Charlevoix County
Materials Management Planning Committee

Date: March 26, 2026
Time: 10:00 a.m. – 12:00 a.m.
Location: Shirley Roloff Center
Committee Room
13513 Division Street
Charlevoix, MI 49720

PROPOSED AGENDA

I. **Call to Order**
II. **Public Comment**
III. **Approval of Agenda**
IV. **Approval of November 22, 2025 Meeting Minutes**
V. **Election of Officers**
VI. **2026 Meeting Dates**
VII. **Materials Management Planning**
    a. **Process Update**
    b. **Draft Language Review**
        i. **Community Input**
        ii. **Previous Planning**
        iii. **Existing Conditions**
    c. **Siting Criteria**
    d. **Funding and Contract Mechanism**
    e. **Goals and Objectives**
VIII. **Committee Member Comments**
IX. **Public Comment**
X. **Adjourn**

Posted:_____

Signature: _____

Charlevoix County
Materials Management Planning Committee Minutes
November 20, 2025 at 10:00 AM
Charlevoix County Shirley Roloff Center
13513 Division Street Charlevoix, MI 49720

MMPC Member Attendance			
Victor VanDeventer *rep. of a solid waste disposal facility*	*P*	*Annemarie Conway* *elected official of the county*	*P*
Kirk Miller *rep. of a hauler*	*P*	*Robin Hissong-Berry* *elected official of a township*	*P*
Andre Grobaski *rep. of a materials recovery facility (MRF)*	*E*	*Tim Nemecek* *elected official of a city or village*	*E*
Sarah Roy *rep. of a composting facility*	*P*	*Jonathan Scheel* *business rep. generating material*	*P*
Mark Bevelhymer *rep. of waste diversion, reuse, or reduction*	*E*	*Isha Pithwa* *rep. of the regional planning area*	*P*
Kyra Allen *rep. of an environmental interest group*	*P*	*Josh Chamberlain* *additional member per part 115*	*E*
		Attendance Key: *P – Present* *A – Absent* *E - Excused Absence*	
Staff in Attendance: Kiersten Stark (Charlevoix County), Josh Cline (Charlevoix County), Lora Roberts (Charlevoix County), Mathew Cooke (DPA-Networks Northwest)			

I. Call to Order, Pledge of Allegiance

Jonathan Scheel, Chair, called the meeting to order at 10:05 a.m.

II. Public Comment

None.

III. Review Proposed Agenda

Motion by Kirk Miller, supported by Robin Hissong-Berry, to approve the November 20, 2025 MMPC agenda as presented. Motion carried unanimously.

IV. Previous Meeting Minutes

Motion by Kirk Miller, supported by Victor VanDeventer, to approve the October 23, 2025 MMPC Meeting Minutes as presented. Motion carried unanimously.

V. Materials Management Planning

a. Process Update

Mathew Cooke provided an update on the MMP process:

- Sarah Roy from Norwood Centennial Farms is the new compost representative.
- With Tim Nemecek outgoing from Boyne City, a representative from a City or Village government is needed. Networks Northwest will send communication to city and village staff of the opening. The MMPC will also need to elect a new vice-chair at the next meeting.
- Working with Emmet County Recycling for a tour at a future meeting date in 2026. Emmet County has the meeting dates so we will look to confirm as soon as possible.
- Isha Pithwa, Community Planner, is developing the Charlevoix Facilities Inventory and presented draft information on drop-sites and landfills. Discussion occurred with revisions to the Facilities Inventory.
    - Food waste acceptance
    - Landfill - updated license expiration date
    - Continually update the facilities inventory
- Data collection from municipalities - In talking with some staff, there is no process for collecting data. This could be an opportunity to examine data collection at the local level in the goals and objectives.
- MMP Business Survey has a low response rate so the survey will be extended to the end of the year. Letters were hand delivered to local businesses in downtown areas of Boyne City, Charlevoix, and East Jordan. Additional promotion will occur in early December.
- Up Next: Local Units of Government Survey review, continued goals and objectives discussions, SEEDs Organics presentation, funding mechanisms and siting presentation, and data analysis from RRS.
- Josh Cline mentioned that he is working with GFL to acquire information on contamination rates of recycling collections.

b. County Resident Survey Review - Goals and Objectives Discussion

The MMPC members reviewed the MMP County Resident Survey results from Charlevoix County Residents. It was noted that a second review with analysis will be conducted following the close of the MMP County Resident Survey on January 5, 2025. Comments on the review of the survey results include:

- Importance of recycling and the awareness of the Charlevoix County Recycling Millage
- An education tour for libraries and townships
- Curbside vs. Drop-off Sites
    - Cost of implementing curbside
- Importance of knowing what happens to recyclables after collection
- Visibility of Single Stream Recycling Guide

Additional discussion included:

- Recycling Millage Awareness - Charlevoix specific video content to replace generic video used at events, such as Library and Commission on Aging lunches.
- Sending the MMP County Resident Survey to schools for additional distribution
- Education on how to prepare recycling (clean, remove labels from tins, etc.)
- Education from SEEDs, Aubree Carlisle (EGLE) to the public
- Develop a short MMP presentation for Local Units of Government
- Begin some level of educational programming for the public prior to plan implementation
- A closed transfer station may be opening back up in Charlevoix County (Sonder Road)
- Contamination of recycled materials

VI. Committee Member Comments

None.

VII. Public Comment

None.

VIII. Adjourn

Chair Jonathan Scheel adjourned the November 20, 2025 meeting at 11:33 am.

Thursday, March 26, 2026

To: Charlevoix County MMPC
Fr: Mathew Cooke, Community Planner
Re: MMP Update

Election of Officers
Below are motions for the election of officers for the Charlevoix County Materials Management Planning Committee.

Motion by _____, supported by _____ to nominate _____ as Chair of the Charlevoix County Materials Management Planning Committee.

Motion by _____, supported by _____ to nominate _____ as Vice-Chair of the Charlevoix County Materials Management Planning Committee.

Motion by _____, supported by _____ to nominate _____ as Secretary of the Charlevoix County Materials Management Planning Committee.

Motion by Victor _____, supported by _____,, to close nominations and elect the slate of _____ as Chair, _____ as Vice-Chair, and _____ as Secretary for the Charlevoix County Materials Management Planning Committee.

2026 Meeting Dates
Attached you will find the proposed meeting dates for 2026, maintaining the same schedule we have been on.

Motion by _____, supported by _____ to approve the Charlevoix County Materials Management Planning Committee's 2026 Meeting Schedule.

Data Analysis
Attached you will find the Charlevoix County Data Analysis draft assisted by RRS. Please note that we are meeting with RRS on Thursday, January 15, 2026 to discuss the draft, but we wanted to provide it to you as it is a robust document.

2026 Charlevoix County
Materials Management Planning Committee Meeting Schedule

Meetings are generally held on the fourth Thursday of the month at 10:00am with meetings taking place at the Shirley Roloff Center's Committee Room (13513 Division St, Charlevoix, MI 49720).

10:00 a.m. Thursday January 22 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

10:00 a.m. Thursday February 26 2026
Emmet County Recycling
7363 Pleasantview Lane
Harbor Springs, MI 49740

10:00 a.m. Thursday March 26 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

10:00 a.m. Thursday April 23 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

10:00 a.m. Thursday May 28 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

10:00 a.m. Thursday June 25 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

10:00 a.m. Thursday July 23 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

10:00 a.m. Thursday August 27 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

10:00 a.m. Thursday September 24 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

10:00 a.m. Thursday October 22 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

10:00 a.m. Thursday November 19 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

10:00 a.m. Thursday December 17 2026
Shirley Roloff Center
Committee Room
13513 Division St, Charlevoix, MI 49720

If you have any questions or need any assistance, please contact Mathew Cooke, Community Planner at Networks Northwest by email: mathew.cooke@networksnorthwest.org or phone: (231) 929-5056

Memo

TO: Mathew Cooke, Networks Northwest
FROM: Caitlyn Wouters and Kristen Wieland, RRS
DATE: January 9, 2026
RE: Charlevoix County MMP Data Analysis - DRAFT

Introduction

The RRS team undertook a comprehensive analysis to support the five counties' waste management planning efforts. As part of this work, RRS developed a baseline data set based on known waste data, where available, and supplemented with modeled projections of waste generation and recovery potential. This data will serve as a foundational resource to guide each committee's decision-making on key planning and policy issues.

The baseline data will support the identification of strategies for meeting the Benchmark Recycling Standards, both in the near term and over the planning horizon. This memorandum presents a summary of the current materials generation and recovery conditions within Charlevoix County. It incorporates modeled data prepared by RRS, along with any available actual data provided by the Networks Northwest planning agency, county MMP Committee participants or municipalities. The information contained herein offers a comprehensive overview of the counties' materials management landscape to serve as a supporting component of the Materials Management Plans.

Recycling Rate

Based on this assessment, RRS estimates that **approximately 54% of landfilled MCW by weight from Charlevoix County is either readily recyclable or compostable**. Based on the available data, as described in detail within this memo, RRS estimates Charlevoix County is currently achieving the following recycling rate (including traditional recycling and organics):

- **Countywide Recycling Rate Estimate:** 13.6%

Preliminary Opportunities

RRS has highlighted several key opportunities that should be discussed by the MMP Committee for potential goal setting in the next phase of the MMP development. These opportunities are described below, with additional detail provided throughout the memorandum.

While the data points discussed in this analysis are comprehensive and valuable for general understanding of the current recycling and diversion taking place and the general makeup of the waste stream, it is critical to note that the preliminary opportunities outlined below are based on the data and information that was provided to RRS or otherwise publicly available.

Reliable data is a critical component of MMP implementation. In the absence of data, we have supplemented with modeled data based on actual data from other similar regions to provide a starting point for discussion purposes and aid in goal setting. In the case of Charlevoix County, RRS found the per capita MCW rate to be extremely low based on the five-year average reported tonnage. An unusually low per capita MCW rate may indicate that a portion of Charlevoix County's MCW is being managed outside of the tonnage attributed to the county in the landfill report. For example, waste generated in the county but disposed at facilities that may be attributed to another county, or disposed through non-landfill pathways that are not captured in the reported landfilled tonnage (illegal burning or dumping). It may also reflect inconsistencies in landfill reporting and categorization practices (e.g., MCW being recorded under another category such as Industrial Waste or C&D). Finally, it is possible that the reported figure accurately reflects atypical disposal dynamics during the analysis period, as described in more detail in the report, though additional data and verification would be required to confirm this.

Additional opportunities to fill data gap for Charlevoix County include:

- To strengthen materials management and accurately measure progress toward the goals outlined in the Materials Management Plan, Charlevoix County should implement consistent, countywide reporting and tracking systems. This includes clarifying and standardizing landfill reporting procedures, expanding the tracking of recycling and organic material collection across municipal, private, and commercial sources, and establishing uniform hauler reporting requirements. These actions will enable the County to capture currently missing data, calculate a documented recycling rate, and monitor material flows more effectively, ensuring a reliable foundation for future planning and performance evaluation.
- Food waste is typically disposed of in the landfill as part of mixed MCW, and without a robust waste audit system there is no clear way to quantify how many tons of disposed MCW are food waste over time. Alternatively, meaningful measurement can be achieved by separating food waste at the source, through food rescue and/or composting programs, and tracking the weight of diverted material. Expanded source separation paired with consistent tonnage reporting would allow the County to quantify diversion more accurately and track reductions in landfilled food waste in a measurable way.
- Establishing consistent reporting of event participation and specific material quantities collected and the disposal/recycling destinations would enhance the County's ability to quantify recovery, identify priority material streams, and track progress over time.

The **Benchmark Recycling Standard** for curbside recycling is being achieved in Charlevoix County. These standards are designed to ensure that counties provide convenient and accessible recycling opportunities for residents and businesses in support of the state's broader recycling goals. Because Charlevoix County does not contain any urbanized areas or communities with populations exceeding 5,000 residents, the first two benchmark standards do not apply.

Currently, there are no municipal or municipally contracted curbside recycling programs operating within the county. However, many residents may be able to subscribe directly with private waste haulers for curbside recycling services on an individual basis. Charlevoix County's recycling program consists of drop-off sites managed by Charlevoix County. Routinely surveying recyclers will ensure the drop-off sites are meeting their needs and engage a committed group of citizens.

The top six materials with diversion significance, by weight, in the county present a prime opportunity for meaningful and measurable impact in the 5-year planning window:

1. Wasted food - discarded food scrap byproducts that are not consumed by humans or food that was edible but ended up wasted - comprises over 4,276 tons of landfill-bound materials generated in Charlevoix County. This category of waste is not only the most significant by weight but is also significant in its potential social and economic value directly within the County. Good food can be redistributed to people in need instead of sent to landfills, thereby supporting the needs of residents through existing food distribution networks. Food that is unsuitable for redistribution can be processed locally through basic backyard composting to generate a soil amendment for use directly by the homeowner. A more sophisticated collection system that aggregates residential and commercial food waste along with other agricultural waste could be processed at a privately operated composting facility or anaerobic digester operator (potentially through a public-private partnership) to generate a large amount of compost to regenerate soils in the entire county and region and support local agriculture. A 2021 study SEEDS noted that Antrim, Benzie, Charlevoix, Kalkaska, Manistee and Missaukee counties all have relatively small amount of organics collection and recommended that these counties focus efforts on food rescue initiatives (recovering edible food before disposal), education on food waste reduction, and promotion of backyard composting practices. Furthermore, the study identified the close proximity to large scale composting operations in Emmet County could present an opportunity for increased organics collection.

2. Plastic film totals over 2,005 tons of landfill-bound materials generated in Charlevoix County. From residential sources, these typically include plastic shopping bags, grocery bags, and dry-cleaning bags. From commercial sources, these thin, flexible plastics could include stretch wrapping used to stabilize pallets and cases, greenhouse and agricultural bale wrapping, shipping pouches and bubble wrap among others. While not typically accepted in single stream recycling programs due to the low value and difficulty in marketing it post-processing, drop-off programs and commercial plastic film collection programs can keep these plastics clean and dry, resulting in significant volumes of valuable material that has strong end market potential.

3. Corrugated cardboard has become a significant waste material type in recent years due to the shift in online purchasing. RRS estimates Charlevoix County is landfilling more than 1,708 tons of cardboard from both residential commercial sources. Cardboard was formerly generated primarily at retail establishments and was sometimes collected for recycling. While online purchasing trends have shifted some tons away from the commercial waste stream and into the residential waste stream, 70% of the cardboard remains in the commercial stream, creating opportunities for increased recovery in both. Local manufacturer, Packaging Corporation of America (PCA) in Filer City (Manistee County), would directly benefit from the additional collection of corrugated cardboard from the Northwest Michigan region.

4. Compostable paper refers to paper products that are typically unsuitable for recycling due to their low quality or because they are often soiled during use, such as paper plates, napkins, facial tissues, and paper towels. When combined with food scraps, this compostable paper could be a valuable input to either composting or anaerobic digestion when done at a commercial scale. This fraction of the waste stream comprises nearly 1,531 tons in the county.

5. Mixed paper, estimated at over 1,243 tons landfilled in the county, is a general grade of clean but varied qualities of mixed fiber materials including mail, office paper, paper bags, books, magazines, greeting cards, index cards, cereal boxes, etc. This paper is often the largest output, by volume, of single stream recycling facilities and has strong Midwest markets ready to accept more material for production of new paper products.

6. Textiles are a significant waste category in Charlevoix County, comprising over 1,006 tons in our model. Clothing, towels, rope, household linen, leather products, and other similar products that are either discarded out of convenience or due to rips, excessive wear, or are otherwise unsuitable for reuse. Local resale stores could be ideal partners to evaluate additional textile recovery opportunities to get more usable textiles into the hands of people who need them, keeping them out of landfills.

Materials that are readily marketable but currently being landfilled offer strong diversion potential due to established recycling channels and typically yield positive economic returns and should be prioritized for enhanced recovery in the Charlevoix Materials Management Plan. While not represented in the top six categories by weight, the following materials have consistent value and market demand and are ubiquitous in the waste stream, making them natural opportunities for increased recovery across the region.

Listed in order from highest-lowest potential yield, these materials include:

- **mixed paper** (as identified above, 1,243 tons)
- **ferrous metal** (473 tons)
- **#1 PET plastic** (bottle and non-bottle) (382 tons)
- **#2 HDPE plastic** (colored and natural) (104 tons)
- **white office paper** (194 tons)
- **magazines** (168 tons)
- **steel cans** (158 tons)
- **newspaper** (139 tons)
- **aluminum cans** (136 tons)
- **#5 PP plastic** (116 tons)
- **polycoated paper cups and cartons** (107 tons)

The materials listed below can be **difficult to recycle due to their bulkiness, weight or other challenges** but are generally frequently requested by community members for recycling and disposal options. As such, RRS recommends these be considered in the development of Charlevoix County's MMP:

Construction and demolition (C&D) materials – primarily clean lumber, pallets, cardboard, concrete, and scrap metal - represent a high-volume opportunity for landfill diversion and reuse. Many of these materials have market value, and reuse programs like Habitat ReStore or other local programs provide both social and environmental benefits. However, current waste characterization studies exclude most C&D debris, meaning its true volume is underrepresented and not well understood. A dedicated study is needed to quantify and stratify C&D materials to develop effective recovery strategies and estimate recovery amounts.

