2) Static Pile
  3) In Vessel

- Any one of these practices is possible for development and implementation with windrowing being the least costly to implement and operate.

- The best option available to Ontario County may be one that involves a lease or other contractual arrangement with a private third party operator. Each of the options are relatively scalable and can commence at a smaller scale and be expanded as operations become established including the addition of organic feedstocks as they become available.

- OCRRA's Amboy, NY SSO composting facility manages ~ 11,000 yd^3 on an 8 acre footprint using conventional windrowing technology.

- Veteran Composting's Aberdeen, MD SSO facility manages ~ 6,000 yd^3 on a 2.5 acre footprint using static pile aeration technology.

41

J&L Consulting

- A number of synergies exist relative to the existing County infrastructure located on the landfill property including material recovery buildings, weigh scales, access roads, etc. In addition, there will undoubtedly be a need for a significant amount of nutrient rich soil as part of the final cover (e.g., vegetative layer) requirements that will be put in place leading up and following the closure of the landfill.

- Pending input from the NYSDEC the surface of the closed Phase I landfill could be a location for locating a composting operation.

42

J&L Consulting

REGIONAL ORGANIC MANAGEMENT FACILITIES STUDY
(Key Findings Summary)

FULL DRAFT REPORT: ONTARIO COUNTY ORGANIC MANAGEMENT FACILITIES SUMMARY
(*ACCESSIBLE ON ONEDRIVE*)

43

J&L Consulting

- There has been a slow but steady development of organic waste facilities in Western New York over the past 10 ten years. Several of the facilities that were investigated as part of this evaluation do have limitations either relating to lack of capacity for accepting additional SSO, infrastructure limitations (e.g., no on site depackaging capabilities). However, several facilities are in a position to serve as an outlet for the recovery of organics from within Ontario County.

- Of the **larger** regional facilities investigated including four anaerobic digesters, one vermiculture, and one compost site, Generate Upcycle's digester in Auburn, NY is likely to be the best current fit for the possibility of diverting organics.

  - The facility has available capacity including front end processing (e.g., depackaging) and with a addition of collection program (e.g., SSO co-collection, Town SSO drop sites) would be a means for diversion of materials prior to and after closure of the landfill.

44

J&L Consulting

GENERATE UPCYCLE – Auburn, NY (Cayuga County)

Located approximately 35 miles east of the Ontario County Landfill, the former Cayuga County Regional Digester initially began commercial operations in August 2008. Generate Capital purchased the former Cayuga County Regional Digester in 2016 and has since expanded the operation including installation of a new replacement digester, a larger engine (previously 0.625 MW now 1.2 MW) and a materials recovery facility including a depackaging operation.

Approximately 21,000 tons of food processing waste and 2,800 tons of SSO from Natural Upcycling (generated from numerous Wegmans stores in the Finger Lakes Region) and other generators was received in 2020. The upgraded facility is capable of handling up to 80,000 tons per year and plans are in place for converting to Renewable Natural Gas (RNG).

45

Closing

46

46

Consultant Observations

47

- Highly unlikely that a new WTE can be developed
- Highly unlikely that a new LF can be developed
- Landfill alternatives analysis is especially critical (next phase)
  - Continue with status quo (700,000 tpy)*
  - Continue with in-county waste plus importation at 50% of current level (350,000 tpy)
  - Continue with in-county waste only (104,000 tpy)
  - Close landfill outright
  - Close landfill and develop a new transfer station

Note: The landfill is permitted for a maximum of 916,000 tpy

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Next Tasks

48

Phase 1 (Complete)

- Municipality Tonnage and Financial Baseline
- Document Review (OMLA, etc)
- Template for Landfill Alternatives Economic Model

Phase 2 (Complete)

- Preliminary Evaluation of New WTE
- Preliminary Evaluation of New Landfill
- Review Federal and State Regulations
- Evaluate Residential Organics Options (Compost, AD, Export)

Phase 3 (In progress)

- Evaluation of Landfill Alternatives
- Evaluation of MRF Options

Phase 4

- Impact Analysis on Municipalities*
- Preliminary Evaluation of Landfill-Based Solar, Wind, and Storage Projects

* Includes updated town-by-town baseline and impact analysis

48

Questions

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APPENDIX F

BOARD OF SUPERVISORS UPDATE

JUNE 28, 2024

Note: Certain data and assumptions contained in this appendix may have been updated in subsequent phases of the projects.

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1

Opening Statements

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- Landfill has accepted all Ontario County waste at favorable contractual rates since 2004
  - 97,000 tons of solid waste in 2022
  - MSW, C&D, Industrial Wastes, Biosolids, Other Waste
- MRF continues to accept all County residentially generated recyclables for no fee
  - 7,300 total tons in 2022
- Favorable economics for County-generated wastes and recyclables are predicated on optimized profitability by a vertically integrated, regionally competitive private operator
- OMLA is set to terminate in 2028
  - The landfill will be substantially full at termination
  - Approximately 100,000 tons of capacity might remain (~1 year of additional Ontario Co availability)

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Sources of Waste Disposed (2023 tons)

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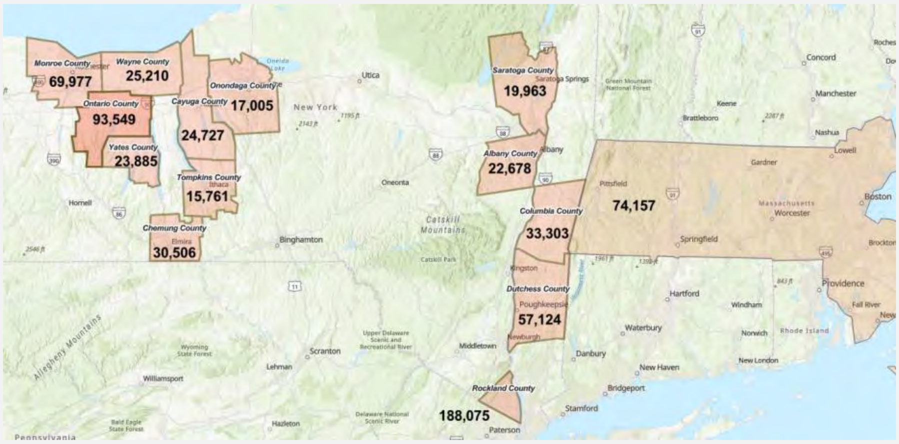

Note: This map is not all-inclusive and only shows sources > 15,000 tons

3

Landfill Facts

4

- 158-acre footprint (all phases)
- Peak elevation of 1,106 ft (~260 ft above ground level)
- Over 17.1 million tons of waste in place since 1992
- Permitted fill rate ~916,000 tons per year (tpy)
- Current fill rate ~700,000 tpy

- 25 million gallons of leachate treated (offsite) in 2023
- Landfill gas to energy generated 81 million kWh in 2023
- ~$6.7 million annual financial benefit to County stakeholders
  - Lease payments
  - Excess tonnage payments
  - Host community fee
  - Free disposal
  - Free recyclables processing
  - Other misc benefits

4

Town of Seneca's Landfill Position

5

- Administered a Public Outreach Effort in 2022
  - Hired Causewave Community Partners as a consultant
  - Held 3 public informational sessions
    - June 28, 2022
    - June 29, 2022
    - June 30, 2022
  - Surveyed town residents
    - 506 responses received
- Town Board Decision
  - Passed Resolution #78-22 on Oct. 18, 2022, unanimously voting for closure of the landfill at the end of the current lease.

5

Sources of Recyclables Processed (2022 tons)

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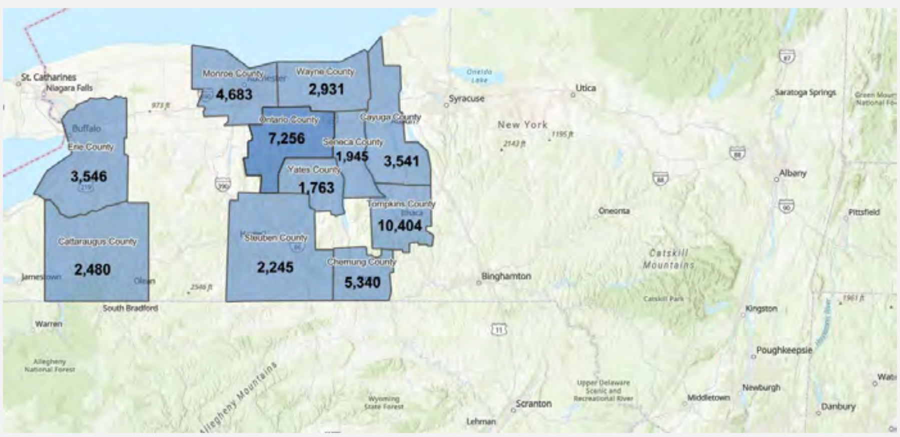


Ontario County Local Law 6-1992 mandates separation of recyclables and bans recyclables from the landfill

Note: This map is not all-inclusive and only shows sources > 1,000 tons

6

Research Summary

7

Phase 1

- Industry & Market Dynamics
- Municipality Tonnage and Financial Baseline
- Document Review (OMLA, etc)

Phase 2 (Workshop #1)

- Preliminary Evaluation of New WTE
- Preliminary Evaluation of New Landfill
- Review Federal and State Regulations
- Evaluate Residential Organics Options (Compost, AD, Export)

Phase 3

- Evaluation of Landfill Alternatives
- Evaluation of MRF Options

Phase 4

- Impact Analysis on Municipalities
- Preliminary Evaluation of Landfill-Based Solar, Wind, and Storage Projects

7

Workshop #1 Recap

8

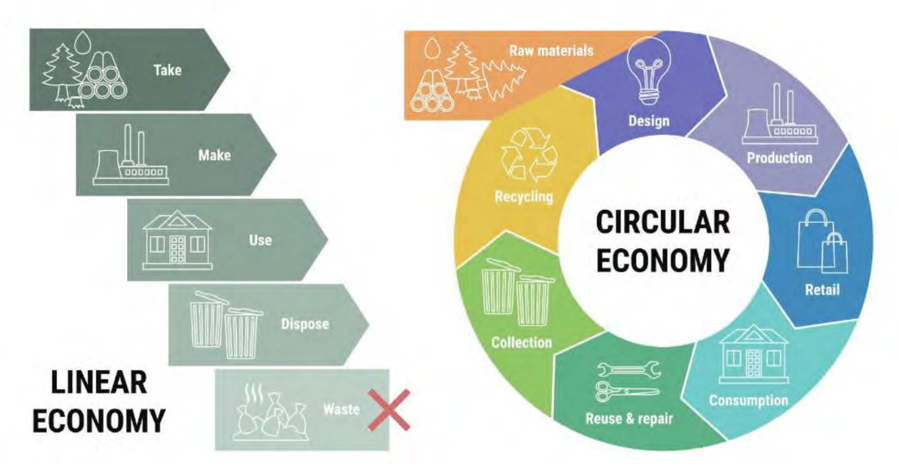
March 28 Meeting

- Waste Management in the Northeast
- New Solid Waste Facility Alternatives
- Organics Management Options

8

Transitioning NY from Linear to Circular Economy

9



Source: NY State Solid Waste Management Plan 2023-2032 (Fig 2.1)

9

Recycling Economics

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- Recyclables processing costs are (and have always been) high
- Revenue share is not guaranteed: dependent on commodity markets

10

Ontario County Municipal Solid Waste Composition

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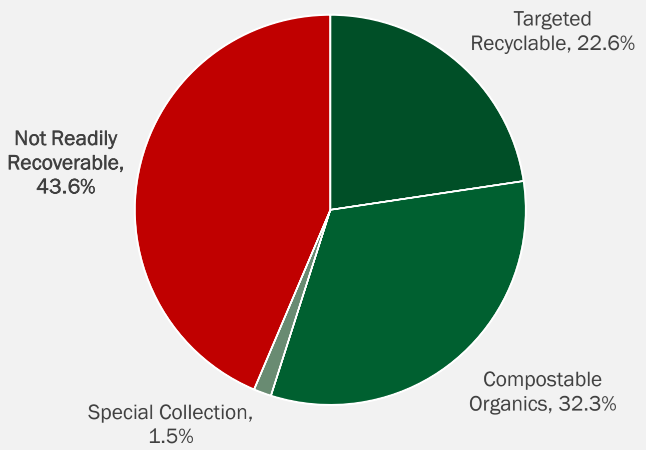
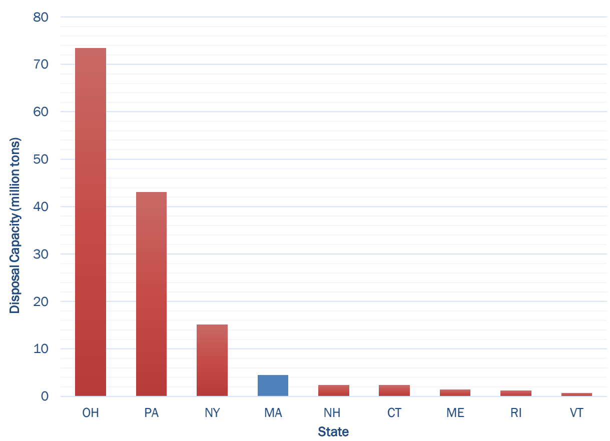


Source: Ontario County Waste Characterization Study, November 2022

11

Remaining Landfill Capacity, Northeast

12



Source: MassDEP Capacity Study Report

12

Consultant Observations

13

- Despite the funding and focus on recycling and organics diversion, the need for landfills in the Northeast (and across the US!) has not been fundamentally reduced
- Landfill (and installed WTE) capacity in Northeastern population centers is increasingly scarce or nonexistent
- Accessing more distant landfill capacity incurs high transportation costs
- As will be seen later in this presentation, even regional recyclables processing and organics waste management capacity is limited

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New Solid Waste Facility Alternatives

14

New Waste-to-Energy (Incinerator)

New Landfill

14

Regulatory Constraints

15

New Waste-to-Energy	New Landfill
• US Clean Air Act ○ Emissions Reduction • NY State Finger Lakes Protection Act ○ Proximity to Other Facilities ○ Proximity to water bodies ○ Prohibition in Watershed	• 40 CFR Part 258 Criteria for Municipal Solid Waste Landfills • 6 NYCRR Part 363 Landfills ○ Setbacks for wetlands, water bodies, airports, ag districts, residents, schools ○ New and existing landfills • NYS Climate Leadership and Community Protection Act

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Eligible Locations for a New WTE in Ontario County

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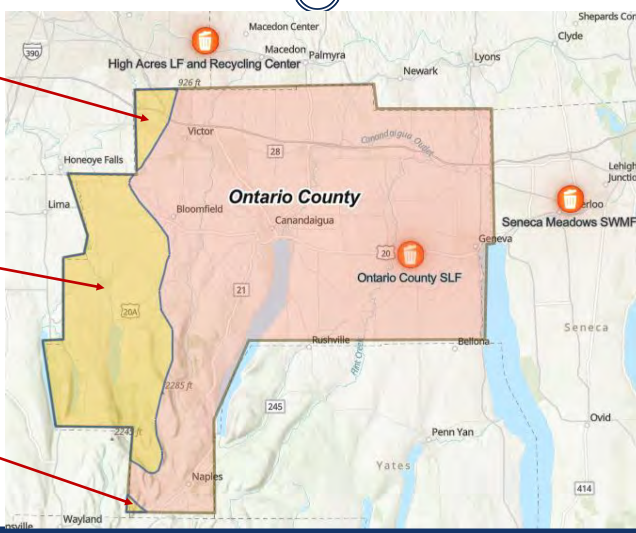
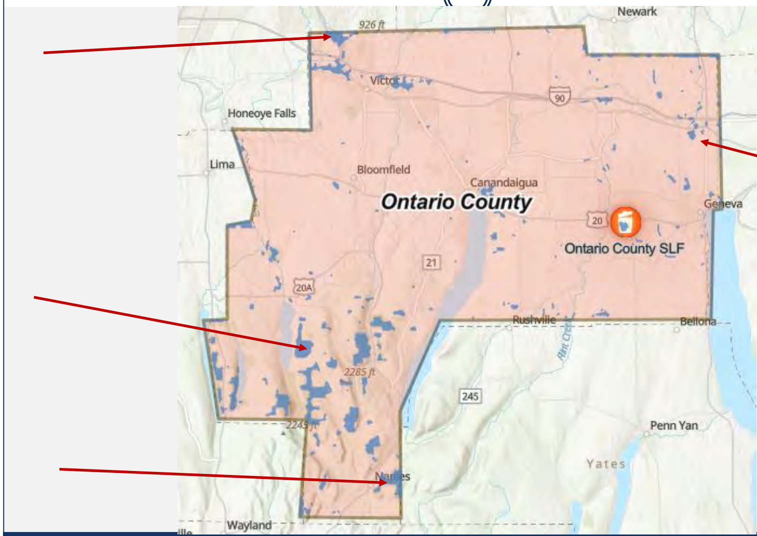


Eligible Locations for a New Landfill in Ontario County*

17



Blue shaded areas preliminarily eligible for development of a new landfill in Ontario County

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Non-Regulatory Constraints

18

Waste-to-Energy	Landfill
• Long development timeline • High capital outlay • Need for guaranteed waste supply • Ash transportation and disposal • Change of law risks • Prohibited waste types • Environmental justice concerns	• Long development timeline • Ongoing capital outlay for new cell construction • Need for guaranteed waste supply • New commitment to 30+ years of post-closure obligation • Environmental justice concerns • Regulatory uncertainty over risks of PFAs in leachate

∴ New Solid waste facility development is highly unlikely

18

Organics Diversion Options

19

Ontario Co Generates ~11,000 Tons per Year of Food Waste

- Centralized County Anaerobic Digestor at County Landfill
- Composting Facility at Ontario County Landfill Site
- Export to Regional Organics Processing Facilities

19

Centralized County Anaerobic Digestor

20

- Organics recovery requires new collection and storage infrastructure ($)
- Some munis have SSO drop-off
- 8 prospective facility developers identified
- $10 million capital cost for a 10,000 tpy facility
- RNG valued at $9 to $80 per MMBtu

20

Centralized County Composting Site

21

- Technologies
  - Windrowing
  - Static Pile
  - In Vessel
- Leased/contracted operation with a private operator recommended
- Synergies at landfill site
- Surface of the closed Phase I landfill could be a suitable location

21

Regional Processing Outlets

22

- Slow but steady market development in Greater Rochester Region for larger processors
  - Four AD
  - One vermiculture
  - One compost site
- Generate Upcycle’s digester in Auburn, NY
  - Capacity available
  - 35 miles east of the Landfill
  - De-packaging

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Ontario Co Landfill Expansion Scenarios

23

23

Current Assumptions

24

- OMLA set to terminate in 2028
- Casella will continue to meet all landfill contractual obligations
  - Accept all Ontario County waste (MSW, biosolids, C&D, etc) at contractual rates
  - Approximately 100,000 tons of capacity might remain (~1 year of additional Ontario Co availability)
  - Note that County pays for remaining, unused tonnage

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Landfill Scenarios (2028 & Beyond)

25

- RFP Requirement: Investigate continued operation of the landfill… including at what scale operations would be viable for a private operator or for the County
- There are two landfill expansion options for continuing operations upon termination of the OMLA
  - Vertical expansion
  - Lateral (or horizontal) expansion

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Vertical Expansion

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Vertical Expansion Considerations and Costs

27

- Potential Additional Capacity: 5.9 million tons
- Vertical Expansion is Developed Over Existing Cells
  - No change to built landfill acreage…but increased elevation
  - Little to no additional cost for closure and leachate management
  - Long term care accrual has largely occurred
  - No cell development or liner typically needed
- Costs
  - Engineering (design, slope confirmation, liner strength analysis)
  - Construction
    - Extension and possible relocation of existing landfill gas wells and lateral lines
    - Some wells would likely be abandoned (and reinstalled) upon the new final grades being met

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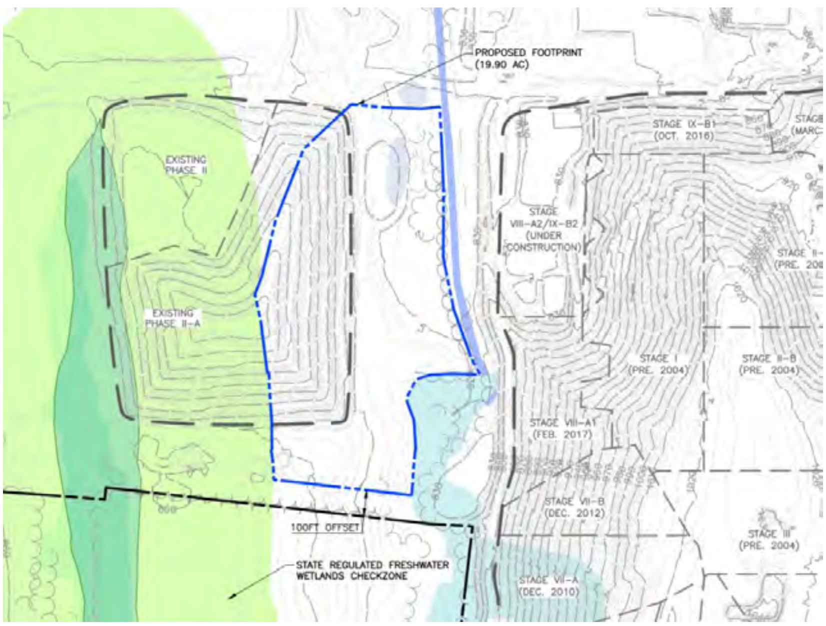

Lateral Expansion

28

Lateral Expansion Considerations and Costs

29

- Potential Additional Capacity Without Extraordinary Measures: 0.7 million tons
- Lateral expansion requires development of additional acreage within the permitted area (usually abutting existing wastes)
- Costs of a New Landfill Phase
  - Engineering (full design)
  - Construction
    - Double liner system as foundation
    - Leachate capture system
    - Landfill gas system
  - Closure and LTC
    - Cap and close
    - Monitor for 30 years

29

Landfill Expansion is Complicated

30

Regulatory Interpretations	Contractual/Legal Interpretations

30

Landfill Permit Modification

31

- Any expansion will require permitting
- Permitting preparation
  - Environmental Impact Report
  - Engineering Design/Part 360 Permit Application
- Timeframe for permitting will take years
  - It may vary depending on the specifications of the expansion
  - There is potential for unforeseen delays

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Expanded Landfill Setback Constraints

32

- NY-CRR Subpart 363-5 Siting Requirements
  - 5.1(k) Excluded from the below requirements are residences or schools that are owned by or which have entered into legal agreement with the landfill owner or operator. In terms of residences, the 1,000 feet distance in the below requirements *is measured from the closest location on the landfill property where waste will be placed to the residence building and managed landscape (italics added)*.
  - 5.1(k)(2) A lateral or vertical expansion of a landfill is prohibited within 1,000 feet of a school or residence.
- No schools are in the vicinity
- 1-2 residential parcels may require investigation

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OMLA Terms Potentially Impacting Expansion (Par. 3.5)

33

(a) [Casella] shall be solely responsible to perform and pay the costs of all present and future Closure and Post Closure Care of (i) all portions of the Landfill closed as of the Effective Date; and (ii) each phase of the Landfill to the extent that the capacity of such phase is exhausted during the term of this Agreement.

