



# Ulster County Resource Recovery Agency Local Solid Waste Management Plan

**October 2019**

**Prepared for:**  
Ulster County Resource Recovery Agency  
999 Flatbush Road, Kingston, New York

## REPORT CERTIFICATION

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### Local Solid Waste Management Plan

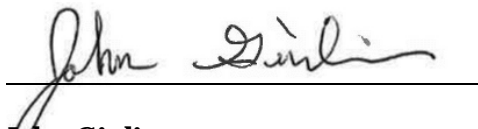
Ulster County Resource Recovery Agency  
Kingston, New York

The material and data in this report were prepared under the supervision and direction of the undersigned.

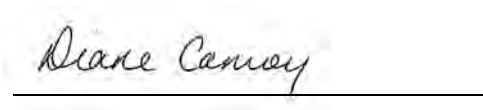
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## APPENDICES

### APPENDIX A: MSW COMPOSTING COST ESTIMATE

### APPENDIX B: ULSTER COUNTY LEGISLATION - LOCAL LAWS

- **Local Law Number 4 of 2010**
- **Local Law Number 4 of 2015**
- **Local Law Number 5 of 2018**
- **Local Law Number 1 of 2019 – Amends Local Law No. 5 of 2018**
- **Local Law Number 2 of 2019**
- **Resolution No. 135 of May 2013**
- **Proposed Local Law Number 3 of 2019**
- **Proposed Local Law Number 5 of 2019**

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### Figures

#### Figure 1: Site Location Map

## GLOSSARY OF TERMS

TERM/ACRONYM	DEFINITION
AD	Anaerobic Digester
BHS	Bulk Handling System
BTU/scf	British Thermal Unit/standard cubic foot
C&D	Construction and Demolition
CARB	Concrete, Asphalt, Rock, Brick
EfW	Energy from Waste
EPA	Environmental Protection Agency
EPR	Extended Producer Responsibility
E-waste	Electronic Waste
FOG	Fats, Oil, Grease
GHG	Greenhouse Gases
GUS	Greene, Ulster, Sullivan
HHW	Household Hazardous Waste
IPS	Integrated Processing System
LSWMP	Local Solid Waste Management Plan
MBI	Mr. Bult's Inc.
MRDC	Municipal Recycling Drop-off Center
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
MWh	Megawatt hour
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
OCC	Old Corrugated Cardboard
PAYT	Pay As You Throw
PU	Planning Unit
RDF	Refuse Derived Fuel



<b>RNG</b>	<b>Renewable Natural Gas</b>
<b>SMI</b>	<b>Seneca Meadows Landfill, Inc.</b>
<b>SRF</b>	<b>Solid Recovered Fuel</b>
<b>SS</b>	<b>Single Stream</b>
<b>SSO</b>	<b>Source Separated Organics</b>
<b>SWMIC</b>	<b>Solid Waste Management Improvement Commission</b>
<b>SWPC</b>	<b>Solid Waste Planning Commission</b>
<b>TS</b>	<b>Transfer Station</b>
<b>UCRRA</b>	<b>Ulster County Resource Recovery Agency (UCRRA or Agency)</b>
<b>WTE</b>	<b>Waste to Energy</b>

## EXECUTIVE SUMMARY

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The Planning Unit responsible for the creation and implementation of the Local Solid Waste Management Plan (LSWMP) is Ulster County. The LSWMP is administered within Ulster County by the Ulster County Resource Recovery Agency (UCRRA or Agency). The Agency was formed in 1986 for the express purpose of developing, financing, and implementing a comprehensive countywide solid waste management plan.

Ulster County's original LSWMP was prepared and approved by the New York State Department of Environmental Conservation (NYSDEC) in December 1991. The initial Plan covered a planning period of 20 years. An update to this plan was submitted to the NYSDEC in September 2011 which was designed as a 10-year continuation of the planned program already managed within Ulster County. NYSDEC commented on this document and returned their comments to UCRRA in April 2018 as a response to the promulgation of the new NYS Solid Waste regulations. Due to the extended period of time and recent changes in solid waste regulations, a new LSWMP will be created for the 10-year period from 2020 through 2029.

Through the implementation of the original LSWMP, and research conducted on emerging technologies, a new comprehensive LSWMP has been created reflective of time proven best practices for materials management. UCRRA's programs continue to evolve to meet the needs of the people of Ulster County as well as in response to new developments, trends, and technologies for optimization of existing facilities and/or enhancing waste reduction, material reuse and material recycling initiatives. The following LSWMP provides a platform for UCRRA to create the most environmentally responsible program possible for the people of Ulster County and fulfill the Agency's Mission.

**UCRRA Mission Statement** – To protect public health and the environment and to promote sustainable materials management practices in Ulster County by efficiently managing solid waste materials with a focus on resource conservation.

The goals for this plan are intended to achieve the following objectives:

1. **Reduce waste generation** to move towards zero waste.
2. **Use materials in the waste stream for their highest and best use.**
3. **Maximize reuse and recycling.**
4. **Engage state agencies, authorities, businesses, institutions, and residents in sustainable materials management programs.**
5. **Maximize the energy value of materials management.**

- 6. Engage manufacturers in end-of-life management of the products and packages they put into the marketplace with product stewardship programs.**
- 7. Encourage self-reliance and sustainability at the local level.**
- 8. Empower consumers to be accountable by encouraging smart purchasing, local purchasing and maintenance (i.e. Repair Cafes).**
- 9. Develop a solid waste management system that is sustainable and enables Ulster County to be self-reliant and responsible for the whole waste cycle.**

**The review and evaluation performed in the preparation of this report confirms UCRRA's current practices are exemplary within the current economic and environmental climate. UCRRA is highly dependent on remote facilities reusing materials processed through the UCRRA facilities. Long-term security and local self-reliance may best be secured through the development of a local facility or facilities for the processing, conversion, or disposal of material generated within Ulster County. Economically viable options are limited as a result of Ulster County's low waste and recyclable material generation rates. Benefits and economic synergy may be achievable through regionalization. The proposed implementation plan and schedule includes early evaluation, study and implementation of potential alternatives.**

# 1 INTRODUCTION

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The Ulster County Resource Recovery Agency (UCRRA or Agency), as the solid waste planning unit for Ulster County, has retained Cornerstone Engineering, Geology and Land Surveying, PLLC (Cornerstone) to develop a Local Solid Waste Management Plan (LSWMP) which covers the 10-year period from 2020 through 2029. The location of Ulster County relative to neighboring planning units is shown on Figure 1.

UCRRA has a history of being proactive and innovative with its solid waste management program and this new LSWMP is an opportunity to evaluate and enhance existing programs enabling UCRRA to make the best use of its resources as well as optimize recycling and diversion efforts. The new LSWMP is intended to not only create a valuable planning tool for the future of solid waste but to bring new waste handling practices and technology to the planning unit.

The regulatory expectations of solid waste management planning have evolved since the last major planning effort that UCRRA underwent in 2010. With the issuance of the new solid waste regulations in November 2017, the LSWMP requirements are now included within the regulations. The Agency currently manages solid waste and recyclables with the policies set forth in the New York State Solid Waste Management Plan criteria. The New York State Department of Environmental Conservation (NYSDEC) has established solid waste management policy objectives under a “preferred hierarchy” that is generally described as follows (in order of descending preferences):

- First, to reduce the amount of waste generated within New York State.
- Second, to reuse material for the purpose for which it was originally intended or recycle material that cannot be reused.
- Third, to recover, in an environmentally acceptable manner, energy from solid waste that cannot be economically and technically reused or recycled.
- Fourth, dispose of solid waste that is not being reused or recycled, or from which energy is not being recovered, by land burial or other methods approved by NYSDEC.

The Agency will continue to provide facilities and investment in new technologies to manage both solid waste and recyclables to public and private users. Increased education efforts and public outreach and fostering increased participation in reducing, reusing and recycling will allow for an increase in material diverted from landfills.

UCRRA staff, the Solid Waste Management Improvement Commission (SWMIC), and the Solid Waste Planning Commission (SWPC) have worked closely throughout the previous



planning period and in recent years to provide a comprehensive evaluation of the waste stream and of emerging solid waste technologies. The SWMIC prepared a draft report in 2017 which discussed the emerging technologies that could potentially be implemented in Ulster County's management practices. Both Commissions and UCRRA Board members have visited several facilities throughout New York, New Jersey, and even in Europe to observe, firsthand, facilities that have been constructed to help with waste diversion from landfills and produce reusable fuel sources. Experts within the solid waste field as well as the NYSDEC were contacted to provide guidance regarding best management practices for solid waste disposal, organics management, and recyclables handling.

The Ulster County Legislature noted in 2014 that new technologies, grant funding and new hosting incentives had emerged in the areas of solid waste and materials management and agreed these should be evaluated and reviewed. The Solid Waste Management Improvement Commission (SWMIC) was created by the Ulster County Legislature by Resolution 39411 on November 18, 2014 to comprehensively review the technologies, grant funding and host benefits available to newly established solid waste disposal facilities. The Commission was authorized to seek information from and to visit solid waste disposal, recycling and composting facilities as well as any other federal, state, or local agency deemed prudent.

Resolution No. 121 of March 19, 2019 established a Solid Waste Planning Commission (SWPC) pursuant to Ulster County Charter § C-11K to review county plans for solid waste management and recommend alternative means of solid waste disposal.

## 2 PLANNING UNIT

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UCRRA's jurisdiction as a Planning Unit (PU) consists of all Ulster County's 1,161 square miles. Ulster County is located in the Hudson Valley Region of southern New York State, approximately 90 miles north of New York City and 60 miles south of the state capital, Albany. Ulster County is bordered by Greene and Delaware Counties to the north, the Hudson River and Dutchess County to the east, Sullivan County to the west, and Orange County to the south. Ulster County observes a high influx of tourism during the summer and fall seasons. The proximity of Ulster County to New York City and Westchester County makes weekend trips practical for tourists. Minnewaska State Park and Mohonk Preserve offer swimming, hiking, biking, hotels, and scenic overlooks that many people, tourists and residents alike, take advantage of throughout the year. The Catskill and Shawangunk Mountains comprise most of the County, creating opportunities for skiing and hiking. Also contributing to the tourist inflow are fall foliage, wine tours, and local farms for apple and pumpkin picking. New Paltz and Kingston have several small shops and eateries as well as overnight accommodations. Numerous other commercial, residential, educational, and cultural facilities exist within the County's borders.

### 2.1 Planning Unit Members

Ulster County has 20 towns, 3 villages, and 1 city, which are all included within the Planning Unit.

#### Towns

Denning	Hurley	Marlborough	Rochester	Shawangunk
Esopus	Kingston	New Paltz	Rosendale	Ulster
Hardenburgh	Lloyd	Olive	Saugerties	Wawarsing
Gardiner	Marbletown	Plattekill	Shandaken	Woodstock

#### Villages

Ellenville	New Paltz	Saugerties
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#### City

Kingston

**The communities within Ulster County demonstrate great variety, comprising of both rural and suburban areas. The following are noted:**

- **Kingston, which is located along the Hudson River, became the first capital of New York State (NYS) in 1777, was the first place for the Senate to meet, and is currently the County seat. There are many historic buildings as well as new construction within this city. The Four Corners, as it is referred to by locals, is the only intersection in America where the buildings on all four corners were built pre-Revolutionary War. The stone-made buildings have been extremely well-preserved and add to the city's significant historical background and tourism attractions.**
- **The Hudson River and Rondout Creek provide a safe harbor for boaters, fisherman, and water enthusiasts. The City of Kingston Port attracts several residential and non-residential boats which help stimulate the local economy.**
- **The Village of New Paltz and Town of New Paltz have a deep-rooted history with the establishment of homes and churches from the Huguenots during the seventeenth century. The State University of New York at New Paltz is minutes from Main Street. There are several shops and eateries along Route 299.**
- **Saugerties lies within part of the Catskill Park and is located in the northeast corner of the County.**
- **Ellenville contains several tourist opportunities with many hotels to accommodate recreational enthusiasts.**
- **Denning is a relatively isolated town with a very small population of year-round residents.**
- **Hurley is part of the historic district containing several National Historic Landmarks.**
- **Marlborough lies to the southeast corner of the County and is bordered by the Hudson River.**
- **Woodstock is famous for being an art colony and cultural center within the County.**
- **The remaining towns of Shawangunk, Esopus, Rosendale, Ulster, Hardenburgh, Lloyd, Olive, Wawarsing, Gardiner, Marbletown, Plattekill, and Shandaken are all similar in the fact they offer many hunting, fishing, and recreational opportunities. The Catskill and Shawangunk Mountains offer breathtaking views, hiking trails, and camping sites. Throughout the area are agricultural properties utilized for livestock, apple orchards, and vineyards.**

## 2.2 Population

According to data provided in the 2010 census, there were 182,493 residents living in Ulster County. Most of the population resides in rural to suburban communities within the County. Ulster County has demonstrated a decreasing trend in population over the last eight (8) years according to the U.S. Census Bureau with a reported population total of 178,599 in 2018. A dramatic increase in population size during the 10-year planning is not expected to occur. It was noted that the area has seen an influx of individuals based in the New York City region purchasing homes within Ulster County. On the other hand, due to high taxes, older generations are leaving the state for less expensive and warmer climates within the southern states, such as North Carolina. The below table represents the population breakdown of residents throughout the County in 2010.

### Population Distribution

Location	Population	Location	Population
Denning	551	Plattekill	10,499
Esopus	9,041	Rochester	7,313
Hardenburgh	238	Rosendale	6,075
Gardiner	5,713	Saugerties	19,482
Hurley	6,314	Shandaken	3,085
Town of Kingston	889	Shawangunk	14,332
Lloyd	10,863	Ulster	12,327
Marbletown	5,607	Wawarsing	13,157
Marlborough	8,808	Woodstock	5,884
New Paltz	14,003	City of Kingston	23,893
Olive	4,419		

### Population Density

Population Density	Percent
Urban	0
Suburban	38
Rural	62



### Race Distribution

Race Origin	Percent
White	89.1
Black or African American	7.5
American Indian or Alaska Native	1.1
Asian	2.2
Native Hawaiian or other Pacific Islander	0.1
Other	3.0

## 2.3 Neighboring Planning Units

Ulster County is bordered by six counties within New York State. Greene, Delaware, Columbia, and Sullivan Counties are more rural with a significant amount of open space. Orange and Dutchess Counties, while still hosting considerable open space, are more developed with residential and commercial properties. Below is a table that summarizes the population of each neighboring county based on the 2010 Census.

### Neighboring Planning Unit Population Totals

County	Population
Greene	49,221
Delaware	47,980
Columbia	63,096
Sullivan	77,547
Orange	372,813
Dutchess	297,488
Ulster	182,493

## 2.4 Significant County Characteristics

Ulster County, with its vast diversity of mountains, agricultural land, universities, historic towns, and commercial retail centers, offers activities that appeal to the interest of tourists as well as current residents. Due to Ulster County's proximity to New York City, Westchester and Albany, the County sees a large amount of short- and long-term tourism. Many hotels, motels, resorts, and bed-and-breakfasts throughout the County have flourished as a result of the high influx of visitors year-round. Minnewaska State Park, Catskill State Park, and Mohonk Preserve are among the major attractions for hikers, skiers, and nature enthusiasts. During the fall season, the County is flooded with tourists taking

advantage of agritourism, viewing fall foliage, picking apples, sweet corn, and pumpkins, and tasting wine and craft beer at the local vineyards and breweries. In addition, there are several farms utilized for horse boarding and breeding, cattle production, and livestock food crops.

Ulster County has four State Correctional Department Facilities. Eastern Correctional Facility (maximum security), located in the Town of Wawarsing, has the capacity to detain over 1,000 inmates. Ulster Correctional Facility (medium security), also located in the Town of Wawarsing, has the capacity to detain 882 inmates. Shawangunk Correctional Facility (maximum security) has the capacity to detain 558 inmates. Wallkill Correctional Facility (medium security) has the capacity to detain 606 inmates.

Several medical facilities are located within Ulster County. These include three major hospitals: Ellenville Regional Hospital and two Health Alliance Hospitals, along with small urgent care facilities, skilled nursing facilities, and elderly living communities.

Ulster County includes fifteen elementary and secondary education districts. Seven districts are completely within the County and the remaining eight share areas with neighboring counties. Ulster County Community College, or the State University of New York (SUNY) at Ulster, located in the Town of Marbletown with a satellite campus in Kingston, offers over 400 different courses in a wide range of fields. Enrollment for the 2018-2019 school year was 3,596 students. The SUNY at New Paltz offers both undergraduate and graduate courses, collegiate sports teams, and is known for courses in liberal arts, business, education, and sciences. Recent additions to the campus infrastructure and facilities allow the school to accommodate approximately 8,500 students annually.

Throughout the County, there are several major retail centers and food establishments. There is a mix of commercial brand stores (Home Depot, Walmart) and chain restaurants (Texas Roadhouse, Applebees) in conjunction with smaller local “mom-and-pop” outlets, farm stores, and local eateries throughout the towns and villages. In addition, the Ulster County Fairgrounds host a variety of events from April through October. Events include the Play Bow Dog Agility Show, horse shows, Woodstock-New Paltz Art and Crafts Show, 4-H showmanship clinics, New Paltz Rotary Touch-a-Touch, Hudson Valley Wine and Chocolate Festival, fireworks, dairy goat shows, the Ulster County Fair, Taste of New Paltz, and Hudson Valley Rib Fest. In addition, Watchtower Farms, a Jehovah’s Witnesses community located in Wallkill, continuously has non-resident members staying at the local facilities. Many other towns within the County have local events throughout the year which increase tourism and help to stimulate the economy.

Five revitalization opportunity areas have been identified countywide and are in the planning process with funding from the New York State Department of State Brownfield Opportunity Area Grant Program. The areas include midtown Kingston, Kerhonkson, Ellenville, Wawarsing, and Saugerties. With funding from the state, an increase in

construction and demolition activities will occur within the County. This will increase the tonnage of material brought to the transfer stations short-term. Other projects that could increase tonnages are expansion and refurbishing at SUNY New Paltz and updates to Vassar Hospital in Dutchess County.

Ulster County has several sustainability initiatives that focus on green purchasing, energy usage and climate protection, and eliminating or reducing potential toxins and pollutants from entering the environment. Details are provided in the full document which can be found at the following link.

<https://ulstercountyny.gov/sites/default/files/documents/Ulster-County-Sustainability-Guide.pdf>

## 2.5 Current Solid Waste Management Activities

UCRRA currently manages municipal solid waste (MSW), construction and demolition debris (C&D), recyclables, organics, electronic waste (e-waste), tires, metals, textiles, and biosolids. UCRRA has two main transfer stations that it operates and oversees daily, the Ulster Transfer Station (TS) and the New Paltz TS. UCRRA has implemented MSW flow control for the entire county which was signed into law by Ulster County Executive on December 18, 2012. This means that any and all MSW produced within the County must be brought to one of the two UCRRA owned TS for disposal. C&D, organics, and recyclables are not regulated through flow control and can be sent to any facility within or outside of the County. UCRRA also accepts material from neighboring planning units.

MSW and C&D materials are brought to either transfer station by public or private haulers and residents. The materials are dumped on the tipping floor and then loaded into long haul trailers for final disposal at the currently contracted landfill. MSW can also be dropped off by residents at any of the 19 municipal residential drop-off centers (MRDC) located within the towns and villages. UCRRA provides carting services for many of the MRDCs. MSW and C&D brought to the facility transfer stations by local haulers, commercial construction companies, and residents are recorded separately when brought into the facilities; however, the waste is combined into the same trailers for landfilling. The Agency currently accepts dual stream recyclables at the Ulster TS.

Since 1997, UCRRA has been responsible for providing post-closure services to two closed landfills, Ulster and New Paltz. Responsibilities at the landfills include mainly leachate management, groundwater monitoring, landfill gas monitoring, and mowing.

Since the last planning period, UCRRA has implemented an organics program utilizing aerated static pile composting that combines food waste with wood/yard debris to make a salable product. A recent 75-acre land acquisition occurred in 2019 with a property adjacent to the Ulster TS. It is the hope of the Agency to use this property to construct new buildings for waste processing and increase the organics composting program. Increasing the

composting rates of organic waste generated in Ulster County can significantly reduce the organic tonnage in the waste stream. This may reduce the total number of truck/trailer loads required to take material to Seneca Meadows Landfill for disposal. In turn, this may provide fuel savings, lower emissions from the trucks, and provide extra revenue to UCRRA through increased volumes of compost to be sold. UCRRA has also been proactive in community outreach and education programs for the local communities, spreading knowledge and information on how to properly dispose of municipal solid waste, organics, recyclables, and overall waste reduction.

The main challenge that UCRRA has faced in the recent planning period relates to single stream (SS) recyclables management. The Agency implemented the ability to accept for transfer single stream materials in 2010. UCRRA transferred SS loads in conjunction with processing dual stream recyclables, based on market drivers and demand at that time. However, the Materials Recovery Facility was designed to accept dual stream recyclables, which made SS management difficult. The Ulster TS was used primarily as a transfer location for the SS material. Local commercial haulers would dump the SS loads on the tipping floor. UCRRA staff would sort through the materials on occasion to pull out higher revenue-generating materials or materials unsuitable for recycling. The recyclables would then be reloaded and shipped to end recyclable vendors. Due to changing markets and more strict regulations on the contamination levels of the recyclables, the SS program became an expense to UCRRA. In 2019, it was decided to no longer except SS and only focus on dual stream markets. Most of the counties large haulers operate SS trucks. This material is typically handled through Waste Management or brought to Republic, a recycling vendor in Beacon, NY.

Another challenge is understanding and quantifying the volume of C&D material that originates within the County borders, which ultimately ends up in a neighboring planning unit for disposal. Ulster County, being a large geographically disperse county, borders several counties which are more conducive for contractors and haulers to bring material to for disposal when working near the County lines.

In previous years, UCRRA provided roll off rental containers to the private sector. When flow control was implemented in 2013, this rental process was viewed as a conflict of interest and unethical, so the rental operations ceased.

When flow control was first proposed to be implemented in 2012, haulers and lobbyist groups actively opposed flow control legislation inclusive of recyclables and C&D materials. It was ultimately decided that flow control legislation would be applicable to MSW only. Implementation of flow control is an important component in developing a self-reliant management system within Ulster County. Declining recycling markets and fluctuations in C&D in response to the County's economic conditions, the absence of flow control on recycling and C&D does not impose much loss of revenue and in some instances may actually be viewed as a positive.



### 3 WASTE GENERATION AND MATERIALS RECOVERY

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Solid waste is comprised of several different material streams and includes MSW, construction and demolition debris (C&D), non-hazardous industrial waste, and biosolids (sewage sludge). Although all these waste streams are managed in the state, the focus of NYSDEC's 2010 Plan titled "*Beyond Waste; A Sustainable Materials Management Strategy for New York State*" and this LSWMP are the materials categorized as MSW, C&D, biosolids, and industrial waste, as discussed below and in subsequent sections. The Agency's transfer stations do not accept Industrial Waste; however, Industrial Waste has been included within the Plan to quantify this material produced with the County.

MSW is comprised of materials generated by the residential, commercial, and institutional sectors that are either discarded or recycled. According to New York State Codes, Rules, and Regulations (NYCRR) Part 360, MSW is defined as residential waste, commercial waste, or institutional waste, or any component or combination thereof, excluding construction and demolition debris and biosolids unless they are commingled. NYCRR Part 360 describes recycling as the series of activities by which materials are collected, sorted, processed, and converted into raw materials or used in the production of new products, or, in the case of organic materials, use productively for soil improvement.

NYSDEC estimates that 54 percent of the MSW generated statewide is residential and 46 percent is commercial/institutional. This ratio is important to the planning efforts since the materials generated by each are typically different. In general, the commercial/institutional sector generates a higher percentage of food scraps and corrugated cardboard than the residential sector. In addition, the population density of a community (urban, suburban, or rural) can have an impact on the composition of the waste stream, particularly the organic content.

The components of MSW are listed below along with estimated generation and disposal percentages reported in the NYSDEC's Beyond Waste Plan (disposal represents non-recycled material).

- **Paper** – {newspaper, corrugated cardboard, other recyclable paper, and other compostable paper} comprises approximately 33 percent of the MSW generated in NYS and approximately 28 percent of the MSW sent for disposal.
- **Glass** - {glass packaging, window glass, and ceramics} makes up approximately 4 percent of the materials generated and approximately 3 percent disposed of in NYS.
- **Plastics** – {plastic bottles, rigid containers, and film plastics} make up more than 13 percent of the MSW generated, and nearly 17 percent of the MSW disposed of in NYS.

- **Metals** – {steel and aluminum cans, aluminum foil, appliances, and municipally generated scrap metal} make up nearly 7 percent of the waste stream in NYS and approximately 6 percent of MSW disposed in NYS.
- **Organics (food scraps)** – {uneaten food and food preparation materials from residences, commercial establishments, and institutions} represent nearly 18 percent of the MSW generated every year in NYS.
- **Yard Waste** – {leaves, grass clippings and garden debris} makes up, on average, approximately 5 percent [urban – 3%, suburban – 10%, rural – 2%] of the MSW stream and combined with food scraps represent almost 30 percent of the materials discarded.
- **Textiles** – {clothing, carpet, towels, sheets, and draperies} make up approximately 5 percent of the materials stream.
- **Wood** – {generated by small scale or do-it-yourself projects} is nearly 3 percent of the MSW generated in NYS.
- **Other** – this category represents about 11 percent of the waste stream in NYS and includes residentially generated C&D materials, other durables, diapers, electronics, HHW and tires, among other items.

C&D material is defined by NYSDEC as uncontaminated solid waste resulting from the construction, remodeling, repair and demolition of utilities, structures and roads; and uncontaminated solid waste resulting from land clearing. Such waste includes, but is not limited to bricks, concrete and other masonry materials, soil, rock, wood (including painted, treated and coated wood and wood products), land clearing debris, wall coverings, plaster, drywall, plumbing fixtures, non-asbestos insulation, roofing shingles and other roof coverings, asphaltic pavement, glass, plastics that are not sealed in a manner that conceals other wastes, empty buckets ten gallons or less in size and having no more than one inch of residue remaining on the bottom, electrical wiring and components containing no hazardous liquids, and pipe and metals that are incidental to any of the above. C&D materials often contain bulky, heavy materials such as the following:

- **Concrete/Asphalt/Rock/Brick (CARB)** – CARB comprises approximately 35 percent of the C&D material stream.
- **Soil/Gravel** - soil and gravel make up approximately 27 percent of the C&D material stream.
- **Wood** – wood makes up approximately 15 percent of the C&D material stream.

- **Other Materials** – the remaining components consist of roofing, drywall, metal, plastic, corrugated/paper and “other.”

In New York State, solid waste that is not considered to be C&D debris (even if it is associated with construction, remodeling, repair and demolition of utilities, structures and roads and land clearing) includes, but is not limited to: asbestos waste, garbage, corrugated container board, electrical fixtures containing hazardous liquids such as fluorescent light ballasts or transformers, fluorescent lights, carpeting, furniture, appliances, tires, drums, containers greater than ten gallons in size, any containers having more than one inch of residue remaining on the bottom, and fuel tanks. Additionally, solid waste that would otherwise be considered C&D debris that has been processed to make individual waste components unrecognizable, other than at a NYSDEC approved C&D processing facility, are no longer classified as C&D debris.

Biosolids consists primarily of septage, manure, and other agricultural waste.

### 3.1 Solid Waste

MSW generated within Ulster County must be brought to and processed through the transfer stations operated by the Agency as a result of flow control that was implemented in 2012. The Ulster County transfer stations also have the ability to process C&D waste. Since flow control is not implemented for C&D, private haulers can also bring C&D waste to be processed at other facilities, such as LaMela’s in Marlborough, Taylor Recycling in Orange County, and Recycling Depot in Dutchess County. As defined above, C&D materials often contain bulky, heavy materials that include:

- Concrete and bricks,
- Wood from buildings,
- Asphalt from roads,
- Roofing shingles and other roof coverings,
- Plaster and gypsum wall covering material,
- Metals,
- Glass,
- Plastics,
- Salvaged building components such as doors, windows, and plumbing fixtures,
- Earth and rock from clearing sites.

Reducing and/or recycling C&D materials conserves landfill space and reduces the environmental impacts associated with producing the materials. It can also reduce building project expenses with the reduction of purchase and disposal costs.

Based on numbers provided for 2018, the following table provides a summary of the combined materials collected (in tons) at the Ulster and New Paltz transfer stations.

### 2018 UCRRA Waste Stream Totals

Material	Total (tons)	Percent of waste stream
MSW	101,379	66.45%
C&D	31,970	20.96%
Biosolids	3,686	2.42%
Single Stream	6,423	4.21%
Old corrugated cardboard	1,553	1.02%
Food Waste	3,537	2.32%
Mixed News	1,051	0.69%
Wood Chips	1,169	0.77%
Commingled	526	0.34%
Brush	459	0.30%
E-Waste	304	0.20%
Glass	496	0.33%
Total	152,553	100.00%

## 3.2 Recycling

Recyclables can be managed by either dual stream or single stream methods. Single stream recycling is the combination of all recyclable products (paper, cardboard, plastics, glass, and metal) into one container by the resident or commercial business, which is then picked up by a truck and dumped in one pile at a processing facility. Dual stream recycling is separation of the two main recyclable product streams (paper and cardboard as one and plastics, glass and metal as the other) by the citizen or commercial business. Recycling materials brought into and shipped from the transfer stations are recorded on each load to help quantify the tonnages being handled. This data is tracked year to year to help set tipping fees and to help understand recycling trends. Collected data is submitted to NYSDEC annually.

The Agency implemented the ability to accept for transfer single stream materials in 2010. UCRRA's MRF was not set up for on-site processing of single stream loads. However, due to recent market trends, single stream operations ceased in early 2019. As a result, only the dual stream recycling method is currently utilized by UCRRA. Haulers can bring dual stream loads of recyclables to the Ulster Materials Recovery Facility (MRF) which are then processed and transferred to vendors for recycling. Dual stream recyclables can be dropped off by residents at the local MRDCs. If the recyclables are dropped off at the local MRDC, they will be transported to the MRF in separate containers, dumped in their own respective piles, and then finally transferred to an end recycling facility for proper disposal. The

UCRRA website provides full details on how to properly recycle and what materials are accepted in the recycling stream.

**CORRUGATED**



Corrugated boxes only  
✓ Flatten, break down boxes  
✓ No food residue

**Not accepted**-pizza boxes, food soiled cardboard, Styrofoam, bubble wrap, plastic bags, paperboard (cereal/tissue boxes, toilet/paper towel rolls, brown bags, etc.) should be recycled with mixed paper stream

**MIXED PAPER**



Newspaper, magazines, white paper, brown bags, paper egg cartons, cereal/tissue boxes, toilet/paper towel rolls, junk mail, wrapping paper, paper egg cartons, etc.  
✓ Clean and dry  
✓ books (hardcovers must be removed)  
✓ shredded paper in \*clear\* plastic bags

**Not accepted**-wax coated paper cups or cartons (juice/milk), paper plates, paper towels, tissue paper, napkins, pizza boxes, wet paper, etc.

**PLASTIC CONTAINERS**



Bottles, jugs, tubs, caps/lids only  
✓ Clean and dry  
✓ Keep plastic caps on the container

**Not accepted**-plastic bags/films, black plastic, flower pots, toys and other rigid plastics, coat hangers, plastic cups, Styrofoam, "clamshell" containers (salad, berry, take-out containers, etc.), utensils, Tupperware etc.

When in doubt, ask!  
845-336-3336

**METAL**



Cans, lids, foil wrap, foil trays  
✓ Clean and dry  
✓ Crumple foil into a large ball

**Not accepted**-scrap metal, pipes, tools, fencing, auto parts, electronics, knives, etc.

**GLASS**



Bottles or jars only  
✓ Clean and dry  
✓ Metal lids removed and recycled separately

**Not accepted**-window glass, ceramics, pyrex, light bulbs, mirrors, dishes or crystal glass

**DO NOT BAG**  
Recyclables

LEAVE ITEMS LOOSE & EMPTY  
Return plastic bags to retailers or place in trash bin.

Recycling rules can vary depending on where you live. The recycling symbol does not always mean it is recyclable in your area. When in doubt, check with your local town transfer station, recycling hauler, or call the UCRRA!

Private or public haulers must also pick up recyclable materials curbside, if residents do not bring the recyclables themselves to a MRDC. These materials do not have to be transferred to the UCRRA MRF since the County's flow control legislation does not apply to recyclables. However, it is the responsibility of the generator to ensure the recyclable materials are brought to an appropriate recyclables facility. The City of Kingston provides curbside pickup for MSW, recyclables, and yard waste for the residents that live within the service area.

### 3.3 Biosolids

Biosolids are the accumulated semi-solids or solids resulting from treatment of wastewaters from sewage treatment plants. Biosolids do not include grit or screenings, or ash generated



from the incineration of biosolids. In Ulster County, biosolids are collected at the New Paltz TS only and sent for disposal at the Chemung County Landfill in Elmira, New York.

### 3.4 Composting

Composting is the aerobic, thermophilic decomposition of organic waste to produce a stable, humus-like material. Compost is a valuable amendment that restores soil by building health and structure to improve water retention and plant vitality. In recent years, UCRRA has increased the quantity of organics diverted from the waste stream using composting. Food waste is brought to the Ulster TS by local business and facilities. Green waste and yard waste can also be brought to the Ulster TS where it is chipped and combined with food waste and composted to create a reusable compost material. The compost is sold back to residents or commercial businesses, which helps to generate revenue for the Agency. The NYS Food Donation and Food Scrap Recycling Act, requiring mandatory composting for large generators, will take effect starting in 2022. This will help increase the organics waste stream that may be available to the Agency to utilize in their organic recovery facility.

In addition to food scraps and green waste, the Agency is permitted to conduct mortality composting. This takes place in a separate aeration zone within the organic recovery facility. The finished compost is used onsite only and is not available to the public for purchase. Last year the Agency managed approximately 11 tons of deceased deer carcasses.

### 3.5 Electronics

The NYS Electronic Equipment Recycling and Reuse Act went into effect on April 1, 2011. The law is intended to ensure that every New Yorker will have the opportunity to recycle their electronic waste in an environmentally responsible manner. The Agency accepts electronics for free from businesses (with less than 50 employees), non-profits (with less than 75 employees), residents, and nonresidents at the Ulster TS Monday through Friday from 8:00am to 3:00pm. Electronics can also be recycled at some of the MRDCs. Additional discussion on E-waste is provided in Section 4.10.4.

### 3.6 Household Hazardous Waste

Household Hazardous Wastes (HHW) are waste materials that would be regulated as hazardous waste if they were generated outside of a household. Waste materials that are ignitable, toxic, corrosive, or reactive are commonly labelled as hazardous. UCRRA maintains an updated contact list of hazardous waste companies for businesses, schools, farms, etc. that need to dispose of commercially-generated hazardous waste, and residents with large quantities of hazardous waste that cannot be managed through the HHW program. To manage HHW in the County, the Agency runs 2 to 4 HHW collection events every year. This provides an outlet for Ulster County residents to dispose of

environmentally unfriendly materials in a safe manner at no additional cost. The HHW events are not open to other counties, businesses, farms, non-profit organizations, schools, or other institutions. Materials collected at these events include but are not limited to lawn and garden chemicals, pool chemicals, waste fuels, aerosols, pharmaceutical waste, and lead- and oil-based paints. Approximately 1,000 residents participate in the program each year. In 2018, the Agency collected over 110,000 lbs. of material during the HHW events.

In August 2008, the NYSDEC launched an initiative to help households reduce the growing presence of pharmaceuticals in water bodies. The "Don't Flush Your Drugs" campaign is designed to eliminate flushing of pharmaceuticals in household settings by raising public awareness about this issue and providing information about how to properly dispose of household pharmaceuticals. The Agency receives a 50% grant reimbursement for the HHW events from the Household Hazardous Waste State Assistance Program.

The New York State Legislature has approved legislation creating a "Post-consumer Paint Collection Program." This legislation directs NYSDEC to develop a plan for paint manufacturers and sellers to form and cover the costs of a statewide, not-for-profit Paint Stewardship Program. The plan would seek to minimize the involvement of local governments in the management of post-consumer paint by reducing its generation and establishing agreements to collect, transport, reuse, recycle, and/or burn for energy recovery at appropriately licensed collection sites and facilities using environmentally sound management practices. The measure further specifies that the plan include annual program audits and reports, education and outreach to consumers, and details on how post-consumer paint would be collected, treated, stored, transported, and disposed. A commencement date for this program has not yet been established.

### 3.7 Scrap Metal

Metals can be brought to either transfer station through mixed loads or solely bulk metal loads and are charged at the current tipping fee for MSW. These goods are collected from residents, waste haulers, and small businesses. Metals collected at the transfer stations are sold to local vendors as mixed metal scrap. Large items such as boats, RVs, and trailers can be brought to the Ulster TS by appointment only and are assessed on a case by case basis.

### 3.8 Tires

Car tires, as well as light and medium truck tires, are accepted at the Transfer Stations. Vehicular tires are occasionally brought into the facility through mixed loads. The tires are taken out of the waste stream and sent for disposal at recycling facilities. Large truck tires and agricultural tires are not allowed to be brought in the facilities for disposal. Some of the MRDCs collect tires as well.

### 3.9 Textiles

Textiles include used and discarded clothing from residents. The Agency works with local fire departments and charities to collect the clothing which is then cleaned and provided to families in need. There are collection boxes at the transfer stations and MRDCs as well as non-profit agency sponsored clothing drop boxes located throughout the County for public use. According the EPA, only about 15% of textiles are recycled/reused. Textile manufacturers are among the top contributors to CO<sub>2</sub> emissions. Generally, there is a statewide need for increased education and the number of programs available to limit the tonnage of textiles ending up in landfills. The New York State Association for Reduction, Reuse, and Recycling discusses the Re-Clothe NY Coalition, which is a group of recyclers, non-profits, and governments that work to increase textile reuse and recycling across NYS. The NYSDEC has determined that approximately 1.4 billion pounds of clothing and textiles are disposed of each year in NYS. Below is a list of items that may be accepted as a textile or clothing at textile collection events or specific textile drop-off points. Items can be donated in any condition (torn, worn, stained, missing buttons, broken zippers, shoe without a mate, etc.) as long as they are clean, dry, and odorless.

#### **Footwear (single or in pairs):**

- Shoes
- Heels (wedges, pumps)
- Flats
- Sandals
- Flip Flops
- Boots (work boots, dress boots, winter boots)
- Sneakers
- Cleats
- Slippers

#### **Clothing:**

- Tops (T-shirts, blouses, shirts, tank tops)
- Sweaters
- Sweatshirts
- Dresses
- Outerwear (coats, jackets, blazers)
- Bottoms (pants, slacks, jeans, sweatpants, skirts, shorts)
- Suits



- Socks
- Pajamas
- Slips
- Bras
- Underwear

**Accessories:**

- Hats
- Bags (pocketbooks, backpacks, duffle bags, totes)
- Belts
- Gloves
- Ties
- Scarves
- Bathrobes

**Linens:**

- Sheets
- Blankets
- Towels
- Curtains/Drapes
- Aprons
- Dish cloths
- Cloth napkins
- Table linens
- Comforters
- Throw rugs
- Placemats

**Other:**

- Halloween costumes
- Sports jerseys
- Pet clothing
- Textile scraps greater than 1'x1'
- Canvas

### 3.10 Industrial Waste

Industrial waste is solid waste that is the byproduct of manufacturing or industrial processes but does not include hazardous waste. This material is different from MSW in that it does not include food and other wastes typically generated in the home and can include large quantities of materials which can be generated by the following: electric power generation; fertilizer/agricultural chemicals; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay and concrete products; textile manufacturing; and transportation equipment. UCRRA currently does not accept industrial waste. During this planning period, an attempt will be made to identify large industrial waste generators within Ulster County. However, collection of data pertaining to industrial waste may not be achievable because UCRRA does not currently process or monitor industrial waste.

### 3.11 Waste Projections

Projections of MSW generation for each year of the 10-year planning period are presented in the table below. These data are based on the 2018 MSW totals and consider a steady decrease in population over the 10-year planning period. The annual population displayed in the table below is based on a 0.27% decrease per year over the 10-year planning period which was derived from current population estimates provided from the Census Bureau and literature expressing the increasing outflux of residents from NYS during recent years.

Section 9 discusses MSW projections as well. However, the calculator provided by the NYSDEC assumes a 0.27% increase in population per year based on the 2000-2010 census data.

**10-Year MSW Projections based on Population**

Year	Population	Tonnage -Population Based Projections
2019	178,112	94,266
2020	177,626	94,008
2021	177,139	93,751
2022	176,652	93,493
2023	176,165	93,235
2024	175,679	92,978
2025	175,192	92,720
2026	174,705	92,463
2027	174,218	92,205
2028	173,732	91,947
2029	173,245	91,690

**The 2013 EPA average waste generation rate of 4.4 lbs. of waste & recyclables per day per person (2.9 lbs. for MSW and 1.5 lbs. for recyclables) was used to calculate projected yearly tonnages based on population. In 2018, 101,379 tons of MSW were actually collected by UCRRA which results in an average of 3.1 lbs./day/person, compared to the EPA generation rate of 2.9 lbs./day/person. This difference can be explained in part by UCRRA accepting MSW from neighboring planning units and/or the large influx of tourism and events in the County which typically results in high volumes of non-resident waste. Over the 10-year planning period, it is estimated that waste generated by residents will decrease by approximately 3,000 tons due to a slow decrease in population. Many of New York State counties have observed a decreasing populating trend in the last 5-10 years as a result of high unemployment rates, high cost of living, high taxes, and colder climate. Even if the County experiences a slow and steady population growth during the next 10 years, the increased tonnage will be minor and the current facility operations will continue to adequately manage the waste. In conjunction with population decreases, reduction in waste will also be achieved by diverting materials from the waste stream for recycling, reuse, or composting.**

**In 2018, UCRRA managed a combined total of approximately 133,000 tons of MSW and C&D. Due to temporary agreements with haulers and response to extreme weather events, UCRRA processed approximately 150,000 tons of MSW and C&D during 2011. This demonstrates that a slight increase in population should not affect UCRRA's current operations. This projection does not take into consideration additional waste diversion resulting from the implementation of this plan. Those potential impacts and results will be discussed in Section 9.**

**The northern half of the Town of Hardenburgh in Ulster County (127 estimated population), is authorized to utilize Delaware County solid waste infrastructure under contractual agreement between the Town and County. This contract is subject to a fee-based annual renewal and may be terminated at any time. This long-standing arrangement is driven by the geography of the area in which Hardenburgh's northern portion is accessible through Delaware County only. The population and waste stream services are readily accommodated by existing infrastructure. The arrangement is expected to continue. Hardenburgh is not an official member of the Delaware County Solid Waste Planning Unit. This information was noted in the Delaware County LSWMP Plan, December 2017.**

## 4 EXISTING SOLID WASTE MANAGEMENT SYSTEM

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UCRRA is a public benefit corporation which was formed for the purpose of implementing and operating a countywide solid waste management program. The Agency was approved in December 1986 by the NYS Legislature pursuant to Chapter 936 of the Public Authorities Law. Since 1986, the Agency has continued to grow and improve waste management practices.

The Agency's organizational structure currently consists of a five-member Board of Directors, an Executive Director, Agency Counsel, and approximately 30 administrative and operations personnel. The Agency's Board of Directors is active in the community and works closely with other departments, including the Solid Waste Planning Commission to continue improving upon the waste management programs utilized in the County.

### 4.1 UCRRA Facilities

As introduced in Section 2, the Agency operates two transfer stations. One is located at 999 Flatbush Road in the Town of Ulster, owned by UCRRA, and the other on Clearwater Road in the Town of New Paltz.

UCRRA recently purchased a 75-acre parcel of land adjacent to the currently owned Ulster Transfer Station in the Town of Ulster. With this acquisition, this facility now has a total of 113 acres that can be utilized. The Ulster TS has an administration office building, vehicle maintenance facility, material recovery facility, solid waste transfer/processing building, additional miscellaneous out-buildings, a scale, a gasoline and diesel fueling station, fire suppression unit, excavators, loaders, trommel separator, composting processing equipment and organics recovery facility, company vehicles, a compactor, conveyor system, containers, and trucks. The transfer station is surrounded by a perimeter fence and the operational areas are paved. The recently acquired parcel currently remains largely wooded and vacant.

Ulster TS is permitted by the NYSDEC under Permit #3-5154-00125/00001. The permit allows Ulster TS to accept 650 tons per day and 3,900 tons per week of MSW and C&D materials. The MRF has the permitted ability to accept, process, store, and transfer both single and dual stream recyclables. The MFR building has the design capacity of 80 tons per day and storage capacity of 400 tons. The permit for the Ulster TS had an expiration date of August 17, 2019, however the renewal of this permit is currently pending.

The New Paltz TS operates under Permit # 3-5138-00089/0001 that had an expiration date of July 29, 2019, however, the renewal of this permit is currently pending. The New Paltz TS is leased from the Town of New Paltz and the lease agreement expires on September 30, 2026. This TS is permitted to accept 390 tons per day and 1,560 tons per week of MSW and

**C&D. One hundred tons per week of sewage sludge is also permitted. The New Paltz TS is much smaller in size, approximately 5 acres. The New Paltz TS does not accept single or dual stream recyclables, organics, or electronics. All recyclables must be brought to and handled at the Ulster TS. New Paltz TS includes a scale, scale house, excavator, front-end loader, large tipping floor, sludge hopper tipping area, and a sludge containment area within the collection building.**



*Ulster Transfer Station*





*New Paltz Transfer Station*

**Solid waste, which includes MSW and C&D, can be brought by contractors, businesses, and residents that have more than two cubic yards to either of the UCRRA TS. Small car loads are only accepted on Saturdays at the Ulster TS due to high volume of large truck traffic during the week. All open loads must be tarped prior to entering the facilities. Recycling is only accepted from commercial entities at the Ulster facility. Residents must bring recyclables to one of the MRDCs. Dual stream (separated) recycling is free. Single stream recycling loads are not accepted. Electronic recycling materials can be brought and disposed of for free at the Ulster TS. Compost material is managed at the Ulster TS facility and can be purchased by residents and businesses at a cost of \$30/ton. Source separated food waste is accepted at the Ulster TS facility at a cost of \$20/ton. Biosolids are handled only at the New Paltz TS where it is currently shipped to Chemung Landfill for final disposal.**

**Hours and days of operation for each UCRRA facility are listed below. New Paltz TS is closed on Saturdays during the months of January, February, and March. UCRRA facilities are closed in observance of the holidays that are listed on their holiday schedule, which can be found at [ucrra.org/ucrraslocationsandhours](http://ucrra.org/ucrraslocationsandhours).**

### Ulster and New Paltz Transfer Station Hours of Operation

Ulster	Hours	Days
Admin Office	7:30 AM - 3:30 PM	M-F
TS	6:00 AM - 3:00 PM	M-Sat
MRF-Recycling	7:00 AM - 4:00 PM	M-F
Compost Facility	7:00 AM - 4:00 PM	M-F
	6:00 AM - 3:00 PM	Sat

New Paltz	Hours	Days
	7:00 AM - 4:00 PM	M-F
	7:00 AM - 12:00 PM	Sat
	Closed Saturdays Jan-March	

## 4.2 Other Ulster County Facilities

Within Ulster County there are 19 Municipal Residential Drop-off Centers (MRDCs). Most only allow Ulster residents to utilize the facilities, however, a few of the MRDCs permit non-residents to use their facilities. These drop-off centers are typically open 2-3 days a week and consist of an operator and several roll off containers where materials including MSW and recyclables are separated for disposal. All MSW generated in Ulster County must be brought to either the Ulster or New Paltz TS for final disposal due to flow control implementation. Therefore, neighboring PUs should not be receiving MSW generated within Ulster County.

Recyclables and other materials can be brought to the UCRRA-owned facilities or to other vendor facilities for final disposal since flow control is only mandatory for MSW. Residents are typically required to purchase an annual permit for the MRDC that they utilize. This fee helps to fund the operations and maintenance at the MRDC. These 19 facilities have implemented a Pay As You Throw (PAYT) program which means residents pay only on what they discard. Typically, 30-gallon bags can be disposed of for around \$4. Recyclables can be disposed of for free and must be separated into the correct corresponding roll off. By implementing the PAYT program, this incentivizes the residents to reduce waste as much as possible, and results in recycling and composting food and yard waste. The table below shows the MRDCs along with location, hours of operation, and accepted materials for 2020.

### Municipal Residential Drop-off Center Information

Location	Contact	Hours	Permit Price (for residents)	Open to Non-Residents	Additional Materials
Denning Town Barn Denning Rd., Claryville, NY	Transfer Station: (845) 985-2543  www.denning.us	Wed 7:00am-11:00 am  Fri 1pm-6pm  Sun 12-6pm (12pm-4pm Dec-Apr)	N/A	No	Yard waste, electronics
Esopus 70 West Shore Drive West Park, NY	Transfer Station: (845) 384-6835  www.esopus.com	Tue-Fri 8am-4pm  Sat 7am-3pm	Yearly Permit: \$40  Seniors/Veterans: \$20  1 day pass: \$10	No	Used motor oil, auto batteries, propane tanks, yard waste, mattresses, electronics, tires, freon appliances, textiles
Gardiner 131 Steve's Lane Gardiner, NY	Town Hall: (845) 255-9675  Recycling Office: (845) 255-9775  www.townofgardiner.org	Wed, Fri, Sat 8am-3:45pm	Yearly Permit: \$30  1 day pass: \$4  Seniors: Free	No	Tires, scrap metal, electronics, fluorescent bulbs, auto and rechargeable batteries, used oil, textiles, freon appliances, yard waste
Hardenburgh 192 Alder Creek Rd Hardenburgh, NY	Transfer Station: (845) 439-3681  www.townofhardenburgh.org	Wed, Sun 12pm-4pm  Sat 9am-1pm	N/A	No	Appliances and metal (by appointment only)
Hurley 1043 Dug Hill Rd Hurley, NY	Transfer Station: (845) 338-5412  www.townofhurley.org	Mon 9am-3pm  Tues 9am-6pm (Apr-Oct), 9am-3pm (Nov-Mar)  Thurs. 9am-6pm (Apr-Oct)  Fri 9am-3pm, Sat 8am-3pm	Yearly Permit: \$10  New Customers: \$20	Yes	Antifreeze, fluorescent bulbs, appliances, tires, brush, auto and rechargeable batteries, used oil, scrap metal, yard waste, clothing, electronics



### Municipal Residential Drop-off Center Information

Location	Contact	Hours	Permit Price (for residents)	Open to Non-Residents	Additional Materials
Kingston (City) 69 Albert St Kingston, NY	DPW: (845) 331-0682  Transfer Station: (845) 331-5787  www.ci.kingston.ny.us	Municipal Curbside Collection T/S Hours:  Fri 9am-1pm  Sat 8am-3pm	N/A	No	Scrap metal (inc. white goods), yard waste, electronics
Kingston (Town)	Town Clerk:  (845) 336-8853 x13  www.townofkingstonny.us	<i>*Curbside collection only (Friday's)</i>	N/A	N/A	N/A
Lloyd 106 Lily Lake Rd	Transfer Station:  (845) 220-8123  www.townoflloyd.com	Fri 8am-3pm  Sat 8am-4pm  Sun 9am-3pm	Yearly Permit: \$35  Seniors: \$15	No	Auto batteries, tires, scrap metal, yard waste, freon appliances, clothing, mattresses, electronics, Reuse Center
Marbletown 135 Canal Rd High Falls, NY	Town Hall: (845) 687-9198  www.marbletown.net	Tues, Fri, Sat 8am-3:45pm	Yearly Permit: \$40  Seniors: \$20  1 day pass: \$10	Yes	Scrap metal, yard waste, propane tanks, freon appliances, tires, electronics, mattresses, clothing, organics (kitchen waste)
Marlborough 20 Baileys Gap Rd Milton, NY	Transfer Station: (845) 795-2314  www.townofmarlboroughny.org	Fri 8am-11:30am  Sat 8am-3pm  Sun 9am-12:30pm	Yearly Permit: \$60  Seniors: Free	No	Scrap metal, yard waste

### Municipal Residential Drop-off Center Information

Location	Contact	Hours	Permit Price (for residents)	Open to Non-Residents	Additional Materials
New Paltz 3 Clearwater Rd New Paltz, NY (off Rt 32)	Transfer Station: (845) 255-8456  www.townofnewpaltz.com	Tues-Sat 9am-4:45pm	Yearly Permit: Call for pricing	Yes	Freon appliances, auto batteries, scrap metal, textiles, food scraps, brush/leaves/grass, propane tanks, Reuse Center
Olive 580 Beaverkill Road Olivebridge, NY	Transfer Station: (845) 657-8177  Town Clerk: (845) 657-8118  www.town.olive.ny.us	Mon, Wed, Fri, Sat 7:30am- 3pm  Sun 11am-2:30pm	Yearly Permit: \$30	No	Auto batteries, used oil and filters, antifreeze, tires, scrap metal
Plattekill 41 Venuto Rd Modena, NY	Town Hall: (845) 883-7331  Transfer Station: (845) 883-6064  www.town.plattekill.ny.us	Thur-Sat 8am-4pm  Sun 8am-12pm	Yearly Permit: \$35 Senior: \$20  1 day pass: \$20	No	Freon appliances, tires, mattresses, electronics, textiles, propane tanks
Rochester Airport Road Rochester, NY (off Rt. 209)	Town Hall: (845) 626-7384  Transfer Station: (845) 626-5273  townofrochester.ny.gov	Tues, Fri, Sat 8am-4pm	Yearly Permit: \$35  Seniors: \$20  1 Day Pass: \$10  Fire Dept. Members: \$20	No	Auto batteries, tires, scrap metal, yard waste, textiles, electronics, fluorescent bulbs, food scraps

### Municipal Residential Drop-off Center Information

Location	Contact	Hours	Permit Price (for residents)	Open to Non-Residents	Additional Materials
Rosendale 414 Whiteport Road Rosendale, NY	Transfer Station: (845) 338-0113  <a href="http://www.townofrosendale.com">www.townofrosendale.com</a>	Tues, Thurs, Fri, Sat 7:30am-3:10pm  Wed 11:30am-3:10pm	Yearly Permit: (residents) \$40 (non-residents) \$60 1 day pass: \$10	Yes	Antifreeze, used motor oil, auto batteries, tires, scrap metal, yard waste, freon appliances, propane tanks
Saugerties 1765 NY-212 Saugerties, NY	Transfer Station: (845) 679-0514  <a href="http://www.saugerties.ny.us">www.saugerties.ny.us</a>	Tues, Thurs, Sat 7am-3pm	Yearly Permit: (Saugerties) \$35 (Woodstock) \$55  1 Day Pass: \$7	Yes	Auto batteries, scrap metal, tires, fluorescent bulbs, freon appliances, propane tanks, mattresses, furniture, food scraps
Shandaken Recycling Center Town Hall 7209 Rt. 28 Shandaken, NY	Town Clerk: (845) 688-5004  <a href="http://www.shandaken.us">www.shandaken.us</a>  <i>*Residents may use Saugerties TS for trash disposal.</i>	Mon, Thur, Sat 7:30am-12:30pm	N/A	No	N/A
Shawangunk 267 River Road Wallkill, NY	Transfer Station: (845) 895-2894  <a href="http://www.shawangunk.org">www.shawangunk.org</a>	Wed 9am-2:30pm  Sat 8am-3:30pm	Yearly Permit: \$25  Seniors: \$20  1 day pass: \$10	No	Scrap metal, yard waste, furniture, electronics, batteries, freon appliances, mattresses
Ulster 900 Miron Lane Kingston, NY	Transfer Station: (845) 336-0311  Highway Dept: (845) 338-0193  <a href="http://www.townofulster.org">www.townofulster.org</a>	Tues, Sat 7:15am-2:45pm	Yearly Permit: \$50  Seniors: \$35  1 day pass: \$20	No	Furniture, appliances, propane tanks, electronics, yard waste, scrap metal, tires, mattresses

Municipal Residential Drop-off Center Information					
Location	Contact	Hours	Permit Price (for residents)	Open to Non-Residents	Additional Materials
Wawarsing 209 Landfill Road Wawarsing, NY	Transfer Station: (845) 647-3410  Town Clerk: (845) 647-6560  www.townofwawarsing.net	Tues-Sat 7am-4pm	Yearly Permit: \$60 1 day pass: \$15	No	Used oil, tires, scrap metal, yard waste, textiles, electronics

**It should be noted that the contracts between UCRRA and town MRDCs expire on December 31, 2020. Correspondence between the UCRRA and MRDCs will be initiated to renew these contracts.**

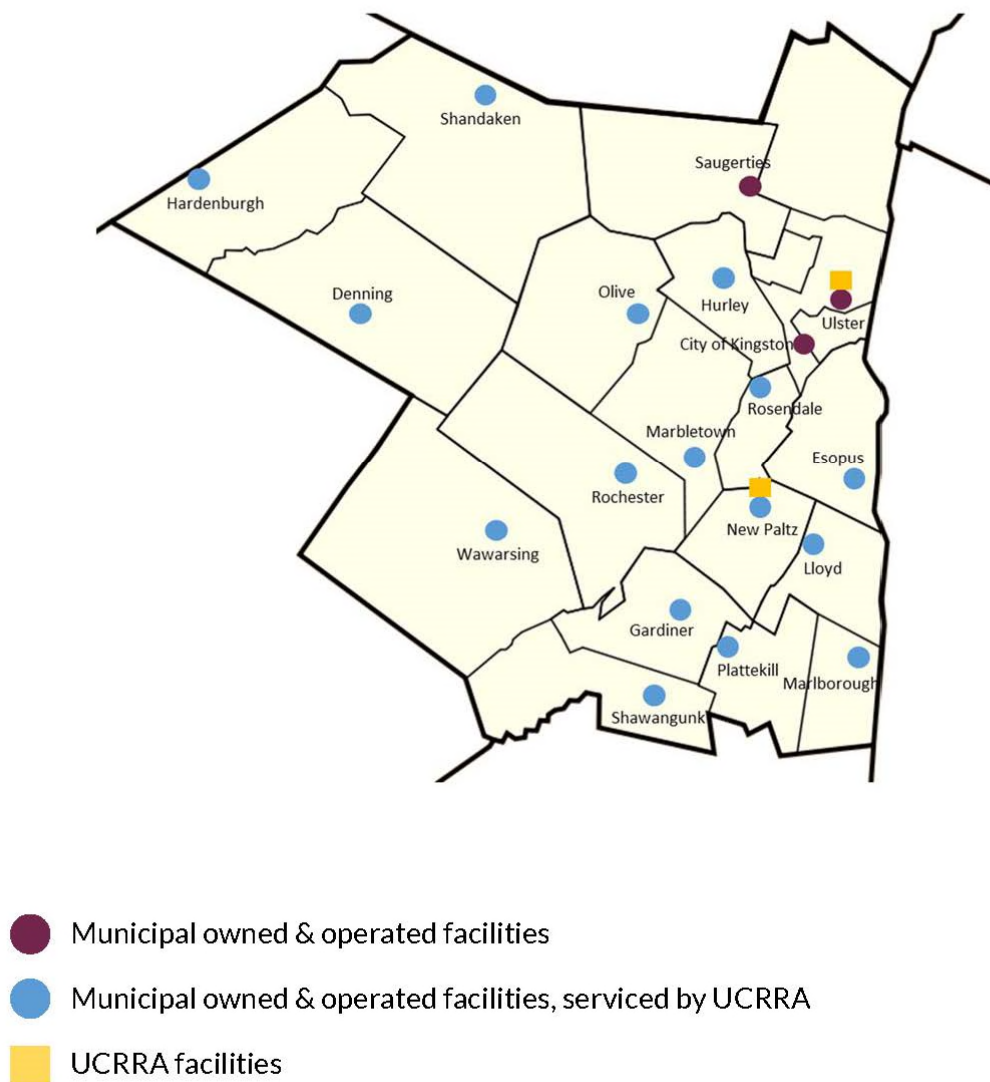
**The table below contains information compiled by UCRRA's recycling coordinator for materials collected from the 19 MRDCs in 2018. The table shows what materials were transported to UCRRA facilities for disposal and what materials were transferred to an outside vendor or recycled onsite at the MRDC locations. All MSW was sent to the UCRRA Transfer Stations as well as all cardboard, mixed paper, glass, and commingled materials. Over 80% of the materials handled by the MRDCs were sent to UCRRA facilities. Material sent elsewhere include green waste that can be recycled onsite, materials that produce revenue (metals), and HHW materials.**

### 2018 Municipal Recycling Drop-off Center & Curbside Totals

Material (tons)	Delivered/shipped to UCRRA	Sent to Outside Vendor or Onsite Disposal	Total	Percent shipped outside of UCRRA	Total Percent of Waste Stream
MSW	16,186.68	0	16,186.68	0.00%	56.68%
Cardboard	645.20	0	645.20	0.00%	2.26%
Paperboard	0	92.37	92.37	100.00%	0.32%
Mixed Paper	847.64	0	847.64	0.00%	2.97%
Aluminum and Tin Cans	0	0.75	0.75	100.00%	0.00%
White Goods	0	16.72	16.72	100.00%	0.06%
Propane	0	25.80	25.80	100.00%	0.09%
Bulk Metal	0	2,003.52	2,003.52	100.00%	7.01%
Ferrous Metal	0	170.21	170.21	100.00%	0.60%
Non Ferrous Metal	0	7.27	7.27	100.00%	0.03%
Glass	514.27	0	514.27	0.00%	1.80%
PET Plastics	0	10.92	10.92	100.00%	0.04%
Single Stream	1,966.99	0	1,966.99	0.00%	6.89%
Commingled	352.49	0	352.49	0.00%	1.23%
Leaves/Grass	0	213.83	213.83	100.00%	0.75%
Brush/trees	806.57	1,937.32	2,743.89	70.60%	9.61%
Food Scrap	0	24.50	24.50	100.00%	0.09%
Textiles	0	23.65	23.65	100.00%	0.08%
E-Waste	36.84	149.08	185.92	80.19%	0.65%
Tires	0	222.85	222.85	100.00%	0.78%
Wood	0	131.75	131.75	100.00%	0.46%
Other Recyclables	0	25.96	25.96	100.00%	0.09%
HHW Materials	0	40.47	40.47	100.00%	0.14%
Asphalt	0	34.40	34.40	100.00%	0.12%
Soil	0	135.00	135.00	100.00%	0.47%
Land Clearing Debris	0	25.20	25.20	100.00%	0.09%
Biosolids	1,912.27	0	1,912.27	0.00%	6.70%
Total	23,268.95	5,291.57	28,560.52	18.53%	100.00%

The following figure below shows municipal transfer stations in relation to the two UCRRA operated transfer stations in Town of Ulster and New Paltz.