Glass bottles and jars, estimated at 403 tons annually in Charlevoix County, are endlessly recyclable but require clean separation from contaminants to maintain quality. Mixed collection often leads to contamination, reduced yield, and degradation of other recyclables. When local markets are accessible, clean glass can retain material and

economic value; otherwise, it may be diverted to lower value uses like landfill cover. Developing a system to aggregate clean glass for efficient delivery could unlock recycling potential.

Expanded polystyrene (EPS) foam is rarely accepted in curbside recycling because it's difficult to process in automated facilities. When source-separated, it can be recycled but requires densification to improve shipping efficiency and market value. Charlevoix County discards an estimated 201 tons annually, indicating a strong opportunity for recovery if a collection network and basic processing infrastructure are developed.

Electronics (e-waste) have become pervasive in modern life thanks to technological advancements that make them smaller and more affordable, but these same innovations lead to rapid obsolescence, driving consumers to replace them frequently. Since they are not banned from landfills, computers, cell phones, printers, toasters, coffee pots, and many more devices can be found in the waste stream, with some containing batteries that pose fire and environmental risks. If recycled, precious metals, scrap metal, and rigid plastics can be recovered and diverted from landfills. Residents routinely seek out a permanent collection program to provide ongoing benefits and convenience.

Batteries, especially lithium-ion, are increasingly common in consumer products and pose serious disposal risks. Improperly discarded batteries can ignite fires in collection vehicles, processing facilities, or during shipment, making safe handling and recycling critical. While not quantified in the model, battery collection is a public safety issue that should be addressed to protect people, infrastructure, and the environment.

Mattresses are hard to dispose of, causing illegal dumping and landfill issues due to their bulk and springs. Though Charlevoix County generates only an estimated 14 tons annually, a local recycler (BARC) offers a solution through community partnership that should be explored.

Scrap tires are banned from Michigan landfills but can be recycled into products like rubber mulch, road additives, or energy sources. They are often illegally dumped, creating health risks from mosquito breeding and a public nuisance for public agencies. With no documented scrap tire collection sites in Charlevoix County, periodic collection events are key to safe disposal and environmental protection.

Storm debris can place significant strain on landfill capacity and, depending on the severity of the event, may generate large volumes of material that could be diverted from disposal if adequate infrastructure and systems are in place. RRS recommends integrating disaster debris planning with MMP development, as both rely on the same foundational materials management framework - facilities, collection and processing capacity, transportation logistics, and end markets - though they operate on different timelines. Even without a finalized County or local Disaster Debris Management Plan, the MMP can establish this connection by documenting the core operational elements needed during an emergency.

Commercial recyclables present an opportunity for high volumes of targeted materials to be recovered but services are often limited for commercial routes.

- The 2023 establishment and employment data reinforce several priority opportunities identified in EGLE's MMP guidance. The prominence of Accommodation and Food Services aligns with waste characterization findings that food

waste is one of the largest components of the MCW stream, underscoring the importance of food waste prevention, food rescue, and organics diversion strategies targeted to restaurants, resorts, and institutional food service operations—particularly relevant in a tourism-driven county such as Charlevoix.

- The scale and growth of Manufacturing, Retail Trade, and Construction highlight corrugated cardboard, wood waste, and other packaging and building materials as high-volume, recoverable material streams. These sectors represent a substantial share of total establishments and employment and are well-positioned for targeted commercial recycling initiatives, improved access to recycling services, and coordination with private haulers and construction-related recovery programs.
- Overall, the 2023 establishment and employment data support a planning approach that prioritizes sector-specific strategies, consistent with EGLE's emphasis on focusing resources where they will yield the greatest diversion impact. By aligning program development with Charlevoix County's evolving business profile, the County can more effectively reduce disposal, increase recovery of high-value materials, and advance progress toward its Materials Management Plan goals.

State Landfill Report

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) requires quarterly reporting of all materials landfilled within the state. This reporting, documented through the *Annual Report of Solid Waste Landfilled in Michigan*[1], provides actual data on waste disposed of at Michigan landfills. The dataset includes the total tonnage of waste, identified by county of origin, and classifies materials into broad waste categories.

These categories include **Municipal and Commercial Waste (MCW)**, such as household waste, commercial waste, garbage, regulated medical waste, and municipal solid waste incinerator ash; **Industrial Waste (IW)**, including ashes, auto shredder residue, cement kiln dust, coal ash, food processing residuals, foundry sand, and industrial sludge; **Construction and Demolition (C&D)**, including asbestos waste, scrap wood, and treated or untreated wood; **Other Waste**, such as contaminated soils and technologically enhanced naturally occurring radioactive materials (TENORM); and **Alternative Daily Cover (ADC)**, materials such as chipped tires, ash, foundry sand, sludge, or contaminated soils approved for landfill cover use.

The annual report also includes estimates of remaining landfill capacity. However, it does not account for waste generated in Michigan and disposed of out of state, nor does it provide detailed quantities of specific materials within each category. In addition, the assignment of broad categories (MCW, C&D, ADC, IW, and Other) is not necessarily consistent across the state and may vary by facility and even by individual scale operator. This is particularly relevant for mixed loads that contain multiple material types (e.g., both MCW and C&D), where the total weight of a container or load is typically attributed to a single category, potentially obscuring the true distribution of materials.

[1] https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Legislative/MMD/Part-115/Report-FY24-Landfilled-Solid-Waste.pdf?rev=b1a8a575d427406f8a4ad4fb4de0ff47&hash=430D8389FB9BEE4BA4AA6D076DCC50F7

For this analysis, RRS reviewed EGLE's reported data covering fiscal years 2020 through 2024.

TOTAL TONS LANDFILLED IN MI GENERATED FROM ANTRIM, CHARLEVOIX, MANISTEE, MISSAUKEE AND WEXFORD COUNTIES

Table 1 below presents the aggregated total tons of all material categories (MCW, IW, C&D, ADC, and Other) landfilled in Michigan and attributed to each county in the past fiscal year. It is important to note that these figures represent tonnage as reported. While the data reflects the best available information, it is possible that some materials were reported under incorrect category types or mixed loads were categorized under a single type.

2024	Tons from Charlevoix	242,114.42
2024	Tons from Manistee	93,033.15
2024	Tons from Antrim	78,111.39
2024	Tons from Wexford	58,665.15
2024	Tons from Missaukee	29,706.13

Table 1: Total Tons Landfilled in MI from Each County 2024

CHARLEVOIX COUNTY

TOTAL TONS LANDFILLED BY TYPE

Table 2 below summarizes the types of materials landfilled in Michigan that were attributed to Charlevoix County. Reported disposal tonnages are categorized by material type consistent with state landfill reporting conventions.

Notably, the tonnage of Industrial Waste (IW) reported for 2024 is substantially higher than in prior years, totaling approximately 238,000 tons. This figure represents a significant departure from historical patterns and may reflect a reporting or categorization anomaly, a change in industrial activity during 2024, or a combination of both. When analyzed using a five-year average (2020–2024), the average annual IW disposal attributed to Charlevoix County is approximately 48,000 tons. However, if the 2024 data are excluded, the average IW tonnage reported between 2020 and 2023 drops dramatically to approximately 990 tons per year.

It is also important to consider changes in state reporting requirements that may contribute to this discrepancy. From 2020 through 2022, landfill reporting to the State was required in cubic yards; while beginning in 2023, reporting shifted to tons. For consistency in analysis, reported cubic yards were converted to tons.

In 2024, 238,044 tons were reported by City Environmental Services, Inc of Waters in Crawford County and originating in Charlevoix County. According to the facility's approved operating license [2], allowable ADC sources include industrial byproducts such as ash, sludge, contaminated soils, foundry sand, and automotive shredder residue ("auto fluff"). Approved

[2] https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Programs/MMD/Licenses/MMD/Solid-Waste/City-Environmental-Waters-Landfill.pdf

sources listed in the permit include ash and flakes from Weyerhaeuser; fly ash from Decorative Panels, Inc.; ash from Grayling Generation; contaminated soils from various sources; foundry sand from East Jordan Iron Works / EJ USA Inc.; and auto fluff from A&L Iron. While sludge from Great Lakes Tissue is also listed as an approved source, that facility ceased operations following a fire in 2023 and is therefore unlikely to have contributed to 2024 disposal volumes.

The acceptance of these industrial materials as ADC may have resulted in large volumes being reported as industrial waste attributable to Charlevoix County in 2024, even in the absence of a corresponding increase in local industrial generation. This regulatory context should be considered when interpreting the 2024 IW data and comparing it to historical trends. To illustrate the impact of the significant increase in IW documented in 2024, RRS calculated the average percentage of each waste type for two periods: 2020–2023 and 2020–2024. Without 2024 data, IW accounts for only 8% of total waste; when 2024 is included, IW jumps to 83%, as shown in Table 2.

REPORTED LANDFILL WASTE TYPE, TONS[3]	**2020**	**2021**	**2022**	**2023**	**2024**	***AVERAGE 2020 - 2024***	***% TOTAL AVERAGE 2020 - 2024***	***AVERAGE 2020-2023***	***% TOTAL AVERAGE 2020 - 2023***
ADC	40	-	-	-	-	***8***	*0.01%*	***10***	*0.08%*
C&D	2,259	2,868	2,015	8,666	1,251	***3,412***	*5.86%*	***3,952***	*32.40%*
IW	2,741	457	420	341	238,044	***48,401***	*83.19%*	***990***	*8.11%*
MCW	6,914	3,215	2,656	2,445	2,559	***3,558***	*6.11%*	***3,807***	*31.22%*
OTHER	705	3,303	8,824	920	260	***2,802***	*4.82%*	***3,438***	*28.19%*
Grand Total	**12,658**	**9,842**	**13,915**	**12,371**	**242,114**	***58,180***		***12,197***	

Table 2: Michigan Landfill Waste Generated by Charlevoix County by Type 2020 – 2024

[3] Fiscal years 2020 – 2022 were reported in cubic yards, converted to tons using: MCW = 3 cy : 1 ton, C&D = 2 cy : 1 ton, ADC, IW, OTHER all 1 cy = 1 ton.

MICHIGAN LANDFILL WASTE GENERATED BY CHARLEVOIX COUNTY BY TYPE IN TONS 2020-2024

Figure 1 below illustrates the reported annual tons of landfilled material, by type, attributed to Charlevoix County on average from 2020–2024. The average total tonnage per year is 55,505 tons, of which approximately **43%** is Municipal and Commercial Waste (MCW). According to demographic data provided by Networks Northwest, originally sourced from the American Community Survey, Charlevoix County had an estimated population of 26,143 in 2023. This corresponds to an estimated **MCW disposal rate of approximately 0.7 pounds per person per day** based on the five-year average reported tonnage.

This is an unusually low MCW disposal rate on a per-capita basis. For comparison, the statewide average reported by EGLE is **4.64 pounds per person per day**. An unusually low per-capita MCW rate may indicate that a portion of Charlevoix County's MCW is being managed outside of the tonnage attributed to the county in the landfill report. For example, waste generated in the county but disposed at facilities that may be attributed to another county, or disposed through non-landfill pathways that are not captured in the reported landfilled tonnage (illegal burning or dumping). It may also reflect inconsistencies in landfill reporting and categorization practices (e.g., MCW being recorded under another category such as Industrial Waste or C&D). Finally, it is possible that the reported figure accurately reflects atypical disposal dynamics during the analysis period, though additional data and verification would be required to confirm this.

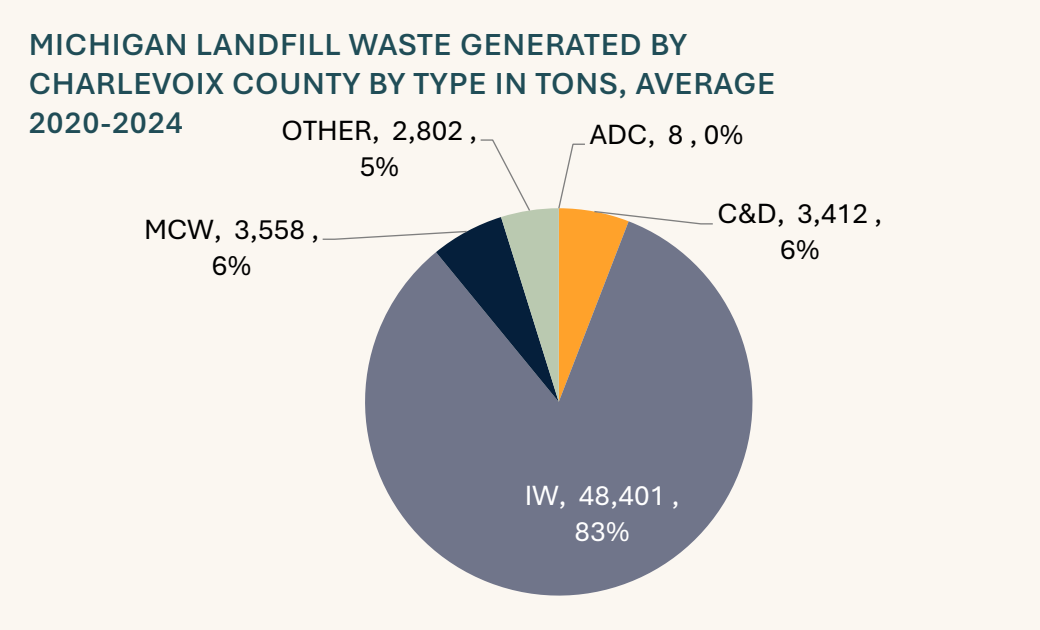


Figure 1: Michigan Landfill Waste Generated by Charlevoix County by Type in Tons, Average 2020 – 2024

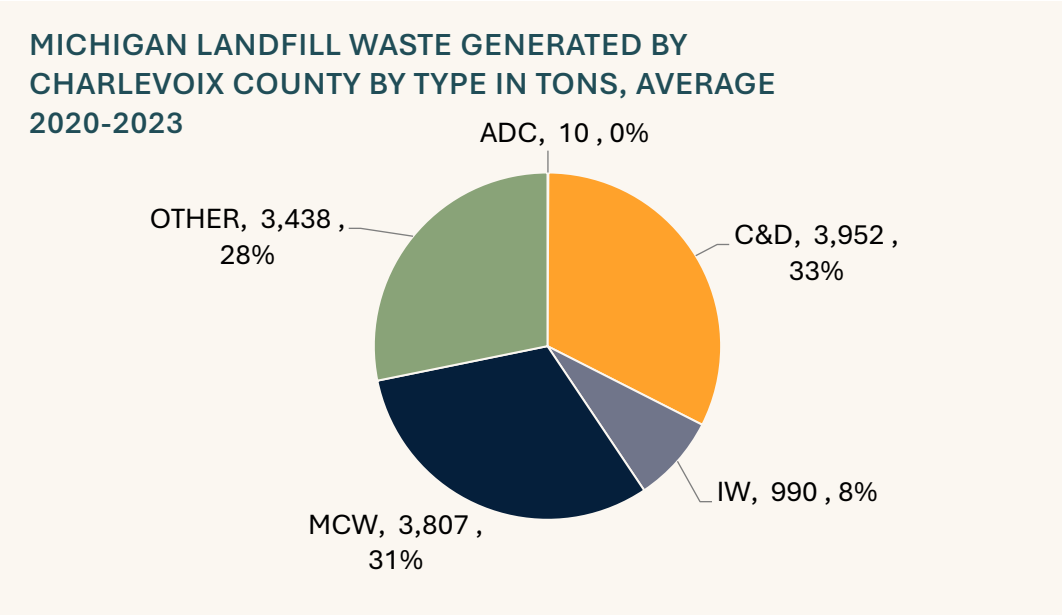


Figure 2: Michigan Landfill Waste Generated by Charlevoix County by Type in Tons, Average 2020 - 2023

DISPOSAL FACILITIES RECEIVING LANDFILLED MATERIAL FROM CHARLEVOIX COUNTY IN FY 2024

Table 3 presents information on landfill capacity at each location, reported in cubic yards. The remaining years of capacity are presented as a range for each facility: one value is self-reported by the landfills, and the other is calculated by EGLE by dividing the remaining capacity by the amount of capacity used in FY 2024. Differences between these two values account for the range in remaining years of capacity shown in the table.