(d) [Casella] shall be responsible for all environmental remediation...no matter when caused including without limitation any required by [federal and state law]...These obligations survive the termination or expiration of this Agreement except...(ii) [Casella] shall not be liable for any environmental conditions or liability created or exacerbated as a result of any actions by any party after such termination.

County should expect to retain outside counsel to support any expansion!

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Complications

34

- Prospective facility operators will face differing legal and technical perspectives
  - The Current Operator is already responsible for future landfill risk mitigation, and understands the inherent Long Term Care (LTC) and remediation risk
  - New Operators (and the County) potentially face greater uncertainty and technical/legal challenge to delineate LTC and remediation responsibilities for any subsequent operator
- Minimal acreage is available for lateral expansion without impacting wetlands or incurring excavation/lining of old landfill phases
  - If wetlands are impacted, remediation is required:
    - Option 1: Restore/expand wetlands at 4:1 ratio
    - Option 2: Wetland credits via Ducks Unlimited ~$100,000/acre
  - If older phases are excavated/mined, the recovered capacity would require new linter installation

34

35

To be conservative, this analysis incorporates a conservative (high) estimate of the cost of landfill expansion

(But if all regulatory constraints and legal/business risks can be overcome, a vertical expansion would be less expensive than a lateral expansion due to avoidance of new cell development, closure and post-closure)

35

Landfill Scenarios (2028 & Beyond)

36

- 100% (Existing) Fill Rate: Maintain current import level (700,000 tpy)
- 50% Fill Rate: Limit imports to cut fill rate by 50% (350,000 tpy)
- County Waste Only: Eliminate waste imports and fill with Ontario County wastes only (100,000 tpy)

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Landfill Vertical Expansion[1] Scenarios

37

		100% Fill (144 feet add'l elevation)		50% Fill (75 feet add'l elevation)	
Scenario	Annual Tonnage	Add'l Capacity (Million CY)	Landfill Life	Add'l Capacity (Million CY)	Landfill Life
100% Fill Rate	700,000	5.9	2037	2.9	2033
50% Fill Rate	350,000	5.9	2045	2.9	2038
County Waste Only	100,000	5.9	2083	2.9	2057

Note: Current permitted fill rate: ~916,000 tpy

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Tonnage Rate & Facility Service Area Considerations

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Methods to Estimate Landfill Tip Fees

39

1. Analysis of Casella Operating & Financial Data
2. Technical Case Studies from Other Landfills
3. Planning-Level Pro-Forma Model for Three Fill Rates

39

Method 1: Analysis of Casella Data

40

Cost of OMLA Benefits to Casella

Benefit Type	Line Item	All Tons
Direct Payments to County	Base Lease Payment	$2,000,000
	Permit Success Payment	$1,307,559
	Revenue Share	$523,534
	Excess Tonnage payment ($3.27/ton over 612k)	$228,641
	Misc Benefits to County (scholarship, reimbursements)	$42,500
Direct Payments to Seneca	Host Community Fee	$2,066,465
	Value of Free Host Community Refuse Disposal	$63,685
System Benefit	Value of Free Recycling	$439,247
	Total Benefits Attributable to OMLA	$6,671,631
	Tons	779,668
	Benefit $/Ton	$8.55

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Method 1 (Continued)

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Implied Tip Fee

Line Item	All Waste
Gross Revenue (Est)	$38,037,750
Benefits Attributable to OMLA	($6,671,631)
Net Revenue	$31,366,119
Profit 10%	($2,851,465)
Conservative Full Cost Estimate	$28,514,654
Imported Tons	779,668
Full Cost/Ton	$36.57
Cost of County Benefits	$8.55
Implied Tip Fee	$45.13

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Method 1 (Continued)

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Conclusion

			Profit (Loss)	
		Tip Fee ($/ton)	$	Pct
Implied Tonnage Rate		$45.13		
Current Tip Fee	County Municipal MSW	$41.58	($3.55)	-7.9%
	County Private MSW	$46.29	$1.16	2.6%
	County Municipal C&D	$41.06	($4.07)	-9.0%
	County Private C&D	$45.70	$0.57	1.3%

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Method 2: Technical Case Studies

43

- Low Fill Rate Landfills
  - Madison County, NY (2021 analysis)
    - 60,000 tpy
    - ~$91/ton projected tip fee
  - Sullivan County, NY (2006 analysis)
    - 80,000 tpy
    - ~$82/ton tip fee
- High Fill Rate Landfill
  - Private sector landfill in Ohio (2011 analysis)
  - Business strategy: maximize tonnage, minimize cost/ton
  - 1.3 million tpy
  - ~$29/ton projected tip fee

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Method 3: Pro Forma Landfill Cost Estimates

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	100% (Existing) Fill Rate	50% Fill Rate	County Waste Only
FTEs	38	25	13
Tons	700,000	350,000	116,936
Operating Cost (Mil $)	$11.2	$9.2	$7.1
Operating Cost ($/ton)	$16.00	$26.21	$60.53
Cell Development ($/ton)	$16.00	$16.00	$16.00
Closure/Post Closure ($/ton)	$8.00	$8.00	$8.00
Estimated Tip Fee	$40.00	$50.21	$84.53

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Summary of Tip Fee Estimates for County Landfill Expansion

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Method	Landfill Throughput (tpy)	Range (+/-)
1. Analysis of Current Landfill Data	700,000	$40-$50
2. Technical Case Study – Small LF	60,000 to 80,000	$80-$95
2. Technical Case Study – Large LF	1,300,000	$30-$40
3. Pro Forma – County Waste Only	116,000	$80-$90
3. Pro Forma – 50% Fill Rate	350,000	$55-$65
3. Pro Forma – 100% (Existing) Fill Rate	700,000	$35-$45

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Tip Fees Used for Comparative Analysis

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	MSW		C&D	
Scenario	Muni	Pvt	Muni	Pvt
Current	$41.58	$46.29	$41.06	$45.70
Vertical Expansion, 100% Fill Rate	$46.29	$46.29	$45.70	$45.70
Vertical Expansion, 50% Fill Rate	$60.00	$60.00	$60.00	$60.00
Vertical Expansion, County only	$80.00	$80.00	$80.00	$80.00

Commentary:

- MSW and C&D tip fees are equilibrated for all scenarios
- The high (100% Fill) and low (County Waste Only) tip fee estimates are validated from multiple methods

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Prospects for Continued Benefits

47

- Free recycling: Assumed to be reduced or eliminated in all scenarios
  - A reduced processing fee at the County MRF may be negotiable under certain outcomes
- County benefits
  - Could continue if importation is continued at a meaningful level
  - May be reduced even as best-case scenario
- Host community benefits
  - Likely to continue under all landfill expansion scenarios
  - Fee level may be reduced with lower tonnage
  - Free disposal may change

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Break

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Export Scenarios

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Waste Export Scenarios

50

- Close Landfill & Establish a Commercial Transfer Station
  - Undetermined ownership of the transfer station
  - Resulting waste supply could be shopped to surrounding landfills in hopes of securing a reduced tip fee for long-term commitment
- Close Landfill with No Transfer Station
  - Municipalities to rely on the private market for all materials management service
  - Disposal locations to be secured by haulers; tip fees dependent on disposal agreements between haulers and landfills
  - County waste supply would be divided among multiple parties and reduce leverage for long-term supply discounts for any single party (e.g. municipal transfer stations)

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Commercial-Scale Transfer Station

51

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Definitions

52

- Transfer (Handling): Receiving wastes from packer trucks on a tip floor, then reloading that waste into large trailers
- Transportation: Conveying trailers of waste originating at the transfer station to a landfill (or WTE) for final Disposal
- Disposal: The tip fees paid to a landfill (or WTE) receiving the transported waste
- Full Cost: the sum of direct operating expense, annualized capital cost, and debt service. Excludes profit.

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Commercial Transfer Station Operating Cost Comps

53

LIBERTY COUNTY
GEORGIA

- Rural county outside Savannah
- Simple 2-level transfer station
  - Publicly operated
- 56,000 tons annual throughput
- Transfer: $16/ton Full Cost

53

Commercial Transfer Station Operating Cost Comps

54

- Medium-sized city, serving an isolated county
- Recently built, modern transfer station
- 83,000-ton annual throughput
- Publicly operated
- Transfer: $15/ton full cost

LOGAN
CITY UNITED IN SERVICE

54

Commercial Transfer Station Operating Cost Comps

55

CITY OF FAYETTEVILLE ARKANSAS

- Medium sized city in NW Arkansas
- High demand by 3rd parties to use City transfer station
- 81,000-tons annual throughput at time of study
- Transfer: $18.40/ton full cost

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New Ontario County Transfer Station

56

- Estimated maximum annual throughput of 65,000 tons
  - 55,000 tons MSW; 10,000 tons C&D
  - Not viable for biosolids, asbestos, BUD, and some industrial wastes
  - Unknown amount of County waste will shift to direct haul to nearby landfills
- Assumed private operation
  - Adds ROI requirements for capital investment
  - Adds profit margin for service
- Estimated $20/ton all-in cost for Transfer (Handling)
  - Includes profit
- Tonnage commitment required to attract investment

56

Transportation Costs

57

- Tractor-Trailer is low-cost over-the-road transport option
- Linear cost calculation based on mileage
- Pro forma transportation model
  - Vehicle capital cost
  - Labor
  - Maintenance expense
  - Fuel/oil/tires
- Estimates the $/ton-mile
  - Cost to move 1 ton 1 mile

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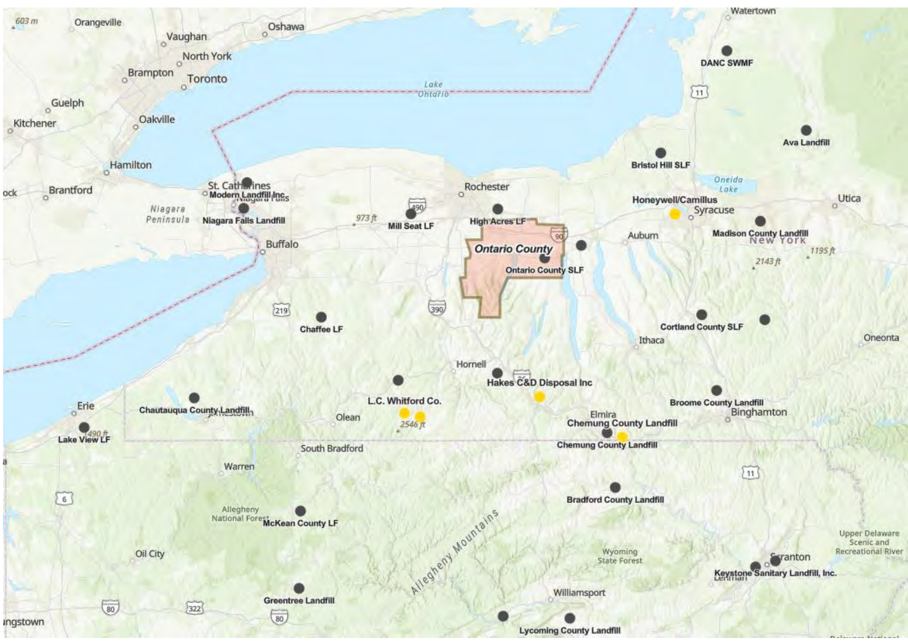

See Exhibits 2 (NY Landfills) and 3 (PA Landfills)

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Transportation Cost Ranges

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One-way Mileage	Transportation Cost ($/ton)	No. of Landfills within Radius Band	
		NY	PA
0-25	$0-$7	2	
26-50	$8-$14	2	
51-75	$15-$21	6	
76-100	$22-$28	4	
101-125	$29-$35	2	1
126-150	$36-$42	5	2
151-175	$43-$49		2

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Disposal Expectations for Direct Haul from Ontario County

60

Landfill	City	Distance from Ontario Co (mi)	Reported Gate Rate*
High Acres	Fairport, NY	18	$58
Seneca Meadows	Waterloo, NY	23	$100
Chemung County	Elmira, NY	62	$65
Mill Seat	Bergen, NY	40	$60
Modern Landfill	Model City, NY	93	$76

* Published prices for MSW disposal with no supply agreement

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NY Landfills Accepting Special Wastes

61

- Reported to accept Biosolids
  - Steuben Co Landfill
    - Currently accepting V. Naples biosolids
    - 46 miles one way
    - Not shown on DEC report
  - Chaffee Landfill
    - Owned by WM
    - Erie County
    - 75 miles one way
    - 2021 Landfill Report
  - Chatauqua Landfill
    - Owned by Chatauqua Co
    - 150 miles one way
    - 2021 report
- Industrial, Asbestos
  - Accepted by High Acres and Seneca Meadows
  - Accepted at 3 add'l landfills within 75 miles
- C&D Debris
  - Widely accepted
  - Including at all 10 landfills within 75 miles

Source: DEC

61

Total Cost Comparison ($/ton)

62

Option	Transfer	Transportation	Approx. Disposal ($/ton)	Total Disposal Cost*	Continued Benefits
Close Landfill, Develop Transfer Station	$20	$7-$30+	$40-$50	$67-$100	No
Close Landfill	N/A	N/A	$58-$100	$58-$100	No

*The values in this table EXCLUDE impacts on the cost of collection that will be incurred to new disposal locations, which are discussed later

62

Alternative Landfill Tonnage Rate Assumptions

63

Alternative Landfills	Transfer (Handling)	Transportation	Disposal Tip Fee	Total
Seneca Meadows	$20.00	$4.00	$80.00	$104.00
High Acres	$20.00	$8.00	$58.00	$86.00
Mill Seat	$20.00	$17.00	$60.00	$97.00
Distant (Generic)	$20.00	$22.00	$80.00	$122.00

Assumptions
- Actual pricing is set by each landfill on a case-by-case basis depending on the customer relationship
- Typically, higher volume and longer time commitments receive price concessions
- To be conservative, the analysis assumes tip fees will be closer to gate rates, although a long-term rate discount is assumed for Seneca Meadows
- Seneca Meadows may not be a long-term option due to potential closure

63

Direct Haul of Waste (No Transfer Station)

64

64

Collection System Impacts of Closed Landfill

65

- There are minimal collection system impacts if the landfill remains open
- A centrally located commercial transfer station would also limit impacts to the local collection system

Closing the landfill with no new commercial transfer station will drive changes in local collection services

65

Ontario County Residential Collection System

66

- Current service levels are low
  - Weekly refuse collection
  - Weekly or EOW recycling collection
  - Extra cost for yard waste
  - Extra cost for bulky waste
- Subscription prices for residential service are reported to be (very) high

Hauler	Monthly $/Household
Casella	$40-$48
WM	$63
Dependable	$70
Range for Analysis	$44-$70

Rates are from a limited sample of County residents

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Ontario County Residential Curbside Service Costs

67

- City of Canandaigua
  - 2,918 households
  - Services provided
    - 1x/week refuse
    - Every-other-week recycling
    - Every-other-week yard waste (seasonal + holiday trees)

Expense Item	Cost
Budgeted Operating Expenses	$753,506
Disposal @ $41.58	$102,869
Recyclables Processing @ $0/ton	$0
Total	$856,375
Households	2,918
Cost per Household per Month	*$24.46*

- Village of Victor
  - 1,099 households
  - Services provided
    - 1x/week refuse
    - 1x/week recycling
    - 2x/year large item collection

Expense Item	Cost [1]
Budgeted Refuse Cost	$122,664
Budgeted Recycling Cost	$55,591
Total	$178,255
Households [2]	1,099
Cost per Household per Month	*$13.52*

(1) Source: Reported by Village of Victor
(2) Source: 2020 U.S. Census

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One More Collection Cost Case Study

68

- City of Poughkeepsie
  - 5,200 residential accounts
  - Services provided
    - 2x/week refuse
    - 1x/week recycling
    - 1x/week seasonal YW
    - On-call, fee-based bulky waste
  - $97/ton tip fee
  - $120/ton recyclables processing fee
  - $43/month per household (2024 $)

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Curbside Collection Economics

69

- Routes are typically designed to fill an 8- or 10-hour shift
- Productive Time: Spent on route actively collecting set-outs in neighborhoods
- Non-Productive Time: Time spent doing everything other than collecting set-outs in neighborhoods
  - Pre-trip inspection of the collection truck
  - Driving from the fleet yard to the route
  - When the truck is full, driving from the route to the disposal facility
  - Lunch/breaks
  - Driving back to the fleet yard at the end of the day
  - Refueling and post-trip inspection of the collection truck

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Collection Productivity Assumptions

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	Metric
Work Day (Hours)	8
Productive Time per Day (Hours)	5.5
Non-productive Time per Day (Hours)	2.5
Households/Route	500
Households/Productive Hour	90.9
Seconds/Stop	39.6

Source: MSW Consultants professional estimates

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Collection System Overview

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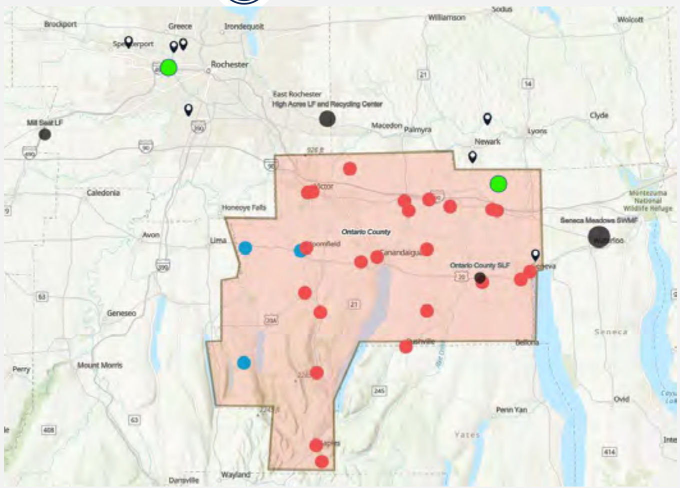
Legend

- Landfills
- Hauler yards
- Hauler yard centroids
- Munis served by Northwest haulers
- Munis served by Northeast haulers



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Collection & Disposal Portions of Subscription Rate

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Estimated Annual Disposal/Processing Cost per Household

Material	Residential Generation Rate (tpy)	Tip Fee for Privately Collected Materials ($/ton)	Annual Disposal Cost	**Implied Annual Disposal with Mark-up (20%)**
Waste	0.80	$46.29	$37.03	**$44.44**
Recycling	0.13	$0	$0.00	**$0.00**
Total	**0.93**		**$37.03**	**$44.44**

Implied Annual Collection-only Cost per Household

Subscription Collection Scenario	Monthly Rate	Total Annual Rate	Disposal/ Processing Annual Cost	Annual Collection Cost ($/Yr)	**Implied Cost of Collection-only ($/Mo)**
Lower Range	$44.00	$528	($44)	$484	**$40.30**
Upper Range	$70.00	$840	($44)	$796	**$66.30**

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Landfills Selected for Direct-Haul Analysis

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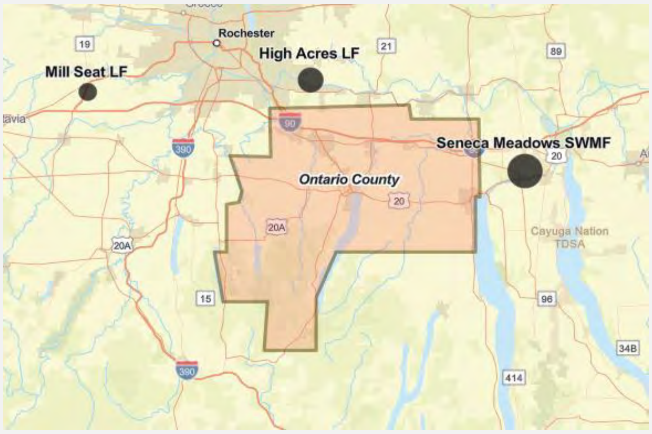

Generic Distant Landfill

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Estimated Tip Fees at Selected Landfills

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	Total Disposal Cost ($/ton)	
Destination Landfill	**Range**	**Used for Analysis**
Current	$46.29	$46.29
Seneca Meadows	$80-$90	$85.00
High Acres	$58-$68	$63.00
Mill Seat	$60-$70	$65.00
Distant	$65-$100	$85.00

It is assumed that direct (subscription) haulers (who do not own the destination facilities) will pay higher rates when direct hauling as compared to the rates secured via long term supply arrangement through a commercial transfer station (discussed previously)

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Algorithm for Estimating Collection Cost Impact

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- Step 1: Measure the mileage between each municipality and the Ontario Co Landfill
- Step 2: Calculate the incremental mileage to reach each of the more distant landfills
- Step 3: Convert additional mileage to drive time (based on posted roadway speed)
- Step 4: Calculate the reduction in households served due to the increase of non-productive time and the corresponding decrease of productive time
- Step 5: Calculate the rate increase that would be needed to achieve equivalent revenue per route

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New Subscription Rates

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More Expensive Collection from Longer Direct Haul

+

More Expensive Disposal at Distant Landfills

=

Higher Subscription Rate for Residential Households

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Community Impacts Worksheets

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Table 20 A - Estimated Total Monthly Cost