## Town Transfer Stations & UCRRA Facilities



**LaMela Sanitation (LaMela) is a privately-owned facility located at 1118 Route 9W in the Town of Marlborough. The facility operates under DEC Permit #3-5136-00007/00002. LaMela has been in operation for over 50 years providing waste disposal services and roll off containers for both residents and commercial businesses. LaMela also accepts waste and recyclables from Orange and Dutchess County. Per a conversation with owner John LaMela, the facility is 12,000 square feet and is situated on 2.5 acres. The facility acceptance limit is 400 tons of material per day. Based on 2017 totals, LaMela accepted approximately 46,393 tons of material which averages to 127 tons per day over 365 days per year. The table below presents the materials in tons handled by LaMela in 2017.**

**LaMela 2017 Material Totals**

<b>Material</b>	<b>Total (tons)</b>
Concrete/aggregate	197.19
Brush/trees	132.44
Bulk Metal	228.93
C&D	40,370.15
Paper/cardboard	5,015.84
Tires	113.46
Single Stream	335.73

**Waste Management of New York, LLC (WM) is a privately owned company and facility. WM is a major hauler of waste within Ulster County. Their facility is located at 264 Old Flatbush Road in Kingston, New York. WM operates under Permit # 3-5154-0081/00003. The following table summarizes the materials and tonnages WM accepted in 2017. All MSW collected was from outside Ulster County less 11 tons from within Ulster. WM received 5,290 tons of C&D and 4,751 tons of single stream from within Ulster County. All asbestos was received from outside of Ulster County. Waste Management accepted approximately 30,048 tons of material in 2017 from Columbia, Delaware, Dutchess, Greene, Orange, Sullivan, and Ulster Counties. The facility operates a single three-bay transfer station. They are permitted to accept 350 tons per day of combined MSW, C&D, SS, and dual stream recyclables.**

**Waste Management 2017 Material Totals**

<b>Material</b>	<b>Total (tons)</b>
C&D	9,703.81
MSW	11,009.29
Asbestos	3,586
Single Stream	5,749.2

Three scrap metal recycling facilities currently operate in Ulster County. A. Messina and Sons is located at 19 Orchard Drive in Gardiner. The facility is open Monday through Friday from 7:30 AM to 4:30 PM and on Saturday from 8:00 AM to 12:00 noon. A. Messina and Sons is a family-owned business that specializes in the recycling of both ferrous and non-ferrous metals. Some of the items that are accepted at the facility include copper, brass, aluminum, stainless steel, insulated wire, high temp alloys, steel, and tin.

West Kingston Recycling is located at 642 Abeel St in Kingston. The facility is open Monday through Friday from 7:30 AM to 5:00 PM and on Saturday from 7:30 AM to 2:00 PM. This recycling center collects ferrous and non-ferrous metals. The also provide roll off container services and junk car removal.

Canos Recycling LLC is located at 1026 Kings Highway in Saugerties. The facility is open Monday through Friday from 7:00 AM to 5:00 PM and on Saturday from 7:00 AM to 2:00 PM. Canos collects ferrous and non-ferrous metals.

#### **2018 Scrap Metal Recycling Totals (tons)**

<b>Material</b>	<b>Canos Recycling</b>	<b>A.Messina and Sons</b>	<b>West Kingston Recycling</b>
White Goods	12	--	--
Ferrous Metal	67.16	324	800
Non-ferrous Metal	81.5	13.8	125
Vehicle Batteries	--	33	60
Aluminum and Tin Cans	--	--	50
Tires	--	--	6
Antifreeze	--	--	250
Used Oil	--	--	500

#### **Compost Facilities**

Greenway Environmental Services (Greenway) is a privately owned company that has a registered composting facility located at 205 Hurds Road in Clintondale. Greenway's Mission is to return the fertility to our soils, and at the same time, protect ground water and surface water. They focus on recovering the organic fraction of the waste stream and converting it to high-performance blended soils, compost, and mulch. Greenway accepts food waste, leaves, stumps, logs, pallets, and unpainted lumber at their facility. They are approved to accept the following materials and tonnage per year:

- 2,000 tons of SSO (food waste)
- 8,500 cubic yards of leaves
- 2,500 cubic yards of brush and wood waste



- **2,000 pallets / untreated dimensional lumber**

**Greenway has developed an advanced composting technique which enables a rapid volume reduction. Their goals are to establish small, compost satellite locations that will collect local organics, apply their decomposition system, and ship the volume reduced organics to a central facility to be further refined and processed.**

**Community Compost Company is private, women-owned business based in the Hudson Valley. Community Compost Company was founded in 2013 to lead the change on food waste, climate change, and soil health through regional composting. They collect food scraps slated for landfills and produce a high-quality compost. They service residents, businesses and institutions, providing an opportunity to ecologically dispose of these materials, while educating on the importance of food waste reduction. They provide two food scrap drop spots located at the Kingston and Beacon farmers markets.**

**Community Composting currently has a registered site with the NYSDEC to process organics on Arrowhead Farm located at 5941 US Route 209 in Kerhonkson. They are allowed to receive 2,500 tons of food scraps per year, 10,000 cubic yards of leaves, and an unlimited amount of wood chips and manure. The site handles 12-15 tons of food waste per week from either their own collection or brought in by two haulers. This site does not accept bio-plastic. In the near future, their goals are to increase the volume of food waste managed by the site to reach the maximum allowable capacity. They would also like to establish additional registered sites in neighboring counties to reduce hauling distances and increase both the processing capacity and compost production from food/animal waste organics. It is anticipated that at least one future site will be able to process bio-plastic certified compostable products. In 2018, Community Composting handled 211 tons of source separated food scraps.**

**In 2016, Hudson Soil Co. was created to handle the products produced by Community Composting. Finished compost is sold in bags and bulk to garden centers, home gardeners, and landscaping companies.**

**Below is a list of compost facilities in Ulster County and the town in which they operate, as noted on the NYSDEC website, including UCRRA.**

- **AK Farms – Modena**
- **Community Compost Co. / Arrowhead Farms - Kerhonkson**
- **Community Enterprises LLC – Ulster Park**
- **Hurds Farm Compost - Clintondale**
- **Kingston WWTP - Aslan Sludge Pelletization Facility - Kingston**
- **Moriarty Services/Custom Compost – Marlborough**
- **Woodcrest Community - Rifton**
- **New Paltz – New Paltz**

- NYCDEP Mortality Compost - Marbletown
- Twin Star Orchards Organic Waste Composting – New Paltz
- UCRRA Ulster Transfer Station - Kingston

### 4.3 Volume Based Incentives

Since flow control has been instituted in the County, there is no need to provide a volume-based financial incentive to haulers. It is mandatory for all haulers to dispose of MSW at one of the two UCRRA-owned transfer stations. Residents who bring their trash to the drop-off centers have an incentive to reduce the volume of trash by diverting as much as possible since they are typically pay per bag for disposal. By recycling at the drop-off centers and composting in backyards, residents can greatly reduce the volume of their weekly waste.

### 4.4 Enforcement

UCRRA employs a compliance officer to ensure local disposal and recycling laws are being practiced by haulers, customers, and residents. This position is needed to ensure that MSW is not being hauled to neighboring PUs for disposal since flow control has been implemented in Ulster County. It is also important to verify that proper recycling techniques and correct materials are being recycled, and not mixed into the waste stream. The compliance officer follows leads and tips of MSW leaving the County. Violators are assessed a \$5,000 fine per occurrence. The officer also follows up on calls about waste haulers not separating MSW from recyclables. Overall, the program has been very successful in stopping violations from occurring. Unfortunately, there are some repeat offenders. Violations primarily occur on the County borders when trucking to an adjacent planning unit transfer station will save the hauler time and money in fuel costs, instead on disposing the material at one of the two UCRRA transfer stations.

### 4.5 Agricultural Operations

Throughout Ulster County, there are approximately 421 farms totaling 58,932 acres. The farmland is used for production of crops, animal feed, hay, and pasture for livestock. A majority of farms utilize the raw manure for fertilizer on their fields. These operations are outside of UCRRA's system.

Combining farm operations with food waste recycling via composting and reuse for animal feedstock is an established and growing practice in Ulster County and an avenue that the Agency and County wishes to continue to improve in the future. Currently, farms accept food waste as feedstock for animals and divert hundreds of tons of waste from landfills each year. A local distillery also benefits from using recycled food waste to brew alcohol. As noted above, Greenway and Community Composting have developed successful food

waste composting facilities at local farms. Blue Chip Horse Farm and Watch Tower Beef Farm in Wallkill, and HITS Equestrian Center in Saugerties are large producers of manure that could be managed through composting. The quantities of materials managed through these programs that do not enter the UCRRA system are difficult to quantify as in many cases they are neither measured or reported.

## 4.6 Local Hauler Licensing

Local haulers must apply for an annual license with the Ulster County Department of Health. UCRRA requires that the haulers provide the Ulster County Department of Health's license number on UCRRA's flow control licensing application prior to transporting accepted materials to either of the transfer stations. There is a \$200 application fee plus a cost of \$100 for each truck/trailer hauling waste or recyclables. Haulers must obey local law Number 4 of 2010 which states it is an unlawful act for any hauler to collect, transport, store, or deliver regulated recyclable materials that contain solid waste. Haulers must provide instructions to their customers containing information on how to properly recycle.

## 4.7 Landfills

There are no operating landfills in Ulster County. The Agency is currently responsible for post-closure care and maintenance at two closed landfills in Ulster County. These include the former Town of New Paltz Landfill on Clearwater Road in the Town of New Paltz and the former Town of Ulster Landfill located on Sottile Boulevard in the Town of Ulster. The Agency is responsible for leachate management, mowing, and overall landfill upkeep. Annual costs for maintaining both landfills are estimated in 2019 to be \$249,536.

## 4.8 Transportation and Disposal

UCRRA has implemented a cost-effective strategy for moving materials from the UCRRA facilities to the final disposal location. The Agency requests separate bids and contracts for transportation and disposal of waste. This allows the Agency to select the best cost scenario for transportation and the best cost scenario for disposal and pair the two to provide the best overall cost to the Agency. The Agency has contracted with Seneca Meadow's for disposal. Mr.Bult's, Inc. is contracted for waste hauling from the Ulster TS and GottaDo Contracting, LLC from the New Paltz TS. The tables below summaries the contact years and associated costs per ton for transportation and disposal.

Year	Disposal Contract Seneca Meadows Landfill	Transportation Contract from New Paltz TS Gottado Contracting LLC	Transportation Contract from Ulster TS Mr. Bult's Inc.
2020	\$24.15	\$36.81	\$35.60
2021	\$25.36	\$37.91	\$36.45
2022	\$26.63	\$39.05	\$37.33
2023	\$27.96	\$40.22	\$38.23
2024	\$29.36	\$41.43	\$39.14

Biosolid sludge collected at the New Paltz transfer station is currently shipped to Chemung Landfill in western New York. The current biosolid contracts with MBI and the landfill will expire on December 31, 2020. The Agency pays a per ton hauling and disposal fee for both MSW/C&D and biosolids.

Further cost savings result from the Agency's purchase of fuel for the waste transporter. UCRRA is able to purchase fuel at municipal agency contract prices absent some of the taxes that would apply to a private transportation company. This practice is expected to continue in the future.

## 4.9 Recycling Markets

UCRRA uses a variety of local final disposal vendors for recyclables. Based on market prices as well as transport and disposal costs, these vendors can change periodically. The Agency records all recyclable materials that enter and leave the facility to track year-to-year trends. This helps to focus direction on education and learn changing market characteristics.

Due to dramatic changes in the overseas recycling markets, single stream recycling is no longer accepted by the Agency. Markets for recyclable materials have, over the past decade, been somewhat volatile and highly subject to the quality of the material collected, produced, and segregated. The Chinese markets have had significant effect on these commodity prices. Over the years, China has aggressively improved their recycling efforts, which has limited the percentage of contamination acceptable. In addition, due to an increase in unacceptable recyclable items mixed into the recycling stream, the demand on US imports of recyclable materials is less, thus making commodity pricing volatile.

Source separation from residential and commercial containers has been a continuous struggle. When unapproved recyclable items are added to the single stream containers, it becomes difficult to provide a clean product for vendors to use. Additional costs are incurred to sort the materials on site prior to shipping to the end facility. Increased outreach

and enforcement are required to educate residents and businesses. Utilizing dual stream methods only allows for a quicker sort of materials if needed, as well as provides more structure and easier concepts to residents on how to recycle properly.

#### 4.10 Waste Reduction Programs

UCRRA will continually look for viable approaches, and education programs geared toward reducing waste, increasing reuse, repurposing, and recycling. This approach, often referred to as “Zero Waste” is a long-term objective that is expected to be kept in view for the duration of this Plan. The New Paltz Recycling and Reuse Center is a great model on how products within the community can be reused or upcycled. UCRRA will promote reuse and upcycling facilities through education and media outlets, in an effort to have other local municipalities create their own facilities. The Agency, through enforcing Local Laws and promoting awareness about the urgency for alternative waste technologies, waste reduction, reuse, and diversion, will hopefully enlighten residents about the immediate need for change in their daily choices for purchasing and disposal of products.

Several of the town municipal drop off centers operate reuse programs either formally or informally. Residents can place items in good condition at designated locations within the dropoff centers, and other residents are able to take the items at no charge.

The Ulster County Legislature adopted the Ulster County Mandatory Source Separation and Recycling Law (Local Law No. 8 of 1991) in 1991 and amended the law in 2007. Local Law No. 4 of 2010 amended the 2007 law. This local law requires that regulated recyclable materials be separated at the source from all solid waste. Citizens, businesses, institutions, and government agencies were included in this law and are responsible for source separation. UCRRA is responsible for implementing and enforcing the local law through education and administrative procedures if necessary.

UCRRA collects and maintains excellent records for recyclable materials that enter and leave the Ulster Transfer Station. In 2018, 15,518 tons of recyclables that included single stream, mixed news, OCC, food waste, wood chips, commingled, glass, brush, and E-Waste were collected/processed. UCRRA has a recycling coordinator and a recycling educator to help promote recycling, answer questions, and collaborate with residents, businesses, and institutions on how to best manage their recyclable materials. A flow control and recycling compliance officer is also employed by the Agency to ensure laws and regulations are being obeyed and practiced.

The New York State Returnable Container Act, also known as the “Bottle Bill” was originally enacted on June 15, 1982, and effective July 1, 1983. Over the years, changes to the law took place in order to keep up with the continuous amount of emerging products sold in bottles. A new amendment in 2019 is proposed to help reduce litter and protect the environment. If approved, Governor Cuomo will expand the Bottle Bill to make most non-

alcoholic beverage containers eligible for 5 cent redemption, including those for sports drinks, energy drinks, fruit and vegetable beverages and ready-to-drink teas and coffee. The Bottle Bill expansion will include some exceptions for bottles containing dairy milk, milk substitutes, infant formula, syrups and flavorings, medical prescriptions and dietary supplements. While expansion of the Bottle Bill is geared toward moving more bottles into the recycling stream, this specific recycling stream is separate from the stream handled by UCRRA. As such, a reduction in recycling tonnage and revenue may be the outcome.

Repair Cafes are particular locations within a community that offer free repairs on a variety of items. Repair Cafes were originally created in Europe and have recently been popping up in the Hudson Valley through promotor John Wackman. The intent of these Repair Cafes is to divert waste from landfills. If items can be repaired relatively quickly and cheaply, instead of discarded, it will increase the lifetime use of that product and decrease volume sent to landfills. Many of these Repair Cafes have local community experts, such as electricians, welders, or wood workers, that volunteer their time to help residents repair these items. The website [www.Repaircafe.org](http://www.Repaircafe.org) lists the times and schedules for these events.

The local prison has implemented a new program that dehydrates all leftover food products not consumed. This program has helped to reduce the require trips workers need to take to unsecured locations within the prison. The material weight is reduced through the dehydration process, and then shipped to UCRRA's composting facility.

Other reuse and diversions from the waste stream can be made by donating to local food pantries and clothing to local shelters. Items can be brought to the Salvation Army, Good Will, the New Paltz Reuse and Recycling Center among other locations within the County. The New Paltz Reuse and Recycling Center is a great model for communities to donate products to that would otherwise end up in the trash. The items can be resold to, reused or repurposed by residents. SUNY New Paltz has implemented a food waste recovery program from the school cafeteria to divert materials from the waste stream. Students can also purchase a reusable box to take food to their dormitories. Items can also be posted for free at online websites such as [freecycle.org](http://freecycle.org), [nextdoor](http://nextdoor), [craigslist](http://craigslist), and [facebook market place](http://facebookmarketplace).

#### 4.10.1 Organics

UCRRA continues to focus diversion efforts related to organic materials. In recent years, UCRRA has increased the amount of organics diverted from the waste stream. Food waste can be brought to the Ulster TS for disposal at a cost of \$20/ton. Green waste and yard waste can be brought to the Ulster Facility and disposed of for a fee of \$40/ton. The material is chipped and combined with food waste to create a reusable compost material. The compost material is tested on a quarterly basis for quality assurance and is then sold back to residents or commercial businesses, which helps to generate revenue for the Agency.



**The current demand for compost exceeds UCRRA's ability to capture and produce compost. Increased organics diversion efforts and composting footprint at the Ulster Facility is anticipated to grow throughout the next 10-year period. The recent acquisition of land adjacent to the Ulster TS is, in part, earmarked for the expansion of the facility's compost facility to meet the current and anticipated increase in the demand for compost.**

**UCRRA's portable grinding unit can be transported to local MRDCs to chip brush and woody material collected at those locations for a fee or in exchange for services.**

**The Agency strongly encourages backyard composting by residents. Residents who have the available space are encouraged to create composting piles on their property when practical. This includes green yard waste and food waste. The Agency sells composting bins which residents can purchase at the Ulster TS. The compost can be utilized as fertilizer for gardens and significantly reduces the amount of tonnage entering the waste stream. In addition to backyard composting for food waste, some of the MRDC's are now accepting this material. Also, private composting facilities are placing drop-off containers throughout the County to collect food waste.**

#### **4.10.2 Education and Outreach**

**Because the success of any waste and recycling system depends heavily upon the materials that enter the system, education is key to the program's overall success. The Ulster County Recycles Program is designed and coordinated by the UCRRA Recycling Outreach Team, consisting of the Agency's Recycling Coordinator and the Recycling Educator. Ulster County Recycles is a countywide outreach education and community engagement program that utilizes a variety of promotional strategy, marketing, educational techniques, and technical supports to increase reuse, recycling, waste reduction, and composting among both residential and commercial waste generators in Ulster County.**

**The Recycling Outreach Team hosts educational tours of the Agency's recycling and composting facilities, and hosts free, educational presentations and workshops at the Agency as well as at public community centers. The Recycling Coordinator and Recycling Educator provide public presentations, games and activities for youth, and are available to host outreach tables at local community events. The Recycling Outreach Team is available for site visits to apartment complexes, schools, business districts, municipal recycling centers, and other community centers to enhance existing waste reduction programs or assist with implementing new recycling or composting initiatives.**

**The Ulster County Recycles Program produces and distributes a variety of educational media and community resources such as brochures, flyers, guides, contacts list, posters, recycling bin stickers/labels, etc. Media content includes instructions for safe disposal or recycling for medications, sharps, household hazardous wastes, electronics, batteries, organics, and other miscellaneous items. This media is distributed annually to municipal**



recycling centers and town halls, at request by local businesses or community centers, and at educational programs, workshops, and community events. These brochures, flyers, contact lists, and an "A to Z Recyclopedia" are also available electronically on the Agency website. At programs and events, UCRRA distributes custom promotional items related to waste reduction, recycling, and composting with UCRRA contact information.

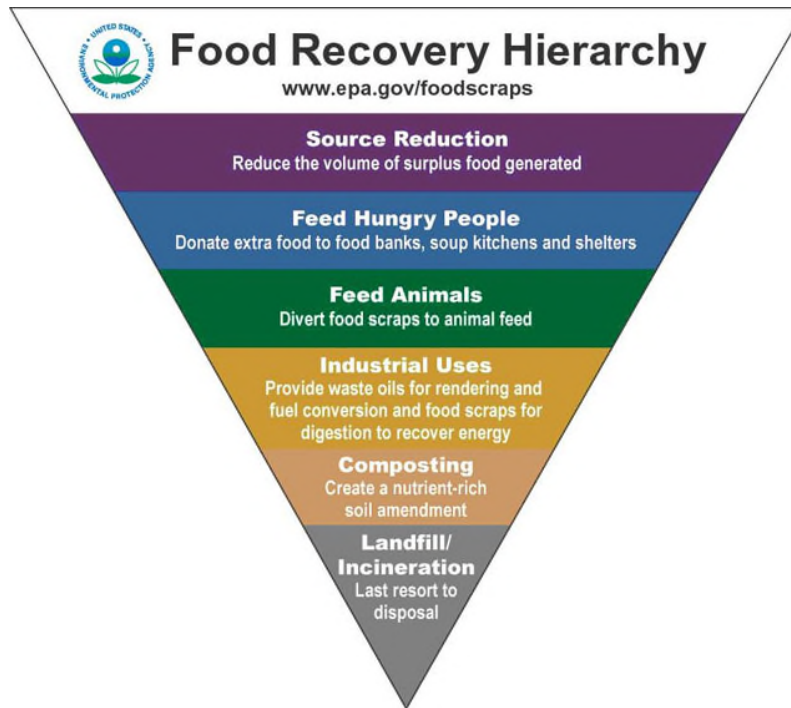
The Ulster County Recycles Program maintains web-accessible resources such as interactive social media pages with tips and facts about recycling or local events, a UCRRA website with detailed information and resources about recycling, composting, and waste reduction specific to businesses, schools, or multi-family dwellings, and produces a quarterly e-newsletter with over 2,500 subscribers. UCRRA flyers and other resources are accessible from the Agency website, and hard-copies are available at the UCRRA Main Office or by request.

The Recycling Outreach Team designs and coordinates advertisements in local newspapers and on local radio stations to promote waste reduction, Earth Day, America Recycles Day, tips on recycling Do's and Don'ts, and facts about recycling and the environmental benefits of waste reduction. The Recycling Coordinator and Recycling Educator respond to requests for information, program planning, questions and concerns about recycling/composting through a direct Recycling Hotline, through email, on social media, and in person at the UCRRA Main Office.

Additionally, the Recycling Coordinator acts as liaison to private sector waste hauling companies, municipal recycling centers, local government, and local businesses as part of the Ulster County Recycles Program. The Recycling Coordinator also works collaboratively with the Agency's Compliance Officer to address recycling complaints and assists with enforcing the local mandatory recycling laws. The Recycling Coordinator plans, implements, directs, and reports on the Agency's Household Hazardous Waste Collection Program as well as compiles data for the required planning unit reports about recycling and waste characterization in the planning unit. The Recycling Coordinator assists in marketing the availability and use of the Agency's finished compost and maintains membership with the US Composting Council and USCC Seal of Testing Assurance Program.

The Recycling Coordinator and Recycling Educator are active in solid waste, recycling, and composting associations and participate in regional round table meetings, conferences, trade shows, committees, and webinars to gain access to the best knowledge available to improve and expand programmatic education and outreach strategies.

Below is the food recovery hierarchy established by the EPA that the Agency uses as a guide for food diversion out of the waste stream. This message is passed along to residents and promoted through the training sessions focusing on food waste reduction, reuse and donation. Food can be donated to soup kitchens and food pantries.



#### 4.10.3 Online Resources

UCRRA provides recycling information on their website, [www.ucrra.org](http://www.ucrra.org), regarding, among other things, the types of materials that must be recycled, where residents can drop off recyclable materials (and other solid waste items for processing) and the hours of operation. Included on the website is a list of links associated with recycling and waste management.

#### 4.10.4 Electronics

The NYS Electronic Equipment Recycling and Reuse Act requires manufacturers to provide free and convenient recycling of electronic waste to most consumers in the state.

Consumers eligible for free and convenient recycling include individuals, for-profit businesses, corporations with less than 50 full-time employees, not-for-profit corporations with less than 75 full-time employees, not-for-profit corporations designated under Section 501(c)(3) of the Internal Revenue Code, schools, and governmental entities located in NYS. For-profit businesses with 50 or more full-time employees and not-for-profit corporations with 75 or more full-time employees may be charged. The disposal ban for this Act states that beginning April 1, 2011, no manufacturer, retailer, owner or operator of an electronic waste collection site, electronic waste consolidation facility or electronic waste recycling facility in the state shall dispose of electronic waste at a solid waste management facility or hazardous waste management facility, or place electronic waste for collection which is intended for disposal at a solid waste management facility or hazardous waste management facility. Beginning January 1, 2012, no person except for an individual or

household shall place or dispose of any electronic waste in any solid waste management facility, or place electronic waste for collection which is intended for disposal at a solid waste management facility or hazardous waste management facility in this state. Persons engaged in the collection of solid waste for delivery to a solid waste management facility shall provide written information to users of such facility on the proper methods for the recycling of electronic waste. Beginning January 1, 2015, no individual or household shall place or dispose of any electronic waste in any solid waste management facility, or place electronic waste for collection which is intended for disposal at a solid waste management facility or hazardous waste management facility in this state. Beginning January 1, 2012, an owner or operator of a solid waste management facility or hazardous waste management facility shall educate users of such facility on the proper methods for the management of electronic waste.

Such education shall include:

- (a) providing written information to users of such facility on the proper methods for recycling of electronic waste; and
- (b) posting, in conspicuous locations at such facility, signs stating that electronic waste may not be disposed of at the facility.

UCRRA accepts electronics from residents and small businesses for free, Monday through Friday from 8:00am – 3:00pm at the Ulster Transfer Station. E-waste is also accepted at some of the MRDC's as well as commercial retailers within the County such as Best Buy, Staples, and RadioShack. Below is a list of E-waste equipment covered by the NYS Electronic Equipment Recycling and Reuse Act. UCRRA may also accept some additional E-waste items, as specified on their website. American Lamp, located in Milton uses state of the art technology to reclaim components for reuse from electronic equipment.

	Subcategory and/or Description
Cathode Ray Tube (CRT)	
Computer	All-in-one
	Desktop
	E-reader
	Interactive flat panel display (w/ processor)
	Laptop
	Tablet
	Thin client

	Virtual reality headset (w/ processor)
	Workstation
Computer Peripheral	3-D printer (intended for use w/ a computer and weighing <100 lbs.)
	Document scanner (intended for use w/ a computer and weighing <100 lbs.)
	Electronic keyboard
	Electronic mouse or similar pointing device
	Facsimile machine (intended for use w/ a computer and weighing <100 lbs.)
	Label printer (intended for use w/ a computer and weighing <100 lbs.)
	Monitor (>4" diagonally)
	Printer ((intended for use w/ a computer and weighing <100 lbs.)
Small Electronic Equipment	Cable or satellite receiver
	Digital converter box
	Digital video recorder (DVR)
	Digital video disc (DVD) player
	Electronic or video game console (handheld and those intended for use w/ a video display device)
	Portable digital music player (w/ memory capability)
	Projector w/ DVD player capability
	Videocassette recorder (VCR)
Small Scale Server	(Designed in a desktop or similar form factor and capable of supporting only a single processor)
Television	(>4" diagonally)

#### 4.10.5 Other Wastes

**Although some of the following items are accepted at the HHW events, there are other outlets available as noted below, which UCRRA will promote in conjunction with their own programs:**

**Old cell phones and chargers may be donated to organizations for reuse. New York State residents now have a lot more opportunities to recycle their cell phones. Under the New York State Wireless Recycling Act, which became effective January 1, 2007, all wireless**

telephone service providers that offer phones for sale will accept cell phones for reuse or recycling. Verizon Wireless will donate cell phones or a portion of the proceeds from resale to charity.

Lead-acid batteries (most car batteries) are accepted for recycling by establishments that sell them. New York State Law requires a \$5.00 deposit on the sale of every new battery, which is refunded when the battery is returned. Lead-acid batteries are accepted at the HHW facility.

Rechargeable batteries may be recycled at Home Depot, Lowes, Radio Shack, Best Buy, Sam's Club, Verizon Wireless, Staples and Walmart, to name a few, through the program called Call2Recycle®. Call2Recycle® is a program of the Rechargeable Battery Recycling Corporation (RBRC) promoting environmental sustainability by providing free battery and cell phone recycling in North America. Call2Recycle® accepts old cell phones and used portable rechargeable batteries commonly found in cordless power tools, cellular and cordless phones, laptop computers, camcorders, digital cameras, and remote-control toys. This includes the following types of batteries: Nickel Cadmium (Ni-Cd), Nickel Metal Hydride (Ni-MH), Lithium Ion (Li-Ion) and Small Sealed Lead (Pb). Customers should bring their old batteries to the returns desk.

Domestically-produced alkaline and carbon zinc household batteries no longer contain mercury and can be disposed of with solid waste. Large numbers of used alkaline batteries should not be disposed of together. Used batteries are often not completely dead and disposing of several used batteries together can bring these "live" batteries into contact with one another, creating safety risks.

NYS Rechargeable Battery Recycling Law was signed into law by Governor Paterson on December 10, 2010. The law requires manufacturers of covered rechargeable batteries to collect and recycle the batteries statewide in a manufacturer-funded program at no cost to consumers. Consumers will now be able to safely return rechargeable batteries to retailers, from a large number of electronic products, for recycling or proper management at the end of their useful life. The types of rechargeable batteries covered by the new law are as follows:

- Nickel-cadmium
- Sealed lead
- Lithium ion
- Nickel metal hydride
- Any other such dry cell battery capable of being recharged
- Battery packs containing any of the above-mentioned batteries

The aforementioned law does not cover: any of the above-mentioned batteries/packs weighing 25 pounds or more; batteries used as the principal power source for a vehicle,

such as an automobile, boat, truck, tractor, golf cart or wheelchair; batteries for storage of electricity generated by an alternative power source, such as solar or wind-driven generators; batteries for backup that is an integral component of an electronic device; or any non-rechargeable batteries such as common alkaline batteries.

Under the new law, manufacturers of covered rechargeable batteries or groups of collaborating manufacturers will be responsible for financing the collection and recycling of the batteries, advertising their program to consumers, and reporting on the progress of their programs. Beginning June 8, 2011, retailers that sell covered rechargeable batteries will be required to accept used rechargeable batteries from consumers during normal business hours and will need to post signs informing consumers about these requirements. A retailer must accept up to 10 batteries per day from any person regardless of whether such person purchases replacement batteries or shall accept as many such batteries as a consumer purchases from the retailer. The rechargeable battery disposal ban states that no person shall knowingly dispose of rechargeable batteries as solid waste at any time within New York.

Small Freon-containing appliances are accepted at the Ulster Facility for a fee and during the HHW events. Residents can contact their municipality for information on disposing larger items. Other locations that typically accept these appliances include scrap metal recycling facilities, some of the MRDCs, and Central Hudson. Hydrofluorocarbon such as Freon and other refrigerants are powerful greenhouse gases that need to be properly disposed of prior to recycling the product they were contained in. Many of these whitegoods are brought into scrap metal facilities already depleted of the refrigerant or HFCs, drained and improperly disposed of by residents contributing to environmental problems.

Waste Tires are accepted by tire dealers for a nominal fee. Tires can also be brought to the County transfer stations for a nominal fee. Some of the MRDCs and some scrap metal recycling facilities also accept tires.

**Used Oil:** State law requires that establishments that sell more than 1,000 gallons of motor oil per year must accept up to 5 gallons of used oil per person per day. Used motor oil may also be brought to UCRRA sponsored HHW events.

**Plastic grocery bags** are accepted for recycling by supermarkets and other large retail stores. New York State's Plastic Bag Reduction, Reuse and Recycling Act became effective January 1, 2009, which requires certain retail and grocery stores to set up a plastic carry out bag recycling program for their customers. Stores with 10,000 square feet or more of retail space, and chains which operate five or more stores with greater than 5,000 square feet of retail space, and which provide plastic carry out bags to customers, are required to comply with the law.



**Stores meeting these requirements must establish an "at-store" plastic bag recycling program and they must ensure that collected plastic bags are actually recycled, including maintaining records describing the collection, transport and recycling of plastic bags for at least three years. Stores must also sell reusable bags and allow the use of reusable shopping bags. Retail stores currently required to accept film plastic from consumers will be required to do so even after the new Bag Waste Reduction Act, described below, is implemented.**

**Governor Andrew Cuomo passed the New York State Bag Waste Reduction Act that goes into effect in March 1, 2020, eliminating single-use plastic bags within the state. Certain exceptions do apply. Bags that can still be used to contain or wrap uncooked meat, fish or poultry, to contain bulk items such as fruits, vegetables, grains or candy, to contain food sliced or prepared to order, to contain a newspaper for delivery to a subscriber, bags sold in bulk to a consumer, trash bags, good storage bags, garment bags, carryout bags provided by a restaurant for carry out or food delivery, and bags provided by a pharmacy to carry prescription drugs.**

**It is estimated that New York uses more than 23 billion plastic bags every year with 50 percent of those plastic bags ending up in landfills and around the city and waterways. The plastic bag ban will not only reduce plastic bags in New York landfills and waterways, but it will also eliminate thousands of barrels of oil used to make plastic bags used by New York each year. New York is the third state, along with Hawaii and California, to ban single-use plastic bags. Maine, Vermont, Connecticut, Delaware, and Oregon also passed legislation to ban single-use plastic bags in 2019.**

**The Ulster County Executive signed Resolution Number 283 in the fall of 2018, which is being referred to as "Bring Your Own Bag Act" which will eliminate single-use bags at "covered store" locations starting in July 2019. A covered store means an establishment engaged in the retail sale of personal, consumer or household items including but not limited to drug stores, pharmacies, grocery stores, supermarkets, convenience stores, food marts, apparel stores, home center and hardware stores, stationary and office supply stores, farmers markets, open-air flea markets and food service establishments that provide carryout bags to consumers. This term does not include food service establishments located outside of grocery stores, supermarkets, convenience stores, or food marts. Full enforcement of the law will start January 1, 2020. Businesses that violate the law after first getting a written warning are subject to fines of up to \$100 for the first offense, \$250 for the second, and \$550 for the third and all subsequent violations. Funds collected from the fines will be used to cover costs associated with implementing and enforcing the requirements the new law and/or for public education and outreach. A 5-cent charge for paper bags by the store may be implemented by Ulster County for customers without a reusable bag. All monies collected from these fees are to be kept by the store.**

**Wire Hangers in good condition will be accepted by most dry cleaners.**



**Shredded paper should be accepted by haulers providing curbside pick-up. Individual haulers should be contacted for specifics. UCRRA currently accepts shredded paper in their mixed paper stream. The shredded paper must be contained within clear plastic bags. Shredded paper is classified as mixed paper, so the first step in recycling is to separate it from cardboard, office paper, and newspaper grades. Shredded paper is then baled and sent to a mill. At the mill, there are machines called pulpers that introduce water and chemicals to break down the paper into fibers. Then, any ink and adhesive are removed and the paper fibers start bonding together. Finally, the fibers are rolled and dried, then sent off to make new products. Because mixed-paper fibers are smaller than cardboard or office paper, this paper is recycled into lesser-quality paper products, such as coffee filters, egg cartons and paper towels.**

**Compact fluorescent light (CFL) bulbs can be recycled at some store locations as well as at the UCRRA sponsored HHW events. CFL bulbs received at UCRRA facilities are charged a nominal fee per bulb. Some of the MRDC's will accept fluorescent bulbs as well – residents should check with individual MRDC to confirm. Currently Home Depot and Lowe's accept CFLs at the return desk.**

**Non-Controlled Pharmaceutical Medication including both prescription and nonprescription medications, as well as pet medications can be brought to the HHW for disposal or to various collection centers throughout the County such as town police departments or sheriff's department.**

**Sharps waste, such as syringes, needles and exposed dental wires, are to be collected in approved sharps containers. Drop-off locations for these materials include hospitals, nursing homes, and assisted living facilities.**

**Asbestos is a heat-resistant fibrous silicate mineral that can be woven into fabrics and is used in fire-resistant and insulating materials such as brake linings. Asbestos is known to be carcinogenic. Residents with friable asbestos must contact an abatement company. Non friable asbestos is accepted by appointment only at UCRRA with special instructions.**

## 5 ADMINISTRATIVE AND FINANCIAL STRUCTURE

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### 5.1 Administrative

The UCRRA Staff and Board work together with the municipalities in Ulster County and work in partnership with many agencies, such as the Ulster County Legislature, Department of Health, schools and institutions, local businesses, and the NYSDEC. UCRRA employs 30 full-time and 3 part-time employees to oversee the Solid Waste Management System operations. UCRRA performs all Solid Waste Management System operation services through the use of its own employees or through contracting with private vendors.

Below is a summary of the main responsibilities for the personnel at UCRRA in charge of managing key aspects of the Solid Waste Management Program.

#### **Executive Director – Timothy Rose**

Mr. Rose serves as the Executive Director of UCRRA and is responsible for implementing the strategic goals and objectives of the organization, and for giving direction and leadership toward the achievement of the organization's philosophy, mission, strategy, and annual goals.

#### **Director of Facilities and Safety – Charles Whittaker**

Mr. Whittaker serves as UCRRA's Operations Manager and is responsible for overseeing the day-to-day operations of the Solid Waste Management System. In this capacity, Mr. Whittaker works directly with and supervises the Agency's transfer station staff.

#### **Compliance Officer – Thomas Briggs**

Mr. Briggs serves as UCRRA's Solid Waste Compliance Officer. Mr. Briggs is the primary interface between local citizens, haulers, and municipal officials to develop and implement solutions to solid waste collection and disposal issues regarding flow control and recycling efforts.

#### **Recycling Educator – Melinda France**

Ms. France serves as the Agency's Recycling Educator and is responsible for assisting UCRRA with the development of the Agency's Public Education and Outreach Programs. This involves the preparation, publication, and distribution of materials for education and outreach programs including the implementation of various environmental education programs.

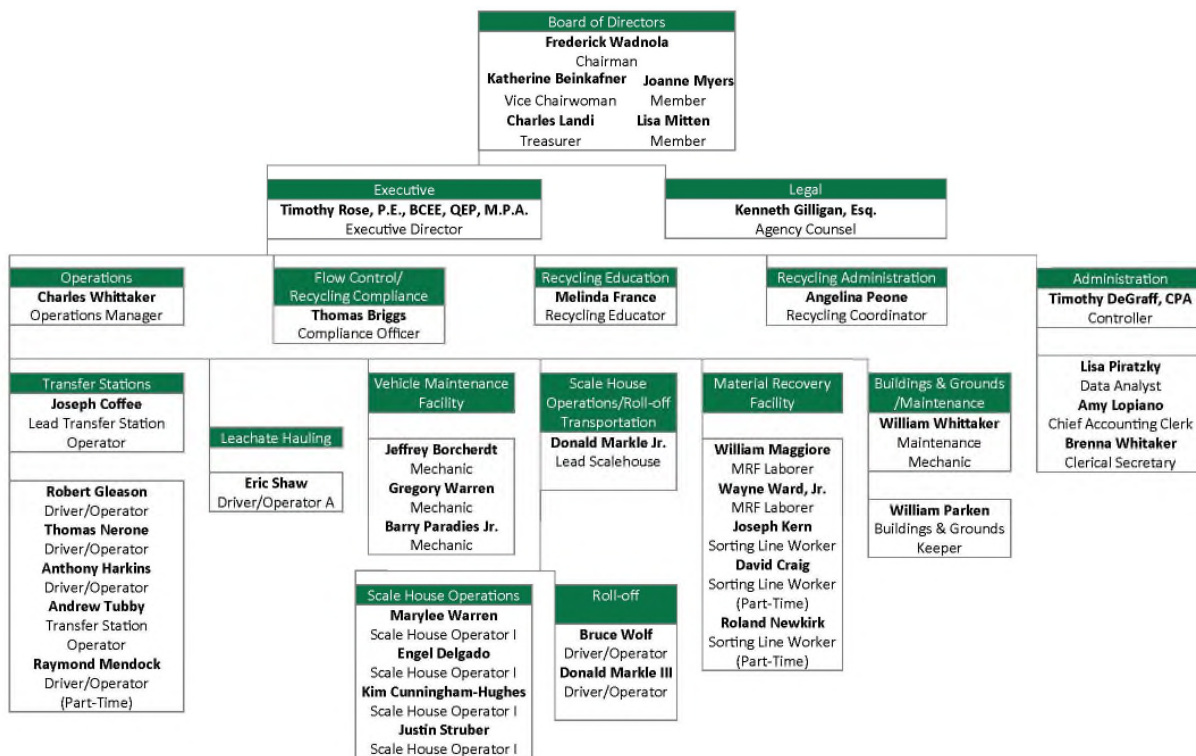
## Recycling Coordinator – Angelina Peone

Ms. Peone serves as the UCRRA's Recycling Coordinator and is responsible for encouraging and assisting municipalities, haulers, and generators in their recycling efforts. In addition, the Coordinator assists in developing, presenting, and implementing UCRRA's recycling initiatives and programs to the residential and commercial sectors. The coordinator also researches and applies for grants for program funding.

## Controller – Timothy DeGraff

Mr. DeGraff serves as the UCRRA's Administration Supervisor. He is responsible for overseeing the financial aspects for the Agency.

The chart below presents the organizational chart of the Agency.



## 5.2 Financial Structure

### 5.2.1 Revenue Sources

The various solid waste management plan initiatives and programs are funded through revenue earned from the solid waste disposal charges, tip fees, and the revenue from the sale of recyclables and compost. Each is discussed in some detail below.



The table below presents the schedule for operations at the transfer stations.

**HOURS OF OPERATION AND LOCATIONS:**

**Ulster**

999 Flatbush Road, Kingston, NY 12401

**Administrative Office:** Monday through Friday 7:30am–3:30pm

**Ulster Transfer Station:** Monday through Saturday 6:00am–3:00pm

**Materials Recovery Facility (MRF):** Monday through Friday 7:00am–4:00pm

**New Paltz**

1 Clearwater Road, New Paltz, NY 12561

Monday through Friday 7:00am–4:00pm

Saturday 7:00pm–12:00pm (April through December)

**ULSTER AND NEW PALTZ TRANSFER STATIONS ARE CLOSED ON  
THE FOLLOWING HOLIDAYS IN 2020**

New Years Day	Wednesday, January 1st
Memorial Day	Monday, May 25th
Independence Day	Saturday, July 4th
Labor Day	Monday, September 7th
Thanksgiving Day	Thursday, November 26th
Christmas Day	Friday, December 25th

**ADMINISTRATIVE OFFICE WILL BE CLOSED ON THE HOLIDAYS ABOVE  
AND INCLUDING THE FOLLOWING HOLIDAYS IN 2020**

**(PLEASE NOTE NO ELECTRONICS WILL BE ACCEPTED ON HOLIDAYS THAT THE OFFICE IS CLOSED)**

MLK JR. Day	Monday, January 20th
Presidents' Day	Monday, February 17th
Independence Day (Observed)	Friday, July 3rd
Columbus Day	Monday, October 12th
Veterans Day	Wednesday, November 11th
Day After Thanksgiving	Friday, November 27th



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### 5.2.3 Recyclable & Re-usable Materials

UCRRA earns revenue by selling the recyclable and re-usable materials it receives at its facilities. When it can be safely performed, metal, cardboard, e-waste, and other reclaimable items are culled from loads disposed of at the Agency's two transfer stations for proper recycling. The Sections below describe the various ways the Agency earns revenue at each of its facilities.

#### 5.2.3.1 Materials Recovery Facility

The Agency transports recyclables brought into the Ulster TS to local final disposal vendors in the planning unit or adjacent planning units. Revenues from the sales of recyclables in 2018 were \$217,692.

2018 MRF Materials Handled (tons)		
	In	Out
Commingled	526	0
Glass	496	0
Mixed News	1,051	1,024
Single Stream	6,423	7,005
OCC	1,553	1,594
Tin	0	63
Returnable Containers	0	2
Plastic (PET/Natural/Colored/tubs lids)	0	124
Total	10,049	9,812

#### 5.2.3.2 Composting/Organics

UCRRA has started to increase organics diversion efforts in recent years to decrease the tonnage required to be transported and disposed of at landfills. By diverting food waste and green waste from the waste stream, an immediate savings in transportation and disposal costs was realized. The food and green waste are combined onsite at the Ulster TS, and throughout aerated windrows, composting of this material occurs. The final composted product is then sold to residents and local businesses. The revenues received from this effort was \$130,336 in 2018; \$88,838 came from tip fees while \$41,496 was received from sales of the finished compost. Success with the compost program had been tremendous since inception. The current demand for finished compost exceeds UCRRA's current ability to capture and produce material. The program will be expanded within the coming years to increase the total tonnage that can be processed on a yearly basis. This will help to

increase revenues through reduction in tonnage transported to landfills and through the sale of finished compost product.

#### 5.2.3.3 HHW Grant

The Agency typically administers 2 to 4 HHW events each year. During 2018, UCRRA received \$45,558 in grant revenue based on a 50% reimbursement of Agency expenses associated with operating these events. Grant revenue is received from the HHW State Assistance Program that is funded by the NYSDEC's Environmental Protection Fund. It is the goal to construct a year-round HHW facility during the next planning period which will be located at the Ulster TS.

#### 5.2.4 Costs and Expenses

The results of the various solid waste management plan activities are expenses related to solid waste disposal, maintenance and operations, long-term debt, recycling and composting, and employee wages. Each is discussed in some detail below.

##### 5.2.4.1 Transportation and Disposal

Costs associated with transportation and disposal (T&D) include fuel, tip fees, and hauling to the landfill. Currently, UCRRA allots their trucking company 93 gallons per round trip for disposal to Seneca Meadows Landfill. Because UCRRA is a public benefit corporation, they are able to purchase fuel tax-free which results in tremendous cost savings.

##### 5.2.4.2 Facility Operations

Facility operations include the day-to-day activities at the Transfer Stations. This includes fuel costs for equipment and costs for necessary utilities such as electricity, internet, water, and sewer.

##### 5.2.4.3 Closed Landfills

Costs associated with post-closure care at the Ulster and New Paltz Landfills that UCRRA is responsible for include leachate management, annual analytical testing, and general maintenance.

##### 5.2.4.4 Debt Service

Debt service is a major component in expenses for the Agency. The Agency has debt service for various loans and bonds which is expected to be paid in full by 2025.



#### 5.2.4.5 Capital Outlay

Several different aspects comprise capital expenses. Land, buildings, equipment, infrastructure, computers, software, furniture, and vehicles are all included in capital costs. Capital expenditures are paid from Agency revenues. Expenditures in excess of \$50,000 must be approved by the Ulster County Legislature. Extraordinary capital expenditures for major capital improvements that exceed the Agency's reserves will be funded through the issuance of bonds.

#### 5.2.4.6 Personnel Expenses

Personnel expenses are responsible for one of the largest costs associated with the Agency's overall expenses. In 2018, \$2.82 million was put towards personnel expenses. Some of the costs associated with this include salaries and wages, benefits, insurance, and pension contributions.

#### 5.2.4.7 Administration Expenses

All basic office-related costs are included such as office supplies, as well as costs related to the collective bargaining agreement, bank/credit card fees, radio and computer equipment, and telephone costs. Most administration costs are a result of liability insurance and professional services such as auditors, legal, engineering, payroll, and information technology.

#### 5.2.4.8 Composting

Analytical testing of compost material and operating the aerated stockpile were costs incurred by the Agency in 2018. Separation of organic loads containing non-organic materials that need to be removed add to the time and costs associated with composting operations.

#### 5.2.4.9 Recycling

As mentioned in previous sections, the Agency operates a dual stream recycling facility. In the past, single stream loads would be accepted at the Ulster TS and reloaded into trailers for shipment to an end vendor/processor. Due to changes in the recent market related to the volatility in commodity pricing and contamination issues with the single stream loads, disposal costs increased for the Agency in 2018. As a result, and as noted above, single stream recycling is no longer accepted at the UCRRA Transfer Stations. In addition, contamination issues experienced with dual stream recycling also resulted in increased disposal costs during 2018. Educating the public on these issues will be increased throughout the next planning period, in an effort to reduce contamination of loads.

#### 5.2.4.10 Education

Costs related to education and outreach include travel for recycling and composting conferences, seminars, onsite recycling and composting training for local schools and businesses, fliers, and information forums for public outreach to the community.

#### 5.2.5 Funding Mechanisms

The various solid waste management plan initiatives and programs are funded through revenue earned from the solid waste disposal charges, tip fees, and the revenue from the sale of recyclables and compost. Additional funding mechanisms for UCRRA are limited. Typically, long-term debt is acquired through bonds to fund facility operations and projects. Grants are also sought after to help cover costs on particular projects and recycling programs such as the HHW events.

#### 5.2.6 Laws and Regulations

Various rules and regulations were administered to establish the requirements for increasing the rate of recycling, and for eliminating or reducing the amount of County-generated solid waste disposed of in landfills.

As discussed in Section 4.10, the Ulster County Legislature adopted the amended Local Law No. 4, the Ulster County Mandatory Source Separation and Recycling Law. This local law required that regulated recyclable materials be separated at the source from all solid waste. UCRRA is responsible for implementing and enforcing the local law through education and administrative procedures if necessary.

Local Law No. 9 of 1991, is a Local Law providing for the management of solid waste in the County. This law states that the County can designate facilities to receive, process, transfer, transport or dispose of MSW. The Law allows for issuance of summonses, notices and administrative complaints to persons in violation of the provisions of this Local Law. The Law allows the Agency to issue hauler licensing and enforce the requirements stated within. This Law provides Ulster County the ability to implement flow control. Under the Flow Control Act signed into law on December 18, 2012, it is a violation for haulers or residents to take MSW produced within Ulster County to any facility for disposal other than the two designated transfer stations that the Agency operates.

Local Law No. 10 of 2012, is a Local Law that amended Local Law No. 9. This Law refers to the Ulster County and the Agency's preparation of a Local Solid Waste Management Plan pursuant to the provisions of Environmental Conservation Law §27-0106 and §27-0107 in order to define the County's policies with respect to solid waste management. It is the policy of the County, in accordance with the solid waste management policies of the State of New York, to: reduce the amount of solid waste generated; reuse material for the

purpose for which it was originally intended or recycle material that cannot be reused; recover energy from solid waste that cannot be economically or technically reused or recycled; and dispose of solid waste that is not being reused, recycled or from which energy is not being recovered by land burial or other means approved by law. This local law is intended to advance and support the policies expressed in the Local Solid Waste Management Plan.

Local Law No. 4 of 2014, is a Local Law regulating the use of polystyrene foam disposable food service ware by food service establishments in Ulster County. The polystyrene manufacturing process is one of the largest creators of hazardous waste in the United States and the material is a carcinogen and neurotoxin. Biodegradable, compostable or reusable containers are cost effective and more environmentally friendly. Use of these alternative containers may help to decrease the waste stream tonnages and reduce waste costs.

Local Law No. 5 of 2018, is a Local Law promoting the use of reusable bags and regulating the use of plastic carryout bags and recyclable paper carryout bags. Plastic bags have significant environmental impacts, including the contamination of the environment, the depletion of natural resources, use of non-renewable polluting fossil fuels, and increased clean up and disposal costs. Covered stores under this law shall only provide reusable bags or recyclable paper bags to consumers. The retailer must charge the customer 5 cents for each recyclable paper bag sold. All monies collected from sales of recyclable paper bags will be retained by the retailer.

Local Law No. 1 of 2019, is a Local Law amending Local Law No. 5 of 2018. The law took effect on July 15, 2019. This law provided an exemption that all covered stores that provide recyclable paper bags to customers shall provide such bags free of charge for items purchased by any person using the New York State Supplemental Nutrition Assistance Program (SNAP) or New York State Special Supplemental Nutrition Program for Women, Infants and Children (WIC), as full or partial payment. The Local Law also states that this article shall be null and void on the day that statewide legislation goes into effect incorporating either the same or substantially similar provisions as are contained in this Article or in the event that a pertinent state or federal administrative agency issues and promulgates regulations preempting such action by the County of Ulster. The Ulster County Legislature may determine by resolution whether or not identical or substantially similar statewide legislation or pertinent preempting state or federal regulations have been enacted for the purposes of triggering the provisions of this section.

Local Law No. 2 of 2019, is a Local Law requiring restaurants and fast food service establishments provide plastic beverage straws solely upon request. Restaurants and Fast Food Service Establishments shall only provide a Single-Use Plastic Beverage Straw to a Dine-In Customer or a Take-Out Food Order upon the customer's request. Nothing in this law shall prevent any establishment from providing paper or non-plastic straws without a request.

The County is aggressively working to expand composting programs by large food waste generators beyond the 2022 State regulations and has Proposed Local Law No. 5 of 2019, to regulate businesses that generate from 2 tons/week to a half a ton/week of food waste. UCRRA will assist and support this effort as necessary. It will be mandatory for these large generators to bring food waste and compostable materials to a composting facility or compost onsite.

Proposed Local Law No. 3 of 2019, will amend the definition of “refuse” to include:

- **Regulated Waste** – shall mean concrete, brick, asphalt, asbestos, drywall, plaster, roofing materials, wood, metal, tiles, paint chips, ash, slag, coal, pieces of particle board, carpet, petroleum contaminated soil, and other contaminate materials.
- **Construction and Demolition debris** – shall mean uncontaminated solid waste resulting from construction, remodeling, repair and demolition of utilities, structures and roads; and uncontaminated solid waste resulting from land clearing.
- **Refuse**, once the law is adapted shall mean regulated waste, construction and demolition debris, garbage, rubbish, industrial waste and dredge material. This is a result of the Towns of Rochester and Saugerties having suffered diverse environmental impacts by receiving out of County materials that were used as “clean fill” and permanently landfilled in Ulster County.

### 5.2.7 Product Stewardship

Product stewardship is a product-centered approach that is gaining increasing attention in public policy as an effective mechanism for solid waste management. Some of the goals of product stewardship include shifting waste management costs off taxpayers and into the cost of the product, reducing waste destined for landfills and waste to energy facilities, improving product and packaging design for recycling and materials recovery, and economic development in new industries and job growth within New York State.

Refer to Section 5 of the NYS Beyond Waste Plan for a detailed overview. [http://www.dec.ny.gov/docs/materials\\_minerals\\_pdf/frptbeyondwaste.pdf](http://www.dec.ny.gov/docs/materials_minerals_pdf/frptbeyondwaste.pdf)

Consumer engagement is critical in product stewardship because it is the consumer who makes the choice between competing products and who must use and dispose of products responsibly. State and local governments are essential to fostering product stewardship as it relates to waste management, because solid waste and recycling programs are administered by local governments pursuant to state regulation and policy.

A national non-profit organization called the Product Stewardship Institute (PSI) was formed in 2000 to work with state and local governments to partner with manufacturers, retailers, environmental groups, federal agencies, and other key stakeholders to reduce the

health and environmental impacts of consumer products (PSI, 2009). The PSI is a national, membership-based nonprofit committed to reducing the health, safety, and environmental impacts of consumer products across their lifecycle with a strong focus on sustainable end-of-life management. Currently, PSI is involved in the following product categories:

- Appliances Containing Refrigerants
- Auto Switches
- Batteries
- Carpet
- Electronics
- Fluorescent lighting
- Gas cylinders
- Household Hazardous Waste
- Junk Mail
- Mattresses
- Medical sharps
- Packaging
- Paint
- Pesticides
- Pharmaceuticals
- Phone books
- Radioactive devices
- Solar Panels
- Thermostats
- Tires

The New York Product Stewardship Council was founded in 2009 by the New York State Association for Solid Waste Management. The mission of this Council is to promote product stewardship as the priority policy for solid waste management, thereby shifting the waste management system from one focused on government-funded and ratepayer-financed waste diversion to one that relies on product stewardship to reduce public costs and drive improvements in product and packaging design that promotes environmental sustainability.

Extended Producer Responsibility (EPR) is a mandatory type of product stewardship that places responsibility for end-of-life product management on the producers instead of the public. EPR uses legislative authority and financial incentives to encourage manufacturers to design environmentally friendly products by holding producers responsible for costs associated with managing their products at the end of their life. The NYSDEC defines EPR as a mandatory type of product stewardship that includes, at a minimum, the requirement that the producer's responsibility for their product extends to post-consumer management of that product and its packaging. There are two related features of EPR policy: (1) shifting financial and management responsibility, with government oversight, upstream to the producer and away from the public sector; and (2) providing incentives to producers to incorporate environmental considerations into the design of their products and packaging. Product stewardship can be a powerful driver for the reduction of waste volume and toxicity. By placing the responsibility for end-of-life management on the manufacturer, these programs ensure that end-of-life impacts of the product or package are considered during the earliest stages of design. Product stewardship programs create incentives for manufacturers to redesign products and packaging to be less toxic, less bulky and lighter, as well as more recyclable. Reducing material use and toxicity and increasing recycling

results in significant environmental, economic, energy, and greenhouse gas (GHG) reduction benefits.

As discussed in Section 4.10, the NYS Rechargeable Battery Recycling Act (Article 27, Title 18 of the Environmental Conservation Law) was signed into law on December 10, 2010. The law requires manufacturers of covered rechargeable batteries to collect and recycle the batteries statewide in a manufacturer-funded program at no cost to consumers. Most rechargeable batteries contain toxic metals that can be released into the environment when improperly disposed. The NYS Electronic Equipment Recycling and Reuse Act requires manufacturers to provide free and convenient recycling of electronic waste to most consumers in the state. The Act also identifies disposal bans that require adherence.

On December 18, 2013 the Governor signed the Mercury Thermostat Collection Act of 2013 into law. This legislation adds a new Title 29 to Environmental Conservation Law (ECL) Article 27, "Mercury Thermostat Collection Act" and provides for the mandatory collection and environmentally sound management of mercury thermostats. Homeowners will now have more convenient opportunities for the safe drop-off and recycling of out-of-service mercury thermostats, thereby diverting them from being improperly disposed of in the trash, ultimately ending up in landfills and at municipal waste combustion facilities.

### 5.2.8 Sustainability Initiatives

Sustainability initiatives are the policies and procedures a company or organization adopts to demonstrate a commitment to environmentally-friendly practices. Currently, UCRRA has implemented a food waste and yard waste composting facility at the Ulster transfer station. By eliminating tonnage that is sent to a landfill, they have reduced the amount of truck miles that would otherwise have been needed to transfer the food and yard waste. The materials are then composted for reuse on farmers' fields and residents' gardens. The use of compost helps to revitalize the soil and eliminates the need to spread fertilizer. In 2018 alone, the Agency processed 3,536 tons of source-separated organics. By composting this material, the Agency removed 101 tractor trailer transport vehicles from the road that would have traveled (43,733 miles cumulatively) to and from Seneca Meadows Landfill for disposal. Each truck would have held approximately 35 tons per trip, traveling 466 miles round trip. This represents a conservation of nearly 9,595 gallons of diesel fuel, which prevented 97.67 metric tons of carbon dioxide from transportation. Further, by composting this material, 229,849 kilograms of methane pollution (from landfill disposal) was prevented in 2018. Since the program's inception in 2012, 9,762 tons of food waste have been composted, 279 tractor trailers trips were reduced, conserving 26,505 gallons of diesel, preventing 270 metric tons of CO<sub>2</sub> and 634,530 kilograms of methane.

In addition to the composting program, the Agency has implemented several sustainability initiatives with staff and daily operations. The following is a comprehensive list of the



**changes that have been made and current techniques utilized to be more environmentally friendly:**

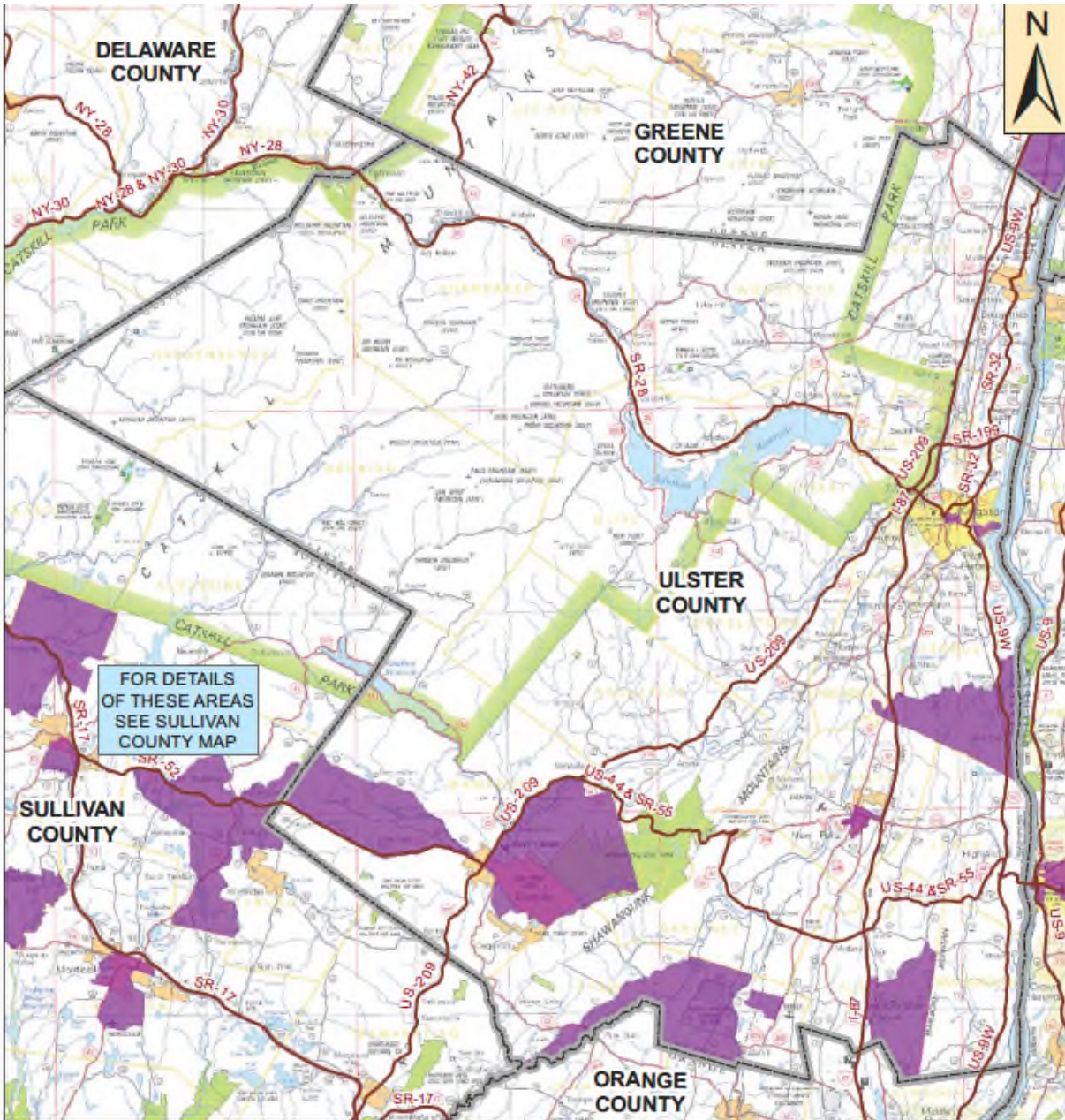
- **Agency vehicle for administration staff and fuel-efficient hybrid vehicles**
- **Agency has adapted more electronic filing systems over paper filing systems**
- **The Administration office composts all food scraps and uses compostable service ware for board meetings**
- **A small garden for staff has been created using compost from the organic's recovery facility**
- **The offices use sustainably forested, recycled content copy paper, recycled content trash bags, purchase recycled content paper products, and eco-friendly cleaning products when practical**
- **The administration office also recycles film plastics, toner cartridges, and deposits beverage containers using the CLYNK program**
- **UCRRA participated in a program through Central Hudson to switch to energy efficient lighting in all of the buildings**

**In its operations, the Ulster County government is committed to reducing waste production, reusing and recycling old materials, and following green procurement policies when new materials are purchased. The County also supports the mission of the Ulster County Resource Recovery Agency (UCCRA) which is "to provide its constituency with a comprehensive program for managing solid waste, which is consistent with New York State's Hierarchy for materials management, in an economically sound and environmentally safe manner." Ulster County Legislature proposed legislation to make it mandatory for large generators to compost food scraps. Materials must be composted on site or sent to a composting facility. Ulster County has several sustainability initiatives that focus on green purchasing, energy usage and climate protection, and eliminating or reducing potential toxins and pollutants from entering the environment.**

**Ulster County was awarded a \$261,000 grant from the NYS Regional Economic Development Council (2016) to expand and improve the operation and commercial viability of the composting facility at the Ulster County Resource Recovery Agency (UCCRA) in Kingston, NY. This funding will provide compost bins for commercial customers, identify and map food service operations and institutional generators within the UCRRA service, purchase and install a bagging machine to increase the marketability of finished compost, and establish a pilot organics recovery program at the Ulster County Law Enforcement Center.**

### 5.2.9 Local Environmental Justice

**Environmental justice means the fair treatment and meaningful involvement of all people regardless of race, color, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. Environmental justice, under the NYSDEC Policy 29 aims to enhance public participation and the review of environmental impacts from proposed construction of facilities in environmental justice communities, and to reduce disproportionate environmental impacts in overburdened communities. The map below identifies the environmental justice areas within Ulster County.**



This computer representation has been compiled from supplied data or information that has not been verified by EPA or NYSED. The data is offered here as a general representation only and is not to be used for commercial purposes without verification by an independent professional qualified to verify such data or information.