Landfills Receiving Waste from Charlevoix County 2024					
	Tons	**City Environmental Services, Inc of Waters (Crawford County)**	**GFL North Michigan Landfill, LLC (Presque Isle County)**	**Montmorency-Oscoda-Alpena SWMA (Montmorency County)**	**Wexford County Landfill (Wexford County)**
ADC	-	-	-	-	-
C&D	1,251	1,045	192	-	15
IW	238,044	238,044	-	-	-

MCW	2,559	2,512	9	38	-
OTHER	260	194	-	-	67
Grand Total	**242,114**	**241,794**	**201**	**38**	**82**

Table 3: Landfills Receiving Waste from Charlevoix County in 2024

	City Environmental Services, Inc of Waters (Crawford County) (City Environmental Services, Inc of Water)	**GFL North Michigan Landfill, LLC (Presque Isle County)**	**Montmorency-Oscoda-Alpena SWMA (Montmorency County)**	**Wexford County Landfill (Wexford County)**
Remaining Capacity (CY)	17,590,764	871,763	1,517,378	15,820,706
Capacity Used in 2024 (CY)	54,650	111,477	91,437	366,293
Est Years of Remaining Capacity	321 - 322	8 -9	17	43 - 46

Table 4: Estimated Landfill Capacity 2024

RRS MCW Modeling

The RRS Municipal and Commercial Waste (MCW) Characterization Model is designed to identify potential recovery opportunities within the MCW stream, broken down by specific material types and generating sectors, including single-family residential, multi-family residential, and commercial sources. The model was developed using multiple waste characterization and capture rate studies conducted over the past five years, including studies specific to Michigan as well as broader research from the Midwestern United States. This model is intended as a planning tool to help the County understand which specific materials are being landfilled within the MCW stream, thereby identifying the greatest opportunities and potential tons available for recovery.

The model estimates the composition of MCW by dividing it into approximately 50 distinct material categories, expressed as percentages of the total waste stream. **For most counties where the reported MCW disposal tonnage is considered reliable, these percentages can then be applied directly to the county' s reported MCW tonnage to estimate the tons of each material category being landfilled.** However, because Charlevoix County's reported MCW tonnage is unusually low and cannot be confirmed as representative of actual conditions, **RRS applied the characterization model to an alternative baseline: the amount of MCW Charlevoix County would be expected to generate if it were disposing waste at the Michigan statewide average per-capita rate.** This approach supports planning by providing a more reasonable estimate of landfilled material composition and recoverable tonnage in the absence of verified local disposal reporting.

In addition, the model uses aggregated data to differentiate between waste generated by commercial businesses and residential sources. Within the residential sector, housing data from the 2020 U.S. Census is incorporated to allocate tonnages between single-family and multi-family residences.

The approximately 50 material categories were also ranked according to their ease of recovery. The rankings are as follows:

1. **Readily Recyclable** – materials that are almost universally accepted in existing curbside recycling programs. Examples include cardboard, plastics #1-2, aluminum cans.

2. **Compostable** – materials that break down naturally, including food waste, yard waste, brush, and leaves.

3. **Recyclability Variable by Municipality** – materials that are sometimes accepted in established curbside recycling programs. Examples include HHW, plastic films, textiles.

4. **Minimal Access for Recycling/Specialty Recycling** – materials that may be recyclable through drop-off or specialized programs, such as bulky waste, tires, and polystyrene.

5. **Not Recyclable** – materials that are currently not recyclable through existing programs.

Based on this assessment, RRS estimates that approximately 54% of landfilled MCW by weight from Charlevoix County is either readily recyclable or compostable. This approach provides a detailed, data-driven foundation for evaluating material-specific recovery potential and informing county-level planning efforts.

RRS LANDFILLED MCW RECYCLABILITY MODEL BY WEIGHT IN TONS

Figure 3 below illustrates the recyclability of municipal and commercial waste (MCW) by weight for materials currently landfilled, based on an estimated MCW tonnage of 23,733; the amount of MCW Charlevoix County would be expected to generate if it were disposing waste at the Michigan statewide average per-capita rate. It highlights the potential opportunities to divert waste from landfill toward higher-value outcomes, such as established recycling programs or composting initiatives.

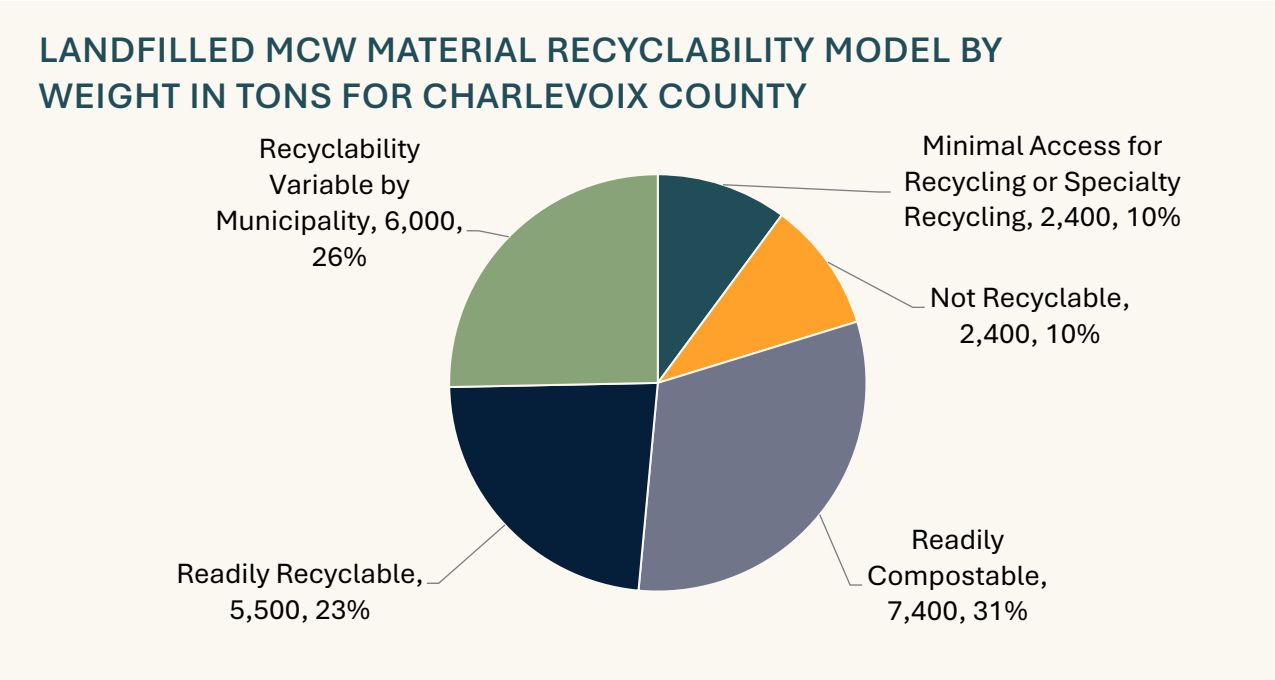


Figure 3: RRS Model, Landfilled MCW Recyclability by Weight in Tons

RRS MCW COMPOSITION MODEL BY WEIGHT

Figure 4 below outlines the 25 most prevalent materials within the MCW stream by weight, as identified by the RRS model. It also illustrates the proportional generation of each material by single-family households, multi-family households, and the commercial sector. The tonnage and relative proportions of these materials provide valuable insights for planners to target key materials for diversion efforts as discussed previously in the Preliminary Opportunities section. Clearly, wasted food represents a significant opportunity to both increase diversion and reduce overall waste through food rescue and composting. In addition, the large quantity of compostable paper further increases the potential feedstock for expanded composting infrastructure. The model also indicates a strong potential to increase recovery of corrugated cardboard and plastic films, particularly within the commercial sector, where these materials represent a larger share of total generation. Textile waste also represents a significant tonnage and therefore presents an opportunity to expand or encourage textile reuse and donation outlets within the county.

A full depiction of all 50+ materials and their anticipated composition in the waste composition model can be found in the Appendix.

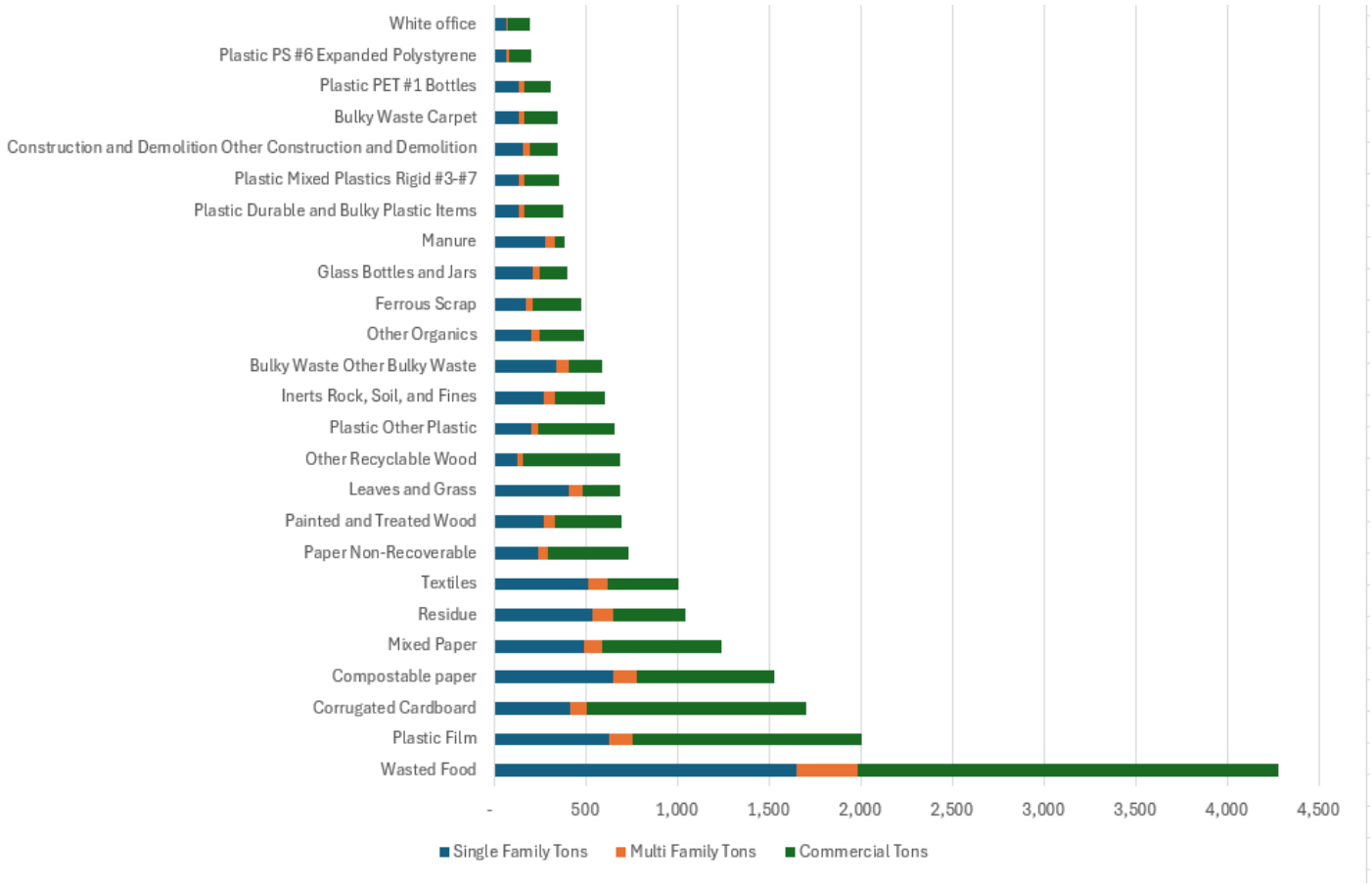


Figure 4: RRS Modeled MCW Composition by Weight

POTENTIAL ECONOMIC OPPORTUNITY

When approached strategically, materials management plans present significant economic opportunities for the county. Recovered materials, often considered "waste," can be valuable resources when properly sorted and processed, serving as key inputs for various industries, such as East Jordan Iron Works or St. Mary's Cement. The following table illustrates the potential economic value of materials currently being landfilled by residents and businesses in Charlevoix County. It provides a breakdown of reported MCW tonnage into specific material categories, based on the RRS model. Additionally, commodity values for each material were sourced from Recyclingmarkets.net, a trusted industry resource, to demonstrate the potential value of these landfilled materials if they were properly captured, sorted, and prepared for market (e.g., baled). While this analysis serves as an illustration of potential value, it is recognized that achieving a 100% capture rate for all landfilled recyclables is unlikely. Furthermore, the snap-shot values presented reflect a relatively low commodities market, so the estimated value should be considered somewhat conservative. **Even under these conservative assumptions, the analysis indicates that more than $200,000 in "Readily Recyclable" materials from Charlevoix County are likely landfilled each year.**

Type Modeled	Ease of Recoverability	Total Tons	Recyclingmarkets.net value 9.15.25	Est Market Value of Tons
Corrugated Cardboard	Readily Recyclable	1,708	$ 65.00	$ 110,988
Mixed Paper	Readily Recyclable	1,243	$ 35.00	$ 43,503
Steel Cans	Readily Recyclable	158	$ 160.00	$ 25,330
White office	Readily Recyclable	194	$ 125.00	$ 24,197
Aluminum Cans	Readily Recyclable	136	$ 80.00	$ 10,848
Magazines	Readily Recyclable	168	$ 35.00	$ 5,865
Newspaper (ONP)	Readily Recyclable	139	$ 35.00	$ 4,875
Plastic HDPE #2 Bottles Natural	Readily Recyclable	98	$ 46.00	$ 4,528
Plastic PET #1 Bottles	Readily Recyclable	311	$ 5.75	$ 1,787
Paperboard Boxboard	Readily Recyclable	45	$ 35.00	$ 1,564
Plastic PET #1 Non-Bottle	Readily Recyclable	71	$ 5.75	$ 411
Plastic HDPE #2 Bottles colored	Readily Recyclable	106	$ 2.50	$ 266
Plastic HDPE #2 Non-Bottle colored and natural combined	Readily Recyclable	6	$ 0.50	$ 3
				$ 234,165
Plastic Film	Recyclability Variable by Municipality	2,005	$ 1.00	$ 2,005
Plastic PP#5	Recyclability Variable by Municipality	116	$ 7.50	$ 870
Plastic Mixed Plastics Rigid #3-#7	Recyclability Variable by Municipality	355	$ 1.50	$ 533
				$ 3,408
				$ 237,573

Figure 5: Example Recycling Market Values for 9.15.2025

Organic Material

Organic materials, including food scraps, edible surplus food, leaves, grass clippings, brush, and other yard debris, represent a significant and recoverable portion of the municipal solid waste stream in Charlevoix County. Consistent with Michigan law, yard clippings are prohibited from disposal in landfills (Part 115 of NREPA)[4], and communities across the county provide a mix of municipal collection and drop-off options to manage these materials outside of the landfill.

[4] https://legislature.mi.gov/Laws/MCL?objectName=mcl-324-11514&utm

At the municipal level, the **City of Charlevoix**[5], **City of East Jordan**[6], and **Boyne City**[7] all provide **seasonal curbside yard waste collection** programs for residents, as documented on their respective Department of Public Works and public services webpages. The **City of Charlevoix** operates a municipal composting program and reports that it collects an **average of approximately 369 tons of compostable material per year**, based on self-reported data from the City's Department of Public Works. This program represents one of the most established municipal organics recovery efforts within the county.

In addition, **East Jordan** provides a **dedicated compost drop-off area** for food waste and yard waste (excluding brush). This site is located behind the EMS building across from Save-A-Lot at 107 Bartlett Street, adjacent to the county recycling bins. Information on this site is provided through Charlevoix County recycling and East Jordan municipal resources.

Together, these municipal programs form the core of Charlevoix County's current organics management system. While these services demonstrate existing commitment and infrastructure for organic material diversion, available tonnage data are limited outside of the City of Charlevoix program. As a result, countywide organics diversion must be evaluated using a combination of reported municipal data and regional modeling, as described in the following section.

SEEDS ORGANICS ANALYSIS

A 2021 report[8] prepared by RRS and commissioned by SEEDS Ecology & Education Centers and funded with a 2021 EGLE Market Development Grant, evaluated current prevention, rescue/recovery and recycling processing opportunities and applied feasibility of each option to each county in the region and modeled centralized composting and operating costs and a preliminary collection and transportation plan. It also projected GHG emission savings and job creation and identified actionable next steps for the region to support the organics circular economy. The study concluded that Charlevoix County generated an estimated 6,687 tons of organic waste per year with approximately 1,286 tons diverted to permitted composting sites annually. Based on RRS's current model of landfilled MCW and the state average MCW tons for the county, in 2024 RRS estimates that Charlevoix County generated approximately 7,300 tons of organic waste that was landfilled. **For planning purposes, Charlevoix County should estimate 6,600 – 7,300 tons of organic waste generated (food scraps, yard waste, brush, leaves, branches and trimmings) annually.**

SEEDS REPORT ESTIMATED ORGANICS GENERATION AND DIVERSION 2021

Figure 6 below summarizes the ten counties analyzed, showing their estimated annual generation of organic waste (food and yard waste) in tons, the amount currently diverted, and the additional tonnage that could potentially be diverted through various methods. If all identified strategies were implemented, Charlevoix County's overall organics diversion rate would reach 29%. The 2021 study noted that Antrim, Benzie, Charlevoix, Kalkaska, Manistee and Missaukee counties all have s relatively small

[5] https://www.charlevoixmi.gov/DocumentCenter/View/152/Brush-Pickup-PDF

[6] https://www.eastjordancity.org/news_detail_T4_R13.php

[7] https://www.boynecity.gov/services/public_works/leaf_yard_waste.php

[8] https://michiganrecycles.org/wp-content/uploads/2022/08/RRS-FINAL-REVISED-NW-Lower-MI-Regional-Organics-Strategy-Report.pdf

amount of organics collection and recommended that these counties focus efforts on food rescue initiatives (recovering edible food before disposal), education on food waste reduction, and promotion of backyard composting practices. Furthermore, the study identified the close proximity to large scale composting operations in Emmet County could present an opportunity for increased organics collection. At the time, it was estimated that ~ 855 tons of food waste is generated per year from food stores within the county, ~381 tons per year from food processing operations and ~87 tons per year of food waste from bars and restaurants.