Municipality	Total Monthly Avg Low	Total Monthly Avg High	Ontario - Seneca Low	Ontario - Seneca High	Ontario - High Acres Low	Ontario - High Acres High	Ontario - Mill Seat Low	Ontario - Mill Seat High	Ontario - Chemung Low	Ontario - Chemung High
Town of Victor	$44.00	$70.00	$51.46	$79.87	$45.98	$71.98	$55.26	$87.14	$66.98	$105.65
Town of Farmington	$44.00	$70.00	$51.36	$79.70	$45.98	$71.98	$50.75	$79.72	$67.71	$106.86
Town of Canandaigua	$44.00	$70.00	$53.14	$82.63	$47.65	$74.73	$54.30	$85.57	$67.00	$105.69
Town of Manchester	$44.00	$70.00	$49.45	$76.55	$46.19	$72.32	$55.37	$87.32	$67.03	$105.74
Town of Gorham	$44.00	$70.00	$54.48	$84.82	$53.62	$84.54	$60.98	$96.56	$66.28	$104.50
Town of Hopewell	$44.00	$70.00	$52.84	$82.13	$51.01	$80.26	$59.30	$93.79	$67.97	$107.28
Town of Geneva	$44.00	$70.00	$50.53	$78.33	$57.14	$90.35	$64.96	$103.10	$65.97	$103.99
Town of Richmond	$44.00	$70.00	$51.22	$79.47	$45.98	$71.98	$50.78	$79.77	$65.20	$102.72
Town of West Bloomfield	$44.00	$70.00	$53.79	$83.70	$45.98	$71.98	$47.00	$73.55	$67.64	$106.74
Town of Seneca	$44.00	$70.00	$53.43	$83.10	$57.10	$90.27	$64.46	$102.27	$67.57	$106.63
Town of Naples	$44.00	$70.00	$54.16	$84.30	$51.36	$80.83	$53.86	$84.85	$59.16	$92.79
Town of Bristol	$44.00	$70.00	$54.18	$84.34	$46.45	$72.76	$51.78	$81.42	$67.75	$106.92
Village of Phelps	$44.00	$70.00	$49.08	$75.95	$51.21	$80.58	$60.62	$95.96	$67.03	$105.74
Town of South Bristol	$44.00	$70.00	$54.16	$84.30	$47.79	$74.95	$52.33	$82.32	$63.66	$100.18
City of Geneva	$44.00	$70.00	$49.37	$76.42	$56.34	$89.02	$64.80	$102.84	$65.45	$103.14
City of Canandaigua	$20.00	$20.00	$28.93	$28.93	$26.22	$26.22	$28.30	$28.30	$32.05	$32.05
Town of Phelps	$44.00	$70.00	$49.25	$76.22	$50.95	$80.15	$60.37	$95.55	$67.15	$105.93
Town of East Bloomfield	$44.00	$70.00	$53.60	$83.39	$45.98	$71.98	$50.33	$79.04	$67.59	$106.66
Village of Victor	$13.52	$13.52	$21.54	$21.54	$19.20	$19.20	$19.80	$19.80	$23.81	$23.81
Village of Clifton Springs	$44.00	$70.00	$50.62	$78.48	$49.26	$77.38	$58.27	$92.10	$68.06	$107.43
Town of Canadice	$44.00	$70.00	$53.94	$83.94	$46.40	$72.67	$47.93	$75.09	$62.00	$97.46
Village of Manchester	$44.00	$70.00	$50.34	$78.01	$45.98	$71.98	$54.47	$85.85	$67.46	$106.45
Village of Shortsville	$44.00	$70.00	$51.07	$79.22	$46.59	$72.98	$55.61	$87.73	$67.91	$107.18
Village of Bloomfield	$44.00	$70.00	$53.41	$83.08	$45.98	$71.98	$50.61	$79.49	$67.55	$106.59
Village of Naples	$44.00	$70.00	$53.18	$82.69	$50.02	$78.63	$53.18	$83.72	$59.93	$94.06
Village of Rushville	$44.00	$70.00	$53.47	$83.16	$51.97	$81.84	$59.48	$94.09	$63.60	$100.10
Monthly	$41.90	$65.90	$50.08	$76.70	$47.24	$73.21	$53.26	$82.96	$63.06	$98.16

Table 20 B - Estimated Total Monthly Cost

Municipality	Total Monthly Avg Low	Total Monthly Avg High
Town of Victor	$44.00	$70.00
Town of Farmington	$44.00	$70.00
Town of Canandaigua	$44.00	$70.00
Town of Manchester	$44.00	$70.00
Town of Gorham	$44.00	$70.00
Town of Hopewell	$44.00	$70.00
Town of Geneva	$44.00	$70.00
Town of Richmond	$44.00	$70.00
Town of West Bloomfield	$44.00	$70.00
Town of Seneca	$44.00	$70.00
Town of Naples	$44.00	$70.00
Town of Bristol	$44.00	$70.00
Village of Phelps	$44.00	$70.00
Town of South Bristol	$44.00	$70.00
City of Geneva	$44.00	$70.00
City of Canandaigua	$20.00	$20.00
Town of Phelps	$44.00	$70.00
Town of East Bloomfield	$44.00	$70.00
Village of Victor	$13.52	$13.52
Village of Clifton Springs	$44.00	$70.00
Town of Canadice	$44.00	$70.00
Village of Manchester	$44.00	$70.00
Village of Shortsville	$44.00	$70.00
Village of Bloomfield	$44.00	$70.00
Village of Naples	$44.00	$70.00
Village of Rushville	$44.00	$70.00
Monthly	$41.90	

Adjusted HH's (Refuse) | Increase to Collection-Monthly | Increase to Disposal-Monthly | New Total Cost-Monthly | Est. Tip Fees | Town of Vic

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Material Recovery Facility (MRF) Analysis

78

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Current Assumptions

79

- OMLA set to terminate in 2028
- Casella will continue to accept all Ontario County recyclables through termination
  - $0 per ton for residential recyclables
  - $80/ton for commercial mixed recyclables
  - $35/ton rebate for clean cardboard

79

Recycling: A Brief History

80

- Economically-driven Recycling (pre-1990)
  - Take-back programs
  - Newspapers, glass bottles, scrap metal
- Rise of Residential Curbside Recycling (1990s)
  - Manual Collection
    - Source separated: 6+ compartments on truck
    - Dual stream: paper and bottles/cans
  - Processing: Manual sorting with low-tech mechanical equipment
- Modern Recycling Programs
  - Automated Collection: Single stream
  - Processing: Highly automated

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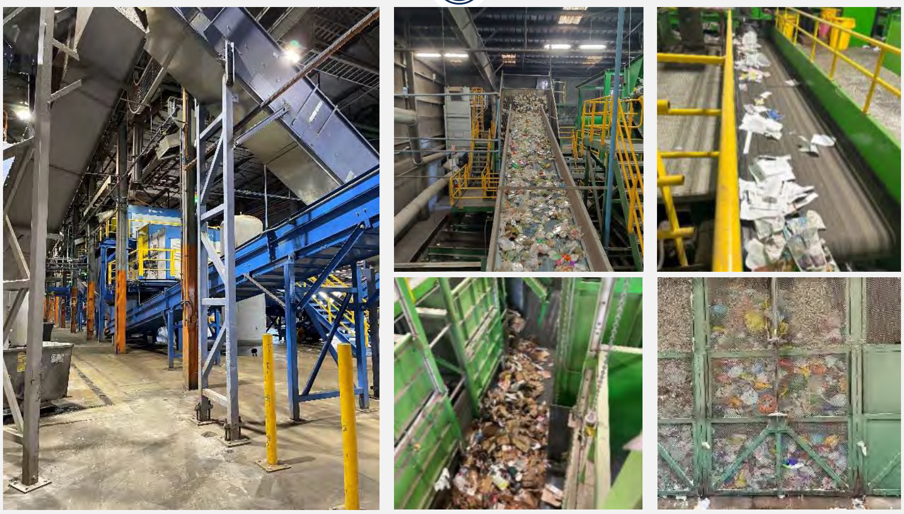
Modern MRFs

81



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Ontario County's MRF

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Photo courtesy of Ontario County

82

Processing Challenges

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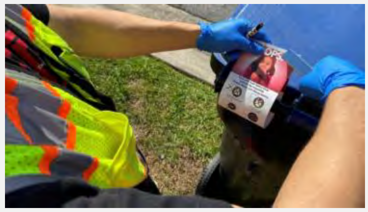
Glass



Contamination

Bottle Bill

83

Components of the Cost of Processing

84

- Processing Fee: Per ton cost to move material through a MRF
  - Typically, a fixed rate, $90/ton up to $120/ton+
- Revenue Share/Rebate: The value of the sorted recyclable materials when sold as secondary commodities
  - Sometimes call Average Material Value (AMV)
  - Varies with commodity market prices
- Load Rejection Fees: Special charges to remove and dispose of a load of recyclables that is too contaminated to process

84

Average Material Value (AMV)
Average Commodity Revenue (ACR)

85

	2023		
Material	Market Value ($/Ton)	Material %	Average Market Value ($/Ton)
Cardboard	$55.42	23%	$12.75
Mixed Paper	$14.88	28%	$4.17
#1 PET	$251.27	4%	$10.05
#2 Natural HDPE	$1,056.35	3%	$31.69
#2 Colored HDPE	$309.21	4%	$12.37
#3-7 Plastics	$28.21	1%	$0.28
Aluminum Cans	$1,446.78	2%	$28.94
Steel Cans	$226.29	7%	$15.84
Glass	-$20.59	10%	-$2.06
Contamination	-$46.29	18%	-$8.33
Total		**100%**	**$105.69**

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Value of Single Stream Recyclables ($/ton)

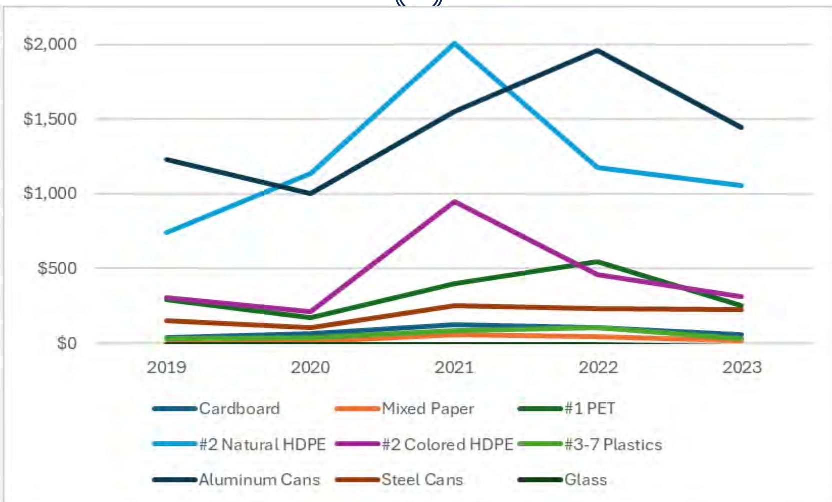
86

Source: NERC, Northeast MRF Commodity Values Report, Oct-Dec 2023

86

Individual Commodity Values ($/ton)

87



Source: Recyclemarket.net, Western NY Region

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Sample Calculation

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Metric	AMV > Processing Fee	AMV < Processing Fee
Processing Fee	$125/ton	$125/ton
Commodity Markets	High!	Low
AMV	$132	$65
Outcome	Processor rebates $7/ton	Supplier pays $60/ton

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MRFs

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- Recent processing deals
  - Montgomery (PA) Consortium
    - $95/ton processing fee w/ low revenue share
    - $105/ton with higher share
  - Enfield, NH
    - Casella is the processor
    - $154/ton transfer and processing fee
    - Pays 50% of revenue to town if AMV>$22/ton
    - 4% minimum ann'l esc.

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Processing Agreement Expectations

90

Larger Communities	Smaller Communities, Small Haulers
• Generate enough recycling tonnage to justify customized pricing for recyclables processing • Pay a processing fee • Receive rebate based on index-based, verifiable AMV	• Do not generate sufficient tonnage to warrant custom pricing • Pay a processing fee • Simple (or no) revenue share

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Ontario County Recycling Options

91

- Expect to pay market rates for recyclables processing
  - Single stream will cost the most to process, and have the lowest value due to material degradation
  - Source separation may enhance value
- Continued operation of the MRF by Casella will require RFP and new contract
- Options if another operator takes over landfill operation
  - County investment in new equipment with contract operator
  - Separate facility leasing agreement
  - Transfer/transport recyclables to a more distant MRF

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Nearest Single Stream MRFs

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See Exhibit #4 for list of NY MRFs

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Residential Recycling Impacts if MRF Closes

93

- Residential households will see another increase in their subscription collection rates for the incremental drive times to reach distant MRFs
- To be discussed in afternoon workshop

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Other Site Development Opportunities

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PRELIMINARY EVALUATION OF LANDFILL-BASED SOLAR, WIND, AND BATTERY STORAGE PROJECTS

J & L Consulting

Full Draft Report: Ontario County Preliminary Land Use Evaluation

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J&L Consulting

Possible Options

- **Solar**
  - Community (e.g., subscription) – aka Distributed Generation
    - 5 MW (~40 – 45 acres)
    - subscribers within the local area
    - ~10% savings
  - Utility Scale (>15 MW)
- **Wind**
  - Distributed Generation
    - 1 – 3 turbines
    - ~400+' apart
  - Utility Scale
- **Battery Energy Storage**

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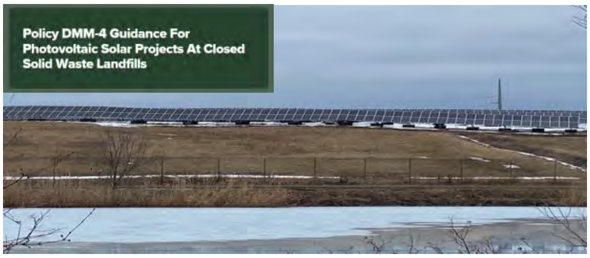
Solar Projects at Closed Landfills

- Lancaster
- Mohawk Valley
- Tonawanda
- Rotterdam
- DeWitt
- Canandaigua



* - Niagara County is currently seeking proposals

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Wind Resource Map

97

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Distributed Generation Wind

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Battery Energy Storage

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Battery Energy Storage

- Arbitrage which involves charging the battery when energy prices are low and discharging during more expensive peak hours.
- Firm Capacity or Peaking Capacity: System operators must ensure they have an adequate supply of generation capacity to reliably meet demand during the highest-demand periods in a given year, or the peak demand.
- Operating Reserves and Ancillary Services: To maintain reliable power system operations, generation must exactly match electricity demand at all times.
- Black Start: When starting up, large generators need an external source of electricity to perform key functions before they can begin generating electricity for the grid.

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Utility Interconnection

- Grid connection availability will make or break a project
- Involves numerous studies (e.g., feasibility, system impacts, reliability, facilities)
    - Local utility
    - NYISO
- Typically involves system upgrades (e.g., additional safety equipment and line re-conductoring)
- Transmission vs. distribution
- Long process, currently being overhauled
- Interconnection agreement with host utility (large vs. small generator)

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Lease Structure

- 20 -25 years
- Initial option period/payment
- Lease rate
    - $1,000 - $1,500 /acre / year (depending on property taxes and tax credits)
- Decommissioning Provision
    - Letter of credit or performance bond

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Lease Value

The value of a land lease for a renewable energy project depends on several factors including but not limited to:

1) Property taxes
2) Existing conditions (e.g., prime farm land)
3) Usable land (e.g., slopes, wetlands, trees)
4) Proximity to utility interconnection
5) Costs for utility system upgrades
6) Zoning requirements
7) Subsurface conditions (e.g., rock)
8) Public acceptance
9) Tax credit availability (e.g., brownfield, coal community)

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Site Synergies

A number of synergies exist relative to the existing County infrastructure located on the landfill property including:

- existing on-site electric substations (if/when BP were to convert to RNG)
- tax credit eligibility (IRA – brownfield development
- visual screening
- on-site electric loads
- tax exemption
- access roads
- stormwater management

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Town of Seneca Zoning

- Any development will require compliance with the Town of Seneca's existing zoning code which includes:
  - 16 MW limit for solar
  - 330' height restriction for wind & no more than 1 turbine/100 acres
- The Town is currently amending their zoning code to include battery energy storage systems (BESS)
- The New York State Office of Renewable Energy Siting (ORES) is the permitting entity for utility scale solar projects (>15 MW)
- ORES is considering the inclusion of BESS projects

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Conclusion/Next Steps

- Ideal arrangement for these projects would be one in which the County were able to attract a third party development company whom similar to Casella would lease the necessary parcels for their project(s).
- Companies that would likely have interest in development and ownership of renewable energy projects at the Ontario County Landfill facility include but not limited to:
  - NexAmp
  - AC Power
  - EDF Renewables
  - Genie Solar
  - Norbut Solar
- The County may wish to consider initially soliciting an Expression of Interest or move to an RFP process for renewable energy project lease(s).

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LUNCH

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Working Group Discussion: Community Impacts

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Limitations

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- Quantified Impacts
  - Cost of waste disposal, including biosolids
  - Cost of recyclables processing
  - Rates for subscription curbside collection service
  - Transfer station operating costs
  - Incremental waste transportation costs
- Harder to Measure/ Unmeasurable Impacts
  - Odor
  - Litter
  - Agriculture Impact
  - Tourism Impact
  - Truck Traffic
  - Roadway Wear-and-Tear
  - Local Employment

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Overview of Calculational Model

110

- Key concepts and assumptions have been presented in this slide deck
- We will provide a rapid overview of the model framework

Table 12 - Route to Landfill Mileage (One-way)

Municipality	Mileage to Ontario County LF	Mileage to Seneca Meadows LF	Mileage to High Acres LF	Mileage to Mill Seat LF	Mileage to Chemung LF
Town of Victor	22.9	32.3	16.7	50.6	88.1
Town of Farmington	20.8	29.9	7.1	35.5	87.9
Town of Canandaigua	13.8	27.1	18.1	38.8	79.1
Town of Manchester	15.4	19.8	15.9	43.4	80.7
Town of Gorham	6.4	22.7	24.7	48.7	69.7
Town of Hopewell	7.6	20.2	20.0	45.8	75.4
Town of Geneva	4.1	11.2	29.9	55.6	66.6
Town of Richmond	25.2	34.0	23.0	40.0	85.6
Town of West Bloomfield	24.4	39.2	20.5	27.3	91.4
Town of Seneca	1.7	15.7	27.4	52.1	68.5
Town of Naples	27.1	42.7	40.4	50.9	69.7
Town of Bristol	18.9	34.6	20.1	36.7	86.2
Village of Phelps	9.2	12.7	22.1	50.7	74.5
Town of South Bristol	24.4	40.0	29.0	43.8	80.4
City of Geneva	5.6	9.8	29.7	56.8	66.7
City of Canandaigua	10.9	25.5	16.4	40.7	77.5
Town of Phelps	9.2	13.1	21.5	50.1	74.9
Town of East Bloomfield	19.1	33.5	16.1	32.6	85.9
Village of Victor	22.9	31.6	9.8	31.5	87.5
Village of Clifton Springs	10.0	17.3	18.3	45.6	78.1
Town of Canadice	29.9	45.0	31.0	35.8	81.1
Village of Manchester	15.4	22.0	13.6	40.9	81.9
Village of Shortsville	13.2	21.6	14.8	41.8	80.9
Village of Bloomfield	18.9	32.8	15.5	33.2	85.6
Village of Naples	27.1	40.5	37.2	49.0	72.1
Village of Rushville	12.4	26.5	27.1	51.1	68.3

Collection Pro Forma High Low | One-way Mileage | One-way Mileage Delta

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Customized Impact Analysis by Municipality

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- All municipalities will be provided a detailed summary of the outcome of each option on:
  - Municipal transfer station waste (MSW, Recycling and C&D)
  - Residential household curbside subscription/ collection rates
  - Aggregate disposal and processing cost increases imposed on the business community
  - Biosolids cost impacts where applicable

Municipality Overview

Town of Manchester

System Summary

System Element	Value
Population	4,387
Households	1,711
Operates Transfer Station	Yes
Transfer Station Used	Town of Manchester
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$56.00

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Components of Municipal Impact Analysis

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Current Waste and Recycling Generation (Annual Tons) by Customer Type

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	53.3	4.8	31.0		**89.0**
Residents (Curbside)	1,315.5		182.9		**1,498.4**
Commercial	823.8	349.0	58.2		**1,231.1**
Total Tons to Landfill/MRF	**2,192.6**	**353.8**	**272.1**	**0.0**	**2,818.5**
Exported Tons	668.0		0.0		**668.0**
Residential Lbs/HH/Yr	**1,600.0**		**250.0**		

Current Annual Cost of Waste and Recycling Service by Customer Type

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station)	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station)	$2,216	$197	$0	**$2,413**	
Residents (Curbside)	$60,895		$0	**$60,895**	
Commercial	$38,135	$15,949	$4,658	**$58,742**	
Total	**$101,246**	**$16,146**	**$4,658**	**$122,050**	**$0**

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Components of Municipal Impact Analysis

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Detailed Cost & Rate Impacts for all Ontario County Landfill Scenarios

- Current System
- Vertical Expansion, Maintain 100% Importation
- Vertical Expansion, 50% Importation
- Vertical Expansion, County Waste Only
- Close Landfill/Build Transfer Station, Haul to Seneca Meadows LF (SM)
- Close Landfill/Build Transfer Station, Haul to High Acres LF (HA)
- Close Landfill/Build Transfer Station, Haul to Mill Seat LF (MS)
- Close Landfill/Build Transfer Station, Haul to a distant generic landfill (distant)
- Close Landfill w/o Transfer Station (SM)
- Close Landfill w/o Transfer Station (HA)
- Close Landfill w/o Transfer Station (MS)
- Close Landfill w/o Transfer Station (Distant)

Impacts are Reported for

- Municipal Transfer Stations ($ incurred by your municipality)
- Your Residential Households that either receive municipal collection (C. of Canandaigua, V. of Victor) or use subscription services
- Incremental cost of disposal and recycling for the Commercial sector in your municipality
- For municipalities with wastewater treatment plants, the incremental cost of Biosolids disposal

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Biosolids Generators

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Material	Municipality	Annual Tons	Current Tip Fee
Sludge	C. Canandaigua	2,988	$30.00
	C. Geneva	154	$78.86
	T. Farmington	2,572	$63.04
	V. Bloomfield	10	$79.28
	V. Victor	141	$50.00

Note: V. of Naples currently sends biosolids out of county and this arrangement has not been included in the analysis

- Assumed new disposal rate of $80/ton
- Closest landfill accepting new biosolids sources (according to NYS Landfill reports) is Chaffee Landfill (WM) in Erie County
- Incremental transportation costs have been added

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Comparison of Alternatives

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	Impact on Municipality		Impact on Residential Households					Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo) [1]						
Scenario	Disposal Cost for Transfer Station Tons	% Change from Current System	Agg. Disposal Cost to Curbside Customers	% Change from Current System	Low	High	Maximum % Change from Current System	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Aggregate Transport/Disposal Cost	% Change from Current System
Current System	$41,181	0.0%	$175,932	0.0%	$44.00	$70.00	0.0%	$191,995	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$70,454	71.1%	$223,447	27.0%	$45.96	$71.96	2.8%	$195,922	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$84,167	104.4%	$275,554	56.6%	$47.29	$73.29	4.7%	$248,932	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$104,019	152.6%	$351,567	99.8%	$47.29	$73.29	4.7%	$325,365	69.5%	$0	N/A
Close Landfill/Build Transfer Station (SM)	$127,842	210.4%	$442,783	151.7%	$45.82	$71.82	2.6%	$417,084	117.2%	$0	N/A
Close Landfill/Build Transfer Station (HA)	$109,975	167.1%	$374,371	112.8%	$45.96	$71.96	2.8%	$348,294	81.4%	$0	N/A
Close Landfill/Build Transfer Station (MS)	$120,894	193.6%	$416,179	136.6%	$45.62	$71.62	2.3%	$390,332	103.3%	$0	N/A
Close Landfill/Build Transfer Station (distant)	$120,894	193.6%	$416,179	136.6%	$47.62	$73.62	5.2%	$390,332	103.3%	$0	N/A
Close Landfill w/o Transfer Station (SM)	$108,983	164.6%	$370,571	110.6%	$51.46	$79.87	14.1%	$344,473	79.4%	$0	N/A
Close Landfill w/o Transfer Station (HA)	$87,145	111.6%	$286,956	63.1%	$45.98	$71.98	2.8%	$260,397	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS)	$89,130	116.4%	$294,557	67.4%	$55.26	$87.14	24.5%	$268,040	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant)	$84,167	104.4%	$275,554	56.6%	$66.98	$105.65	50.9%	$248,932	29.7%	$0	N/A

(1) Estimated rates based on the Ontario County MRF staying open.