Neither EPA nor NYSED guarantee the accuracy, completeness, or timeliness of the information shown and shall not be liable for any loss or injury resulting from reliance.

Data Source for Potential Environmental Justice Areas:  
U.S. Census Bureau, 2000 U.S. Census

#### Legend

- Potential EJ Area
- County Boundary

0 2 4 6 8 10 Miles

SCALE: 1:350,000

For questions about this map contact:  
New York State Department of  
Environmental Conservation  
Office of Environmental Justice  
625 Broadway, 14th Floor  
Albany, New York 12233-1500  
(518) 462-8556  
ej@ga.dec.state.ny.us



**The Agency is required to follow all laws, rules, and regulations mandated by Federal, State, and Local agencies pertaining to waste management and recyclables. The Solid Waste Planning Commission is extremely proactive in learning about emerging technologies, environmental concerns, and implementing ways to enhance the reduction of waste within the County without infringing on any laws or communities. The Agency works closely with the Solid Waste Planning Commission to help enforce and maintain Ulster County's solid waste initiatives and waste management practices.**

**The Ulster County Recycles outreach program strives to reach all audiences of Ulster County with recycling and composting education and solid waste environmental literacy. Promotions for educational tours, classes, and other programs reflect their commitment to serve all geographic areas of Ulster County and reflect efforts to reach underserved audiences such as low-income families and other minority groups. Educational programs are offered at no charge to residents. To aid in serving the Agency's mission to reach underserved audiences, UCRRA aims to improve its print media resources to be more inclusive of the Spanish-speaking population in Ulster County.**



## 6 REGIONALIZATION

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The Agency retained Cornerstone in 2017, on the behalf of the counties of Greene, Ulster, and Sullivan, to prepare an engineering feasibility study addressing the possible formation of a new Greene, Ulster and Sullivan (GUS) Solid Waste Management Authority.

Formation of a new Solid Waste Management Authority was being considered with the goals of improving waste management operations, creating efficiencies among the three counties, and the potential for reduction of both long-haul truck miles and their associated greenhouse gas emissions. Currently, each of the three counties has existing systems in place for the management of waste and recyclable materials. Formation of the new Authority was predicated upon the expectation that the combination of the various county and UCRRA assets under one organization will facilitate a greater level of operational efficiency and allow the new Authority to provide a broader range of services. Aggregating the material managed into one entity will create a stronger negotiating position than can currently be obtained through each county maintaining independent operations and will create new opportunity to take advantage of waste management technologies that would now be possible with a larger quantity of materials managed.

Summarized in this section are the results from the March 2018 Feasibility Study for the formation of GUS. Creating a single authority among the three counties that would comprise GUS creates a larger geographical area where logistical synergies can be created. Outlying communities of one county may be able to take advantage of closer disposal options that exist within the adjoining county, an option previously unavailable. Aggregating solid waste volumes can result in a better position for negotiation of disposal contracts, since larger solid waste volumes may result in lower disposal fees. Similarly, the recyclable materials collected within each county may result in a better position with recycling markets. All three counties will have access to Authority educational outreach programs, resulting in a more unified educational platform. Additionally, in the current absence of local disposal facilities, waste from all three counties is transported long distances for disposal. Together, the waste generated from all three counties creates the potential for “in-Authority” facilities to manage organics, recyclables and solid waste to be financially and environmentally viable.

In evaluating the feasibility of establishing GUS, Cornerstone performed a general overview of the waste management operations of each of the three entities in order to:

- Observe the general compatibility of the waste management systems within each operating unit.
- Evaluate the extent to which each entity manages materials relative to population and national statistics.

- **Perform a high-level review of annual operating costs including transportation and disposal.**
- **Identify the potential for environmental enhancements resulting from the combination of operations of the three existing entities.**

**Site visits were conducted at each county to meet with county solid waste management directors and staff, to observe the facilities infrastructure, and to evaluate the geographical spacing.**

**In review of the proposed operating area of GUS, Cornerstone found that the combined area of Greene, Ulster and Sullivan counties are compatible for the logistics of moving material within the operating area. The area is linear in nature with Ulster County sitting between Greene County to the north and Sullivan County to the south. All three counties are located on the west side of the Hudson River, so having to move material across the river will not be an issue. The highway infrastructure is excellent with I-87 NY Thruway running north and south through Greene and Ulster Counties. Route 17 provides a highway corridor running east to west in Sullivan. Secondary routes are well maintained for industrial and commercial activities in the Hudson Valley and Route 17 corridor in Sullivan County. All three counties are influenced by the Catskill Mountains making much of the west side of GUS operating area limited to state and county routes to service this area.**

**Primary transfer stations operating in the proposed GUS area are well-positioned to the secondary transfer stations and other town transfer stations and/or drop-off centers to be serviced by GUS. Most of the secondary transfer stations and town drop-off centers fall within a 20-mile radius of a primary transfer. There are a few town transfer stations and/or drop-off areas located about 30 miles from a primary or secondary transfer station, all located on the western side of the operating area and in the Catskill Mountain Range. The combining of these fixed assets may offer better and more efficient truck routes to service some of the rural town drop-off centers. During the site visits, buildings and operations equipment appeared to be well-maintained and in good condition.**

**A major reason for combining with other counties is to increase the overall volumes of waste the Authority will manage. Currently, each county is handling between 60,000 to 100,000 tons of MSW annually. Independently, each county does not have the tonnage that is required to make constructing an energy from waste or similar facility financially viable. The capital and operational costs would be to immense, and the tipping fee, in order to recoup investments, would be upwards of \$200/ton or more. However, combining the counties would allow the new Authority to process around 250,000 tons which would allow tipping fees to be in a more economical range and make constructing a local facility a viable option. Even if a local facility or landfill was not constructed, having the large volume of waste would help when trying to contract landfills and haulers for disposal by**



**guaranteeing them a higher volume of MSW. The increased tonnage from combining with other counties would be more attractive to private entities offering alternative waste technologies as well. As stated above, by guaranteeing a larger waste volume to a particular disposal company, whether it is a landfill, biomass, or waste-to-energy facility, the Authority may receive better cost savings per disposal ton for the planning unit.**

**Based upon the information reviewed for this study, the formation of a multi-county, Greene, Ulster and Sullivan (GUS) Solid Waste Authority would be a feasible project. The synergies demonstrated in demographics, operating area, operations, and comparable assets, that all the necessary components for a successful Solid Waste Authority exist.**

**A presentation of the feasibility study was made to each county and the public during legislative meetings. Following this study, the Agency also retained the services of Richard McCarthy from Environmental Capital to perform a financial feasibility study. Despite the efforts and understanding that the formation of GUS is feasible, not all parties involved were convinced that the timing to move forward with the new authority was right.**

**As noted in other sections of this report, UCRRA currently manages approximately 100,000 tons of municipal solid waste and 16,000 tons of recyclable material each year. The GUS Feasibility Study indicates for calendar 2016, that the three counties managed approximately 244,000 tons of MSW/C&D combined and 20,825 tons of recyclable material. The report determined, based on this quantity of material, that just by applying UCRRA's current management practices to this quantity of material would result in a savings of more than \$1,000,000 each year to the new authority in fuel costs alone. The development of a local facility or facilities would result in a significant environmental benefit through the reduction in greenhouse gas emissions.**

## 7 ALTERNATIVES EVALUATION AND SELECTION

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This section will present a discussion of commercially proven waste management technologies and practices which, while not currently used in the planning unit, could be integrated into the current material management program. Feasibility evaluations of these technologies and selected technologies to implement into the 10-year plan are included. The proven waste management technologies and practices currently being employed in the planning unit include dual stream collection and MRF for recyclables, yard waste and organics composting, transfer stations, and long-haul trucking of MSW, C&D, and biosolids for landfill disposal. Other potentially feasible proven technologies and practices discussed below include local landfilling, enhanced organics diversion, energy from waste, MSW composting practices, pyrolysis/gasification, and biomass technologies.

Multiple waste management technologies and practices are in use today to address the treatment, storage, and disposal of solid waste. Several of these are currently employed by the planning unit, such as transfer stations and hauling to MSW landfills. Other potentially feasible technologies and practices that are anticipated to be evaluated in an effort to minimize disposal quantities, minimize discrete cost, and possibly generate alternative energy include diversion, composting, regional landfilling, and thermal processing facilities. The combination of technologies and practices utilized by a planning unit are dependent on many factors, the most important being integration with existing facilities, access, and economics, all of which will be considered as new or alternative technologies are evaluated.

The following sections provide an evaluation of the various technologies available for the storage, treatment, and disposal of solid waste generated and collected.

### 7.1 Waste Export

Waste export within New York has been a major concern for transfer stations across the state over the last few decades.

According to the NYSDEC, landfilling of solid waste will continue to be a necessary part of integrated solid waste management systems, since there will always be a need to dispose of waste that cannot be economically reused, recycled, or incinerated for energy recovery.

As of December 2017, there were 27 active MSW landfills in New York State. At the end of 2014, the landfills had approximately 160 million tons of capacity remaining including capacity constructed and that which was not yet constructed but permitted to be constructed. This equates to approximately 23 years of capacity at 7.9 million tons disposed of per year in New York State. Recent closures of solid waste management facilities and

landfills in nearby states, especially Massachusetts, has resulted in an influx of waste being imported to NYS which is quickly diminishing the lifetime capacity of landfills.

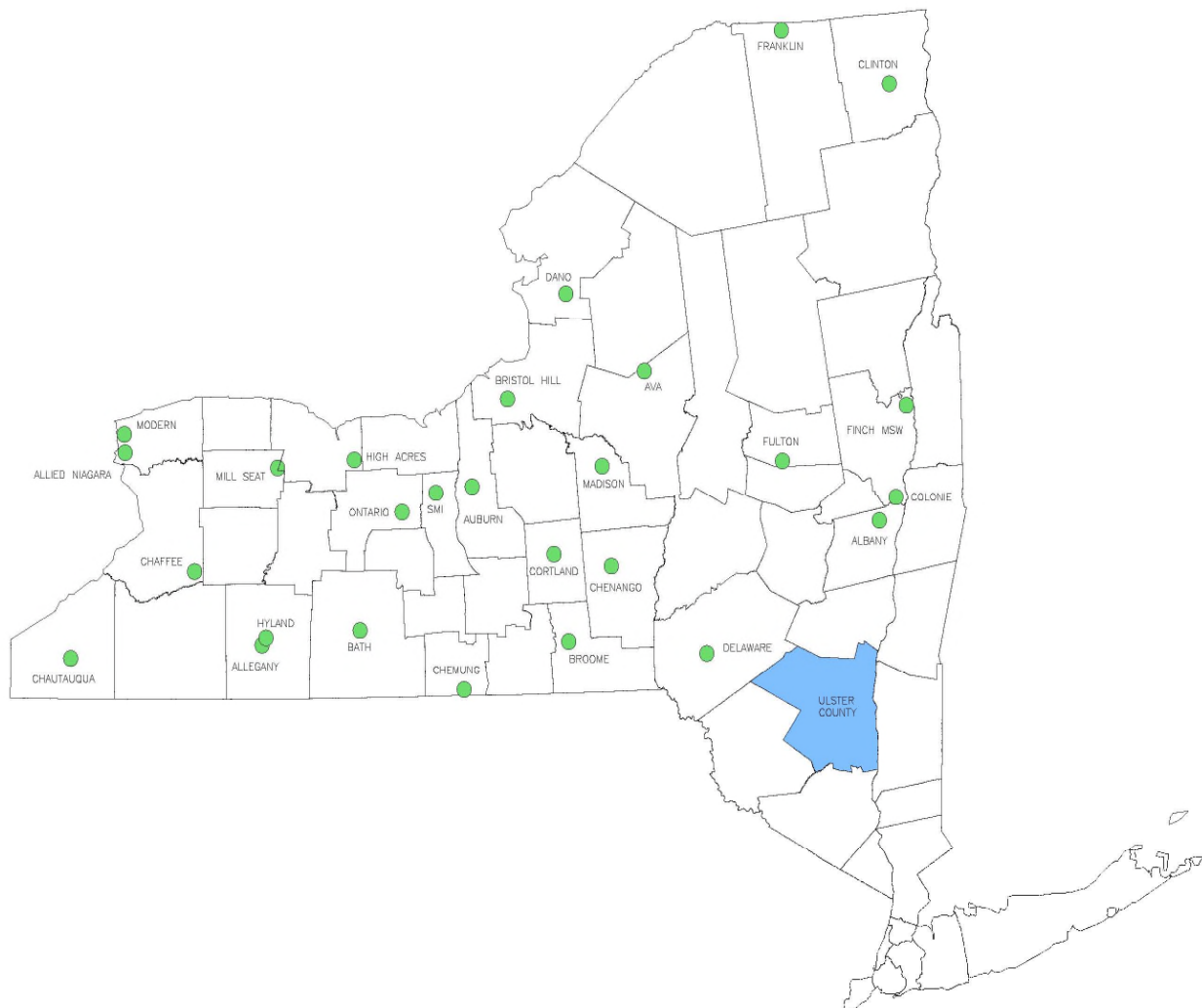
It is important to note that while the above state-wide remaining disposal capacity appears to be adequate for New York State for the near term, not all of these facilities are available to UCRRA, or available at comparable cost to UCRRA's current disposal fees. Some of the facilities, like Madison County for example, limit waste to in-county generators only. Other facilities, because of their particular circumstances have standard tip fees that are measurably higher than those currently paid by UCRRA. The driving distance to more than half of the other state landfills would be longer than is currently travelled increasing fuel consumption and greenhouse gas from vehicle emissions.

Based on a separate study performed by Cornerstone in 2018, the total remaining permitted capacity of the 27 landfills active in NYS is greater than the 2014 estimate stated above. Cornerstone's 2018 study yielded approximately 253 million tons of total remaining permitted capacity. This would provide 32 additional years of capacity at a disposal rate of 7.9 million tons per year. The table below presents the landfills in NYS and the travel distance to each landfill from Ulster TS. It also notes if the landfill would accept waste from UCRRA and the constructed/permitted capacity of the landfill based on the 2017 annual reports submitted to the NYSDEC.

Landfill	Miles to IF from Ulster Transfer Station	Would accept waste from UCRRA Y/N	Available Constructed or Permitted capacity as of 2017 (cy)
Albany	61	Y	906,533
Allegany	276	N	0
Allied Niagara	348	N	4,377,302
Auburn	223	N	268,864
Ava	177	N	24,959,853
Bath	233	Y	1,321,245
Bristol Hill	213	N	2,375,888
Broome	145	N	10,967,972
Chaffee	304	Y	5,660,000
Chautauqua	358	Y	8,415,908
Chemung	181	Y	7,231,880
Chenango	122	N	1,864,265
Clinton	213	Y	5,583,555
Colonie	77	Y	10,350,000
Cortland	177	N	1,142,309
DANC	216	Y	14,723,533
Delaware	77	N	597,509

<b>Landfill</b>	<b>Miles to IF from Ulster Transfer Station</b>	<b>Would accept waste from UCRRA Y/N</b>	<b>Available Constructed or Permitted capacity as of 2017 (cy)</b>
<b>Finch</b>	<b>101</b>	<b>Y</b>	<b>5,254,167</b>
<b>Franklin</b>	<b>226</b>	<b>Y</b>	<b>2,084,861</b>
<b>Fulton</b>	<b>100</b>	<b>Y</b>	<b>6,527,099</b>
<b>High Acres</b>	<b>271</b>	<b>Y</b>	<b>48,090,000</b>
<b>Hyland</b>	<b>373</b>	<b>Y</b>	<b>383,510</b>
<b>Madison</b>	<b>172</b>	<b>N</b>	<b>9,584,876</b>
<b>Mill Seat</b>	<b>297</b>	<b>Y</b>	<b>32,400,000</b>
<b>Modern</b>	<b>358</b>	<b>Y</b>	<b>20,590,000</b>
<b>Ontario</b>	<b>247</b>	<b>Y</b>	<b>9,445,345</b>
<b>Seneca Meadows</b>	<b>239</b>	<b>Y</b>	<b>18,148,340</b>

Below is a figure depicting the active landfills in New York State. Ulster County is identified by the blue filled in area.



Source: NYSDEC

Trucking MSW to landfills within the state, to destinations in neighboring states, or even to Canada consumes a large portion of transfer station's revenues brought in by tipping fees. These transportation and disposal costs typically result in 40 to 60% of a facility's expenses. Increased fuel prices and limited capacity continue to drive the cost higher every year. Long haul trucks and trailers can typically carry 30 to 35 tons of waste per load and average

around 5-6 miles per gallon. Hauling waste long distances not only consumes fossil fuels but exhaust emissions contribute to greenhouse gas problems. UCRRA has recently received new bids for hauling and disposal. Seneca Meadows Landfill won the disposal bid and has contracted with UCRRA for the next 5 years, terminating on December 31, 2024. Disposal to Seneca Meadows was \$23 per ton in 2019. Rates for disposal increased by approximately 10 percent with the new contract.

Based on UCRRA's current average MSW tonnages of 100,000 tons per year and an average of 32.5 tons of waste being loaded per long trailer to Seneca Meadows Landfill, it would require 3,077 trips to dispose of the material. The table below assumes trucks averaging 5 miles per gallon and a cost of \$2.75/gallon of fuel. A cost saving of \$580,000 would be immediately recognized per year by disposing of MSW locally with the County.

	<b>SMI</b>	<b>Local</b>	<b>Difference</b>
Round trip miles	470	70	400
Miles per year	1,446,190.00	215,390.00	1,230,800.00
Fuel cost per year	\$795,404.50	\$215,390.00	\$580,014.50

The table below summarizes the emission differences traveling to Seneca Meadows Landfill compared to a local landfill in pounds per year. The US EPA emission standards were utilized for calculations, assuming a full truck and trailer load, emitting at the emission limit for trucks year 2007 or newer.

<b>Engine Emissions (lbs per year)</b>					
<b>Destination</b>	<b>NOx</b>	<b>PM10</b>	<b>PM2.5</b>	<b>VOC</b>	<b>CO</b>
Seneca Meadows Landfill	6,376.499	318.825	318.825	4,463.549	494,178.682
Landfill within Ulster County	949.691	47.485	47.485	664.784	73,601.080
<b>Difference</b>	<b>5,426.808</b>	<b>271.340</b>	<b>271.340</b>	<b>3,798.765</b>	<b>420,577.601</b>

Another way to export waste is by railroad. Waste export by rail typically involves either the development of new direct to rail facilities or, more likely, transmodal transportation. This is especially true given the rural setting of much of NYS. This means that trucks would need to transport the container loaded with MSW to a rail spur where it would then be transferred to a railcar for shipment. Once the railcar has reached the final destination, the container may need to be transferred to a second truck which would bring the full container to a landfill for disposal. Using a rail system that can haul high volumes of containers would limit the amount of fuel consumption and emissions from trucking long distances to



landfills. In addition, using a railroad system would help to limit truck traffic on the roads and alleviate congestion especially in high density population areas. Currently, the closest railroad line is CSX located approximately 4 miles from the Ulster Transfer Station. According to information provided by the Ulster County Solid Waste Management Improvement Commission in their 2016 study, a railcar can hold four containers of MSW, each holding approximately 21 tons of waste. A feasibility study, to fully understand the possible rail spur tie in locations, financial costs, and environmental impacts, has been proposed as part of the implementation plan and schedule.

## 7.2 Local Landfill

Disposal of MSW to a local landfill may not always be an option for cities and municipalities given the vast size of NYS and their proximity to an active landfill. Currently, there are only 27 active landfills in NYS and the majority of them are located northwest of Ulster County as depicted on the map in Section 7.1. Siting a local regional landfill is a time-consuming process. Finding available land and travel routes to avoid congesting local streets and avoid interfering with water supply sources can prove difficult. Permitting and construction of the landfill and infrastructure can take years, especially with political and local community apprehension to having a landfill in “their backyard”. No MSW landfill has been sited in the state since Ava Landfill in 2004. This landfill was sited as a result of Oneida-Herkimer Solid Waste Authority realizing that exporting waste was no longer a viable solution and that the Authority needed to dispose of their waste locally. In NYS, the minimum liner required for an MSW landfill is a double composite liner with primary and secondary leachate collection and removal systems. The double composite liner system allows for the performance of the system to be regularly evaluated to ensure adequate protection of groundwater resources. NYSDEC reports show that all active landfills in NY are in compliance with leak performance standards.

Having a local landfill will help to bring stabilization of transportation and disposal costs to the Agency. Decreased trucking costs and lower fuel consumption will allow for the Agency to see an immediate cost savings. In an effort to maximize the landfill lifetime expectancy and lower tipping fees, it would be in the best interest of the residents and the Agency to divert as much waste as possible from being landfilled. This includes organics, food, and yard waste, which can be composted, as well as recycling all applicable products and materials.

The EPA summarizes modern landfills as well engineered facilities that are located, designed, operated, and monitored to ensure compliance with federal regulations. Solid waste landfills must be designed to protect the environment from contaminants which may be present in the solid waste stream. The landfill siting plan, which prevents the siting of landfills in environmentally-sensitive areas, as well as onsite environmental monitoring systems, which monitor for any sign of groundwater contamination and for landfill gas, provide additional safeguards. All MSW landfills must comply with the federal regulations

**in 40 CFR Part 258 (Subtitle D). Some of the standards for modern landfills include the following:**

- **Location restrictions** – Ensure that landfills are built in suitable geological areas away from faults, wetlands, flood plains, or other restricted areas.
- **Composite liners requirements**—include a flexible membrane (geomembrane) overlaying two feet of compacted clay soil lining the bottom and sides of the landfill, which protect groundwater and the underlying soil from leachate releases.
- **Leachate collection and removal systems**—sit on top of the composite liner and remove leachate from the landfill for recirculation or treatment and disposal.
- **Operating practices**—include compacting and covering waste daily with several inches of soil to help reduce odor; control litter, insects, and rodents; and protect public health.
- **Closure and post-closure care requirements**—include capping landfills and providing long-term care and maintenance.
- **Corrective action provisions**—control and clean up landfill releases and ensures groundwater protection standards are being satisfied.
- **Financial assurance**—provides funding for environmental protection during and after landfill closure.

**An approximate cost to site and construct a landfill is on the order of \$30 to \$40 million dollars. Financial responsibilities include property acquisition, designing, permitting, construction, operations equipment, scale, administration offices, maintenance building, and other miscellaneous infrastructure.**

**A feasibility study has been included in the implementation plan and schedule to recognize all costs associated with permitting, designing, and construction of a landfill. As well as identifying possible site locations, impacts to the environment and impacts to the local community should be identified. Host community benefits should also be evaluated as part of the study.**

### **7.3 Organics Diversion**

**Organics diversion is the removal of biodegradable materials from the waste stream. Some materials include green yard waste, food waste, and food soiled paper products. There are two general types of organic processing technologies: composting and anaerobic digestion. Both types utilize microbial degradation where microorganisms break down the organic fraction of MSW into valuable products (e.g. energy and soil amendment/compost).**

UCRRA currently has a composting facility at the Ulster transfer station where food waste is combined with wood chips. Decomposition of the materials is enhanced through aeration blowers. The following section is a general description of a few common types of organic processing technologies.

### **Composting:**

Composting is a biological decomposition process that reduces organic material (in the presence of oxygen) to produce a peat-like humus. Composting processes can range from very simple pile systems, generally only suitable for composting yard and garden waste, to more complex self-contained systems that are capable of processing mixed organics.

Composting is utilized in many jurisdictions for processing food scraps, food soiled paper, yard and garden waste, animal by-products, manure, and biosolids. Composting generates heat which is used to destroy pathogens within the compost pile, provided a certain duration and temperature are maintained. Composting is also often used after anaerobic digestion to produce a more stable and marketable organic rich compost.

#### **7.3.1 Composting Process Overview**

Although different technologies may utilize different configurations, there are three basic phases to a composting process.

1. **Pre-processing of the organic waste is usually implemented prior to the composting stage. Pre-processing may include particle size reduction, screening, and the addition of amendments. The goal of pre-processing is to create a more homogeneous input into the system, to extract contaminants (such as metals, plastics and glass), and to create a feedstock that has the necessary ratio of carbon to nitrogen. The addition of amendments is especially important, because there is little opportunity to alter the mix once the material has been incorporated into piles, laid in beds, or sealed in the compost vessel. Feedstock ‘recipes’ must, therefore, be fairly consistent to allow for proper operation. Required equipment includes a grinder and/or shredder, screens (such as trommels), and mixing equipment (this may be combined with the grinder if the feedstock is soft enough).**
2. **The primary composting phase involves the actual breakdown of the material. Once the pre-processing is complete, the organic waste is loaded into the compost system (piles, vessels or beds). In the case of in-vessel systems, the sealed composting unit is then connected to the aeration and monitoring equipment. In covered aerated static pile systems, the piles are built over the aeration system, which may be a series of in-ground vents, or a network of air distribution piping. During this phase, the temperature, oxygen, and moisture levels in the vessel are monitored and adjusted as needed to maintain the optimum operating conditions. Air and water may be introduced into the vessel via piping systems if the system requires additional air or**

moisture. Excess moisture may be drained off the compost and stored for later use in adding moisture to dry feedstock. Exhaust air is typically run through a biofilter and/or wet scrubber in order to minimize odors.

3. Once the material has finished in the primary composting phase, the material is stabilized and cured in windrows or static piles. During the stabilization phase, continued aeration is necessary to complete the composting process. Aeration may be achieved either by using a forced aeration system such as the system used in covered aerated static pile systems, or by turning the piles on a regular basis. During the curing phase, aeration is not required. Stabilization typically lasts 4-6 weeks and is a minimum requirement, curing can last an additional 4-6 weeks, or as long as is available. Many facilities store curing compost for 12 – 18 months after completion of the primary composting phase.



### 7.3.2 Windrow Composting



Windrow composting consists of placing the mixture of organic materials into long narrow piles, or windrows, which are agitated or turned on a regular basis. Typically, these windrows are three feet high for dense or tightly packed materials such as manures, and 10 to 15 feet high for porous or less dense materials such as yard waste (leaves and branches). In colder climates, windrows tend to be taller and wider to reduce heat loss. The equipment used for turning these windrows determines the size, shape, and spacing of the windrows. Front-end bucket loaders or telescopic handlers with a long reach can build

higher windrows, while turning machines tend to produce low and wide windrows.

Windrows aerate primarily by natural or passive air movement (convection and gaseous diffusion). The rate of air exchange depends on the porosity of the windrow. Turning the rows mixes the materials, rebuilds the porosity of the windrow, and releases trapped heat, water vapor, and gases. This type of compost technology is best suited to composting yard and garden waste. Composting times are typically over six months.

#### *Windrow Composting Advantages and Disadvantages*

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>§ Can handle feedstocks with lower Carbon to Nitrogen (C:N) ratios</li> <li>§ Relatively-low capital costs and low technology requirements (windrow turners, front-end loaders, or farm equipment will suffice)</li> <li>§ Relatively low operating costs</li> <li>§ No electric power needed</li> <li>§ Large amount of industry practical experience</li> </ul>	<ul style="list-style-type: none"> <li>§ Large land area required</li> <li>§ More labor-intensive than aerated static pile, particularly for feedstock with low C:N ratio or porosity</li> <li>§ No odor control, which may require larger buffer area between operation and neighbors</li> <li>§ More challenges to overcome if food waste or biosolids are included due to increased odors and reduced markets</li> <li>§ Exposure to rain, wind, and cold can be problematic</li> </ul>

### 7.3.3 Aerated Static Pile



**This composting approach should have the composting area built on an impermeable surface such as a concrete or asphalt pad with a 2% grade to allow for leachate collection. Each pile can be equipped with a trench-style, concrete aeration floor or perforated pipe that is placed on the ground and compost piles are built on top. The aeration pipes are connected to a blower equipped with a control system to moderate temperature and oxygen content in the pile. The control system tracks operating conditions to determine aeration rates.**

**Condensate and leachate are collected in the trench. Odor is managed by maintaining aerobic conditions in the pile (for positive air systems) or with a simple biofilter made with a wood chip-based medium (for negative air systems). The composting time for this type of system ranges from three to six months.**

#### *Aerated Static Pile Composting Advantages and Disadvantages*

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>§ Forced aeration reduces land requirements and mixing</li> <li>§ Use of negative aeration can help control odors</li> <li>§ Smaller surface area relative to windrows</li> <li>§ Lower operating costs from shorter processing times and less mixing/turning</li> <li>§ Material handling requirements are less than windrow system (less turning required)</li> </ul>	<ul style="list-style-type: none"> <li>§ Slightly higher capital cost for forced-aeration equipment</li> <li>§ Over-aeration can remove moisture</li> <li>§ Feedstock pre-processing requires a higher degree of care; feedstocks must be well mixed and properly sized and moistened</li> <li>§ More operator skill required to manage aeration systems</li> </ul>



§ Aeration systems generally require more complex (three phase) electrical supply

### 7.3.4 Membrane Covered Aerated Static Pile



The covered aerated static pile composting area is typically constructed on an impermeable surface such as concrete or asphalt with a 2% grade to allow for leachate collection. The aeration system design uses a trench built into the impermeable surface to allow for leachate collection and aeration of the pile. The system being shown, GORE® Cover System, operates using positive aeration. The cover is made of a Goretex material that covers the pile and is secured to the ground or support walls on the side of the pile. As air is injected into the pile,

the breathable membrane expands like a balloon to create an in-vessel like environment. The sealed edges create a fully-enclosed system. This membrane allows for the management and retention of moisture, temperature, and odor. The control system measures oxygen and temperature which helps dictate the aeration rate. The composting process consists of the main active phase (4 weeks under GORE® cover), second active phase (2 weeks under GORE® cover) and curing phase (2 weeks without GORE® cover). The residence time for this type of system is approximately 56 days.

#### *Membrane Covered Aerated Static Pile Composting Advantages and Disadvantages*

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>§ Newer facilities use coverall (low cost) buildings for better odor control</li> <li>§ Lower space requirements than windrow systems</li> <li>§ Contained system reduces potential for odor emissions and contaminated storm water</li> </ul>	<ul style="list-style-type: none"> <li>§ Potential steam or dust issues inside the enclosure</li> <li>§ Indoor air must be managed in odor control system prior to release</li> <li>§ Operating and maintenance expertise required</li> <li>§ Moderate to high capital and operating costs</li> </ul>



### 7.3.5 In-Vessel Composting



The in-vessel composting process is similar to covered aerated static pile composting in that the piles are aerated continuously (with a combination of positive and negative air flow) and contained in a vessel. The difference is that the piles are contained in a rigid structure. The vessels are made of concrete, with gasketed and insulated stainless steel doors. The residence time for this type of system is in the order of 28 days with several additional weeks for curing. The vessel is equipped with an

aeration floor and condensate/leachate collection system. The control system tracks operating conditions to optimize aeration rates. Exhaust gases are treated with wet scrubbers and biofilters to control odors.

#### *In-Vessel Composting Advantages and Disadvantages*

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>§ High degree of odor control except for receiving area and when doors are opened</li> <li>§ Lower space requirements</li> </ul>	<ul style="list-style-type: none"> <li>§ Operating and maintenance expertise required</li> <li>§ Higher capital and operating costs.</li> <li>§ Some vendors claim shorter residence time (1 to 4 weeks) and used in combination with another composting method/technology.</li> </ul>

#### *Comparison of Composting Approaches*

Composting Approach	Odor & Nuisance Control Requirements	Maintenance Requirements	Staffing Needs	Capital Cost	Operating Cost	Space Requirements	Typical Processing Time
Windrow	Low – Moderate	Low	Low – Moderate	Low – Moderate	Low – Moderate	Large	4 to 12 months
Aerated Static Pile	Low – High	Low	Low – Moderate	Low – Moderate	Low – Moderate	Low – Moderate	3 to 6 months
Covered Aerated Static Pile	High	Low	Low – Moderate	Moderate – High	Low – Moderate	Low – Moderate	2 to 4 months
In-Vessel Composting	High	Moderate – High	Low – Moderate	High	High	Low – Moderate	1 to 4 months

### 7.3.6 End Products - Compost

The end product of composting is a peat-like humus material that is suitable as a soil amendment. End markets for processed organics from municipal solid waste sources typically include soil amendments used for landscaping purposes, soil erosion control, and horticultural/agricultural applications. Some rural solid waste authorities stockpile processed organics at their landfills for future use as final topsoil cover to promote vegetative growth once the landfill is closed. Some of the benefits of using compost include improvements in soil quality which in turn yield healthier plants, grass, and crops. Compost adds valuable nutrients to soils, acting as a natural slow release fertilizer, reducing the need for chemical fertilizers that may be carcinogenic, and saves money by using the compost amendments. The compost material helps to retain moisture content, reducing the time and costs of watering. Compost helps to reduce and prevent pests and diseases, increasing soil life while aiding in balancing soil pH. By composting in the backyard or by bringing organics to a composting facility, one can reduce the overall tonnage needed to be trucked to a landfill, ultimately extending the life of a landfill and reducing GHGs.

Most States have compost quality standards that dictate acceptable uses and distribution of compost from municipal solid waste sources. Pathogen levels are typically regulated to protect public health. Having markets for the compost material is critical to the success of any organic processing operation. Producing high quality compost usually results in more available markets and higher revenues for the end products.

### 7.3.7 Financial

The following table summarizes the expected capital and operating costs for the three most likely composting scenarios for Ulster County and applies those figures to calculate the unit processing cost. The facilities are assumed to be constructed on paved surfaces. For annualized capital costs, an interest rate of 5% over 15 years was used on equipment and construction costs. Operational costs predominantly include labor and equipment maintenance and replacement. Ulster County roughly receives 100,000 tons per year of MSW, with organic waste comprising approximately 40% of the waste stream. A comprehensive organics diversion program should be able to capture 50-70% of total organics from the waste stream. For Ulster County, a reasonably sized organics processing facility should range from 25,000 to 33,000 tons per year, not accounting for seasonal fluctuations. For unit cost estimate purposes, the design capacity was assumed to be 30,000 tons per year.

Description	Aerated Static Pile	Membrane Covered Aerated Static Pile	In-Vessel Composting
Capital Cost	\$16,995,000	\$17,830,000	\$27,780,000

Operating Cost	\$975,000	\$1,280,000	\$1,460,000
Total Annualized Capital	\$1,640,000	\$1,720,000	\$2,290,000
Total Annual Cost	\$2,615,000	\$3,000,000	\$3,750,000
Cost per Ton	\$87	\$100	\$125

## 7.4 Anaerobic Digestion

**Anaerobic digestion (AD) is the biological decomposition of organic materials in the absence of oxygen. The process is carried out by anaerobic micro-organisms that convert carbon-containing compounds to biogas, which consists primarily of methane (CH<sub>4</sub>) and carbon dioxide (CO<sub>2</sub>), with trace amounts of other gases. For the process to take place efficiently, six key process parameters must be carefully controlled. These are pH, temperature, carbon to nitrogen ratio (C:N), organic loading ratio, retention time, and reaction mixing.**

**For MSW applications, AD focuses on the organic or compostable portions of the waste stream. Communities that produce large quantities of organic waste (such as food processing plants) can benefit from AD.**

**A wide variety of microorganisms are involved in all stages of the AD process. AD can be performed either under mesophilic conditions or thermophilic conditions. Mesophilic bacteria operate at an optimum temperature range of 95-104°F, while thermophilic bacteria prefer warmer conditions, in the range of 122-131°F. While retention times will depend on process design specifics and feedstock characteristics, typical retention times range between 12 and 30 days. Physical mixing of the feedstock is important as it provides improved contact between the organic material and bacteria, prevents the formation of dead zones and scum layers, and promotes effective heat transfer.**

**Since AD works only on the organic fraction of the waste stream, pre-treatment processes are undertaken to separate the organic fraction from the inorganic and other materials that are not suitable for treatment in the AD process. Pre-treatment is also required to achieve:**

- **Removal of non-digestible materials which take up unnecessary space in the digester;**
- **Provision of a uniform small particle size in the feedstock to promote efficient digestion;**
- **Protection of the plant and equipment from waste components that may cause physical damage; and**
- **Removal of materials which may adversely affect the quality of the digestate.**

**Mechanical pre-treatment can involve the following processes:**

- **Trommels/screens for the removal of the oversized fraction;**
- **Hammer mill (or similar) for size reduction of the feedstock; and**
- **Shredding/mixing of the feedstock (or use of a Hydro-pulper as a wet pre-treatment process to break down the organics and separate out the heavy and light non-organic fractions)**

**Following pre-treatment, the organic fraction is loaded into the reactor where digestion takes place. In the first stage of digestion, organic material is broken down by microbes, called acid formers, to produce fatty acids. In the second stage of the digestion process, generally referred to as methanogenesis, another group of microbes called methane producers convert the fatty acids into biogas, which generally contains about 55% methane and 45% carbon dioxide, along with other trace gases. The material remaining is a partially stabilized organic material that can be used as a soil amendment or separated into solid and liquid fractions. The liquid fraction can be disposed in a wastewater plant or used as liquid fertilizer if there are agricultural users nearby. The solid digestate can be dewatered and composted for full stabilization. The insoluble solids in the digestate are comprised of non-digestible inert material, non-digestible organic materials and microbial biomass.**

**AD systems allow for organic materials to be processed in a controlled environment. This allows for the capture of odors, methane collection, and digestate to be used as fertilizer or soil amendments. Diverting the organics from a landfill helps to limit odor complaints, saves air space, decreases methane release, and provides a reusable energy source for potential revenue.**

#### **7.4.1 Dry AD Systems**

**Dry AD technologies (“dry AD”) or high solids AD is commonly used for source separated organics (SSO) that contain woody materials such as yard and garden waste. Dry AD has a similar biological process to wet AD; however, for wet AD the substrate is a slurry (<15% total solids by mass) and for dry AD the substrate is 40-50% total solids. This falls well within the range of available high “solid” or “stackable” substrates such as MSW, food waste, yard waste, and other organic substrates. The higher solids content equates to higher transport efficiencies in comparison to wet systems where 90% or more of the feedstock transported is simply water. Numerous proprietary technologies have been developed to commercially execute dry AD. Most notable amongst these technologies are “garage style” digesters and assisted plug flow digesters.**

**In “garage”-style dry digesters, biomass is placed inside a sealed garage-like container with or without the use of material separation. Once the container is full, the environment is sealed, oxygen is removed, the temperature is increased to approximately 98°F, and the substrate is “irrigated” with microbially enhanced liquids for a period of 25 to 30 days**

(which varies based upon substrate and technology purveyor). Liquid percolate (leachate) infiltrates the biomass and is collected through floor drains.

The methane rich biogas is continuously collected from the container. The biogas can be used to generate heat, electricity or both as in a traditional wet AD system. After the reaction period, the remaining waste is removed (either to landfilling or composting), and a new batch is inserted. This method has few mechanical parts and thus offers the advantage of needing limited material separation prior to digestion. This process has feedstock flexibility that comes at the cost of gas production efficiency.

The lack of stirring during the process means that not all materials are exposed to the methanogenic microbes vital to AD reactions, and the gas production suffers as a result. Depending on the preprocessing, dry AD can achieve a portion of the efficiencies (as low as 50% to 60%) in comparison to production rates achieved by wet AD technologies. Specifically, garage-style digesters convert available total solids to biogas with roughly half the efficiency of wet AD systems. However, there is more flexibility as wet and dry materials that can be processed.

An advantage of dry AD systems is that they can handle larger amounts of contaminants (i.e., metal, glass, plastics, woody material, etc.). This is also a disadvantage at the back end of the process as the end product needs additional handling and processing and the contaminants affect the marketability of the end product.

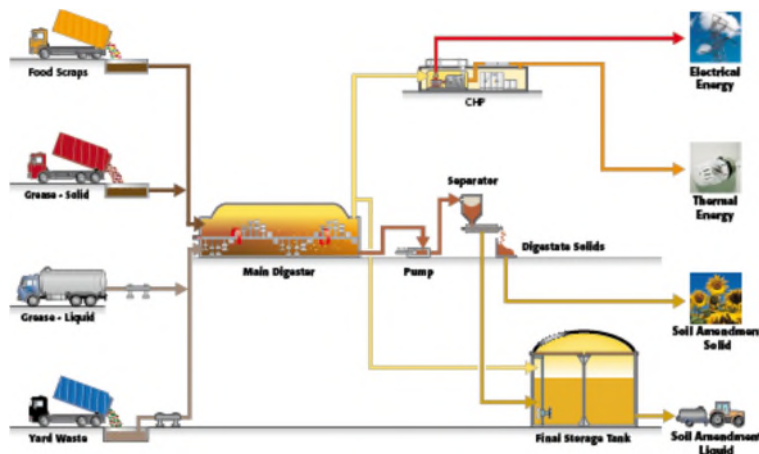


### Example of Garage Style Dry Anaerobic Digestion

Source: BioFerm Energy Systems <http://biofermenergy.com/>

### 7.4.2 Assisted Plug Flow High Solids AD Systems

An assisted plug flow high solids AD system is a technology that falls between wet and dry AD systems and addresses the issue of material conversion efficiencies. This is accomplished by moving the substrate along the length of a sealed container using “paddle arms”. The “paddle arms” serve two purposes. First, they move the substrate along the length of the reactor at a pre-determined rate allowing the substrate a digester retention time of 25 to 30 days. Second, they mix the substrate somewhat as it is moved such that the material is exposed to the bacteria (e.g., methanogenic bacteria) that generate biogas. This method results in a volatile solids destruction of 90% according to The Eisenmann Corporation, a leading international provider of biogas and anaerobic digestion technologies. If this efficiency is reached, it would be comparable to wet AD systems for conversion efficiency. However, the “paddle arms” require that material entering the digester be separated and preprocessed sufficiently prior to digestion in order to limit damage that non-digestible materials might cause to the digester. This preprocessing equipment can raise capital costs, and greatly increase operational and maintenance costs as the mechanical and operation costs are higher.



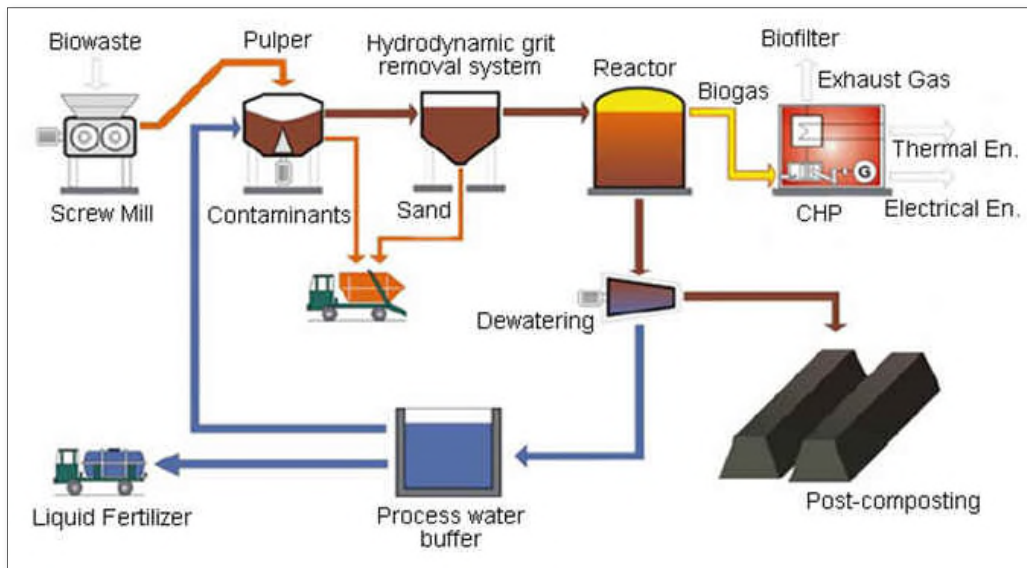
Example of Assisted Plug Flow Dry AD

Source: Eisenmann Corporation. <http://www.eisenmann.us.com/>



### 7.4.3 Wet AD Systems (including Co-digestion Systems)

Wet AD systems basically follow the processes listed above but have a feedstock input that is less than 15% total solids. Below is a flow diagram that illustrates the various stages in a wet AD process.



Flow Diagram of a Typical Single Stage Wet AD Process

Co-digesting waste water treatment residuals (biosolids) with source-separated organics from a MSW stream is being tested and considered in many waste water treatment plants. Sanitary waste water treatment plants that have anaerobic digesters have similar back-end processes for managing solids from the waste water treatment plant. Co-digestion requires source-separated organics to be processed into a slurry before it is fed into an anaerobic digestion unit. The source-separated organics and biosolids are then be blended, mixed, and fed into the co-digestion unit (i.e. anaerobic digestion reactor).

The digesters are typically pancake-style digesters with fixed covers and insulation to conserve heat, thus minimizing energy consumption for maintaining process temperatures. As with other anaerobic digestion alternatives, a hot water boiler and heat exchangers would be used to heat the feedstock and maintain process temperatures within the digesters. Mixing would be provided by submersible mixing equipment configured with tank roof access for maintenance and repairs while the tank remains in service.

As with the other technologies, biogas generated with co-digestion is recovered, cleaned, compressed, stored, and used to produce electrical power or upgraded for injection into a natural gas distribution system. Heat recovered would supplement natural gas consumed in maintaining digestion process temperatures. Benefits to co-digestion compared to other AD approaches for the organic fraction of MSW are as follows:

- Utilize available digester capacity at waste water treatment plants;
- Increase biogas quality and quantity that could be sold and/or used to supplement energy use at the plant; and
- Increase reaction time in the anaerobic digestion reactor.

#### 7.4.4 Summary of Organic Processing Technologies

The table below summarizes the scalability, suitability, feedstock preference, and output considerations for the various organic processing technologies discussed.

*Organic Processing Comparison*

Technology Type	Scalability	Suitability	Typical Feedstock	Outputs
Composting (Varied Approaches)	Can be scaled up or down as many technologies are modular	Suitable for SSO from various sectors, cannot process all MSW	SSO and yard waste	§ Compost
Dry Anaerobic Digestion (Garage Style)	Can be scaled up by adding more modular units	Suitable for SSO and organics collected with yard waste, cannot process all MSW	SSO and yard waste	§ Biogas § Compost or soil amendment
Assisted Plug Flow High Solids AD	Can be scaled up by adding more lines	Most suitable for SSO and biosolids, cannot process all MSW	SSO and biosolids	§ Biogas § Compost or soil amendment
Wet AD Systems (Co-digestion with biosolids)	Can be scaled up by adding more digesters. Some cities are using available capacity at treatment plants to process organics.	Most suitable for SSO and biosolids, cannot process all MSW	SSO and biosolids	§ Biogas § Compost or soil amendment

The Dry AD process can accommodate a wide variety of feedstocks, including the entire MSW stream. Ulster County receives roughly 100,000 tons per year of MSW, so this number was used as the design capacity and utilized for cost estimations. This technology is only appropriate for reducing the quantity of organics present in the material stream through methanogenic decomposition. There are communities that process waste in this manner to reduce greenhouse gas emissions from disposal. The majority of materials (assuming limited source-separation) entering the bunker remain intact throughout the process. Developing a Dry AD system can incur significant unit processing costs since a sizeable proportion of materials require further management (typically landfilling). Dry AD systems can be successful for processing organics (food and yard waste) collected from sources with contamination challenges as capital costs can be managed by reducing facility size, gas production can be maximized by increasing the proportion of decomposable material, and operating costs can be managed by limiting the quantity of residuals produced.

Annual revenue was primarily based on electricity sales at \$90 per MWh at 85% availability. For annualized capital costs, an amortization rate of 15 years at 5% interest was used. Annual operating costs for the facility include facility labor and maintenance, as well as prospective disposal costs for the residuals (estimated to be 75% of incoming feedstocks). The following table summarizes the expected capital and operating costs for Ulster County's conceptual MSW dry anaerobic digestion facility.

Description	Costs
Capital Cost	\$58,750,000
Annualized Capital Cost	\$5,700,000
Operating Cost	\$3,700,000
Total Annual Cost	\$9,400,000
Total Annual Revenue	\$500,000
Net Annual Cost	\$8,900,000
AD Unit Cost + Prospective Disposal Cost	\$89 + 0.75(\$8,300,000)
Cost per Ton	\$151

A reasonably-sized Wet AD facility for Ulster County would range from 12,000 to 15,000 tons per year, not accounting for seasonal fluctuations. For unit cost estimate purposes, the design capacity was assumed to be 15,000 tons per year.

Securing additional feedstocks typically lowers the unit processing cost (\$ per ton) of the facility. Desirable feedstocks for a Wet AD facility include commercial sector organics, food processing and fats, oils and greases (FOG) from food retail establishments. Securing reliable feedstocks from commercial sources generally adds stability to the AD process, as commercial feedstocks are typically more consistent than residential sources.

Annual revenue was primarily based off electricity sales from combusting produced gas at \$90 per MWh assuming 85% availability. For annualized capital costs and annual operating costs, an amortization rate of 15 years at 5% interest was used. The following table summarizes the expected capital and operating costs for Ulster County's conceptual wet anaerobic digestion facility.

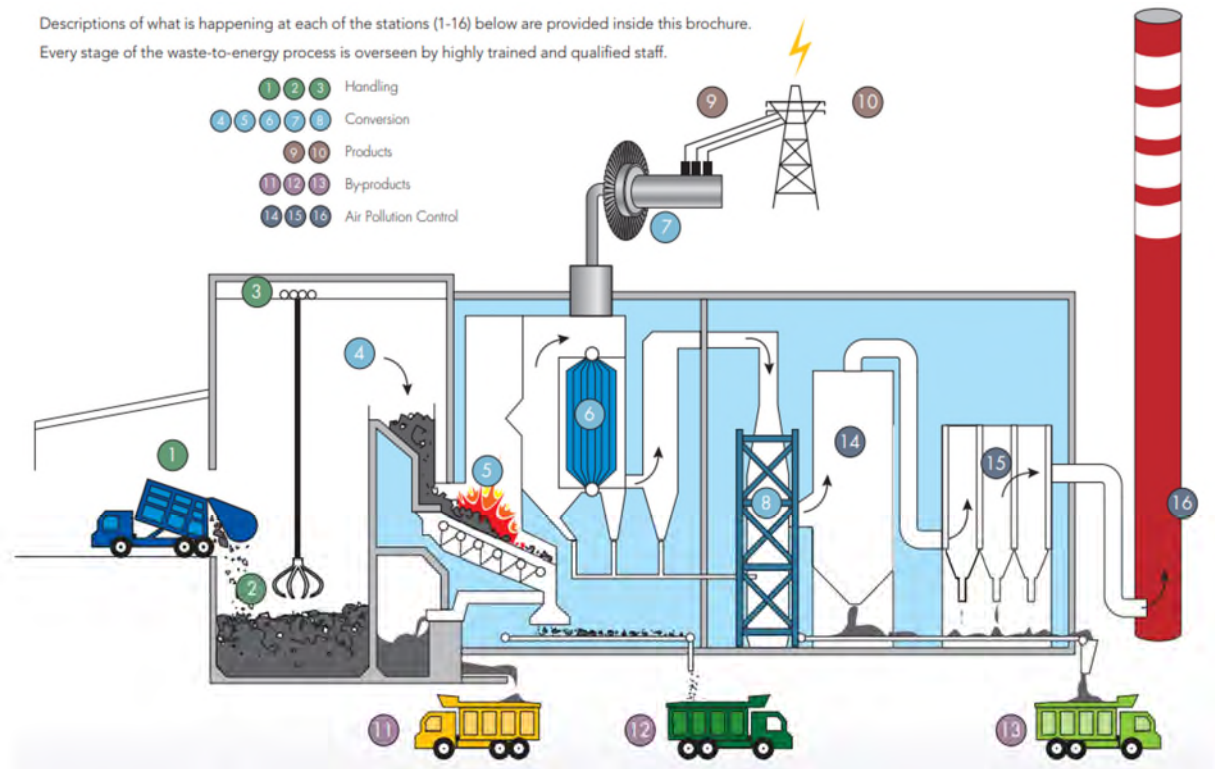
Description	Costs
Capital Cost	\$15,750,000
Annualized Capital Cost	\$1,500,000
Operating Cost	\$1,500,000
Total Annual Cost	\$3,000,000
Total Annual Revenue	\$150,000

Net Annual Cost	\$2,850,000
Cost per Ton	\$189

## 7.5 Energy from Waste

Energy from waste occurs when MSW is completely combusted or incinerated at nearly 850 degrees Celsius. Combustion occurs with oxygen in slight stoichiometric excess to rapidly complete a thermal oxidation reaction. The products of combustion are heat, an ash residue, and an off gas made up of predominantly nitrogen (N<sub>2</sub>), carbon dioxide (CO<sub>2</sub>), and water vapor (H<sub>2</sub>O). The off gas must be treated to meet regulatory emission requirements for chemical pollutants and particulates. Combustion is an exothermic (net heat output) process, therefore, the technology lends itself to heat recovery in many applications. Heat generation can be used in boilers or converted to power via turbines. The combustion process is highly developed commercially and is available in numerous vendor-specific designs.

The most common direct combustion technology for biomass is stoker boiler technology. Various forms of stoker boilers have been employed since the 1920s. Stoker boilers employ direct fire combustion of solid fuels with excess air, producing hot flue gases, which then heats water to produce steam in the heat exchange section of the boiler. The steam is used directly for heating purposes or passed through a steam turbine generator to produce electricity. The energy recovery capabilities of the boiler system can be further enhanced when excess heat is used in a district heating/energy infrastructure. While this technology is conventional and well proven, it is not as environmentally friendly as other alternative technologies. This type of technology typically produces more fly ash and air emissions than other technologies, and usually requires close monitoring and management. Combustion technologies can process most types of MSW but operate more efficiently with dry feedstock materials that have medium to high calorific value. The figure below illustrates the process flow of municipal solid waste through a mass burn waste-to-energy facility.



**The process of generating electricity in a mass burn waste-to-energy plant has seven stages:**

- 1. Waste is dumped from garbage trucks into a large pit or tipping floor. Recyclables are separated out of the waste piles if applicable.**
- 2. A giant claw on a crane grabs waste and dumps it into a combustion chamber.**
- 3. The waste (fuel) is burned, releasing heat.**
- 4. The heat turns water into steam in a boiler.**
- 5. The high-pressure steam turns the blades of a turbine generator to produce electricity.**
- 6. An air pollution control system removes pollutants from the combustion gas before it is released through a smoke stack.**
- 7. Ash is collected from the boiler and the air pollution control system. Ferrous and non-ferrous metal can be sorted from the ash and sold to market. Recent advances in technology have resulted in the ability to recover a higher percentage of metals from the waste stream. Ash can be used as daily cover in landfills or sent to landfills for final disposal. Countries in Europe are utilizing the ash in certain cement applications and roadway construction.**

**Mass burn technologies have the ability to process biosolids from wastewater treatment plants. Depending on the moisture content of the biosolid, a mass burn facility can process biosolids up to 20% of the plant's design capacity. Generally, mass burn facilities are able to process more biosolids the lower the moisture content.**

According to the EPA, for every ton of garbage processed at an Energy from Waste (EfW) facility, approximately one ton of emitted carbon-dioxide equivalent in the atmosphere is prevented. This is because the trash burned at an EfW facility doesn't generate methane, as it would at a landfill, the metals that would have been sent to the landfill are recycled instead of thrown out, and the electricity generated offsets some of the greenhouse gases that would otherwise have been generated from coal and natural gas plants.

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>§ Minimal pre-processing required of incoming materials and can process most feedstocks</li> <li>§ Well established technology with reliable facilities and developed industry expertise</li> <li>§ Reduction in residual waste volume by up to 90%</li> <li>§ Potential revenue from sale of heat and electricity.</li> </ul>	<ul style="list-style-type: none"> <li>§ Process produces emissions that require proper treatment and management</li> <li>§ Residuals include fly ash and bottom ash waste that require treatment and proper disposal</li> <li>§ Capital costs are high, requiring energy markets and significant economies of scale to ensure financial feasibility</li> <li>§ High level of public opposition due to air pollution concerns</li> </ul>

The mass burn system can thermally process much of Ulster County's waste stream. This includes the majority of the 100,000 tons of MSW, as well as approximately 18,000 tons of wood waste from the C&D sector. Any prospective facility should consider seasonal fluctuations in the waste stream when determining design capacity. The financial analysis below assumes a facility designed to manage the collected MSW and would utilize stored wood waste from the C&D sector during the months when waste disposal rates are below the annual average.

High level capital costs for mass burn Waste-to-Energy (WTE) facilities are typically between \$900 and \$1300 per ton of incoming feedstock. Larger facilities generally have lower unit capital costs due to economies of scale. Since Ulster County's current intake is considered small, the unit capital cost is likely on the higher end of the cost scale. Operating costs for similarly sized facilities are approximately \$150 per ton based on Ulster County's current intake of 100,000 tons per year. Annualized costs were conducted using an amortization period of 15 years at an interest rate of 5%. Estimated revenues include sales of electrical energy at \$90 per MWh (at 85% availability) and metal sales at \$80 per ton. The following table summarizes the expected capital and operating costs of a prospective mass burn WTE facility for Ulster County.

Description	Costs
Capital Cost	\$150,000,000
Annualized Capital Cost	\$14,400,000
Operating Cost	\$15,070,000
Total Annual Cost	\$29,470,000



Total Annual Revenue	\$4,570,000
Net Annual Cost	\$24,900,000
Cost per Ton	\$249

Based on a conversation with a representative from Covanta, to construct a “small” waste-to-energy facility capable of handling 1,200 tons per day, a capital investment of approximately \$200,000,000 would be required.

A waste-to-energy facility in Spokane City went online in 1991 capable of handling 800 tons of MSW per day has a current tip fee of \$108 per ton. They generate 22 megawatts of electricity annually, enough to power 13,000 homes. The receive about \$5 million in power sales annually. The process burns the solid waste at 2500 °F and reduces the solid waste 90 percent by volume and 70 percent by weight. Residual inert ash residue is sent to a landfill for disposal.

A key concept to understand is that as the total tons processed per year increases, the cost per ton decreases. The table below relates to costs for an Energy from Waste facility. The numbers were provided by Wheelabrator Technologies. Tip fees for a facility processing around 100,000 tons of MSW per year would be between \$175 – \$200 per ton.

**Daily Tons per Day vs. Tip Fee**

Plant Size (Ton per Day)	250	500	1,000	1,500	2,250	3,000
Tip Fee - High	\$225.00	\$145.00	\$100.00	\$80.00	\$63.00	\$60.00
Tip Fee - Low	\$205.00	\$125.00	\$80.00	\$60.00	\$43.00	\$40.00

## 7.6 Thermal Processes

### 7.6.1 Gasification

Gasification is a partial combustion process in an oxygen-deficient atmosphere (i.e., the oxygen level is limited to convert the solid material). The resulting products are a carbon-rich ash and a synthetic gas (syngas) stream. The syngas is composed of various gases – hydrogen, carbon dioxide, and other trace gas. Gasification processes that use pure oxygen are able to obtain higher syngas energy content (300 to 380 British thermal units/standard cubic foot (Btu/scf)) as a result of the elimination of the nitrogen present in atmospheric air. While gasification is a more complex technology, it allows for the recovery of value products (i.e., syngas) which can be used to generate chemicals (fuels, alcohols, etc.). Catalytic conversion via the Fischer-Tropsch process and other methods can also be used to generate “drop-in” biofuels such as synthetic gasoline, renewable natural gas (RNG), and

diesel. The syngas can also be used to drive gas engines and turbines to generate electricity that could be used internally or exported to a local electricity grid.

The benefits of gasification are considered to be increased efficiency, greater variety of end products, and fewer back-end pollution control requirements. Commercially, gasification technologies have not proven to be economically and operationally comparable to traditional combustion processes such as mass burn because of its high complexity and high capital costs.

This technology is best suited to processing homogeneous materials that are pre-shredded and have a medium-to-high energy content such as biomass, plastics and shredded tires.



Gasification Plant in Lebanon,  
Tennessee (64 tpd, 1.8M kWh)

However, there are still challenges that affect continuous and reliable operation of these facilities. This technology is more complex and more expensive than other thermo-chemical technologies and has limited proven commercial viability and success. The photograph to the left shows the external view of a gasification plant operating in Lebanon, Tennessee. There is also another facility that is not fully operational in Edmonton, Alberta, Canada that is designed to process 100,000 tpy of MSW.

The ash produced is considered carbon-rich with a potential market value. Using MSW as a feedstock results in an ash material that likely contains inert materials that would affect the marketability of the end product. It remains to be seen whether a market for the ash end product exists.

Feedstocks for gasification systems include the bulk of the MSW stream. As such, the 100,000 tons of MSW, as well as approximately 18,000 tons of wood waste from C&D managed by Ulster County each year, are considered in developing the facility design capacities. The cost analysis below takes into consideration the collected MSW and would potentially utilize stored wood waste from the C&D sector during months with lower disposal rates in order to maintain consistent syngas production.