ANNUAL TONS YARD AND FOOD WASTE

COUNTY	Generation	Current Diversion*	Estimated Potential Diversion					
			Prevention	Rescue/ Recovery	Recycle**	Centralized Composting	Tons Diversion	Percent Diversion
Antrim County	6,149	41	81	39	345	935	1,400	22.8%
Benzie County	5,101	108	62	30	360	686	1,138	22.3%
Charlevoix County	6,687	1,286	91	44	387	1,415	1,937	29.0%
Emmet County	8,006	1,048	236	127	678	2,806	3,847	48.0%
Grand Traverse County	19,074	4,003	319	302	1,551	8,301	10,473	54.9%
Kalkaska County	5,114	14	61	30	229	721	1,041	20.4%
Leelanau County	5,850	751	76	36	447	861	1,420	24.3%
Manistee County	6,366	421	85	41	321	992	1,438	22.6%
Missaukee County	4,608	1	52	25	194	561	832	18.1%
Wexford County	8,035	77	115	56	547	1,789	2,507	31.2%
TOTAL	**74,989**	**7,750**	**1,179**	**729**	**5,060**	**19,066**	**26,034**	**34.7%**

*Current Diversion tonnage is estimated based on 2021 survey data and 2019 EGLE Waste Data System (WDS) of reported volumes to permitted composting sites.
**Recycle includes backyard composting, community composting and animal feed. The estimated diversion by sub-category is included in the appendix.

Figure 6: Potential Organic Tonnage, SEEDS 2021

Demographic Data & Waste Generation

MCW GENERATION PROJECTIONS

Networks Northwest provided RRS with county-level demographic data obtained from the American Community Survey, the Bureau of Labor Statistics, and the Michigan Department of Technology, Management & Budget. These data include projected five-year population estimates through 2050. Table 5 below applies the state average MCW disposal rate of 4.6 pounds per person per day to illustrate the potential range of MCW volumes the county may need to manage in the coming decades.

YEAR	PROJECTED COUNTY POPULATION	ANNUAL MCW TONS AT 4.6 LBS/PP/DAY
2025	26,248	22,138
2030	26,260	22,227
2035	25,980	22,237
2040	25,368	22,000
2045	24,391	21,482
2050	23,441	20,654

Table 5: RRS Potential MCW Tonnage Projections

BUSINESS SECTOR DEMOGRAPHICS

Detailed business establishment and employment data for **2018 and 2023**, provided by Networks Northwest and originally sourced from Esri, further refine the understanding of Charlevoix County's commercial landscape and its implications for materials management planning. These data form the basis for Figure 7, Figure 8, and Figure 9 and highlight both growth trends and sector-specific recovery opportunities. The full 2018 and 2023 establishment and employment datasets are provided in the appendix.

Between 2018 and 2023, Charlevoix County experienced notable growth in the number of business establishments, particularly in sectors associated with higher waste generation and recoverable materials. **Construction** increased from **117 to 146 establishments**, **Retail Trade** from **114 to 120**, **Accommodation and Food Services** from **79 to 97**, and **Health Care and Social Assistance** from **55 to 87** establishments. Growth was also observed in **Manufacturing** (45 to 57 establishments), **Professional, Scientific, and Technical Services** (44 to 68), and **Administrative Support and Waste Management Services** (53 to 57). These trends indicate a growing and diversifying commercial base with direct implications for both MCW generation and diversion potential.

Employment data further clarify where material recovery efforts may be most impactful. In **2023**, the largest employment sectors in Charlevoix County were **Manufacturing (2,874 jobs)**, **Accommodation and Food Services (1,838 jobs)**, **Health Care and Social Assistance (1,422 jobs)**, and **Retail Trade (879 jobs)**. Employment growth was particularly strong in **Manufacturing** (2,451 to 2,874 jobs), **Administrative Support and Waste Management Services** (253 to 302 jobs), **Wholesale Trade** (53 to 110 jobs), and **Utilities** (148 to 197 jobs).

From a materials management perspective, these 2023 data reinforce several priority opportunities identified in EGLE's MMP guidance. The prominence of Accommodation and Food Services aligns with waste characterization findings that food waste is one of the largest components of the MCW stream, underscoring the importance of **food waste prevention, food rescue, and organics diversion strategies** targeted to restaurants, resorts, and institutional food service operations—particularly relevant in a tourism-driven county such as Charlevoix.

Similarly, the scale and growth of Manufacturing, Retail Trade, and Construction highlight **corrugated cardboard**, **wood waste**, and other packaging and building materials as high-volume, recoverable material streams. These sectors represent a substantial share of total establishments and employment and are well-positioned for targeted commercial recycling initiatives, improved access to recycling services, and coordination with private haulers and construction-related recovery programs.

Overall, the 2023 establishment and employment data support a planning approach that prioritizes sector-specific strategies, consistent with EGLE's emphasis on focusing resources where they will yield the greatest diversion impact. By aligning program development with Charlevoix County's evolving business profile, the County can more effectively reduce disposal, increase recovery of high-value materials, and advance progress toward its Materials Management Plan goals.

Figure 7: Industry and Employment Statistics, Courtesy Networks Northwest

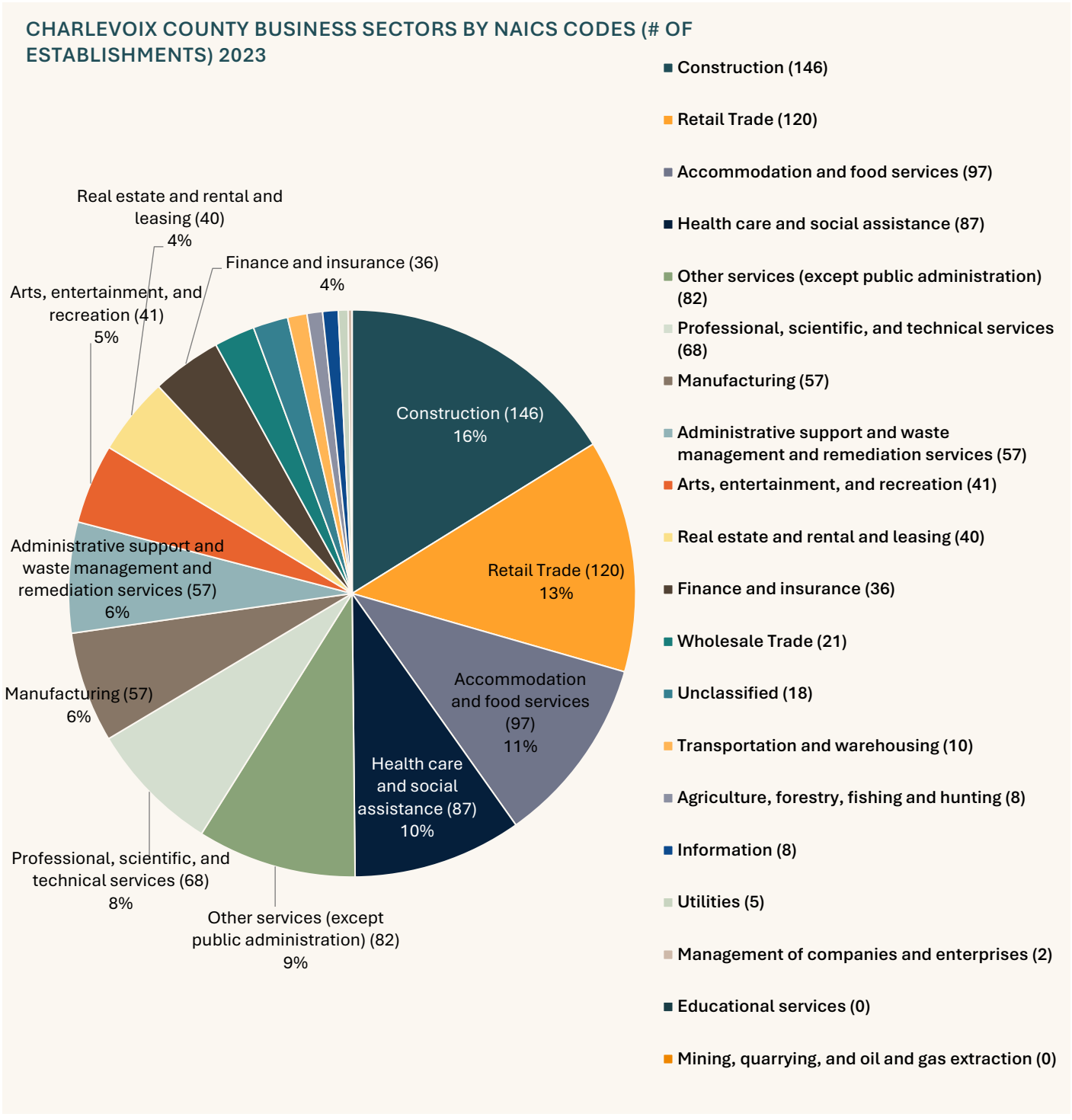


Figure 8: Charlevoix County Business Sectors by NAICS Code, # of Establishments. Data provided by Networks Northwest

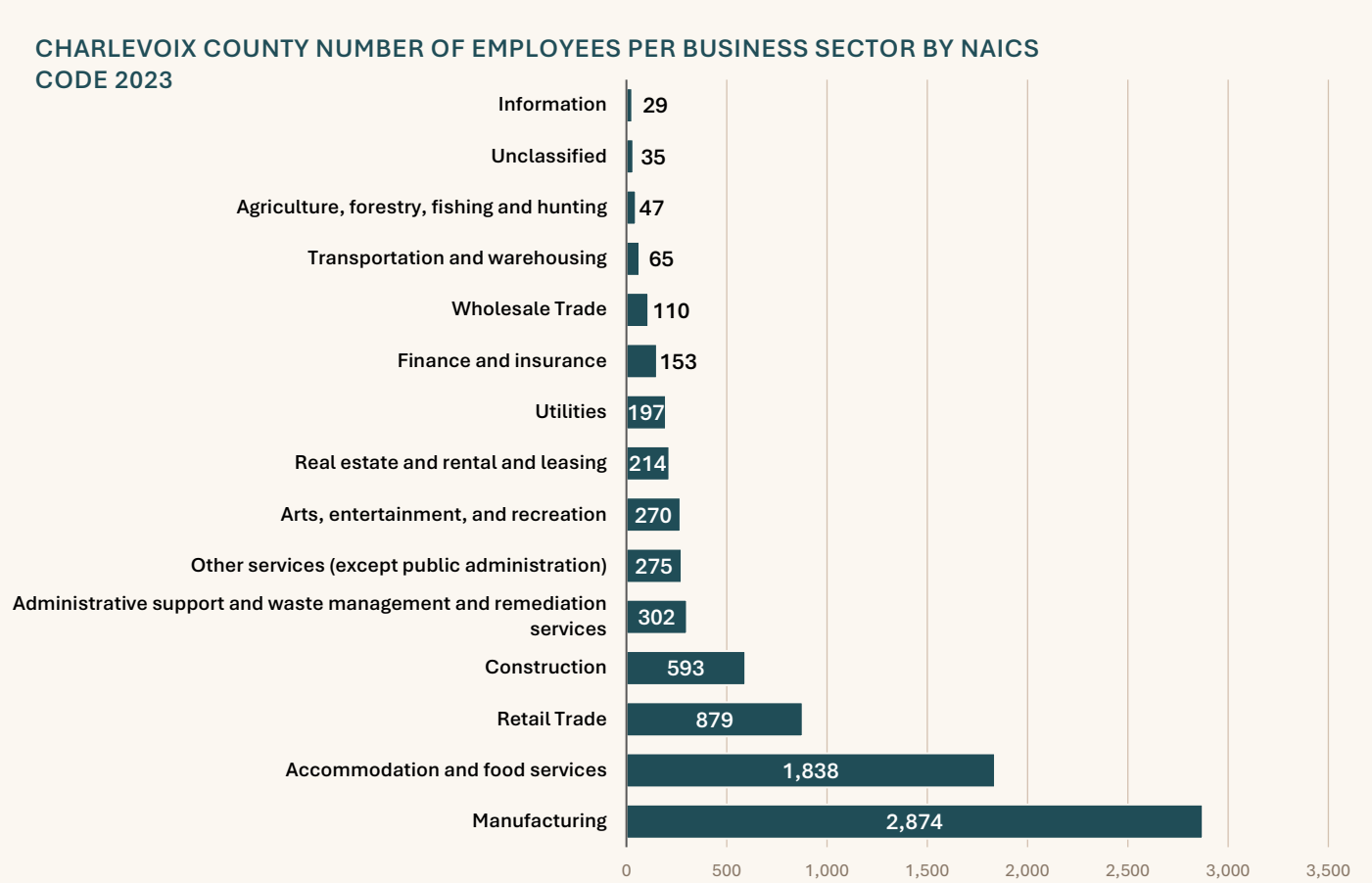


Figure 9: Charlevoix County # of Employees by NAICS Code, 2023. Data provided by Networks Northwest

Compliance with Part 115 and Benchmark Recycling Standards

Charlevoix County is in compliance with Michigan's Part 115 Benchmark Recycling Standards, which are designed to ensure that counties provide convenient and accessible recycling opportunities for residents and businesses in support of the state's broader recycling goals. Because Charlevoix County does not contain any urbanized areas or communities with populations exceeding 5,000 residents, the first two benchmark standards do not apply.

Currently, there are no municipal or municipally contracted curbside recycling programs operating within the county. However, many residents may be able to subscribe directly with private waste haulers for curbside recycling services on an individual basis. Charlevoix County's recycling program consists of drop-off sites managed by Charlevoix County. The drop-off locations include:

- **Beaver Island Transfer Station**– 36770 East Side Drive

- **Boyne City** – East of Charlevoix County Road Commission, off Beardsley Street
- **Boyne Valley Township** – Addis Road, West of US 131
- **Charlevoix Location** – next to the County Sheriff's Office / County Jail, 1030 Grant St, Charlevoix
- **East Joran Location**– behind the EMS building across from Save-A-Lot, 107 Bartlett St.
- **Melrose Township Transfer Station**– State St, west of Clarion Village, across from the Marathon Station

Drop-off locations provide access to recycling receptacles for paper, cardboard, glass, plastic bottles and jugs, metal cans, and even plastic films[9]. Locations have varying hours, but with six drop-off sites, the county exceeds the **Benchmark Recycling Standard** for drop-off access. Definitions of the Benchmark Recycling Standards are listed in the Appendix.

CURBSIDE SERVICE TYPES

More broadly, curbside waste, recycling, and organics/yard waste collection programs can be categorized as:

1. **Municipal** – municipal staff collect material using municipal equipment.
2. **Contracted or franchised** – a municipality contracts with a single hauler to provide curbside service to all residents (funded through a variety of approaches, such as general funds, special assessments, utility-style fees, or billed service fees).
3. **Subscription (open-market)** – residents contract directly with the hauler of their choice for curbside services.
4. **No curbside program** – there is no verified curbside service being actively provided within the municipality (regardless of cost).

EGLE instructs counties to calculate curbside recycling access according to this formula:

$$\text{Curbside Recycling Access} = \frac{\text{Sum of single family dwellings which have curbside recycling access}}{\text{Total number of single family dwellings}} \times 100$$

Currently, there are no municipal or municipally contracted recycling programs operating within the county. However, some residents may be able to subscribe directly to curbside recycling service through private waste haulers on an individual basis.

[9] https://cms2.revize.com/revize/countyofcharlevoix/SSR%20List.pdf

Table 6 below does not list any communities under 'Subscription' because there are no publicly confirmed haulers documented as providing curbside recycling services in those areas.

Importantly, Part 115's benchmark recycling standards treat subscription/open-market service as "access" for purposes of curbside recycling. Specifically, the statute provides that curbside recycling qualifies when: "The curbside recycling is provided by the municipality or the resident has access to curbside recycling by the resident's chosen hauler."[10]

At the same time, the statutory "access" language does not specify that subscription/open-market service must be affordable (e.g., it does not define an acceptable price, require rate caps, or require that service be provided at no additional cost). As a result, a community may be counted as having "access" through subscription service even if cost remains a practical barrier for some households.

RECYCLING AND COMPOSTING ACCESS IN CHARLEVOIX COUNTY

As noted previously, there are no confirmed haulers offering subscription-based curbside recycling service, and there are no municipally managed curbside recycling programs for traditional recyclables (packaging). However, there are three known municipal curbside collection programs for yard waste, located in **Boyne City, Charlevoix City** and **East Jordan City**. Table 6 below provides a summary by community.