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Questions?

Nick O'Callaghan, MSW

John Culbertson, MSW

Jerry Leone, J&L Consulting

Please review the findings for your municipality. Anything look incorrect? Please let us know.

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Next Steps

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Next Steps: Potential Landfill Development Scenario – Requests for Proposals (RFP)

- Develop RFP specifications for Landfill Operations, Maintenance and Lease
  - Consult with outside counsel regarding indemnifications, liabilities and compliance, etc.
  - Offer pre-bid site visit
- Posted for 30-45 days (minimum)
- Questions on RFP are due 2 weeks prior to RFP due date
- Evaluation of Proposals
  - Committee of 5 people
  - Pre-determined evaluation criteria
  - Interviews for top 2-3 responses (if desired)
- If a proposal is selected - Award RFP within 45 days of RFP due date
  - Execute Contract with selected operator - must go through PEQ, W&M, and BOS meeting
  - (The BOS is not required to award a contract)

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Next Steps: Potential Landfill Development Scenario – Obtain Necessary Permits

- Conduct required pre-permitting studies (depending on development option selected)
  - Hydrogeologic Investigation
- Conduct State Environmental Quality Review (SEQR) Process
- Obtain required State and Federal permits for landfill operation
- Obtain NYSDEC approval for cell construction
- Obtain NYSDEC approval to utilize newly constructed landfill cell

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Next Steps: No Further Landfill Development

- Landfill Closure
  - Casella to cap remaining area of the Phase III active landfill
  - Obtain NYSDEC approval of closure construction activities
- Landfill Post Closure Monitoring (Casella obligation under current contract)
  - Leachate Treatment
  - Gas Collection & Monitoring
  - Groundwater Monitoring
  - Settlement Monitoring
- Separate Landfill Gas Contract with BP Continues

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Next Steps: MRF or Transfer Station

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- Similar RFP process as described for landfill operations
  - Lease of current County-owned building for MRF
- New Transfer Station siting study
- Simplified permitting compared to landfill

121

Conclusions

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Ambitious RFP Objectives Met

123

- Economic Impact Analysis of Landfill Closure
  - On residents and businesses
  - On private and municipal haulers
  - Benefits to County and residents of the OMLA
  - On recycling/diversion (assuming closure of MRF)
- Impacts of Continued Landfill Operation
  - Reduced tonnage limits
  - Remaining airspace
  - Viability for private operation
- Economic Impacts of Alternatives to Landfill
  - Development of new Waste-to-Energy
  - Creation of a centralized commercial transfer station
  - Development of new landfill site
  - Organics diversion

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Thank You!

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APPENDIX G

BACKGROUND DATA & EXHIBITS

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APPENDIX G – TABULAR DATA

G 1. MUNICIPAL DEMOGRAPHIC DATA

Population and household data are sourced from the US Census Bureau. This source reports town populations and household counts inclusive of the village(s) located within the town borders. As such, the raw population and household columns double count villages. To better evaluate the impact of system changes on the municipal level for both towns and villages, town populations and households have been recast to exclude any villages. The recast columns show the correct Ontario County-wide numbers.

Table G-1 2020 Population and Households by Municipality

Municipality	Population(1)	Recast Population(2)	Households(1)	Recast Households(2)
Town of Victor	15,860	13,116	6,869	5,735
Town of Farmington	14,170	14,170	5,576	5,576
Town of Canandaigua	11,109	11,109	4,601	4,601
Town of Manchester	9,404	4,678	3,766	1,741
Town of Gorham	4,130	3,479	1,690	1,453
Town of Hopewell	3,841	3,841	1,473	1,473
Town of Geneva	3,473	3,473	1,663	1,663
Town of Richmond	3,380	3,380	1,502	1,502
Town of West Bloomfield	2,760	2,760	1,206	1,206
Town of Seneca	2,658	2,658	1,052	1,052
Town of Naples	2,417	1,452	986	533
Town of Bristol	2,298	2,298	895	895
Village of Phelps	1,989	1,989	791	791
Town of South Bristol	1,727	1,727	781	781
City of Geneva	12,812	12,812	4,655	4,655
City of Canandaigua	10,539	10,539	5,132	5,132
Town of Phelps	6,637	4,648	2,768	1,977
Town of East Bloomfield	3,661	2,384	1,456	982
Village of Victor	2,744	2,744	1,134	1,134
Village of Clifton Springs	1,931	1,931	869	869
Town of Canadice	1,674	1,674	782	782
Village of Manchester	1,475	1,475	648	648
Village of Shortsville	1,320	1,320	508	508
Village of Bloomfield	1,277	1,277	474	474
Village of Naples	965	965	453	453
Village of Rushville	651	651	237	237
Total	**124,902**	**112,550**	**51,967**	**46,853**

[1] 2020 US Census. Note that town data includes villages and therefore there is double counting.

[2] Deducts population or households from villages.

Table G-2 Overview of Materials Management Services for Residential Households

Municipality	Owns a Transfer Station	Residential Drop-off Access (Transfer Station)	Residential Curbside Collection	Collection Technology
Town of Victor	Yes	Own Facility	Subscription	Multiple/Unknown
Town of Farmington	Yes	Own Facility	Subscription	Multiple/Unknown
Town of Canandaigua	Yes	Own Facility	Subscription	Multiple/Unknown
Town of Manchester	Yes	Own Facility	Subscription	Multiple/Unknown
Town of Gorham	Yes	Own Facility	Subscription	Multiple/Unknown
Town of Hopewell	Yes	Own Facility	Subscription	Multiple/Unknown
Town of Geneva	Yes	Own Facility	Subscription	Multiple/Unknown
Town of Richmond	Yes	Own Facility	Subscription	Multiple/Unknown
Town of West Bloomfield	Yes	Own Facility	Subscription	Multiple/Unknown
Town of Seneca	Yes	Own Facility	Subscription	Multiple/Unknown
Town of Naples	Yes	Own Facility	Subscription	Multiple/Unknown
Town of Bristol	Yes	Own Facility	Subscription	Multiple/Unknown
Village of Phelps	Yes	Own Facility	Subscription	Multiple/Unknown
Town of South Bristol	Yes	Own Facility	Subscription	Multiple/Unknown
City of Geneva	No	Town of Geneva	Subscription	Multiple/Unknown
City of Canandaigua	No	Town of Canandaigua	Public	Automated
Town of Phelps	No	Village of Phelps	Subscription	Multiple/Unknown
Town of East Bloomfield	No	Town of Bristol	Subscription	Multiple/Unknown
Village of Victor	No	Town of of Victor	Public	Manual
Village of Clifton Springs	No	Town of Manchester	Subscription	Multiple/Unknown
Town of Canadice	No	Town of Richmond	Subscription	Multiple/Unknown
Village of Manchester	No	Town of Manchester	Subscription	Multiple/Unknown
Village of Shortsville	No	Town of Manchester	Subscription	Multiple/Unknown
Village of Bloomfield	No	Town of Bristol	Subscription	Multiple/Unknown
Village of Naples	No	Town of Naples	Subscription	Multiple/Unknown
Village of Rushville	No	Town of Gorham	Subscription	Multiple/Unknown

G 2. TONNAGE DATA

Table G-3 Estimated Residential MSW Generation

	MSW	Recycling
Households (2020) (1)	46,853	46,853
Estimated Household Generation Rate (Lbs/Yr) (2)	1,600	250
Estimated Household Generation Rate (Tons/Yr) (2)	0.80	0.13
Lbs/HH/Week	30.8	4.8
Estimated Residential Generation (Tons)	37,482	5,857
Total Generation	60,042	7,451
Percent Residential	62%	79%

[1] 2020 US Census. Note that town data includes villages and therefore there is double counting.

[2] MSW Consultants Estimate

Table G-4 MSW Generation Detail by Municipality

Municipality	Reported Tons Through Transfer Station	*Tons from Own Municipality*	*Tons from Other Municipalities*	*Exported Tons*
Town of Victor	986	*815*	*171*	*2,672*
Town of Farmington	107	*107*	*0*	*2,672*
Town of Canandaigua	1,556	*1,556*	*0*	
Town of Manchester	137	*68*	*69*	
Town of Gorham	1,759	*1,482*	*277*	
Town of Hopewell	191	*191*	*0*	
Town of Geneva	305	*65*	*240*	*89*
Town of Richmond	222	*149*	*74*	
Town of West Bloomfield	316	*316*	*0*	
Town of Seneca	1,532	*1,532*	*0*	
Town of Naples	218	*131*	*87*	
Town of Bristol	242	*93*	*149*	
Village of Phelps	212	*63*	*148*	*45*
Town of South Bristol	244	*244*	*0*	
City of Geneva	240	*240*		
City of Canandaigua	0	*0*		
Town of Phelps	148	*148*		*89*
Town of East Bloomfield	97	*97*		
Village of Victor	171	*171*		
Village of Clifton Springs	28	*28*		
Town of Canadice	74	*74*		
Village of Manchester	21	*21*		
Village of Shortsville	19	*19*		
Village of Bloomfield	52	*52*		
Village of Naples	87	*87*		
Village of Rushville	277	*277*		
	9,241	8,027	1,214	5,567

Table G-5 Recycling Generation Detail by Municipality

Municipality	Reported Tons Through Transfer Station	*Tons from Own Municipality*	*Tons from Other Municipalities*	*Exported Tons*
Town of Victor	298	*246*	*51*	*156*
Town of Farmington	474	*474*	*0*	
Town of Canandaigua	524	*269*	*255*	
Town of Manchester	68	*34*	*34*	
Town of Gorham	213	*180*	*34*	
Town of Hopewell	64	*64*	*0*	
Town of Geneva	144	*31*	*113*	
Town of Richmond	103	*69*	*34*	
Town of West Bloomfield	92	*92*	*0*	
Town of Seneca	0	*0*	*0*	
Town of Naples	69	*41*	*28*	
Town of Bristol	31	*12*	*19*	
Village of Phelps	169	*51*	*119*	
Town of South Bristol	96	*96*	*0*	
City of Geneva	113	*113*		
City of Canandaigua	255	*255*		
Town of Phelps	119	*119*		
Town of East Bloomfield	13	*13*		
Village of Victor	51	*51*		*39*
Village of Clifton Springs	14	*14*		
Town of Canadice	34	*34*		
Village of Manchester	11	*11*		
Village of Shortsville	10	*10*		
Village of Bloomfield	7	*7*		
Village of Naples	28	*28*		
Village of Rushville	34	*34*		
	3,032	2,345	687	195

Table G-6 C&D Generation Detail by Municipality

Municipality	Reported Tons Through Transfer Station	*Tons from Own Municipality*	*Tons from Other Municipalities*
Town of Victor	214	*177*	*37*
Town of Farmington	0	*0*	*0*
Town of Canandaigua	571	*116*	*456*
Town of Manchester	0	*0*	*0*
Town of Gorham	0	*0*	*0*
Town of Hopewell	0	*0*	*0*
Town of Geneva	25	*5*	*19*
Town of Richmond	0	*0*	*0*
Town of West Bloomfield	0	*0*	*0*
Town of Seneca	0	*0*	*0*
Town of Naples	0	*0*	*0*
Town of Bristol	72	*28*	*44*
Village of Phelps	0	*0*	*0*
Town of South Bristol	179	*179*	*0*
City of Geneva	19		
City of Canandaigua	456		
Town of Phelps	0		
Town of East Bloomfield	29		
Village of Victor	37		
Village of Clifton Springs	0		
Town of Canadice	0		
Village of Manchester	0		
Village of Shortsville	0		
Village of Bloomfield	15		
Village of Naples	0		
Village of Rushville	0		
	1,618	505	556

Table G-7 Other Waste Generation Detail by Municipality

Municipality	Industrial	Asbestos	Sludge	BUDS
Town of Victor	1,116			2,123
Town of Farmington	1,205	7	2,893	2,064
Town of Canandaigua	945			1,703
Town of Manchester	398			644
Town of Gorham	296			538
Town of Hopewell	327			545
Town of Geneva	295			616
Town of Richmond	287			556
Town of West Bloomfield	235			446
Town of Seneca	226			389
Town of Naples	123			197
Town of Bristol	195			331
Village of Phelps	169			293
Town of South Bristol	147			289
City of Geneva	1,090			1,723
City of Canandaigua	896		2,152	1,900
Town of Phelps	395			732
Town of East Bloomfield	203			363
Village of Victor	233		560	420
Village of Clifton Springs	164			322
Town of Canadice	142			289
Village of Manchester	125			240
Village of Shortsville	112			188
Village of Bloomfield	109		261	175
Village of Naples	82			168
Village of Rushville	55			88
Total	9,573	7	5,865	17,342

Table G-8 Residential/Commercial Waste Fractions by Municipality

	MSW		Recycling		Total	
Municipality	Res	Com	Res	Com	Res	Com
Town of Victor	5,413	1,755	572	119	5,985	2,894
Town of Farmington	5,848	3,069	618	144	6,466	4,315
Town of Canandaigua	4,585	3,028	485	0	5,069	3,892
Town of Manchester	1,931	1,794	204	136	2,135	2,294
Town of Gorham	1,436	0	152	0	1,588	271
Town of Hopewell	1,585	1,395	168	104	1,753	1,797
Town of Geneva	1,433	1,039	152	8	1,585	1,317
Town of Richmond	1,395	1,173	147	44	1,542	1,480
Town of West Bloomfield	1,139	823	120	28	1,259	1,066
Town of Seneca	1,097	0	116	116	1,213	323
Town of Naples	599	381	63	0	663	494
Town of Bristol	948	706	100	69	1,049	954
Village of Phelps	821	565	87	0	908	719
Town of South Bristol	713	468	75	0	788	603
City of Geneva	5,287	5,047	559	446	5,846	6,490
City of Canandaigua	4,349	4,349	460	205	4,809	5,374
Town of Phelps	1,918	1,681	203	84	2,121	2,127
Town of East Bloomfield	984	887	104	91	1,088	1,164
Village of Victor	1,132	962	120	29	1,252	1,204
Village of Clifton Springs	797	769	84	70	881	989
Town of Canadice	691	617	73	39	764	786
Village of Manchester	609	587	64	54	673	756
Village of Shortsville	545	526	58	48	602	676
Village of Bloomfield	527	475	56	49	583	623
Village of Naples	398	311	42	15	440	401
Village of Rushville	269	0	28	0	297	51
Total	46,448	32,407	4,911	1,899	51,359	43,060

Table G-9 Estimated Landfill Rates

	Reported Rates ($/mo)			Est Mkt
Hauler	Low	High	Avg	Share
Casella	$40	$48	$44	75%
WM			$63	20%
Dependable			$70	15%
Wtd Average			$56	
Annual Average			$672	

Table G-10 Estimated Landfill Rates

Material	Gen Rate (tons)	Tip Fee ($/ton)	Annual Disp Cost	Annual Disp w/ Mark-up (20%)	Total Annual Rate	Collection Portion (Annual)	Collection Portion ($/Mo)
Waste	0.80	$46.29	$37.03	$44.44			
Recycling	0.13	$80	$10.00	$12.00			
Total	0.93		$47.03	$56.44	$672	$616	$51.30
Pct of Total Charge							91.6%

G 3. TIME AND MILEAGE

Table G-11 One-Way Mileage

Municipality	Mileage to Ontario LF	Mileage to Seneca Meadows	Mileage to High Acres	Mileage to Mill Seat	Mileage to Chemung LF
Town of Victor	22.9	32.3	16.7	50.6	88.1
Town of Farmington	20.8	29.9	7.1	35.5	87.9
Town of Canandaigua	13.8	27.1	18.1	38.8	79.1
Town of Manchester	15.4	19.8	15.9	43.4	80.7
Town of Gorham	6.4	22.7	24.7	48.7	69.7
Town of Hopewell	7.6	20.2	20.0	45.8	75.4
Town of Geneva	4.1	11.2	29.9	55.6	66.6
Town of Richmond	25.2	34.0	23.0	40.0	85.6
Town of West Bloomfield	24.4	39.2	20.5	27.3	91.4
Town of Seneca	1.7	15.7	27.4	52.1	68.5
Town of Naples	27.1	42.7	40.4	50.9	69.7
Town of Bristol	18.9	34.6	20.1	36.7	86.2
Village of Phelps	9.2	12.7	22.1	50.7	74.5
Town of South Bristol	24.4	40.0	29.0	43.8	80.4
City of Geneva	5.6	9.8	29.7	56.8	66.7
City of Canandaigua	10.9	25.5	16.4	40.7	77.5
Town of Phelps	9.2	13.1	21.5	50.1	74.9
Town of East Bloomfield	19.1	33.5	16.1	32.6	85.9
Village of Victor	22.9	31.6	9.8	31.5	87.5
Village of Clifton Springs	10.0	17.3	18.3	45.6	78.1
Town of Canadice	29.9	45.0	31.0	35.8	81.1
Village of Manchester	15.4	22.0	13.6	40.9	81.9
Village of Shortsville	13.2	21.6	14.8	41.8	80.9
Village of Bloomfield	18.9	32.8	15.5	33.2	85.6
Village of Naples	27.1	40.5	37.2	49.0	72.1
Village of Rushville	12.4	26.5	27.1	51.1	68.3

Table G-12 One-Way Mileage Delta

Municipality	Ontario Seneca	Ontario High Acres	Ontario Mill Seat	Ontario Chemung
Town of Victor	9.4	0.0	27.7	65.2
Town of Farmington	9.1	0.0	14.7	67.1
Town of Canandaigua	13.3	4.3	25.0	65.3
Town of Manchester	4.4	0.5	28.0	65.3
Town of Gorham	16.3	18.3	42.3	63.3
Town of Hopewell	12.6	12.4	38.2	67.8
Town of Geneva	7.1	25.8	51.5	62.5
Town of Richmond	8.8	0.0	14.8	60.4
Town of West Bloomfield	14.8	0.0	2.9	67.0
Town of Seneca	14.0	25.7	50.4	66.8
Town of Naples	15.6	13.3	23.8	42.6
Town of Bristol	15.7	1.2	17.8	67.3
Village of Phelps	3.5	12.9	41.5	65.3
Town of South Bristol	15.6	4.6	19.4	56.0
City of Geneva	4.2	24.1	51.2	61.1
City of Canandaigua	14.6	5.5	29.8	66.6
Town of Phelps	3.9	12.3	40.9	65.7
Town of East Bloomfield	14.4	0.0	13.5	66.8
Village of Victor	8.7	0.0	8.6	64.6
Village of Clifton Springs	7.3	8.3	35.6	68.1
Town of Canadice	15.1	1.1	5.9	51.2
Village of Manchester	6.6	0.0	25.5	66.5
Village of Shortsville	8.4	1.6	28.6	67.7
Village of Bloomfield	13.9	0.0	14.3	66.7
Village of Naples	13.4	10.1	21.9	45.0
Village of Rushville	14.1	14.7	38.7	55.9

Table G-13 Productivity Assumptions

	Metric
Workday (hrs)	8
Productive Time (hrs)	5.5
Non-productive Time (hrs	2.5
HHs/Route	500
HHs/Productive Hr	90.9
Second/Stop	39.6

Table G-14 Additional Drive Time

Municipality	Ontario Seneca	Ontario High Acres	Ontario Mill Seat	Ontario Chemung
Town of Victor	32.1	0.0	73.8	142.2
Town of Farmington	31.2	0.0	39.3	146.5
Town of Canandaigua	45.6	14.8	66.8	142.4
Town of Manchester	15.1	1.9	74.6	142.6
Town of Gorham	56.0	62.8	112.9	138.1
Town of Hopewell	43.2	42.7	101.9	148.0
Town of Geneva	24.3	88.3	137.4	136.3
Town of Richmond	30.1	0.0	39.5	131.7
Town of West Bloomfield	50.7	0.0	7.7	146.1
Town of Seneca	47.9	88.0	134.4	145.7
Town of Naples	53.6	45.4	63.5	92.9
Town of Bristol	53.7	4.2	47.5	146.7
Village of Phelps	11.9	44.2	110.6	142.6
Town of South Bristol	53.6	15.9	51.8	122.2
City of Geneva	14.4	82.7	136.5	133.2
City of Canandaigua	50.2	19.0	79.3	145.3
Town of Phelps	13.4	42.2	108.9	143.3
Town of East Bloomfield	49.2	0.0	35.9	145.8
Village of Victor	30.0	0.0	23.0	140.9
Village of Clifton Springs	25.1	28.4	95.0	148.5
Town of Canadice	51.9	3.8	15.8	111.8
Village of Manchester	22.7	0.0	68.0	145.1
Village of Shortsville	28.8	5.4	76.4	147.6
Village of Bloomfield	47.8	0.0	38.1	145.6
Village of Naples	45.9	34.7	58.3	98.1
Village of Rushville	48.2	50.2	103.1	121.9