High-level capital costs for standard gasification facilities are typically between \$900 and \$1,800 dollars per ton. Capital costs for controlled air gasification facilities are between \$900 and \$1,500 per ton. Larger facilities generally have lower unit capital costs due to economies of scale. Since Ulster County's current intake is relatively small, the unit capital cost is likely on the higher end of the cost scale. Annual revenue was primarily based off electricity sales, estimated at \$90 per MWh (at 85% availability), and metal sales at \$80 per ton (Standard Gasification Only). The following table summarizes the expected capital and operating costs of prospective standard and controlled air gasification facilities.

Description	Standard Gasification	Controlled Air Gasification
Capital Cost	\$203,550,000	\$162,840,000
Annualized Capital Cost	\$19,610,000	\$15,690,000
Operating Cost	\$14,750,000	\$14,750,000
Total Annual Cost	\$36,320,000	\$31,785,000
Total Annual Revenue	\$5,390,000	\$5,090,000
Net Annual Cost	\$30,928,964	\$26,695,000
Cost per Ton	\$262	\$226

## 7.6.2 Gasification – Conversion to Ethanol

This technology is based on Enerkem's gasification process that converts non-recyclable and non-compostable waste into biofuels (methanol and ethanol) or other chemical products. It can be implemented to complement existing recycling and composting systems or may require construction of a mixed waste Material Recovery Facility (MRF).

The Enerkem gasification technology is deemed to be competitive in price with landfilling and is much less capital-intensive than waste incineration. The process differs from other gasification processes due to its considerably lower operating temperatures, which results in lower energy requirements and costs.

The waste feedstock must undergo pre-processing prior to the gasification process. This includes screening out contaminants and inerts, reducing particle size via shredding, and drying the material, which can incur significant capital costs if the feedstock is not source-separated.

The remaining carbon-rich residues are subsequently fed into the Enerkem gasification vessel, where it is converted into syngas, which is constantly drawn out of the gasification vessel. This process is conducted in a low temperature and low oxygen environment,

eliminating the possibility of combustion. Residual solids (10-20% of feedstock by weight) are removed to be disposed of in a landfill.

The syngas is then purified by a sequence of cleaning and conditioning steps. Lastly, the purified syngas is converted into biofuels, such as ethanol via the use of catalysts. Variables such as temperature and pressure can be precisely controlled at every level of the Enerkem gasification process.

Feedstocks for an Enerkem gasification system is the residual MSW, which is primarily made up of materials such as plastics or synthetic textiles. An estimated 25% of total MSW was considered for Enerkem design capacity calculations. Considering the current rate of 100,000 tons of MSW Ulster County manages annually, a design capacity of 25,000 tons per year was utilized. However, additional feedstocks could potentially be drawn from neighboring counties to increase output of products.

Annual revenue was primarily based on ethanol sales, at a price point of approximately \$1.2 per gallon (80% of current ethanol prices). Enerkem states that capital costs generally reside around \$1,600 per annual processing ton. Ethanol production is estimated at 77.6 gallons per ton of residual waste processed. Annualized capital costs and annual operating costs were determined using an amortization rate of 15 years at 5% interest. The following table summarizes the expected capital and operating costs for a proposed Ulster County gasification facility that produces ethanol. It should be noted below that the unit processing cost does not including pre-processing costs which are estimated to be \$80 per ton, based on the preprocessing facility that was built in Edmonton, Alberta.

Description	Costs
Capital Cost	\$46,000,000
Annualized Capital Cost	\$6,885,000
Operating Cost	\$2,040,000
Total Annual Cost	\$6,885,000
Total Annual Revenue	\$2,910,000
Net Annual Cost	\$3,975,000
Cost per Ton	\$159 + Preprocessing Cost (~\$80/t)

It should also be noted that depending on the incoming feedstock composition, pre-processing costs may be significant (\$800 - \$900 per operating ton), which amounts to an additional \$20 million in capital costs. Moreover, this would involve additional pre-processing and operating costs.

### 7.6.3 Pyrolysis

**Pyrolysis (similar to a plastic-to-oil process developed by The Agilyx Corporation) is a thermal depolymerization process that converts plastic waste into a synthetic crude oil using heat, motion, and careful reactions. It has the potential to divert plastics destined for the landfill, displace virgin fossil fuel production, and reduce greenhouse gas emissions. Hydrocarbons including crude oil produced by pyrolysis can be marketed as feedstock for oil refineries, petrochemical processors, or consumed on-site.**

**Plastic waste makes up roughly 15% of all waste destined for landfills. This plastic could be processed back into its primary hydrocarbon constituents and used as feedstock for refineries.**

**Compared to incineration, demonstration facilities similar to Agilyx's solution have been able to achieve performances that are five times more efficient in terms of energy efficiency, carbon intensity, and resource productivity. However, capital and operational costs remain relatively high as this technology is still in development.**

**Plastic feedstocks must be pre-processed, including shredding and densification in order to optimize the pyrolysis process.**

**After pre-processing, the batch of densified plastic is placed into a large, airtight processing vessel. The vessel is subsequently heated with a light industrial burner, depolymerizing the plastic (solid → liquid → gas). Through a combination of temperature and vacuum, the plastic gases are pulled from the vessel into a central condensing unit where the off gases are cooled and condensed into a synthetic crude oil.**

**The synthetic crude oil is transferred to an exterior tank to be transported to an oil refinery, and feedstock impurities are separated out into a char.**

**Outputs from pyrolysis can achieve marketable crude oil (75-82%), solid carbon residuals (7-12%), non-condensable gases (7-10%), and dissolved organics (less than 1%). These performance specifications are based on a clean feedstock.**

**The facility design is based on Agilyx's Gen 5 processing system which was designed to process up to 17,000 tons per year of plastics (50 tons/day). Ulster County receives roughly 15,000 tons per year of plastics. For unit cost purposes, the design capacity was rated at 17,000 tons per year, as per existing Gen 5 Agilyx demonstration facility.**

**Assessment of end-markets will need to be considered prior to construction. Bi-product revenues were determined using a crude oil price of 56.00 USD/Barrel. End market availability for petroleum products will need to be considered, as well as suitability for refining.**

Description	Costs
Capital Cost	\$39,750,000
Annualized Capital Cost	\$3,830,000
Operating Cost	\$1,385,500
Total Annual Cost	\$5,500,000
Total Annual Revenue	\$1,450,000
Net Annual Cost	\$4,050,000
Cost per Ton	\$238

#### 7.6.4 Plasma Arc Gasification

Plasma arc gasification uses extremely high temperatures and low oxygen to gasify waste into hydrogen, methane, and other potential fuels. High temperatures are created by running an electric current through a low-pressure gas stream, producing a plasma stream at 9,000 –27,000 °F. The products of this process are a recyclable slag and combustible gases. The slag produced by this process is inert and will not leach metals or other contaminants into the environment.

Feedstocks for gasification systems include the bulk of the MSW stream. As such, the 100,000 tons of MSW, as well as approximately 18,000 tons of wood waste from C&D managed by Ulster County each year, are considered in developing the facility design capacities. The cost analysis below takes into consideration the collected MSW and would potentially utilize stored wood waste from the C&D sector during months with lower disposal rates in order to maintain consistent syngas production.

High level capital costs for standard gasification facilities are typically between \$900 and \$1,800 dollars per ton. Capital costs for controlled air gasification facilities are between \$900 and \$1,500 per ton. Larger facilities generally have lower unit capital costs due to economies of scale. Since Ulster County's current intake is relatively small, the unit capital cost is likely on the higher end of the cost scale. Annual revenue was primarily based off of electricity sales, estimated at \$90 per MWh (at 85% availability), and metal sales at \$80 per ton (Standard Gasification Only). The following table summarizes the expected capital and operating costs of prospective standard and controlled air gasification facilities.

Description	Standard Gasification	Controlled Air Gasification
Capital Cost	\$203,550,000	\$162,840,000
Annualized Capital Cost	\$19,610,000	\$15,690,000



Operating Cost	\$14,750,000	\$14,750,000
Total Annual Cost	\$36,320,000	\$31,785,000
Total Annual Revenue	\$5,390,000	\$5,090,000
Net Annual Cost	\$30,928,964	\$26,695,000
Cost per Ton	\$262	\$226

## 7.7 MSW Composting

The Integrated Processing System (IPS) Composting System is an enclosed in-vessel, agitated, aerated, automated composting process with biofiltration odor control. It transforms dewatered biosolids, municipal solid waste and source-separated organics into high-quality compost products. The system also stabilizes residual waste in mechanical biological treatment. A sustainable solution to today's climate concerns, the IPS system provides landfill diversion, composting process control, and responsible use of organic residuals. The finished product can be sold to residential customers, commercial businesses, farmers, or it can be used as daily cover in landfills.

Nearby, Delaware County has a MSW Composting facility which began operations in 2005. The facility was designed to co-compost 6,700 tons of biosolids and 35,000 tons of organics per year. The MSW is in the range 50% - 60% dry solids. Large items and items that are unable to be composted must be presorted and removed from the feedstock prior to commencing composting sequencing. The MSW is received in a large submerged waste pit when it is then moved by a grapple to a 157-ft long x 14-ft diameter rotating drum type "bioreactor" where it is subjected to physical reduction from the tumbling action for approximately 3 days. To aid in the physical reduction process, as well as to enhance the composting process by adding nitrogen to the high carbon content MSW, liquid biosolids and other liquid wastes recycled from within the facility are sprayed into the drum. After 3 days in the bioreactor the organic (compostable) material in the MSW is sufficiently reduced in size such that it can be effectively screened out without a significant portion of inorganic contaminants. This compostable material is then conveyed to the composting portion of the facility where high solids (>10% DS) biosolids are added to it prior to loading in the BDP bays. The facility incorporates fourteen 10 feet wide x 256 feet long bays and two 100 HP BDP agitators where the material is composted for up to 56 days. The finished compost material then undergoes a refining process to remove remaining contaminants before being sent to the indoor curing facility for up to 90 days. A traditional wood chip type biofilter is used for odor control of the entire facility. The material is then trucked out for final use in agricultural and commercial operations. A summary of the Delaware Composting Project was provided by BDP Industries who designed the facility.

**BDP Industries and Machinex Technologies Inc. prepared a cost estimate to construct and operate a material sorting and agitated bay composting facility capable of handling both organic solid waste and biosolids. Based on UCRRA's throughput of 100,000 tons of MSW per year, it was estimated that this proposed facility would handle 40,000 tons of organic solid waste and 10,000 tons of biosolids annually. Capital investments including engineering services are approximately \$53,000,000 for a turnkey facility. Annual labor costs for operations and maintenance are approximately \$500,000 to \$1,000,000 depending on the number of shifts per day and days operating per week. Annual energy costs are**



**estimated around \$6.2 million. Land acquisition and taxes are not included in the cost, but it is assumed that the facility could be developed on the existing property adjacent to the Ulster Transfer Station. The full scope of work and proposal for the MSW composting facility is provided in Appendix A.**

Bay Aeration system. Photo provided by BDP Industries.

## 7.8 Biomass

**Biomass production is similar to MSW composting in that the process utilizes aerobic or anaerobic decomposition of the organic portions of MSW in order to achieve a useful end product. The main difference between these processes is that Biomass production generally produces a higher energy end-product that is certified at a particular energy rating, which can be combusted for use in processes like powering cement kilns. Biomass production will typically require a more technologically advanced plant and process than MSW composting. The Biomass end product is often referred to as Solid Recovered Fuel (SRF) and is also sometimes called Refuse Derived Fuel (RDF). Biomass is performed through biological treatment; no combustion or incineration occurs. MSW is brought to a facility by haulers. All waste that is allowable by haulers in curbside pickups should be able to be managed at these facilities. Hazardous waste, used oil, source separated recyclables, white goods, and construction debris are not allowed to be brought to biomass plants. MSW will go through an initial screening process using a large rotary drum that will open the trash bags and combine the bagged waste with other non-bagged MSW. Large pieces of waste such as plastic, paper and cardboard are separated from the MSW and set aside for use**

during the refining stage. The remaining waste, including organic waste, is referred to as “underscreen” material. It is smaller in size and goes directly to a holding area. An air circulation system is used to ensure rapid composting of the organic fraction of the waste. The air circulation system blows warm air through the underscreen waste in order to quickly start up the aerobic composting fermentation process. The underscreen material is moved from the holding area and placed on a pre-fabricated concrete floor that contains slots through which processed air is moved. The processed air is comprised of a controlled combination of fresh air and re-circulated warm air, which ensures a consistent breakdown of the waste. This reduces the amount of water in the material leading to a dry paper-like product. After the biological treatment stage, the now dried underscreen material will be re-introduced to the previously removed material in the refinement area of the facility. Using rotary screens, air separators, and magnetic/infrared technology, the material is further separated to remove any metals and PVC plastics that may remain. Metals are sent to a recycling facility, whereas plastics are typically sent to a landfill for disposal. The product is then shredded into smaller pieces resulting in a product that can be used as an alternate fuel replacing traditional fuels, such as coal and petroleum coke. Biomass processing significantly reduces the amount of volume sent to landfills (70-85%) for final disposal and replaces fossil fuels as a fuel source. The fine and inert material that remains is now being used in concrete mixes or as daily cover at landfills. BioHiTech has partnered with Entsorga to implement the HEBioT™ technology. Entsorga West Virginia serves as the first resource recovery facility in the United States to utilize Entsorga Italia’s patented HEBioT™ process. The West Virginia Facility is currently permitted to handle 120,000 tons per year. The Solid Recovered Fuel (SRF) is currently purchased by a cement kiln located 2 miles from the facility at \$30/ton delivered. Another facility is currently permitted in Rensselaer with capacity to handle 130,000 tons per year. Based on cost estimated provide by Dennis Soriano from BioHiTech, a 3-crane facility capable of handle 130,000 tons would require a capital investment approximately \$30,000,000. Additional costs include \$16,000,000 for equipment and \$14,000,000 for a 75,000 square foot building. Cost for land and preparation is not included. Revenues generated will be difficult to assume based the distance required to truck product to end user.

Description	Costs
Capital Cost	\$42,070,000
Operating Cost	\$8,800,000
Annualized Capital Cost	\$4,050,000
Total Annual Cost	\$12,850,000
Annual Bi-Product Revenue	\$2,550,000
<b>Net Annual Cost</b>	<b>\$10,300,000</b>
<b>Cost per ton</b>	<b>\$103</b>

## 7.9 Recycling Technology

The current operations at the Ulster MRF are set up for processing dual stream only. A conversion to single stream would be costly and possibly hinder flow of dual stream processing during construction. A study prepared by Dvirka and Bartilucci Consulting Engineers in February 2011 indicated a capital cost of \$2.4 million to convert the MRF to a single stream recycling operation. Further, contamination issues with single stream recycling strongly suggest that conversion to single stream is not in the Agency's best interest.

The MRF currently suits the needs and tonnages UCRRA handles on a yearly basis. However, as a result of this study being outdated and recent advances in technology over the last few years, a feasibility study has been included within the implementation plan and schedule to evaluate the current infrastructure, upgrades that can be made, and the impact that these upgrades may be able to have on recycling rates. In addition, the study will include evaluation of the current and future markets to the extent possible. The evaluation will occur within 2 years of the new planning period and provide cost estimates for improvements or upgrades to the MRF. Bulk Handling Systems has advanced technology designs for all phases of waste management. The following website link provides an overview of the services and facilities that have been constructed by BHS. <https://www.bulkhandlingsystems.com/materials-recovery-facilities-mrfs/>

## 7.10 Infrastructure upgrades

The Agency has several new design ideas in which they plan to implement during the upcoming planning period at the Ulster Transfer Station. Utilizing the recently purchased parcel of land adjacent to the Ulster TS for expansion, the Agency plans to increase the composting facility and organics management program to meet increased demand for composting materials and in preparation of the NYS and Ulster County legislation for mandatory food waste diversion of large generators. Also, it is intended to construct a new administration building, turning the old administration building into an educational center.

In addition, ideas to construct a year-round HHW recovery center have been discussed. Some residents may not have adequate storage for HHW, and may find it difficult to attend one of the HHW events held throughout the year, which may result in disposal of HHW in the MSW waste stream. With greater availability to dispose of HHW through the use of this additional building, the hope is to divert harmful products out of the waste stream and out of landfills.

## 7.11 Technology Selection

Based on the information provided above related to facility size, required tonnages, and waste stream characterization, three technologies have been selected to pursue in the 10-year planning period. Feasibility studies for siting a local landfill, installing a BioHiTech (biomass) Facility, and waste exportation by railroad will be conducted. A fourth feasibility study related to the materials recovery facility will also be conducted within the first two years of the new planning period. Until these studies have been completed and a full understanding of the pros and cons of each technology has been compiled, UCRRA will continue standard operations. MSW and C&D will be shipped to Seneca Meadows Landfill in northern New York for the next 5-year period. Recyclables will be sent to vendors who provide the best revenue opportunities. Due to recent success of the organics diversion, food waste diversion, and demand for compost from residents, the organics diversion and composting program will be expanded upon. Educational programs and community outreach will be increased to inform residents, businesses, and local institutions of best management practices on how to handle their waste and recyclables in an efficient and environmentally safe manner. The 10-year planning period goals and milestones are outlined in Section 8.

**Technology Summary for Waste Stream Capture and Cost**

<b>Technology</b>	<b>Percent of Waste Stream</b>	<b>Cost per ton</b>
Export to Landfill	100%	\$100-\$120
Export by Rail	100%	\$60-\$120
Local Landfill	100%	\$60-\$90
Composting	30-50%	\$87-\$125
Wet AD	15-25%	\$189
Dry AD	50-60%	\$151
MSW Composting	50-60%	\$125-\$170
EfW	70-90%	\$249
Gasification	70-90%	\$226
Pyrolysis	15-25%	\$238
Ethanol	15-25%	\$239
Biomass	70-90%	\$103

**Waste export is a major issue for every solid waste authority within New York State. With available air space quickly diminishing in the existing permitted landfills, planning units are being forced to look to alternative technologies or disposal locations outside of New York. A possible solution maybe to export waste via a railroad system to distant landfills. Due to the proximity of the Ulster TS to the CSX railroad, a feasibility study has been selected to further pursue the practicability of export by rail.**

**Siting a local landfill within Ulster County is another technology that has been selected for a feasibility study. A landfill will provide a location for disposal of all materials that cannot be otherwise reused or recycled. Trucking materials within the county for disposal will also reduce the greenhouse gas emissions produced from diesel exhaust. The reduction in miles to the final destination will also allow the Agency to see an immediate fuel cost savings.**

**The third technology selected for additional consideration is the BioHiTech biomass technology. This technology allows for 90% of the waste stream to be managed in a reusable or recyclable manner. The estimated cost per ton is also in line with UCRRA's current collected tip fee for disposal to a landfill. Finding a company to ship the solid recovered fuel to may prove to be a challenge as there are not too many industrial plants in the Hudson Valley.**

**The Agency has had great success with their current composting program. Turning food and green waste into a reusable product has helped generate revenue and eliminate organics from being landfilled. By diverting the material, it reduces the amount of trucks required for landfill disposal. The demand for finished compost currently exceeds the ability of UCRRA to produce compost. During the next few years, the composting program will be expanded. Space within the recently purchased land adjacent to the Ulster TS will be utilized for this expansion effort.**

**Wet Anaerobic Digestion only would allow for 15% of the waste stream to be diverted from landfills. Due to the nature of the feedstock required, presorting of the material, and high capital costs, this technology is not being perused.**

**Thermal processes including WTE, gasification, pyrolysis, plastic conversion to ethanol have extremely high capital costs that make these technologies financial impracticable based on current tonnages UCRRA manages. In addition, pyrolysis and ethanol would only address 15-25% of the total waste stream therefore landfilling or another technology would also be required to manage the remaining materials.**

**MSW Composting provides the ability to manage the majority of the waste stream after prescreening has taken place. However, due to relatively high capital costs, this technology will not be further evaluated during the 10-year planning period.**



## 8 IMPLEMENTATION PLAN AND SCHEDULE

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A key component to the LSWMP is the creation of the Implementation Plan and Schedule. The following schedule is a culmination of tasks the Agency anticipates performing and outlines the timeframe for each task to be completed. The Implementation Plan and Schedule provides a general timeline and sequence of all these tasks.

The Plan is considered a living document that will be updated throughout the planning period as elements of the Plan are pursued and implemented, which includes the Implementation Plan and Schedule. Efforts will be made to surpass the timelines laid out in the schedule when possible, particularly regarding the time frame of the feasibility studies and decision to move forward with a selected technology.

### **Solid Waste Management Plan**

- Implementation
- Biennial Updates
- Draft new LSWMP (2029)

### **Law and Legislation**

- Periodic review of Legislation on all levels
- Enforcement of laws
- Collaboration with planning departments

### **Recyclables**

- Continuous monitoring of changing recyclables market

### **Data**

- Continue to submit required reports
- Collect data on all materials managed

### **Finance**

- Debt Service
- Apply for Grants
- Contract renewals

### **Feasibility Studies**

- Landfills
- Mechanical Biological Treatment – BioHiTech/Entsorga

- Infrastructure upgrades to the existing Materials Recovery Facility
- Exporting MSW via railroad system

### **Facility Upgrades and Improvements**

- Residential drop-off center at the Ulster Transfer Station
- Household hazardous waste center
- New administration building

### **Organics Diversion**

- Composting program expansion
- Promote backyard composting and assist with implementation practices to residents, schools and business as needed

### **Education and Outreach**

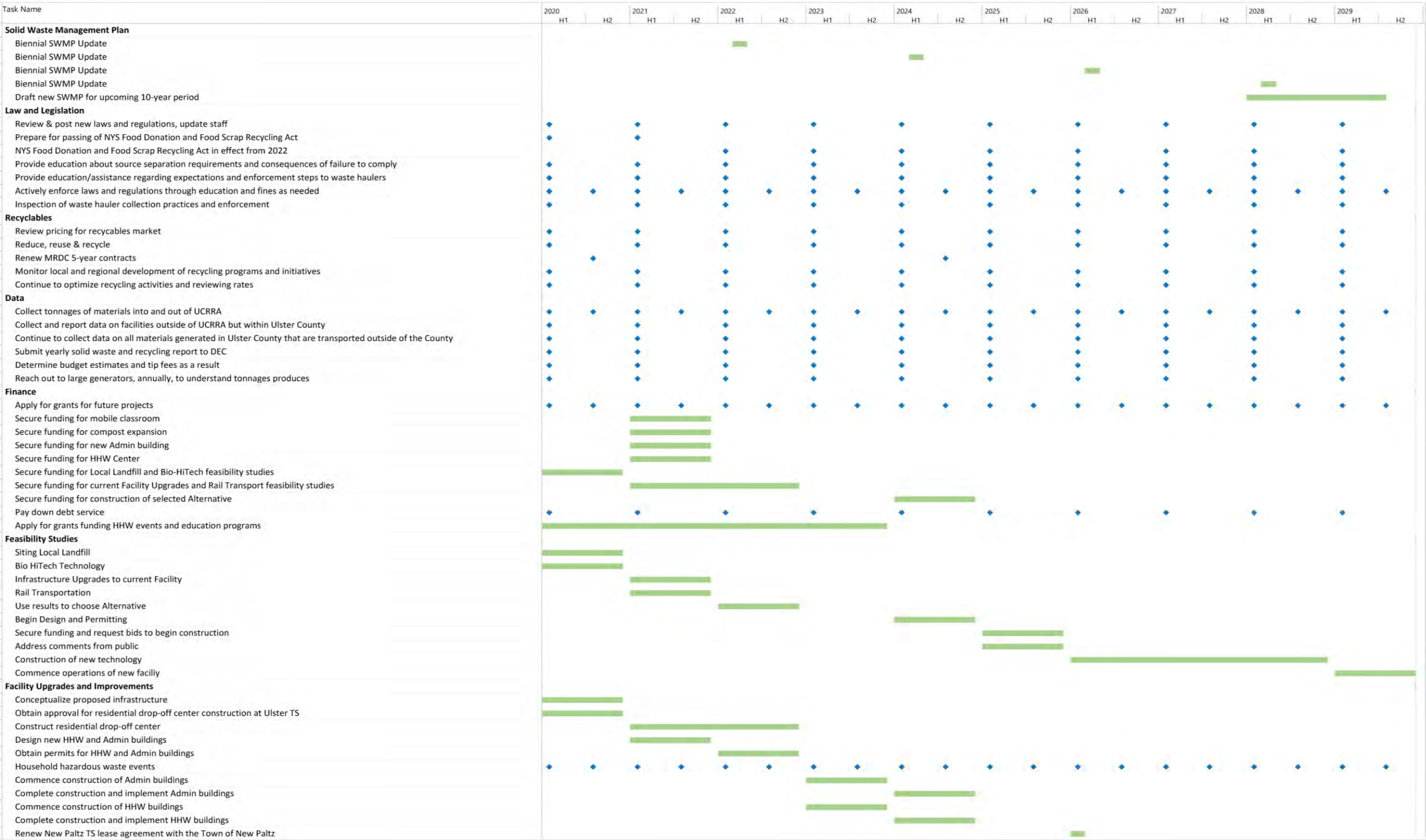
- Measure effectiveness of education programs
- Create a mobile classroom for recycling education
- Convert existing Administration building into an education center
- Update Website
- Social media communication
- Tours and hands-on learning
- Targeted outreach community engagement efforts

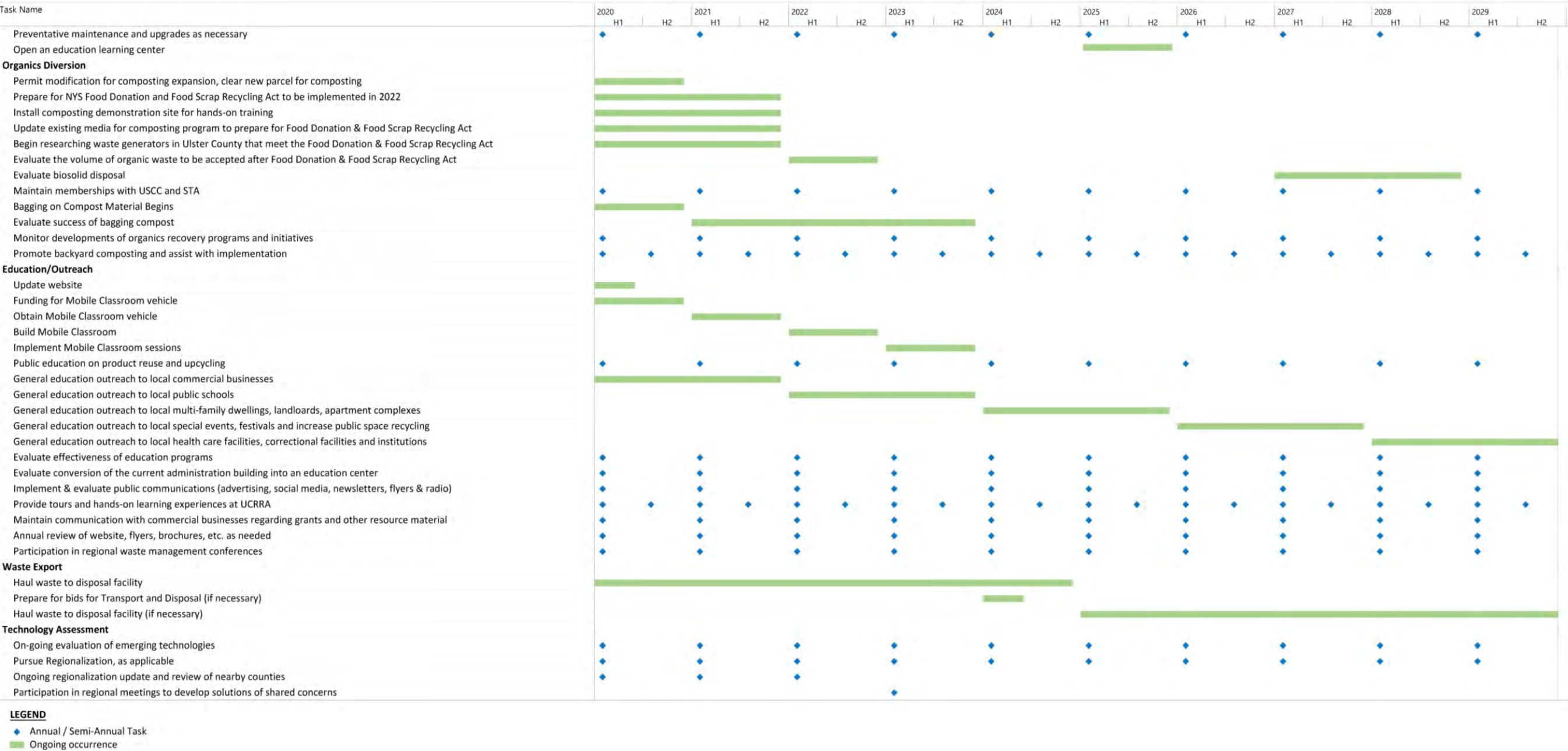
### **Waste Export**

- Disposal to landfill

### **Technology Assessment**

- Evaluate different technologies for waste management
- Regionalization







# **2020 Implementation Plan and Schedule**

## **Solid Waste Management Plan**

- **Implementation**

## **Law and Legislation**

- **Prepare for passing of NYS Food Donation and Food Scrap Recycling Act**
- **Provide education about source separation requirements and consequences of failure to comply; hauler notices to customers, website**
- **Provide education / assistance regarding expectations and enforcement steps to waste haulers**
- **Provide updated laws and regulations to all staff members**
- **Post new laws and regulations to website**
- **Actively enforce laws and regulations through education and fines as needed**
- **Inspection of waste hauler collection practices and enforcement**

## **Recyclables**

- **Review pricing for recyclables market**
- **Renew the contracts for MRDC's**
- **Monitor local and regional development of recycling programs and initiatives**

## **Data**

- **Collect and report tonnages of all materials brought into and shipped from UCRRA**
- **Collect and report data pertaining to facilities outside of UCRRA but within Ulster County**
- **Reach out to large generators, including industrial waste generators, within the county on a yearly basis to understand tonnages produce**
- **Continue to collect data on all materials generated in Ulster County that are transported outside of the county**
- **Submit yearly solid waste and recycling reports to NYSDEC**

## **Finance**

- **Continue to pay down debt service**
- **Secure funding for feasibility studies**
- **Apply for grants funding HHW events and educational programs**

## **Feasibility Studies**

- **Contract a consulting firm to evaluate the possibility of permitting and constructing a local landfill or a BioHiTech Facility within Ulster County**

## **Facility Upgrades and Improvements**

- **Secure approval and funding to construct a residential drop-off center at the Ulster Transfer Station**
- **Develop concepts for a year-round household hazardous waste center**
- **Develop concepts for a new administration building**

## **Organics Diversion**

- **Seek permit modification to expand composting program**
- **Request bids to clear acreage on recently acquired land to expand the composting program.**
- **Develop plans for expansion of composting system.**
- **Install composting demonstration site for hands-on training**
- **In preparation of upcoming NYS Food Donation and Food Scrap Recycling Act, update existing media for composting program**
- **Begin researching waste generators in Ulster County that meet the NYS Food Donation and Food Scrap Recycling Act requirements**
- **UCRRA to begin bagging compost; incorporate new promotional and marketing strategies.**
- **Maintain memberships with USCC and STA**
- **Monitor local and regional developments of organics recovery programs and initiatives**
- **Promote backyard composting and assist with implementation practices to residents, schools and business as needed**

## **Education and Outreach**

- **Participation in regional conferences and trainings to obtain information on evolving solid waste management technology and practices, including recycling and composting**
- **Measure effectiveness of education programs**
- **Update UCRRA website**
- **Secure funding for a vehicle to create a mobile classroom for recycling education**
- **Evaluate conversion of the current administration building into an education center**



- **Implement and evaluate public communications through print media advertising, social media, newsletters, flyers, and radio public service announcements**
- **Provide tours and hands-on learning experiences to the public**
- **Actively engage the community to be involved with recycling and waste programs**
- **Targeted outreach and community engagement efforts to local commercial businesses**
- **Maintain communication with commercial businesses regarding grant information, available programs, and resource material**
- **Annual review of website, flyers, brochures, etc. as needed**

### **Waste Export**

- **Continue to ship MSW and C&D via long haul trailers to Seneca Meadows Landfill (anticipated for years 2020 through 2024)**

### **Technology Assessment**

- **Continue to evaluate different and emerging technologies for waste management**
- **Ongoing regionalization update and review of nearby counties**

# **2021 Implementation Plan and Schedule**

## **Solid Waste Management Plan**

- **Implementation**

## **Law and Legislation**

- **Prepare for implementation of NYS Food Donation and Food Scrap Recycling Act**
- **Provide education about source separation requirements and consequences of failure to comply; hauler notices to customers, website**
- **Provide education / assistance regarding expectations and enforcement steps to waste haulers**
- **Provide updated laws and regulations to all staff members**
- **Post new laws and regulations to website**
- **Actively enforce laws and regulations through education and fines as needed**
- **Inspection of waste hauler collection practices and enforcement**

## **Recyclables**

- **Review pricing for recyclables market**
- **Identify system enhancements to increase recycling rates and/or optimize recycling revenue**
- **Monitor local and regional development of recycling programs and initiatives**

## **Data**

- **Collect tonnages of all materials brought into and shipped from UCRRA**
- **Collect data pertaining to facilities outside of UCRRA**
- **Reach out to large generators, including industrial waste generators, within the county on a yearly basis to understand tonnages produce**
- **Continue to collect data on all materials generated in Ulster County that are transported outside of the county**
- **Submit yearly solid waste and recycling reports to NYSDEC**
- **Use information collected to help establish tipping fees and budget estimates**

## **Finance**

- **Continue to pay down debt service**
- **Apply for grants funding HHW events and educational programs**
- **Secure funding for feasibility studies**

- Secure funding for mobile classroom vehicle, compost expansion, household hazardous waste center, and new administration building

### **Feasibility Studies**

- Contract with a consulting firm to evaluate the possibility of infrastructure upgrades to the existing materials recovery facility and other equipment related to recycling
- Contract with a consulting firm to evaluate the possibility of exporting MSW and C&D to landfills via railroad system taking into consideration locations for spur connections, ability to site a transfer near the railroad, and impacts to community (odors and truck traffic to facility)

### **Facility Upgrades and Improvements**

- Clear space and construct a residential drop-off center at the Ulster Transfer Station
- Select a consulting firm to design new HHW center and new administration building

### **Organics Diversion**

- Begin to clear acreage and construct expansion the composting program
- Continue researching waste generators in Ulster County that meet the NYS Food Donation and Food Scrap Recycling Act requirements
- Install composting demonstration site for hands-on training
- Reach out to waste generators to inform them of the NYS Food Donation and Food Scrap Recycling Act requirements
- UCRRA to begin bagging compost; update promotional and marketing strategies.
- Evaluate success of bagged compost material
- Maintain memberships with USCC and STA
- Monitor local and regional developments of organics recovery programs and initiatives
- Promote backyard composting and assist with implementation practices to residents, schools and business as needed

### **Education and Outreach**

- Participation in regional conferences and trainings to obtain information on evolving solid waste management technology and practices, including recycling and composting
- Measure effectiveness of education programs
- Purchase vehicle for mobile classroom education program

- **Implement and evaluate public communications through print media advertising, social media, newsletters, flyers, and radio public service announcements**
- **Annual review of website, flyers, brochures, etc. as needed**
- **Provide tours and hands-on learning experiences to the public**
- **Actively engage the community to be involved with recycling and waste programs**
- **Targeted outreach and community engagement efforts to local commercial businesses**
- **Maintain communication with commercial businesses regarding grant information, available programs, and resource material**

### **Waste Export**

- **Continue to ship MSW and C&D via long haul trailers to Seneca Meadows Landfill (assumed export through 2024)**

### **Technology Assessment**

- **Continue to evaluate different and emerging technologies for waste management**
- **Ongoing regionalization update and review of nearby counties**

# **2022 Implementation Plan and Schedule**

## **Solid Waste Management Plan**

- **Implementation**
- **Biennial update to NYSDEC**

## **Law and Legislation**

- **NYS Food Donation and Food Scrap Recycling Act to be put into effect**
- **Provide education about source separation requirements and consequences of failure to comply; hauler notices to customers, website**
- **Provide education / assistance regarding expectations and enforcement steps to waste haulers**
- **Provide updated laws and regulations to all staff members**
- **Post new laws and regulations to website**
- **Actively enforce laws and regulations through education and fines as needed**
- **Inspection of waste hauler collection practices and enforcement**

## **Recyclables**

- **Review pricing for recyclables market**
- **Identify system enhancements to increase recycling rates and/or optimize recycling revenue**
- **Monitor local and regional development of recycling programs and initiatives**

## **Data**

- **Collect tonnages of all materials brought into and shipped from UCRRA**
- **Collect data pertaining to facilities outside of UCRRA**
- **Reach out to large generators, including industrial waste generators, within the county on a yearly basis to understand tonnages produce**
- **Continue to collect data on all materials generated in Ulster County that are transported outside of the county**
- **Submit yearly solid waste and recycling reports to NYSDEC**
- **Use information collected to help establish tipping fees and budget estimates**

## **Finance**

- **Continue to pay down debt service**

- Apply for grants funding HHW events and educational programs
- Secure funding for additional feasibility studies

### **Feasibility Studies**

- Evaluate results of the four feasibility studies conducted during the first two years of the plan. Select an alternative technology to pursue.

### **Facility Upgrades and Improvements**

- Promote new residential drop-off center at the Ulster Transfer Station
- Acquire required permits to build HHW center and new administration building

### **Organics Diversion**

- Continue to explore options to increase diversion of organics from landfilling
- Evaluate the number of containers or bins that will be required for food waste program at Ulster
- Reach out to waste generators to inform them of the NYS Food Donation and Food Scrap Recycling Act requirements, encourage reduction and reuse of food scraps, i.e. composting
- Evaluate success of bagged compost material
- Install composting demonstration site for hands-on training
- Maintain memberships with USCC and STA
- Monitor local and regional developments of organics recovery programs and initiatives
- Promote backyard composting and assist with implementation practices to residents, schools and business as needed

### **Education and Outreach**

- Participation in regional conferences and trainings to obtain information on evolving solid waste management technology and practices, including recycling and composting
- Build the internal components for the mobile classroom and begin trial offsite sessions with local community entities
- Provide tours and hands-on learning experiences to the public
- Measure effectiveness of education programs
- Actively engage the community to be involved with recycling and waste programs
- Targeted outreach and community engagement efforts to local public schools



- **Maintain communication with all schools regarding grant information, available programs, and resource material**
- **Implement and evaluate public communications through print media advertising, social media, newsletters, flyers, and radio public service announcements**
- **Annual review of website, flyers, brochures, etc. as needed**

### **Waste Export**

- **Continue to ship MSW and C&D via long haul trailers to Seneca Meadows Landfill (assumed through 2024)**

### **Technology Assessment**

- **Continue to evaluate different and emerging technologies for waste management**
- **Ongoing regionalization update and review of nearby counties**

# **2023 Implementation Plan and Schedule**

## **Solid Waste Management Plan**

- **Implementation**

## **Law and Legislation**

- **Provide education about source separation requirements and consequences of failure to comply; hauler notices to customers, website**
- **Provide education / assistance regarding expectations and enforcement steps to waste haulers**
- **Provide updated laws and regulations to all staff members**
- **Post new laws and regulations to website**
- **Actively enforce laws and regulations through education and fines as needed**
- **Inspection of waste hauler collection practices and enforcement**

## **Recyclables**

- **Review pricing for recyclables market**
- **Identify system enhancements to increase recycling rates and/or optimize recycling revenue**
- **Monitor local and regional development of recycling programs and initiatives**

## **Data**

- **Collect tonnages of all materials brought into and shipped from UCRRA**
- **Collect data pertaining to facilities outside of UCRRA**
- **Reach out to large generators, including industrial waste generators, within the county on a yearly basis to understand tonnages produce**
- **Continue to collect data on all materials generated in Ulster County that are transported outside of the county**
- **Submit yearly solid waste and recycling reports to NYSDEC**
- **Use information collected to help establish tipping fees and budget estimates**

## **Finance**

- **Continue to pay down debt service**
- **Apply for grants funding HHW events and educational programs**

## **Feasibility Studies**

- **Begin designing and permitting process for construction of selected waste management technology**

## **Facility Upgrades and Improvements**

- **Continue to promote new residential drop-off center at the Ulster Transfer Station**
- **Commence construction on the new administration building**

## **Organics Diversion**

- **Reach out to waste generators to inform them of the NYS Food Donation and Food Scrap Recycling Act requirements, encourage reduction and reuse of food scraps, i.e. composting**
- **Evaluate success of bagged compost material**
- **Maintain memberships with USCC and STA**
- **Monitor local and regional developments of organics recovery programs and initiatives**
- **Promote backyard composting and assist with implementation practices to residents, schools and business as needed**

## **Education and Outreach**

- **Participation in regional conferences and trainings to obtain information on evolving solid waste management technology and practices, including recycling and composting**
- **Implement and evaluate public communications through print media advertising, social media, newsletters, flyers, and radio public service announcements**
- **Annual review of website, flyers, brochures, etc. as needed**
- **Schedule routine sessions with local community entities and school using the mobile classroom**
- **Measure effectiveness of education programs**
- **Actively engage the community to be involved with recycling and waste programs**
- **Targeted outreach and community engagement efforts to local public schools**
- **Maintain communication with all schools regarding grant information, available programs, and resource material**

## **Waste Export**

- **Continue to ship MSW and C&D via long haul trailers to Seneca Meadows Landfill (assumed through 2024)**

## **Technology Assessment**

- **Continue to evaluate different and emerging technologies for waste management**
- **Participation in regional meetings with local counties to investigate opportunities for collaboration and develop solutions to shared concerns**

# **2024 Implementation Plan and Schedule**

## **Solid Waste Management Plan**

- **Implementation**
- **Biennial update to NYSDEC**

## **Law and Legislation**

- **Provide education about source separation requirements and consequences of failure to comply; hauler notices to customers, website**
- **Provide education / assistance regarding expectations and enforcement steps to waste haulers**
- **Provide updated laws and regulations to all staff members**
- **Post new laws and regulations to website**
- **Actively enforce laws and regulations through education and fines as needed**
- **Inspection of waste hauler collection practices and enforcement**

## **Recyclables**

- **Review pricing for recyclables market**
- **Identify system enhancements to increase recycling rates and/or optimize recycling revenue**
- **Monitor local and regional development of recycling programs and initiatives**

## **Data**

- **Collect tonnages of all materials brought into and shipped from UCRRA**
- **Collect data pertaining to facilities outside of UCRRA**
- **Reach out to large generators, including industrial waste generators, within the county on a yearly basis to understand tonnages produce**
- **Continue to collect data on all materials generated in Ulster County that are transported outside of the county**
- **Submit yearly solid waste and recycling reports to NYSDEC**
- **Use information collected to help establish tipping fees and budget estimates**

## **Finance**

- Continue to pay down debt service
- Apply for grants funding to further enhance educational opportunities
- Secure funding as needed to construction of new buildings at the Ulster Transfer Station

## **Feasibility Studies**

- Secure funding for capital costs and investment of new technology
- Public announcement/hearing on proposed concept for new waste management infrastructure

## **Facility Upgrades and Improvements**

- Finish construction on the new administration building
- Set up offices with proper equipment and technology
- Start construction of the HHW center

## **Organics Diversion**

- Promote backyard composting and assist with implementation practices to residents, schools and business as needed
- Maintain memberships with USCC and STA
- Monitor local and regional developments of organics recovery programs and initiatives
- Promote backyard composting and assist with implementation practices to residents, schools and business as needed

## **Education and Outreach**

- Participation in regional conferences and trainings to obtain information on evolving solid waste management technology and practices, including recycling and composting
- Schedule routine sessions with local community entities and school using the mobile classroom
- Maintain communication with all schools regarding grant information, available programs, and resource material
- Measure effectiveness of education programs
- Actively engage the community to be involved with recycling and waste programs



- Targeted outreach and community engagement efforts to local multi-family dwellings, landlords, apartment complexes, etc.
- Maintain communication with multi-family dwellings, landlords, apartment complexes, etc. regarding grant information, available programs, and resource material
- Implement and evaluate public communications through print media advertising, social media, newsletters, flyers, and radio public service announcements
- Annual review of website, flyers, brochures, etc. as needed

### **Waste Export**

- Continue to ship MSW and C&D via long haul trailers to Seneca Meadows Landfill (anticipated through 2024)
- Rebid trucking and disposal contracts for next 5 years

### **Technology Assessment**

- Continue to evaluate different and emerging technologies for waste management
- Evaluate concerns from regional meetings with local counties. Develop schedule, if feasible, to collaborate on waste programs.

# **2025 Implementation Plan and Schedule**

## **Solid Waste Management Plan**

- **Implementation**

## **Law and Legislation**

- **Provide education about source separation requirements and consequences of failure to comply; hauler notices to customers, website**
- **Provide education / assistance regarding expectations and enforcement steps to waste haulers**
- **Provide updated laws and regulations to all staff members**
- **Post new laws and regulations to website**
- **Actively enforce laws and regulations through education and fines as needed**
- **Inspection of waste hauler collection practices and enforcement**
- **Evaluate success of enforcement and education**

## **Recyclables**

- **Review pricing for recyclables market**
- **Renew the contracts for MRDC's**
- **Identify system enhancements to increase recycling rates and/or optimize recycling revenue**
- **Monitor local and regional development of recycling programs and initiatives**

## **Data**

- **Collect tonnages of all materials brought into and shipped from UCRRA**
- **Collect data pertaining to facilities outside of UCRRA**
- **Reach out to large generators, including industrial waste generators, within the county on a yearly basis to understand tonnages produce**
- **Continue to collect data on all materials generated in Ulster County that are transported outside of the county**
- **Submit yearly solid waste and recycling reports to NYSDEC**
- **Use information collected to help establish tipping fees and budget estimates**

## **Finance**

- Continue to pay down debt service
- Continue to apply for grants
- Secure funding as needed for technology and equipment improvements

## **Feasibility Studies**

- Request bids to clear required acreage and for construction
- Address any comments and questions from public

## **Facility Upgrades and Improvements**

- Start to convert old administration building into educational learning center
- Finish HHW center construction
- Inventory rolloff containers, yellow iron and trucks for upgrades or replacement

## **Organics Diversion**

- Continue food waste and composting programs
- Continue education and assistance for local businesses and establishments
- Maintain memberships with USCC and STA
- Monitor local and regional developments of organics recovery programs and initiatives
- Promote backyard composting and assist with implementation practices to residents, schools and business as needed

## **Education and Outreach**

- Participation in regional conferences and trainings to obtain information on evolving solid waste management technology and practices, including recycling and composting
- Measure effectiveness of education programs
- Evaluate effectiveness of mobile classroom
- Promote new learning center at Ulster Transfer Station
- Continue promoting backyard composting and assist with implementation practices to residents, schools and business as needed
- Alter education programs and techniques based on evaluation from previous year
- Continue to engage the community and respond to any concerns or questions
- Targeted outreach and community engagement efforts to local multifamily dwellings, landlords, apartment complexes, etc.

- **Maintain communication with multi-family dwellings, landlords, apartment complexes, etc. regarding grant information, available programs, and resource material**
- **Implement and evaluate public communications through print media advertising, social media, newsletters, flyers, and radio public service announcements**
- **Annual review of website, flyers, brochures, etc. as needed**

### **Waste Export**

- **Continue to ship MSW and C&D via long haul trailers to a Landfill (anticipated through 2029)**

### **Technology Assessment**

- **Continue to evaluate different and emerging technologies for waste management**
- **Determine if regionalization avenues are feasible based on meetings and collected data during previous years.**

# **2026 Implementation Plan and Schedule**

## **Solid Waste Management Plan**

- **Implementation**
- **Biennial update to NYSDEC**

## **Law and Legislation**

- **Provide education about source separation requirements and consequences of failure to comply; hauler notices to customers, website**
- **Provide education / assistance regarding expectations and enforcement steps to waste haulers**
- **Provide updated laws and regulations to all staff members**
- **Post new laws and regulations to website**
- **Actively enforce laws and regulations through education and fines as needed**
- **Inspection of waste hauler collection practices and enforcement**

## **Recyclables**

- **Review pricing for recyclables market**  
**Identify system enhancements to increase recycling rates and/or optimize recycling revenue**
- **Monitor local and regional development of recycling programs and initiatives**

## **Data**

- **Collect tonnages of all materials brought into and shipped from UCRRA**
- **Collect data pertaining to facilities outside of UCRRA**
- **Reach out to large generators, including industrial waste generators, within the county on a yearly basis to understand tonnages produce**
- **Continue to collect data on all materials generated in Ulster County that are transported outside of the county**
- **Submit yearly solid waste and recycling reports to NYSDEC**
- **Use information collected to help establish tipping fees and budget estimates**

## **Finance**

- **Continue to pay down debt service**

- Continue to apply for grants
- Secure funding as needed for technology and equipment improvements

### **Feasibility Studies**

- Begin construction of new facility

### **Facility Upgrades and Improvements**

- Renew New Paltz Transfer Station lease agreement with the Town of New Paltz
- Open educational learning center
- Open HHW center
- Replace rolloff containers, yellow iron and trucks as needed

### **Organics Diversion**

- Evaluate the composting programs
- Maintain memberships with USCC and STA
- Monitor local and regional developments of organics recovery programs and initiatives
- Promote backyard composting and assist with implementation practices to residents, schools and business as needed

### **Education and Outreach**

- Participation in regional conferences and trainings to obtain information on evolving solid waste management technology and practices, including recycling and composting
- Update content as practical in mobile classroom
- Continue to promote new learning center at Ulster Transfer Station
- Measure effectiveness of education programs
- Increase education in schools, and assist with implementation of new programs
- Continue to engage the community and respond to any concerns or questions
- Targeted outreach and community engagement efforts to local special events and festivals to increase public space recycling
- Maintain communication with special events and festivals regarding grant information, available programs, and resource material
- Implement and evaluate public communications through print media advertising, social media, newsletters, flyers, and radio public service announcements
- Annual review of website, flyers, brochures, etc. as needed



## **Waste Export**

- **Continue to ship MSW and C&D via long haul trailers to a Landfill (anticipated through 2029)**

## **Technology Assessment**

- **Continue to evaluate different and emerging technologies for waste management**
- **Pursue regionalization if feasible, otherwise cease efforts and focus on other aspects of waste management.**

# **2027 Implementation Plan and Schedule**

## **Solid Waste Management Plan**

- **Implementation**

## **Law and Legislation**

- **Provide education about source separation requirements and consequences of failure to comply; hauler notices to customers, website**
- **Provide education / assistance regarding expectations and enforcement steps to waste haulers**
- **Provide updated laws and regulations to all staff members**
- **Post new laws and regulations to website**
- **Actively enforce laws and regulations through education and fines as needed**
- **Inspection of waste hauler collection practices and enforcement**

## **Recyclables**

- **Review pricing for recyclables market**
- **Identify system enhancements to increase recycling rates and/or optimize recycling revenue**
- **Monitor local and regional development of recycling programs and initiatives**

## **Data**

- **Collect tonnages of all materials brought into and shipped from UCRRA**
- **Collect data pertaining to facilities outside of UCRRA**
- **Reach out to large generators, including industrial waste generators, within the county on a yearly basis to understand tonnages produce**
- **Continue to collect data on all materials generated in Ulster County that are transported outside of the county**
- **Submit yearly solid waste and recycling reports to NYSDEC**
- **Use information collected to help establish tipping fees and budget estimates**

## **Finance**

- **Continue to pay down debt service**
- **Continue to apply for grants**

- Secure funding as needed for technology and equipment improvements

### **Feasibility Studies**

- Continue construction of new facility

### **Facility Upgrades and Improvements**

- Make facility improvements and upgrades as needed
- Evaluate older structures, roadways, and storm management infrastructure

### **Organics Diversion**

- Make changes to composting programs as needed to accommodate waste tonnages and economics
- Evaluate biosolid disposal
- Maintain memberships with USCC and STA
- Monitor local and regional developments of organics recovery programs and initiatives
- Promote backyard composting and assist with implementation practices to residents, schools and business as needed

### **Education and Outreach**

- Participation in regional conferences and trainings to obtain information on evolving solid waste management technology and practices, including recycling and composting
- Continue to promote new learning center and mobile classroom
- Measure effectiveness of education programs
- Increase education in schools, and assist with implementation of new programs
- Discuss source separation techniques at correctional facilities and hospitals
- Continue to engage the community and respond to any concerns or questions
- Targeted outreach and community engagement efforts to local special events, festivals, and to increase public space recycling
- Maintain communication with special events and festivals regarding grant information, available programs, and resource material
- Implement and evaluate public communications through print media advertising, social media, newsletters, flyers, and radio public service announcements
- Annual review of website, flyers, brochures, etc. as needed

## **Waste Export**

- **Continue to ship MSW and C&D via long haul trailers to a Landfill (anticipated through 2029)**

## **Technology Assessment**

- **Continue to evaluate different and emerging technologies for waste management**

# **2028 Implementation Plan and Schedule**

## **Solid Waste Management Plan**

- **Implementation**
- **Biennial update to NYSDEC**
- **Begin to Draft a new LSWMP for the following 10-year planning period**

## **Law and Legislation**

- **Provide education about source separation requirements and consequences of failure to comply; hauler notices to customers, website**
- **Provide education / assistance regarding expectations and enforcement steps to waste haulers**
- **Provide updated laws and regulations to all staff members**
- **Post new laws and regulations to website**
- **Actively enforce laws and regulations through education and fines as needed**
- **Inspection of waste hauler collection practices and enforcement**

## **Recyclables**

- **Review pricing for recyclables market**
- **Identify system enhancements to increase recycling rates and/or optimize recycling revenue**
- **Monitor local and regional development of recycling programs and initiatives**

## **Data**

- **Collect tonnages of all materials brought into and shipped from UCRRA**
- **Collect data pertaining to facilities outside of UCRRA**
- **Reach out to large generators, including industrial waste generators, within the county on a yearly basis to understand tonnages produce**
- **Continue to collect data on all materials generated in Ulster County that are transported outside of the county**
- **Submit yearly solid waste and recycling reports to NYSDEC**
- **Use information collected to help establish tipping fees and budget estimates**

## **Finance**

- Continue to pay down debt service
- Continue to apply for grants
- Secure funding as needed for technology and equipment improvements

### **Feasibility Studies**

- Finish construction and prepare to open facility

### **Facility Upgrades and Improvements**

- Begin to replace older or outdated equipment and infrastructure

### **Organics Diversion**

- Continue food waste and composting programs
- Continue education and assistance for local businesses and establishments
- Determine if biosolid disposal system needs to be altered based on previous year evaluation and data collection
- Maintain memberships with USCC and STA
- Monitor local and regional developments of organics recovery programs and initiatives
- Promote backyard composting and assist with implementation practices to residents, schools and business as needed

### **Education and Outreach**

- Participation in regional conferences and trainings to obtain information on evolving solid waste management technology and practices, including recycling and composting
- Continue to promote new learning center and mobile classroom
- Measure effectiveness of education programs
- Increase education in schools, and assist with implementation of new programs
- Continue to increase communications and programs with correctional facilities, hospitals, and other large food waste producers
- Continue to educate residents regarding mandatory source separation
- Promote tours and training events at the UCRRA facilities
- Targeted outreach and community engagement efforts to local health care facilities, correctional facilities, institutions, etc.



- **Maintain communication with health care facilities, correctional facilities, institutions, etc. regarding grant information, available programs, and resource material**
- **Implement and evaluate public communications through print media advertising, social media, newsletters, flyers, and radio public service announcements**
- **Annual review of website, flyers, brochures, etc. as needed**

### **Waste Export**

- **Continue to ship MSW and C&D via long haul trailers to a Landfill (anticipated through 2029)**

### **Technology Assessment**

- **Continue to evaluate different and emerging technologies for waste management**

# **2029 Implementation Plan and Schedule**

## **Solid Waste Management Plan**

- **Implementation**
- **Finalize and adapt a new LSWMP for the following 10-year planning period**

## **Law and Legislation**

- **Provide education to residents about source separation requirements and consequences of failure to comply; hauler notices to customers, website**
- **Provide education / assistance regarding expectations and enforcement steps to waste haulers**
- **Actively enforce laws and regulations through education and fines as needed**
- **Inspection of waste hauler collection practices and enforcement**
- **Provide updated laws and regulations to all staff members**
- **Post new laws and regulations to website**

## **Recyclables**

- **Review pricing for recyclables market**
- **Identify system enhancements to increase recycling rates and/or optimize recycling revenue**
- **Monitor local and regional development of recycling programs and initiatives**

## **Data**

- **Collect tonnages of all materials brought into and shipped from UCRRA**
- **Collect data pertaining to facilities outside of UCRRA**
- **Reach out to large generators, including industrial waste generators, within the county on a yearly basis to understand tonnages produce**
- **Continue to collect data on all materials generated in Ulster County that are transported outside of the county**
- **Submit yearly solid waste and recycling reports to NYSDEC**
- **Use information collected to help establish tipping fees and budget estimates**

## **Finance**

- Continue to pay down debt service
- Continue to apply for grants
- Secure funding as needed for technology and equipment improvements

## **Feasibility Studies**

- Facility is operational

## **Facility Upgrades and Improvements**

- Preventative maintenance to equipment and facility infrastructure
- Upgrades and replacements as required

## **Organics Diversion**

- Evaluation of organics program over last 10-year period
- Continue food waste and composting programs
- Continue education and assistance for local businesses and establishments
- Maintain memberships with USCC and STA
- Monitor local and regional developments of organics recovery programs and initiatives
- Promote backyard composting and assist with implementation practices to residents, schools and business as needed

## **Education and Outreach**

- Participation in regional conferences and trainings to obtain information on evolving solid waste management technology and practices, including recycling and composting
- Continue to promote new learning center and mobile classroom
- Increase education in schools, and assist with implementation of new programs
- Continue to increase communications and programs with correctional facilities, hospitals, and other large food waste producers
- Measure effectiveness of education programs
- Continue to educate residents regarding mandatory source separation
- Promote tours and training events at the UCRRA facilities
- Targeted outreach and community engagement efforts to local health care facilities, correctional facilities, institutions, etc.

- **Maintain communication with health care facilities, correctional facilities, institutions, etc. regarding grant information, available programs, and resource material**
- **Implement and evaluate public communications through print media advertising, social media, newsletters, flyers, and radio public service announcements**
- **Annual review of website, flyers, brochures, etc. as needed**

### **Waste Export**

- **Continue to ship residual waste to a landfill if needed**
- **Evaluate need for rebidding contracts**

### **Technology Assessment**

- **Continue to evaluate different and emerging technologies for waste management**

## 9 WASTE STREAM PROJECTIONS

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As discussed in Section 3, a community's solid waste stream is comprised of four key components: municipal solid waste (MSW), construction and demolition debris (C&D), biosolids, and industrial waste. This Plan tracks the municipal solid waste component of the solid waste stream and the total waste stream. Mirroring the State's approach, MSW includes materials generated by the residential, commercial, and institutional sectors and excludes C&D, biosolids, industrial waste, and medical waste. The total waste stream includes MSW, C&D, and biosolids (industrial waste is not included as it is not tracked separately in the County). NYSDEC requested that communities include an MSW generation rate to provide consistency among solid waste management plans throughout the state. The total waste stream was tracked, and a diversion rate calculated to illustrate the impact of the County's comprehensive education and outreach programs, as well as recycling and expanding organics composting programs on its solid waste management.

As required by NYSDEC, the scope of time for the planning of this Plan is 10 years. With this in mind, it is necessary to make a critical assessment of the population of Ulster County anticipated throughout the next 10-year period in conjunction with the anticipated changes in waste management and recycling practices. Projections included herein are carried out through the year 2029. Utilizing the NYSDEC MSW calculator, estimates for waste production and reduction were generated based on population growth for the 10-year planning period. Population estimates and growth (0.27% per year) are based on the 2010 Census. Based upon this calculator, the planning unit's population projections for the 10-year planning period show a slow and steady population growth with 2020 population estimated to be 186,976 and 2029 192,086. Annual waste generation tonnages remain relatively consistent, and waste diversion rates increase by an estimated 0.5% annually. The MSW diversion rate is estimated to rise to approximately 13% by 2029.

Thermal treatment and disposal options will be not be addressed in the next planning period. A focus will be made to divert tonnages from landfills through increased education efforts, organics diversion, recycling, and reuse.

## Step 1. Planning Unit and Plan Period Selection

Please, select from the drop-down list the name of your **planning unit** and the **planning period** of your **LSWMP**. Be aware that a LSWMP must be developed for a **10-year period**, and that your selection will be replicated on each one of the following tabs.

<b>Planning Unit</b>	Ulster County Resource Recovery Agency (UCRRA)
<b>Planning Period</b>	2020-2029

## Step 2. Waste Generation Rate

In order to project how the amount of waste generated in the planning unit will change over time, data regarding the current amount of waste generated by the planning unit is needed. This can be the total tons of waste generated by the planning unit in the current year (**Tons/yr**), or this can be the estimated daily quantity of waste generated per person in the planning unit (**lb/person/day**). If both the total annual generation and the estimated generation rate per person are unknown, the state average for MSW generation rate can be used along with the planning unit's population to estimate the total amount of waste generated in the planning unit.

For this step, select **one** of the options that describes the known information about the planning unit. Enter the waste generated in Tons (MSW disposed & Recycled Materials) or the waste generation rate in lb/person/day in the **purple cell**. If no data on the waste generated in the planning unit is available, choose the corresponding option from the list. The calculator will estimate the total amount of waste generated based on the state's average generation rate and the planning unit's population.

### Ulster County Resource Recovery Agency (UCRRA)

The amount of waste generated (by all residents, institutions, etc.) in the planning unit will be based on what is known. If the MSW generation amount and the generation rate are unknown, the state average for MSW generation rate will be used.

<input checked="" type="radio"/> I know the amount of MSW generated (Tons/year):	Enter tons disposed here:	101,379.00
<input type="radio"/> The planning unit Average MSW Generation Rate (lb/person/day) is:		
<input type="radio"/> The amount of MSW Generated and the planning unit Average MSW Generation Rate are unknown:	Enter tons diverted here:	16,589.00



## Step 3. Planning Unit Population - Projections & Municipal Solid Waste (MSW) - Projections

This tab will provide you with population projections and MSW generation projections for the planning period you had previously selected. It is recognized that Municipal Solid Waste (MSW) generation is reliant on population changes, hence, it is necessary to project both and identify their correlation.

In the first **purple cell** enter the total tons of MSW that was disposed in the year immediately before your plan period starts. For example: If the plan period is 2016-2026, the MSW disposed data should be from 2015.

### Population Projection:

Calculations are determined by a linear regression based on the latest **census population data** and an **annual growth rate percentage** specific to the planning unit. If it is anticipated that the population is going to decrease overtime, the minus sign (-) will be used.