SUMMARY TABLE OF RECYCLING ACCESS BY COMMUNITY

COMMUNITY NAME	2020 CENSUS NAME	COMMUNITY POPULATION	# OF HOUSE HOLDS	POPULATION IN SINGLE FAMILY HOMES[11]	POPULATION IN MULTI FAMILY HOMES[12]	RECYCLE CURB SIDESIDE SERVICE TYPE	RECYCLING DROP-OFF PROGRAM
Bay Township	Horton Bay CDP Bay Township	1141	485	1141	0	No Curbside Program	Charlevoix County Drop-Off Program
Boyne City	Boyne City	3817	1687	3172	645	No Curbside Program	Charlevoix County Drop-Off Program
Boyne Valley Township	Boyne Falls Village	357	172	315	42	No Curbside Program	Charlevoix County Drop-Off Program
Boyne Valley Township	Boyne Valley Township	1067	413	1033	34	No Curbside Program	Charlevoix County Drop-Off Program
Chandler Township	Chandler Township	284	113	281	3	No Curbside Program	Charlevoix County Drop-Off Program
Charlevoix City	Charlevoix City	2349	1252	1735	614	No Curbside Program	Charlevoix County Drop-Off Program
Charlevoix Township	Charlevoix Township	1763	771	1730	33	No Curbside Program	Charlevoix County Drop-Off Program

[10] https://www.legislature.mi.gov/documents/mcl/pdf/mcl-451-1994-ii-3-115.pdf

[11] Single Family = 1-4 units, mobile homes and other types of housing.

[12] Multi-Family = 5 or more units.

East Jordan City	East Jordan City	2240	947	1975	265	No Curbside Program	Charlevoix County Drop-Off Program
Evangeline Township	Evangeline Township	767	318	767	0	No Curbside Program	Charlevoix County Drop-Off Program
Eveline Township	Advance CDP Ironton CDP Eveline Township	1515	663	1503	12	No Curbside Program	Charlevoix County Drop-Off Program
Hayes Township	Bay Shore CDP (1 of 2) Hayes township	2001	861	2001	0	No Curbside Program	Charlevoix County Drop-Off Program
Hudson Township	Hudson Township	670	285	670	0	No Curbside Program	Charlevoix County Drop-Off Program
Marion Township	Marion Township	1657	666	1628	29	No Curbside Program	Charlevoix County Drop-Off Program
Melrose Township	Melrose Township Walloon Lake CDP	1405	585	1368	37	No Curbside Program	Charlevoix County Drop-Off Program
Norwood Township	Norwood CDP Norwood township	700	313	700	0	No Curbside Program	Charlevoix County Drop-Off Program
Peaine Township	Peaine Township	266	141	262	4	No Curbside Program	Charlevoix County Drop-Off Program
South Arm Township	South Arm Township	1941	741	1913	28	No Curbside Program	Charlevoix County Drop-Off Program
St. James Township	St. James Township St. James CDP	260	136	260	0	No Curbside Program	Charlevoix County Drop-Off Program
Wilson Township	Wilson Township	1858	727	1858	0	No Curbside Program	Charlevoix County Drop-Off Program

Table 6: Summary of Recycling Access by Community

Data Currently Available

Charlevoix County has provided recycling tonnage data for the past three years (2022–2024) through its Re-TRAC reporting system. Over this period, the County reported an average of approximately **2,542 tons per year of residential drop-off recycling.** In 2024, the County also reported **80.9 tons of material collected through Household Hazardous Waste (HHW)** events and **206 scrap tires**, which are collected on an alternating-year basis when funding is available. During these years, collected materials were processed through a combination of facilities and service providers, including GFL Environmental (Grand Traverse County), ERG Environmental Services, Bay Area Recycling for Community (BARC), East Jordan Auto Parts, and Environmental Rubber Recycling.

The total tons of MCW attributed to Charlevoix County are available through the State's landfill reporting system; however, there is **no consistent reporting or tracking of tonnages collected by individual municipalities**. One notable exception is Melrose Township, which reported the number of trash compactor hauls from its drop-off program in 2024. Applying a standard conversion for compacted municipal solid waste (approximately 500 pounds per cubic yard), this equates to an estimated 425 tons per year. This estimate closely aligns with the Mega Data Project estimate of 419 tons per year for Melrose Township, providing confidence in the reasonableness of the Mega Data modeling approach.

In addition, the City of Charlevoix Department of Public Works reports an average of approximately **369 tons of organic material collected annually** through its municipal composting program. Because the compost is available for public use, there is currently no tracking of how much finished compost is reused or removed within a given year.

The table and chart below present the County-reported drop-off recycling tonnage for 2022–2024. At present, however, there is no available information on recyclable tonnages that may have been collected through curbside programs, commercial recycling services, or industrial recycling activities within the county. Additionally, no tonnage data are reported by private entities that may be collecting recyclable materials through curbside or independent drop-off systems outside of the County's managed recycling program.

RETRAC MUNICIPAL MEASUREMENT PROGRAM - CHARLEVOIX COUNTY	2022	2023	2024
Residential Drop Off Tons	2,200.00	2,682.97	
Single Stream Residential Drop Off Tons			2,474.55
HHW Events Tons			80.91
Scrap Tires, collected every-other-year			206.25
Final Destination	GFL Grand Traverse	GFL Grand Traverse, ERG Environmental Services, BARC, East Jordan Auto Parts	GFL Grand Traverse, ERG Environmental Services, BARC, East Jordan Auto Parts, Environmental Rubber Recycling

Table 7: Charlevoix County Reported Drop-Off Recycling Tonnages

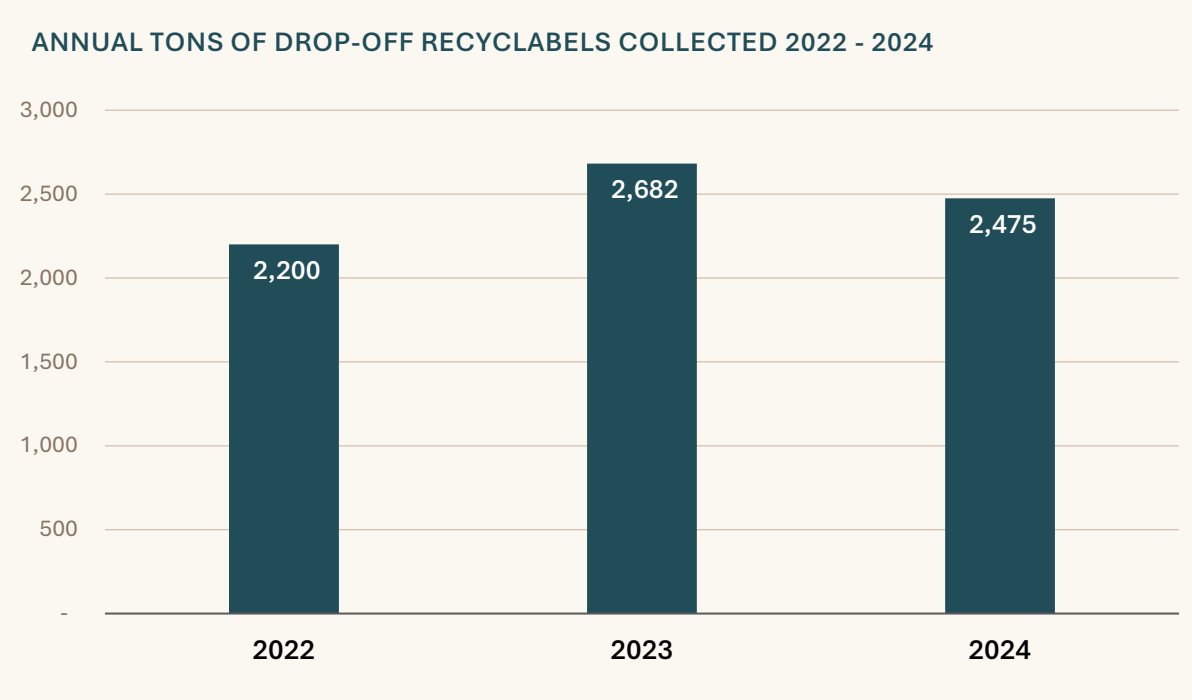


Figure 10: Charlevoix County Reported Drop-Off Recycling Tonnages

Due to these data gaps, the County does not currently have a measured recycling rate or diversion rate. Establishing consistent tonnage reporting and tracking systems represents a key opportunity to quantify these missing material flows, calculate a documented diversion rate, and track progress toward the goals established through the MMP process.

Recycling Rate Estimates

RECYCLING RATE VS DIVERSION RATE

As noted above, RRS estimates an MCW generation estimate of 4.6 pounds per person per day based on the State average. This MCW generation rate represents the average quantity of **waste disposed** per person per day and is used to estimate total disposal system demand.

To evaluate recycling performance and calculate a measured Recycling Rate it is also necessary to quantify the **weight of material recycled.** It is important to understand that for the MMP process, as defined by EGLE, the term **"Recycling Rate"** incudes both traditional recyclables (packaging and paper) and organic material (food scraps and yard waste).

The term **"Diversion Rate"** accounts for additional material diverted from landfill via reuse, recovery, donation, co-generation, digestion or other processes along with traditional recycling and composting. In order to calculate a complete diversion rate, the county would need tonnage data for material diverted via these additional methods.

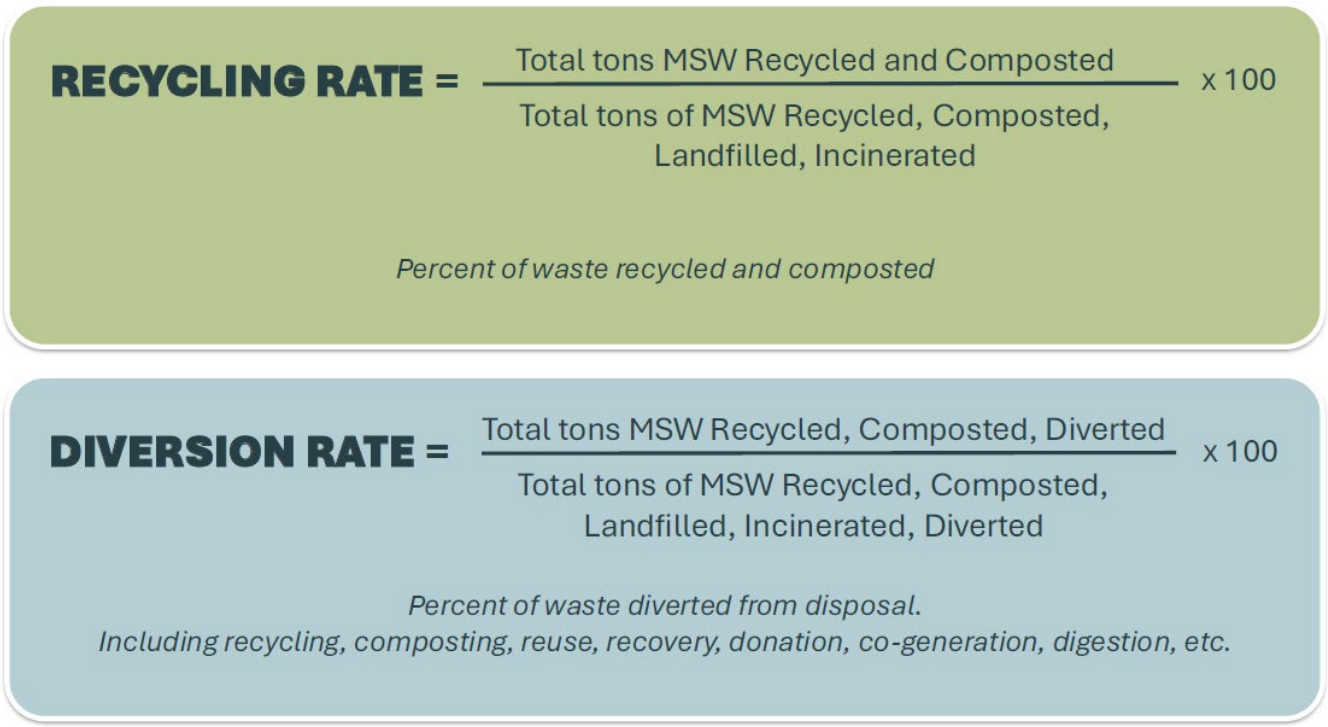


Figure 11: Recycling and Diversion Rate Definitions, EGLE, "Setting Materials Management Goals"[13]

RECYCLING RATE

In the absence of comprehensive, measured, and reported tonnages for recyclables collected through curbside programs and from commercial and institutional sources, proxy data may be used for planning purposes. RRS developed an estimation model during the statewide Mega Data Collection Project[14] to project recovered quantities using variables related to recycling access and recycling program design. The model draws on findings from The Recycling Partnership[15], which identifies characteristics of recycling programs that are associated with varying levels of material recovery per household.

The Recycling Partnership has identified several characteristics associated with high-performing residential recycling programs that capture higher quantities of material per household. These factors include:

- Curbside collection (rather than drop-off access),

[13] https://www.michigan.gov/-/media/Project/Websites/egle/Documents/Programs/MMD/Recycling/MMP-Goals-MRC-Presentation-Slides.pdf

[14] https://www.michigan.gov/egle/about/organization/materials-management/materials-management-in-michigan/mega-data-collection-project

[15] https://recyclingpartnership.org/wp-content/uploads/2018/05/state-of-recycling-report-Jan2017.pdf

- Use of collection carts instead of bins for curbside collection,
- Automatic enrollment and service delivery (residents receive recycling service with no action required) rather than opt-in participation, and
- Programs supported by public policy mechanisms (such as automatic service provisions or ordinances requiring haulers to offer curbside recycling alongside trash collection) compared with programs that lack supporting public action[16].

Based on the 2020 – 2023 MegaData Project, the projected recycling rates are as follows:

- **Residential Recycling Rate Estimate (Recycling + Compost):** 15.6%
- **Commercial Recycling Rate Estimate:** 8.2%
- **Countywide Recycling Rate Estimate:** 11.7%

Since completion of the Mega Data Project, Charlevoix County now has reported 2024 recycling tonnage from the county drop-off sites, totaling 2,475 tons. While reported tonnages of recycled organic materials countywide are not available, applying the Mega Data estimate of approximately 999 tons per year of organics recycling results in an estimated **3,474 tons recycled in 2024** (2,475 tons of traditional recyclables plus 999 tons of organics).

The reported tonnage of MCW disposed in 2024 is 2,559. Using this disposal figure, the estimated countywide recycling rate would be approximately 58%, which is significantly higher than the 11.6% recycling rate projected during the Mega Data Project. However, this disposal tonnage corresponds to an implied disposal rate of roughly 0.5 pounds per person per day, which is unusually low. Given this discrepancy, it is more reasonable for planning purposes to apply the **state average MCW disposal rate of 4.6 pounds per person per day**, which corresponds to an estimated 21,947 tons of MCW disposed annually in Charlevoix County.

Using the estimated **3,082 tons recycled** and **25,421 tons landfilled**, the countywide recycling rate for 2024 is estimated at approximately **13.7%**.

It is important to emphasize that this figure remains an estimate, given the lack of measured organic diversion tonnages and the likelihood of misreported or inconsistently categorized MCW disposal data. Charlevoix County has a clear opportunity to improve the accuracy of future recycling calculations by clarifying and standardizing landfill reporting procedures and by establishing systems to consistently track and report organic material diversion. Doing so would enable the County to calculate a measured recycling rate and more effectively track progress toward the goals established in the MMP.

[16] https://recyclingpartnership.org/wp-content/uploads/2018/05/state-of-recycling-report-Jan2017.pdf

CHARLEVOIX COUNTY	TOTAL WASTE GENERATION (TONS)	TOTAL RECYCLING (TONS)	TOTAL REQUIRING DISPOSAL (TONS)	RECYCLING RATE
MegaData Estimates, 2020-2023	25,075	2,927	22,149	**11.67%**
Updated Estimate 2024: Reported MCW Tons. Reported Recycling Tons. Estimated Organics Tons.	6,033	3,474	2,559	**57.58%**
Updated Estimate 2024: State Average MCW per Capita Tons. Reported Recycling Tons. Estimated Organics Tons.	25,421	3,474	21,947	**13.67%**

Table 8: Estimated Recycling Rates

Recycling Data Gaps

Several significant data gaps limit Charlevoix County's ability to fully quantify recycling and diversion performance. Most notably, there is no reliable accounting of **commercial and institutional recycling tonnage** that may be collected directly by private haulers. Many businesses and institutions may be recycling materials through contracted services, but without standardized reporting requirements, these recovered materials are not reflected in countywide diversion calculations. Establishing consistent hauler reporting requirements would allow the County to capture this missing data and better understand the full scale of recycling activity occurring outside of publicly managed programs.

In addition, there is a lack of information regarding any **curbside recycling services** that may be operating on a subscription basis for residential or commercial customers. Even limited or informal curbside collection can contribute meaningful tonnage to overall diversion, yet these materials remain unaccounted for in the absence of hauler reporting. Similarly, **organic material diversion data**, including both food waste and yard waste, is incomplete. While some municipal yard waste programs are known to exist and organics may be managed through private composting or mulching facilities, tonnage data are not consistently tracked or reported. As a result, the County cannot calculate a fully **measured recycling rate or diversion rate** and must rely on estimates and partial datasets.