G 4. HOUSEHOLDS AND REVENUE

Table G-15 Adjusted HH's on Refuse Routes

Municipality	Ontario Seneca	Ontario High Acres	Ontario Mill Seat	Ontario Chemung
Town of Victor	451.4	500.0	388.2	284.5
Town of Farmington	452.7	500.0	440.5	278.0
Town of Canandaigua	430.9	477.6	398.8	284.3
Town of Manchester	477.2	497.2	387.0	284.0
Town of Gorham	415.1	404.8	328.9	290.7
Town of Hopewell	434.5	435.3	345.6	275.8
Town of Geneva	463.2	366.1	291.7	293.5
Town of Richmond	454.4	500.0	440.1	300.5
Town of West Bloomfield	423.1	500.0	488.4	278.7
Town of Seneca	427.5	366.6	296.3	279.2
Town of Naples	418.8	431.2	403.8	359.3
Town of Bristol	418.6	493.6	428.1	277.7
Village of Phelps	482.0	433.0	332.5	284.0
Town of South Bristol	418.8	475.9	421.5	314.8
City of Geneva	478.2	374.7	293.2	298.2
City of Canandaigua	424.0	471.2	379.8	279.9
Town of Phelps	479.8	436.1	334.9	282.9
Town of East Bloomfield	425.4	500.0	445.6	279.1
Village of Victor	454.6	500.0	465.1	286.5
Village of Clifton Springs	462.0	457.0	356.1	275.0
Town of Canadice	421.4	494.3	476.0	330.7
Village of Manchester	465.6	500.0	396.9	280.2
Village of Shortsville	456.3	491.8	384.3	276.3
Village of Bloomfield	427.6	500.0	442.2	279.5
Village of Naples	430.5	447.4	411.6	351.3
Village of Rushville	427.0	423.9	343.8	315.3

Table G-16 Lost Monthly Revenue

Municipality	Monthly Curbside Collection Cost	Ontario Seneca	Ontario High Acres	Ontario Mill Seat	Ontario Chemung
Town of Victor	$51.30	$2,493	$0	$5,735	$11,055
Town of Farmington	$51.30	$2,427	$0	$3,052	$11,386
Town of Canandaigua	$51.30	$3,547	$1,149	$5,190	$11,067
Town of Manchester	$51.30	$1,170	$145	$5,799	$11,081
Town of Gorham	$51.30	$4,354	$4,884	$8,776	$10,737
Town of Hopewell	$51.30	$3,360	$3,317	$7,919	$11,500
Town of Geneva	$51.30	$1,888	$6,866	$10,683	$10,594
Town of Richmond	$51.30	$2,339	$0	$3,072	$10,235
Town of West Bloomfield	$51.30	$3,944	$0	$595	$11,354
Town of Seneca	$51.30	$3,721	$6,840	$10,450	$11,324
Town of Naples	$51.30	$4,165	$3,531	$4,935	$7,218
Town of Bristol	$51.30	$4,177	$330	$3,690	$11,404
Village of Phelps	$51.30	$925	$3,437	$8,592	$11,081
Town of South Bristol	$51.30	$4,164	$1,237	$4,025	$9,501
City of Geneva	$51.30	$1,118	$6,428	$10,609	$10,354
City of Canandaigua		$0	$0	$0	$0
Town of Phelps	$51.30	$1,038	$3,276	$8,467	$11,134
Town of East Bloomfield	$51.30	$3,828	$0	$2,791	$11,333
Village of Victor		$0	$0	$0	$0
Village of Clifton Springs	$51.30	$1,948	$2,207	$7,382	$11,540
Town of Canadice	$51.30	$4,033	$293	$1,230	$8,687
Village of Manchester	$51.30	$1,763	$0	$5,288	$11,275
Village of Shortsville	$51.30	$2,241	$422	$5,936	$11,474
Village of Bloomfield	$51.30	$3,712	$0	$2,964	$11,313
Village of Naples	$51.30	$3,567	$2,696	$4,534	$7,625
Village of Rushville	$51.30	$3,745	$3,905	$8,015	$9,476

APPENDIX H

LANDFILL FILL RATE SCENARIOS

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APPENDIX H – FILL RATE SCENARIOS

Table H-1 Ontario County Fill Rate Scenarios

	Vertical Density (CY/Tons)	Actual 0.77	Actual 1.12	Projected 1.12	Projected 1.00	Projected 1.00	Projected 1.00	Projected 1.00	Projected 1.00
Landfill Scenario	**Capacity**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
NO LF EXPANSION	Build Capacity Beginning of The Year	2,571,825	2,841,720	2,069,221	1,977,876	2,027,876	1,992,762	1,242,762	492,762
	Permitted Capacity Built During the Year	0	0	896,000	800,000	714,886	0	0	0
	Permitted Capacity Used During the Year	618,142	772,499	750,000	750,000	750,000	750,000	750,000	750,000
	Built Remaining Capacity During the Year	1,953,683	2,069,221	2,215,221	2,027,876	1,992,762	1,242,762	492,762	(257,238)
2024 VERTICLE LF EXPANSION - 100% CURRENT FILL RATE	Build Capacity Beginning of The Year	2,571,825	2,841,720	2,069,221	1,977,876	2,027,876	1,992,762	2,067,762	2,142,762
	Permitted Capacity Built During the Year	0	0	896,000	800,000	714,886	825,000	825,000	825,000
	Permitted Capacity Used During the Year	618,142	772,499	750,000	750,000	750,000	750,000	750,000	750,000
	Built Remaining Capacity During the Year	1,953,683	2,069,221	2,215,221	2,027,876	1,992,762	2,067,762	2,142,762	2,217,762
2024 VERTICLE LF EXPANSION - 50% CURRENT FILL RATE	Build Capacity Beginning of The Year	2,571,825	2,841,720	2,069,221	1,977,876	2,027,876	1,992,762	2,067,762	2,142,762
	Permitted Capacity Built During the Year	0	0	896,000	800,000	714,886	825,000	825,000	825,000
	Permitted Capacity Used During the Year	618,142	772,499	750,000	750,000	750,000	750,000	750,000	375,000
	Built Remaining Capacity During the Year	1,953,683	2,069,221	2,215,221	2,027,876	1,992,762	2,067,762	2,142,762	2,592,762
2024 VERTICLE LF EXPANSION - IN-COUNTY WASTE ONLY	Build Capacity Beginning of The Year	2,571,825	2,841,720	2,069,221	1,977,876	2,027,876	1,992,762	2,067,762	2,142,762
	Permitted Capacity Built During the Year	0	0	896,000	800,000	714,886	825,000	825,000	825,000
	Permitted Capacity Used During the Year	618,142	772,499	750,000	750,000	750,000	750,000	750,000	116,936
	Built Remaining Capacity During the Year	1,953,683	2,069,221	2,215,221	2,027,876	1,992,762	2,067,762	2,142,762	2,850,826

Table H -1 Ontario County Fill Rate Scenarios – *Continued*

Landfill Scenario	Capacity	2030	2031	2032	2033	2034	2035	2036	2037	Remaining Years	Year Full
	Vertical Density (CY/Tons)	Projected 1.00	Projected 1.00	Projected 1.00	Projected 1.00	Projected 1.00	Projected 1.00	Projected 1.00	Projected 1.00		
NO LF EXPANSION	Build Capacity Beginning of The Year										
	Permitted Capacity Built During the Year										
	Permitted Capacity Used During the Year										
	Built Remaining Capcity During the Year										
2024 VERTICLE LF EXPANSION - 100% CURRENT FILL RATE	Build Capacity Beginning of The Year	2,217,762	2,267,762	2,342,762	2,392,762	2,642,762	1,892,762	1,142,762	392,762		
	Permitted Capacity Built During the Year	800,000	825,000	800,000	1,000,000	0	0	0	0		
	Permitted Capacity Used During the Year	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000		
	Built Remaining Capcity During the Year	2,267,762	2,342,762	2,392,762	2,642,762	1,892,762	1,142,762	392,762	(357,238)		
2024 VERTICLE LF EXPANSION - 50% CURRENT FILL RATE	Build Capacity Beginning of The Year	2,592,762	3,017,762	3,467,762	3,892,762	4,517,762	4,142,762	3,767,762	3,392,762		
	Permitted Capacity Built During the Year	800,000	825,000	800,000	1,000,000	0	0	0	0		
	Permitted Capacity Used During the Year	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000		
	Built Remaining Capcity During the Year	3,017,762	3,467,762	3,892,762	4,517,762	4,142,762	3,767,762	3,392,762	3,017,762	8	2045
2024 VERTICLE LF EXPANSION - IN-COUNTY WASTE ONLY	Build Capacity Beginning of The Year	2,850,826	3,533,890	4,241,953	4,925,017	5,808,081	5,691,145	5,574,208	5,457,272		
	Permitted Capacity Built During the Year	800,000	825,000	800,000	1,000,000	0	0	0	0		
	Permitted Capacity Used During the Year	116,936	116,936	116,936	116,936	116,936	116,936	116,936	116,936		
	Built Remaining Capcity During the Year	3,533,890	4,241,953	4,925,017	5,808,081	5,691,145	5,574,208	5,457,272	5,340,336	46	2083

APPENDIX I

Town by Town Financial Impact Summary

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City of Canandaigua - Not Including Town of Canandaigua

System Summary

System Element	Value
Population	10,539
Households	5,132
Operates Transfer Station	No
Transfer Station Used	Town of Canandaigua
Transfer Station Operator	Municipality
Residential Collection	Public
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	0.0	263.4	0.0		263.4
Residents (Curbside)	4,105.6		641.5		4,747.1
Commercial	2,471.0	838.4	174.6		3,484.1
Total Tons to Landfill/MRF	6,576.6	1,101.8	816.1	2,988.1	8,494.6
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$41.58		$0.00	
Commercial	$46.29	$45.70	$80.00	$30.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$0	$10,815	$0	$10,815	
Residents (Curbside)	$170,711		$0	$170,711	
Commercial	$114,384	$38,315	$13,971	$166,670	
Total	$285,095	$49,129	$13,971	$348,195	$89,644

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$10,815	0.0%	$170,711	0.0%	$24.46	$24.46	0.0%	0.0%	$166,670	0.0%	$89,644	0%
Vertical Expansion, Maintain 100% Importation	$12,037	11.3%	$254,198	48.9%	$25.50	$25.50	4.3%	4.3%	$170,162	2.1%	$239,051	167%
Vertical Expansion, 50% Importation	$15,803	46.1%	$310,486	81.9%	$26.41	$26.41	8.0%	8.0%	$216,029	29.6%	$239,051	167%
Vertical Expansion, County Waste Only	$21,071	94.8%	$392,598	130.0%	$27.75	$27.75	13.4%	13.4%	$282,218	69.3%	$239,051	167%
Close Landfill/Build Transfer Station (SM) [1]	$27,393	153.3%	$491,132	187.7%	$29.35	$29.35	20.0%	20.0%	$361,644	117.0%	$372,466	315%
Close Landfill/Build Transfer Station (HA) [1]	$22,652	109.4%	$417,232	144.4%	$28.15	$28.15	15.1%	15.1%	$302,074	81.2%	$372,466	315%
Close Landfill/Build Transfer Station (MS) [1]	$25,549	136.2%	$462,393	170.9%	$28.88	$28.88	18.1%	18.1%	$338,478	103.1%	$372,466	315%
Close Landfill/Build Transfer Station (Distant) [1]	$32,134	197.1%	$565,033	231.0%	$30.55	$30.55	24.9%	24.9%	$421,214	152.7%	$372,466	315%
Close Landfill w/o Transfer Station (SM) [1]	$32,286	198.5%	$413,126	142.0%	$33.81	$33.81	38.2%	38.2%	$298,765	79.3%	$372,466	315%
Close Landfill w/o Transfer Station (HA) [1]	$25,459	135.4%	$322,803	89.1%	$31.47	$31.47	28.7%	28.7%	$225,957	35.6%	$372,466	315%
Close Landfill w/o Transfer Station (MS) [1]	$28,856	166.8%	$331,014	93.9%	$32.69	$32.69	33.7%	33.7%	$232,576	39.5%	$372,466	315%
Close Landfill w/o Transfer Station (Distant) [1]	$39,379	264.1%	$413,126	142.0%	$40.24	$40.24	64.5%	64.5%	$298,765	79.3%	$372,466	315%

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

City of Geneva - Not Including Town of Geneva

System Summary

System Element	Value
Population	12,812
Households	4,655
Operates Transfer Station	No
Transfer Station Used	Town of Geneva
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	0.0	0.0	0.0		0.0
Residents (Curbside)	3,724.0		581.9		4,305.9
Commercial	2,241.4	1,019.2	158.4		3,419.0
Total Tons to Landfill/MRF	5,965.4	1,019.2	740.3	154.2	7,724.9
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$78.86

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$0	$0	$0	$0	
Residents (Curbside)	$172,384		$0	$172,384	
Commercial	$103,752	$46,578	$12,672	$163,003	
Total	$276,136	$46,578	$12,672	$335,387	$12,157

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$0	#DIV/0!	$172,384	0.0%	$44.00	$70.00	0.0%	0.0%	$163,003	0.0%	$12,157	0%
Vertical Expansion, Maintain 100% Importation	$0	#DIV/0!	$230,571	33.8%	$45.04	$71.04	2.4%	1.5%	$166,171	1.9%	$12,333	1%
Vertical Expansion, 50% Importation	$0	#DIV/0!	$281,628	63.4%	$45.96	$71.96	4.4%	2.8%	$211,475	29.7%	$12,333	1%
Vertical Expansion, County Waste Only	$0	#DIV/0!	$356,108	106.6%	$47.29	$73.29	7.5%	4.7%	$276,686	69.7%	$12,333	1%
Close Landfill/Build Transfer Station (SM) [1]	$0	#DIV/0!	$445,484	158.4%	$48.89	$74.89	11.1%	7.0%	$354,940	117.8%	$19,810	63%
Close Landfill/Build Transfer Station (HA) [1]	$0	#DIV/0!	$378,452	119.5%	$47.69	$73.69	8.4%	5.3%	$296,250	81.7%	$19,810	63%
Close Landfill/Build Transfer Station (MS) [1]	$0	#DIV/0!	$419,416	143.3%	$48.42	$74.42	10.1%	6.3%	$332,116	103.7%	$19,810	63%
Close Landfill/Build Transfer Station (Distant) [1]	$0	#DIV/0!	$512,516	197.3%	$50.09	$76.09	13.8%	8.7%	$413,630	153.8%	$19,810	63%
Close Landfill w/o Transfer Station (SM) [1]	$0	#DIV/0!	$374,728	117.4%	$50.15	$77.45	14.0%	10.6%	$292,989	79.7%	$19,810	63%
Close Landfill w/o Transfer Station (HA) [1]	$0	#DIV/0!	$292,800	69.9%	$54.95	$86.38	24.9%	23.4%	$221,257	35.7%	$19,810	63%
Close Landfill w/o Transfer Station (MS) [1]	$0	#DIV/0!	$300,248	74.2%	$59.73	$94.35	35.8%	34.8%	$227,778	39.7%	$19,810	63%
Close Landfill w/o Transfer Station (Distant) [1]	$0	#DIV/0!	$374,728	117.4%	$69.86	$109.87	58.8%	57.0%	$292,989	79.7%	$19,810	63%

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Bristol

System Summary

System Element	Value
Population	2,298
Households	895
Operates Transfer Station	Yes
Transfer Station Used	Town of Bristol
Transfer Station Operator [1]	Private
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

[1] Due to using a private hauler, municipal impacts are absorbed by residential households

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	84.9	27.3	11.9		124.2
Residents (Curbside)	631.1		99.9		731.0
Commercial	430.9	182.8	30.5		644.2
Total Tons to Landfill/MRF	1,146.9	210.1	142.3	0.0	1,499.4
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$3,531	$1,121	$0	$4,652	
Residents (Curbside)	$29,213		$0	$29,213	
Commercial	$19,948	$8,354	$2,436	$30,739	
Total	$52,692	$9,476	$2,436	$64,604	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$4,652	0.0%	$29,213	0.0%	$44.00	$70.00	0.0%	0.0%	$30,739	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$6,374	37.0%	$39,205	34.2%	$45.04	$71.04	2.4%	1.5%	$31,348	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$7,929	70.4%	$47,858	63.8%	$45.96	$71.96	4.4%	2.8%	$39,870	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$10,173	118.7%	$60,479	107.0%	$47.29	$73.29	7.5%	4.7%	$52,145	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$12,867	176.6%	$75,625	158.9%	$48.89	$74.89	11.1%	7.0%	$66,875	117.6%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$10,847	133.1%	$64,266	120.0%	$47.69	$73.69	8.4%	5.3%	$55,828	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$12,081	159.7%	$71,207	143.8%	$48.42	$74.42	10.1%	6.3%	$62,579	103.6%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$14,887	220.0%	$86,984	197.8%	$50.09	$76.09	13.8%	8.7%	$77,923	153.5%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$22,751	389.0%	$63,635	117.8%	$54.46	$84.55	23.8%	20.8%	$55,214	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$17,273	271.3%	$49,751	70.3%	$47.57	$74.23	8.1%	6.0%	$41,712	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$20,599	342.8%	$51,013	74.6%	$52.12	$81.83	18.5%	16.9%	$42,939	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$29,477	533.6%	$63,635	117.8%	$70.34	$110.67	59.9%	58.1%	$55,214	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Canandaigua - Not Including City of Canandaigua

System Summary

System Element	Value
Population	11,109
Households	4,601
Operates Transfer Station	Yes
Transfer Station Used	Town of Canandaigua
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	1,583.9	115.8	544.5		2,244.2
Residents (Curbside)	2,096.9		30.6		2,127.5
Commercial	2,215.4	883.7	156.6		3,255.7
Total Tons to Landfill/MRF	5,896.2	999.6	731.7	0.0	7,627.4
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$65,857	$4,756	$0	$70,613	
Residents (Curbside)	$97,067		$0	$97,067	
Commercial	$102,549	$40,387	$12,525	$155,461	
Total	$265,473	$45,143	$12,525	$323,141	$0

Impact by Scenario

Scenario	Impact on Municipality: Total Cost for Transfer Station Tons		Impact on Residential Households: Agg. Total Cost to Curbside Customers	% Change from Current System	Estimated Curbside Residential Rate ($/Mo): Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Impact on Commercial Sector: Agg. Disposal Cost to Commercial Generators	% Change from Current System	Biosolids: Agg. Transport/Disposal Cost	% Change from Current System
Current System	$70,613	0.0%	$97,067	0.0%	$44.00	$70.00	0.0%	0.0%	$155,461	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$133,061	88.4%	$100,128	3.2%	$45.04	$71.04	2.4%	1.5%	$158,592	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$156,432	121.5%	$128,877	32.8%	$45.96	$71.96	4.4%	2.8%	$201,602	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$190,426	169.7%	$170,816	76.0%	$47.29	$73.29	7.5%	4.7%	$263,584	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$231,219	227.4%	$221,142	127.8%	$48.89	$74.89	11.1%	7.0%	$337,963	117.4%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$200,624	184.1%	$183,397	88.9%	$47.69	$73.69	8.4%	5.3%	$282,179	81.5%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$219,321	210.6%	$206,464	112.7%	$48.42	$74.42	10.1%	6.3%	$316,269	103.4%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$261,813	270.8%	$258,887	166.7%	$50.09	$76.09	13.8%	8.7%	$393,746	153.3%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$273,595	287.5%	$181,301	86.8%	$53.88	$83.59	22.5%	19.4%	$279,080	79.5%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$227,452	222.1%	$135,168	39.3%	$49.26	$77.01	12.0%	10.0%	$210,900	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$252,632	257.8%	$139,362	43.6%	$53.54	$84.17	21.7%	20.2%	$217,098	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$325,558	361.0%	$181,301	86.8%	$74.29	$117.17	68.9%	67.4%	$279,080	79.5%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Canadice

System Summary

System Element	Value
Population	1,674
Households	782
Operates Transfer Station	No
Transfer Station Used	Town of Richmond
Transfer Station Operator [1]	Private
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

[1] Due to using a private hauler, municipal impacts are absorbed by residential households

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	73.9	0.0	19.9		93.8
Residents (Curbside)	551.7		77.8		629.5
Commercial	376.5	133.2	26.6		536.3
Total Tons to Landfill/MRF	1,002.1	133.2	124.4	0.0	1,259.7
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$3,074	$0	$0	$3,074	
Residents (Curbside)	$25,537		$0	$25,537	
Commercial	$17,430	$6,086	$2,129	$25,644	
Total	$46,040	$6,086	$2,129	$54,255	$0

Impact by Scenario

Scenario	Impact on Municipality: Total Cost for Transfer Station Tons		Impact on Residential Households: Agg. Total Cost to Curbside Customers	% Change from Current System	Estimated Curbside Residential Rate ($/Mo): Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Impact on Commercial Sector: Agg. Disposal Cost to Commercial Generators	% Change from Current System	Biosolids: Agg. Transport/Disposal Cost	% Change from Current System
Current System	$3,074	0.0%	$25,537	0.0%	$44.00	$70.00	0.0%	0.0%	$25,644	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$5,414	76.1%	$33,320	30.5%	$45.04	$71.04	2.4%	1.5%	$26,176	2.1%	$0	N/A
Vertical Expansion, 50% Importation	$6,427	109.1%	$40,884	60.1%	$45.96	$71.96	4.4%	2.8%	$33,243	29.6%	$0	N/A
Vertical Expansion, County Waste Only	$7,906	157.2%	$51,917	103.3%	$47.29	$73.29	7.5%	4.7%	$43,437	69.4%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$9,680	214.9%	$65,157	155.1%	$48.89	$74.89	11.1%	7.0%	$55,670	117.1%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$8,349	171.6%	$55,227	116.3%	$47.69	$73.69	8.4%	5.3%	$46,495	81.3%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$9,162	198.1%	$61,296	140.0%	$48.42	$74.42	10.1%	6.3%	$52,102	103.2%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$11,011	258.2%	$75,088	194.0%	$50.09	$76.09	13.8%	8.7%	$64,844	152.9%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$11,125	261.9%	$54,676	114.1%	$54.48	$84.58	23.8%	20.8%	$45,985	79.3%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$8,949	191.1%	$42,539	66.6%	$47.65	$74.37	8.3%	6.2%	$34,772	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$9,327	203.4%	$43,642	70.9%	$48.97	$76.64	11.3%	9.5%	$35,791	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$12,339	301.4%	$54,676	114.1%	$61.63	$96.34	40.1%	37.6%	$45,985	79.3%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of East Bloomfield - Not Including Village of Bloomfield