### MSW Generation Projection:

The MSW generation rate (Lb/person/day) calculated on the previous tab from the **Waste Generation Rate** will serve as a start point for the planning period. On the calculator, three options are considered to anticipate the MSW generation over time, and one must be selected according to the goals of the planning unit:

#### First Option:

MSW generation **rate** does not change. Consequently, MSW generation fluctuates with the population of the planning unit. If the population increases, waste generation will rise as well, and vice versa.

By selecting this option, the planning unit is in **"status quo"**, meaning that is not making any improvements, and consequently is getting far from reaching the State's goal by 2030.

#### Second Option:

MSW generation **amount** remains the same, regardless of whether or not the planning unit's population changes.

#### Third Option:

As a result of successfully implementing the Local Solid Waste Management Plan, MSW generation will be reduced by an annual factor of ...

An **Annual Factor of Reduction (%)** should be calculated, defined, and selected by the planning unit. This factor will be the numerical representation of one of the planning unit's **goals** for the planning period. Once calculated, the Annual Factor of Reduction can be chosen from the drop down list provided.

#### Note:

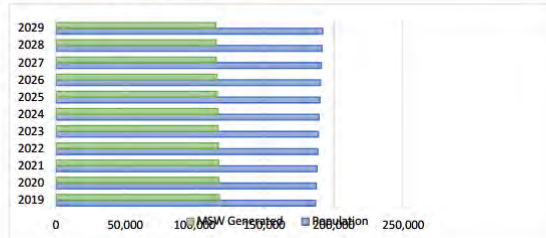
• The graphic will display the Population and MSW Generation projections over the selected planning period. It has been designed to visualize the contrast of the final outcomes, based on the selections of each planning unit

## Ulster County Resource Recovery Agency (UCRRA)

2020-2029

### Current Data

2010 Population Census	182,493
2019 Population	186,976
2019 MSW Generated (Tons/yr)	117,968
2019 MSW generation rate (Lb/person/day)	2.97
2019 MSW Disposed (Tons/yr)	101,379
2019 MSW Diverted (Tons/yr)	16,589



Annual rate of population growth (%)	0.27%
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### Population Projection

2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
186,976	187,481	187,987	188,494	189,003	189,514	190,025	190,538	191,053	191,569	192,086

Forecasting future conditions... What do you expect to happen to the MSW generation rate over the next 10 year period plan?

- ☐ MSW generation rate does not change. Consequently, MSW generation fluctuates with the population of the planning unit, if the population increases, waste generation will rise as well, and vice versa.
- ☐ MSW generation amount remains the same, regardless of whether or not the planning unit's population fluctuates.
- ☒ As a result of successfully implementing the Local Solid Waste Management Plan, MSW generation will be reduced by an annual factor of ...

Reduction Factor (per year) **0.5%**

### MSW Generation Projection

2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
3.45	3.43	3.42	3.40	3.38	3.37	3.35	3.33	3.32	3.30	3.28	(Lb/person/day)
117,765	117,492	117,220	116,949	116,678	116,409	116,139	115,871	115,602	115,335	115,068	Tons/yr

## Step 4. Municipal Solid Waste (MSW) Detailed Composition Analysis

The next step is to Identify the Materials Composition of the Waste Stream based on population density, and demographic characteristics of the Planning Unit.

This tab will provide the PU with a more detailed estimate of the materials present in the waste stream, which could be crucial when prioritizing the initiatives and programs of the LSWMP.

The population density distribution has been calculated based on the 2010 Census data and will be auto populated when a planning unit is selected. The following parameters were used:

- Rural: <325 persons/mi<sup>2</sup>
- Suburban: >325 and <5,000 persons/mi<sup>2</sup>
- Urban: >5,000 persons/mi<sup>2</sup>

Under **Density Population Distribution**, the user has the option to modify the percentage values for the **Sector** (*Residential and Commercial/Institutional*) based on land use and specific characteristics of each planning unit. For example: A rural population in Westchester County could be 64% Residential and 36% Commercial / Institutional, while in Wyoming County might be 50% Residential and 50% Commercial / Institutional.

The results are presented on the last right column under **MSW Materials Composition**. Be aware of color changes on the cells, whenever a category represents over 15% of the total waste generation, the cell will turn **red** to easily identify key categories of the waste stream. It will also facilitate the selection of initiatives, programs, and infrastructure for the solid waste management system.

**Note:** If no data exists, use the pre-populated information in the worksheet.

### Ulster County Resource Recovery Agency (UCRRA)

2020-2029

Density Population Distribution		Rural			Suburban			Urban			MSW Materials Composition (%)	
		53.24%			46.76%			0.00%				
		Residential	Comm/Inst.	Combined	Residential	Comm/Inst.	Combined	Residential	Comm/Inst.	Combined		
		58.00%	42.00%	100.00%	55.00%	45.00%	100.00%	58.00%	42.00%	100.00%		
Material	Newspaper	5.20%	1.90%	3.81%	5.00%	1.90%	3.61%	6.60%	2.00%	4.67%	3.72%	
	Corrugated Cardboard	6.60%	13.90%	9.67%	6.60%	13.90%	9.89%	6.90%	13.70%	9.76%	9.77%	
	Other Recyclable Paper	Paperboard	3.20%	1.10%	2.32%	3.30%	1.00%	2.27%	3.60%	0.90%	2.47%	2.29%
		Office Paper	0.80%	3.80%	2.06%	0.90%	4.20%	2.39%	1.10%	5.80%	3.07%	2.21%
		Junk Mail	3.00%	0.70%	2.03%	3.20%	0.70%	2.08%	3.50%	0.70%	2.32%	2.05%
		Other Commercial Printing	1.70%	2.30%	1.95%	1.70%	2.40%	2.02%	2.30%	2.60%	2.43%	1.98%
		Magazines	1.10%	0.90%	1.02%	1.00%	0.80%	0.91%	1.10%	1.00%	1.06%	0.97%
		Books	0.50%	0.30%	0.42%	0.50%	0.30%	0.41%	0.60%	0.40%	0.52%	0.41%
		Paper Bags	0.50%	0.20%	0.37%	0.50%	0.20%	0.37%	0.60%	0.20%	0.43%	0.37%
		Phone Books	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.20%	0.26%	0.30%
	Poly-Coated	0.20%	0.30%	0.24%	0.20%	0.20%	0.20%	0.30%	0.20%	0.26%	0.22%	
	Other Recyclable Paper (Total)	11.30%	9.90%	10.71%	11.60%	10.10%	10.93%	13.40%	12.00%	12.81%	10.81%	
	Other Compostable Paper	6.80%	6.80%	6.80%	6.40%	6.40%	6.40%	6.80%	6.80%	6.80%	6.61%	
	Total Paper		29.90%	32.50%	30.99%	29.60%	32.30%	30.82%	33.70%	34.50%	34.04%	30.91%
	Ferrous/Aluminum Containers	Ferrous Containers	1.90%	1.00%	1.52%	1.20%	0.70%	0.98%	1.40%	0.70%	1.11%	1.27%
		Aluminum Containers	0.70%	0.40%	0.57%	0.60%	0.30%	0.47%	0.50%	0.40%	0.46%	0.52%
	Ferrous/Aluminum Containers (Total)		2.60%	1.40%	2.10%	1.80%	1.00%	1.44%	1.90%	1.10%	1.56%	1.79%
	Other Ferrous Metals		5.20%	5.40%	5.28%	5.00%	5.80%	5.36%	3.30%	3.70%	3.47%	5.32%
	Other Non-Ferrous Metals	Other aluminum	0.20%	0.30%	0.24%	0.20%	0.30%	0.25%	0.20%	0.30%	0.24%	0.24%
		Automotive batteries	0.80%	0.50%	0.67%	0.70%	0.40%	0.57%	0.20%	0.20%	0.20%	0.62%
		Other non-aluminum	0.50%	0.30%	0.42%	0.30%	0.40%	0.35%	0.40%	0.20%	0.32%	0.38%
	Other Non-Ferrous Metals (Total)		1.50%	1.10%	1.33%	1.20%	1.10%	1.16%	0.80%	0.70%	0.76%	1.25%
	Total Metals		9.30%	7.90%	8.71%	8.00%	7.90%	7.96%	6.00%	5.50%	5.79%	8.36%
	PET Containers		1.10%	0.80%	0.97%	0.90%	0.80%	0.86%	1.20%	1.00%	1.12%	0.92%
	HDPE Containers		1.10%	0.60%	0.89%	0.90%	0.70%	0.81%	1.00%	0.70%	0.87%	0.85%
	Other Plastic (3-7) Containers		0.20%	0.10%	0.16%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%	0.18%
	Film Plastic		5.70%	5.90%	5.78%	5.50%	5.80%	5.64%	5.80%	5.80%	5.80%	5.71%
	Other Plastic	Durables	3.10%	3.20%	3.14%	3.00%	3.20%	3.09%	3.20%	3.30%	3.24%	3.12%
		Non-Durables	1.60%	1.80%	1.68%	1.60%	1.80%	1.69%	1.80%	1.90%	1.84%	1.69%
		Packaging	1.40%	1.10%	1.27%	1.40%	1.10%	1.27%	1.50%	1.10%	1.33%	1.27%
	Other Plastic (Total)		6.10%	6.10%	6.10%	6.00%	6.10%	6.05%	6.50%	6.30%	6.42%	6.07%



Density Population Distribution	Rural			Suburban			Urban			MSW Materials Composition (%)
	53.24%			46.76%			0.00%			
	Residential	Comm/Inst.	Combined	Residential	Comm/Inst.	Combined	Residential	Comm/Inst.	Combined	
	58.00%	42.00%	100.00%	55.00%	45.00%	100.00%	58.00%	42.00%	100.00%	
Total Plastics	14.20%	13.50%	13.91%	13.50%	13.60%	13.55%	14.70%	14.00%	14.41%	13.74%
Glass Bottles, Jars and Containers	4.10%	3.80%	3.97%	3.90%	3.80%	3.86%	4.30%	3.80%	4.09%	3.92%
Other Glass (Flat glass, dishware, light bulbs, etc.)	0.50%	0.40%	0.46%	0.30%	0.40%	0.35%	0.40%	0.40%	0.40%	0.41%
Total Glass	4.60%	4.20%	4.43%	4.20%	4.20%	4.20%	4.70%	4.20%	4.49%	4.32%
Food Scraps	12.70%	13.30%	12.95%	12.90%	15.50%	14.07%	17.20%	25.20%	20.56%	13.47%
Leaves and Grass / Pruning and Trimmings	3.10%	1.10%	2.26%	11.30%	9.10%	10.31%	4.20%	1.50%	3.07%	6.02%
Total Organics	15.80%	14.40%	15.21%	24.20%	24.60%	24.38%	21.40%	26.70%	23.63%	19.50%
Clothing Footwear, Towels, Sheets	4.60%	3.00%	3.93%	4.40%	3.20%	3.86%	4.80%	2.50%	3.83%	3.90%
Carpet	1.40%	1.30%	1.36%	1.70%	1.40%	1.57%	1.70%	0.90%	1.36%	1.45%
Total Textiles	6.00%	4.30%	5.29%	6.10%	4.60%	5.43%	6.50%	3.40%	5.20%	5.35%
Total Wood (Pallets, crates, adulterated and non-adulterated wood)	4.10%	9.00%	6.16%	2.90%	4.10%	3.44%	2.00%	3.50%	2.63%	4.89%
DIY - Construction & Renovation Materials	8.00%	7.60%	7.83%	3.80%	2.70%	3.31%	4.40%	3.80%	4.15%	5.72%
Diapers	1.90%	1.10%	1.56%	2.10%	1.20%	1.70%	2.30%	1.10%	1.80%	1.63%
Electronics	1.30%	1.40%	1.34%	1.60%	1.70%	1.65%	1.30%	1.30%	1.30%	1.48%
Tires	1.80%	1.80%	1.80%	1.70%	1.40%	1.57%	0.50%	0.40%	0.46%	1.69%
HHW	0.60%	0.00%	0.35%	0.60%	0.00%	0.33%	0.50%	0.00%	0.29%	0.34%
Soils and Fines	0.60%	0.60%	0.60%	0.10%	0.20%	0.15%	0.10%	0.10%	0.10%	0.39%
Other Composite Materials - Durable and/or Inert	1.90%	1.70%	1.82%	1.60%	1.50%	1.56%	1.90%	1.50%	1.73%	1.69%
Total Miscellaneous	16.10%	14.20%	15.30%	11.50%	8.70%	10.24%	11.00%	8.20%	9.82%	12.94%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

## Step 5. Municipal Solid Waste (MSW) Detailed Composition Analysis

On this tab, the composition of the municipal waste stream will be estimated based on the amount of material generated in the planning unit and the state average of the different waste materials. A pie chart will be generated to clearly show the composition of the waste stream and to identify key categories of the waste stream for the planning unit.

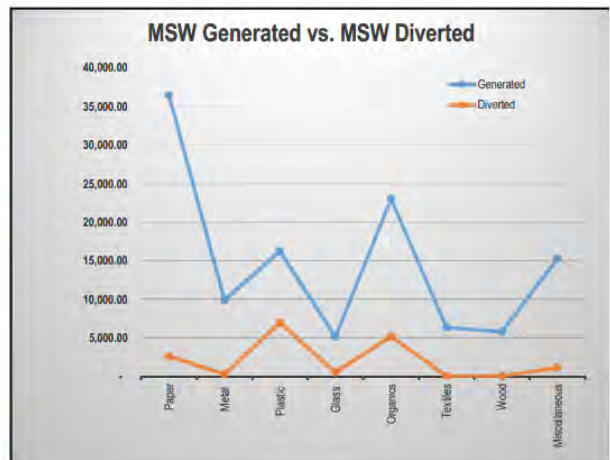
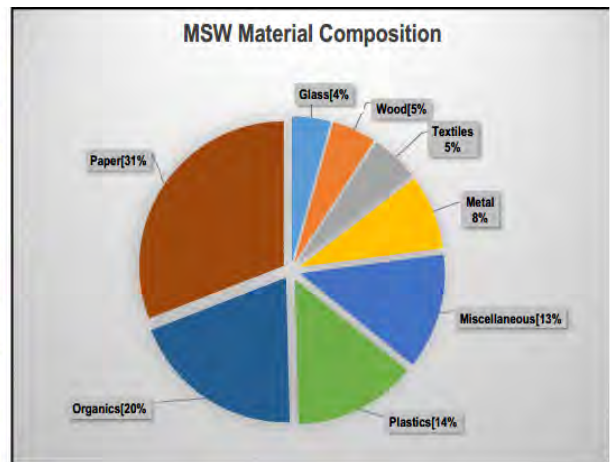
The total tons of MSW diverted per year will be auto populated based on previous data inputs, while the amount tons diverted for each material by category should be populated by the user. purple note should be used for amounts of diverted waste by type of material, and a totaled number by category (e.g. paper, metal) should be put in the green cells. After inputting the data, a graphic will be generated to show the MSW generation and diversion streams in Tons.

Make sure that the total amounts at the bottom of the page are consistent with the data you already put into the calculator. If the cell is highlighted in red, you should revise the amounts of diverted waste by category.

### Ulster County Resource Recovery Agency (UCRRA)

2020-2029

		2019		
		MSW Materials Composition (%)	MSW Generated (Tons)	MSW Diverted (Tons)
Material		100.0%	117,968	16,589.00
Paper	Newspaper	3.7%	4,384	1,051.00
	Corrugated Cardboard	9.8%	11,524	1,553.00
	Other Recyclable Paper (Total)	10.8%	12,754	
	Other Compostable Paper	6.6%	7,801	
	<b>Total Paper</b>	<b>30.9%</b>	<b>36,463</b>	<b>2,604.00</b>
Metal	Ferrous/Aluminum Containers (Total)	1.8%	2,111	
	Other Ferrous Metals	5.3%	6,275	
	Other Non-Ferrous Metals (Total)	1.2%	1,474	259.00
	<b>Total Metals</b>	<b>8.4%</b>	<b>9,860</b>	<b>259.00</b>
Plastic	PET Containers	0.9%	1,083	
	HDPE Containers	0.9%	1,006	
	Other Plastic (3-7) Containers	0.2%	210	
	Film Plastic	5.7%	6,741	
	Other Plastic (Total)	6.1%	7,166	6,949.00
	<b>Total Plastics</b>	<b>13.7%</b>	<b>16,205</b>	<b>6,949.00</b>
Glass	Glass Bottles, Jars and Containers	3.9%	4,622	496.00
	Other Glass (Flat glass, dishware, light bulbs, etc.)	0.4%	478	0.00
	<b>Total Glass</b>	<b>4.3%</b>	<b>5,100</b>	<b>496.00</b>
Organics	Food Scraps	13.5%	15,896	3,537.00
	Leaves and Grass / Pruning and Trimmings	6.0%	7,107	1,628.00
	<b>Total Organics</b>	<b>19.5%</b>	<b>23,003</b>	<b>5,165.00</b>
Textiles	Clothing Footwear, Towels, Sheets	3.9%	4,596	
	Carpet	1.5%	1,716	
	<b>Total Textiles</b>	<b>5.4%</b>	<b>6,312</b>	<b>0.00</b>
Wood	<b>Total Wood</b> (Pallets, crates, adulterated and non-adulterated wood)	<b>4.9%</b>	<b>5,765</b>	
	DIY Construction & Renovation Materials	5.7%	6,742	739.00
Miscellaneous	Diapers	1.6%	1,917	
	Electronics	1.5%	1,750	304.00
	Tires	1.7%	1,994	18.00
	HHW	0.3%	401	55.00
	Soils and Fines	0.4%	457	
	Other Composite Materials - Durable and/or inert	1.7%	1,998	
	<b>Total Miscellaneous</b>	<b>12.9%</b>	<b>15,259</b>	<b>1,116.00</b>
<b>Total</b>		<b>100.0%</b>	<b>117,968</b>	<b>16,589.00</b>





## Step 6. Municipal Solid Waste (MSW) Diversion Projections

This tab will be used to create goals for the amount of material the planning unit will divert for each year of the planning period. These goals will be entered as percentages, based on how much of the material generated will be diverted for recycling or beneficial use.

The diversion goal percentages will be entered in the **purple cells** for each material and each year of the planning period.

### Ulster County Resource Recovery Agency (UCRRA)

2020-2029

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Projected MSW Generation (Tons/yr)	117,765	117,492	117,220	116,949	116,678	116,409	116,139	115,871	115,602	115,335
MSW Diverted (Tons/yr)	10,248	10,776	11,303	11,827	12,348	12,867	13,383	13,897	14,409	14,918

	Material	2019				2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
		MSW Materials Composition (%)	MSW Generated (Tons)	MSW Diverted (Tons)	% MSW Diverted	% MSW Diverted	% MSW Diverted	% MSW Diverted	% MSW Diverted	% MSW Diverted	% MSW Diverted	% MSW Diverted	% MSW Diverted	% MSW Diverted	% MSW Diverted
Paper	Newspaper	3.7%	4,384	1,051	24.0%	24.5%	25.0%	25.5%	26.0%	26.5%	27.0%	27.5%	28.0%	28.5%	29.0%
	Corrugated Cardboard	9.8%	11,524	1,553	13.5%	14.0%	14.5%	15.0%	15.5%	16.0%	16.5%	17.0%	17.5%	18.0%	18.5%
	Other Recyclable Paper (Total)	10.8%	12,754	0	0.0%	1.0%	2.0%	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%
	Other Compostable Paper	6.6%	7,801	0	0.0%	1.0%	2.0%	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%
	<b>Total Paper</b>	<b>30.9%</b>	<b>36,463</b>	<b>2,604</b>	<b>7.1%</b>	<b>7.9%</b>	<b>8.7%</b>	<b>9.5%</b>	<b>10.3%</b>	<b>11.1%</b>	<b>11.8%</b>	<b>12.6%</b>	<b>13.4%</b>	<b>14.2%</b>	<b>15.0%</b>
Metal	Ferrous/Aluminum Containers (Total)	1.8%	2,111	0	0.0%	1.0%	2.0%	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%
	Other Ferrous Metals	5.3%	6,275	0	0.0%	1.0%	2.0%	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.0%
	Other Non-Ferrous Metals (Total)	1.2%	1,474	259	17.6%	18.0%	19.0%	20.0%	21.0%	22.0%	23.0%	24.0%	25.0%	26.0%	27.0%
	<b>Total Metals</b>	<b>8.4%</b>	<b>9,860</b>	<b>259</b>	<b>2.6%</b>	<b>3.5%</b>	<b>4.5%</b>	<b>5.5%</b>	<b>6.5%</b>	<b>7.5%</b>	<b>8.5%</b>	<b>9.5%</b>	<b>10.5%</b>	<b>11.5%</b>	<b>12.5%</b>
Plastic	PET Containers	0.9%	1,083	0	0.0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%
	HDPE Containers	0.9%	1,006	0	0.0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%
	Other Plastic (3-7) Containers	0.2%	210	0	0.0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%
	Film Plastic	5.7%	6,741	0	0.0%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
	Other Plastic (Total)	6.1%	7,166	6,949	97.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
	<b>Total Plastics</b>	<b>13.7%</b>	<b>16,205</b>	<b>6,949</b>	<b>42.9%</b>	<b>0.7%</b>	<b>0.8%</b>	<b>0.9%</b>	<b>0.9%</b>	<b>1.0%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>1.2%</b>	<b>1.3%</b>	<b>1.4%</b>
Glass	Glass Bottles, Jars and Containers	3.9%	4,622	496	10.7%	11.0%	11.5%	12.0%	12.5%	13.0%	13.5%	14.0%	14.5%	15.0%	15.5%
	Other Glass (Flat glass, dishware, light bulbs, etc.)	0.4%	478	0	0.0%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
	<b>Total Glass</b>	<b>4.3%</b>	<b>5,100</b>	<b>496</b>	<b>9.7%</b>	<b>10.0%</b>	<b>10.5%</b>	<b>10.9%</b>	<b>11.4%</b>	<b>11.8%</b>	<b>12.3%</b>	<b>12.7%</b>	<b>13.2%</b>	<b>13.6%</b>	<b>14.1%</b>
Organics	Food Scraps	13.5%	15,896	3,537	22.3%	22.5%	23.0%	23.5%	24.0%	24.5%	25.0%	25.5%	26.0%	26.5%	27.0%
	Leaves and Grass / Pruning and Trimmings	6.0%	7,107	1,628	22.9%	23.0%	23.5%	24.0%	24.5%	25.0%	25.5%	26.0%	26.5%	27.0%	27.5%
	<b>Total Organics</b>	<b>19.5%</b>	<b>23,003</b>	<b>5,165</b>	<b>22.5%</b>	<b>22.7%</b>	<b>23.2%</b>	<b>23.7%</b>	<b>24.2%</b>	<b>24.7%</b>	<b>25.2%</b>	<b>25.7%</b>	<b>26.2%</b>	<b>26.7%</b>	<b>27.2%</b>
Textiles	Clothing Footwear, Towels, Sheets	3.9%	4,596	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Carpet	1.5%	1,716	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>Total Textiles</b>	<b>5.4%</b>	<b>6,312</b>	<b>0</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
Wood	Total Wood (Pallets, crates, adulterated and non-adulterated wood)	4.9%	5,765	0	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Miscellaneous	DIY Construction & Renovation Materials	5.7%	6,742	739	11.0%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%
	Diapers	1.6%	1,917	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Electronics	1.5%	1,750	304	17.4%	18.0%	19.0%	20.0%	21.0%	22.0%	23.0%	24.0%	25.0%	26.0%	27.0%
	Tires	1.7%	1,994	18	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
	HHW	0.3%	401	55	13.7%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%	21.0%	22.0%	23.0%
	Soils and Fines	0.4%	457	0	0.0%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
	Other Composite Materials - Durable and/or inert	1.7%	1,998	0	0.0%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
	<b>Total Miscellaneous</b>	<b>12.9%</b>	<b>15,259</b>	<b>1,116</b>	<b>7.3%</b>	<b>7.7%</b>	<b>7.9%</b>	<b>8.0%</b>	<b>8.1%</b>	<b>8.3%</b>	<b>8.4%</b>	<b>8.6%</b>	<b>8.7%</b>	<b>8.9%</b>	<b>9.0%</b>



Step 7. Municipal Solid Waste (MSW) Generation and Diversion - Detailed Projections

The final result of the Population and Municipal Composition Calculator is presented on the last tab. This tab contains data for the current year regarding waste generated and waste diverted from disposal. This tab also shows the projected waste diversion percentages, and the amount of waste in tons these percentages will divert for recycling. Total amounts of waste diverted will be calculated for each material and each year of the planning period.

Ulster County Resource Recovery Agency (UCRRA)

2020-2029

		MSW Materials Composition (%)	2019			2020			2021			2022			2023			2024			2025			2026			2027			2028			2029				
			MSW Generated (Tons)	MSW Diverted (Tons)	% MSW Diverted	MSW generated (Tons)	MSW Diverted	% MSW Diverted	MSW generated (Tons)	MSW Diverted	% MSW Diverted	MSW generated (Tons)	MSW Diverted	% MSW Diverted	MSW generated (Tons)	MSW Diverted	% MSW Diverted	MSW generated (Tons)	MSW Diverted	% MSW Diverted	MSW generated (Tons)	MSW Diverted	% MSW Diverted	MSW generated (Tons)	MSW Diverted	% MSW Diverted	MSW generated (Tons)	MSW Diverted	% MSW Diverted	MSW generated (Tons)	MSW Diverted	% MSW Diverted					
Material		100.00%	117,888	16,589	14.1%	117,785	10,248	8.7%	117,492	10,776	9%	117,220	11,308	9.6%	118,949	11,827	10.1%	118,678	12,843	10.8%	118,408	12,867	11.1%	118,139	13,383	11.3%	117,871	13,887	12.0%	117,602	14,409	12.6%	117,335	14,918	12.9%		
Paper	Newspaper	0.72%	4,384	1,051	24.0%	4,376	1,072	24.5%	4,366	1,092	25%	4,356	1,111	25.5%	4,346	1,130	26.0%	4,336	1,149	26.5%	4,326	1,168	27.0%	4,316	1,187	27.5%	4,306	1,206	28.0%	4,296	1,224	28.5%	4,286	1,243	29.0%		
	Corrugated Cardboard	9.77%	11,524	1,553	13.5%	11,504	1,611	14.0%	11,477	1,664	15%	11,451	1,718	15.0%	11,424	1,771	15.5%	11,398	1,824	16.0%	11,371	1,876	16.5%	11,345	1,929	17.0%	11,319	1,981	17.5%	11,293	2,033	18.0%	11,266	2,084	18.5%		
	Other Recyclable Paper	Paperboard	2.29%	2,705	0	0.0%	2,701	0	0.0%	2,694	0	0%	2,688	0	0.0%	2,682	0	0.0%	2,676	0	0.0%	2,670	0	0.0%	2,663	0	0.0%	2,657	0	0.0%	2,651	0	0.0%	2,645	0	0.0%	
		Office Paper	2.21%	2,609	0	0.0%	2,605	0	0.0%	2,599	0	0%	2,593	0	0.0%	2,587	0	0.0%	2,581	0	0.0%	2,575	0	0.0%	2,569	0	0.0%	2,563	0	0.0%	2,557	0	0.0%	2,551	0	0.0%	
		Junk Mail	2.06%	2,422	0	0.0%	2,418	0	0.0%	2,412	0	0%	2,407	0	0.0%	2,401	0	0.0%	2,395	0	0.0%	2,390	0	0.0%	2,385	0	0.0%	2,379	0	0.0%	2,374	0	0.0%	2,368	0	0.0%	
		Other Commercial Printing	1.98%	2,337	0	0.0%	2,333	0	0.0%	2,328	0	0%	2,323	0	0.0%	2,317	0	0.0%	2,312	0	0.0%	2,307	0	0.0%	2,301	0	0.0%	2,295	0	0.0%	2,291	0	0.0%	2,285	0	0.0%	
		Megazines	0.97%	1,140	0	0.0%	1,138	0	0.0%	1,135	0	0%	1,133	0	0.0%	1,130	0	0.0%	1,128	0	0.0%	1,125	0	0.0%	1,122	0	0.0%	1,120	0	0.0%	1,117	0	0.0%	1,115	0	0.0%	
		Books	0.41%	487	0	0.0%	487	0	0.0%	485	0	0%	484	0	0.0%	483	0	0.0%	482	0	0.0%	481	0	0.0%	480	0	0.0%	479	0	0.0%	478	0	0.0%	477	0	0.0%	
		Paper Bags	0.37%	436	0	0.0%	435	0	0.0%	434	0	0%	433	0	0.0%	432	0	0.0%	431	0	0.0%	430	0	0.0%	429	0	0.0%	428	0	0.0%	427	0	0.0%	426	0	0.0%	
		Phone Books	0.30%	354	0	0.0%	353	0	0.0%	352	0	0%	352	0	0.0%	351	0	0.0%	350	0	0.0%	349	0	0.0%	348	0	0.0%	348	0	0.0%	347	0	0.0%	346	0	0.0%	
	Poly-Coated	0.22%	282	0	0.0%	282	0	0.0%	281	0	0%	281	0	0.0%	280	0	0.0%	259	0	0.0%	259	0	0.0%	258	0	0.0%	258	0	0.0%	257	0	0.0%	256	0	0.0%		
	Other Recyclable Paper (Total)	10.81%	12,754	0	0.0%	12,732	127	1.0%	12,703	254	2%	12,673	380	3.0%	12,644	506	4.0%	12,615	631	5.0%	12,586	755	6.0%	12,557	879	7.0%	12,527	1,002	8.0%	12,498	1,125	9.0%	12,470	1,247	10.0%		
	Other Compostable Paper	8.91%	7,801	0	0.0%	7,788	78	1.0%	7,770	155	2%	7,752	233	3.0%	7,734	309	4.0%	7,716	386	5.0%	7,698	462	6.0%	7,680	538	7.0%	7,662	613	8.0%	7,645	688	9.0%	7,627	763	10.0%		
	Total Paper	30.81%	36,463	2,604	7.1%	36,400	2,868	7.9%	36,316	3,165	9%	36,232	3,441	9.5%	36,148	3,716	10.3%	36,064	3,989	11.1%	35,981	4,261	11.8%	35,898	4,532	12.6%	35,815	4,802	13.4%	35,732	5,070	14.2%	35,649	5,337	15.0%		
Metal	Ferrous/Aluminum Containers	Ferrous Containers	1.27%	1,494	0	0.0%	1,491	11	0.7%	1,488	21	1%	1,484	32	2.1%	1,481	42	2.8%	1,477	52	3.5%	1,474	63	4.2%	1,471	73	5.0%	1,467	83	5.7%	1,464	93	6.4%	1,460	103	7.1%	
		Aluminum Containers	0.52%	817	0	0.0%	816	2	0.3%	815	4	1%	813	5	0.2%	812	7	1.2%	810	9	1.5%	808	11	1.8%	807	12	2.0%	806	14	2.3%	805	16	2.6%	803	18	2.9%	
	Ferrous/Aluminum Containers (Total)		1.79%	2,111	0	0.0%	2,107	21	1.0%	2,102	42	2%	2,097	63	3.0%	2,093	84	4.0%	2,088	104	5.0%	2,083	125	6.0%	2,078	145	7.0%	2,073	166	8.0%	2,068	186	9.0%	2,064	206	10.0%	
	Other Ferrous Metals		6.82%	6,275	0	0.0%	6,265	63	1.0%	6,250	125	2%	6,236	187	3.0%	6,221	249	4.0%	6,207	310	5.0%	6,192	372	6.0%	6,178	432	7.0%	6,164	493	8.0%	6,150	553	9.0%	6,135	614	10.0%	
	Other Non-Ferrous Metals	Other aluminum	0.24%	287	0	0.0%	287	0	0.0%	286	0	0%	285	0	0.0%	285	0	0.0%	284	0	0.0%	283	0	0.0%	283	0	0.0%	282	0	0.0%	281	0	0.0%	281	0	0.0%	
		Automotive batteries	0.82%	735	0	0.0%	734	0	0.0%	732	0	0%	730	0	0.0%	729	0	0.0%	727	0	0.0%	725	0	0.0%	724	0	0.0%	722	0	0.0%	720	0	0.0%	719	0	0.0%	
		Other non-aluminum	0.38%	452	0	0.0%	451	0	0.0%	450	0	0%	449	0	0.0%	448	0	0.0%	447	0	0.0%	446	0	0.0%	445	0	0.0%	444	0	0.0%	443	0	0.0%	442	0	0.0%	
	Other Non-Ferrous Metals (Total)		1.35%	1,474	0	0.0%	1,471	0	0.0%	1,468	0	0%	1,464	0	0.0%	1,461	0	0.0%	1,458	0	0.0%	1,454	0	0.0%	1,451	0	0.0%	1,447	0	0.0%	1,444	0	0.0%	1,441	0	0.0%	
	Total Metals		8.98%	9,860	259	2.6%	9,843	349	3.5%	9,820	446	5%	9,797	543	5.5%	9,775	639	6.5%	9,752	735	7.5%	9,729	831	8.5%	9,707	926	9.5%	9,684	1,021	10.5%	9,662	1,115	11.5%	9,640	1,209	12.5%	
	Plastic	PET Containers	0.92%	1,063	0	0.0%	1,061	5	0.5%	1,059	11	1%	1,056	18	1.5%	1,054	21	2.0%	1,052	27	2.5%	1,049	32	3.0%	1,047	37	3.5%	1,044	43	4.0%	1,042	48	4.5%	1,039	53	5.0%	
HDPE Containers		0.86%	1,008	0	0.0%	1,004	5	0.5%	1,002	10	1%	999	15	1.5%	997	20	2.0%	995	25	2.5%	992	30	3.0%	990	35	3.5%	988	40	4.0%	986	44	4.5%	983	49	5.0%		
Other Plastics (3-7) Containers		0.18%	210	0	0.0%	209	1	0.5%	209	2	1%	208	3	1.5%	206	4	2.0%	207	6	3.0%	207	8	3.0%	206	7	3.5%	205	9	4.5%	205	10	5.0%					
Film Plastic		Other Plastic	Dummbies	6.71%	6,741	0	0.0%	6,729	34	0.5%	6,714	34	1%	6,698	33	0.5%	6,683	33	0.5%	6,667	33	0.5%	6,652	33	0.5%	6,637	33	0.5%	6,621	33	0.5%	6,606	33	0.5%	6,591	33	0.5%
			Non-Dummbies	3.12%	3,678	0	0.0%	3,672	0	0.0%	3,663	0	0%	3,655	0	0.0%	3,646	0	0.0%	3,638	0	0.0%	3,629	0	0.0%	3,621	0	0.0%	3,612	0	0.0%	3,604	0	0.0%	3,596	0	0.0%
			Packaging	1.89%	1,990	0	0.0%	1,985	0	0.0%	1,982	0	0%	1,977	0	0.0%	1,973	0	0.0%	1,968	0	0.0%	1,964	0	0.0%	1,959	0	0.0%	1,955	0	0.0%	1,950	0	0.0%	1,945	0	0.0%
Other Plastic (Total)		1.27%	1,498	0	0.0%	1,495	0	0.0%	1,492	0	0%	1,488	0	0.0%	1,485	0	0.0%	1,482	0	0.0%	1,478	0	0.0%	1,475	0	0.0%	1,471	0	0.0%	1,468	0	0.0%	1,465	0	0.0%		
Other Plastic (Total)		8.07%	7,166	0	0.0%	7,153	72	1.0%	7,137	71	1%	7,120	71	1.0%	7,104	71	1.0%	7,087	71	1.0%	7,071	71	1.0%	7,055	71	1.0%	7,038	70	1.0%	7,022	70	1.0%	7,006	70	1.0%		
Total Plastics		13.74%	16,205	0	0.0%	16,178	117	0.7%	16,140	128	1%	16,103	139	0.9%	16,066	150	0.9%	16,028	161	1.0%	15,991	172	1.1%	15,954	183	1.1%	15,917	194	1.2%	15,881	205	1.3%	15,844	215	1.4%		
Glass		Glass Bottles, Jars and Containers		3.82%	4,922	496	10.1%	4,914	508	11.0%	4,904	529	12%	4,893	551	12.0%	4,882	573	12.5%	4,872	594	13.0%	4,861	616	13.5%	4,851	637	14.0%	4,840	658	14.5%	4,830	679	15.0%	4,819	700	



## LIMITATIONS

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The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

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## FIGURES

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PREPARED BY:  
CORNERSTONE ENGINEERING, GEOLOGY AND LAND SURVEYING, PLLC

ULSTER COUNTY RESOURCE RECOVERY AGENCY  
ULSTER COUNTY, NEW YORK

**SITE LOCATION MAP**

FIGURE NO.

1

PROJECT NO.  
190256

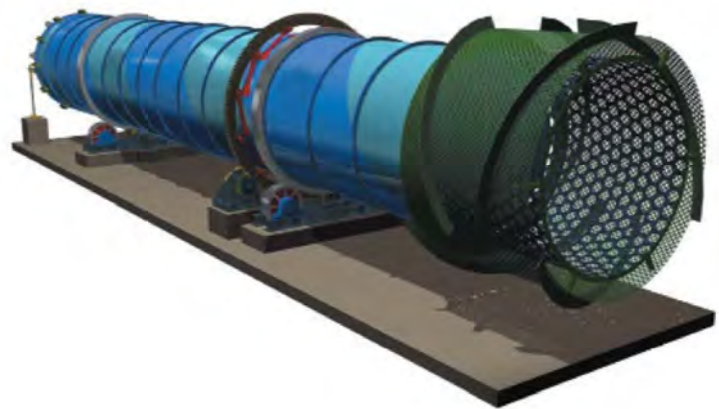
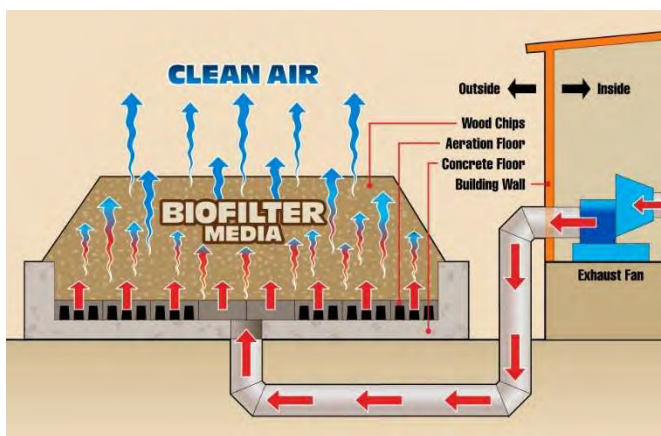
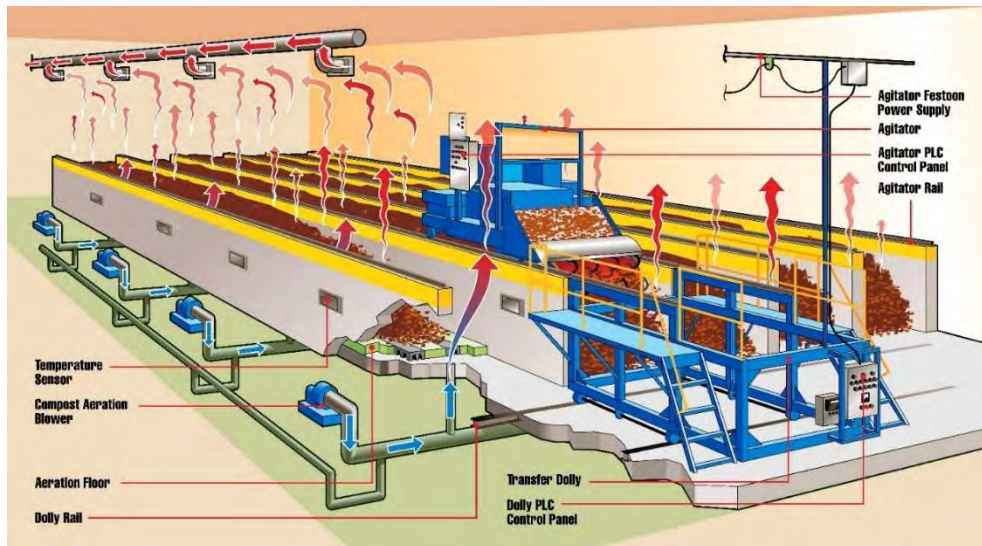
## APPENDIX A

### MSW COMPOSTING COST ESTIMATE

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# Material Sorting & Agitated Bay Composting - Ulster County, NY Organic Solid Waste + Biosolids



## SUBMITTED TO:

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100 Crystal Run Road, Suite 101 | Middletown, NY 10941 | [cornerstoneeg.com](http://cornerstoneeg.com) | [tetratech.com](http://tetratech.com)

## INTRODUCTION

In order to give a full system estimate price, BDP Industries and Machinex put their strengths together to build a strong solution for your project featuring Machinex and BDP Industries Equipment.

More than 40 years ago, Machinex became the first company in Canada to design machinery for material recycling facilities. The company immediately established itself as a leader in designing profitable quality recycling sorting systems. Today, Machinex is still a world leader in the industry, developing cutting edge sorting, waste management and recycling technology. Over the years, our expert staff have designed and installed over 200 turnkey facilities in partnership with leading MRF operators in Canada, the United States and Northern Europe.

BDP has been manufacturing in-vessel, agitated bay compost agitators and other composting related equipment since 1986 with over 30 reference facilities worldwide. Combining daily agitation and forced aeration inside a fully enclosed facility provides a system that is widely recognized as the most space efficient type of system to achieve stable, homogenized compost for any given feedstock. BDP's strategic partnership with BacTee Systems, results in a team that can provide complete process design for compost facilities including aeration, ventilation and odor control. BDP designs and manufactures the proprietary process related components. We also provide performance specifications for the balance of process equipment such that this equipment can be procured in the most cost-effective manner.

We hope that you will find that this proposal meets with your requirements. If you have any comments or questions, whatsoever, please do not hesitate to contact us.

Sincerely,



Richard Nicoletti  
Compost Systems Manager  
BDP Industries



Pierre-André Mongeon  
Sales Project Director  
Machinex Technologies Inc.

## ESTIMATED COSTS

BDP Industries and Machinex Technologies Inc. estimate a total of **\$50,000,000 USD** for a complete plant (Building and Equipment) to receive MSW + Biosolid, extract the organic fraction (OSW), compost the OSW + Biosolid, remove contaminants in compost and send it to aeration (ASP) bays. Details of the plant design follow.

## MASS AND FLOW CHART

Based on a previous project in New York, one can find the following Municipal Solid Waste (MSW) material composition percentage per weight.

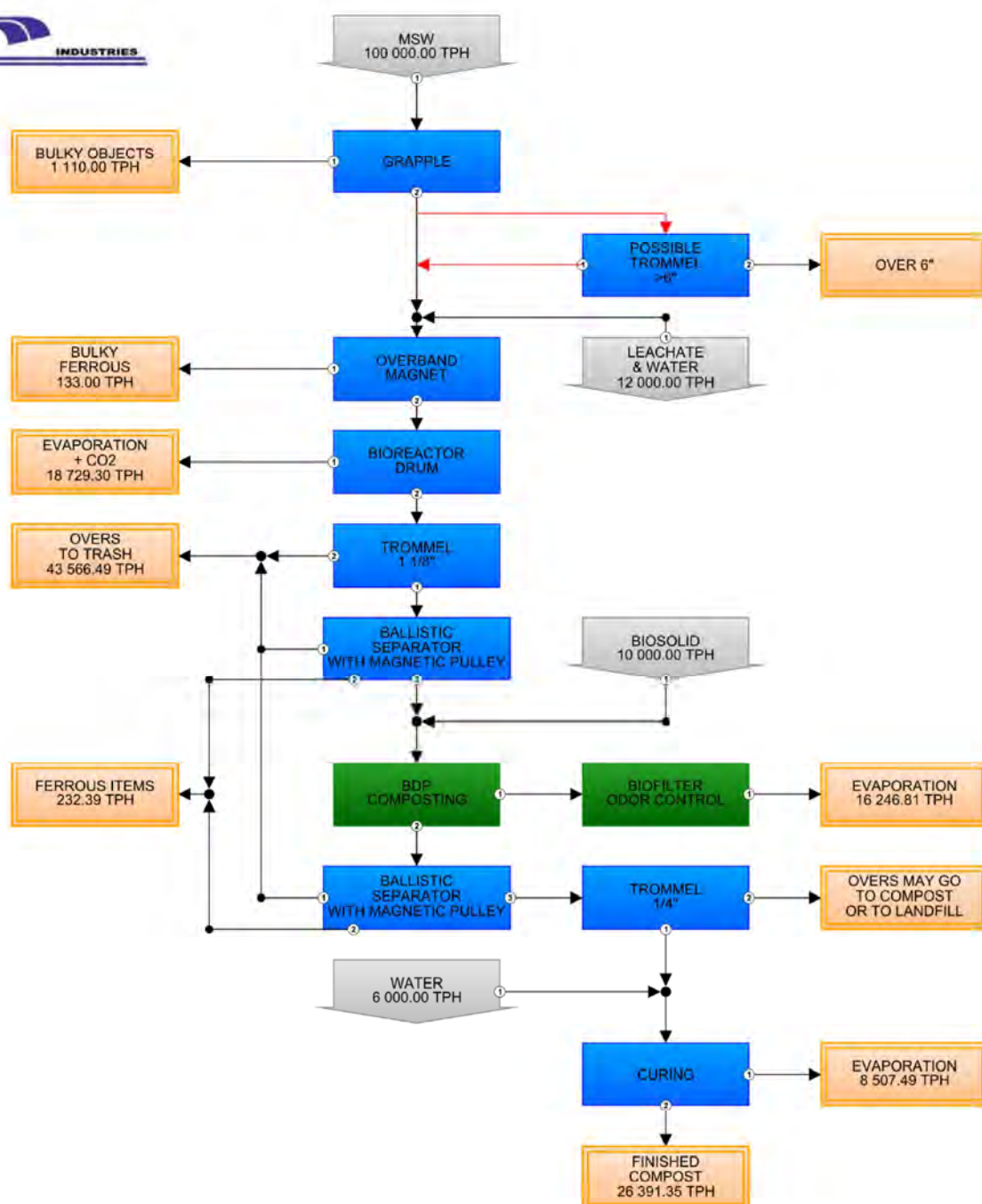
STONY POINT - NY WASTE COMPOSITION	
MATERIAL	% WEIGHT
Corrugated carton 14"+	4.5%
Plastic PET Bottles	1.8%
Plastic HDPE Bottles	2.1%
Ferrous Cans	0.2%
Other Ferrous	0.1%
Aluminum Cans	0.8%
Other Aluminum	1.1%
PVC	0.2%
Glass	4.5%
Non-Ferrous, other than aluminum	2.0%
Not Otherwise defined, non-combustible	5.8%
Mixed paper	20.2%
Newspaper	1.6%
Plastic Film	7.6%
Dense Plastic: PP	0.8%
Textiles	6.6%
Plastics, other than PVC, PET and HDPE	4.7%
Wood	2.1%
Food waste	17.3%
Other organics	5.2%
Not Otherwise defined, combustible	2.9%
Fines (2" minus)	7.9%
<b>Total</b>	<b>100%</b>
ESTIMATED MOISTURE CONTENT 31.00%	

Based on these estimates and on the MSW mass throughput of 100,000 tons per year given as a starting point, Machinex and BDP Industries sized and designed the best solution to process 40,000 WTPY of organic fraction or OSW and 10,000 tons per year of Biosolid.

The following flow diagram shows expected mass balance in tons per year (note that some units are indicated in TPH, but the numbers are in tons per year).



ULSTER COUNTY, NY  
MSW COMPOSTING FACILITY  
100,000 TPY OF MSW  
30,000 TO 50,000 TPY ORGANIC  
10,000 TPY OF BIOSOLIDS





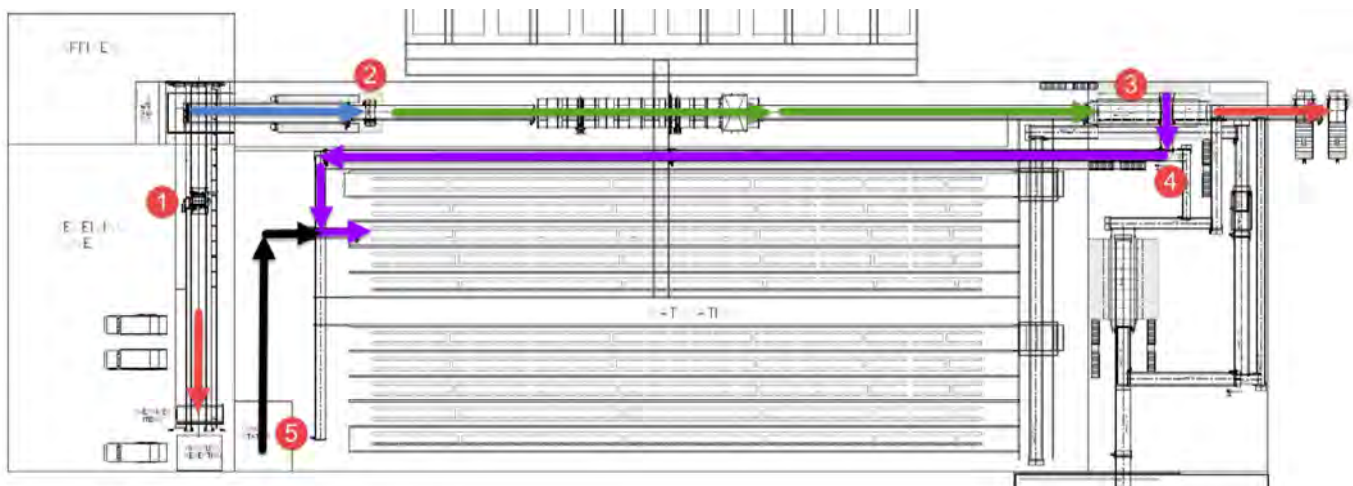
# NARRATIVE DESCRIPTION

## Receipt and sorting

In the MSW application, it is recommended to use a pit as a reception hall versus a tipping floor since material must be processed the same day it is received.

The first feature of this system is the grapple crane (1) operated by one crane operator. In constant communication with the other operators on site and by the means of cameras, the crane operator is the mastermind of the whole operation. He can detect blockages with the cameras, he calls the roll-off trucks to pick up full bins, he feeds the system and he **removes big contaminants such as car motors, mattresses and other large items.**

Once the material is dropped into the feed hopper, conveyors (C-4 & C-5) are conveying the material to the **Bioreactor drum D-6**. Just before it enters the drum, an over band magnet M-4 (2) removes ferrous items from the stream. After the material spent 1,000 revolutions inside the drum, the organic matter is decomposed enough to be screened out by a trommel (3). The material **over 1 1/8"** (predominantly organic and about 30% of the inbound material) is sent to the outside to two compactors to reduce trucking requirements. The material **under 1 1/8"**, which is predominantly OSW, continues its route to the BDP compost stage. Prior to do so, a ballistic conveying system (4) removes hard particles based on the bouncing reaction of hard particles versus the impact absorption of organic (softer) matter. The head pulley of that ballistic system will be magnetic to remove small ferrous metals. The ferrous material will be sent to a bin on the floor and will have to be manually emptied.



The biosolid receiving bay is convenient and easy to use. The pump truck opens its valves and drops the biosolid into a receiving hopper. Then, the **pumping/screw conveyors** drop the biosolid onto pre-cleaned organic matter and gets mixed into the BDP compost bays.

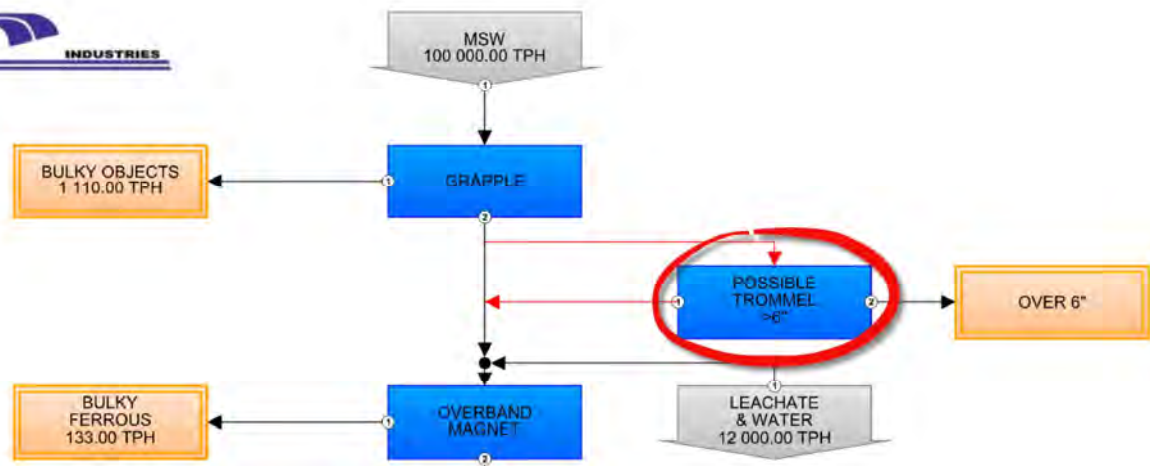
## Optional Trommel

All equipment was designed based on 2 shifts of 8 hours x 6 days per week which leads to about 25 TPH. If the mass rate has to increase, most of the equipment would have to be redesigned unless a trommel is added in from of the Bioreactor Drum. This trommel would remove the 6" overs since it is generally poor in organic content. The trommel screens would have bag rippers inside to open the bags to free they contain. This option should keep the mass rate close to 25 TPH.

The Bioreactor Drum is the most expensive unit of the system, the optional trommel could also be used to process less material in the Drum and to reduce the size of it (so the budget). The downsides of that are: one additional equipment to run and maintain, organic fraction would be lost in the 6 inches overs and



ULSTER COUNTY, NY  
MSW COMPOSTING FACILITY  
100,000 TPY OF MSW  
30,000 TO 50,000 TPY ORGANIC  
10,000 TPY OF BIOSOLIDS





## Composting Stage

Following the pre-composting Receipt/Sorting system detailed in the previous Machinex portion of this document, BDP proposes a 2 stage compost/curing system.

The initial Active Compost phase occurs in a 28 day enclosed compost facility comprised of (10) BDP bays at 10 ft wide x 8 ft high x 290 ft long to co-compost 40,000 wet tons per year (WTPY) of the organic fraction of Municipal Solid Waste or "OSW" with 10,000 WTPY of biosolids as per the following:

- 40,000 Wet Tons Per Year (WTPY) of OSW at approximately 50% dry solids (DS) and 0.35 tons per cubic yard density (T/Yd3).
- 10,000 WTPY of Biosolids at an average of 25% DS (Cornerstone indicated a range of 20% - 30% DS) and 0.8 T/Yd3

**TABLE 1 - MATERIALS BALANCE**  
ICS Composting Facility  
**Ulster County, NY - DANO Drum Design Basis**

10,000 WTPY Biosolids + 40,000 WTPY OSW - 28 Days in Bays					
MATERIALS	WET TONS PER DAY	PERCENT DRY SOLIDS	DRY TONS PER DAY	VOLUME CY	BULK DENSITY TONS/CY
Organics from MSW (OSW)	128	50%	64.1	366	0.35
Mixed Biosolids	32	25%	8.0	40	0.80
Ground Green Waste	0	50%	0.0	0	0.30
Recycled Overs	0	65%	0.0	0	0.30
<b>INPUT TO BAYS</b>	<b>160</b>	<b>45%</b>	<b>72</b>	<b>377</b>	<b>0.43</b>
<b>OUTPUT to REFINING</b>	<b>90</b>	<b>65%</b>	<b>54</b>	<b>225</b>	<b>0.40</b>
<b>Agitated Bay Design Criteria and Assumptions</b>					
	1.	10000	Wet Tons per Year (WTPY) Biosolids at 20% - 30% DS Design Capacity.		
	2	40000	WTPY of Food Waste Design Capacity.		
	3	0	WTPY of Ground Green Waste Required		
	4	10	Bays at	290	ft long required
	5		Facility Operates	6	Days per week
	6	40.5	Cubic yard Charges per Agitation		
	7	9	Bays loaded and Agitated per day at	6	Days/week
	8	28	Days in the Bays Retention		
	9	27	Estimated Carbon to Nitrogen ratio of infeed mix		

Note that no ground Green Waste bulking agent is required to get a proper compost feedstock.

Following 28 days in the BDP bays, the material should be well into the Curing phase with limited odor potential. After the material leaves the bays, it will be conveyed to the enclosed Machinex Screening/Refining system where the remaining inorganic contaminants are removed.

The organic fraction is then conveyed to the secondary 30 – 40 day Aerated Static Pile (ASP) Curing Shed to complete the curing process.

### **Facility Design Parameters**

Figure 1 – Conceptual Compost/Curing Facility layout.

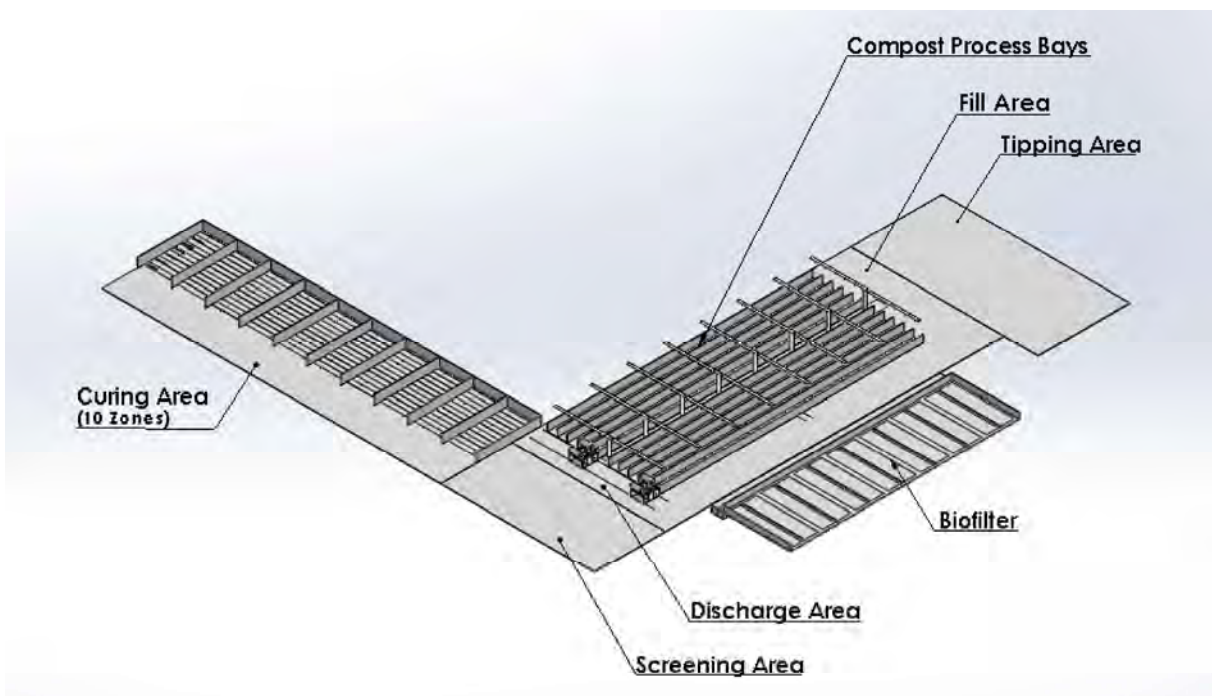
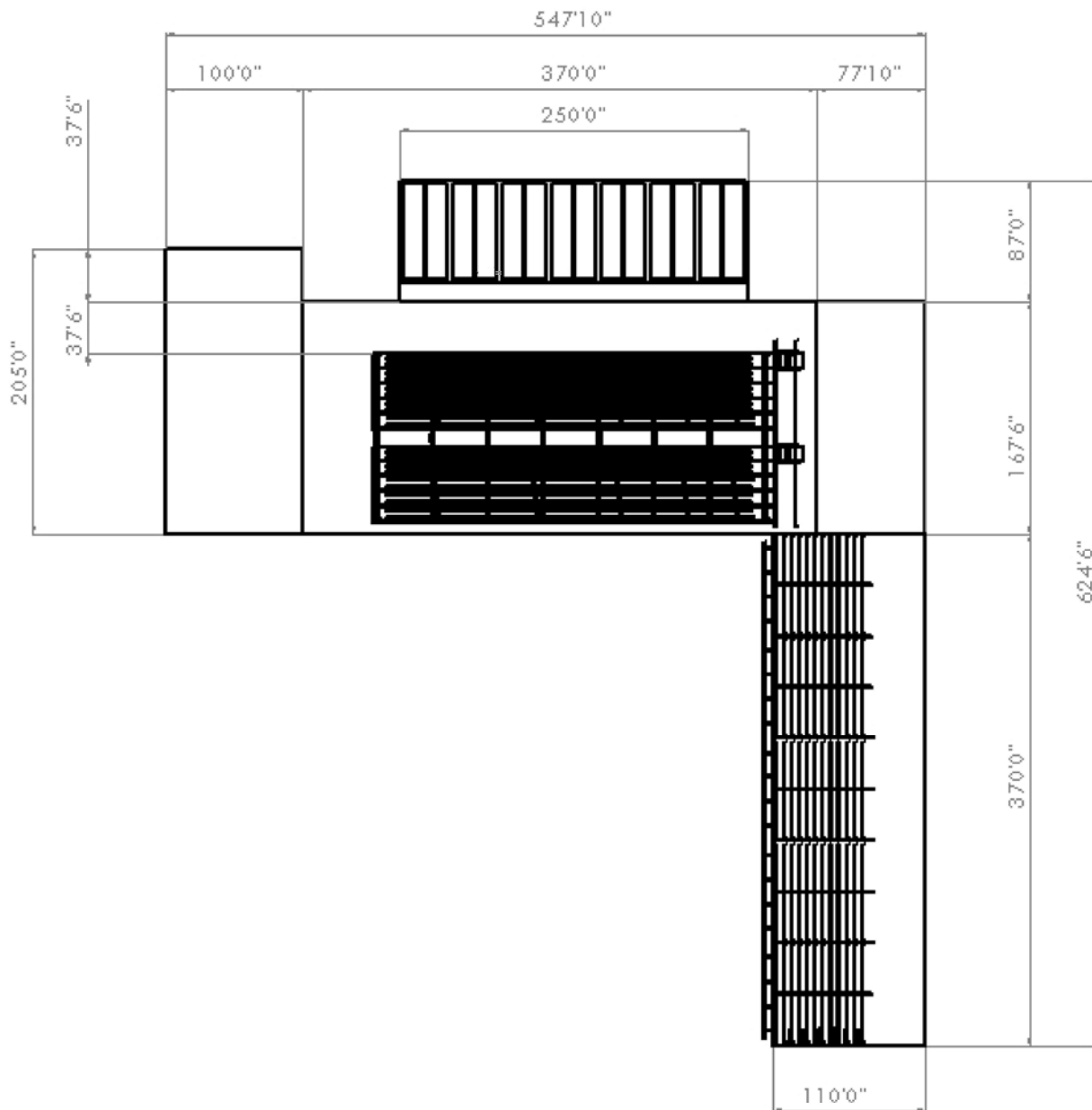


Figure 2 – Dimensioned Plan View



- It is presumed the Compost Facility will operate 6 days per week and 16 hours per day to match the Receiving/Sorting/Refining facility operations. However, with two agitators in operation, the run time per agitator is expected to be only 6 – 7 hours per day (6 days per week).
- The (10) bays are 10ft wide x 290ft long and are designed to retain the material in the bays for at least 28 days to achieve appropriate pathogen destruction (3 days at 55C) and Vector Attraction Reduction (VAR = 14 days at 45C avg) required by the USEPA CFR 503 guidelines for biosolids. After 28 days in the enclosed bay facility, the discharge material should be sufficiently stable for outdoor curing (after the refining operation).
- Per the Machinex design, the OSW and Biosolids will be pre-mixed for delivery to the compost facility. The design has the compost feedstock material belt conveyed directly into the bays. A 50 ft long space in front of the bays is indicated for loader access to the bays should it be needed or for storage of random/seasonal clean organic materials that may need to be disposed of by the County but don't need to go thru the Sorting system such as ground green waste. This material can be loaded directly into the bays.
- The (2) agitator transfer dollies would be located at the rear end of the bays. The design assumes a 30 ft long space along the back end of the bays for the dollies. The base design includes a belt conveyor under the dollies for automated movement of the composted material to the adjacent Screening/Refining building.
- After 28 days in the bays, and following the refining process, approximately 225 yds/day of screened compost material would be transferred to an approximate 40,000 SF open sided shed type building for 30 – 40 days of aerated static pile curing. The shed would contain approximately (10) bunkers for the curing process. Each bunker would have a dedicated aeration blower. The bunkers would use BDP supplied aeration strips in the floor for delivering air to the compost material.
- The biofilter size of @ 20,000 SF is based on using a natural wood chip type media over a BDP supplied aeration floor.