These gaps also limit the County's ability to quantify progress on food waste reduction, which is a key materials management priority from EGLE. Food waste is typically disposed of in the landfill as part of mixed MCW, and without a robust waste audit system there is no clear way to quantify how many tons of disposed MCW are food waste over time. Alternatively, meaningful measurement can be achieved by separating food waste at the source, through food rescue and/or composting programs, and tracking the weight of diverted material. Expanded source separation paired with consistent tonnage reporting would allow the County to quantify diversion more accurately and track reductions in landfilled food waste in a measurable way.

Hard-to-Recycle Materials and Collection Events

Charlevoix County conducts Household Hazardous Waste (HHW) collection events twice each year, typically in June and September. Event locations rotate throughout the county, and accepted materials may vary by event. In **2024**, the County reported a total of **80.91 tons of HHW materials** collected through these events. Materials commonly accepted include appliances (with certain exclusions), electronics, household chemicals, used motor oil, batteries, oil-based paints, and latex paint (accepted with a fee). Mattresses are also accepted for a fee. Scrap tire collection is offered on an alternating-year basis when grant funding is available; in **2024**, the County reported that 206 tires were collected through this program.

In addition to county-sponsored events, Bay Area Recycling for Community (BARC), a nonprofit organization based in Traverse City provides year-round collection services for select hard-to-recycle materials, including electronics and mattresses for modest processing fees, at its Traverse City and Kaleva, Michigan locations. Mattress recycling is a unique and specialized service offered by BARC, and the organization recently received EGLE grant funding to expand its mattress recycling capacity, further improving regional access to this difficult-to-manage material stream. Establishing convenient and frequent mattress and electronics recycling services within Charlevoix County in partnership with BARC or another logistics/recycler would provide more routine opportunities for recycling these ubiquitous waste materials and prevent them from going to landfills.

At this time, historical tonnage data are not readily available for materials collected through the County's special collection events, nor are tonnage data available for mattresses or other materials collected by BARC or other private entities. Additionally, HHW tonnage does not directly equate to recycling tonnage; HHW programs are primarily intended to ensure the safe handling and proper disposal of hazardous materials, although some components may ultimately be recycled. Keeping HHW out of landfills remains a critical environmental and public health objective. As a result, HHW tonnage collected in 2024 was not included in the updated recycling rate estimates. Establishing consistent reporting of event participation and specific material quantities collected and the disposal/recycling destinations would enhance the County's ability to quantify recovery, identify priority material streams, and track progress over time.

Construction & Demolition (C&D) Debris

While no C&D debris recycling tonnages were provided for this report to show active diversion, landfill reporting shows that C&D waste accounts for an average of 6% of total landfill tonnage over the last 5 years as shown in Table 2, with the majority going to City Environmental Services, Inc of Waters in Crawford County. C&D debris includes anything used in the construction of roads, bridges and buildings. Typically, these materials include concrete, asphalt, wood (treated or blond), drywall, asphalt shingles, metals, rigid and film plastics, vinyl siding and windows, carpet and other flooring, ceiling tiles, cardboard and other paper, glass, and insulation.

While population and economic growth is a significant factor in the generation of C&D debris, most landfill reporting would attribute an average of between 20% and 40% of inbound tonnage from construction and demolition activities. According to US EPA reports, the amount of construction and demolition waste generated in the United States is more than twice that of MCW. While Charlevoix County's C&D landfill tonnage is within the average range, a true representation of the types of C&D debris generated in the county would require either reporting on an ongoing basis or periodic waste characterization studies

that focus on C&D.[17] Some landfills actively seek out C&D debris and even offer discounted disposal rates. Sometimes the landfills are diverting clean wood and/or concrete for use on-site (after chipping, grinding, or crushing); others are diverting it from landfill entirely by sending it to local markets that can use it for landscaping, fuel, or road building aggregates.

C&D debris can be diverted from landfills at multiple points in the disposal chain. The most effective approach - yielding the cleanest material with the highest reuse or recycling value - is source separation at the construction site. With 146 construction-related businesses – the most of any single business type in the county (Figure 8) – the number of potential partners to engage is significant. Achieving this requires clear, consistent communication and convenient processes, whether through voluntary programs or mandatory policies. With construction reflecting the fourth largest sector by employee count (Figure 9), this engagement could have considerable reach and impact, both the number of people and potential diversion. Alternatively, mixed C&D processing offers convenience by eliminating on-site separation, but recovered materials have lower value due to contamination and the cost of processing. Mechanical or conveyor-based sorting also produces fine debris such as drywall dust, dirt, and wood particles (referred to as 'fines') with little to no market value.

Markets exist for some C&D materials when prepared according to specification and generated at a consistent rate:

WOOD

Clean wood, including woody vegetation, untreated dimensional lumber, and pallets, would likely constitute sufficient tonnage on a regular basis to warrant separation and would result in meaningful and measurable impact on landfill-bound tonnage. Markets are likely to include:

- reuse of dimensional lumber 6 feet or longer and plywood/engineered boards at least 16 square feet that has not been painted or nailed
- landscaping for woodchips/mulch, with colorization potentially adding value
- energy sector, particularly where renewable energy inputs are sought as feedstock for energy production

SCRAP METAL

Though much of the scrap metal generated on construction sites is already recovered through informal collection by subcontractors and tradespeople, there could remain some fraction of scrap metal in the construction site debris that goes for disposal. A scrap metal container with clear labelling and discreetly positioned on the construction site would present an opportunity for anyone on the construction site to contribute any amount of metal for diversion. Local scrap metal companies would be interested in purchasing mixed or sorted metals from a construction site.

[17] C&D loads are typically excluded from most MSW/MCW waste characterization studies. While a waste characterization study may include a category for "C&D" it reflects de minimis amounts that were co-collected in an MSW/MCW collection truck. A specific C&D characterization is needed to capture material coming in rolloff boxes from construction projects.

CARDBOARD (OCC)

A collection container for OCC generated at strategic junctures during the project timeline will enable recovery of clean cardboard from product installation, such as cabinetry, appliances, and furniture. This large format cardboard will require a large container, ideally with a lid to protect it from precipitation. Cardboard can typically be delivered loose to a buyer but will carry higher value if baled.

CONCRETE

A designation of "clean" concrete is typically made by vendors that accept and produce a higher standard "crusher-ready' aggregate material. "Mixed aggregate", containing pieces of brick, ceramic, or other engineered inert materials, such as plastics and compound materials is not considered clean. Rebar sometimes presents additional processing challenges for aggregate producers and therefore markets for concrete with rebar are often limited. Partners for concrete recycling include local excavation companies and aggregate manufacturers.

VINYL

Rigid vinyl can come from several sources in a building or renovation project: siding, piping/conduit, window frames, flooring, and fencing are most common. These materials can be transported to a centralized collection point where they can be recycled into new vinyl products. Vinyl is typically not accepted at MRFs but specialty vinyl recyclers, like Fryman's Recycling in Dowagiac or others participating in Revinylize, the national vinyl recycling collaborative, may offer collection bins and pay the transportation costs in exchange for localized collection of rigid vinyl materials.

Storm Debris

At the request of Networks Northwest, RRS evaluated storm debris measurement and quantification methodologies to support Charlevoix County's preparedness for debris generated by major storms and severe weather events. Establishing baseline debris estimates is an important first step in emergency debris management planning, which is typically implemented through a countywide Emergency Operations Plan (EOP) and supporting annexes.

The Michigan State Police, Emergency Management & Homeland Security Division provides a **Local Disaster Debris Management Plan Template**[18] for counties, cities, and townships to adapt. The template positions disaster debris planning as a companion to the EOP and as a local counterpart to the State's Disaster Debris Management Plan. Adoption of local debris plans varies, and EGLE has noted that outside of hurricane-prone regions, many communities do not complete disaster debris pre-planning. As a result, the Materials Management Plan (MMP) process represents a timely opportunity to "connect the dots"

[18] https://www.michigan.gov/-/media/Project/Websites/msp/EMHSD/Publications/Local_Disaster_Debris_Management_Plan_Template_2008_Final_Edition.pdf?rev=f548c2a196c248c69772fa733bc01714&utm

by documenting the infrastructure, roles, and material pathways that emergency management will depend on during surge conditions.

RRS recommends aligning disaster debris planning with MMP planning because both efforts rely on the same underlying materials management system, facilities, collection/processing capacity, transportation logistics, and end markets, operating under different time horizons. Even without a finalized County or local Disaster Debris Management Plan, the MMP can formalize this linkage by capturing core operational elements that will be needed during an incident, including:

- **Sites:** Existing solid waste and recycling facilities, as well as candidate temporary debris staging and reduction sites, including key constraints (e.g., access, drainage, and traffic control). This enables emergency operations to begin with identified options rather than starting from zero.

- **Capacity:** Normal throughput versus surge conditions, including overflow routing options. The County can also pre-define "activation triggers" tied to capacity constraints (e.g., transfer station queues exceeding a defined threshold for multiple days, or primary MRF downtime exceeding 48 hours).

- **Roles and responsibilities:** Identification of who supports the Emergency Operations Center (EOC) with materials management decisions, regulatory coordination, and communications.

- **Contractors and end markets:** Pre-identified pathways for hauling, grinding, C&D handling, white goods, and HHW management; recognizing that surge volumes may require intermediate staging and alternative destinations.

- **Public guidance hooks:** Pre-developed reuse- and recycling-first messaging where feasible, consistent with EGLE storm debris guidance, including separating materials and emphasizing recovery options when conditions allow.

RRS has developed preliminary storm debris estimates (in cubic yards) for multiple weather scenarios; these estimates are presented in the following subsections.

SCENARIO 1: ICE STORMS

The first scenario evaluates an ice storm producing between **0.25 inches and 1 inch of ice accumulation** with sustained winds between **10 and 30 mph**. The debris estimate uses roadway mileage as a key input, based on MDOT's published **System Length / Route Miles** metric[19], which for Charlevoix County is **854 miles.** In MDOT's reporting, System Length / Route Miles generally represent roadway centerline mileage (counting only one side of divided roads and excluding ramps) for public roads open to travel and certified by public road agencies; MDOT notes this dataset is GIS-based, tied to federal mileage certification processes, and available historically back to 1990.

[19] https://www.michigan.gov/mdot/-/media/Project/Websites/MDOT/Programs/Planning/Asset-Management/HPMS/Statewide-Statistics-LS-County.pdf

Using the county's applicable route-mile input and the scenario assumptions above, RRS estimates that ice storms of these magnitudes could generate the approximate debris quantities below. These calculations are based on methodology laid out in a published 2011 study *Rapid Assessment of Tree Debris Following Urban Forest Ice Storms*[20], including a negative correlation between wind speed and debris volume (as wind speed increases less debris observed). FEMA guidance[21] indicates that ice and snowstorm debris streams are typically dominated by **vegetative debris** (downed limbs and trees), along with **overhead utility system components** associated with damaged lines and service infrastructure (see Figure 12).

COUNTY NAME	SYSTEM MILES	WIND SPEED MPH	ICE THICKNESS (INCHES)	SCENARIO 1 DEBRIS ESTIMATE CUBIC YARDS
Charlevoix	854	10	0.25	83,205
		20	0.25	52,048
		30	0.25	20,892
		10	0.50	166,409
		20	0.50	104,097
		30	0.50	41,784
		10	0.75	249,614
		20	0.75	156,145
		30	0.75	62,676
		10	1.00	332,819
		20	1.00	208,193
		30	1.00	83,567

Table 9: RRS Estimated Ice Storm Debris Volumes CY

SCENARIO 2: SEVERE WEATHER EVENTS

Scenario 2 evaluates debris generation associated with **severe weather events**, with or without precipitation, characterized by **wind speeds ranging from 74 mph to 157+ mph**. At the upper end of this range, the scenario includes **tornado events**, which can produce highly variable and localized debris conditions. The debris estimates generated under this scenario incorporate multiple variables beyond wind speed, including **household density**, **vegetation cover**, and the **prevalence of commercial properties**, all of which influence both the quantity and composition of storm debris.

For Charlevoix County, the model inputs include **11,274 households**, a **Heavy vegetation** classification, and a **Light commercial property** designation. Heavy vegetation is typically associated with mature neighborhoods and wooded areas

[20] Hauer, Richard J.; Hauer, Angela J.; Hartel, Dudley R.; Johnson, Jill R. 2011. Rapid Assessment of Tree Debris Following Urban Forest Ice Storms. Arboriculture & Urban Forestry 37(5):236–246. https://www.srs.fs.usda.gov/pubs/ja/2011/ja_2011_hauer_001.pdf

[21] https://www.fema.gov/sites/default/files/2020-07/fema_325_public-assistance-debris-mgmt-plan_Guide_6-1-2007.pdf, Chapter 6

where dense tree canopy cover limits visibility of the ground or structures, increasing the likelihood of vegetative debris during severe wind events. The Light commercial property classification reflects a lower concentration of large commercial structures relative to residential land uses, which influences the proportion of construction and demolition (C&D) debris expected in the debris stream.

In addition to debris volume estimates, it is important to consider anticipated debris composition. FEMA guidance[22] describes typical tornado debris as including vegetative debris, construction and demolition (C&D) debris, personal property/household items, hazardous waste, household hazardous waste (HHW), white goods, and vehicles and vessels (see Figure 8).

The resulting debris estimates, segmented by precipitation condition and wind speed category, are presented in the table below. These estimates are intended to support emergency planning by illustrating the potential range of debris volumes that could be generated under severe weather scenarios affecting Charlevoix County.

COUNTY	HOUSEHOLDS	COMMERCIAL PROPERTY	VEGETATION	WIND SPEED	PRECIPITATION	SCENARIO 2 DEBRIS ESTIMATE CUBIC YARDS
Charlevoix	11,274	Light	Heavy	74-95 MPH	None to Light	33,822
				74-95 MPH	Medium - Heavy	40,586
				96-110 MPH	None to Light	135,288
				96-110 MPH	Medium - Heavy	162,346
				111-129 MPH	None to Light	439,686
				111-129 MPH	Medium - Heavy	527,623
				130-156 MPH	None to Light	845,550
				130-156 MPH	Medium - Heavy	1,014,660
				157+ MPH	None to Light	1,352,880
				157+ MPH	Medium - Heavy	1,623,456

Table 10: RRS Estimated Severe Weather Debris Volumes CY

[22] https://www.fema.gov/sites/default/files/2020-07/fema_325_public-assistance-debris-mgmt-plan_Guide_6-1-2007.pdf, Chapter 6

		Typical Debris Streams								
		Vegetative	Construction & Demolition (C&D)	Personal Property/ Household Items	Hazardous Waste	Household Hazardous Waste (HHW)	White Goods	Soil, Mud and Sand	Vehicles and Vessels	Putrescent
Types of Disasters	Hurricanes / Typhoons	X	X	X	X	X	X	X	X	X
	Tsunamis	X	X	X	X	X	X	X	X	X
	Tornadoes	X	X	X	X	X	X		X	X
	Floods	X	X	X	X	X	X	X	X	X
	Earthquakes		X	X		X	X	X		
	Wildfires	X		X		X	X	X		
	Ice Storms	X				X				

Figure 12: FEMA-325 "Figure 6.2 – Typical Debris Streams for Different Types of Disasters"[23]

Facility Inventory

Name	Address	Address	Description
St Mary's Cement US LLC	16000 Bells Bay Rd	Charlevoix	Type III Landfill
Charlevoix Transfer Station	15890 Bells Bay Rd.	Charlevoix	Processing & Transfer Facility
Beaver Island Transfer Station and Recycling Center	36770 East Side Drive	Beaver Island	Processing & Transfer Facility
Boyne Valley Township Transfer Station	1408 S. Addis Rd	Boyne Falls	Processing & Transfer Facility
Melrose Township Transfer Station	4449 State St	Boyne Falls	Processing & Transfer Facility