System Summary

System Element	Value
Population	2,384
Households	982
Operates Transfer Station	No
Transfer Station Used	Town of Bristol
Transfer Station Operator	Private
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	88.1	28.3	12.4		128.8
Residents (Curbside)	697.5		110.4		807.9
Commercial	472.8	189.7	33.4		695.9
Total Tons to Landfill/MRF	1,258.4	218.0	156.2	0.0	1,632.6
Exported Tons	1,336.0		0.0		1,336.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$3,663	$1,163	$0	$4,826	
Residents (Curbside)	$32,287		$0	$32,287	
Commercial	$21,887	$8,667	$2,673	$33,228	
Total	$57,838	$9,830	$2,673	$70,341	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$4,826	0.0%	$32,287	0.0%	$44.00	$70.00	0.0%	0.0%	$33,228	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$6,612	37.0%	$43,323	34.2%	$45.04	$71.04	2.4%	1.5%	$33,896	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$8,225	70.4%	$52,886	63.8%	$45.96	$71.96	4.4%	2.8%	$43,090	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$10,554	118.7%	$66,836	107.0%	$47.29	$73.29	7.5%	4.7%	$56,340	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$13,348	176.6%	$83,576	158.8%	$48.89	$74.89	11.1%	7.0%	$72,239	117.4%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$11,253	133.1%	$71,021	120.0%	$47.69	$73.69	8.4%	5.3%	$60,315	81.5%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$12,533	159.7%	$78,693	143.7%	$48.42	$74.42	10.1%	6.3%	$67,602	103.5%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$15,444	220.0%	$96,131	197.7%	$50.09	$76.09	13.8%	8.7%	$84,164	153.3%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$15,711	225.5%	$70,323	117.8%	$53.42	$82.83	21.4%	18.3%	$59,652	79.5%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$12,068	150.0%	$54,978	70.3%	$46.54	$72.54	5.8%	3.6%	$45,078	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$13,433	178.3%	$56,373	74.6%	$50.97	$79.94	15.8%	14.2%	$46,403	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$18,997	293.6%	$70,323	117.8%	$72.28	$113.86	64.3%	62.7%	$59,652	79.5%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Farmington

System Summary

System Element	Value
Population	14,170
Households	5,576
Operates Transfer Station	Yes
Transfer Station Used	Town of Farmington
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	0.0	0.0	0.0		0.0
Residents (Curbside)	4,460.8		697.0		5,157.8
Commercial	2,684.8	1,127.2	189.7		4,001.8
Total Tons to Landfill/MRF	7,145.6	1,127.2	886.7	2,571.8	9,159.6
Exported Tons	1,336.0		0.0		1,336.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$63.04

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$0	$0	$0	$0	
Residents (Curbside)	$206,490		$0	$206,490	
Commercial	$124,280	$51,515	$15,180	$190,975	
Total	$330,770	$51,515	$15,180	$559,593	$162,128

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Custo		Estimated Curbside Residential Rate ($/Mo)							
Scenario	Disposal Cost for Transfer Station Tons	% Change from Current System	Agg. Disposal Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$0	#DIV/0!	$206,490	0.0%	$44.00	$70.00	0.0%	0.0%	$190,975	0.0%	$162,128	0%
Vertical Expansion, Maintain 100% Importation	$0	#DIV/0!	$276,190	33.8%	$45.04	$71.04	2.4%	1.5%	$194,770	2.0%	$205,746	27%
Vertical Expansion, 50% Importation	$0	#DIV/0!	$337,348	63.4%	$45.96	$71.96	4.4%	2.8%	$247,698	29.7%	$205,746	27%
Vertical Expansion, County Waste Only	$0	#DIV/0!	$426,564	106.6%	$47.29	$73.29	7.5%	4.7%	$323,939	69.6%	$205,746	27%
Close Landfill/Build Transfer Station (SM) [1]	$0	#DIV/0!	$533,623	158.4%	$48.89	$74.89	11.1%	7.0%	$415,429	117.5%	$299,475	85%
Close Landfill/Build Transfer Station (HA) [1]	$0	#DIV/0!	$453,329	119.5%	$47.69	$73.69	8.4%	5.3%	$346,812	81.6%	$299,475	85%
Close Landfill/Build Transfer Station (MS) [1]	$0	#DIV/0!	$502,398	143.3%	$48.42	$74.42	10.1%	6.3%	$388,744	103.6%	$299,475	85%
Close Landfill/Build Transfer Station (Distant) [1]	$0	#DIV/0!	$613,918	197.3%	$50.09	$76.09	13.8%	8.7%	$484,046	153.5%	$299,475	85%
Close Landfill w/o Transfer Station (SM) [1]	$0	#DIV/0!	$448,868	117.4%	$50.42	$77.90	14.6%	11.3%	$343,000	79.6%	$299,475	85%
Close Landfill w/o Transfer Station (HA) [1]	$0	#DIV/0!	$350,730	69.9%	$46.54	$72.54	5.8%	3.6%	$259,134	35.7%	$299,475	85%
Close Landfill w/o Transfer Station (MS) [1]	$0	#DIV/0!	$359,652	74.2%	$48.39	$75.69	10.0%	8.1%	$266,758	39.7%	$299,475	85%
Close Landfill w/o Transfer Station (Distant) [1]	$0	#DIV/0!	$448,868	117.4%	$74.65	$117.75	69.7%	68.2%	$343,000	79.6%	$299,475	85%

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

MSW CONSULTANTS

Town of Geneva - Not Including City of Genva

System Summary

System Element	Value
Population	3,473
Households	1,663
Operates Transfer Station	Yes
Transfer Station Used	Town of Geneva
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	289.4	17.1	146.8		453.3
Residents (Curbside)	1,041.0		61.0		1,102.1
Commercial	800.7	276.3	56.6		1,133.6
Total Tons to Landfill/MRF	2,131.1	293.4	264.5	0.0	2,689.0
Exported Tons	89.1		0.0		89.1
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$12,033	$703	$0	$12,736	
Residents (Curbside)	$48,188		$0	$48,188	
Commercial	$37,066	$12,626	$4,527	$54,219	
Total	$97,287	$13,329	$4,527	$115,143	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$12,736	0.0%	$48,188	0.0%	$44.00	$70.00	0.0%	0.0%	$54,219	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$28,861	126.6%	$54,293	12.7%	$45.04	$71.04	2.4%	1.5%	$55,351	2.1%	$0	N/A
Vertical Expansion, 50% Importation	$33,074	159.7%	$68,565	42.3%	$45.96	$71.96	4.4%	2.8%	$70,280	29.6%	$0	N/A
Vertical Expansion, County Waste Only	$39,204	207.8%	$89,385	85.5%	$47.29	$73.29	7.5%	4.7%	$91,820	69.3%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$46,560	265.6%	$114,370	137.3%	$48.89	$74.89	11.1%	7.0%	$117,668	117.0%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$41,043	222.3%	$95,631	98.5%	$47.69	$73.69	8.4%	5.3%	$98,282	81.3%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$44,414	248.7%	$107,082	122.2%	$48.42	$74.42	10.1%	6.3%	$110,129	103.1%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$52,077	308.9%	$133,108	176.2%	$50.09	$76.09	13.8%	8.7%	$137,054	152.8%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$51,266	302.5%	$94,590	96.3%	$51.67	$79.94	17.4%	14.2%	$97,205	79.3%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$47,556	273.4%	$71,688	48.8%	$56.03	$88.16	27.3%	25.9%	$73,511	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$51,836	307.0%	$73,770	53.1%	$61.86	$97.85	40.6%	39.8%	$75,665	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$59,558	367.6%	$94,590	96.3%	$71.01	$111.77	61.4%	59.7%	$97,205	79.3%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Gorham

System Summary

System Element	Value
Population	3,936
Households	1,587
Operates Transfer Station	Yes
Transfer Station Used	Town of Gorham
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	1,003.6	0.0	178.2		1,181.8
Residents (Curbside)	266.0		20.2		286.2
Commercial	764.1	313.1	54.0		1,131.3
Total Tons to Landfill/MRF	2,033.7	313.1	252.4	0.0	2,599.2
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$41,730	$0	$0	$41,730	
Residents (Curbside)	$12,313		$0	$12,313	
Commercial	$35,372	$14,309	$4,320	$54,001	
Total	$89,414	$14,309	$4,320	$108,044	$0

Impact by Scenario

Scenario	Impact on Municipality: Total Cost for Transfer Station Tons		Impact on Residential Households: Agg. Total Cost to Curbside Customers	% Change from Current System	Estimated Curbside Residential Rate ($/Mo): Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Impact on Commercial Sector: Agg. Disposal Cost to Commercial Generators	% Change from Current System	Biosolids: Agg. Transport/Disposal Cost	% Change from Current System
Current System	$41,730	0.0%	$12,313	0.0%	$44.00	$70.00	0.0%	0.0%	$54,001	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$64,273	54.0%	$14,335	16.4%	$45.04	$71.04	2.4%	1.5%	$55,081	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$78,032	87.0%	$17,981	46.0%	$45.96	$71.96	4.4%	2.8%	$70,035	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$98,104	135.1%	$23,301	89.2%	$47.29	$73.29	7.5%	4.7%	$91,580	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$122,191	192.8%	$29,685	141.1%	$48.89	$74.89	11.1%	7.0%	$117,434	117.5%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$104,126	149.5%	$24,897	102.2%	$47.69	$73.69	8.4%	5.3%	$98,044	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$115,165	176.0%	$27,823	126.0%	$48.42	$74.42	10.1%	6.3%	$109,893	103.5%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$140,256	236.1%	$34,473	180.0%	$50.09	$76.09	13.8%	8.7%	$136,825	153.4%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$143,710	244.4%	$24,631	100.0%	$54.48	$84.58	23.8%	20.8%	$96,966	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$122,887	194.5%	$18,779	52.5%	$53.14	$83.40	20.8%	19.1%	$73,267	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$136,425	226.9%	$19,311	56.8%	$58.89	$92.97	33.8%	32.8%	$75,421	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$168,175	303.0%	$24,631	100.0%	$71.73	$112.95	63.0%	61.4%	$96,966	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Hopewell

System Summary

System Element	Value
Population	3,841
Households	1,473
Operates Transfer Station	Yes
Transfer Station Used	Town of Hopewell
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	172.6	0.0	59.8		232.4
Residents (Curbside)	1,005.8		124.3		1,130.1
Commercial	709.2	305.6	50.1		1,064.9
Total Tons to Landfill/MRF	1,887.6	305.6	234.2	0.0	2,427.4
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$7,176	$0	$0	$7,176	
Residents (Curbside)	$46,559		$0	$46,559	
Commercial	$32,831	$13,964	$4,010	$50,805	
Total	$86,566	$13,964	$4,010	$104,540	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$7,176	0.0%	$46,559	0.0%	$44.00	$70.00	0.0%	0.0%	$50,805	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$13,973	94.7%	$58,988	26.7%	$45.04	$71.04	2.4%	1.5%	$51,807	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$16,339	127.7%	$72,778	56.3%	$45.96	$71.96	4.4%	2.8%	$65,900	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$19,790	175.8%	$92,894	99.5%	$47.29	$73.29	7.5%	4.7%	$86,196	69.7%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$23,932	233.5%	$117,034	151.4%	$48.89	$74.89	11.1%	7.0%	$110,552	117.6%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$20,826	190.2%	$98,929	112.5%	$47.69	$73.69	8.4%	5.3%	$92,285	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$22,724	216.7%	$109,993	136.2%	$48.42	$74.42	10.1%	6.3%	$103,448	103.6%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$27,039	276.8%	$135,139	190.2%	$50.09	$76.09	13.8%	8.7%	$128,818	153.6%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$27,248	279.7%	$97,923	110.3%	$53.59	$83.11	21.8%	18.7%	$91,270	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$23,319	225.0%	$75,795	62.8%	$51.54	$80.77	17.1%	15.4%	$68,945	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$25,792	259.4%	$77,807	67.1%	$57.10	$90.02	29.8%	28.6%	$70,974	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$31,879	344.3%	$97,923	110.3%	$74.77	$117.95	69.9%	68.5%	$91,270	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Manchester - Not Including Village of Manchester or Village of Shortsville

System Summary

System Element	Value
Population	4,387
Households	1,711
Operates Transfer Station	Yes
Transfer Station Used	Town of Manchester
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	53.3	4.8	31.0		89.0
Residents (Curbside)	1,315.5		182.9		1,498.4
Commercial	823.8	349.0	58.2		1,231.1
Total Tons to Landfill/MRF	2,192.6	353.8	272.1	0.0	2,818.5
Exported Tons	1,336.0		0.0		1,336.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$2,216	$197	$0	$2,413	
Residents (Curbside)	$60,895		$0	$60,895	
Commercial	$38,135	$15,949	$4,658	$58,742	
Total	$101,246	$16,146	$4,658	$122,050	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$2,413	0.0%	$60,895	0.0%	$44.00	$70.00	0.0%	0.0%	$58,742	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$5,782	139.7%	$79,186	30.0%	$45.04	$71.04	2.4%	1.5%	$59,907	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$6,581	172.8%	$97,221	59.7%	$45.96	$71.96	4.4%	2.8%	$76,192	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$7,743	220.9%	$123,531	102.9%	$47.29	$73.29	7.5%	4.7%	$99,649	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$9,137	278.7%	$155,104	154.7%	$48.89	$74.89	11.1%	7.0%	$127,797	117.6%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$8,091	235.4%	$131,424	115.8%	$47.69	$73.69	8.4%	5.3%	$106,686	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$8,730	261.9%	$145,895	139.6%	$48.42	$74.42	10.1%	6.3%	$119,587	103.6%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$10,182	322.0%	$178,783	193.6%	$50.09	$76.09	13.8%	8.7%	$148,908	153.5%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$12,280	409.0%	$130,109	113.7%	$51.21	$79.19	16.4%	13.1%	$105,513	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$10,809	348.0%	$101,168	66.1%	$48.45	$75.68	10.1%	8.1%	$79,711	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$12,403	414.1%	$103,799	70.5%	$53.21	$83.61	20.9%	19.4%	$82,056	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$16,110	567.7%	$130,109	113.7%	$74.65	$117.75	69.7%	68.2%	$105,513	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Naples - Not Including Village of Naples

System Summary

System Element	Value
Population	1,452
Households	533
Operates Transfer Station	Yes
Transfer Station Used	Town of Naples
Transfer Station Operator [1]	Private
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

[1] Due to using a private hauler, municipal impacts are absorbed by residential households

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	130.1	0.0	43.7		173.8
Residents (Curbside)	296.3		22.9		319.2
Commercial	256.6	115.5	18.1		390.3
Total Tons to Landfill/MRF	683.0	115.5	84.8	0.0	883.3
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$5,410	$0	$0	$5,410	
Residents (Curbside)	$13,715		$0	$13,715	
Commercial	$11,880	$5,279	$1,451	$18,609	
Total	$31,005	$5,279	$1,451	$37,735	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$5,410	0.0%	$13,715	0.0%	$44.00	$70.00	0.0%	0.0%	$18,609	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$10,393	92.1%	$16,007	16.7%	$45.04	$71.04	2.4%	1.5%	$18,972	1.9%	$0	N/A
Vertical Expansion, 50% Importation	$12,177	125.1%	$20,069	46.3%	$45.96	$71.96	4.4%	2.8%	$24,142	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$14,780	173.2%	$25,995	89.5%	$47.29	$73.29	7.5%	4.7%	$31,585	69.7%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$17,902	230.9%	$33,106	141.4%	$48.89	$74.89	11.1%	7.0%	$40,517	117.7%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$15,560	187.6%	$27,773	102.5%	$47.69	$73.69	8.4%	5.3%	$33,818	81.7%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$16,992	214.1%	$31,032	126.3%	$48.42	$74.42	10.1%	6.3%	$37,912	103.7%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$20,244	274.2%	$38,439	180.3%	$50.09	$76.09	13.8%	8.7%	$47,216	153.7%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$23,732	338.6%	$27,476	100.3%	$54.40	$84.44	23.6%	20.6%	$33,446	79.7%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$20,419	277.4%	$20,958	52.8%	$51.24	$80.27	16.4%	14.7%	$25,259	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$22,055	307.7%	$21,551	57.1%	$54.86	$86.33	24.7%	23.3%	$26,003	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$26,205	384.4%	$27,476	100.3%	$59.05	$92.09	34.2%	31.6%	$33,446	79.7%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Phelps - Not Including Village of Phelps

System Summary

System Element	Value
Population	4,648
Households	1,977
Operates Transfer Station	No
Transfer Station Used	Village of Phelps
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	150.6	0.0	126.7		277.3
Residents (Curbside)	1,431.0		120.5		1,551.4
Commercial	951.9	369.8	67.3		1,388.9
Total Tons to Landfill/MRF	2,533.5	369.8	314.4	0.0	3,217.7
Exported Tons	89.1		0.0		89.1
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$6,264	$0	$0	$6,264	
Residents (Curbside)	$66,239		$0	$66,239	
Commercial	$44,064	$16,898	$5,382	$66,344	
Total	$116,567	$16,898	$5,382	$138,847	$0

Impact by Scenario

Scenario	Impact on Municipality: Total Cost for Transfer Station Tons		Impact on Residential Households: Agg. Total Cost to Curbside Customers	% Change from Current System	Estimated Curbside Residential Rate ($/Mo): Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Impact on Commercial Sector: Agg. Disposal Cost to Commercial Generators	% Change from Current System	Biosolids: Agg. Transport/Disposal Cost	% Change from Current System
Current System	$6,264	0.0%	$66,239	0.0%	$44.00	$70.00	0.0%	0.0%	$66,344	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$19,638	213.5%	$78,287	18.2%	$45.04	$71.04	2.4%	1.5%	$67,689	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$21,704	246.5%	$97,905	47.8%	$45.96	$71.96	4.4%	2.8%	$86,028	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$24,716	294.6%	$126,524	91.0%	$47.29	$73.29	7.5%	4.7%	$112,461	69.5%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$28,332	352.3%	$160,867	142.9%	$48.89	$74.89	11.1%	7.0%	$144,181	117.3%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$25,620	309.0%	$135,110	104.0%	$47.69	$73.69	8.4%	5.3%	$120,391	81.5%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$27,277	335.5%	$150,851	127.7%	$48.42	$74.42	10.1%	6.3%	$134,930	103.4%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$31,043	395.6%	$186,625	181.7%	$50.09	$76.09	13.8%	8.7%	$167,971	153.2%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$30,335	384.3%	$133,679	101.8%	$49.88	$77.00	13.4%	10.0%	$119,070	79.5%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$27,801	343.9%	$102,198	54.3%	$51.42	$80.57	16.9%	15.1%	$89,993	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$29,912	377.6%	$105,060	58.6%	$56.73	$89.42	28.9%	27.7%	$92,636	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$35,083	460.1%	$133,679	101.8%	$73.32	$115.56	66.6%	65.1%	$119,070	79.5%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Richmond

System Summary

System Element	Value
Population	3,380
Households	1,502
Operates Transfer Station	Yes
Transfer Station Used	Town of Richmond
Transfer Station Operator [1]	Private
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

[1] Due to using a private hauler, municipal impacts are absorbed by residential households

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	149.3	0.0	40.2		189.5
Residents (Curbside)	1,052.3		147.5		1,199.9
Commercial	723.2	268.9	51.1		1,043.2
Total Tons to Landfill/MRF	1,924.8	268.9	238.9	0.0	2,432.6
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$6,206	$0	$0	$6,206	
Residents (Curbside)	$48,713		$0	$48,713	
Commercial	$33,477	$12,288	$4,089	$49,854	
Total	$88,396	$12,288	$4,089	$104,773	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$6,206	0.0%	$48,713	0.0%	$44.00	$70.00	0.0%	0.0%	$49,854	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$10,931	76.1%	$63,466	30.3%	$45.04	$71.04	2.4%	1.5%	$50,876	2.1%	$0	N/A
Vertical Expansion, 50% Importation	$12,977	109.1%	$77,894	59.9%	$45.96	$71.96	4.4%	2.8%	$64,637	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$15,963	157.2%	$98,940	103.1%	$47.29	$73.29	7.5%	4.7%	$84,478	69.5%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$19,545	214.9%	$124,197	155.0%	$48.89	$74.89	11.1%	7.0%	$108,288	117.2%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$16,858	171.6%	$105,255	116.1%	$47.69	$73.69	8.4%	5.3%	$90,431	81.4%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$18,500	198.1%	$116,830	139.8%	$48.42	$74.42	10.1%	6.3%	$101,344	103.3%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$22,232	258.2%	$143,139	193.8%	$50.09	$76.09	13.8%	8.7%	$126,146	153.0%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$25,311	307.8%	$104,202	113.9%	$54.48	$84.58	23.8%	20.8%	$89,439	79.4%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$20,810	235.3%	$81,051	66.4%	$49.01	$76.60	11.4%	9.4%	$67,613	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$23,585	280.0%	$83,155	70.7%	$53.26	$83.71	21.1%	19.6%	$69,597	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$30,842	396.9%	$104,202	113.9%	$69.64	$109.51	58.3%	56.4%	$89,439	79.4%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Seneca

System Summary

System Element	Value
Population	2,658
Households	1,052
Operates Transfer Station	Yes
Transfer Station Used	Town of Seneca
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	-$2,128,293
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	1,487.0	0.0	138.3		**1,625.2**
Residents (Curbside)	0.0		0.0		**0.0**
Commercial	506.5	211.4	35.8		**753.8**
Total Tons to Landfill/MRF	**1,993.5**	**211.4**	**174.1**	**0.0**	**2,379.0**
Exported Tons	0.0		0.0		**0.0**
Residential Lbs/HH/Yr	**2,826.9**		**262.9**		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$0.00	$0.00	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$0	$0	$0	**$0**	
Residents (Curbside)	$0		$0	**$0**	
Commercial	$23,447	$9,663	$2,864	**$35,974**	
Total	**$23,447**	**$9,663**	**$2,864**	**$35,974**	**$0**

Impact by Scenario

Scenario	Impact on Municipality: Total Cost for Transfer Station Tons		Impact on Residential Households: Agg. Total Cost to Curbside Customers	% Change from Current System	Estimated Curbside Residential Rate ($/Mo): Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Impact on Commercial Sector: Agg. Disposal Cost to Commercial Generators	% Change from Current System	Biosolids: Agg. Transport/Disposal Cost	% Change from Current System
Current System	$0	#DIV/0!	$0	#DIV/0!	$44.00	$70.00	0.0%	0.0%	$35,974	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$82,659	#DIV/0!	$0	#DIV/0!	$45.04	$71.04	2.4%	1.5%	$36,690	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$103,046	#DIV/0!	$0	#DIV/0!	$45.96	$71.96	4.4%	2.8%	$46,659	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$132,785	#DIV/0!	$0	#DIV/0!	$47.29	$73.29	7.5%	4.7%	$61,018	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$168,472	#DIV/0!	$0	#DIV/0!	$48.89	$74.89	11.1%	7.0%	$78,250	117.5%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$141,707	#DIV/0!	$0	#DIV/0!	$47.69	$73.69	8.4%	5.3%	$65,326	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$158,063	#DIV/0!	$0	#DIV/0!	$48.42	$74.42	10.1%	6.3%	$73,224	103.5%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$195,237	#DIV/0!	$0	#DIV/0!	$50.09	$76.09	13.8%	8.7%	$91,173	153.4%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$197,685	#DIV/0!	$0	#DIV/0!	$54.62	$84.81	24.1%	21.2%	$64,608	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$174,532	#DIV/0!	$0	#DIV/0!	$56.50	$88.93	28.4%	27.0%	$48,813	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$195,258	#DIV/0!	$0	#DIV/0!	$62.53	$98.95	42.1%	41.4%	$50,249	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$236,847	#DIV/0!	$0	#DIV/0!	$74.52	$117.55	69.4%	67.9%	$64,608	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of South Bristol