## Post-Compost cleaning

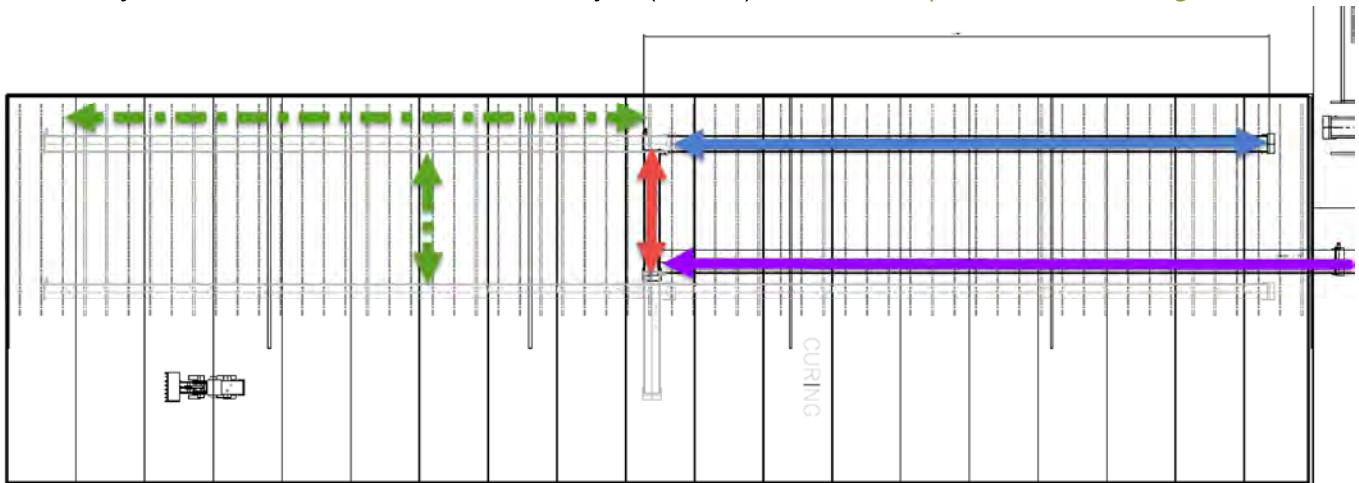
Once the compost is stabilized through the tunnels, the BDP agitator $\text{s}$  (1) discharge about 25 cubic yards per bays of compost to a series of conveyors (C-200/C-201/C-202). Since the bay discharging process is not continuous, an accumulating hopper (2) is recommended. This hopper will accumulate until it reaches a certain height. Then, a signal will be sent to the operator that it is time to process compost through the cleaning process. An overflow alarm is also recommended to avoid spillage in the hopper.

The compost cleaning system is fed by a slow speed conveyor under the hopper (2). The hard particles in the compost will be removed by a ballistic separator (3) and sent to trash by the conveyor **C-207**. The head pulley of that ballistic system will be magnetic to remove small ferrous metals. Then the compost is conveyed (C-208/C-209) is screened at  $\frac{1}{4}$ " by a finishing trommel (4). The **over  $\frac{1}{4}$ "** could be reused as a bulking agent, but our previous experiences suggest that it should be considered as trash. The **under  $\frac{1}{4}$ "** is conveyed to the curing phase in the BDP aerated beds.



## Curing bays feeding system

The cleaned compost is ready to be finalized in the curing bays. In order to minimize loader operation which ultimately results in fuel economy, a shuttle conveying system is recommended. The feeding conveyors (C-300/C-301) bring the compost to the reversible conveyor (C-302). Then the shuttle/reversible conveyor (C-303) fills and maximizes the bays. As indicated below, the conveyor (C-303) can move up/down and left/right.





## COMPOST/CURING ESTIMATE CAPEX

TABLE 2 - CAPITAL COST ESTIMATE						
ICS COMPOSTING FACILITY						
Ulster County, NY - DANO Drum Design Basis						
10 WIDE BAYS into ASP CURING						
ITEM						BUDGETARY COST
<b>CONSTRUCTION</b>						
	Site Work (Estimated at 5 Acres)				\$	200,000
	Compost Building @ 52,000 SF (Coated Steel - Equipped) <sup>1</sup>					7,700,000
	Product Curing Shed @ 40,000 SF (Steel Roof - Equipped) <sup>2</sup>					2,900,000
	Biofilter Odor Control incl, Concrete, Duct, Fans , Floor and Media <sup>3</sup>					1,000,000
	Balance of BDP Equipment and Services <sup>4</sup>					2,900,000
	Rolling Stock & Misc Equipment <sup>5</sup>					800,000
	<b>SUBTOTAL:</b>				\$	<b>15,500,000</b>
<b>ENGINEERING AND SERVICES</b>						<b>1,800,000</b>
	<b>10% Contingency:</b>				\$	<b>1,700,000</b>
<b>ESTIMATED TOTAL PROJECT COST:</b>						<b>\$ 19,000,000</b>
<sup>1</sup>	Does not include Machinex supplied conveyors.					
<sup>2</sup>	Including BDP supplied Aeration Floor but does not include Machinex supplied conveyors.					
<sup>3</sup>	Complete Turnkey Biofilter Including BDP supplied Aeration Floor.					
<sup>4</sup>	BDP Equipment includes ICS Proprietary Equipment Package per attached ICS System Technology Purchase Schedule. Services are provided during design, construction and operational start-up training. Also includes an estimate of shipping of ICS Equipment FOB.					
<sup>5</sup>	(1) Front End Loader for Curing Shed & Miscellaneous Equipment (Outdoor Lights, Pumps, Tanks, etc...)					

**NOTE:** The above capital estimate is for all buildings and equipment BDP would be supplying and/or designing. There is some crossover with Machinex' design/supply scope as noted. However, all costs are covered in this complete document for a full turnkey CAPEX.

### TABLE 3 - BDP SCOPE of SUPPLY

ICS COMPOSTING FACILITY

Ulster County, NY - DANO Drum Design Basis

10 WIDE BAYS into ASP CURING

ITEM	QUANTITY
<b><u>EQUIPMENT</u></b>	
Agitator & Dolly - 100HP w/ Level Bed Device & Discharge Chute	2 Each
Agitator Bay Wall Rails with Wall Embeds and all Hardware	3,480 Ft
Agitator Retrieval Unit/Filtration Cart	1 Each
Bay Wall Compost Temperature Sensors w/ Wall Boxes	50 Each
Bay Aeration Floor	50 Zones
Bay Moisture Addition System	10 Zones
Dolly Mobile Power Festoon System	2 Each
Curing Shed Floor Aeration Strips (Included in CAPEX under Curing Shed)	10 Bunkers
AgitatAer™ Process and Facility Control System	1 Each
Biofilter Aeration Floor (Included in CAPEX estimate under "Odor Control")	1 System
<b><u>ENGINEERING AND SERVICES</u></b>	
Internal Engineering Support	As Required
Design Engineering Support	20 Days/4 Trips
Construction, Start Up and Process Support	40 Days/6 Trips
Post Start Up Support	10 Days/2 Trips
<b>ESTIMATED BDP PRICE INCLUDING FREIGHT:</b>	<b>\$ 3,300,000</b>

The above estimate is included in the estimate price of Table 2.

# MSW SORTING/COMPOST SCREENING ESTIMATE CAPEX

## TABLE 4 - CAPITAL COST ESTIMATE

ICS COMPOSTING FACILITY

Ulster County, NY - DANO Drum Design

### MSW Organic extraction

ITEM	BUDGETARY COST
<b><u>CONSTRUCTION</u></b>	
Receiving Bay and Offices Building @20,000 SF	\$10 000 000
DANO Drum + Pre/Post compost Building @27,000 SF	\$5 300 000
Driveway and access @15,000 SF	\$200 000
Organic extraction system <sup>1</sup>	\$10 000 000
Compost cleaning <sup>2</sup>	\$2 700 000
<b>SUBTOTAL:</b>	<b>\$28 200 000</b>
<b><u>ENGINEERING AND SERVICES</u></b>	
	<b>Included</b>
<b>10% Contingency:</b>	<b>\$2 820 000</b>
<b>ESTIMATED TOTAL PROJECT COST:</b>	<b>\$31 020 000</b>
<sup>1</sup> Complete Turnkey Grapple Crane, Conveyors and BioSolid reception Pumping for Biosolid, DanoDrum and ø12' x 55'lg Trommel <sup>2</sup> Conveyors, ø12' x 55'lg Trommel, Hard particule separator Shuttle conveyors to optimize Curing bays	

## OPERATIONAL COST ESTIMATE (OPEX)

### Labor requirement

Based on several projects we have done in the past, here are some requirements regarding general labor, maintenance and repairs as well as wear parts.

TABLE 5 - LIFE CYCLE COST				
PREVENTIVE CLEANING - MAINTENANCE - REPAIR - WEAR PARTS				
GRAND TOTAL <b>CLEANING / MAINTENANCE / REPAIRS / WEAR PARTS</b>				
YEAR	CLEANING LABOUR (MAN HRS)	MAINTENANCE LABOUR (MAN HRS)	REPAIRS LABOUR (MAN HRS)	WEAR PARTS (\$)
2021	2432	1037	343	294 035. \$
2022	2432	1037	406	321 241. \$
2023	2432	1037	430	333 439. \$
2024	2432	1037	801	450 444. \$
2025	2432	1037	590	404 657. \$
2026	2432	1037	517	394 985. \$
2027	2432	1037	860	648 711. \$
2028	2432	1037	472	383 954. \$
2029	2432	1037	544	387 222. \$
2030	2432	1037	862	456 968. \$
TOTAL	24 319	10 370	5 827	4 075 714. \$

ANNUAL AVERAGE OVER THE NEXT 10 YEARS <b>CLEANING / MAINTENANCE / REPAIRS / WEAR PARTS</b>				
YEAR	CLEANING LABOUR (MAN HRS)	MAINTENANCE LABOUR (MAN HRS)	REPAIRS LABOUR (MAN HRS)	WEAR PARTS (\$)
	2432	1037	583	407 571

The requirements in terms of labor is (per shift)

- One General manager (one shift only)
- One Crane operator
- One loader/forklift operator
- Two general cleaning/maintenance labor
- One mechanic for the compost phase
- One mechanic for the pre and post compost cleaning phase

## Electrical requirement

Based on the proposed design, the following tables show a list of motor and their electrical consumption. These lists of motors give a total energy consumption of:

**Table 6 – Process Equipment Quantity, Sizing  
and Electrical Consumption Estimate**  
ICS COMPOSTING FACILITY  
**Ulster County, NY - DANO Drum Design**

### MSW Organic extraction

Equipment	Quantity	Connected Load (KW)	Consumption (kWh)
<b>MSW SORTING</b>			
Receiving + conveying + cleaning	1	492.0	1 632 384
Bioreactor drum	1	349.0	1 567 987
<b>Composting</b>			
Process Air Blower - Zones 1	2	22.5	130 677
Process Air Blower - Zone 2	2	22.5	130 677
Process Air Blower - Zone 3	2	11.3	60 759
Process Air Blower - Zone 4	2	7.5	34 468
Process Air Blower - Zones 5	2	7.5	34 468
Ventilation Supply	1	5.6	28 481
Agitator	2	150.0	279 225
Biofilter Pump	1	1.5	9 855
Biofilter Blower	4	225.0	1 130 359
Control System	1	0.4	3 121
<b>Compost Cleaning</b>			
Conveying + Cleaning	1	137.0	419 328
<b>Curing</b>			
Curing Blowers	10	37.5	169 601
Sub-total			5 631 390
Lights and Misc. (10%)			563 139
<b>Total Annual Energy</b>			<b>6 194 529</b>

### Assumptions

- The Compost bays fan, the biofilter system and the curing bays fan will be working all year long (8,760 hours/year)
- The reception and pre-cleaning equipment will be on 6 days x 16 hours x 52 weeks
- The Bioreactor drum will be on 6 days x 24 hours x 52 weeks
- The Compost cleaning and conveying will be on 6 days x 12 hours x 52 weeks

# EQUIPMENT DESCRIPTION

## General design information

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### For conveyors and peripherals equipment

*Unless otherwise noted. These are some general Machinex key design features.*

#### SAFETY GUARDS AND OTHERS

- 1) All safety guards will be bolt on type for ease of maintenance;
- 2) Protective guards up to 7'-0" above slab or platforms will be provided (as per local code);
- 3) Painted surface preparation will include chemical cleaning or sandblasting, prior to application of primer/paint.

#### DRIVES AND MOTORS

- 4) Gear reducers and motors are helical in line shaft mount type, sized by application;
- 5) All motors are mounted on reducers and are PREMIUM efficiency type, 1.15 Service factor.

#### STRUCTURAL SUPPORTS

- 6) All equipment structural supports to be made of square tubing and/or structural steel;
- 7) All legs will have boot adjustments. Each boot to be attached using "Wedge anchors" through 2 to 4 holes in each footpad.
- 8) Support bracings to be made of angle iron and/or structural steel.

#### TRANSFER PANELS

- 9) All transfer panels will be made of formed steel plate. Transfer panels to be bolt on type for easy access to head shafts;
- 10) Transitions to be equipped with rubber skirting, where necessary, to avoid material spillage.
- 11) Appropriate adapter skirts or shields, chutes and transfer panels to be provided at all transfer points to ensure that all transitions are sufficiently enclosed to minimize spillage or dust emissions.

#### CONTROLS

- 12) Machinex offers a Full Scada system to manage the whole facility. The Management Tool is further presented in Appendix A.



## OSW Handling Crane with 10m3 Grapple

### Infeed Crane

MODEL: 14,0T x span 150'

MANUFACTURER: KONECRANES



### A) Complete GL-Grablifter cranes

Item	Qty.
<b>1-14UYC2F6</b>	
14,0T <b>RDF handling crane</b>	1 pc(s)
Full automation for crane(s) –incl. site startup.	1 lot(s)
Joystick type radio controller for crane.	1 pc(s)
Crane Power supply system through festoon cables. (not incl. I-beam running rail and supports)	70 m 1 lots
10,0 m <sup>3</sup> Hydraulic grab (orange peel, KC recommendation)	1 pc(s)
Freight to the site	1 lot(s)
Installation of cranes and fixing grabs to cranes. Install runway festoons, junction boxes, control panels. Excludes inter-connecting wiring within the building.	1 lot(s)
Site start-up & cold commissioning for manual driven cranes prior to automation and load testing. Including test loads	1 lot(s)

## Chain Roller Conveyor

### Heavy Duty Conveyors

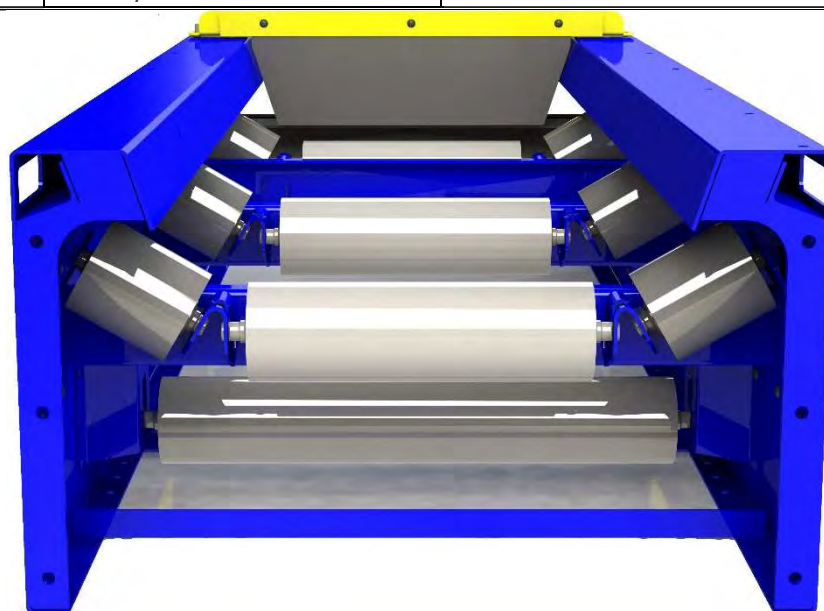
Features	Description	Additional information
<b>FRAME</b>		
<b>Construction</b>	Open frame min. 3/16" thick	
<b>Section length</b>	12'-0" maximum	Reinforced every 72".
<b>Connecting plates</b>	3/8" thick	
<b>Chain Tracks</b>	30 #/ft. Rails	
<b>Impact Rails</b>	"C" Shaped 3/16" steel plate	
<b>Side skirts</b>	3/16" thick / 11" minimum height	
<b>BEARINGS, SHAFT AND PULLEYS</b>		
<b>Tail bearing</b>	Minimum 2 15/16" (70mm)	Pillow block mounted on take-up mechanism. One of the tail sprocket will be floating on the shaft.
<b>Pulleys (Tail &amp; Head)</b>	18" pitch cast iron sprocket	6 Teeth.
<b>Head bearing</b>	Minimum 2 15/16" (70mm)	Pillow Block. Hubs, keyways and set screws.
<b>Oilers</b>	Minimum 2 oilers supplied	Electric oilers.
<b>Back Stop</b>	Mechanical back stop	On inclined conveyors with risk of chain rolling back.
<b>BELT</b>		
<b>Belt availabilities</b>	Z-Shape pan ¼" thick or Chain Belt (PVC 350) or Apron Belt (3/8" thick)	Bolted on each side for easy removal. 9" pitch. 4" diameter roller, single flange with solid bushing hardened 50/60 RC. 3/8" thick sidebars and 4" high x 3/8" thick overlap wings.



## Idler Belt Conveyor

For all conveyors carrying considerable amount of glass/fines material

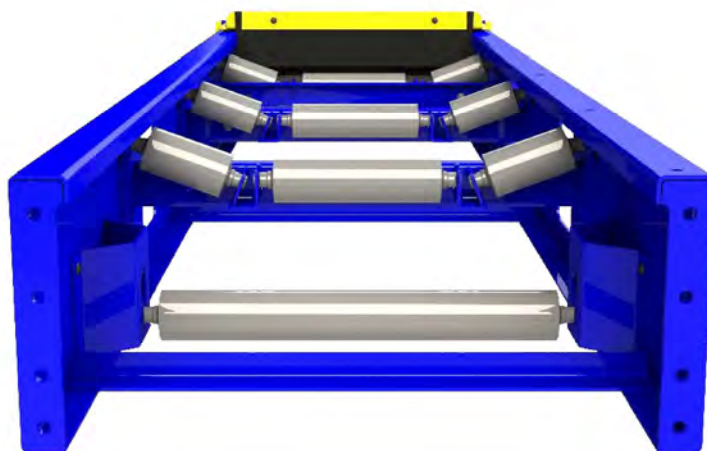
Features	Description	Additional information
<b>FRAME</b>		
<b>Construction</b>	Open frame 3/16" thick	Flat side conveyor
<b>Section length</b>	12'-0" maximum	Reinforced every 72".
<b>Connecting plates</b>	3/8" thick	
<b>Carrying rollers</b>	Ø5" (steel-CEMA "C")	Tapered roller bearings with sealed bearings and slide in type brackets. 30 degrees idler type spaced at a maximum of 36". Impact areas to have idlers every 12".
<b>Return rollers</b>	Ø5" (steel-CEMA "C")	Tapered roller bearings with sealed bearings and slide in type brackets.
<b>Side skirts</b>	7" minimum height	12 gauge
<b>BEARINGS, SHAFT AND PULLEYS</b>		
<b>Tail bearing</b>	Minimum Ø2 7/16" (60mm) pillow block	Mounted on take-up mechanism. Taper hub bushings with key ways and set screws.
<b>Tail pulley</b>	Minimum Ø10"	Winged, crowned and self-cleaning.
<b>Head bearing</b>	Minimum Ø2 7/16" (60mm)	Four (4) bolts flange.
<b>Head pulley</b>	Minimum Ø10"	Crowned with 1/4" lagging; Taper hub bushings with key ways and set screws.
<b>RUBBER BELT</b>		
<b>Belt</b>	Minimum 3 ply 330 PIW	One (1) piece with one mechanical joint.
<b>Belt cover</b>	Top 3/16" thick Back 1/16" rubber cover	With cleating as required.



## Picking Idler Conveyor

Conveyors carrying a considerable amount of fines or glass

Features	Description	Additional information
<b>FRAME</b>		
Construction	Open frame 3/16" thick	Flat side conveyor
Section length	12'-0" maximum	Reinforced every 72"
Connecting plates	3/8" thick	
Carrying rollers	Ø3" (steel-CEMA "C")	Tapered roller bearings with sealed bearings and slide in type brackets.
Return rollers	Ø3" (steel-CEMA "C")	Tapered roller bearings with sealed bearings and slide in type brackets.
Side skirts	6" minimum height	12 gauge
<b>BEARINGS, SHAFT AND PULLEYS</b>		
Tail bearing	Minimum Ø2 7/16" (60mm) pillow block	Mounted on take-up mechanism; Taper hub bushings with key ways and set screws.
Tail pulley	Minimum Ø8"	Winged, crowned and self-cleaning
Head bearing	Minimum Ø2 7/16" (60mm)	Four (4) bolts flange
Head pulley	Minimum Ø8"	Crowned with 1/4" lagging; Taper hub bushings with key ways and set screws.
<b>RUBBER BELT</b>		
Belt	2 ply 220 PIW – Rubber back	One (1) piece with one mechanical joint
Belt cover	Top 3/16" thick Bottom 1/8" thick	



## Magnet Separator

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### M-1

#### FRAME DESCRIPTION

- 1) Frame type: Closed frame construction design for ease of maintenance & safety. Frames are to be made of structural steel.
- 2) Equipment to be equipped with all necessary guards.
- 3) Structural supports to be included to platform level with four (4) rods or turnbuckles to adjust magnet height off sorting belt surface.

#### INSTALLATION

- 4) Cross belt installation – Magnet to be 12" wider than conveyor effective belt width
- 5) Magnet full efficiency at up to 14" suspension height (At magnet belt level)

#### RUBBER BELT

- 6) Rubber belt: One (1) piece with no more than one stainless steel mechanical belt splice.
- 7) Belt to be a minimum of 3-ply 330 ABS rubber with 1/4" top cover and a 1/16" bottom cover with stainless steel cleats
- 8) Lacing to be FLEXCO Rustaloy or equivalent



## Bioreactor Drum

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### Activates digestion of organic matter

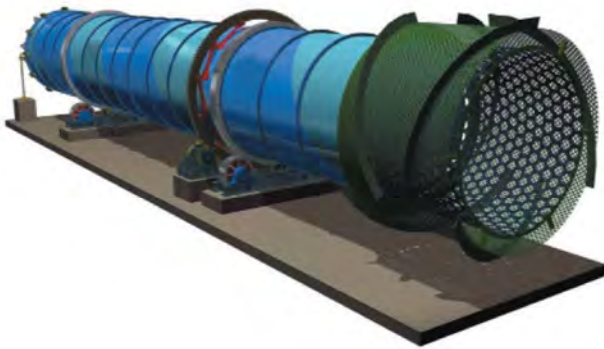
Manufacturer: Keppel Seghers

Approximate length: 100 feet

Maximum throughput: 25 TPH

The soft pulverisation process inside the drum prepares the waste for maximum separation of the organic fraction and pre-conditions the organic particulates for associated biological processes like anaerobic digestion or composting. Typically occurs within 8 hours.

Rotating speed: 3.6 RPM





## Trommel


### Rotating screen

Features	Description	Additional information
<b>FRAME</b>		
<b>Construction</b>	Heavy structural steel	Heavy tubular steel.
<b>Drum</b>	Standard diameters 3' to 5' : fines material 6' to 10' : coarser material	Other diameter can be designed based on your needs
<b>Angle adjustment (Optional)</b>	Hydraulic (manual or electric hydraulic pump)	Adjustable from 2 to 8 degrees
<b>SCREENS</b>		
<b>Screening Length</b>	Variable	Based on tonnage and material to screen
<b>Apertures</b>	Variable	Based on material size and composition Bolt-on perforated steel plates to facilitate their replacement
<b>Hood</b>	Covers the full screening length	Acts as dust control covers Hinged to ease access Bolt-on to ease screening plate replacement
<b>Dust Extraction (Optional)</b>	Hood connected to air aspiration system	Helps dust propagation
<b>3D buckets (Optional)</b>	To control long part	Buckets would be bolted to the screening plates to prevent long part to pass through the openings.
<b>Bag opening (Optional)</b>	Cutting knives	To rip bags open
<b>Drive</b>		
<b>Drum</b>	Chain driven	Supported by four (4) steel trunnion wheels mounted on 3 15/16" self-aligned bearings Oilers for trunnion wheel and drive chain
<b>Rotating speed</b>	7 RPM	Can be adjust with a VFD (Optional)
<b>Safety</b>	Protective guards	Around moving parts



## 3 cubic yards Compactors

MODEL: MTC-300-15-HS

Features	Description	Additional information
CONSTRUCTION		
Charge Box Capacity	3.0 cu. Yard (Mfrs. Rating) 2.57 cu. Yard (Wastec Rating)	Clear Opening: 57 ½" wide x 66 ½" long
Ram Face	Platen Face: 59 ½ "wd. x 30"ht.	Platen Face Thk.: 1/2" with stiffeners
Floor Plate	½" hard plate	360/400 Brinell
Side Walls	¼ " m.s.+ ¼" hard liner guide	425 Brinell
Ram Top	¼ " m.s.+ 3/8" hard liner guide	425 Brinell
Ram Penetration	13" past breaking bar	
Electric Eyes	Two level sensors	For precise control of baling and overfed indication
HYDRAULIC		
Pump	Piston pump	16 gal/min
Motor	15 HP	NEMA 12 UL rated
Main Cylinder	Bore diameter: 6" Rod diameter: 4"	Cylinder Stroke: 80"
Cooling	Air-to-Oil	½ HP
Oil	ISO Grade 32 or 46	Depends on ambient temperature
Filtration	10 Microns filter	Replaceable
Oil Heater (Optional)	Submersion type 1 x 2 kW	
Reservoir Oil Capacity	40 gallons	Oil Temperature & level alarms included
CONTROL PANEL		
CSA Control Panel	Nema 4	Compactor mounted
Electrical Control Voltage	24 VDC	
Standards Controls	Keylock, start-stop	
HMI Screen	Alarm status, Operating data, etc.	
Control Valves	Hydraulic actuated valves Controls speed, acceleration and deceleration of the main piston Prevent damage and minimize power consumption	
PERFORMANCE		
Cycle Time (Dry)	37 sec.	
Operating Ram Force/ Pressure	55 550 lbs. (2000 psi)	
Maximum Ram Force/ Pressure	66 445 lbs. (2350 psi)	
Operating Ram Face Pressure	31.4 psi	
Maximum Ram Face Pressure	36.9 psi	

## Screw conveyors

### Biosolid conveying system

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#### MANUFACTURER

- 1) Spiral Engineering

#### CONSTRUCTION

- 2) Construction in Stainless 316
- 3) U Frame with bolt-on covers
- 4) UHMW under screw at specific locations to prevent wear

#### POWER TRANSMISSION

- 5) Shaftless flight to reduce chances of blockage
- 6) Stainless steel adapter with cable gland and labyrinth seal



## ICS Agitated Bay and ASP Curing General Process Description

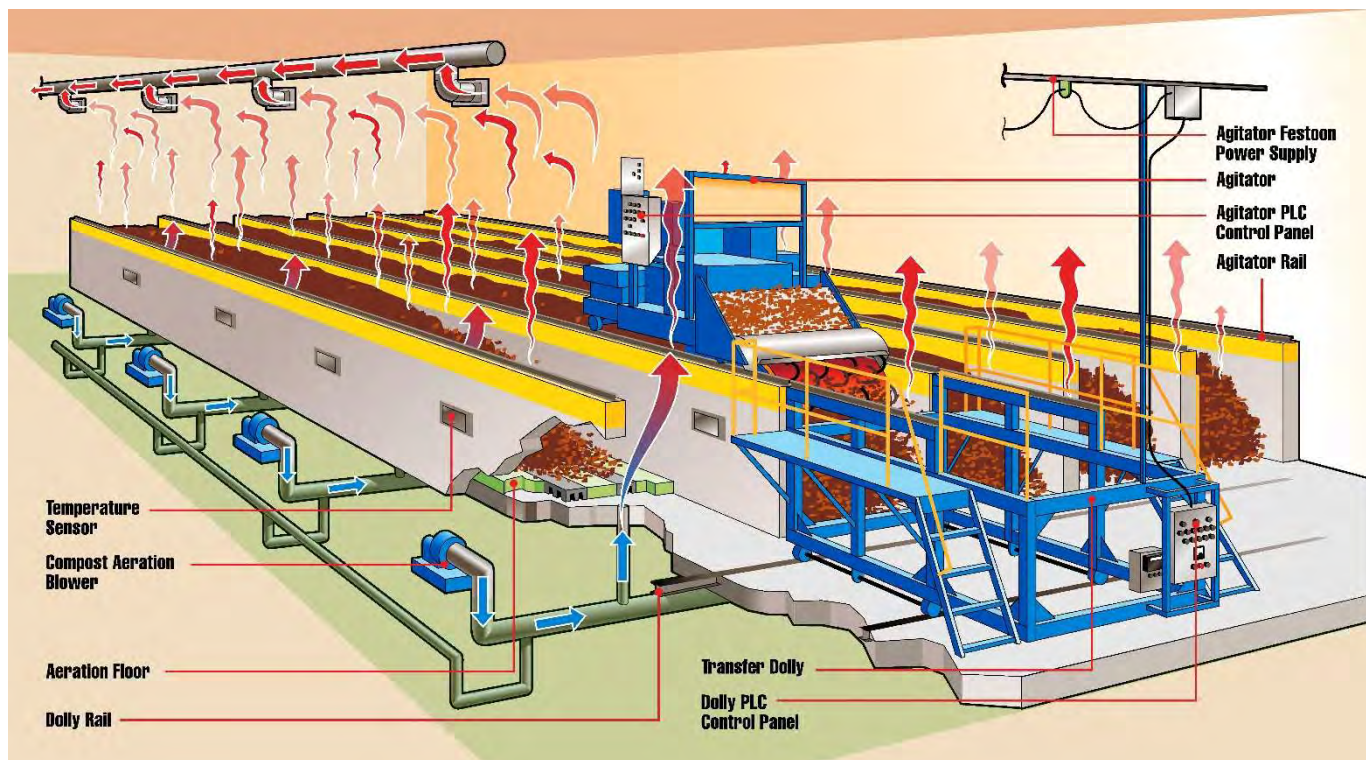
### Process Description

Per the Machinex' section, the pre-composting material Receipt/Sorting is done in a separate building as is the post-composting Screening/Refining. The air from these buildings will be transported into the Active Compost building, as makeup air, and then be ventilated out into the adjacent biofilter. The Curing is done in another shed roof only building.

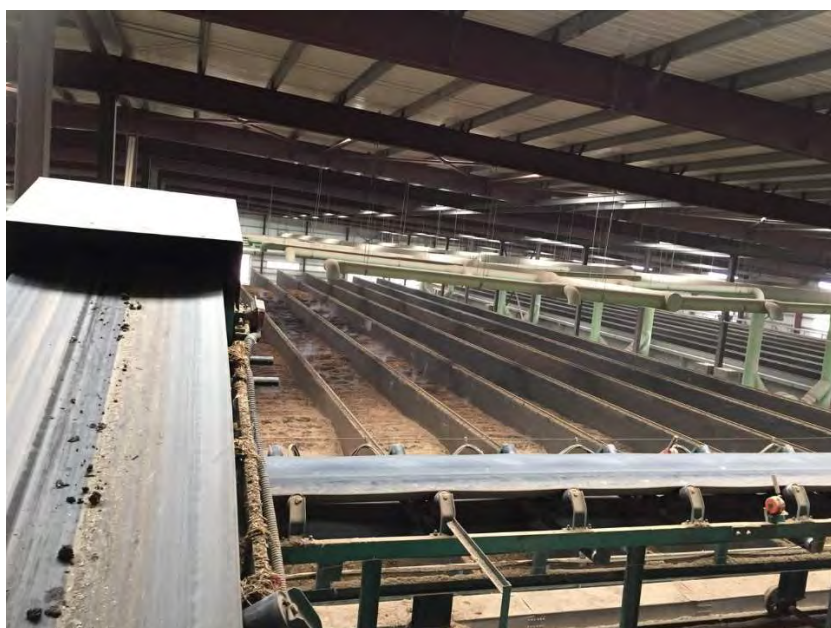
The individual compost and curing process steps include:

- 1) **Bay Loading** of the compost Feedstock blend of OSW and Biosolids.
  - The primary delivery of the compost feedstock will be via a Machinex supplied conveyance system loading the bays directly with approximately 40 cubic yards of material ("charge") into each bay after an agitation.
  - As a secondary method of delivery, we have indicated an appropriate space in front of the bays for loader access in case of random deliveries of organic materials that do not need to go thru the pre-sorting process such as ground green waste, clean pre consumer food wastes, etc... which can be loaded directly into the bay. As the project proceeds we can determine the true need for this secondary delivery.
- 2) **Active Composting** – 28 days in the ICS bays. All material movement during this period is done (automatically) by the agitator. During this period the compost temperature is monitored (automatically) to ensure the compost undergoes the proper time @ temperature protocol required by the USEPA to achieve pathogen destruction and appropriate stabilization to avoid vector attraction once it is moved to the open curing shed.
- 3) **Bay Discharging** or unloading the processed material from the bays via a Machinex designed conveyance system.
- 4) **Compost Screening/Refining** to remove the remaining inorganic contaminants as discussed in detail in the Machinex section.
- 5) **Ventilation/Odor control** – biofiltration – for air from the enclosed portions of entire facility including Receiving, Sorting, Composting and Screening.
- 6) **Curing** Screened compost is delivered by Machinex conveyance system to the Curing shed for (30) – (40) days of aerated curing.





**Step 1 – Bay Loading** – The OSW and Biosolids will be blended prior to being delivered to the ICS bays. The bays are designed to receive nominally 40 yds<sup>3</sup> of feedstock (or “charge”) following an agitation. The front 20 ft of each bay is a non-aerated concrete pad designated as the “Loading Area” of the bays. As discussed above, the primary method of loading the bays will be via a Machinex supplied overhead conveyor as shown in Photo 1.



*Photo 1 – Automated Overhead Bay Loading Telescoping Conveyor*

*Photo 2 – Optional Bay  
Loading via Loader*



**Step 2 – Active Composting** - For this application, the bays are 10 ft wide x 8 ft high x 290 ft long for a retention time of 28 days. The (10) bays are in two groups of (5) contiguous bays. Equipment and personnel access aisles are on each side of the outer bays as well as in middle. With each pass of the agitator along the length of the bay, the process material will be mixed and translated towards the tunnel discharge end an average of 13 ft with the bay leveling device automatically modulating the agitator conveyor discharge throw between 11 ft and 15 ft to offset pile height loss as the material composts.

*Photo 3 - Agitator  
on Dolly*







*Photo 4- Agitator working in bay next to empty bay*

- i. **Bay Aeration System** - Each of the (10) bays is divided into five (5) separate aeration zones for a total of 50 Aeration Zones (i.e. 5 aeration zones/bay x 10 bays). The BDP/BacTee aeration floor system enables the benefits of utilizing either the positive (blowing air up thru the compost) or negative aeration (air is drawn down through the compost) methods. The aeration system provides sufficient oxygen to the process between agitation cycles and removes condensate from the process bays.



*Photo 5 – Agitator over BacTee Aeration Floor*

The AgitatAeR™ aeration control system (system) allows continuous modulation of process air based on temperature feedback from the process material. The aeration zones in each set of bays are linked by a common below-grade manifold to a blower for that particular zone. Thus for the five (50) total aeration zones, (10) aeration blowers are being supplied.

The BacTee aeration floor system consists of BacTee's polymeric baseplates (Photo 6) that are encased in the floor but can be removed for periodic full-access cleaning. The baseplates are adjacently located to a Cross-Arm which provides a plenum cavity between the baseplates and a spigot that transports air downward to a below-grade manifold pipe (Photo 7).



*Photo 6 - BacTee Polymeric HT Baseplate*



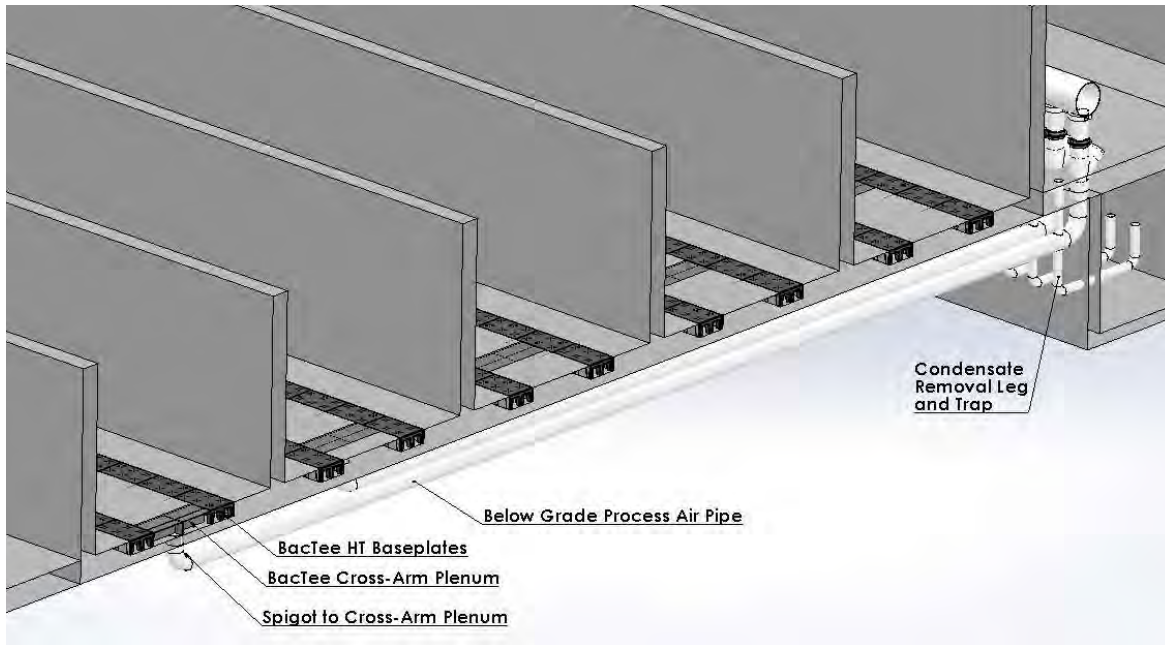
*Photo 7 - Baseplate embedded in the bay floor*

Process material temperature is continuously monitored and supplied to the control system from RTD type temperature sensors mounted in the bay wall for each aeration zone as shown below.

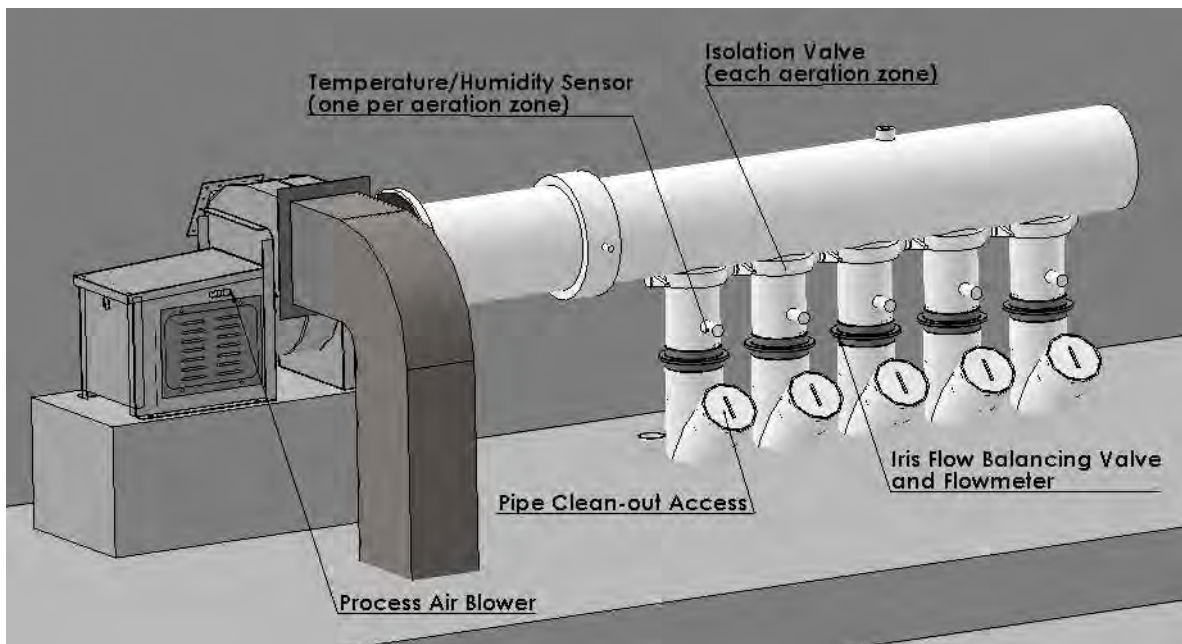


*Photo 8 – RTD temperature sensor mounted in bay wall box.*

The temperature inputs from the same aeration zone in each of the five (5) bays are averaged by the control system to drive the blower drawing air from the respective zone. All blowers are operated through a variable frequency drive (VFD) to provide continuous modulation of the air flow to precisely maintain process material temperature about a floating set point within the control system.



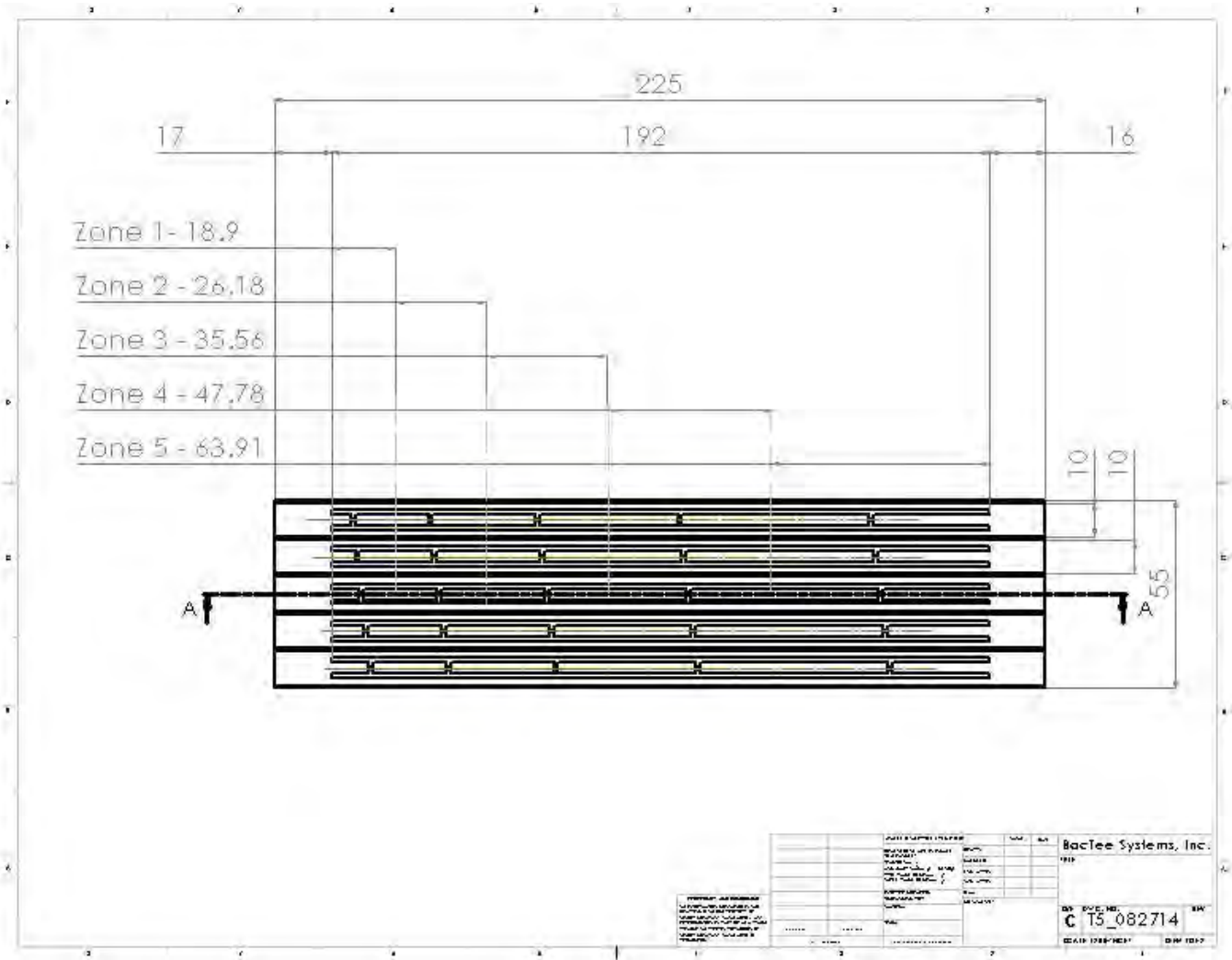
*Photo 9 -  
Compost Aeration  
Floor Components*



*Photo 10 -  
Temperature  
probe in Aeration  
Zones*

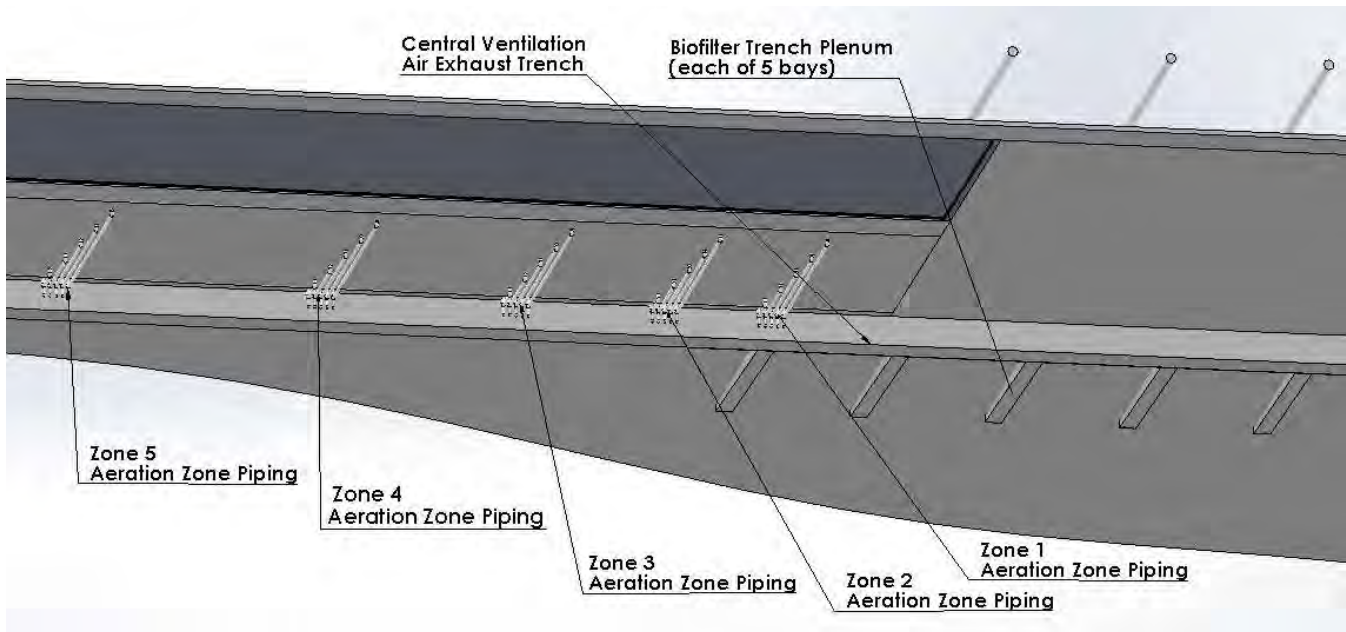
The aeration zones vary in length to provide adequate aeration throughout the composting process. Zones at the beginning of the bay are shorter and provide more airflow to support the higher level of biological activity that produces temperatures that are higher than in those zones nearer the discharge end of the bays. The aeration zones become progressively longer from the fill to the discharge end of the bays (Photo 11). In addition to the aeration zone length varying from the fill to discharge ends of the bays, the air flow rates are decreased. Consequently, blower air flow capacity decreases for the zones nearest the discharge end.

Photo 11 – Aeration Zone Lengths





All aeration plenum and manifold units (i.e. pipe) are designed to transport condensate water away from the bays. The low point of the below-grade aeration manifolds is equipped with a U-trap to prevent short-circuiting of air flow while allowing disposal of water to a below-grade drain manifold. Photo 12 illustrates the below-grade aeration manifolds and drain piping. A collection sump incorporated into the floor of the process area serves as a collection reservoir for the water. The water collected is preferentially re-used within the compost facility – either for moisture addition in the Material Preparation area to achieve the maximum 45% solids feedstock level, moisture replenishment in the bays (See Section iii below) or for moisture replenishment for the biofilter. As a last resort the moisture will be discharged to the adjacent wastewater treatment plant for processing. It is estimated that approximately 2000 GPD of condensate will be collected in the sump.



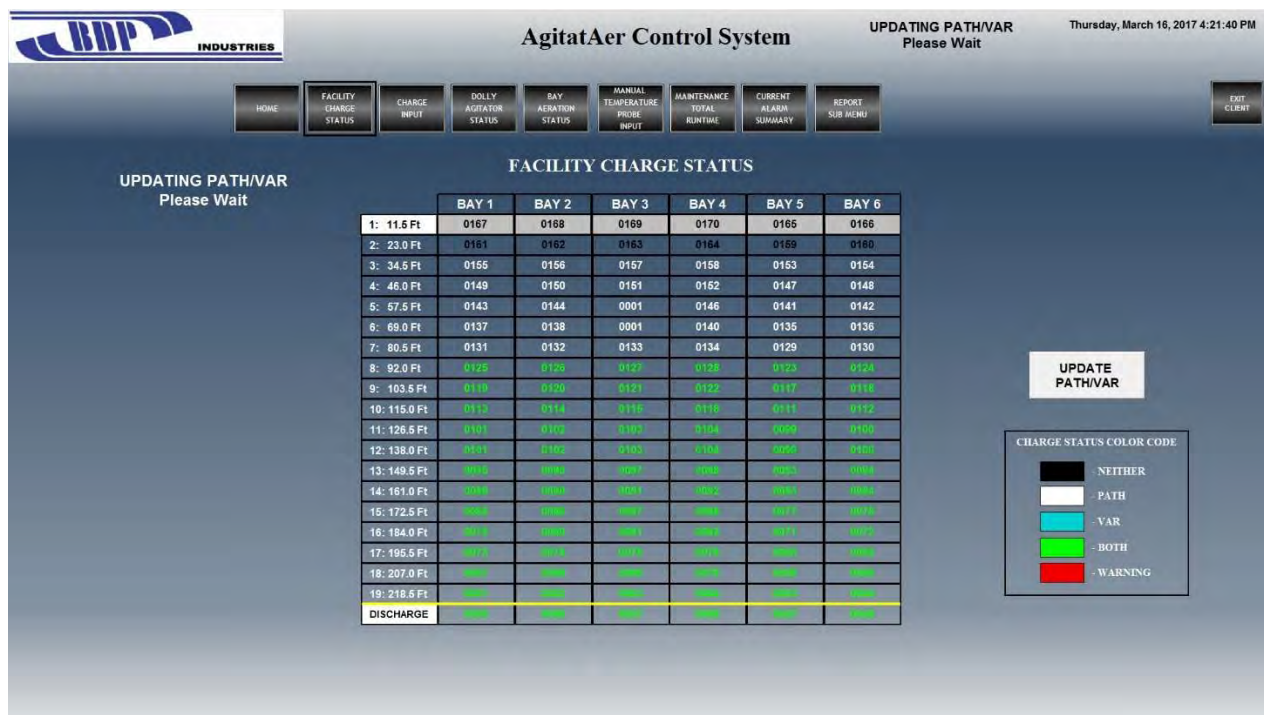
*Photo 12 - Below Grade Aeration Structures*

ii. **AgitatAer™ Computer Control** – The BDP AgitatAer™ Process Control System (system) is designed to be the total compost facility control system interfacing with the various fans, blowers, agitators and other miscellaneous equipment.

1. The primary function of the system is to ensure that the compost material in the bays is subjected to the required Time/Temperature protocol (3 continuous days at 55C) for pathogen destruction. (Provided the feedstock material has sufficient bioavailable volatile solids for the necessary heat generation). This is done by the system monitoring the (50) bay wall mounted RTD type temperature probes (Photo 8) and correlating that data with the material movement through the bays. The compost temperature at the bay wall should be the coolest spot due to the heat sink effect of the concrete wall.

Each 40 Yd3 “charge” of material that is loaded in the front of the bays is assigned a unique 4-digit Charge Number as shown in the screen shot below. For the 290 ft length bay, there will be about 20 individual charges per bay. The system also monitors which bays are agitated on a given day. As indicated above, with each agitation the compost pile in a bay is translated about 13 feet towards the end of the bay. Charge movement down the length of the bay is estimated by the system via a site specific charge movement algorithm. With each bay agitation, the computer advances the charges towards the discharge end of that bay. The system correlates the appropriate wall temperature measurement to the charge as it moves.

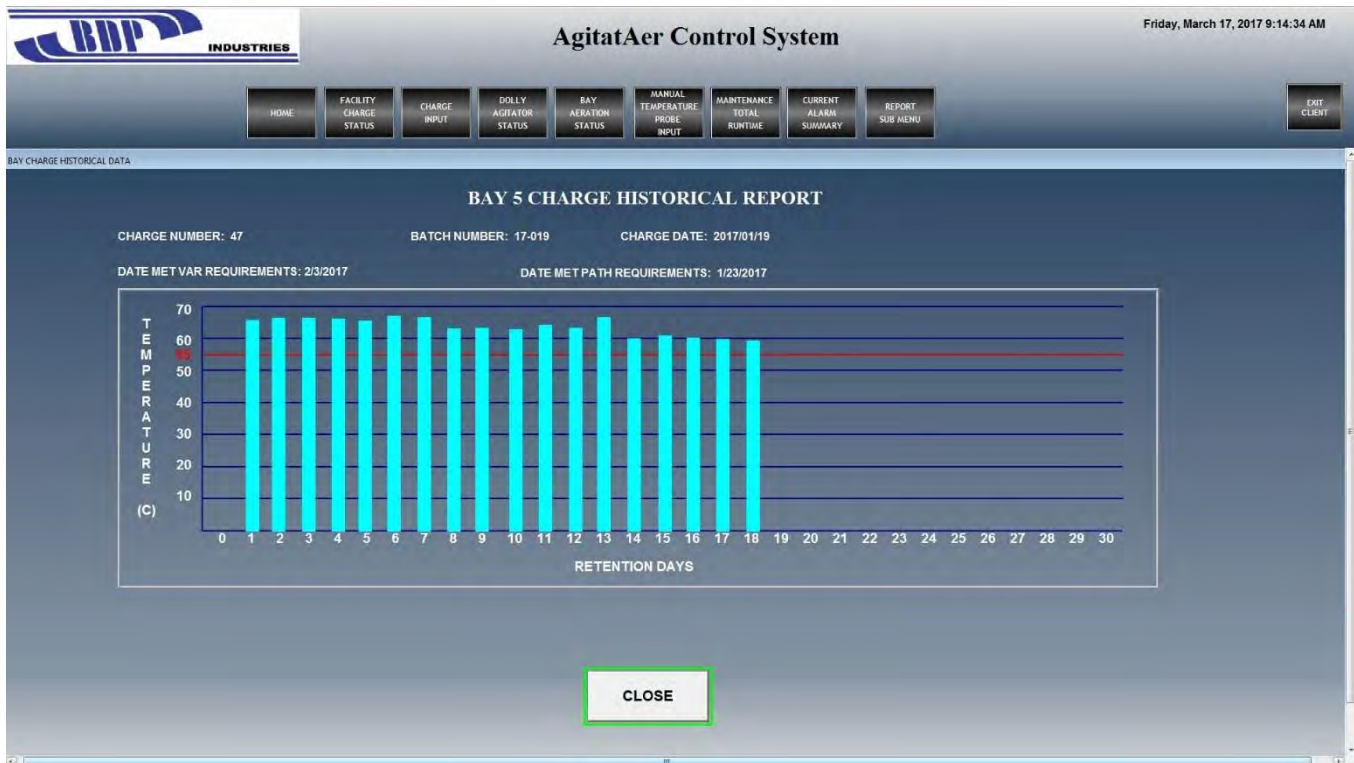
Photo 13- Sample Charge Tracking Scree





The charges are color coded such that the operator can visually tell the status of a charge as it moves thru bay. When the charge is initially loaded into the bay, the charge number is presented in black text. When the charge achieves the time/temp protocol, the charge number text color changes to green indicating the material has met this requirement. If the charge gets within the last 5 segments in the bay, and does not achieve time/temp protocol, the charge number text turns red indicating to the operator corrective action for that charge is required (typically taking hand probe temperature probe measurement). If the charge does not reach time/temp protocol when it is discharged, it will be recycled back to the front of the facility for re-processing.

The system can generate detailed time/temperature reports for compliance proof as shown below.



*Photo 14 – Sample PFRP/VAR Compliance Report*

- The system also is used to automatically control the aeration blowers to optimize compost conditions and to maintain aerobic conditions in the bays in a Temperature/Cycle (TC) Mode. The goal is to discharge a suitably mature compost product from the bays that can be moved outdoors for covered, windrow type, curing to finish stabilizing the compost product.

The system modulates the process blower speed, as needed, to allow the process temperatures to stay within a limited range. The desired range of process temperature is determined by input parameters that may be varied by simple menu-driven changes to the control system if feedstock properties and the objective final material properties change. The System also automatically controls the aeration blowers to cycle ON a minimum amount of time per hour to ensure the air necessary for the composting process.

Both process control and data acquisition functions are provided within the system. The screen shot below indicates aeration blower control and monitoring for a 5 zone (A – E) bay.

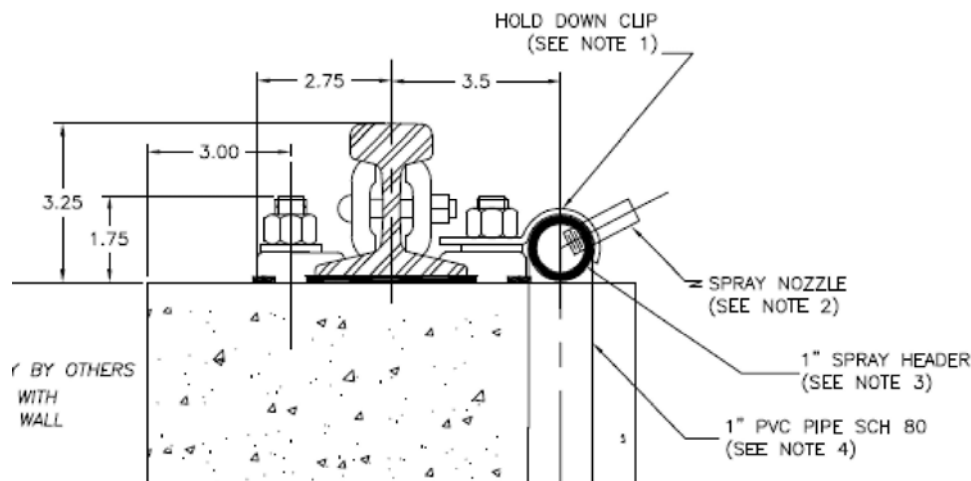


Photo 15 – Aeration Blower Control Screen

As discussed above, the Aeration Zones A – E will be served by 1 blower for 5 bays. The corresponding 5 wall temperature probes data for those zones will be averaged for blower control.

3. The system is also used to control the building ventilation fans/blowers VFD drives to control the fans speed to maintain negative pressure conditions within the building for optimal odor containment.

**iii. Bay Moisture Addition** – As the compost material progresses down the length of the bays over time it will lose moisture by design. Some of that moisture is collected as condensate in the aeration system as discussed above. The balance of the moisture lost will be evaporative and exhausted directly to the biofilter by the ventilation fans. In some cases, depending on facility location and feedstock, the compost process begins to suffer due to moisture depletion in the bays. Essentially the compost microbes become starved for water. This tends to occur towards the end of the bays as the compost begins to exceed 65% solids. It is anticipated that this facility will encounter this moisture deficiency during some periods of the year. Therefore, BDP supplies a moisture addition system to add moisture back into the bays. It uses PVC pipe with spray nozzles nested in the rail that runs along the top of the bay walls as shown in Photo 16! This moisture addition system is controlled by the CompAer system and usually runs for prescribed time period based on operator experience. The water supply for the moisture addition should be designed to supply 1000 gals/day/bay.



System.

Photo 16 - Bay Irrigation

**Step 3 – Composting Material Discharge** – After 28 days in the bays the compost material is moved by the agitator onto a Machinex supplied conveyor situated under the Dolly as shown in Photo 17 below. At this point the compost is expected to have a solids content in the range of 60% - 70% and a density of about 0.35 – 0.4 tons/yd<sup>3</sup>. Approximately 24 yd<sup>3</sup> of material is removed from each bay after each agitation.