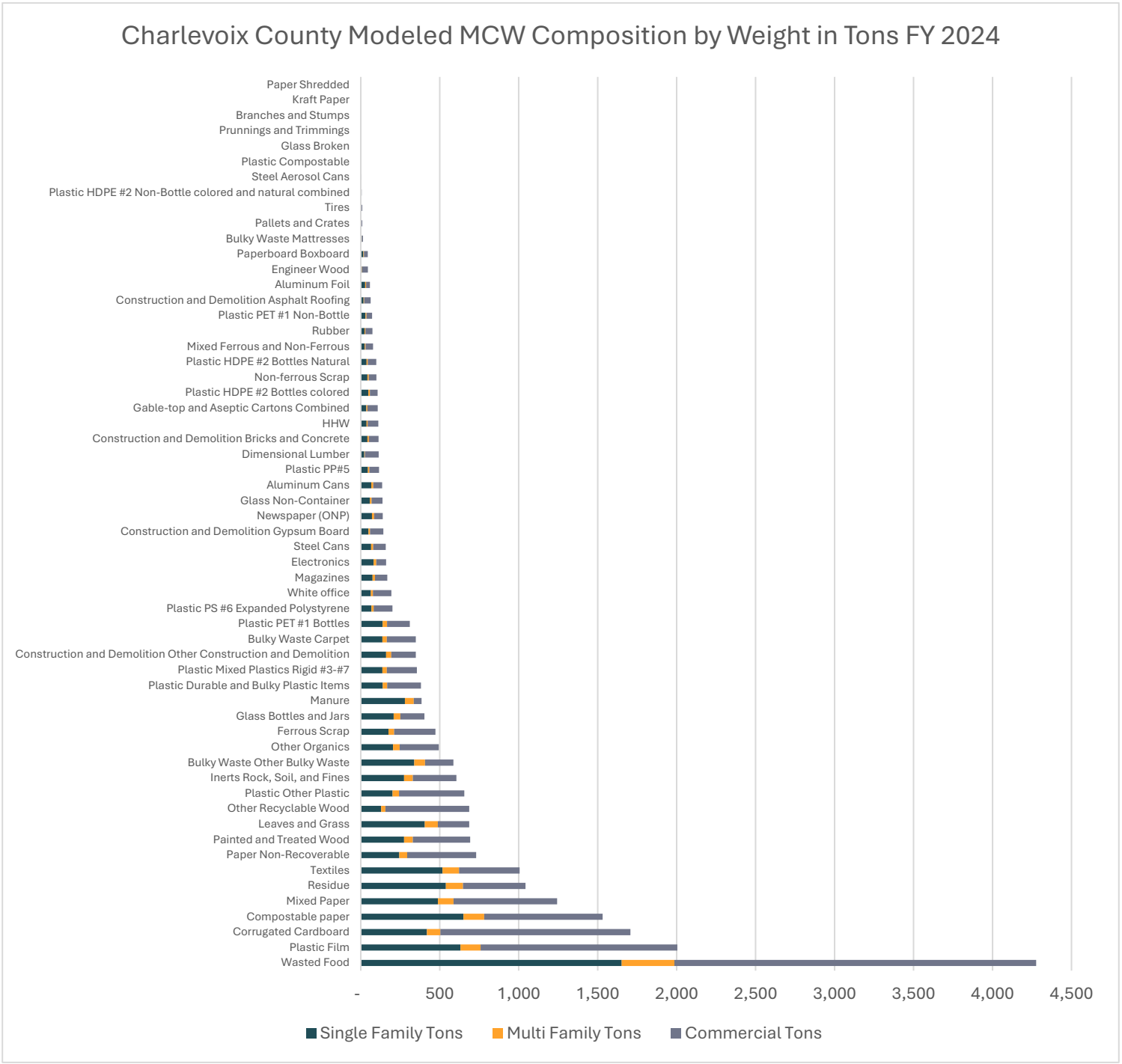
[23] https://www.fema.gov/sites/default/files/2020-07/fema_325_public-assistance-debris-mgmt-plan_Guide_6-1-2007.pdf

Charlevoix County Recycling - Boyne City	1251 Boyne Avenue	Boyne City	Other Source Separated Facility
Charlevoix County Recycling - Charlevoix City	1030 Grant Street	Charlevoix	Other Source Separated Facility
Charlevoix County Recycling - Boyne Valley Township Transfer Station	1408 S. Addis Rd	Boyne Falls	Other Source Separated Facility
Charlevoix County Recycling - Melrose Township Transfer Station	4449 State St	Boyne Falls	Other Source Separated Facility
Charlevoix County Recycling - City of East Jordan	110 Bartlett Street	East Jordan	Other Source Separated Facility
Beaver Island Transfer Station and Recycling Center	36770 East Side Drive	Beaver Island	Other Source Separated Facility
City of East Jordan Transfer Station	700 Nichols Street	East Jordan	Compost Facility
Boyne City - North Boyne Yard	1321 ROBINSON ST	Boyne	Compost Facility
City of Charlevoix Stump-Composting Area	6894 S US HIGHWAY 31	Charlevoix	Compost Facility

Table 11: Materials Management Infrastructure

Appendix

RRS MCW Composition Model



Definitions of the Benchmark Recycling Standards

Michigan Legislature. (1994). Natural resources and environmental protection act, Act 451 of 1994, Part 115, § 11502. Retrieved from Michigan Legislature website: https://www.legislature.mi.gov/documents/mcl/pdf/mcl-451-1994-ii-3-115.pdf

(6) "Benchmark recycling standards" means all of the following requirements:

(a) By January 1, 2026, at least 90% of single-family dwellings in urban areas as identified by the most recent federal decennial census and, by January 1, 2028, at least 90% of single-family dwellings in municipalities with more than 5,000 residents have access to curbside recycling that meets all of the following criteria:

(*i*) One or more recyclable materials, as determined by the county's material management plan, that are typically collected through curbside recycling programs, are collected at least twice per month.

(*ii*) If recyclable materials are not collected separately, the mixed load is delivered to a solid waste processing and transfer facility and the recyclable materials are separated from material to be sent to a solid waste disposal area.

(*iii*) Recyclable materials collected are delivered to a materials recovery facility that complies with part 115 or are managed appropriately at an out-of-state recycling facility.

(*iv*) The curbside recycling is provided by the municipality or the resident has access to curbside recycling by the resident's chosen hauler.

(b) By January 1, 2032, the following additional criteria:

(*i*) In counties with a population of less than 100,000, there is at least 1 drop-off location for each 10,000 residents without access to curbside recycling at their dwelling, and the drop-off location is available at least 24 hours per month.

(*ii*) In counties with a population of 100,000 or more, there is at least 1 drop-off location for each 50,000 residents without access to curbside recycling at their dwelling, and the drop-off location is available at least 24 hours per month.

BUSINESS SECTOR DEMOGRAPHICS, NUMBER OF ESTABLISHMENTS AND NUMBER OF JOBS

Datasets generated by Esri, provided by Networks Northwest

ESTABLISHMENTS

Industry	2018	2023
Construction	117	146
Retail Trade	114	120
Accommodation and food services	79	97
Health care and social assistance	55	87
Other services (except public administration)	76	82
Professional, scientific, and technical services	44	68
Manufacturing	45	57
Administrative support and waste management and remediation services	53	57
Arts, entertainment, and recreation	37	41
Real estate and rental and leasing	29	40
Finance and insurance	29	36
Wholesale Trade	16	21
Unclassified	8	18
Transportation and warehousing	11	10
Agriculture, forestry, fishing and hunting	5	8
Information	8	8
Utilities	4	5
Management of companies and enterprises	1	2
Educational services	5	0
Mining, quarrying, and oil and gas extraction	1	

JOBS

Industry	2018	2023
Manufacturing	2,451	2,874
Accommodation and food services	1,827	1,838
Retail Trade	876	879
Construction	609	593
Administrative support and waste management and remediation services	253	302
Other services (except public administration)	305	275
Arts, entertainment, and recreation	267	270
Real estate and rental and leasing	184	214
Utilities	148	197
Finance and insurance	161	153
Wholesale Trade	53	110
Transportation and warehousing	79	65
Agriculture, forestry, fishing and hunting		47
Unclassified	11	35
Information	24	29
Mining, quarrying, and oil and gas extraction		
Professional, scientific, and technical services		
Management of companies and enterprises		
Educational services	67	
Health care and social assistance	1,422	

MMP Community Input

A key component of any solid planning process involves the collection of input from a variety of stakeholders. In respects to the materials management planning process, the targeted audiences selected were County residents, local businesses, local units of government, and haulers and operators. As part of the collection of public input, multiple surveys were developed and distributed to the above stakeholder groups.

The following is a brief analysis of the input, with full survey results located in the appendices.

Community Input Events

In order to promote the Materials Management Plan process and survey's, Networks Northwest staff attended several community events during the 2025 summer. Each event was 3-4 hours long, with staff on hand to answer or discuss anything materials management related, distribute survey business cards, display boards with question and answer prompts, and a materials sorting game aimed for younger crowds.

Charlevoix County Community Events

- July 25, 2025 Venetian Festival
- August 8, 2025 East Jordan Music in the Park
- August 23, 2025 Boyne City Farmer's Market
- September 5, 2025 Charlevoix County HHW Collection - Boyne City

The following questions and responses are from the events.

1. *What types of materials do you find challenging to properly dispose of or recycle of in our community?*

- Tires, styrofoam, agricultural tires, water softener bags, glass, batteries, oil, salt bags (snowmelt), and bins constantly being too full

2. *What ideas do you have for reducing waste and increasing reuse in our community?*

- Additional township trash pick-up days, single stream recycling, outlaw single use plastics, food waste drop-off, deposits on all bottles, and consumers awareness of what can be recycled, plastic bag ban, community compost bins

3. *What resources or information would help you make more sustainable choices about the materials you use?*

- Economics of recycling, school experiments on pollution and recycling, smarter container materials, more HHW events, encourage youth/young adults to recycle, flyers of what is allowed to be recycled

County Resident Survey

The County Resident Survey was distributed to residents for responses from June 23, 2025 to January 5, 2026 through a variety of mediums including multiple press releases, social media (including popular community group pages), news articles, survey business card distribution, and flyer distribution. Additional distribution methods included Hayes Township included the flyer in their Winter Tax Bills, distributing survey cards at the Household Hazardous Waste collection, and Charlevoix County forwarded the survey to the HHW contact list.

Efforts led to 522 total responses including 451 permanent and 71 seasonal residents with at least one response from every municipality and the overwhelming majority of respondents having lived in Charlevoix County for over 10 years. Over 93% of respondents believe that recycling is very or extremely important for the communities, environment and natural resources as well as reducing the amount of waste going into landfills.

Material management services (trash, recycling, organics, etc.) are paid for in a variety of ways with the most popular being private hauler (236) followed by County Recycling Millage (164), and property taxes (143). Other responses included subscription service (107), purchasing special pre-paid bags for trash pick up, services being included in rent or association dues, utilizing recycling drop off sites, or per visit at transfer stations. 9% of respondents were not sure how they paid, and nearly half (262 - 257) were not aware of the Charlevoix County Recycling Millage.

However, 96% of respondents do participate in recycling a variety of materials with the most popular being:

1. Cardboard (486)
2. Plastic Bottles and Jugs (474)
3. Glass Bottles and Jars (463)
4. Metal Cans (453)
5. Paper (447)
6. Plastic Tubs and Containers (441)

Other materials that are recycled include hazardous waste (like batteries, paints, vehicle fluids, etc.), at home composting, municipal yard waste composting, and taking accepted materials like used furniture and textiles to local organizations for repurpose.

While some use curbside pickup (55) or private services/subscription service (32), and other ways recycling is collected include donating to resale stores, taking recyclables to recycling drop-off sites or local recycling centers, the overwhelming majority utilize drop-off centers (482). Environmental Responsibility (34%), Reducing Pollution (27%), Promoting Sustainability (23%), and Cost Savings (15%) were listed as main reasons for recycling, as well as environmental and economic benefit, saving money on trash collection, and practicality of trash bin space.
Those who mentioned that they did not recycle had a majority show interest in increased availability. The primary barriers that prevent residents from recycling were lack of curbside (126), location of drop-off sites (63), costs (38), and lack of convenience (location, curbside pick-up availability, full drop site bins), lack of knowledge on what is allowed or if recycling actually is recycled, and lack of services for yard waste and more HHW events. Some did mention it was too difficult (15) or no belief in value (9).

Residents noted information and resources helpful for recycling and waste reduction were clearer guidelines (241), community recycling events (224), online resources (142), workshops (37), and more drop-off sites and availability for household hazardous waste, information on what is recyclable and what products are produced, and need for education amongst all groups.

Trash is disposed of primarily by private haulers (64%), but some do utilize drop-off sites (16%), pay to throw (10%), or tax paid curbside (5%). Other ways household trash is disposed of included subscription dumpsters, rent or association dues covering dumpsters, or disposal at third party locations such as employers or hauling downstate.

45% of residents participate in composting, primarily by composting at home (72%), using community compost programs (21%), or local farm composting or a subscription service (each 3%). The Emmet County Compost Drop-off was mentioned as a location of use. Of the 55% who did not compost, access (27%), access to compost equipment (24%), and increased information (23%) would encourage composting participation. Other ways that participation can be encouraged include educational programs (10%), affordability (9%) and addressing concerns of smells, animals and pests, multi-unit options, and increasing composting education.

While most say the rules and guidelines for recycling are clear (70%) and know what items are not acceptable (74%), there is a

split that leans towards not being sure more so than not at all for both. Communities could do a better job of managing waste and resources through reducing waste (36%), reusing items (32%), composting more (26%), or curbside and single stream recycling, increasing education opportunities, transparency of recycling, increased household hazardous waste and difficult to recycle item collection.

The top services that residents would like to see offered in their communities were electronic waste drop-off (24%), more household hazardous waste events (21%), bulk waste pickup (16%), increased recycling access (16%) and green waste pickup (12%). Other services desired included curbside recycling pickup, access to specialty wastes like household hazardous waste, tires, electronics, etc., and compost options for yard waste and food.

A combined 80% of respondents have at least a moderate interest in learning about waste reduction and management, recycling, and organics in the community. A mix of responses were received about willingness to pay for increased services and access with 22% saying they would not pay for any increased services. 24% would pay more for increased recycling services, 21% for increased household hazardous waste, 20% for mattress, furniture, or appliances, and 13% for organics.

Lastly, an open ended question about anything else that should be considered yielded responses for the MMPC to consider include single stream curbside recycling, more drop-off options available year round for hazardous waste and bulky items, drop-site security, and education for all community members.

Local Unit of Government Survey

The Local Unit of Government Survey was distributed to a contact list of all Charlevoix County government clerks and supervisors or administrators via email and a mailing to the Clerk's address asking for a response to the survey. Additionally, the survey was included in the August 20, 2026 Local Unit of Government MMP Newsletter and in email communications of the Materials Management Planning Committee's public notices.

With 29 total responses, at least one person responded from 15 of the 20 units of government with the majority of responses from supervisor or clerks (20), but also from mayors (3) and administrators (3) and a treasurer.

Recycling drop-off centers (17), household hazardous waste events (14), and composting (4), and public education events (1) were mentioned as services implemented or supported by the community. For those who do not offer recycling, household hazardous waste, or composting, the reasons were costs, funding, or that the County offers the service (recycling).

85% rate the effectiveness of the current materials management infrastructure and services within the community to be moderately or very effective, and no responses marked not effective at all. The biggest materials management challenges that the community faced were public participation (17), educational awareness (14), infrastructure (8), recycling contamination (7), and limited landfill capacities (5). Beaver Island noted that they have to consider barge costs to the mainland as well as age and condition of processing equipment.

On a scale of Excellent (1) to Non-existent (6), respondents were asked how well different materials are managed in the County. Below are the top five highest and lowest ranked materials.

How well are different types of materials currently managed within your county?	
Highest Ranked *(avg score)*	**Lowest Ranked** *(avg score)*
Paper *(2.28)*	Tires *(3.81)*
Plastics *(2.38)*	Construction Debris *(3.76)*
Glass *(2.40)*	White Goods - appliances *(3.68)*
Metal *(2.88)*	Yard Waste (*3.64)*
Household Hazardous Waste *(2.88)*	Mattresses *(3.52)*
Scale: Excellent (1), Good (2), Average (3), Poor (4), Terrible (5), Non-Existent (6)	

A wide variety of responses were received about the primary focus of the County Materials Management Plan from their community perspective. The overall sentiment was to make recycling and composting easier, better known, and more accessible for all residents while being aware of the potential increased costs associated with expansion. It was also noted that bins need to be picked up more frequently.

The most selected choice for areas to receive the most attention in the County Materials Management Plan was funding for infrastructure development (16), support for recycling contamination (9), guidance and resources for waste reduction (9), and market development initiatives (7). The infrastructure investments that are most needed were funding for local recycling facilities (16), composting sites (13), collection equipment and transfer stations (7 each).

When asked to consider region-wide collection of household hazardous waste year round, a waste authority, or a single regional contractor for events, the responses displayed interest in collection occurring multiple times a year (10), quarterly (9), year round and a single contract (6), and year round collection (5). There was slight interest in a regional or multi-county household hazardous waste contract (3 each).

Increasing community events (13), providing standardized materials (12), and funding local campaigns (11) were selected as effective ways to educate the public about proper recycling and waste reduction practices. While the biggest barriers to increasing the recycling rate were funding (8), access (8), and education (5).

71% were unsure or did not know where the recycling went after it was collected. Others were aware of materials going to GFL's Traverse City transfer station or the now closed Kalkaska Recycling Facility. Many of the respondents were familiar that recycling was paid for by the County Recycling Millage or through County funding (15 total).

Costs associated for communities to provide recycling programs and services come from being a drop-off site host (10), HHW collection events (5), trash pick up day(s) (5), or composting (2) but no financial figures were provided on the costs.

Lastly, when asked if there was anything to be considered about materials management and their community, it was reinforced about no new taxes or costs being a concern, needing to clarify how and where participation can occur, and the considerations Beaver Island residents face.

<u>Local Business Survey</u>

The Local Business Survey was distributed to local businesses through a business press release, requesting distribution through local Chambers of Commerce, Downtown Development Authorities, and Northern Lakes Economic Alliance, business survey cards, and hand delivered letters to businesses within the downtown

and industrial areas of Charlevoix, Boyne City, and East Jordan.

Overall the survey received 63 responses with 19 identified from Charlevoix County businesses primarily from the service industry (6), retail (5), or manufacturing (3). Government, food service, agriculture and education were also mentioned.