System Summary

System Element	Value
Population	1,727
Households	781
Operates Transfer Station	Yes
Transfer Station Used	Town of South Bristol
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	222.4	169.7	87.6		**479.8**
Residents (Curbside)	402.4		10.0		**412.4**
Commercial	376.0	137.4	26.6		**540.0**
Total Tons to Landfill/MRF	**1,000.8**	**307.1**	**124.2**	**0.0**	**1,432.1**
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	**1,600.0**		**250.0**		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$9,249	$6,967	$0	**$16,216**	
Residents (Curbside)	$18,626		$0	**$18,626**	
Commercial	$17,407	$6,279	$2,126	**$25,812**	
Total	**$45,282**	**$13,246**	**$2,126**	**$60,653**	**$0**

Impact by Scenario

Scenario	Impact on Municipality: Total Cost for Transfer Station Tons		Impact on Residential Households: Agg. Total Cost to Curbside Customers	% Change from Current System	Estimated Curbside Residential Rate ($/Mo): Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Impact on Commercial Sector: Agg. Disposal Cost to Commercial Generators	% Change from Current System	Biosolids: Agg. Transport/Disposal Cost	% Change from Current System
Current System	$16,216	0.0%	$18,626	0.0%	$44.00	$70.00	0.0%	0.0%	$25,812	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$26,815	65.4%	$19,624	5.4%	$45.04	$71.04	2.4%	1.5%	$26,343	2.1%	$0	N/A
Vertical Expansion, 50% Importation	$32,291	99.1%	$25,141	35.0%	$45.96	$71.96	4.4%	2.8%	$33,464	29.6%	$0	N/A
Vertical Expansion, County Waste Only	$40,133	147.5%	$33,188	78.2%	$47.29	$73.29	7.5%	4.7%	$43,732	69.4%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$49,543	205.5%	$42,845	130.0%	$48.89	$74.89	11.1%	7.0%	$56,055	117.2%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$42,485	162.0%	$35,602	91.1%	$47.69	$73.69	8.4%	5.3%	$46,813	81.4%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$46,799	188.6%	$40,028	114.9%	$48.42	$74.42	10.1%	6.3%	$52,461	103.2%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$56,601	249.1%	$50,088	168.9%	$50.09	$76.09	13.8%	8.7%	$65,296	153.0%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$57,206	252.8%	$35,200	89.0%	$54.48	$84.58	23.8%	20.8%	$46,299	79.4%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$46,441	186.4%	$26,348	41.5%	$49.01	$76.60	11.4%	9.4%	$35,004	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$51,576	218.1%	$27,153	45.8%	$53.26	$83.71	21.1%	19.6%	$36,031	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$64,605	298.4%	$35,200	89.0%	$64.77	$101.50	47.2%	45.0%	$46,299	79.4%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Victor - Not Including Village of Victor

System Summary

System Element	Value
Population	13,116
Households	5,770
Operates Transfer Station	Yes
Transfer Station Used	Town of Victor
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	815.3	177.3	246.1		1,238.7
Residents (Curbside)	3,800.7		475.1		4,275.8
Commercial	2,778.2	1,043.4	196.3		4,018.0
Total Tons to Landfill/MRF	7,394.2	1,220.7	917.6	0.0	9,532.5
Exported Tons	1,336.0		156.0		1,492.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$33,902	$7,279	$0	$41,181	
Residents (Curbside)	$175,932		$0	$175,932	
Commercial	$128,604	$47,683	$15,708	$191,995	
Total	$338,438	$54,962	$15,708	$409,108	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo) (1)							
Scenario	Total Cost for Transfer Station Tons	% Change from Current System	Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$41,181	0.0%	$175,932	0.0%	$44.00	$70.00	0.0%	0.0%	$191,995	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$70,454	71.1%	$223,447	27.0%	$45.04	$71.04	2.4%	1.5%	$195,922	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$84,167	104.4%	$275,554	56.6%	$45.96	$71.96	4.4%	2.8%	$248,932	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$104,019	152.6%	$351,567	99.8%	$47.29	$73.29	7.5%	4.7%	$325,365	69.5%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$127,842	210.4%	$442,783	151.7%	$48.89	$74.89	11.1%	7.0%	$417,084	117.2%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$109,975	167.1%	$374,371	112.8%	$47.69	$73.69	8.4%	5.3%	$348,294	81.4%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$120,894	193.6%	$416,179	136.6%	$48.42	$74.42	10.1%	6.3%	$390,332	103.3%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$145,709	253.8%	$511,195	190.6%	$50.09	$76.09	13.8%	8.7%	$485,873	153.1%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$151,031	266.8%	$370,571	110.6%	$50.47	$77.97	14.7%	11.4%	$344,473	79.4%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$123,153	199.1%	$286,956	63.1%	$46.54	$72.54	5.8%	3.6%	$260,397	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$130,525	217.0%	$294,557	67.4%	$47.48	$74.18	7.9%	6.0%	$268,040	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$190,406	362.4%	$370,571	110.6%	$73.77	$116.30	67.6%	66.1%	$344,473	79.4%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of West Bloomfield

System Summary

System Element	Value
Population	2,760
Households	1,206
Operates Transfer Station	Yes
Transfer Station Used	Town of West Bloomfield
Transfer Station Operator [1]	Private
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

[1] Due to using a private hauler, municipal impacts are absorbed by residential households

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	0.0	0.0	0.0		0.0
Residents (Curbside)	964.8		150.8		1,115.6
Commercial	580.7	219.6	41.0		841.3
Total Tons to Landfill/MRF	1,545.5	219.6	191.8	0.0	1,956.8
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$0	$0	$0	$0	
Residents (Curbside)	$44,661		$0	$44,661	
Commercial	$26,880	$10,034	$3,283	$40,197	
Total	$71,540	$10,034	$3,283	$84,857	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$0	#DIV/0!	$44,661	0.0%	$44.00	$70.00	0.0%	0.0%	$40,197	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$0	#DIV/0!	$59,736	33.8%	$45.04	$71.04	2.4%	1.5%	$41,018	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$0	#DIV/0!	$72,963	63.4%	$45.96	$71.96	4.4%	2.8%	$52,119	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$0	#DIV/0!	$92,259	106.6%	$47.29	$73.29	7.5%	4.7%	$68,123	69.5%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$0	#DIV/0!	$115,414	158.4%	$48.89	$74.89	11.1%	7.0%	$87,329	117.3%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$0	#DIV/0!	$98,048	119.5%	$47.69	$73.69	8.4%	5.3%	$72,925	81.4%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$0	#DIV/0!	$108,661	143.3%	$48.42	$74.42	10.1%	6.3%	$81,728	103.3%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$0	#DIV/0!	$132,781	197.3%	$50.09	$76.09	13.8%	8.7%	$101,734	153.1%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$0	#DIV/0!	$97,083	117.4%	$53.55	$83.04	21.7%	18.6%	$72,125	79.4%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$0	#DIV/0!	$75,857	69.9%	$46.99	$73.28	6.8%	4.7%	$54,519	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$0	#DIV/0!	$77,787	74.2%	$47.99	$75.03	9.1%	7.2%	$56,120	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$0	#DIV/0!	$97,083	117.4%	$68.29	$107.29	55.2%	53.3%	$72,125	79.4%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Village of Bloomfield

System Summary

System Element	Value
Population	1,277
Households	474
Operates Transfer Station	No
Transfer Station Used	Town of Bristol
Transfer Station Operator [1]	Private
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

[1] Due to using a private hauler, municipal impacts are absorbed by residential households

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	47.2	15.2	6.6		69.0
Residents (Curbside)	332.0		52.6		384.6
Commercial	228.2	101.6	16.1		345.9
Total Tons to Landfill/MRF	607.4	116.8	75.4	9.6	799.6
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	**1,600.0**		**250.0**		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$79.28

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$1,962	$623	$0	$2,585	
Residents (Curbside)	$15,369		$0	$15,369	
Commercial	$10,565	$4,643	$1,290	$16,498	
Total	$27,896	$5,266	$1,290	$34,452	$757

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$2,585	0.0%	$15,369	0.0%	$44.00	$70.00	0.0%	0.0%	$16,498	0.0%	$757	0%
Vertical Expansion, Maintain 100% Importation	$3,542	37.0%	$20,630	34.2%	$45.04	$71.04	2.4%	1.5%	$16,820	2.0%	$764	1%
Vertical Expansion, 50% Importation	$4,406	70.4%	$25,182	63.9%	$45.96	$71.96	4.4%	2.8%	$21,402	29.7%	$764	1%
Vertical Expansion, County Waste Only	$5,653	118.7%	$31,822	107.1%	$47.29	$73.29	7.5%	4.7%	$27,998	69.7%	$764	1%
Close Landfill/Build Transfer Station (SM) [1]	$7,150	176.6%	$39,790	158.9%	$48.89	$74.89	11.1%	7.0%	$35,914	117.7%	$1,137	50%
Close Landfill/Build Transfer Station (HA) [1]	$6,027	133.1%	$33,814	120.0%	$47.69	$73.69	8.4%	5.3%	$29,977	81.7%	$1,137	50%
Close Landfill/Build Transfer Station (MS) [1]	$6,713	159.7%	$37,466	143.8%	$48.42	$74.42	10.1%	6.3%	$33,605	103.7%	$1,137	50%
Close Landfill/Build Transfer Station (Distant) [1]	$8,273	220.0%	$45,766	197.8%	$50.09	$76.09	13.8%	8.7%	$41,851	153.7%	$1,137	50%
Close Landfill w/o Transfer Station (SM) [1]	$8,401	224.9%	$33,482	117.9%	$53.20	$82.46	20.9%	17.8%	$29,647	79.7%	$1,137	50%
Close Landfill w/o Transfer Station (HA) [1]	$6,464	150.0%	$26,178	70.3%	$46.54	$72.54	5.8%	3.6%	$22,391	35.7%	$1,137	50%
Close Landfill w/o Transfer Station (MS) [1]	$7,181	177.8%	$26,842	74.7%	$50.75	$79.57	15.3%	13.7%	$23,051	39.7%	$1,137	50%
Close Landfill w/o Transfer Station (Distant) [1]	$10,138	292.1%	$33,482	117.9%	$72.79	$114.70	65.4%	63.9%	$29,647	79.7%	$1,137	50%

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Village of Clifton Springs

System Summary

System Element	Value
Population	2,222
Households	899
Operates Transfer Station	No
Transfer Station Used	Town of Manchester
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	27.0	2.4	15.7		45.1
Residents (Curbside)	692.2		96.7		788.9
Commercial	432.9	176.8	30.6		640.2
Total Tons to Landfill/MRF	1,152.1	179.2	143.0	0.0	1,474.2
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$1,122	$100	$0	$1,222	
Residents (Curbside)	$32,042		$0	$32,042	
Commercial	$20,037	$8,078	$2,447	$30,563	
Total	$53,202	$8,178	$2,447	$63,827	$0

Impact by Scenario

Scenario	Impact on Municipality: Total Cost for Transfer Station Tons		Impact on Residential Households: Agg. Total Cost to Curbside Customers	% Change from Current System	Estimated Curbside Residential Rate ($/Mo): Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Impact on Commercial Sector: Agg. Disposal Cost to Commercial Generators	% Change from Current System	Biosolids: Agg. Transport/Disposal Cost	% Change from Current System
Current System	$1,222	0.0%	$32,042	0.0%	$44.00	$70.00	0.0%	0.0%	$30,563	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$2,929	139.7%	$41,711	30.2%	$45.04	$71.04	2.4%	1.5%	$31,175	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$3,333	172.8%	$51,202	59.8%	$45.96	$71.96	4.4%	2.8%	$39,637	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$3,922	220.9%	$65,046	103.0%	$47.29	$73.29	7.5%	4.7%	$51,829	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$4,628	278.7%	$81,659	154.8%	$48.89	$74.89	11.1%	7.0%	$66,460	117.5%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$4,098	235.4%	$69,199	116.0%	$47.69	$73.69	8.4%	5.3%	$55,487	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$4,422	261.9%	$76,813	139.7%	$48.42	$74.42	10.1%	6.3%	$62,193	103.5%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$5,157	322.0%	$94,118	193.7%	$50.09	$76.09	13.8%	8.7%	$77,434	153.4%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$5,078	315.5%	$68,507	113.8%	$51.39	$79.49	16.8%	13.6%	$54,878	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$4,458	264.8%	$53,278	66.3%	$50.06	$78.34	13.8%	11.9%	$41,466	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$4,866	298.2%	$54,663	70.6%	$55.03	$86.61	25.1%	23.7%	$42,685	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$5,987	389.9%	$68,507	113.8%	$74.58	$117.64	69.5%	68.1%	$54,878	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Village of Manchester

System Summary

System Element	Value
Population	1,475
Households	648
Operates Transfer Station	No
Transfer Station Used	Town of Manchester
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	17.9	1.6	10.4		29.9
Residents (Curbside)	500.5		70.6		571.1
Commercial	312.0	117.3	22.1		451.4
Total Tons to Landfill/MRF	830.4	118.9	103.1	0.0	1,052.4
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$745	$66	$0	$811	
Residents (Curbside)	$23,167		$0	$23,167	
Commercial	$14,443	$5,362	$1,764	$21,569	
Total	$38,355	$5,428	$1,764	$45,548	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$811	0.0%	$23,167	0.0%	$44.00	$70.00	0.0%	0.0%	$21,569	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$1,944	139.7%	$30,226	30.5%	$45.04	$71.04	2.4%	1.5%	$22,010	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$2,213	172.8%	$37,088	60.1%	$45.96	$71.96	4.4%	2.8%	$27,966	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$2,603	220.9%	$47,097	103.3%	$47.29	$73.29	7.5%	4.7%	$36,553	69.5%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$3,072	278.7%	$59,109	155.1%	$48.89	$74.89	11.1%	7.0%	$46,857	117.2%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$2,721	235.4%	$50,100	116.3%	$47.69	$73.69	8.4%	5.3%	$39,129	81.4%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$2,935	261.9%	$55,606	140.0%	$48.42	$74.42	10.1%	6.3%	$43,852	103.3%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$3,424	322.0%	$68,118	194.0%	$50.09	$76.09	13.8%	8.7%	$54,585	153.1%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$3,384	317.1%	$49,600	114.1%	$50.74	$78.42	15.3%	12.0%	$38,700	79.4%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$2,871	254.0%	$38,589	66.6%	$47.33	$73.84	7.6%	5.5%	$29,254	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$3,142	287.3%	$39,590	70.9%	$51.96	$81.56	18.1%	16.5%	$30,113	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$3,970	389.5%	$49,600	114.1%	$74.79	$117.98	70.0%	68.5%	$38,700	79.4%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Village of Naples

System Summary

System Element	Value
Population	965
Households	453
Operates Transfer Station	No
Transfer Station Used	Town of Naples
Transfer Station Operator [1]	Private
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

[1] Due to using a private hauler, municipal impacts are absorbed by residential households

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	86.5	0.0	29.0		115.5
Residents (Curbside)	275.9		27.6		303.5
Commercial	218.1	76.8	15.4		310.3
Total Tons to Landfill/MRF	580.5	76.8	72.0	0.0	729.3
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$3,596	$0	$0	$3,596	
Residents (Curbside)	$12,773		$0	$12,773	
Commercial	$10,097	$3,508	$1,233	$14,838	
Total	$26,465	$3,508	$1,233	$31,206	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$3,596	0.0%	$12,773	0.0%	$44.00	$70.00	0.0%	0.0%	$14,838	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$6,907	92.1%	$15,531	21.6%	$45.04	$71.04	2.4%	1.5%	$15,146	2.1%	$0	N/A
Vertical Expansion, 50% Importation	$8,093	125.1%	$19,313	51.2%	$45.96	$71.96	4.4%	2.8%	$19,235	29.6%	$0	N/A
Vertical Expansion, County Waste Only	$9,823	173.2%	$24,832	94.4%	$47.29	$73.29	7.5%	4.7%	$25,132	69.4%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$11,898	230.9%	$31,454	146.3%	$48.89	$74.89	11.1%	7.0%	$32,209	117.1%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$10,341	187.6%	$26,487	107.4%	$47.69	$73.69	8.4%	5.3%	$26,902	81.3%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$11,293	214.1%	$29,523	131.1%	$48.42	$74.42	10.1%	6.3%	$30,145	103.2%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$13,454	274.2%	$36,421	185.1%	$50.09	$76.09	13.8%	8.7%	$37,517	152.8%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$13,588	277.9%	$26,212	105.2%	$54.48	$84.58	23.8%	20.8%	$26,607	79.3%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$11,474	219.1%	$20,141	57.7%	$51.01	$79.89	15.9%	14.1%	$20,119	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$12,263	241.1%	$20,693	62.0%	$54.96	$86.49	24.9%	23.6%	$20,709	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$14,787	311.3%	$26,212	105.2%	$60.81	$94.99	38.2%	35.7%	$26,607	79.3%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Village of Phelps

System Summary

System Element	Value
Population	1,989
Households	791
Operates Transfer Station	Yes
Transfer Station Used	Village of Phelps
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	64.5	0.0	54.2		**118.7**
Residents (Curbside)	568.3		44.7		**613.0**
Commercial	380.9	158.2	26.9		**566.0**
Total Tons to Landfill/MRF	**1,013.7**	**158.2**	**125.8**	**0.0**	**1,297.7**
Exported Tons	44.6		0.0		**44.6**
Residential Lbs/HH/Yr	**1,600.0**		**250.0**		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$2,680	$0	$0	**$2,680**	
Residents (Curbside)	$26,308		$0	**$26,308**	
Commercial	$17,630	$7,231	$2,153	**$27,014**	
Total	**$46,619**	**$7,231**	**$2,153**	**$56,003**	**$0**

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$2,680	0.0%	$26,308	0.0%	$44.00	$70.00	0.0%	0.0%	$27,014	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$8,404	213.5%	$30,776	17.0%	$45.04	$71.04	2.4%	1.5%	$27,553	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$9,287	246.5%	$38,568	46.6%	$45.96	$71.96	4.4%	2.8%	$35,037	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$10,577	294.6%	$49,935	89.8%	$47.29	$73.29	7.5%	4.7%	$45,819	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$12,124	352.3%	$63,575	141.7%	$48.89	$74.89	11.1%	7.0%	$58,757	117.5%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$10,964	309.0%	$53,345	102.8%	$47.69	$73.69	8.4%	5.3%	$49,053	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$11,673	335.5%	$59,597	126.5%	$48.42	$74.42	10.1%	6.3%	$54,983	103.5%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$13,284	395.6%	$73,805	180.5%	$50.09	$76.09	13.8%	8.7%	$68,461	153.4%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$17,735	561.7%	$52,776	100.6%	$49.48	$76.35	12.5%	9.1%	$48,514	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$17,563	555.3%	$40,273	53.1%	$51.50	$80.70	17.0%	15.3%	$36,654	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$20,275	656.4%	$41,410	57.4%	$56.82	$89.56	29.1%	27.9%	$37,733	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$24,495	813.9%	$52,776	100.6%	$72.60	$114.38	65.0%	63.4%	$48,514	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Village of Rushville

System Summary

System Element	Value
Population	194
Households	103
Operates Transfer Station	No
Transfer Station Used	Town of Gorham
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	49.5	0.0	8.8		58.2
Residents (Curbside)	32.9		4.1		37.0
Commercial	49.6	15.4	3.5		68.5
Total Tons to Landfill/MRF	132.0	15.4	16.4	0.0	163.8
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$2,057	$0	$0	$2,057	
Residents (Curbside)	$1,525		$0	$1,525	
Commercial	$2,296	$705	$280	$3,281	
Total	$5,877	$705	$280	$6,863	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$2,057	0.0%	$1,525	0.0%	$44.00	$70.00	0.0%	0.0%	$3,281	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$3,168	54.0%	$1,934	26.9%	$45.04	$71.04	2.4%	1.5%	$3,351	2.1%	$0	N/A
Vertical Expansion, 50% Importation	$3,846	87.0%	$2,385	56.5%	$45.96	$71.96	4.4%	2.8%	$4,252	29.6%	$0	N/A
Vertical Expansion, County Waste Only	$4,835	135.1%	$3,044	99.7%	$47.29	$73.29	7.5%	4.7%	$5,553	69.2%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$6,023	192.8%	$3,834	151.5%	$48.89	$74.89	11.1%	7.0%	$7,113	116.8%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$5,132	149.5%	$3,242	112.6%	$47.69	$73.69	8.4%	5.3%	$5,943	81.1%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$5,676	176.0%	$3,604	136.4%	$48.42	$74.42	10.1%	6.3%	$6,658	102.9%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$6,913	236.1%	$4,427	190.4%	$50.09	$76.09	13.8%	8.7%	$8,284	152.4%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$6,989	239.8%	$3,209	110.5%	$54.48	$84.58	23.8%	20.8%	$5,878	79.1%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$5,932	188.4%	$2,484	63.0%	$52.81	$82.86	20.0%	18.4%	$4,447	35.5%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$6,560	218.9%	$2,550	67.3%	$58.12	$91.70	32.1%	31.0%	$4,577	39.5%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$8,203	298.8%	$3,209	110.5%	$69.60	$109.45	58.2%	56.4%	$5,878	79.1%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Village of Shortsville

System Summary

System Element	Value
Population	1,320
Households	508
Operates Transfer Station	No
Transfer Station Used	Town of Manchester
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	16.0	1.4	9.3		26.8
Residents (Curbside)	390.4		54.2		444.5
Commercial	244.6	105.0	17.3		366.9
Total Tons to Landfill/MRF	651.0	106.4	80.8	0.0	838.2
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$667	$59	$0	$726	
Residents (Curbside)	$18,070		$0	$18,070	
Commercial	$11,323	$4,799	$1,383	$17,504	
Total	$30,059	$4,858	$1,383	$36,300	$0