*Photo 17 – Bay  
Discharge  
Conveyor*

The compost material is conveyed to the Machinex designed/equipped compost refining facility (Step 5) which is discussed in detail in the Machinex section.

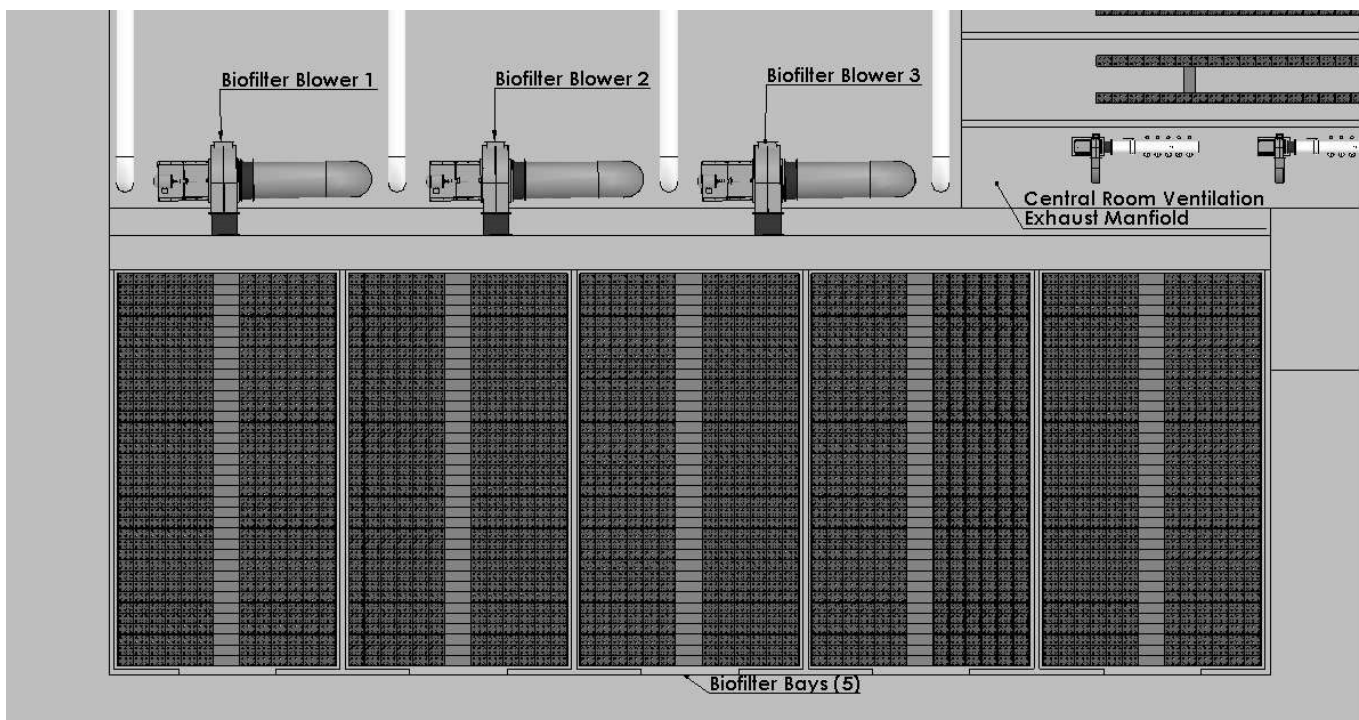
### **Step 6 – Ventilation/Odor Control**

The enclosed Receiving/Sorting/Composting/Screening sections of the facility are served by a comprehensive ventilation system designed to maintain these sections of the facility under a slight negative pressure by the biofilter blowers. Fresh air is drawn into the structure through louvered grilles in the sidewalls of the building. The negative pressure maintained within the Central Ventilation Air Exhaust Trench draws room air through a series of ventilation exhaust ducts located in the 4 sections of the facilities. This room ventilation exhaust air is delivered to the biofilter for treatment prior to release to the atmosphere.

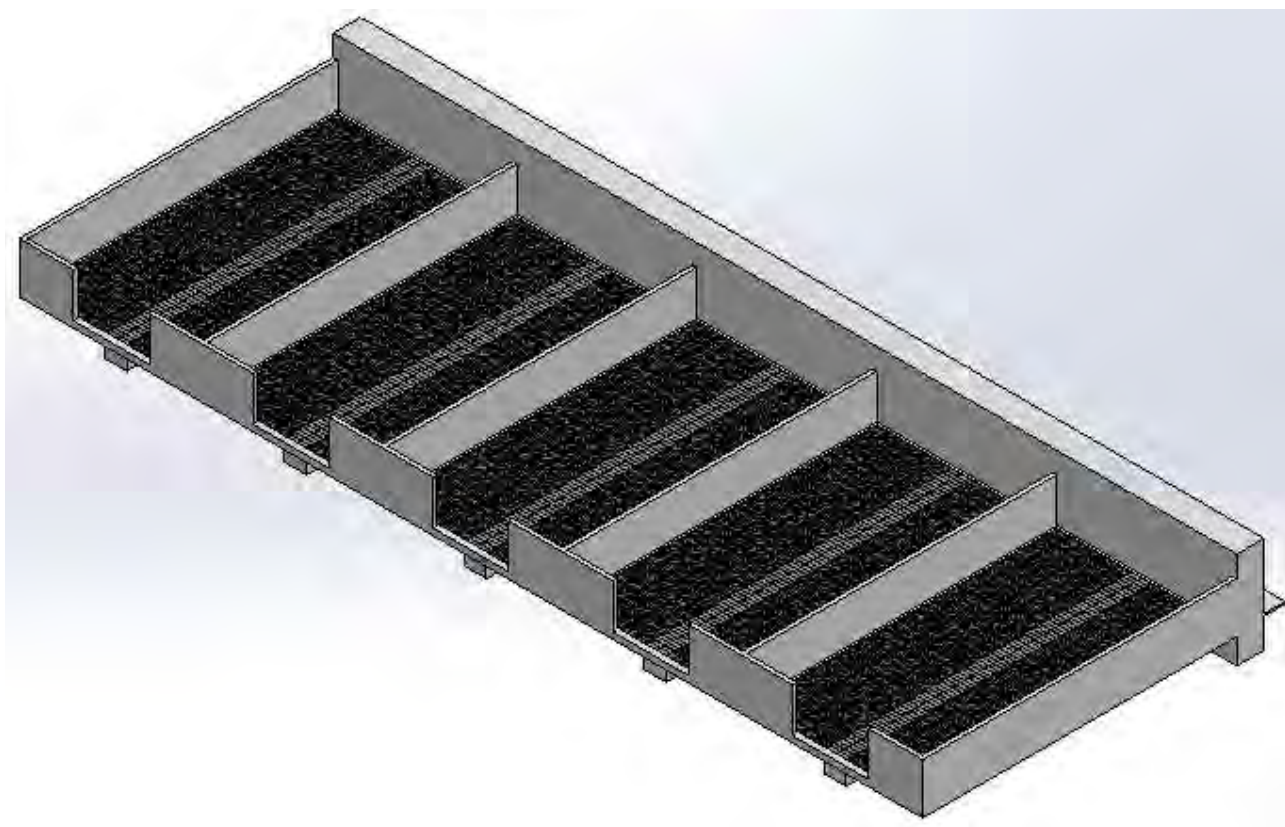


The biofilter blowers transport the air through the Approximate 20,000 SF biofilter bays and media. Three 50 HP blowers are required under normal operation and one blower is an installed spare unit or to meet exceptionally high ventilation requirements. The biofilter bays will be equipped with the BacTee biofilter aeration floor components. The biofilter media will be standard wood chip material generated on site.

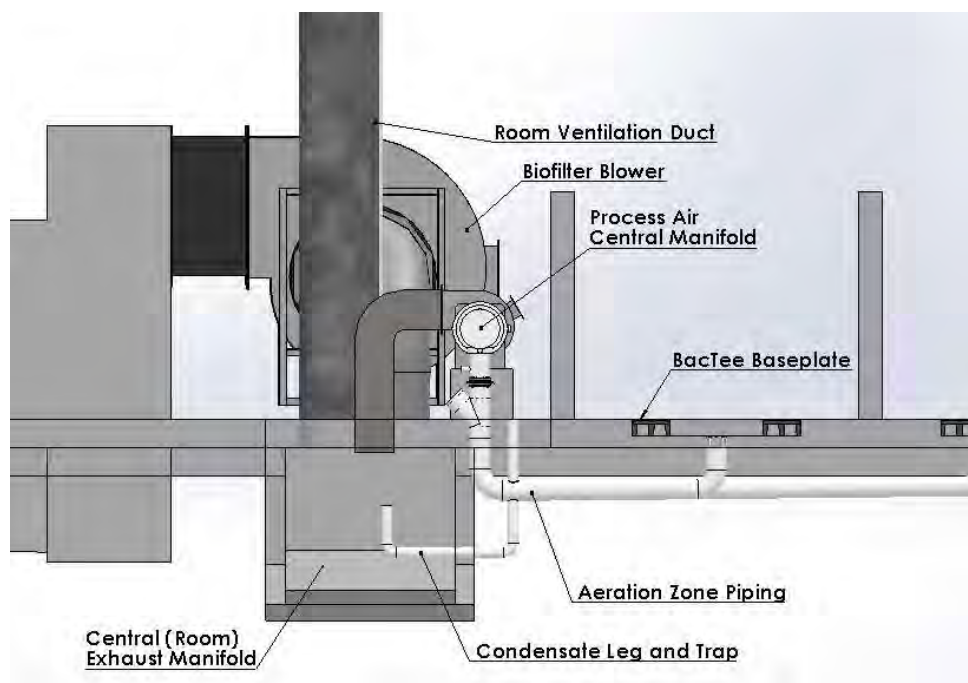
Condensate may form in all air manifolds before and within the air passageways of the biofilter. A condensate leg and trap conveys condensate formed in the aeration zone piping into the central ventilation exhaust manifold from which it can be removed via a condensate drain to appropriate storage or disposal. In addition, heavy rains may potentially permeate through the biofilter media. Consequently, condensate collection and drain piping is provided to remove water from the biofilter unit for re-use/disposal. (Ref. Photo 21). Condensate is removed from both the biofilter and central exhaust manifold via ports at low points in the respective plenums.



*Photo 18: Conceptual Biofilter*



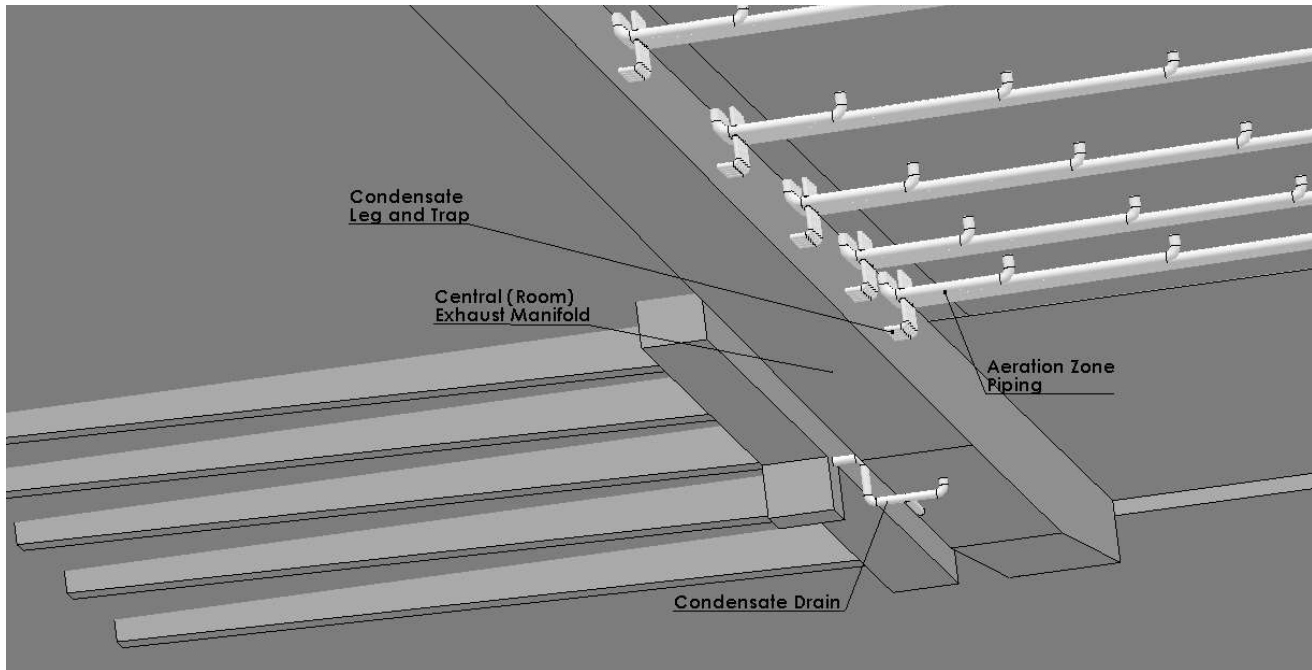
*Photo 19 - Conceptual Biofilter showing concrete details for media placement access*



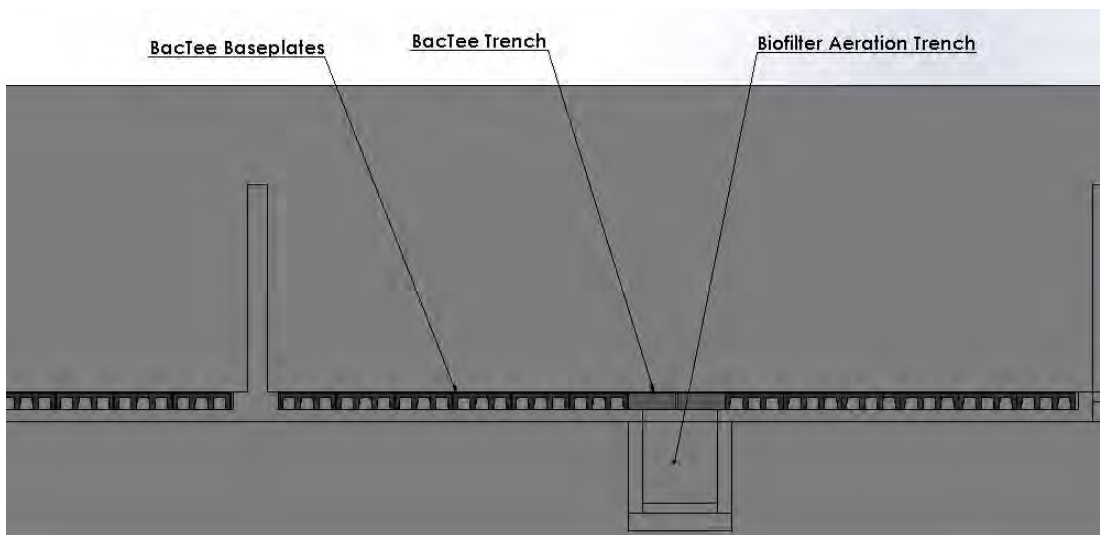
*Photo 20 - Biofilter Drain Piping (typical)*



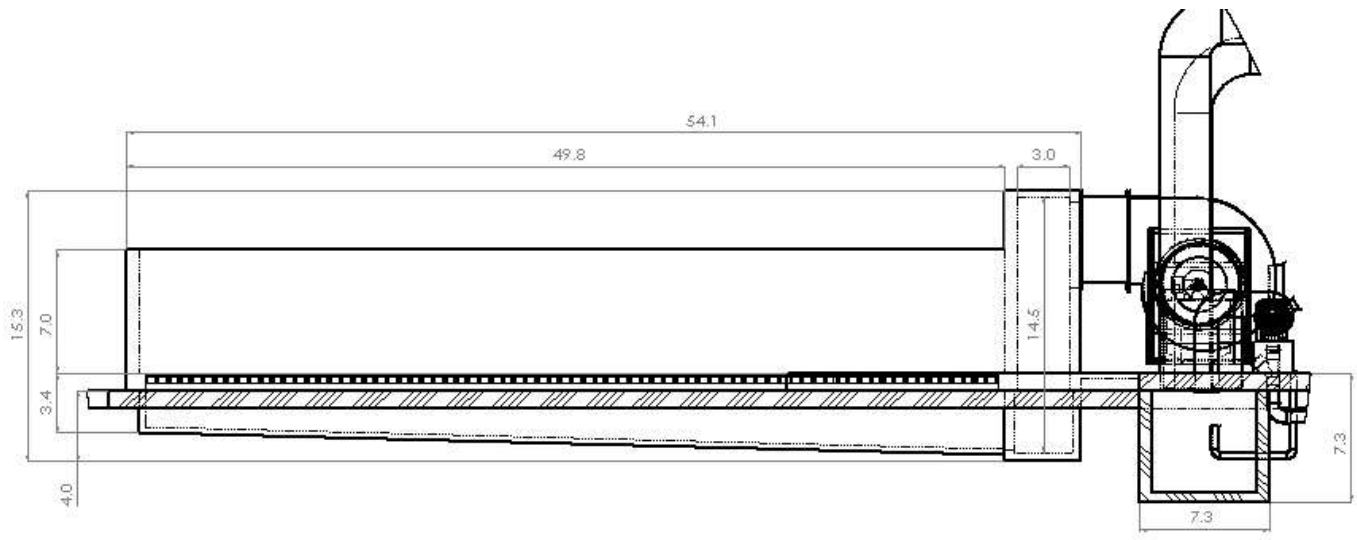
During the mild months of the year, it is expected that water will need to be added to the biofilter to maintain proper moisture content in the media. As an example, on a day with a dry-bulb temperature of 90 F and 60% relative humidity, nominally 1500 gal/day may be required to maintain a high-moisture condition within the biofilter. During the very coldest days, no water may be required.



*Photo 21 - Biofilter Drain Piping (typical)*



*Photo 22 – Biofilter Detail*



*Photo 23 – Biofilter Cross Section*

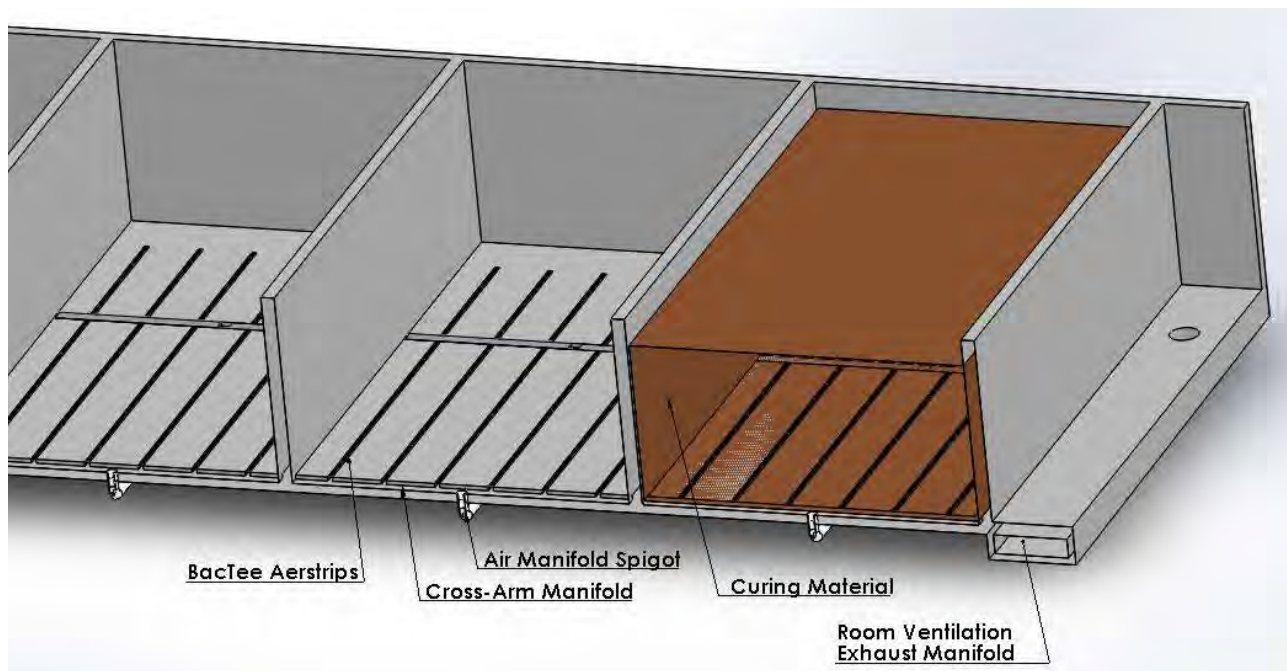
**Step 6 Curing** After the compost is screened it will be belt conveyed to the open Curing Shed. The shed will contain (10) individual bunkers formed by concrete walls. At any given time (1) bunker will be in the filling mode and the balance will be in storage mode such that the minimum Curing time is 30 days. Each bunker will have a dedicated blower with piping connected to multiple BDP/BacTee SS AerStrip™ troughs in the bunker floor to provide forced negative aeration in the bunker. The blower air will be ducted to the biofilter for odor control. A front end loader is used to move the cured compost from the curing bunkers to the Screening pad.



*Photo 24 - BacTee  
Curing Aeration  
Strip*



*Photos 25 & 26 -  
Curing Bunkers in  
Shed*

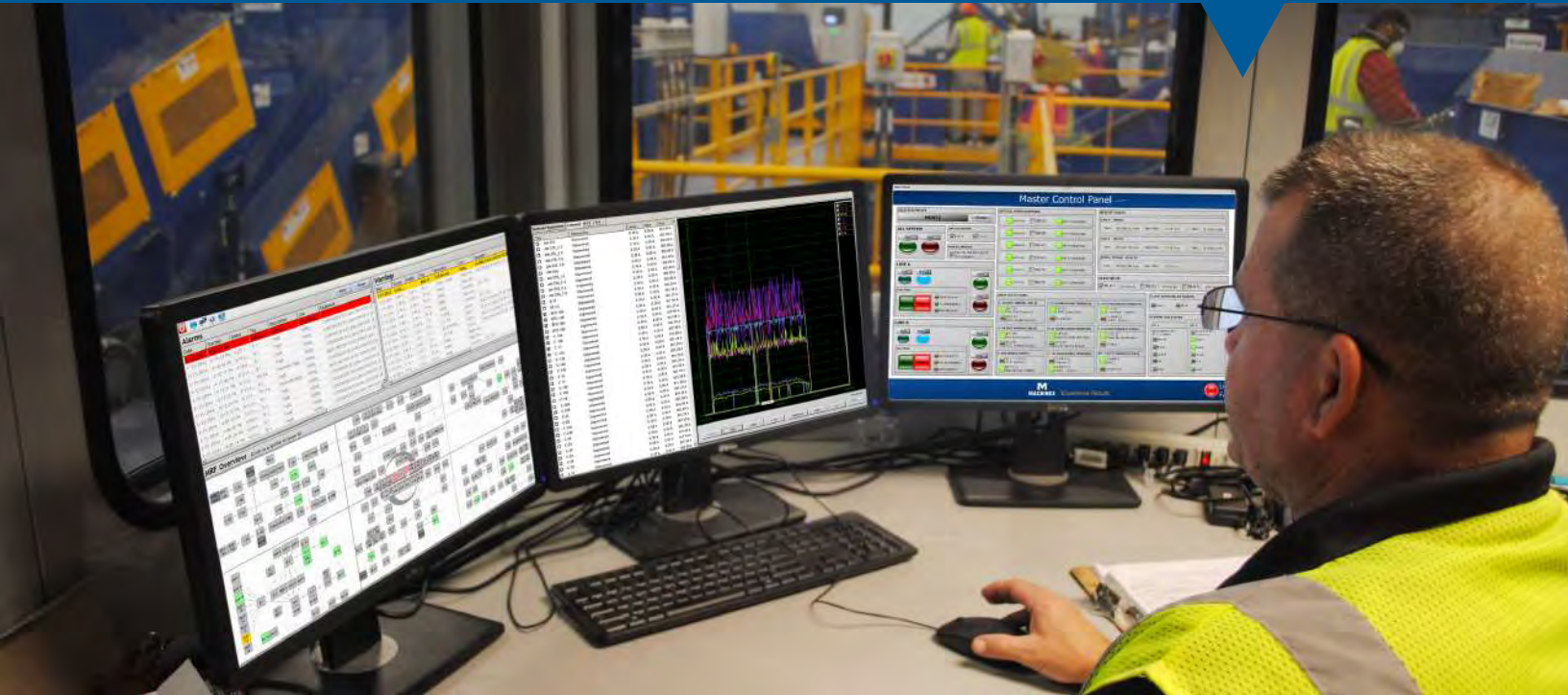


## **APPENDIX A- CONTROL AND MANAGEMENT SYSTEM**



# Control & Management Systems

**M**  
**MACHINEX**  
*Experience Results*



Machinex Control and Management systems are designed to exceed expectations on getting the necessary information and to reach maximum sorting efficiency. Our systems provide flexible control for the maintenance and operating crew, as well as powerful management tools for the plant supervisor. All of our solutions are custom tailored for recycling facilities and fully integrated into Machinex Sorting Systems.

## Management Solutions

### SCADA System & Reporting Software

For the facility manager, it becomes crucial to know how efficient the facility is. Machinex offers management solutions to create the reports that are needed.

#### BENEFITS

- ▶ Increases the efficiency and productivity
- ▶ Minimizes the operation costs
- ▶ Helps to manage the preventative maintenance
- ▶ Flexibility to custom the reports anytime

#### BASIC SCADA SYSTEM



#### FULL SCADA SYSTEM



### SCADA System | Complete Solution for an Optimal Management

The **SCADA** (Supervisory Control and Data Acquisition) System is the ultimate management solution for the plant manager. The same web base server software is used for the SCADA and the handheld device, which means that only one software is needed to program the SCADA, the handheld device and the HMI.

#### BASIC SCADA SYSTEM

##### FEATURES

- ▶ Centralized supervision & control capabilities
  - Lines/equipment status and mode (running, stopped, fault)
  - Conveyors, separators, and peripheral equipment analogs and switches (speed, current, angle, etc.)
  - Alarms & warnings short term logs with pre-selected commentary input
- ▶ Simple trending views for equipment maintenance
- ▶ Reporting Software with basic report templates
- ▶ Managers can have direct access to the system from their PC

#### FULL SCADA SYSTEM

**All features** included in the basic system plus:

- ▶ Interconnect with the customer's mail server for Report Emailing
- ▶ Interconnect with Machinex Baler and MRF scales (if available)
- ▶ Data server with two external monitors with backup and redundancy
- ▶ Custom alarms & warnings long term logs with personalized commentary input

### Reporting Software | Pushing Efficiency One Step Further

With the **Reporting Software**, it is possible to get all of the necessary information neatly summarized in a document that requires no tiresome data manipulation. This software is supplied with the acquisition of the SCADA.

#### REPORTING SOFTWARE FEATURES

- ▶ A reporting tool software that is easy to use, designed to allow quick report generation
- ▶ Set of custom designed report templates:  
Efficiency Report | Line Report | Alarms Report | Warning Report
- ▶ Fully integrates the facility schedule in the report generation process, resulting in more accurate data
- ▶ A quick commentary input window to give additional information about any occurring fault in the facility



## Handheld Device

### ***MACH Pad Control*** | Advanced Mobility

Today's facilities require more and more versatility and mobility from the systems that control them. Machinex offers the sturdiest handheld device on the market\*.

#### BENEFITS

- ▶ Gives more flexibility to the facility operators
- ▶ Allows faster and more precise equipment tuning (see the results as you are doing it)
- ▶ Rapid payback through reduced downtime
- ▶ Improves facility efficiency and maintenance
- ▶ Same interface than the SCADA

#### MACH PAD CONTROL



Perfect for the facility supervisor and the maintenance staff

#### FEATURES

- ▶ Control the mode & state of each line and of the whole system
- ▶ Manually start and stop each piece of equipment
- ▶ Configure up to 15 recipes to adjust your system depending on the type of sorted material
- ▶ Monitor line & equipment operation time and production loss
- ▶ Manage each piece of equipment's specific adjustment

\* Basic or Full SCADA needed

### ***Human Machine Interface*** | All-Purpose Sorting Facility Control

Our touch screen control panel solution offers a simple way to control the sorting lines, adjust each piece of equipment individually, and visualize the faults and event occurrences. The HMI has a standard friendly-user configuration which increases the efficiency and reliability.

#### HMI ON CONTROL PANEL



# Machinex offers the Best at Every Level

No matter what you need, Machinex Control and Management solutions will be able to provide it with unsurpassed versatility and flexibility. Here is an overview of the features of each solution.

## FEATURES

	HMI	Basic SCADA	Full SCADA	Handheld Device
Custom tailored for sorting facilities	✓	✓	✓	✓
Designed for harsh industrial environment	✓	✓		✓
Integrated remote support for maintenance and updates	✓	✓	✓	✓
Designed for mobility throughout the facility				✓
Supervision and control capabilities	✓	✓	✓	✓
Adjustments for conveyors, sorting and peripheral equipment	✓	✓	✓	✓
Sorting system recipe management	✓	✓	✓	✓
Quick access to alarm & warning logs	✓	✓	✓	✓
Reporting capabilities with limited commentary and templates		✓		
Reporting capabilities with various report templates			✓	
Data and commentary logging		Short term	Long term	
Data trending of equipment sensors		✓	✓	✓
Multi-user support	✓	✓	✓	✓



## **APPENDIX B- PRELIMINARY LAYOUT**



## **APPENDIX B**

### **ULSTER COUNTY LEGISLATION - LOCAL LAWS**

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- **Local Law Number 4 of 2010**
- **Local Law Number 4 of 2015**
- **Local Law Number 5 of 2018**
- **Local Law Number 1 of 2019 – Amends Local Law No. 5 of 2018**
- **Local Law Number 2 of 2019**
- **Resolution No. 135 of May 2013**
- **Proposed Local Law Number 3 of 2019**
- **Proposed Local Law Number 5 of 2019**

# **Local Law Number 4 Of 2010**

## **County Of Ulster**

### **A Local Law Amending Local Law Number 8 Of 1991 As Amended By Local Law Number 8 Of 2007 Ulster County Mandatory Source Separation And Recycling Law**

**BE IT ENACTED**, by the County Legislature of the County of Ulster, New York, as follows:

#### **ULSTER COUNTY MANDATORY SOURCE SEPARATION AND RECYCLING LAW**

**Section 1. Short Title.**

**Section 2. Findings and Legislative Intent.**

**Section 3. Statutory Authority.**

**Section 4. Definitions.**

**Section 5. Administration.**

**Section 6. Rules and Regulations.**

**Section 7. Program Established.**

**Section 8. Preparation and Separation of Regulated Recyclable Materials.**

**Section 9. Preparation and Separation by Multi-Family Dwellings of Regulated Recyclable Materials.**

**Section 10. Commercial and Institutional Sector Recycling.**

**Section 11. Private Disposal of Regulated Recyclable Materials.**

**Section 12. Collection and Disposal of Regulated Recyclable Materials.**

**Section 13. Collection and Disposal of Regulated Recyclable Materials by Haulers.**

**Section 14. Preparation, Separation, and Disposal of Yard Waste.**



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**Section 15. Ownership, Direction, and Control of Regulated Recyclable Materials.**

**Section 16. Reporting Requirements.**

**Section 17. County Household Recycling Containers.**

**Section 18. Unlawful Acts.**

**Section 19. Enforcement.**

**Section 20. Independent Administrative Hearing Officer.**

**Section 21. Penalties.**

**Section 22. Collection.**

**Section 23. Consent Agreement and Order.**

**Section 24. Temporary Cease and Desist Order.**

**Section 25. Addition or Removal of Regulated Recyclable Materials.**

**Section 26. Recycling Oversight Committee.**

**Section 27. Reparability.**

**Section 28. Priority.**

**Section 29. Effective Date.**

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**A Local Law Amending Local Law Number 8 Of 1991 As Amended By Local Law Number 8 Of 2007 Ulster County Mandatory Source Separation And Recycling Law**

**Section 1. Short Title.**

This local law shall be known as the “Ulster County Mandatory Source Separation and Recycling Law.”

**Section 2. Findings and Legislative Intent.**

The Ulster County Legislature finds that:

- (a) The County faces an increasing threat to its environmental and economic well-being from the solid waste disposal crisis.
- (b) The solid waste disposal crisis is exacerbated by people discarding in landfills a significant amount of material that can be recycled.
- (c) The State Legislature, in order to resolve the solid waste disposal crisis, delegated to the Agency extensive authority, responsibility, and power to plan, construct, operate, maintain, and finance projects for the management of the County’s solid waste stream.
- (d) The County Legislature, in order to resolve the solid waste disposal crisis, established the Agency as the planning unit to prepare a Solid Waste Management Plan (the “Plan”) for the County and approved the Plan.
- (f) Maximizing waste reduction, reuse, and recycling ensures the attainment of not only the State’s recycling goals as set forth in the 1988 Solid Waste Management Act, but also the County’s recycling goals as set forth in the Plan.
- (g) In order to implement the Plan and maximize reduction, reuse, and recycling, the County wishes to adopt this Mandatory Source Separation and Recycling Law.
- (h) The Mandatory Source Separation and Recycling Law should, in part, address the solid waste disposal crisis by removing regulated recyclable materials from the solid waste stream, thereby, reducing the required capacity of existing and proposed landfills; decreasing the flow of solid waste to landfills; increasing the life expectancy of existing and future landfills; reducing the cost of solid waste disposal; aiding in the conservation of valuable resources; preserving the health, safety and welfare of the public; and preserving the environmental quality of Ulster County.
- (i) The Mandatory Source Separation and Recycling Law is consistent with the Plan because the purpose of this local law is to:

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- (1) source separated all regulated recyclable materials, as defined in Section 4, from the solid waste stream in Ulster County;
  - (2) separate regulated recyclable materials into designated recyclable categories before such materials enter the Municipal Recycling System;
  - (3) account for all regulated recyclable materials through reporting requirements so that the County may measure its progress in attaining the State and County recycling goals;
  - (4) direct the flow of regulated recyclable materials so as (a) to ensure that such materials are not disposed of in a landfill or incinerator, but recycled and (b) to ensure the success of the Plan which the State has mandated and to which the County has committed a substantial amount of public funds;
  - (5) ensure that separate regulated recyclable materials are properly and economically aggregated, processed, and sold or delivered to recycling markets;
  - (6) secure long-term, stable, and environmentally appropriate markets for the county and its municipalities to survive periods of market downturns; and
  - (7) ensure that education and technical assistance are provided to all persons in the County on source separation and recycling.
- (j) The Mandatory Source Separation and Recycling Law will be implemented by the Ulster County Resource Recovery Agency because the Agency has been delegated authority and responsibility to manage the solid waste stream and has been established as the planning unit for the County.
- (k) The Mandatory Source Separation and Recycling Law seeks to maximize recycling by:
- (1) maintaining a partnership effort between the Agency and private sector;
  - (2) ensuring that a sufficient amount of regulated recyclable materials enters the County's Municipal Recycling System to result in a cost-effective, successful operation.
  - (3) having the Municipal Recycling System serve as the market of last resort; and
  - (4) ensuring that private sector recycling, which contributes to both County and State recycling goals, is in accordance with the County Solid Waste Management Plan and Article 27 of the Environmental Conservation Law.

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**Section 3. Statutory Authority.**

This local law adopted pursuant to Section 120-aa of the General Municipal Law, Section 10 of the Municipal Home Rule Law, Section 2050-t(3) of the Public Authorities Law, and Article 27 of the Environmental Conservation Law.

**Section 4. Definitions.**

As used in this local law, the following terms shall have the following meanings:

**“Agency”** shall mean the Ulster County Resource Recovery Agency created under Chapter 936 of the Laws of 1986 of the State, as amended.

**“Catalog”** shall mean a publication, such as a book, pamphlet, or magazine, created for the purposes of advertising or sales as specified by the Agency in the rules and regulations.

**“Charitable Organization”** shall mean any charitable organization registered under Article 7-A of the Executive Law.

**“Commercial Sector”** shall mean businesses, industries, and manufacturing enterprises operating for profit.

**“Commingled Recycling”** shall mean the process of mixing various regulated recyclables as specified by the Agency in the rules and regulations.

**“Commingled Paper”** shall mean the process of mixing various categories of recyclable paper as specified by the Agency in the rules and regulations. See also “mixed paper”.

**“Composting”** shall mean the process of aerobic, thermophilic decomposition by microbial degradation of solid organic constituents of solid waste to produce a stable, humus-like material called compost.

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**“Composting Facility”** shall mean a solid waste management facility used to provide aerobic, thermophilic decomposition by microbial degradation of solid organic constituents of solid waste to produce a stable, humus-like material.

**“Computer Paper”** shall mean clean, untreated or uncoated, white sulphite or sulphate papers, with or without colored stripes, manufactured for use in computer printers, which may or may not be imprinted with impact (non-laser) or laser printing, as specified by the Agency in the rules and regulations, excluding, however, ground wood computer printout or other contamination.

**“Construction and Demolition Debris” or “C&D”** shall mean uncontaminated solid waste resulting from the construction, remodeling, repair and demolition of utilities, structures and roads; and uncontaminated solid waste resulting from land clearing. Such waste includes, but is not limited to bricks, concrete and other masonry materials, soil, rock, wood (including painted, treated and coated wood and wood products), land clearing debris, wall coverings, plaster, drywall, plumbing fixtures, nonasbestos insulation, roofing shingles and other roof coverings, asphaltic pavement, glass, plastics that are not sealed in a manner that conceals other wastes, empty buckets ten gallons or less in size and having no more than one inch of residue remaining on the bottom, electrical wiring and components containing no hazardous liquids, and pipe and metals that are incidental to any of the above.

**“Contamination”** shall mean the inclusion of substance(s) or condition(s) that render the otherwise recyclable or compostable materials, including regulated recyclable materials and yard waste less marketable as specified by the rules and regulations.

**“Corrugated Cardboard”** shall mean all clean, dry brown, paperboard, referred to in industry as “old corrugated cardboard”. This induces includes boxes, cartons or other containers or dividers made of either kraft, test liner or jute, with a center fluting between layers, commonly used for packing, mailing, shipping of containerizing goods, merchandise or other material, or other cardboard as

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#### **A Local Law Amending Local Law Number 8 Of 1991 As Amended By Local Law Number 8 Of 2007 Ulster County Mandatory Source Separation And Recycling Law**

specified by the Agency in the rules and regulations, excluding, however, non cardboard materials, plastic, foam, or wax-coated or soiled cardboard.

**“County”** shall mean the entire County of Ulster as constituted and existing under the Laws of the State.

**“Designated Recyclable Categories”** shall mean the categories into which the regulated recyclable materials shall be separated as designated by the Agency through rules and regulations.

**“Electronic Waste” or “E-Waste”** shall mean any surplus, obsolete, broken, or discarded electrical or electronic devices, including, but not limited to televisions, computer monitors, computer peripherals, electronic office equipment, telephones, and electronic entertainment devices as specified by the Agency in the rules and regulations.

**“Economic Market”** shall mean instances in which the full avoided costs of proper collection, transportation, and disposal of source separated materials are equal to or greater than the cost of collection, transportation, and sale of said material less the amount received from the sale of said material per Subdivision 2 of Section 120-aa of New York State General Municipal Law.

**“Generator”** shall mean any person or legal entity that produces solid waste including regulated recyclable materials requiring off-site disposal.

**“Glass”** shall mean all clean, empty glass containers made from silica or sand, soda ash and limestone, which are transparent or translucent, and are commonly used for the packaging or bottling of various products. These containers shall include all clear or colored glass bottles, jars, and jugs, as specified by the Agency in the rules and regulations, excluding, however, pottery or ceramics, leadbased glass (such as crystal) plate glass, window or auto pane, mirrors, light bulbs, heat-resistant glass or ovenware, thermopane, laboratory glass, safety glass, or other contaminated glass.



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**“Hauler”** shall mean any person engaged in the business or activity of collecting, storing, and transporting regulated recyclable materials.

**“Household Hazardous Waste”** shall mean household products that contain corrosive, toxic, ignitable, or reactive ingredients including, but not limited to, pesticides, oil based paints, solvents and certain batteries as specified by the Agency in the rules and regulations.

**“Institutional Sector”** shall mean private or public organizations such as schools, hospitals, prisons, religious establishments, and not-for-profit organizations, whose purpose is to provide for the public welfare.

**“Magazine”** shall mean a periodical containing a collection of articles, stories, pictures or other features.

**“Mandatory Source Separation and Recycling Law”** shall mean the Local Law No. 8 passed by the Ulster County Legislature on December 31, 1991 and all subsequent revisions approved by the Legislature.

**“Market”** shall mean a business which buys, sells, or accepts recyclable materials, including regulated recyclable materials, or compost for the purpose of reuse as a product or in the manufacturing of new products.

**“Materials Recovery Facility” or “MRF”** shall mean a facility that accepts recyclable commingled materials that have already been separated at the source from municipal solid waste generated by either residential or commercial sources. Material is sorted to specifications, then baled, shredded, crushed, or otherwise prepared for shipment to market. MRFs are either dual stream or single stream. A dual stream MRF is where source-separated recyclables are delivered in a mixed container stream (typically glass, ferrous metal, aluminum and other non-ferrous metals, PET [No.], HDPE [No.2] plastics) and a mixed fiber stream (including cardboard, newspaper, magazines, office paper, junk mail, etc.) Single stream is a MRF that accepts and processes all recyclable materials mixed together, both mixed container and mixed fiber.

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**“Metal Cans”** shall mean clean, empty metal containers made of aluminum or tin-plated or zinc-plated steel, which are commonly used for packaging food, beverages or other products, as specified by the Agency in the rules and regulations and are free of food, beverage or other contamination.

**“Mixed Paper”** shall mean various categories of recyclable paper including, but not limited to, white and colored paper used in printers, photocopiers and fax machines, white and colored ledger paper, carbonless copy paper, construction paper, office paper, undeliverable mail, mailed promotional letters/advertisements/circulars, magazines, catalogs, envelopes, newspaper, paperboard, soft cover books, and hard cover books with the cover removed as specified by the Agency in the rules and regulations.

**“Multi-Family Dwelling Generator”** shall mean solid waste generated from apartment complexes, condominium complexes, cooperative apartment complexes, recreational vehicle or trailer parks, hotels, motels, bungalow or resort colonies, or campgrounds.

**“Municipal Yard Waste Composting Facility”** shall mean site(s) or area(s) designated by municipalities for the purpose of composting yard waste.

**“Municipal Recycling Drop-Off Centers”** also known as “Transfer Stations” shall mean sites or areas designated by municipalities and registered or permitted by the New York State Department of Environmental Conservation as collection points for regulated recyclable materials.

**“Municipal Recycling System”** formerly known as the **“Satellite Aggregation Center System”** shall mean the entire county system as set forth in the County’s Solid Waste Management Plan for maximizing reduction, reuse and recycling including, but not limited to, purchasing any and all equipment, constructing and permitting two Satellite Aggregation Centers, establishing a transportation network for regulated recyclable materials, securing long-term, stable markets for the County and its municipalities, and educating the public on how to maximize reduction, reuse and recycling of the solid waste stream.

**“Newspaper”** shall mean all clean, dry, paper commonly referred to as newspapers or newsprint, not sunburned and free from paper other than news or other contamination, and containing not more than the normal percentage of rotogravure and colored sections, as specified by the Agency in the rules and regulations.

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**“Not-for-Profit Organization”** shall mean any corporation organized according to the New York State Not-for-Profit Corporation Law.

**“Office Paper”** shall mean clean, white or colored ledger, bond, writing, copier or other paper, with or without printing or writing, but free of glossy, treated, coated or padded stock, carbon, plastic, or other contamination, as specified by the Agency in the rules and regulations.

**“Paperboard”** shall mean clean, flat, pressed, uncorrugated, stiff paper as specified by the Agency in the rules and regulations. Paperboard is also known as thin cardboard or greyboard and is used in products such as cereal boxes. Paperboard cannot be plastic or wax coated.

**“Person”** shall mean any natural person, individual, partnership, co-partnership, association, owner or manager of a business, commercial or industrial establishment, joint venture, corporation, trust, estate, institution, not-for-profit organization or any other legal entity including a municipality or any other waste generator.

**“Pharmaceutical Waste”** shall mean waste containing pharmaceutical substances including expired, unused, spilt, and contaminated pharmaceutical products, drugs, vaccines, and sera that are no longer required and need to be disposed of appropriately. The category also includes discarded items used in the handling of pharmaceuticals, such as bottles or boxes with residues, gloves, masks, connecting tubing, and drug vials.

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**“Plastic”** shall mean all clean, empty containers made of the plastic resins specified by the Agency in the rules and regulations, including, but not limited to, plastic bottles or jugs having contained spring water, various beverages or foods, and excluding contamination.

**“Recycling Oversight Committee”** shall mean the committee established and appointed pursuant to the Recycling Law.

**“Recyclable Materials”** shall mean any solid waste that exhibits the potential to be returned to the economic resource stream in the form of raw materials to be used in place of virgin materials in the manufacture of new products.

**“Recyclables Handling and Recovery Facilities”** shall mean a solid waste management facility, properly permitted under the New York State Department of Environmental Conservation rules and regulations, other than collection and transfer vehicles, at which recyclables are separated from the solid waste stream, or at which previously separated recyclables are collected.

**“Regulated Recyclable Materials”** shall include newspaper, mixed paper, glass bottles, jugs and jars, metal cans, plastic, corrugated cardboard, paperboard, and any other materials as may be designated by the Agency in accordance with this law.

**“Residential Generator”** shall mean solid waste generated from single or multiple-family dwellings and other residential sources.

**“Transfer Station”** shall mean the location designated by each municipality and registered or permitted by the New York State Department of Environmental Conservation as a municipal drop-off center for regulated recyclable materials, solid waste or yard waste.

**“Self Hauler”** shall mean any person who hauls or transports the regulated recyclable material it generates.

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**“Solid Waste”** shall mean all materials or substances discarded or rejected within the County of Ulster as being spent, useless, worthless, or in excess to the owners at the time of such discard or rejection, including, but not limited to garbage, refuse, industrial and commercial waste, sludges from air or water pollution control facilities or water supply treatment facilities, rubbish, ashes, contained gaseous materials, incinerator residue, demolition and construction debris and offal, but not including sewage and other highly diluted water-carried materials or substances and those in gaseous form, source, special nuclear or by-product material within the meaning of the Atomic Energy Act of 1954, as amended, and waste which appears on the list of hazardous waste promulgated by the Commissioner of Environmental Conservation pursuant to Section 27-0903 of the environmental conservation law.

**“Solid Waste Management Facility”** shall mean any facility, plant, works, system, building, structure, improvement, machinery, equipment, fixture or other real or personal property which is to be used, occupied or employed for or is incidental to the collecting, receiving, transporting, storage, processing or disposal of solid waste as more fully defined in Public Authorities Law Section 2050-b(16).

**“Ulster County Resource Recovery Agency”** shall mean the Agency established pursuant to chapter 936 of the session laws of 1986 and is referred to herein as “Agency”.

**“Yard Waste”** shall mean grass clippings, leaves, twigs, branches, lawn and garden wastes, weeds, brush, shrubbery clippings, clean wood and clean pallets as specified by the Agency in the rules and regulations, excluding treated painted or glued wood, construction and demolition wood, or other debris.

**Section 5. Administration.**

This local law shall be put into effect, administered, and enforced by the Agency. In order to carry out this responsibility, the Agency, acting consistently with the purposes of this local law, shall be empowered to do the following:

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**County Of Ulster**

**A Local Law Amending Local Law Number 8 Of 1991 As Amended By Local Law Number 8 Of 2007 Ulster County Mandatory Source Separation And Recycling Law**

- a. Execute contracts.
- b. Establish, revise, amend, and repeal standards, practices, and procedures for the proper preparation, separation, collection, and disposal of regulated recyclable materials.
- c. Establish, revise, amend, and repeal rules and regulations as it shall deem reasonable, necessary and proper to carry out the responsibilities and requirements of this local law pursuant to Section 6.
- d. Designate solid waste management facilities within Ulster County which may receive, aggregate, or process regulated recyclable materials or compost yard waste.
- e. Direct the flow of regulated recyclable materials to solid waste management facilities that receive, aggregate, or process regulated recyclable materials or compost yard waste.
- f. Add regulated recyclable materials to the solid waste stream based on market availability, technology and other factors subject to Section 25.
- g. Alter or delete regulated recyclable materials to be removed from the solid waste stream based on market availability, technology and other factors subject to approval by a majority vote of the Recycling Oversight Committee.
- h. Establish reporting procedures to account for all recyclable materials, including regulated recyclable materials and yard waste, in the County.
- i. Secure long-term, stable markets for the recycling of regulated recyclable materials and sell or otherwise market the regulated recyclable materials.
- j. Investigate violations of this law through the subpoena power of the hearing officer and others, issue warnings, seek civil and criminal penalties from the independent administrative hearing officer or in a Court of competent jurisdiction, issue Temporary Cease and Desist Orders, enter into consent agreements, and pursue the collection of penalties in accordance with Sections 19, 20, 21, 22, 23, and 24.

**Section 6. Rules and Regulations.**

When specified in this local law, the Agency may, from time to time, promulgate rules and regulations consistent with the provisions of this local law in order to effectuate the purposes hereof. This procedure for rule making shall be as follows:



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- a. The Executive Director must prepare and submit proposed rules and regulations to the Agency, the Community, the appropriate Committee of the County Legislature, the County Executive and the Recycling Oversight Committee.
- b. The Agency may authorize notification of a hearing in the official newspaper of the County, as designated by the County Legislature.
- c. The notice shall be published at least thirty (30) days prior to the public hearing and shall:
  - (1) cite the statutory authority under which the rules and regulations are proposed,
  - (2) give the date, time, and place of the public hearing,
  - (3) state the proposed rules and regulations or synopses thereof,
  - (4) give the name and address of the Agency representative to whom written comments may be submitted. The express terms of the proposed rules and regulations shall be available to the public on the date such notice is first given pursuant to this subdivision.
- d. The Executive Director shall conduct a public hearing and, upon request of the appropriate Committee of the County Legislature, appear before that Committee in public session to discuss the proposed rule making.
- e. The Executive Director shall prepare the record of the public hearing and a document responding to the comments received at the public hearing.
- f. The record of public comment and the response document shall be made available for public review and submitted to the Agency.
- g. The Agency shall make such changes and modifications in response to public comment as it deems appropriate and shall adopt the final rules and regulations by resolution.
- h. The Executive Director shall publish the final rules and regulations, or synopses thereof in the same manner as the proposed rules and regulations, no less than ten (10) days after the Agency adopts the final rules and regulations. The final rules and regulations shall take effect twenty (20) days after publication.
- i. The Agency shall post any changes to the rules and regulations in addition to the full Local Law at all designated Transfer Stations and online.

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**Section 7. Program Established.**

A program is hereby established within Ulster County for the mandatory source separation of regulated recyclable materials from the solid waste stream. Regulated recyclable materials established under this local law shall, as defined in Section 4, include the following: glass, metal cans, plastics, newspaper, corrugated cardboard, paperboard, and mixed paper. All persons shall separate regulated recyclable materials from solid waste before either setting out solid waste for collection pursuant to lawful procedure or disposing of it in an authorized solid waste management facility.

**Section 8. Preparation and Separation of Regulated Recyclable Materials.**

- (a) Upon the effective date of this local law, all persons in the County shall separate regulated recyclable materials from solid waste for the purposed of collection and recycling.
- (b) The Agency, from time to time, may promulgate rules and regulations pursuant to Section 6 specifying requirements for preparation and separation of regulated recyclable materials. The Agency will provide such rules and regulations to be posted online and at all designated Transfer Stations.
- (c) All persons shall prepare and separate regulated recyclable materials in accordance with the rules and regulations.

**Section 9. Preparation and Separation by Multi-Family Dwellings of Regulated Recyclable Materials.**

- (a) All residents of multi-family dwellings must source separate regulated recyclable materials from solid waste according to Section 8 and the rules and regulations promulgated thereunder, and deposit the regulated recyclable materials in the receptacles and/or collection area(s) provided therefore by the lessor, owner, or manager.

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(b) Lessors, owners, or managers of multi-family dwellings must establish a program which facilitates the multi-family resident to source separate regulated recyclable materials, and must include, providing in a neat and sanitary condition, receptacles and/or collection area(s) to receive all regulated recyclable materials generated by residents of the multi-family dwelling. In cases where a condominium association exists, the condominium association shall be responsible for provision and maintenance of the receptacles and/or collection area(s).

(c) By March 1, 1992 and every year thereafter, lessors, owners, or managers of all multifamily dwellings of five (5) units or more, shall submit to the Agency for approval a Multi-Family Dwelling Recycling Plan implementing Section (b). Such a plan shall include:

1. Location of multi-family dwelling and number of units;
2. Collection system for regulated recyclable materials once the residents have deposited such materials in the receptacles and/or collection area(s);
3. Provisions for publicizing recycling program; and
4. Implementation date of September 1, 1992.

(d) The Agency, from time to time, may promulgate rules and regulations pursuant to Section 6 for additional information and implementation of the Multi-Family Dwelling Recycling Plan.

(e) All multi-family residents, lessors, owners, or managers shall report as required pursuant to Section 16.

**Section 10. Commercial and Institutional Sector Recycling.**

(a) All commercial and institutional sector generators shall prepare and separate regulated recyclable materials according to Section 8 and the rules and regulations promulgated thereunder.

(b) All commercial and institutional sector generators of ten (10) employees or more shall submit a Commercial/Institution Solid Waste Reduction and Recycling Plan to the Executive Director. The plan will remain on file with the Agency. All commercial and institutional sector generators shall submit revisions as applicable.

Such a plan shall include:

- (1) Organization Identification including a general description of the business, its location and type of operation and the number of employees;

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- (2) Waste Composition analysis including an identification of the amounts of recyclable and non-recyclable materials in their solid waste stream;
  - (3) Waste Reduction and Recycling Practices including an identification of waste reduction efforts, present recycling, potential recycling, and waste exchanges; and
  - (4) Waste Disposal for residual waste including an identification of materials in the organization's waste stream that will not be reduced or recycled and disposal methods.
- (c) The Agency, from time to time, may promulgate rules and regulations pursuant to Section 6 for additional information and implementation of the Commercial/Institutional Solid Waste Reduction and Recycling Plan.
- (d) All commercial and institutional sector generators shall report as required in Section 16.

**Section 11. Private Disposal of Regulated Recyclable Materials.**

- (a) Nothing shall prevent any commercial sector generators of regulated recyclable materials from Directly Selling to markets the regulated recyclable materials they generate so long as:
- (1) all costs of separating, preparing, processing, transporting and marketing such materials are directly and fully absorbed by the generators and no public funds contribute to such separation, preparation, processing, transporting or marketing;
  - (2) a minimum of thirty (30) days' written notice of intent to Directly Sell or to cease Directly Selling Regulated Recyclable Materials is provided to the Agency prior to implementing such option; and
  - (3) the generators comply with all reporting requirements of this local law and the rules and regulations promulgated hereunder.
- (b) Private not-for-profit or charitable organizations may receive donations of regulated recyclable materials from generators as part of an announced fund-raising event, provided that they request and receive the prior written approval of the Executive Director of the Agency.

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**Section 12. Collection and Disposal of Regulated Recyclable Materials.**

(a) No person shall collect or dispose of regulated recyclable materials except as directed by the Agency pursuant to this local law and the rules and regulations promulgated pursuant to Section 6 or, if the Agency has not acted, the Municipality.

(b) All solid waste management facilities, whether public or private, shall provide adequate facilities for the acceptance of regulated recyclable materials.

(c) The Agency is authorized to promulgate rules and regulations pursuant to Section 6 regulating the collection and disposal of regulated recyclable materials.

**Section 13. Collection and Disposal of Regulated Recyclable Materials by Haulers.**

(a) No hauler shall collect, transport, or dispose of regulated recyclable materials except as directed by the Agency pursuant to this local law and the rules and regulations promulgated pursuant to Section 6.

(b) The Agency is authorized to promulgate rules and regulations pursuant to Section 6 regulating collection, transportation, and disposal of regulated recyclable materials by haulers.

(c) All haulers shall collect, transport, maintain, and dispose of regulated recyclable materials (1) separated from the solid waste stream and (2) in a condition specified in the rules and regulations promulgated pursuant to Section 6.

(d) Source separated regulated recyclable materials shall be transported and delivered only to a solid waste management facility(ies) designated by the Agency that receives, aggregates or processes regulated recyclable materials. If no facility is designated, the hauler may deliver the regulated recyclable materials to a recycling facility or market of its choice.

(e) All haulers shall report as required pursuant to Section 16.

**Section 14. Preparation, Separation and Disposal of Yard Waste.**

(a) All persons shall separate yard waste from solid waste for the purposes of collection and composting.

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(b) Each Municipality within the County may provide, or obtain rights in, a yard waste composting facility for the disposal of yard waste.

(c) Yard waste may be composted at a composting facility designated by the Municipality or at a solid waste management facility that receives and composts yard waste as may from time to time be designated by the Agency. If no facility is designated, the hauler of yard waste may deliver the yard waste to a private composting facility.

(d) This section shall not prohibit private composting or on site disposal in compliance with any existing law of yard waste by any person.

(e) The Agency may, from time to time, promulgate rules and regulations pursuant to Section 6 for the preparation, separation, collection, and disposal of yard waste.

(f) All yard waste shall be prepared, separated, collected and disposed according to the rules and regulations.

**Section 15. Ownership, Direction and Control of Regulated Recyclable Materials.**

(a) Except as set forth in Section 11, once regulated recyclable materials are set out for collection, placed in Agency containers, or deposited in the Municipal Recycling Drop-Off Centers or Municipal Recycling System, all such materials become the property of the County, and the Agency shall direct and control the processing, transporting and marketing of that property.

(b) The County does not assume ownership of improperly prepared regulated recyclable materials, including those in an improper condition, container, or location.

(c) Improperly prepared regulated recyclable materials must be removed by the generators and properly prepared and separated according to this law.

**Section 16. Reporting Requirements.**

(a) All persons shall report information as designated by the rules and regulations promulgated by the Agency pursuant to Section 6.



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(b) The Agency may, from time to time, pursuant to Section 6 promulgated rules and regulations requiring the reporting on regulated recyclable materials, recyclable materials being studied as possible regulated recyclable materials, regulated recyclable materials directly sold or donated pursuant to Section 11, categories of solid waste as designated by the Agency or any other information needed to further the purposes of this law, including information needed to study possible economic markets, track flow of regulated recyclable materials, or monitor progress in meeting the State and County recycling goals.

**Section 17. County Household Recycling Containers.**

It shall be a violation for any person to:

- (1) remove a County recycling container from the County;
- (2) to take, without authorization, a County recycling container;
- (3) dispose of a County recycling container other than by returning such container to the issuing Municipality; and
- (4) use such container for other than the temporary storage of regulated recyclable materials.

**Section 18. Unlawful Acts.**

It shall be unlawful for:

- (a) Any person to fail to separate, prepare for collection, collect, transport, or dispose of regulated recyclable materials or yard waste in accordance with this law or any rules and regulations promulgated pursuant to Section 6.
- (b) Any person to dispose of any solid waste generated in Ulster County unless such regulated recyclable materials have been removed from such solid waste.
- (c) Any person to place regulated recyclable materials at other than a designated location.
- (d) Any person to alter regulated recyclable materials or fail to maintain these materials in the condition specified by the Agency in the rules and regulations.
- (e) Any person to dispose or cause to be disposed of regulated recyclable materials or yard waste in a landfill, incinerator, or any other solid waste disposal facility.

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(f) Any hauler to collect, transport, store, or deliver regulated recyclable materials that contain solid waste.

(g) Any hauler to deliver regulated recyclable materials to a solid waste management facility not designated by the Agency.

(h) Any solid waste management facility to accept solid waste unless the regulated recyclable materials are separated therefrom.

(i) Any person not authorized under this local law to remove regulated recyclable materials once set out for collection or brought to a Municipal Recycling Drop-Off Center or Municipal Recycling System.

(j) Any person to fail to report as required by this law or the rules and regulations.

(k) Any person to knowingly make a false material statement or representation in any report required under this local law.

(l) Any person to violate, cause, or assist in the violation of any provision herein.

**Section 19. Enforcement.**

(a) The Agency, acting through the Executive Director, is delegated the authority and responsibility to enforce this local law by investigating possible violations through the subpoena power of the independent administrative hearing officer provided for hereunder and the Courts; seeking civil or criminal penalties for violations of this local law or the rules and regulations promulgated pursuant to this local law in a Court of competent jurisdiction or from the independent administrative hearing officer provided for hereunder; issuing Temporary Cause and Desist Orders; and collecting penalties pursuant to this local law.

(b) The Agency shall employ a dedicated Recycling Compliance Officer(s) who will also act as Recycling Educator. The duties of the Recycling Compliance Officer(s) shall include:

(1) coordination of efforts to educate the public and private sector as to the standing recycling/source separation laws and regulations,

(2) the responsibility to answer and record all complaints regarding possible violations of this law, and

(3) inspection of sites to determine compliance with this law. The Recycling Compliance Officer will report at least quarterly with the Recycling Oversight Committee. The Recycling Compliance Officer will report monthly to the Agency board.

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(c) The Executive Director may issue written warnings that include educational material on how to properly comply with this local law.

(d) The Ulster County Health Department shall issue licenses to haulers to collect and transport regulated recyclable materials pursuant to the Sanitary Code and its rules and regulations. The Agency, acting through the Executive Director, may include provisions in the haulers' license as provided by the Sanitary Code and its rules and regulations and may seek enforcement of the Sanitary Code or its rules and regulations.

(e) Notwithstanding anything in this local law or in the Ulster County Sanitary Code to the contrary, no hauler shall be issued a license pursuant to the Sanitary Code to collect, transport, and/or dispose of solid waste unless the hauler also collects and transports regulated recyclable materials in accordance with this local law.

(f) Notwithstanding anything in this section to the contrary, this local law may be enforced by the Sheriff of the County or any police agency of the State or any Municipality of the County.

**Section 20. Independent Administrative Hearing Officer.**

(a) An independent administrative hearing officer is hereby created, established and authorized to issue orders assessing civil penalties for violations of this local law.

(b) The officer shall be appointed by the County Legislature to serve at the pleasure of the County Legislature.

(c) The Executive Director and/or the Recycling Compliance Officer(s) as complainant may institute a proceeding with the officer seeking an order assessing civil penalties for the violation of this local law.

(d) The officer has the authority to require the attendance of witnesses or the production of documentary evidence by subpoena.

(e) Before issuing an order assessing a civil penalty, the officer shall give to the person to be assessed such penalty written notice of the proposed order and an opportunity to request a hearing on the proposed order.

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(f) The written notice shall include, at a minimum:

- (1) a concise statement of the factual basis for the violation;
- (2) the amount of the civil penalty that is proposed to be assessed;
- (3) the provisions of the local law alleged to have been violated;
- (4) the right to request a hearing on the material facts and/or the amount of the civil penalty; and
- (5) a copy of the rules of the hearing procedures.