Impact by Scenario

Scenario	Impact on Municipality: Total Cost for Transfer Station Tons		Impact on Residential Households: Agg. Total Cost to Curbside Customers	% Change from Current System	Estimated Curbside Residential Rate ($/Mo): Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Impact on Commercial Sector: Agg. Disposal Cost to Commercial Generators	% Change from Current System	Biosolids: Agg. Transport/Disposal Cost	% Change from Current System
Current System	$726	0.0%	$18,070	0.0%	$44.00	$70.00	0.0%	0.0%	$17,504	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$1,740	139.7%	$23,488	30.0%	$45.04	$71.04	2.4%	1.5%	$17,850	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$1,980	172.8%	$28,840	59.6%	$45.96	$71.96	4.4%	2.8%	$22,705	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$2,330	220.9%	$36,647	102.8%	$47.29	$73.29	7.5%	4.7%	$29,697	69.7%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$2,749	278.7%	$46,016	154.7%	$48.89	$74.89	11.1%	7.0%	$38,088	117.6%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$2,435	235.4%	$38,990	115.8%	$47.69	$73.69	8.4%	5.3%	$31,795	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$2,627	261.9%	$43,284	139.5%	$48.42	$74.42	10.1%	6.3%	$35,641	103.6%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$3,064	322.0%	$53,043	193.5%	$50.09	$76.09	13.8%	8.7%	$44,381	153.5%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$3,048	319.9%	$38,599	113.6%	$51.61	$79.85	17.3%	14.1%	$31,445	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$2,590	256.7%	$30,011	66.1%	$48.17	$75.22	9.5%	7.5%	$23,754	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$2,832	290.1%	$30,792	70.4%	$52.90	$83.10	20.2%	18.7%	$24,453	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$3,555	389.7%	$38,599	113.6%	$74.83	$118.04	70.1%	68.6%	$31,445	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Village of Victor

System Summary

System Element	Value
Population	2,744
Households	1,099
Operates Transfer Station	No
Transfer Station Used	Town of of Victor
Transfer Station Operator	Municipality
Residential Collection	Public
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	170.6	37.1	51.5		**259.2**
Residents (Curbside)	708.6		85.9		**794.5**
Commercial	529.2	218.3	37.4		**784.9**
Total Tons to Landfill/MRF	**1,408.4**	**255.4**	**174.8**	**140.8**	**1,838.5**
Exported Tons	0.0		39.0		**39.0**
Residential Lbs/HH/Yr	**1,600.0**		**250.0**		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$41.58		$0.00	
Commercial	$46.29	$45.70	$80.00	$50.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$7,093	$1,523	$0	**$8,615**	
Residents (Curbside)	$29,465		$0	**$29,465**	
Commercial	$24,495	$9,976	$2,992	**$37,463**	
Total	**$61,052**	**$11,499**	**$2,992**	**$75,543**	**$7,042**

Impact by Scenario

Scenario	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$8,615	0.0%	$29,465	0.0%	$13.52	$13.52	0.0%	0.0%	$37,463	0.0%	$7,042	0%
Vertical Expansion, Maintain 100% Importation	$14,740	71.1%	$41,391	40.5%	$14.56	$14.56	7.7%	7.7%	$38,211	2.0%	$11,266	60%
Vertical Expansion, 50% Importation	$17,609	104.4%	$51,106	73.4%	$15.47	$15.47	14.5%	14.5%	$48,587	29.7%	$11,266	60%
Vertical Expansion, County Waste Only	$21,762	152.6%	$65,279	121.5%	$16.81	$16.81	24.3%	24.3%	$63,536	69.6%	$11,266	60%
Close Landfill/Build Transfer Station (SM) [1]	$26,746	210.4%	$82,285	179.3%	$18.41	$18.41	36.2%	36.2%	$81,475	117.5%	$16,378	133%
Close Landfill/Build Transfer Station (HA) [1]	$23,008	167.1%	$69,530	136.0%	$17.21	$17.21	27.3%	27.3%	$68,021	81.6%	$16,378	133%
Close Landfill/Build Transfer Station (MS) [1]	$25,292	193.6%	$77,325	162.4%	$17.94	$17.94	32.7%	32.7%	$76,243	103.5%	$16,378	133%
Close Landfill/Build Transfer Station (Distant) [1]	$30,484	253.8%	$95,041	222.6%	$19.61	$19.61	45.0%	45.0%	$94,929	153.4%	$16,378	133%
Close Landfill w/o Transfer Station (SM) [1]	$30,020	248.4%	$68,822	133.6%	$21.70	$21.70	60.5%	60.5%	$67,273	79.6%	$16,378	133%
Close Landfill w/o Transfer Station (HA) [1]	$24,462	183.9%	$53,232	80.7%	$19.76	$19.76	46.2%	46.2%	$50,829	35.7%	$16,378	133%
Close Landfill w/o Transfer Station (MS) [1]	$25,824	199.7%	$54,649	85.5%	$19.79	$19.79	46.4%	46.4%	$52,324	39.7%	$16,378	133%
Close Landfill w/o Transfer Station (Distant) [1]	$36,888	328.2%	$68,822	133.6%	$25.66	$25.66	89.8%	89.8%	$67,273	79.6%	$16,378	133%

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of East Bloomfield - Including Village of Bloomfield

System Summary

System Element	Value
Population	3,661
Households	1,456
Operates Transfer Station	No
Transfer Station Used	Town of Bristol
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	135.3	43.5	19.0		197.8
Residents (Curbside)	1,029.5		163.0		1,192.5
Commercial	701.1	291.2	49.5		1,041.8
Total Tons to Landfill/MRF	1,865.9	334.7	231.5	0.0	2,432.2
Exported Tons	1,336.0		0.0		1,336.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$5,625	$1,786	$0	$7,412	
Residents (Curbside)	$47,656		$0	$47,656	
Commercial	$32,452	$13,310	$3,964	$49,725	
Total	$85,733	$15,096	$3,964	$104,793	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$7,412	0.0%	$47,656	0.0%	$44.00	$70.00	0.0%	0.0%	$49,725	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$10,154	37.0%	$63,953	34.2%	$45.04	$71.04	2.4%	1.5%	$50,716	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$12,631	70.4%	$78,067	63.8%	$45.96	$71.96	4.4%	2.8%	$64,492	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$16,207	118.7%	$98,658	107.0%	$47.29	$73.29	7.5%	4.7%	$84,338	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$20,498	176.6%	$123,366	158.9%	$48.89	$74.89	11.1%	7.0%	$108,153	117.5%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$17,280	133.1%	$104,835	120.0%	$47.69	$73.69	8.4%	5.3%	$90,292	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$19,247	159.7%	$116,159	143.7%	$48.42	$74.42	10.1%	6.3%	$101,207	103.5%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$23,717	220.0%	$141,897	197.8%	$50.09	$76.09	13.8%	8.7%	$126,015	153.4%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$21,676	192.4%	$103,805	117.8%	$53.42	$82.83	21.4%	18.3%	$89,300	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$16,661	124.8%	$81,156	70.3%	$46.54	$72.54	5.8%	3.6%	$67,469	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$18,151	144.9%	$83,215	74.6%	$50.97	$79.94	15.8%	14.2%	$69,454	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$24,962	236.8%	$103,805	117.8%	$72.28	$113.86	64.3%	62.7%	$89,300	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Canandaigua - Including City of Canandaigua

System Summary

System Element	Value
Population	21,648
Households	9,733
Operates Transfer Station	Yes
Transfer Station Used	Town of Canandaigua
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	1,583.9	379.2	544.5		2,507.6
Residents (Curbside)	6,202.5		672.1		6,874.6
Commercial	4,686.4	1,722.1	331.2		6,739.7
Total Tons to Landfill/MRF	12,472.8	2,101.3	1,547.8	0.0	16,122.0
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$65,857	$15,570	$0	$81,428	
Residents (Curbside)	$287,115		$0	$287,115	
Commercial	$216,933	$78,702	$26,496	$322,131	
Total	$569,905	$94,272	$26,496	$690,673	$0

Impact by Scenario

Scenario	Impact on Municipality: Total Cost for Transfer Station Tons		Impact on Residential Households: Agg. Total Cost to Curbside Customers	% Change from Current System	Estimated Curbside Residential Rate ($/Mo): Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Impact on Commercial Sector: Agg. Disposal Cost to Commercial Generators	% Change from Current System	Biosolids: Agg. Transport/Disposal Cost	% Change from Current System
Current System	$81,428	0.0%	$287,115	0.0%	$44.00	$70.00	0.0%	0.0%	$322,131	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$145,098	78.2%	$354,327	23.4%	$45.04	$71.04	2.4%	1.5%	$328,755	2.1%	$0	N/A
Vertical Expansion, 50% Importation	$172,236	111.5%	$439,363	53.0%	$45.96	$71.96	4.4%	2.8%	$417,632	29.6%	$0	N/A
Vertical Expansion, County Waste Only	$211,497	159.7%	$563,414	96.2%	$47.29	$73.29	7.5%	4.7%	$545,802	69.4%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$258,611	217.6%	$712,275	148.1%	$48.89	$74.89	11.1%	7.0%	$699,607	117.2%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$223,276	174.2%	$600,629	109.2%	$47.69	$73.69	8.4%	5.3%	$584,253	81.4%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$244,870	200.7%	$668,857	133.0%	$48.42	$74.42	10.1%	6.3%	$654,747	103.3%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$293,947	261.0%	$823,920	187.0%	$50.09	$76.09	13.8%	8.7%	$814,960	153.0%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$295,983	263.5%	$594,427	107.0%	$53.88	$83.59	22.5%	19.4%	$577,845	79.4%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$244,046	199.7%	$457,971	59.5%	$49.26	$77.01	12.0%	10.0%	$436,857	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$269,752	231.3%	$470,376	63.8%	$53.54	$84.17	21.7%	20.2%	$449,674	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$347,946	327.3%	$594,427	107.0%	$74.29	$117.17	68.9%	67.4%	$577,845	79.4%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Geneva - Including City of Geneva

System Summary

System Element	Value
Population	16,285
Households	6,318
Operates Transfer Station	Yes
Transfer Station Used	Town of Geneva
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	289.4	17.1	146.8		453.3
Residents (Curbside)	4,765.0		642.9		5,407.9
Commercial	3,042.1	1,295.5	215.0		4,552.6
Total Tons to Landfill/MRF	8,096.5	1,312.6	1,004.7	0.0	10,413.8
Exported Tons	89.1		0.0		89.1
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$12,033	$703	$0	$12,736	
Residents (Curbside)	$220,572		$0	$220,572	
Commercial	$140,818	$59,204	$17,199	$217,222	
Total	$373,423	$59,907	$17,199	$450,530	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$12,736	0.0%	$220,572	0.0%	$44.00	$70.00	0.0%	0.0%	$217,222	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$28,861	126.6%	$284,864	29.1%	$45.04	$71.04	2.4%	1.5%	$221,522	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$33,074	159.7%	$350,193	58.8%	$45.96	$71.96	4.4%	2.8%	$281,754	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$39,204	207.8%	$445,493	102.0%	$47.29	$73.29	7.5%	4.7%	$368,506	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$46,560	265.6%	$559,853	153.8%	$48.89	$74.89	11.1%	7.0%	$472,608	117.6%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$41,043	222.3%	$474,083	114.9%	$47.69	$73.69	8.4%	5.3%	$394,532	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$44,414	248.7%	$526,498	138.7%	$48.42	$74.42	10.1%	6.3%	$442,245	103.6%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$52,077	308.9%	$645,623	192.7%	$50.09	$76.09	13.8%	8.7%	$550,685	153.5%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$51,266	302.5%	$469,318	112.8%	$51.67	$79.94	17.4%	14.2%	$390,194	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$47,556	273.4%	$364,488	65.2%	$56.03	$88.16	27.3%	25.9%	$294,767	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$51,836	307.0%	$374,018	69.6%	$61.86	$97.85	40.6%	39.8%	$303,442	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$59,558	367.6%	$469,318	112.8%	$71.01	$111.77	61.4%	59.7%	$390,194	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Manchester - Including Village of Manchester and Village of Shortsville

System Summary

System Element	Value
Population	5,862
Households	2,359
Operates Transfer Station	Yes
Transfer Station Used	Town of Manchester
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	71.2	6.4	41.4		119.0
Residents (Curbside)	1,816.0		253.5		2,069.5
Commercial	1,135.8	466.3	80.3		1,682.5
Total Tons to Landfill/MRF	3,023.0	472.7	375.1	0.0	3,870.9
Exported Tons	1,336.0		0.0		1,336.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$2,961	$263	$0	$3,224	
Residents (Curbside)	$84,062		$0	$84,062	
Commercial	$52,578	$21,311	$6,422	$80,312	
Total	$139,601	$21,574	$6,422	$167,597	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$3,224	0.0%	$84,062	0.0%	$44.00	$70.00	0.0%	0.0%	$80,312	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$7,726	139.7%	$109,412	30.2%	$45.04	$71.04	2.4%	1.5%	$81,917	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$8,794	172.8%	$134,309	59.8%	$45.96	$71.96	4.4%	2.8%	$104,158	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$10,346	220.9%	$170,629	103.0%	$47.29	$73.29	7.5%	4.7%	$136,202	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$12,209	278.7%	$214,212	154.8%	$48.89	$74.89	11.1%	7.0%	$174,654	117.5%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$10,812	235.4%	$181,525	115.9%	$47.69	$73.69	8.4%	5.3%	$145,815	81.6%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$11,666	261.9%	$201,501	139.7%	$48.42	$74.42	10.1%	6.3%	$163,439	103.5%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$13,606	322.0%	$246,900	193.7%	$50.09	$76.09	13.8%	8.7%	$203,493	153.4%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$14,981	364.7%	$179,709	113.8%	$51.21	$79.19	16.4%	13.1%	$144,213	79.6%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$13,081	305.7%	$139,757	66.3%	$48.45	$75.68	10.1%	8.1%	$108,965	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$14,713	356.4%	$143,389	70.6%	$53.21	$83.61	20.9%	19.4%	$112,169	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$18,811	483.5%	$179,709	113.8%	$74.65	$117.75	69.7%	68.2%	$144,213	79.6%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Naples - Including Village of Naples

System Summary

System Element	Value
Population	2,417
Households	986
Operates Transfer Station	Yes
Transfer Station Used	Town of Naples
Transfer Station Operator [1]	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

[1] Due to using a private hauler, municipal impacts are absorbed by residential households

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	216.6	0.0	72.8		289.3
Residents (Curbside)	572.2		50.5		622.7
Commercial	474.8	192.3	33.6		700.6
Total Tons to Landfill/MRF	1,263.6	192.3	156.8	0.0	1,612.6
Exported Tons	0.0		0.0		0.0
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$9,006	$0	$0	$9,006	
Residents (Curbside)	$26,488		$0	$26,488	
Commercial	$21,976	$8,787	$2,684	$33,448	
Total	$57,470	$8,787	$2,684	$68,941	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$9,006	0.0%	$26,488	0.0%	$44.00	$70.00	0.0%	0.0%	$33,448	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$17,301	92.1%	$31,538	19.1%	$45.04	$71.04	2.4%	1.5%	$34,119	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$20,270	125.1%	$39,383	48.7%	$45.96	$71.96	4.4%	2.8%	$43,377	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$24,602	173.2%	$50,827	91.9%	$47.29	$73.29	7.5%	4.7%	$56,718	69.6%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$29,800	230.9%	$64,560	143.7%	$48.89	$74.89	11.1%	7.0%	$72,726	117.4%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$25,902	187.6%	$54,260	104.9%	$47.69	$73.69	8.4%	5.3%	$60,720	81.5%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$28,284	214.1%	$60,554	128.6%	$48.42	$74.42	10.1%	6.3%	$68,057	103.5%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$33,699	274.2%	$74,860	182.6%	$50.09	$76.09	13.8%	8.7%	$84,733	153.3%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$33,987	277.4%	$53,688	102.7%	$54.40	$84.44	23.6%	20.6%	$60,053	79.5%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$28,771	219.5%	$41,099	55.2%	$51.24	$80.27	16.4%	14.7%	$45,378	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$30,581	239.6%	$42,244	59.5%	$54.86	$86.33	24.7%	23.3%	$46,712	39.7%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$36,460	304.9%	$53,688	102.7%	$59.05	$92.09	34.2%	31.6%	$60,053	79.5%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

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Town of Phelps - Including Village of Phelps

System Summary

System Element	Value
Population	6,637
Households	2,768
Operates Transfer Station	No
Transfer Station Used	Village of Phelps
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	215.1	0.0	180.9		396.0
Residents (Curbside)	1,999.3		165.2		2,164.5
Commercial	1,332.8	528.0	94.2		1,955.0
Total Tons to Landfill/MRF	3,547.2	528.0	440.2	0.0	4,515.4
Exported Tons	89.1		0.0		89.1
Residential Lbs/HH/Yr	1,600.0		250.0		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$8,944	$0	$0	$8,944	
Residents (Curbside)	$92,548		$0	$92,548	
Commercial	$61,694	$24,129	$7,535	$93,358	
Total	$163,186	$24,129	$7,535	$194,850	$0

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$8,944	0.0%	$92,548	0.0%	$44.00	$70.00	0.0%	0.0%	$93,358	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$28,042	213.5%	$109,063	17.8%	$45.04	$71.04	2.4%	1.5%	$95,242	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$30,991	246.5%	$136,473	47.5%	$45.96	$71.96	4.4%	2.8%	$121,065	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$35,293	294.6%	$176,459	90.7%	$47.29	$73.29	7.5%	4.7%	$158,280	69.5%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$40,455	352.3%	$224,442	142.5%	$48.89	$74.89	11.1%	7.0%	$202,938	117.4%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$36,584	309.0%	$188,455	103.6%	$47.69	$73.69	8.4%	5.3%	$169,445	81.5%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$38,950	335.5%	$210,447	127.4%	$48.42	$74.42	10.1%	6.3%	$189,913	103.4%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$44,327	395.6%	$260,430	181.4%	$50.09	$76.09	13.8%	8.7%	$236,432	153.3%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$41,234	361.0%	$186,456	101.5%	$49.88	$77.00	13.4%	10.0%	$167,584	79.5%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$37,282	316.8%	$142,471	53.9%	$51.42	$80.57	16.9%	15.1%	$126,647	35.7%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$39,521	341.9%	$146,470	58.3%	$56.73	$89.42	28.9%	27.7%	$130,369	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$45,982	414.1%	$186,456	101.5%	$73.32	$115.56	66.6%	65.1%	$167,584	79.5%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

Town of Victor - Including Village of Victor

System Summary

System Element	Value
Population	15,860
Households	6,869
Operates Transfer Station	Yes
Transfer Station Used	Town of Victor
Transfer Station Operator	Municipality
Residential Collection	Subscription
Current OMLA Benefits	$0
Average Monthly Fee ($/Household)	$44-$70

Generation

Source	MSW	C&D	Recyclables	Biosolids	Total
Municipality (Transfer Station)	985.9	214.4	297.6		**1,497.9**
Residents (Curbside)	4,509.3		561.0		**5,070.3**
Commercial	3,307.4	1,261.7	233.7		**4,802.8**
Total Tons to Landfill/MRF	**8,802.6**	**1,476.1**	**1,092.4**	**0.0**	**11,371.0**
Exported Tons	1,336.0		156.0		**1,492.0**
Residential Lbs/HH/Yr	**1,600.0**		**250.0**		

Current Tip Fees

Payee	MSW	C&D	Recyclables	Biosolids
Municipality (Transfer Station	$41.58	$41.06	$0.00	
Residents (Curbside)	$46.29		$0.00	
Commercial	$46.29	$45.70	$80.00	$0.00

Current Cost

Payee	MSW	C&D	Recyclables	Total	Biosolids
Municipality (Transfer Station	$40,995	$8,802	$0	**$49,796**	
Residents (Curbside)	$208,735		$0	**$208,735**	
Commercial	$153,099	$57,659	$18,699	**$229,458**	
Total	**$402,828**	**$66,461**	**$18,699**	**$487,988**	**$0**

Impact by Scenario

	Impact on Municipality		Impact on Residential Households						Impact on Commercial Sector		Biosolids	
					Estimated Curbside Residential Rate ($/Mo) (1)							
Scenario	Total Cost for Transfer Station Tons		Agg. Total Cost to Curbside Customers	% Change from Current System	Low	High	% Change from Current System Low Estimate	% Change from Current System High Estimate	Agg. Disposal Cost to Commercial Generators	% Change from Current System	Agg. Transport/Disposal Cost	% Change from Current System
Current System	$49,796	0.0%	$208,735	0.0%	$44.00	$70.00	0.0%	0.0%	$229,458	0.0%	$0	0%
Vertical Expansion, Maintain 100% Importation	$85,193	71.1%	$264,838	26.9%	$45.04	$71.04	2.4%	1.5%	$234,133	2.0%	$0	N/A
Vertical Expansion, 50% Importation	$101,776	104.4%	$326,660	56.5%	$45.96	$71.96	4.4%	2.8%	$297,519	29.7%	$0	N/A
Vertical Expansion, County Waste Only	$125,781	152.6%	$416,846	99.7%	$47.29	$73.29	7.5%	4.7%	$388,901	69.5%	$0	N/A
Close Landfill/Build Transfer Station (SM) [1]	$154,588	210.4%	$525,069	151.5%	$48.89	$74.89	11.1%	7.0%	$498,558	117.3%	$0	N/A
Close Landfill/Build Transfer Station (HA) [1]	$132,983	167.1%	$443,902	112.7%	$47.69	$73.69	8.4%	5.3%	$416,315	81.4%	$0	N/A
Close Landfill/Build Transfer Station (MS) [1]	$146,186	193.6%	$493,504	136.4%	$48.42	$74.42	10.1%	6.3%	$466,575	103.3%	$0	N/A
Close Landfill/Build Transfer Station (Distant) [1]	$176,193	253.8%	$606,236	190.4%	$50.09	$76.09	13.8%	8.7%	$580,802	153.1%	$0	N/A
Close Landfill w/o Transfer Station (SM) [1]	$173,832	249.1%	$439,392	110.5%	$50.47	$77.97	14.7%	11.4%	$411,746	79.4%	$0	N/A
Close Landfill w/o Transfer Station (HA) [1]	$141,385	183.9%	$340,188	63.0%	$46.54	$72.54	5.8%	3.6%	$311,226	35.6%	$0	N/A
Close Landfill w/o Transfer Station (MS) [1]	$149,172	199.6%	$349,207	67.3%	$47.48	$74.18	7.9%	6.0%	$320,364	39.6%	$0	N/A
Close Landfill w/o Transfer Station (Distant) [1]	$213,206	328.2%	$439,392	110.5%	$73.77	$116.30	67.6%	66.1%	$411,746	79.4%	$0	N/A

Note: Estimated rates are based on the Ontario County MRF staying open.

(1) Fees include the all in costs associated with the processing of material, transportation, and final landfill disposal tip fee.

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