(g) The hearing shall provide a reasonable opportunity to be heard, cross-examine witnesses, and present evidence free from interference, coercion, restraint, discrimination, or reprisal, and the respondent shall have the right to be represented by a person of his/her choice at any stage of the hearing and proceedings.

(h) If the respondent fails to appear at the hearing without good cause being shown and the Executive Director presents a prima facie case against the respondent, the respondent may be found in default.

The motion for default and a proposed default order shall be served by the officer on all parties, and the defaulting party shall have twenty (20) days from service to reply to the motion. The proposed default order may be set aside for good cause shown in accordance with the civil practice law and rules. Default by the complainant shall result in the dismissal of the complaint with prejudice.

(i) In determining the amount of the civil penalty, the officer, in accordance with Section 21, shall consider the seriousness of the violation(s); any history of such violations; good faith efforts to comply with the applicable requirements; the number of individual generators the violator employs, services, represents, or is otherwise responsible for; the economic impact (benefit or harm) resulting from the violation(s); the economic impact of the penalty; the Executive Director's recommendation for a penalty; and such other factors as justice may require. Civil penalties shall constitute a judgment as that term is defined in the Civil Practice Law and Rules which may be enforced in accordance with that statute.

(j) The officer may establish rules for discovery, administration and implementation of this section, and procedures for conducting hearings and other proceedings.

(k) Any person against whom a civil penalty is assessed under this section may obtain judicial review of such assessment.

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**Section 21. Penalties.**

(a) Criminal Penalties: Any person who violated this local law shall be guilty of a violation and subject to a fine not to exceed one thousand dollars (\$1000) per day per violation and/or up to five days imprisonment.

(b) Civil Penalties: Any person who violated this local law shall be liable to pay a civil penalty. If a decision of liability is made by a hearing officer or a Court competent jurisdiction, a civil penalty shall be assessed of not more than one thousand dollars (\$1000) per day per violation and/or suspension or revocation of collection or disposal privileges in conjunction with solid waste and/or regulated recyclable materials disposed within the County, and/or any other just and equitable remedies available at law.

(c) Each and every act prohibited hereunder shall be deemed a separate violation of this local law.

(d) All fines and penalties shall become due and payable to the Agency.

**Section 22. Collection.**

If any person fails to pay an assessment of a civil penalty, the Agency may bring a civil action in an appropriate Court to recover the amount assessed (plus interest) at currently prevailing rates from the date of the final order or the date of the final judgment, as the case may be. Such person shall be required to pay, in addition to such amount and interest, attorney's fees and costs for collection proceedings and a quarterly nonpayment penalty for each quarter during which such failure to pay persists. Such non-payment penalty shall be in an amount equal to twenty (2) percent of the aggregate amount of such person's penalties and non-payment penalties which are unpaid as of the beginning of such quarter.

**Section 23. Consent Agreement and Order.**

(a) The Executive Director and Respondent or Defendant may confer concerning settlement.

(b) The Executive Director and Respondent or Defendant shall forward a written consent agreement and a proposed consent order to the hearing officer or District Attorney or Court of competent jurisdiction, as the case may be, whenever

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settlement or compromise is proposed. The consent agreement shall state that, for the purpose of the proceeding, respondent:

- (1) admits the jurisdictional allegations of the complaint,
  - (2) admits the facts stipulated in the consent agreement or neither admits nor denies specific factual allegations contained in the complaint; and
  - (3) consents to the assessment of stated penalty. The consent agreement shall include any and all terms of the agreement, and be signed by all parties or their representatives.
- (c) No settlement or consent agreement shall dispose of any proceeding without a consent order from the hearing officer or Court of competent jurisdiction. In preparing such an order, the hearing officer or Court may require that the parties to the settlement appear before him/her to answer inquires relating to the consent agreement or order. All settlements are due and payable to the Agency.

**Section 24. Temporary Cease and Desist Order.**

- (a) Upon receipt of evidence that an emergency exists, the Agency, acting through the Executive Director, may issue a Temporary Cease and Desist Order immediately suspending and restraining such activity causing or contributing to the emergency before the holding of a hearing.
- (b) The person suspended or restrained shall have an opportunity to an expedited hearing within 5 days of the Agency order before the hearing officer on the question of whether an emergency exists.
- (c) If the hearing officer determines that such an emergency exists, he/she shall schedule a full hearing to be held in accordance with Section 20 at least twenty (20) days after the expedited hearing. If the hearing officer determines that an emergency does not exist, he/she shall annul the Agency Order.
- (d) The Agency Order shall be in effect pending the completion of the expedited and full hearing, however the case may be.

**Section 25. Addition or Removal of Regulated Recyclable Materials.**

- (a) In addition to the regulated recyclable materials defined in Section 4, the Agency, subject to Section 26, shall be authorized to designate regulated recyclable materials to be separated from other solid waste.



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(b) In addition to the regulated recyclable materials defined in Section 4, the Agency, subject to Section 26, shall be authorized to remove previously designated regulated recyclable materials from the list of regulated recyclable materials subject to the approval of the Recycling Oversight Committee.

(c) If removal of the regulated recyclable material is based upon the lack of an economic market for the material in accordance with Section 120-aa of the General Municipal Law, the Agency shall conduct such studies as it deems necessary and proper to establish the lack of an economic market, and shall state specifically in the notice of its action removing the regulated recyclable material, the grounds for its action and all studies upon which its determination is based. Such designation or removal shall be made in writing, published in the Environmental News Bulletin and the official newspapers of the County as designated by the County Legislature, and shall take effect thirty (30) days after such publication.

**Section 26. Recycling Oversight Committee.**

(a) A recycling oversight committee consisting of one member of the Agency designated by the Agency Board to serve as a non-voting, ex-officio member and not more than eleven (11) voting members to be appointed by the County Legislature is hereby created and established for the following purposes:

- (i) advising the Agency on the addition of materials from the definition of regulated recyclable materials;
- (ii) approving the removal of materials from the definition of regulated recyclable materials;
- (iii) advising the Agency and the County Legislature on the progress made towards meeting the percent reduction goals established in the Solid Waste Management Act of 1988 and the Plan;
- (iv) advising the Agency on the adoption, repeal or amendment of rules and regulations provided for in Section 6 of this Local Law; and (iv) such other matters as the Agency may suggest. The members of the recycling oversight committee to be appointed by the County Legislature shall consist of an appointee from the following:

- (1) Town Supervisor's Association;
- (2) City of Kingston;

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- (3) Community and Environmental Affairs Committee of the Ulster County Legislature;
- (4) Ulster County Environmental Management Council;
- (5) Commercial Waste Hauling Industry;
- (6) Municipal Recycling Coordinators;
- (7) Commercial or Institutional Sector;
- (8) Multi Family Dwelling Interest.

Additionally the County Legislature shall appoint three (3) at-large community members with interest and concern which may include students but shall not include members that fall into previously mentioned categories.

(b) The appointment in subsection (a) of this Section, other than the Agency appointment, shall be for a three year term from the date of appointment. Should a member no-longer be eligible to serve due to a change in their employment status, appointed or elected status, or interest that member shall serve until the point that they are replaced by the County Legislature. Should a member fail to attend at least 50% of the Committee's calendar meetings, that member is eligible for replacement by the County Legislature. Replacement members shall serve out the original member's term. The chairman shall be elected by the members of the recycling oversight committee at its first regular meeting, and the Committee shall adopt operating by-laws as they deem appropriate.

(c) The Committee shall meet at least quarterly, and the majority of the members shall constitute a quorum. Any recommendation issued by the Committee shall be approved by a majority of its membership.

(d) The Agency shall request and receive the recommendation of the Committee before its order the addition of any material from designation as a regulated recyclable material, except that if such recommendation is not received within thirty (30) days after written request by the Agency, it may act without such recommendation. The Agency shall request and receive the approval of the Committee before its order the removal of any material from designation as a regulated recyclable material, except that if such approval is not received within ninety (90) days after written request by the Agency, it may act without such approval.

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**Section 27. Separability.**

If any section, provision, or part thereof, in this local law, or the application thereof to any person or circumstances, is adjudged invalid or unconstitutional by a Court of competent jurisdiction, then such adjudication shall not effect the validity of the remainder of the local law as a whole or any sections, provisions, or part thereof, not so adjudged invalid or unconstitutional and the application of the local law or any section, provision or part thereof, to other persons or circumstances shall not be affected by said adjudication.

**Section 28. Priority.**

- (a) Pursuant to Section 1 of Chapter 936 of Laws of 1986 of the State of New York, this local law shall take precedence over and supersede any inconsistent provisions of any local law enacted by any Municipality within the County;
- (b) A Municipality may adopt and enforce its own local law which, at a minimum, must be procedurally and substantively as comprehensive as this local law.

**Section 29. Effective Date.**

This Local Law shall take effect immediately upon filing in the office of the New York State Secretary of State in accordance with Section 27 of the Municipal Home Rule Law.

**Adopted by the County Legislature: September 21, 2010**

**Approved by the County Executive: October 6, 2010**

# **Local Law Number 4 Of 2015**

## **County Of Ulster**

### **A Local Law Regulating The Use Of Polystyrene Foam Disposable Food Service Ware By Food Service Establishments In Ulster County**

**BE IT ENACTED**, by the County Legislature of the County of Ulster, New York, as follows:

#### **SECTION 1. TITLE.**

This local law shall be known as “Food Service Waste Reduction Act.”

#### **SECTION 2. LEGISLATIVE INTENT AND FINDINGS.**

The Legislature finds and determines that polystyrene foam is a common environmental pollutant and non-biodegradable substance commonly used as food service ware and that there is no meaningful recycling or reuse of polystyrene foam food service ware.

The Legislature further finds and determines that the Environmental Protection Agency has found that the polystyrene manufacturing process is the fifth largest creator of hazardous waste in the United States.

The Legislature further finds and determines that evidence suggests that a component of polystyrene foam, styrene, is a carcinogen and neurotoxin. According to EPA studies, styrene is now detectable in the fat tissue of every man, woman and child in the United States.

The Legislature further finds and determines that alternative cost-effective biodegradable, compostable and/or reusable food service ware is readily available. Such alternatives are less toxic and more environmentally friendly than polystyrene foam.

The Legislature further finds and determines that the use of biodegradable, compostable food, and/or re-useable service ware will reduce the waste stream and reduce waste costs. Therefore, the purpose of this local law is to eliminate the use of polystyrene foam food service ware by Food Service Establishments within Ulster County.

Therefore, the Legislature hereby finds and determines that the prohibition of the use of polystyrene foam disposable food service ware in Ulster County is in the best interests of the citizens of Ulster County.

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**SECTION 3. DEFINITIONS.**

As used in this local law, the following terms shall have the meanings indicated:

“Chain Food Service Establishment” – means a food service establishment or food service establishments operating in Ulster County that is or are part of a group of fifteen or more food service establishment locations nationally, doing business under the same trade name, offering predominantly the same types of meals, foods or menus regardless of the type of ownership of the individual food service establishment locations.

“County” – The County of Ulster.

“Customer(s)” – Any person(s) obtaining Prepared Food from any Food Service Establishment.

“Disposable Food Service Ware” – All bowls, plates, cartons, cups, other containers, trays, or other items designed for one time use on or in which any Food Service Establishment directly places and/or packages food or provides same to Customer(s) to place and/or package food or which are used by Customer(s) to consume or transport food. This includes, but is not limited to, service ware for takeout Prepared Food and/or leftovers from partially consumed meals prepared at or by Chain Food Service Establishments for consumption at a specific location. This does not include single-use disposable items such as straws, cup lids, or utensils.

"Food Service Establishment" means any establishment, located or providing food within the County of Ulster, which sells or otherwise provides prepared food and/or beverages for public consumption on or off its premises and includes, but is not limited to, any store, shop, sales outlet, restaurant, bar, pub, coffee shop, cafeteria, caterer, convenience store, liquor store, grocery store, super market, delicatessen, catering truck, mobile food truck, cart or vehicle, or any other person who provides prepared food; and any organization, group or individual which regularly provides food as a part of its services.

“Health Commissioner” – The Commissioner of Health for Ulster County.

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“Polystyrene Foam” – Any blown polystyrene, expanded, and extruded foams (commonly referred to as Styrofoam, a Dow Chemical Company trademarked form of polystyrene foam insulation) which are thermoplastic petrochemical materials utilizing a styrene monomer and processed by any number of techniques, including, but not limited to, fusion of polymer spheres (expandable bead polystyrene), injection molding, foam molding, and extrusion blow molding (extruded from polystyrene). Polystyrene foam is generally used to make cups, bowls, plates, trays, clamshell containers, meat trays and egg cartons.

“Prepared Food” – Any food or beverage which is (1) served in Ulster County or (2) which is packaged, cooked, chopped, sliced, mixed, brewed, frozen, squeezed, or otherwise prepared on the premises. Prepared food does not include raw meats, poultry and/or seafood sold for the purpose of cooking off premises.

**SECTION 4. PROHIBITION ON THE USE OF DISPOSABLE POLYSTYRENE FOAM FOOD SERVICE WARE.**

A. No Chain Food Service Establishment shall sell or otherwise provide prepared food in any disposable food service ware that contains polystyrene foam.

B. No Food Service Establishment shall sell or otherwise provide prepared food in any disposable food service ware that contains polystyrene foam.

C. No County facilities, County managed concessions, County sponsored events or County permitted events shall distribute or utilize disposable food service containers containing expanded polystyrene or non-recyclable plastic.

**SECTION 5. EXEMPTIONS TO THE POLYSTYRENE FOAM DISPOSABLE FOOD SERVICE WARE PROHIBITION.**

A Chain Food Service Establishment or Food Service Establishment may seek an exemption from the prohibition under Section 5 due to a “unique packaging hardship” under Subsection A of this Section or a “financial hardship” under Subsection B of this Section.



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- A. The Chain Food Service Establishment or Food Service Establishment must demonstrate that no reasonably feasible alternative exists to a specific and necessary polystyrene foam disposable food service ware to qualify for a “unique packaging hardship” exemption.
- B. The Chain Food Service Establishment or Food Service Establishment must demonstrate both of the following to qualify for a “financial hardship” exemption: (1) a gross income under \$300,000 on their annual income tax filing for the most recent tax year, and (2) with respect to each specific and necessary polystyrene foam disposable food service ware, that there is no feasible alternative that would cost the same or less than the polystyrene foam disposable food service ware.
- C. The Chain Food Service Establishment or Food Service Establishment may submit a written application for an exemption on a form provided by the Department of Health. The Commission of Health or designee (“Commissioner”) may require the applicant to submit additional information or documentation to make a determination regarding the exemption request. Within thirty (30) days of receiving a completed application and supporting documentation, if any, the Commissioner must either grant or deny the applicant’s request for an exemption and must notify the applicant of his or her determination. A request for exemption shall be reviewed on a case by case basis, and may be granted in whole or in part, with or without conditions, for a period of up to twelve (12) months. The Chain Food Service Establishment or Food Service Establishment must apply for a new exemption period no later than sixty (60) days prior to the expiration of the then current exemption period to preserve a continuous exemption status. Each application shall be reviewed anew and will be based on the most current information available. The determination of the Commissioner shall be final and is not subject to appeal.

**SECTION 6. ENFORCEMENT AND NOTICE OF VIOLATION.**

- A. The Commissioner of Health or designee shall have responsibility for notification and enforcement of this local law. The Commissioner of Health or designee is authorized to promulgate rules and regulations and take any

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and all other reasonable actions necessary to implement and enforce this local law. Any rules and regulations so promulgated shall be made available on the County of Ulster website in a manner approved by the Commissioner of Health.

- B. Anyone violating or failing to comply with any of the requirements of this Chapter or of any regulation or administrative procedure authorized by it shall be guilty of an infraction.
- C. The County Attorney may seek legal, injunctive, or any other relief to enforce this Chapter and any regulation or administrative procedure authorized by it.
- D. The remedies and penalties provided in this Chapter are cumulative and not exclusive of one another.

**SECTION 7. PENALTIES.**

Violations of this local law shall be enforced as follows:

- A. For the first violation, the Commissioner of Health, or designee, upon determination that a violation of this local law has occurred, shall issue a written warning notice to the Chain Food Service Establishment or Food Service Establishment which will specify the violation and the appropriate penalties in the event of future violations.
- B. Thereafter, the following penalties shall apply:
  - 1. First Offense. Any Chain Food Service Establishment or Food Service Establishment guilty of a first offense shall be guilty of a violation and shall be fined an amount not to exceed two hundred and fifty (\$250) dollars.
  - 2. Second Offense. Any Chain Food Service Establishment or Food Service Establishment guilty of a second offense shall be guilty of a violation and shall be fined an amount not to exceed five hundred (\$500) dollars.

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3. Third and Subsequent Offense. Any Chain Food Service Establishment or Food Service Establishment guilty of a third or subsequent offense shall be guilty of a violation and shall be fined an amount not to exceed one thousand (\$1,000) dollars.
4. Fines are cumulative and each day that a violation occurs shall constitute a separate violation.

For the purpose of this section, each physical location or establishment shall be treated individually, and offenses and fines for separate locations shall be considered individually.

**SECTION 8. REVERSE PREEMPTION.**

This local law shall be null and void on the day that federal or statewide legislation goes into effect, incorporating either the same or substantially similar provisions as are contained in this law, or in the event that a pertinent state or federal administrative agency issues and promulgates regulations preempting such action by the County of Ulster. The County Legislature may determine via mere resolution whether or not identical or substantially similar federal or statewide legislation, or pertinent preempting state or federal regulations have been enacted for the purposes of triggering the provisions of this section.

**SECTION 9. SEVERABILITY.**

If any clause, sentence, paragraph, section, subdivision, or other part of this local law or its application shall be inconsistent with any federal or state statute, law, regulation or rule then the federal or state statute, law, regulation, or rule shall prevail. If any clause, sentence, paragraph, section, subdivision, or other part of this local law or its application shall be adjudged by a court of competent jurisdiction to be invalid or unconstitutional, such order or judgment shall not affect, impair, or invalidate the remainder of the local law which shall remain in full force and effect except as limited by such order or judgment.

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**SECTION 10. EFFECTIVE DATE AND APPLICABILITY.**

This local law shall be effective six (6) months subsequent to filing in the Office of the Secretary of State for Chain Food Service Establishments, County facilities, County managed concessions, County sponsored events and County permitted events, and one (1) year subsequent to filing in the Office of the Secretary of State for Food Service Establishments. The local law shall apply to all transactions occurring on or after the effective dates referenced above.

**Adopted by the County Legislature: March 17, 2015**

**Approved by the County Executive: April 16, 2015**

**Filed with New York State Department of State: May 1, 2015**

# **Local Law Number 5 Of 2018**

## **County Of Ulster**

### **A Local Law Promoting The Use Of Reusable Bags And Regulating The Use Of Plastic Carryout Bags And Recyclable Paper Carryout Bags**

**BE IT ENACTED**, by the Legislature of the County of Ulster, as follows:

#### **SECTION 1. TITLE.**

This Local Law shall be known by and may be cited as “The ‘Bring Your Own Bag’ (BYOBag) Act.”

#### **SECTION 2. LEGISLATIVE INTENT AND FINDINGS.**

The Ulster County Legislature hereby finds and determines that data released by the United States Environmental Protection Agency shows that between 500 billion and 1 trillion plastic bags are consumed worldwide each year.

The Ulster County Legislature further finds and determines that the production and disposal of single-use checkout bags has significant environmental impacts, including the contamination of the environment, the depletion of natural resources, use of non-renewable polluting fossil fuels, and increased clean up and disposal costs.

The Ulster County Legislature further finds and determines that most plastic bags do not biodegrade; over time, the bags break down into smaller, more toxic petro-polymers, which eventually contaminate soils and waterways affecting the environment and human health.

The Ulster County Legislature further finds and determines that it is estimated that plastic bags account for over 10% of debris that washes up on the United States coastlines.

The Ulster County Legislature further finds and determines that plastic bags can have a devastating effect on wildlife; birds can become entangled in the bags and different species of sea life can die from ingesting plastic bags, which they mistake for food.

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The Ulster County Legislature further finds and determines that U.S. retailers spend approximately \$4 billion annually to purchase disposable bags, costs that are passed on to the consumer in the form of higher prices. Municipalities are spending millions of dollars to clean up and dispose of plastic bags.

The Ulster County Legislature further finds and determines that less than 5 percent of plastic bags are recycled, in part, due to the fact that it costs more to recycle a bag than to produce a new one.

The Ulster County Legislature further finds and determines that several nations around the world have banned or are moving towards banning the distribution of plastic bags, and twelve municipalities in New York State have implemented some combination of bans and/or fees for carryout bags, including the Village of New Paltz.

The Ulster County Legislature further finds and determines that studies document that banning plastic checkout bags and placing a mandatory charge on recyclable paper checkout bags will dramatically reduce the use of both types of bags and increase the customers' use of reusable bags. "An Analysis of the Impact of Single-Use Plastic Bags" by the New York State Plastic Bag Task Force, created by Governor Cuomo in 2017, issued on January 13, 2018 supports the same.

The hybrid solution has proven effective throughout the United States and the international community in reducing plastic bag use and encouraging the switch to reusable bags. Communities such as Los Angeles, California have documented success with the ban/fee hybrid since its adoption in 2012, showing a 94% reduction in carryout bag consumption.

The Ulster County Legislature further finds and determines that reusable bags are readily available with numerous sources and vendors for such bags.



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Therefore, the purpose of this local law is to encourage consumers in Ulster County to use their own reusable bags by prohibiting retail stores in Ulster County from providing plastic carryout bags to their customers and requiring that a fee be placed on recyclable paper bags and certain other plastic bags.

**SECTION 3. DEFINITIONS**

As used in this law, the following terms shall have the meanings indicated:

“COVERED STORE” shall mean an establishment engaged in the retail sale of personal, consumer or household items including but not limited to drug stores, pharmacies, grocery stores, supermarkets, convenience stores, foodmarts, apparel stores, home center and hardware stores, stationary and office supply stores, farmers markets, open-air flea markets and food service establishments that provide carryout bags to consumers. This term does not include food service establishments located outside of grocery stores, supermarkets, convenience stores or food marts.

“CUSTOMER” means any Person obtaining goods from a Covered Store.

“FOOD SERVICE ESTABLISHMENT” shall mean a place where prepared food is provided for individual portion service directly to a Customer whether consumption occurs on or off the premises.

“PERSON” shall mean any natural person, firm, corporation, partnership or other organization or group however organized.

“SINGLE USE PLASTIC CARRYOUT BAG” shall mean a single use plastic bag less than 4 mils thick that is provided by a covered store to a customer at the point of sale and is used to carry goods from such store. “Plastic Carryout Bag” does not include (1) a bag without handles used to carry produce, meats, dry goods or other non-prepackaged food items to the point of sale within a store or market

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or to prevent such food items from coming into direct contact with other purchased items; (2) a garment bag or large plastic bag with two openings that is used to transport clothing from a clothing retailer or garment cleaner such as a dry cleaner; (3) a bag provided by a pharmacy to carry prescription drugs.

“RECYCLABLE PAPER BAG” shall mean a paper bag that (1) contains no old-growth fiber; (2) is 100% recyclable overall and contains a minimum of 40% post-consumer recycled content; and (3) displays the word “Recyclable” on the outside of the bag.

“RETAIL SALES” shall mean the transfer to a customer of goods in exchange for payment occurring in retail stores, sidewalk sales, farmers’ markets, flea markets and restaurants. The term “retail sales” does not include sales of goods at yard sales, tag sales, and other sales by residents at their homes.

“REUSABLE BAG” shall mean a bag with handles that is specifically designed and manufactured for multiple reuse that is provided by a Covered Store to its Customer at the point of sale and is capable of carrying twenty-two (22) pounds over a distance of one hundred and seventy five feet (175) for a minimum of one hundred and twenty five (125) uses and is either: (a) made of cloth or other machine washable fabric; or (b) made of durable plastic that is at least 4 mils thick.

**SECTION 4. PROHIBITION**

No Covered Store shall provide a Single Use Plastic Carryout Bag to any Customer, at the check out stand, cash register, point of sale or other point of departure for the purpose of transporting food or merchandise out of the establishment.

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**SECTION 5. PERMITTED BAGS**

All Covered Stores may provide or make available to Customers only Recyclable Paper Bags or Reusable Bags for the purpose of carrying away goods or other materials from the point of sale, subject to the terms of this Chapter. Nothing in this Chapter prohibits Customers from using bags of any type that they bring to the store themselves or from carrying away goods that are not placed in a bag, in lieu of using bags provided by the store.

**SECTION 6. REGULATION OF RECYCLABLE PAPER BAGS**

- A. Any Covered Store that provides a Recyclable Paper Bag to a Customer must charge that customer a minimum of 5 cents (\$0.05) for each bag provided.
- B. All Covered Stores must indicate on the Customer receipt the number of Recyclable Paper Bags provided and the total amount charged for the bags.
- C. All monies collected by a Covered Store under this Chapter will be retained by the Covered Store.

**SECTION 7. REGULATION OF REUSABLE BAGS**

- A Covered Stores may provide their customers with reusable bags free of charge for a two-week period each year from April 15 to April 30.
- B. With the exception of the aforementioned fee exemption periods, Covered Stores that provide a Reusable Bag to their Customers must charge a minimum of 5 cents (\$0.05) for each bag provided.
- C. All Covered Stores must indicate on the Customer receipt the number of Reusable Bags provided and the total amount charged for the bags.

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D. All monies collected by a Covered Store under this Chapter will be retained by the Covered Store.

E. Each Covered Store is strongly encouraged to educate its staff to promote reusable bags and to post signs encouraging Customers to use reusable bags.

**SECTION 8. ADDITIONAL OBLIGATIONS FOR COVERED STORES**

A. All Covered Stores shall post signs at or near the point of sale located in such Covered Stores to notify Customers of the Provisions of this Law, as well as the per bag charge for Recyclable Paper Bags and Reusable Bags.

B. No Covered Store may make available for sale Recyclable Paper Bags or Reusable Bags unless the amount of the sale of each such bag is separately itemized on the sales receipt.

C. No Covered Store shall provide a credit to any Person specifically for the purpose of offsetting or avoiding the carryout bag charge required by Sections 6 and 7 of this Law.

**SECTION 9. ENFORCEMENT.**

The County Executive shall designate a County Department or Departments to have primary responsibility for enforcement of this Chapter. The Director of the designated Department(s) is authorized to promulgate rules and regulations and to take any and all other actions reasonable and necessary to enforce this Chapter, including, but not limited to, investigating violations, issuing fines and entering the premises of any store during business hours.

A copy of the rules and regulations will be provided to the Clerk of the Legislature before they are publicly disseminated.

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**SECTION 10. VIOLATION PENALTIES**

- A. If it is determined that a violation of this Chapter has occurred, a written warning notice will be issued to the operator of a Covered Store that a violation has occurred and the potential penalties that will apply for future violations.
- B. Any Covered Store that violates or fails to comply with any of the requirements of this Chapter after a written warning notice has been issued for that violation shall be guilty of an infraction.
- C. If a Covered Store has subsequent violations of this Chapter that are similar in kind to the violation addressed in a written warning notice, the following penalties will be imposed and shall be payable by the operator of the store:
  - (1) A fine not exceeding one hundred dollars (\$100.00) for the first violation after the written warning notice is given;
  - (2) A fine not exceeding two hundred fifty dollars (\$250.00) for the second violation after the written warning notice is given; or
  - (3) A fine not exceeding five hundred dollars (\$500.00) for the third and any subsequent violations after the written warning notice is given.
- D. A fine shall be imposed for each day a violation occurs or is allowed to continue.
- E. All fines collected pursuant to this Chapter shall be used to assist the County with its costs of implementing and enforcing the requirements of this Chapter and/or for public education and outreach.

**SECTION 11. APPLICABILITY.**

This law shall apply to all actions occurring on or after the effective date of this law.

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**SECTION 12. SEVERABILITY.**

If any clause, sentence, paragraph, subdivision, section, or part of this law or the application thereof to any person, individual, corporation, firm, partnership, entity, or circumstance shall be adjudged by any court of competent jurisdiction to be invalid or unconstitutional, such order or judgment shall not affect, impair, or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, subdivision, section, or part of this law, or in its application to the person, individual, corporation, firm, partnership, entity, or circumstance directly involved in the controversy in which such order or judgment shall be rendered.

**SECTION 13. REVERSE PREEMPTION.**

This article shall be null and void on the day that statewide legislation goes into effect incorporating either the same or substantially similar provisions as are contained in this Article or in the event that a pertinent state or federal administrative agency issues and promulgates regulations preempting such action by the County of Ulster. The Ulster County Legislature may determine by resolution whether or not identical or substantially similar statewide legislation or pertinent preempting state or federal regulations have been enacted for the purposes of triggering the provisions of this section.

**SECTION 14. EFFECTIVE DATE.**

This local law shall take effect July 15, 2019.

**Adopted by the County Legislature: September 20, 2018**

**Approved by the County Executive: October 19, 2018**

**Filed with New York State Department of State: October 25, 2018**



# Local Law Number 1 Of 2019

## County of Ulster

### **A Local Law Amending Local Law No. 5 of 2018, A Local Law Promoting The Use Of Reusable Bags And Regulating The Use Of Plastic Carryout Bags And Recyclable Paper Carryout Bags**

**BE IT ENACTED**, by the Legislature of the County of Ulster, as follows:

**SECTION 1.** Section 5. of Local Law No. 5 of 2018 is hereby amended as follows:

#### **SECTION 5.** PERMITTED BAGS

All Covered Stores may provide or make available to Customers Recyclable Paper Bags or Reusable Bags for the purpose of carrying away goods or other materials from the point of sale, subject to the terms of this Chapter. Nothing in this Chapter prohibits Customers from using bags of any type that they bring to the store themselves or from carrying away goods that are not placed in a bag, in lieu of using bags provided by the store.

**SECTION 2.** Section 6. of Local Law No. 5 of 2018 is hereby amended as follows:

#### **SECTION 6.** REGULATION OF RECYCLABLE PAPER BAGS

- A. **Except as described in subsection D**, any Covered Store that provides a Recyclable Paper Bag to a Customer must charge that customer a minimum of 5 cents (\$0.05) for each bag provided.
- B. All Covered Stores must indicate on the Customer receipt the number of Recyclable Paper Bags provided and the total amount charged for the bags.
- C. All monies collected by a Covered Store under this Chapter will be retained by the Covered Store.
- D. **Exemption: All Covered Stores that provide Recyclable Paper Bags to customers shall provide such bags free of charge for items purchased by any person using the New York State Supplemental Nutrition Assistance Program (SNAP) or New York State Special Supplemental Nutrition Program for Women, Infants and Children (WIC), as full or partial payment.**

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**A Local Law Amending Local Law No. 5 of 2018, A Local Law Promoting The Use Of Reusable Bags And Regulating The Use Of Plastic Carryout Bags And Recyclable Paper Carryout Bags**

**SECTION 3.** Section 9. of Local Law No. 5 of 2018 is hereby amended as follows:

**SECTION 9. EDUCATION AND ENFORCEMENT.**

The County Executive shall designate a County Department or Departments to have primary responsibility for **the implementation** of this Chapter. **The Director of the designated Department(s) shall complete an education campaign by December 31, 2019, informing the public and Covered Stores about the requirements of this Local Law. After December 31, 2019, the Director shall begin enforcement efforts as described in Section 10 herein.** The Director of the designated Department(s) is authorized to promulgate rules and regulations and to take any and all other actions reasonable and necessary to enforce this Chapter, including, but not limited to, investigating violations, issuing fines and entering the premises of any store during business hours.

A copy of the rules and regulations will be provided to the Clerk of the Legislature before they are publicly disseminated.

**SECTION 4. SEVERABILITY.**

If any clause, sentence, paragraph, subdivision, section, or part of this law or the application thereof to any person, individual, corporation, firm, partnership, entity, or circumstance shall be adjudged by any court of competent jurisdiction to be invalid or unconstitutional, such order or judgment shall not affect, impair, or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, subdivision, section, or part of this law, or in its application to the person, individual, corporation, firm, partnership, entity, or circumstance directly involved in the controversy in which such order or judgment shall be rendered.

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**A Local Law Amending Local Law No. 5 of 2018, A Local Law Promoting The Use Of Reusable Bags And Regulating The Use Of Plastic Carryout Bags And Recyclable Paper Carryout Bags**

**SECTION 5. REVERSE PREEMPTION.**

This article shall be null and void on the day that statewide legislation goes into effect incorporating either the same or substantially similar provisions as are contained in this Article or in the event that a pertinent state or federal administrative agency issues and promulgates regulations preempting such action by the County of Ulster. The Ulster County Legislature may determine by resolution whether or not identical or substantially similar statewide legislation or pertinent preempting state or federal regulations have been enacted for the purposes of triggering the provisions of this section.

**SECTION 6. EFFECTIVE DATE.**

This local law shall take effect July 15, 2019.

**Adopted by the County Legislature: February 19, 2019**

**Approved by the Acting County Executive: March 20, 2019**

**Filed with New York State Department of State:**

## **Local Law No. 2 Of 2019**

### **County Of Ulster**

#### **A Local Law Requiring Restaurants And Fast Food Service Establishments Provide Plastic Beverage Straws Solely Upon Request**

**BE IT ENACTED**, by the County Legislature of the County of Ulster, New York, as follows:

##### **SECTION 1. TITLE.**

This Local Law shall be known and referred to as the “Skip the Straw Law.”

##### **SECTION 2. LEGISLATIVE INTENT AND FINDINGS.**

The County of Ulster is dedicated to conserving resources and reducing greenhouse gas (GHG) emissions, waste, litter, and pollution. The Ulster County Legislature has actively been considering and implementing laws aimed at protecting our environment. In 2015, Ulster County began regulating the use of polystyrene foam disposable food service ware by food service establishments in the County. Regulating the use of plastic carryout bags is another measure aimed at reducing the amount of plastic that can end up in our environment through litter, windblown debris, and over-flowing trash cans.

Millions of plastic straws are used each day in the United States. This equates to billions of straws per year filtering into landfills and littering our waterways and oceans. Less consumption equals less waste. The Ulster County Legislature desires to increase awareness in our community of the simple decisions we can all make to reduce waste.

The Ulster County Legislature recognizes that making straws available upon request will drastically reduce the plastic put into our environment, helping to preserve our community. Allowing customers to make a choice regarding whether or not they want a straw for their beverage empowers each patron to choose to help eliminate plastic pollution, and is a small step towards the elimination single use plastic.

##### **SECTION 3. DEFINITIONS.**

As used in this local law, the following terms shall have the meanings indicated:

**Local Law No. 2 Of 2019**

**County Of Ulster**

**A Local Law Requiring Restaurants And Fast Food Service Establishments Provide Plastic Beverage Straws Solely Upon Request**

"Beverage Straw" shall mean a tube for transferring a beverage from its container to the mouth of the drinker.

"Dine-In Customer" shall mean a customer that orders and consumes Prepared Food on a Restaurant's premises.

"Fast Food Service Establishment" shall mean food service establishments located within the County of Ulster that serve food and/or beverages (1) via a drive-through; (2) in a packaged form for take-out/take-away; or (3) from stands or kiosks which provide no shelter for customers.

"Prepared Food" shall mean food or beverage prepared for consumption on the Restaurant's premises, using any cooking or food preparation technique.

"Restaurant" shall mean any vendor located or providing food within the County of Ulster which provides Prepared Food for public consumption on its premises.

"Single-Use" shall mean a product that is designed to be only used one time in its same form by the customer, food vendor or other entity.

"Take-Out Food Orders" shall mean prepared meals or other food or beverage items that a customer purchases at a Restaurant and intends to eat elsewhere.

**SECTION 4. REGULATION OF SINGLE-USE BEVERAGE STRAWS.**

A. Restaurants and Fast Food Service Establishments shall only provide a Single-Use Plastic Beverage Straw to a Dine-In Customer upon the customer's request.

B. Restaurants and Fast Food Service Establishments shall only provide a Single-Use Plastic Beverage Straw to a customer purchasing a Take-Out Food Order upon the customer's request.

Nothing in this law shall prevent any establishment from providing paper or non-plastic straws without a request.

**Local Law No. 2 Of 2019**

**County Of Ulster**

**A Local Law Requiring Restaurants And Fast Food Service Establishments Provide Plastic Beverage Straws Solely Upon Request**

**SECTION 5. NOTIFICATION REQUIREMENT.**

A. Each Restaurant and Fast Food Service Establishment that provides single-use plastic beverage straws shall post a sign in a location easily visible to each customer which shall state: "SINGLE-USE PLASTIC BEVERAGE STRAW AVAILABLE UPON REQUEST."

B. Signs shall be protected from tampering, damage, removal, or concealment.

**SECTION 6. PENALTIES.**

Violations of this local law shall be enforced as follows:

A. For the first violation, the Commissioner of Health, or designee, upon determination that a violation of this local law has occurred, shall issue a written warning notice to the Fast Food Service Establishment or Restaurant which will specify the violation and the appropriate penalties in the event of future violations.

B. Thereafter, the following penalties shall apply:

1. First Offense. Any Fast Food Service Establishment or Restaurant guilty of a first offense shall be guilty of a violation and shall be fined an amount not to exceed twenty five (\$25) dollars.

2. Second Offense. Any Fast Food Service Establishment or Restaurant guilty of a second offense shall be guilty of a violation and shall be fined an amount not to exceed fifty (\$50) dollars.

3. Third and Subsequent Offense. Any Fast Food Service Establishment or Restaurant guilty of a third or subsequent offense shall be guilty of a violation and shall be fined an amount not to exceed one hundred (\$100) dollars for each offense.



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**A Local Law Requiring Restaurants And Fast Food Service Establishments Provide Plastic Beverage Straws Solely Upon Request**

For the purpose of this section, each physical location or establishment shall be treated individually, and offenses and fines for separate locations shall be considered individually.

**SECTION 7. REVERSE PREEMPTION.**

This local law shall be null and void on the day that federal or statewide legislation goes into effect, incorporating either the same or substantially similar provisions as are contained in this law, or in the event that a pertinent state or federal administrative agency issues and promulgates regulations preempting such action by the County of Ulster. The County Legislature may determine via mere resolution whether or not identical or substantially similar federal or statewide legislation, or pertinent preempting state or federal regulations have been enacted for the purposes of triggering the provisions of this section.

**SECTION 8. SEVERABILITY.**

If any clause, sentence, paragraph, section, subdivision, or other part of this local law or its application shall be inconsistent with any federal or state statute, law, regulation or rule then the federal or state statute, law, regulation, or rule shall prevail. If any clause, sentence, paragraph, section, subdivision, or other part of this local law or its application shall be adjudged by a court of competent jurisdiction to be invalid or unconstitutional, such order or judgment shall not affect, impair, or invalidate the remainder of the local law which shall remain in full force and effect except as limited by such order or judgment.

**SECTION 9. EFFECTIVE DATE.**

This local law shall be effective three (3) months subsequent to filing in the Office of the Secretary of State.

**Local Law No. 2 Of 2019**

**County Of Ulster**

**A Local Law Requiring Restaurants And Fast Food Service Establishments Provide Plastic Beverage Straws Solely Upon Request**

**Adopted by the County Legislature: May 21, 2019**

**Approved by the County Executive: June 20, 2019**

**Filed with New York State Department of State: July 3, 2019**

## Supporting A Product Stewardship Program For Paint

Referred to: The Environmental, Energy and Technology Committee (Chairman Belfiglio and Legislators Bartels, Lopez, John Parete, Ronk, Wawro and Wishnick) and The Laws and Rules, Governmental Services Committee (Chairman Roberts and Legislators Fabiano, Maio, Ronk, Donaldson, Loughran and Robert Parete)

Chairman of the Environmental, Energy and Technology Committee, Carl Belfiglio, offers the following:

WHEREAS, it is estimated that roughly 3.1 million gallons of leftover paint are generated in New York each year; and

WHEREAS, management of leftover paint in New York results in a cost that typically represents 50% of municipal household hazardous waste budgets; and

WHEREAS, a statewide paint stewardship program would mean that the paint industry would be responsible for collecting and managing leftover paint in New York; and

WHEREAS, in addition to reducing government costs, a paint stewardship program would create green sector jobs, reduce waste and encourage the public to purchase the right amount of paint for a job; and

WHEREAS, the American Coatings Association, a trade association representing paint manufactures from across the United States has created PaintCare, a non-profit program to manage the reuse, recycling and disposal of leftover paint; and

WHEREAS, other states, including Rhode Island, Oregon, and Connecticut have passed legislation implementing paint recovery programs managed by PaintCare, saving local municipalities tens of thousands of dollars to manage the paint as part of household hazardous waste collection programs; and

WHEREAS, the Ulster County Resource Recovery Agency adopted Resolution No. 2290 on April 15, 2013, which expressed support for industry sponsored statewide paint recycling legislation, and has requested that the Ulster County Legislature do the same; now, therefore, be it

RESOLVED, that the Ulster County Legislature hereby urges the New York State Legislature to ~~enact industry sponsored paint recycling legislation~~ **support NYS Legislative Bills A6930 and S4690**, which would require the paint industry to be responsible for collecting and managing leftover paint in New York State; and, be it further

**Resolution No. 135      May 14, 2013**

**Supporting A Product Stewardship Program For Paint**

RESOLVED, that the Clerk to the Ulster County Legislature shall forward copies of this resolution to The Ulster County Resources Recovery Agency, Governor Andrew M. Cuomo, New York State Senators James Seward, John J. Bonacic, William J. Larkin, Jr., and Cecilia Tkaczyk **and Senate Environmental Conservation Committee Chair, Mark Grisanti**, Assembly Speaker Sheldon Silver, and New York State Assemblymembers Kevin A. Cahill, Claudia Tenney, Frank K. Skartados, and Peter Lopez **and Assembly Environmental Conservation Committee Chair, Robert Sweeney**,

and move its adoption.

ADOPTED AS AMENDED BY THE FOLLOWING VOTE:

AYES: 22              NOES: 0  
(Absent: Legislator Gregorius)

Passed Committee: Environmental, Energy and Technology as amended on May 2, 2013

Passed Committee: Laws and Rules, Governmental Services on May 13, 2013

FINANCIAL IMPACT:  
NONE

0241

Legislator Belfiglio motioned, seconded by Legislator Harris, to add the corresponding NYS Bill numbers to the first RESOLVED, and to add the respective State Committee Chairs to the last RESOLVED, as indicated above in bold font.

MOTION ADOPTED BY THE FOLLOWING VOTE:

AYES: 22              NOES: 0  
(Absent: Legislator Gregorius)

**Resolution No. 135      May 14, 2013**

**Supporting A Product Stewardship Program For Paint**

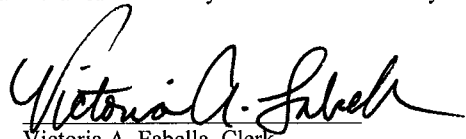
STATE OF NEW YORK

ss:

COUNTY OF ULSTER

This is to certify that I, the undersigned Clerk of the Legislature of the County of Ulster have compared the foregoing resolution with the original resolution now on file in the office of said clerk, and which was adopted by said Legislature on the 14<sup>th</sup> Day of May, 2013, and that the same is a true and correct transcript of said resolution and of the whole thereof.

IN WITNESS WHEREOF, I have hereunto set my hand and seal of the County of Ulster this 15<sup>th</sup> Day of May in the year Two Thousand and Thirteen.

  
Victoria A. Fabella, Clerk  
Ulster County Legislature

# **Proposed Local Law Number 3 Of 2019**

## **County Of Ulster**

### **A Local Law Amending Chapter 304, Article I Of The Code Of The County Of Ulster**

**BE IT ENACTED**, by the County Legislature of the County of Ulster, New York, as follows:

#### **SECTION 1. LEGISLATIVE INTENT.**

Chapter 304 Solid Waste, Article I Use of Disposal Sites, of the Code of the County of Ulster was written to prevent out of County refuse from entering and being landfilled in Ulster County.

The definition of “refuse” in Article I, Section 304-2 was amended by Local Law No. 4 of 1997 to read “garbage, rubbish, industrial waste and dredge material.”

The Towns of Rochester and Saugerties have suffered diverse environmental impacts by receiving out of County materials that were used as “clean fill” and permanently landfilled in Ulster County.

Ulster County desires to amend the definition of refuse to include regulated waste and construction and demolition debris and prohibit these materials from being landfilled within the county borders.

#### **SECTION 2. DEFFINITIONS.**

A. Chapter 304 Solid Waste, Article I Use of Disposal Sites, Section 304-2 Definitions shall be amended to include new definitions to read as follows:

Regulated Waste – shall mean concrete, brick, asphalt, asbestos, drywall, plaster, roofing materials, wood, metal, tiles, paint chips, ash, slag, coal, pieces of particle board, carpet, petroleum contaminated soil, and other contaminate materials.

Construction and Demolition debris – shall mean uncontaminated solid waste resulting from construction, remodeling, repair and demolition of utilities, structures and roads; and uncontaminated solid waste resulting from land clearing.

**Proposed Local Law Number 3 Of 2019**

**County Of Ulster**

**A Local Law Amending Chapter 304, Article I Of The Code Of The County Of Ulster**

- B. The definition of refuse in Chapter 304 Solid Waste, Article I Use of Disposal Sites, Section 304-2 Definitions shall be amended to read as follows:

Refuse – shall mean regulated waste, construction and demolition debris, garbage, rubbish, industrial waste and dredge material.

**SECTION 3. SEVERABILITY.**

In the event that any portion of this local law is found to be invalid, such finding will not have any effect on either the remaining portions or applications of this local law or any provisions of the Code of the County of Ulster which shall remain in full force and effect.

**SECTION 4. EFFECTIVE DATE.**

This Local Law shall take effect upon filing with the Secretary of State.



# **Proposed Local Law Number 5 Of 2019**

## **County Of Ulster**

### **A Local Law Amending The Code Of The County Of Ulster To Include Mandatory Food Scraps Composting By Large Generators**

**BE IT ENACTED**, by the County Legislature of the County of Ulster, New York, as follows:

**SECTION 1.** Chapter 304 of the Code of the County of Ulster is hereby amended to include a new article, Article IV, which shall read as follows:

#### **Article IV – Food Waste Prevention and Recovery**

##### **Section 304-45. SHORT TITLE.**

This Local Law shall be known by and may be cited as “Food Waste Prevention and Recovery Act.”

##### **Section 304-46. LEGISLATIVE INTENT AND FINDINGS.**

The County of Ulster is dedicated to conserving resources and reducing greenhouse gas (GHG) emissions, waste, litter, and pollution.

The Ulster County Legislature has actively been considering and implementing laws aimed at sustainability and protecting our environment. In 2015, Ulster County established a sustainable green fleet policy to reduce emissions, decrease costs, and increase efficiency. Also in 2015, the County began regulating the use of polystyrene foam disposable food service ware by food service establishments in the County. On July 15, 2019, Ulster County will begin regulating the use of single use plastic carryout bags, another measure aimed at reducing the amount of plastic that can end up in our environment through litter, windblown debris, and over-flowing trash cans. Under current consideration in the Ulster County Legislature is a law requiring restaurants and fast food service establishments provide plastic beverage straws solely upon request.

Ulster County was one of the first county in New York State to receive Climate Smart certification, and continues making it a priority to increase awareness and provide education regarding environmental health.

## **Proposed Local Law Number 5 Of 2019**

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#### **A Local Law Amending The Code Of The County Of Ulster To Include Mandatory Food Scraps Composting By Large Generators**

Food waste is a matter intrinsically linked with the growing challenges of food security, resource and environmental sustainability, and climate change. According to the U.S. Environmental Protection Agency, food scraps and yard waste together currently make up about 30 percent of what we throw away. The proposed composting law requires regulated entities to prioritize their diversion practices based on a clearly delineated hierarchy. A significant amount of waste in our landfills should have been composted leaving critical landfill space open for material that cannot be recycled or composted. Benefits to the County of composting include creation of nutrient rich soil for agriculture and landscaping uses, increased tilth and the ability of soil to retain water and to store greenhouse gases, and reduced erosion.

The Ulster County Legislature believes that banning disposal of food by large food waste generators aligns with Ulster County's sustainability initiatives and vision. Diverting food waste from disposal to programs for the purpose of providing nourishment to the food insecure, programs to supplement local farms with animal feed, composting to improve soil quality, and/or conversion to energy is key to a sustainable Ulster County by improving local health, and the county's environment, and further reduction of its carbon footprint. It will also reduce the waste stream the Ulster County Resource Recovery Agency is responsible for disposing of.

This law, commencing January 1, 2020, requires large food waste generators to separate such waste from the general waste stream and then either arrange for its reuse by the food insecure or for animal feed, to it on site, or to arrange for licensed services for the purpose of delivering it to a processing facility for composting or anaerobic digestion. The law will remove food waste generated on an annual basis from the waste stream incrementally from generators producing 2 tons per week to 0.5 tons per week by April 22, 2023.

The Ulster County Legislature has determined that Ulster County should increase food scrap recycling beyond the basic requirements in New York State's Food Donation and Food Scraps Recycling statute. This local law expands food scrap recycling requirements by regulating generators of smaller amounts of waste, by including schools and hospitals, and through other extensions beyond State law. The Legislature finds that Ulster County has a robust network of facilities ready to accept food scraps for the above mentioned purposes, and that maximizing the removal of food from the waste stream is essential to reducing the overall volume of waste in the County.

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The Ulster County Legislature believes education is a fundamental component of this legislation. The law will require the County to identify and recommend actions to address challenges, to encourage the continued viability of the County's organic waste processing and recycling infrastructure, and to foster partnerships with local municipalities, stakeholders, the Ulster County Resource Recovery Agency and other specified state and regional agencies. The law also would allow the County to cooperate with local jurisdictions and organizations to provide assistance for increasing the feasibility of food waste recycling and to identify certain financing mechanisms and state funding incentives.

The additional purpose of this legislation is to implement the food recovery hierarchy in Ulster County as set forth in US Environmental Protection Agency guidance and state legislation. While this law shall apply to large food waste generators, residential and small-quantity food waste generators are encouraged to reduce food waste and compost organic waste.

The law applies within the boundaries of Ulster County, NY to all food waste generators. This law is not intended to regulate large food waste generators otherwise regulated under New York State's Food Donation and Food Scraps Recycling Act, ECL Art. 27, Tit. 22, and specifically exempts such large food waste generators from the requirements hereunder. The Ulster County Legislature intends this law to supplement the benefits of New York State's Food Donation and Food Scraps Recycling rather than supersede or establish duplicative regulation with such state law.

#### **Section 304-47. FOOD WASTE HIERARCHY.**

The following hierarchy represents Ulster County's policy for prioritizing the reduction, reuse and recycling of food scraps. The hierarchy shall be a basis for the County's education and outreach programs, and all food scraps generators are encouraged to manage food scraps accordingly. Regulated large food scraps generators shall be required to implement the reuse and recycling tiers of the hierarchy, pursuant to the procedures specified in Sections 304-50 and 304-51.

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### **County Of Ulster**

#### **A Local Law Amending The Code Of The County Of Ulster To Include Mandatory Food Scraps Composting By Large Generators**

1. The first tier of the hierarchy is source reduction, reducing the volume of surplus food generated. Food scraps generators may follow federal, state or county guidelines or use other methods to reduce spoilage, monitor waste and make other adjustments to reduce food waste and save money.
2. The second tier is recovery, feeding wholesome food to hungry people. Facilities with excess edible food should distribute excess foods for the purpose of providing nourishment to the food insecure through the local network of pantries and soup kitchens and other food-reuse programs in accordance with New York State Sanitary Code Part 14 and Ulster County Sanitary Code Article II. Donations of food are covered under the Bill Emerson Good Samaritan Act of 1996, 42 U.S. Code § 1791.
3. Third is repurposing, feeding animals. Federal, state and municipal governments and entities regulate the use of food scraps in animal feed by setting requirements which govern the type of animals that may be fed food scraps and the kind of food scraps that may be fed to animals. When done responsibly and in conformity with applicable regulations, feeding food scraps to animals has many economic and environmental benefits.
4. Fourth is recycling, processing any leftover food such as by composting or anaerobic digestion to create a nutrient-rich soil amendment. The material that is left over from anaerobic digestion must be either composted or land applied. For the purpose of this law, pulverizers and other sink disposal systems are not acceptable alternatives for composting.

#### **Section 304-48. STATUTORY AUTHORITY.**

This article is adopted pursuant to Section 120-aa of the General Municipal Law and Section 10 of the Municipal Home Rule Law.

#### **Section 304-49. DEFINITIONS.**

“AEROBIC” shall mean involving the presence of oxygen.

“AGENCY” shall mean the Ulster County Resource Recovery Agency.

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“ANAEROBIC” shall mean relating to, involving, or requiring an absence of free oxygen.

“ANIMAL FEED” shall mean material, of an animal or vegetable origin, prepared as feed for domestic or farm animals.

“CONTAMINATION” shall mean the intermixing of non-compostable material into food waste, so as to render such food waste impossible to compost or to otherwise undermine the composting process.

“DIGESTION” shall mean treatment with heat, enzymes, or a solvent in order to promote decomposition or extract essential components.

"FOOD SCRAPS" shall mean inedible food, trimmings from the preparation of food, food-soiled paper, and edible food that is not donated. Food scraps shall not include used cooking oil, yellow grease or food from residential sources, or any food identified in regulations promulgated by the department in consultation with the department of agriculture and markets or any food which is subject to a recall or seizure due to the presence of pathogens, including but not limited to: *Listeria Monocytogenes*, confirmed *Clostridium Botulinum*, *E. coli* and all salmonella in ready-to-eat foods.

"LANDFILL" shall mean a facility where waste is intentionally placed and intended to remain and which is designed, constructed, operated and closed to minimize adverse environmental impacts.

"LARGE FOOD SCRAPS GENERATOR" shall mean a person, business, entity or institution that generates at a single location an annual average of one-half ton per week or more of food scraps based on a methodology developed by Ulster County. Large food scraps generators may include but are not limited to, supermarkets, food service businesses, hotels, correctional facilities, sports or entertainment venues, hospitals, nursing homes, schools and universities, caterers and food preparation and processing businesses. For a location with multiple independent food service businesses, such as a mall or college campus, the entity responsible for contracting for solid waste hauling services is responsible for managing food scraps from the independent businesses.

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"ORGANICS RECYCLER" shall mean a facility, permitted by the New York State Department of Environmental Conservation, that recycles food scraps through use as animal feed or a feed ingredient, rendering, land application, composting, aerobic digestion, anaerobic digestion, fermentation, or ethanol or biogas production. Animal scraps, food soiled paper, and post-consumer food scraps are prohibited for use as animal feed or as a feed ingredient. The proportion of the product created from food scraps by a composting or digestion facility, including a wastewater treatment plant that operates a digestion facility, or other treatment system, must be used in a beneficial manner as a soil amendment and shall not be disposed of or incinerated.

"POST-CONSUMER FOOD SCRAPS" also known as plate waste, shall mean food that has been served pursuant to its intended final consumer use.

"SINGLE LOCATION" shall mean contiguous property under common ownership, which may include one or more buildings.

"TRANSPORTER" shall mean any person or entity licensed by the New York State Department of Transportation and/or the Department of Health to engage in the business or activity of collecting, storing, and transporting organic waste.

"VECTOR" shall mean any insect, arthropod, rodent, or other animal capable of transmitting the causative agents of human disease, or disrupting the normal enjoyment of life by adversely affecting the public health and well-being.

#### **Section 304-50. APPLICABILITY.**

Large food scraps generators shall be subject to the requirements of Section 304-51 as of the following dates:

- (a) Beginning January 1, 2020, a large food scraps generator whose acts or processes produce more than 2 tons per week of food scraps;
- (b) Beginning January 1, 2021, a large food scraps generator whose acts or processes produce more than 1 ton per week of food scraps;
- (c) Beginning January 1, 2022, a large food scraps generator whose acts or processes produce more than .75 ton per week of food scraps; and
- (d) Beginning January 1, 2023, a large food scraps generator whose acts or processes produce more than .5 ton per week of food scraps.

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**Section 304-51. REQUIREMENTS FOR LARGE FOOD SCRAPS GENERATORS.**

A. A large food scraps generator shall separate excess edible food for donation for human consumption to the maximum extent practicable, and in accordance with applicable laws, rules and regulations related to food donation.

B. A large food scraps generator shall manage food scraps that cannot be donated for human consumption as follows:

- (1) separate its remaining food scraps from other solid waste;
- (2) ensure proper storage for food scraps on site which shall preclude such materials from becoming odorous or attracting vectors, such as a container that has a lid and a latch that keeps the lid closed and is resistant to tampering by rodents or other wildlife and has sufficient capacity;
- (3) have information available and provide training for employees concerning the proper methods to separate and store food scraps;
- (4) divert food scraps for consumption by animals, to the maximum extent practicable; and
- (5) for food scraps that cannot be used as animal feed, either
  - (a) obtain a transporter that will deliver food scraps to an organics recycler,
  - (b) self-haul its food scraps to an organics recycler, or
  - (c) provide for organics recycling on-site via in vessel composting, aerobic or anaerobic digestion or any other method of processing organic waste approved by the New York State Department of Environmental Conservation, for some or all of the food waste it generates on its premises, provided that the remainder is delivered to an organics recycler.

C. If transported, food scraps must be sent to a New York State permitted or registered organics recycler. If the food scraps are transported to an organics recycler outside Ulster County, the large food scraps generator shall inform Ulster County of the destination.



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D. Beginning on January 1, 2022, the requirements of paragraph B of this section shall not apply to any designated food scraps generator regulated under section 27-2203 of the Environmental Conservation Law. It shall apply to persons, businesses, institutions and entities not subject to regulation under section 27-2203 of the Environmental Conservation Law.

E. Large food scraps generators shall report the amount of food waste they cause to be reused, composted or otherwise beneficially repurposed under this section, and other relevant information specified by Ulster County, on an annual basis, by February 1 of the following year, to Ulster County and the Agency in a form prescribed by the County.

F. Waivers. Ulster County may waive the requirements of paragraph B with respect to post-consumer food scraps if the County determines that a facility is not reasonably able to separate post-consumer food scraps without contamination, or that compliance with the requirements of paragraph B would result in extraordinary financial hardship to the large food scraps generator, or other unique circumstances. Any waiver granted hereunder shall be for a maximum period of one year and shall include a requirement that the large food scraps generator participate in an education program designed to achieve compliance with this section. Waivers under this paragraph shall not be available to any designated food scraps generator regulated under section 27-2203 of the Environmental Conservation Law.

**Section 304-52. NOTIFICATION, TRAINING, AND EDUCATION.**

A. Ulster County or the Agency pursuant to an agreement with the County shall provide educational resources, including periodic guidance, training, updates, signage, and flyers, for any existing food scraps generator for the purposes of teaching and retaining effective procedures for sorting materials for organics. The County may enter into an agreement with the Agency to provide any portion of the training pursuant to this section.

B. The County or Agency shall promote best practices for covered large food scraps generators to comply with the requirements of this law, and for all entities and the public to manage excess food, food scraps, and organic waste in a similar manner.

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C. The County or Agency may collect and report information to promote improved management of excess food, food scraps and organic waste, including information on practices by covered large food waste generators, other entities and the public, or lists of entities and resources providing assistance for reducing such materials, facilities accepting such materials, or financing mechanisms and incentives available for recovery.

D. Ulster County shall notify large food scraps generators that they are subject to the requirements of section 304-51 at least one month prior to the applicable date of such requirements to the individual large food scraps generator under section 304-50.

**Section 304-53. OVERSIGHT.**

Based on the information received from the annual reports, Ulster County and the Recycling Oversight Committee shall on an annual basis until 2025, consider the prior year's experience under the law, and in particular, the effectiveness and costs of the implementation of the requirements of Section 304-51 and make a recommendation to the Legislature on whether this law should be modified. At their discretion, these agencies may also consider the statewide experience in implementing New York State's Food Donation and Food Scraps Recycling Act, ECL Art. 27, Tit. 22, and any regulations promulgated by the Department of Environmental Conservation thereunder.

**Section 304-54. IMPLEMENTATION AND ENFORCEMENT.**

The County Executive shall designate a County department or departments to have responsibility for implementation and enforcement of the requirements of this Chapter. The Director of the designated Department(s) is authorized to promulgate rules and regulations and to take any other action reasonable and necessary to implement and enforce this Chapter, including, but not limited to, investigating violations, issuing fines and entering the premises of any large waste food generator during business hours. A copy of the rules and regulations will be provided to the Clerk of the Legislature before they are publicly disseminated. After April 22, 2020, the Director(s) shall begin efforts to enforce the requirements of section 304-51.

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**Section 304-55. PENALTIES FOR VIOLATIONS.**

A. If it is determined that a large food scraps generator has failed to comply with any requirement of this Chapter, a written warning notice will be issued to the operator of the large food scraps generator including the potential penalties that will apply for future violations. The County may provide educational services to assist in compliance with the requirements of this chapter.

B. Any large food scraps generator that violates or fails to comply with any of the requirements of this Chapter after a written warning notice has been issued for that violation shall be guilty of a violation.

C. If a large food scraps generator has subsequent violations of this Chapter that are similar in kind to the violation addressed in a written warning notice, the following penalties will be imposed and shall be payable by the operator of the large food waste generator:

- (1) A fine not exceeding one hundred dollars (\$100.00) for the first violation after the written warning notice is given;
- (2) A fine not exceeding two hundred fifty dollars (\$250.00) for the second violation after the written warning notice is given; or
- (3) A fine not exceeding five hundred dollars (\$500.00) for the third and any subsequent violations after the written warning notice is given.

D. A fine shall be imposed for each day a violation occurs or is allowed to continue.

E. All fines collected pursuant to this Chapter shall be used to assist the County with its costs of implementing and enforcing the requirements of this Chapter and/or for public education and outreach.

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**Section 304-56. DISPUTE OF STATUS AS LARGE FOOD SCRAPS GENERATOR.**

Any person, business, entity or institution at any time, including after receipt of a warning notice pursuant to section 304-55, may submit a waste audit to Ulster County indicating that the amount of food scraps that it generates is not sufficient to subject it to the requirements of paragraph 304-51. Ulster County shall publish guidance on the information required to be included in such waste audits. Submittal of such waste audit to Ulster County under this paragraph shall suspend the application of this chapter to such person, business, entity or institution pending the County's evaluation of such information and transmittal of a written finding and response.

**SECTION 2. SEVERABILITY.**

If any clause, sentence, paragraph, subdivision, section, or part of this law or the application thereof to any person, individual, corporation, firm, partnership, entity, or circumstance shall be adjudged by any court of competent jurisdiction to be invalid or unconstitutional, such order or judgment shall not affect, impair, or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, subdivision, section, or part of this law, or in its application to the person, individual, corporation, firm, partnership, entity, or circumstance directly involved in the controversy in which such order or judgment shall be rendered.

**SECTION 3. EFFECTIVE DATE.**

This law shall be effective upon filing in the Office of the Secretary of State.