7 estimated that they generate less than 50 pounds of non-hazardous waste on an average week, while 5 each estimated 50-200 or 201-500 pounds and 2 generated 1000 or more pounds. Businesses estimated their recycling to waste rate at 50% recycling to 50% trash with 13 using single stream recycling, 3 separating their recycled materials, and 3 not currently recycling. A reason for not recycling was not having belief in it.

13 businesses noted they did not participate in organic waste diversion or composting. Food waste collection was handled by private service or to a local farm, if it was applicable at all. Hazardous waste recycling was primarily picked up by a private hauler or dropped off at a transfer station (5 each) while 2 paid for services and 2 utilized HHW collection events. Trash services are typically taken care of by private hauler (12) while some do take it to a drop off site (3)

Most businesses did not have specific goals or initiatives aimed to reduce waste generation or increase recycling (10), but 2 did have some which included year over year reduction of non-recyclable waste materials and repurposing of used boat sails.

Challenges that local businesses face with implementing or expanding sustainable materials management practices were lack of space (6), logistical challenges (5), no challenges (4), insufficient resources or lack of employee engagement (2 each), and costs (1). There was an 8-7 split between those interested in learning more about or participating in local programs or initiatives that support business recycling, composting, or waste reduction and those not interested or unsure.

Only one business noted a significant change in the types or volumes of materials expected in the next 3-5 years which was filter aid materials. 5 businesses currently purchase recycled materials for use which include paper and cardboard (2), plastics and glass (1 each). It was also mentioned that recycled shrink wrap and lumber are materials a business could use if they were available.

Lastly, ways that a business can better engage with the circular economy through re-use of materials identified using recycled paper for office supplies and packaging (10), partner with companies that specialize in processing specific materials (9), take back programs for reusable products (9), product design for easier recycling (9), and using recycled plastic in packaging.

Previous Planning

2000 Charlevoix County Solid Waste Plan

The 2000 Charlevoix County Solid Waste Plan was the guiding document for the collection, transportation, and disposal of solid waste, prepared in compliance with the previous language of Part 115 of the Natural Resources and Environmental Protection Act (NREPA). The plan seeks for waste management practices to protect public health, conserve natural resources, and be economically feasible for residents. Additionally, a detailed inventory of existing waste generation data, facilities, and goals, objectives and strategies were laid out to meet the County's needs.

See Table X below for the 2000 Solid Waste Plan Goals, Objectives, and Strategies Status Update.

Charlevoix County Future Land Use Plan

The County Future Land Use Plan looks at County land use trends, infrastructure, facilities, transportation network, population, housing, and economic data to provide a county-wide vision to support County planning and to support local units of government planning and zoning efforts through facilitation, fostering consistency in plans and zoning ordinances between municipalities, promote economic growth, improve quality of life, and serve as a guide for County decision-making.

The vision of the Plan is broken down into several categories of focus; maintain and improve quality of life, protection of natural areas, farm and forest lands, city and village center growth, and a friendly,cooperative community.

While the Charlevoix County Future Land Use Plan does not have direct mention of materials management, trash, recycling, or organics, there are still goals within that should be considered in the materials management planning process including;

- Maintain and enhance the unique sense of place that attracts people to Charlevoix County and makes it a special place to reside.
- Protect the economic vitality of farm and forest lands (working lands)
- Encourage community and stakeholder collaboration in development decisions
- Proactively engage all stakeholders in community planning processes and implementation.
- Support and encourage economic development activities that grow jobs, enhance the region's unique and vibrant character, and create opportunities to capitalize on new economic trends and conditions.

Objectives pertinent to materials management planning includes:

- Coordinate policies, plans, and ordinances that protect, preserve, and enhance natural features and green infrastructure.
- Coordinate policies, plans, and ordinances that protect, preserve, and enhance the County's outstanding surface and groundwater quality.
- Provide and/or promote infrastructure, economic and cultural incentives to encourage and direct new development to and in existing cities, villages and hamlets.
- Enhance information access and communication between regional, County and local groups, including planning commissions and elected officials, regarding planning issues
- Improve knowledge, understanding, and awareness of community development, growth, and investment needs, procedures, and policies

Finally, the Plan laid out various actions to meet the County goals and objectives. Actions related to materials management were:

- Support efforts to minimize blight through ordinance enforcement, housing rehabilitation programs, and

other activities that reflect the character of the community.
- Facilitate, support, and encourage efforts by local units of government and land conservancies to develop a coordinated program to protect lands that have unique natural features and significant open spaces.
- Review all County plans to ensure they contain provisions for protecting water quality.
- Facilitate, support, and encourage multi-jurisdictional infrastructure and capital improvement planning.
- Rehabilitate, modernize or expand County facilities as needed and consistent with community plans.
- Encourage the development of Capital Improvements Plans to guide decisions regarding infrastructure improvement and expansion.
- Ensure plans, ordinances, development, and community initiatives rely on relevant and up-to-date research, community information, and market data.

Municipal Master Plans, Zoning, and Other Ordinances

All municipalities in Charlevoix County have a Master Plan and Zoning Ordinances except for the Village of Boyne Falls. Therefore, consideration of all the municipal Master Plans, zoning, and other ordinances is important to the materials management planning process for multiple reasons. One is to be aware of the direction of the local communities, another is when considering siting procedures for facilities, the local zoning must be taken into consideration. Additionally, some have existing ordinances that apply to materials management.

Materials Management County Engagement Report

Networks Northwest, with assistance from RRS and funding from EGLE's Materials Management County Engagement Grant, developed the Charlevoix County Materials Management County Engagement report in March 2023. The report was meant to assist counties in the transition to materials management from solid waste, identify current materials management opportunities and gaps, and included a survey with 471 responses from Charlevoix County residents.

The MMCE Report identified the top five needs of the County.

1. Curbside recycling in select areas
2. Consistent education and outreach
3. At least one Center for Hard to Recycle Materials (CHaRM) that includes household hazardous waste collection opportunities
4. Hub-and-spoke collections for key materials, particularly yard and food waste
5. Sustainable funding

The MMCE Report also laid out three materials management projects that may have significant impact on accessibility, awareness, and sustainable funding for programs and services.

1. Engage County and municipal leaders in conversations about materials management solutions in light of changes in state law.
2. Evaluate the funding and infrastructure needed to collect additional materials, including more frequent household hazardous waste events, mattresses, food waste, and other difficult to recycle items regularly or periodically.
3. Develop consistent recycling outreach materials in partnership with the hauler, the processor, the mills, and, as appropriate, the region.

EGLE Charlevoix County Materials Management Profile

In February 2023, EGLE with assistance from RRS, developed the County Profile's to summarize materials management information such as access and collection, facilities, existing policies, and waste projection data. The Profile offers a baseline of what trash, recycling, and organic waste

services and facilities are available in the County.

SEEDs Organic Waste Solutions - Charlevoix

SEED's is an environmental non-profit who seeks "To implement local solutions to global issues at the intersection of ecology, education, and design." In September 2024, they set a goal to see a ⅓ of estimated organic waste, mainly food scraps, being diverted from the landfill by 2030. It was estimated that Charlevoix County creates 6,687 tons of organic waste in a year, with 1,286 tons being currently diverted and a 2030 target of 1,939 tons diverted.

They also provided recommendations to achieve this which were:

- Incentivize and allow on-site and backyard composting solutions.
- Enhance food donation opportunities by clearly communicating options, especially with institutions, schools, and farms.
- Develop selective food waste collections within portions of the County and coordinate with Emmet County on the development of food waste collection and hauling strategies.
- Use the MMP planning process to develop and right-size strategies and incentives that work for Charlevoix County residents and institutions.

Table XX: 2000 Solid Waste Plan Goals, Objectives, and Strategies Status Update		
		Status Notes
Goal	A solid waste management system that ensures for Charlevoix County (its geographic area and inhabitants), the following in descending order of importance: - protection of our health, - Protection of our environment, conservation of our natural resources, - economical, both short and long term, and - convenient.	Ongoing
Objective I	A locally approved solid waste management plan by July 1, 2000.	Completed by 2000 Solid Waste Plan
Strategy 1.1	Develop a data base that includes an inventory of facilities, identification of problems, demographics, land use patterns, and environmental conditions.	Completed by 2000 Solid Waste Plan
Strategy 1.2	Explore alternative systems that include all waste management options such as, resource conservation, resource recovery, co-generation, energy recovery, composting, collection, transportation and disposal of waste, including institutional arrangements and management alternatives.	Completed by 2000 Solid Waste Plan
Strategy 1.3	Selection of a specified system of managing solid waste and designate operators of the system (government and/or private enterprise).	Completed by 2000 Solid Waste Plan
Strategy 1.4	Develop a public participation program that informs the public about the true costs of solid waste, the progress of the plan, material that is available, and how they can assist in developing and implementing the plan.	Completed by 2000 Solid Waste Plan
Strategy 1.5	Develop and include a siting criteria for use in identifying potential sites for Type III Landfills.	Completed by 2000 Solid Waste Plan
Strategy 1.6	Develop siting criteria that allows for transfer stations in those communities that so desire an alternative to collection and to allow waste hauling companies to combine loads from smaller trucks to allow for economical methods of moving waste in addition to reducing truck traffic.	Completed by 2000 Solid Waste Plan

Objective II	Encourage and promote a system of resource conservation and waste reduction through resource recovery and recycling whenever possible in order to reduce the amount of solid waste generated by 20%, compost 20% of the waste that is generated, recycle 30% of the waste that is generated, and reduce the amount of waste by recovering energy from it thereby reducing an additional 10% of the waste with a maximum of 15% of the waste that is generated being landfilled by the year 2002.	Ongoing
Strategy 2.1	Develop a series of recycling centers & drop off locations, and encourage the public to increase levels of recycling of all materials including, but not limited to, paper, metals, glass, oil and plastics.	6 established single-stream drop-off locations as of February 2026.
Strategy 2.2	Encourage the composting of yard wastes by individuals, communities and private companies.	Ongoing
Strategy 2.3	Encourage the purchase of durable goods that have an increased expected lifespan.	Ongoing
Strategy 2.4	Encourage a reduction in the use of disposable items such as paper plates, plastic tableware, etc.	Ongoing
Strategy 2.5	Encourage individuals and businesses to donate or sell items in useable condition, rather than discarding them.	Ongoing
Strategy 2.6	Discourage the concept of planned obsolescence among individuals purchasing goods and businesses producing them.	Ongoing
Objective III	The protection of the environment, the quality of life for residents and the enhancement of our aesthetics.	Ongoing
Strategy 3.1	Prohibit the disposal of hazardous waste in Type II Landfills, and hazardous or Type II waste in Type III Landfills.	Achieved by 2000 Solid Waste Plan
Strategy 3.2	Require that solid waste management practices are conducted in such a manner so as to comply at a minimum with state and nationally adopted air and water quality standards.	Ongoing
Strategy 3.3	Promote the development and enforcement of laws, ordinances, and regulations at the state, county, city/village and township level, governing the location of, appearance, odor, noise, and other public health and aesthetic impacts resulting from the collection, storage, transportation, processing, and disposal of solid waste.	Ongoing, as needed

Strategy 3.4	Require berm planting, fencing, or other methods of screening from view of, Transfer Stations, storage, processing and disposal facilities.	Achieved by 2000 Solid Waste Plan
Strategy 3.5	Require that landfills and dumps not meeting state standards be closed or brought into compliance.	Ongoing, as needed
Objective IV	A solid waste system that continues to be economically feasible, and environmentally sound, for the residents of Charlevoix County.	Ongoing
Strategy 4.1	Develop a solid waste management system that is affordable to the residents and visitors to the county.	Ongoing
Strategy 4.2	Encourage the development of solid waste processing and disposal alternatives that serve a multi-county or regional area, thus reducing the costs to people within the county.	Ongoing
Strategy 4.3	Require processing and disposal facilities to be operated in such a manner as to eliminate costly cleanup measures in the future.	Ongoing
Strategy 4.4	Locate transfer stations, storage, processing and disposal sites adjacent to "All Season Roads" to minimize the need for improving road beds and/or providing costly road repairs due to truck traffic, going to and from the facilities.	Ongoing
Strategy 4.5	Promote the reuse of closed disposal facilities for transfer stations, recreation facilities, or to meet other needs identified in the county and township land use plans.	Ongoing
Strategy 4.6	Endorse the reuse and recycling of items entering the waste stream.	Ongoing
Strategy 4.7	Conserve the amount of land used for actual fill operations through the use of shredders, balers, and compactors, when shown to be effective.	Ongoing
Strategy 4.8	Promote the use of the most environmentally safe and efficient solid waste collection, storage, transportation, processing, and disposal services regardless of ownership by the public or private sector.	Ongoing
Strategy 4.9	Promote fair and equal competition in the private sector in providing solid waste services.	Ongoing

Existing Conditions

Facilities Inventory

The following is a brief analysis of the existing materials management facilities located within Charlevoix County, as identified by EGLE licensing. See Map XX for MMP Facility Locations.

An in depth facilities inventory can be found in appendix XX.

Landfills

There are no public landfills within Charlevoix County, but St. Mary's Cement Incorporated operates a private type III Low Hazard Industrial Landfill in Charlevoix Township, which is to collect materials like low-hazard industrial waste, coal ash, or construction and demolition debris.

Transfer Stations

Beaver Island Transfer Station

The transfer station on Beaver Island is jointly operated by Peaine Township and St. James Township. As an island, materials generated on Beaver Island typically need to be removed from the island for residents, visitors, and commercial businesses. The transfer station receives materials like solid waste, recyclables, tires and food waste and may accept or assist with materials such as construction debris, household hazardous waste, metal, yard waste, electronic waste and other household or bulk items.

Boyne Falls Transfer Station

Boyne Valley Township has a transfer station for its residents to dispose of household trash that is generated in the township. There are also recycling drop-off bins on site.

Melrose Township Transfer Station

Melrose Township operates a transfer station where materials such as bagged household trash, commercial business use, recycling, and metal can be disposed of. The Melrose Township Board of Trustees sets an annual fee schedule for the use of the transfer station, which is available to residents of Melrose Township and Chandler Township through contractual agreement.

Waste Management Transfer Station - Marion Township

Located in Marion Township, Waste Management operates a transfer station primarily for preparation of non-hazardous materials to be sent to landfill facilities. The facility is open to the public for the disposal of household and commercial waste.

Compost Facilities

The City of Boyne City, the City of Charlevoix, and the City of East Jordan have compost yards with the ability to collect primarily yard waste. Additionally, East Jordan and Beaver Island collect food waste.

Treatment, Storage, and Disposal Facilities

Treatment, storage, and disposal facilities receive and treat, store, or dispose of hazardous waste. Honeywell Precision Aerospace in Boyne City and EJ USA Incorporated in East Jordan are both designated treatment, storage, and disposal facilities but neither accept offsite hazardous waste.

County Recycling Drop-Off Sites

The County, in cooperation with local units of government in many cases, hosts recycling drop-off sites with bins for the collection of single-stream recycling. This is collected by GFL, under contract as the recycling hauler until 2033.

The main recycling drop off sites are located at:

- Beaver Island Transfer Station
    - 36770 East Side Dr, Beaver Island, MI 49782
- City of Boyne City
    - 1251 Boyne Ave, Boyne City, MI 49712
- Boyne Valley Township Transfer Station
    - 1408 S Addis Rd, Boyne Falls, MI 49713
- City of East Jordan

    - 107 Bartlett St. East Jordan, MI
- City of Charlevoix
    - 1030 Grant St, Charlevoix, MI 49720
- Melrose Township Transfer Station
    - 4449 State St, Boyne Falls, MI 49713

Additional single bin recycling drop-off's are available at the following locations:

- East Jordan Elementary School
- East Jordan Middle-High School
- East Jordan Senior Center
- Grandvue Medical Facility
- Boyne City Elementary-Middle-High School
- Concord Academy Boyne
- Camp Michigania
- Boyne Falls Public School
- Shirly Roloff Center
- Charlevoix Elementary School
- Charlevoix Middle-High School

Detailed drop-off site information is available in appendix XX.

County Recycling and Household Hazardous Waste

Charlevoix County, supported by the County Board of Commissioners, offers drop-off recycling and household hazardous waste collections for County residents. These are primarily handled by the Materials Management and Recycling Department, with assistance from the Administration and Human Resources Department, Planning Department, and County Treasurer.

Funding for recycling comes from the Charlevoix County Recycling Millage, which was renewed by voters (67% approved) in 2024 at 0.15 mills for a period of four years to fund recycling services. The funding for the household hazardous waste collections comes from the County's general fund.

2024 Charlevoix County Recycling Millage Renewal Estimates	
2025	$444,392
2026	$462,168
2027	$480,654
2028	$499,881
Estimates based on projected taxable values at a 4% increase per year from 2024 baseline	

Household Hazardous Waste collections are held twice a year, once in June and once in September through a registration and appointment process. The June event typically takes place in the City of Charlevoix and the later event in Boyne City or East Jordan. Materials collected include typical HHW materials (motor fluids, household cleaners, etc.), electronics, appliances, and every other year - tires.

County Recycling Drop-Off Sites

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    - 1408 S Addis Rd, Boyne Falls, MI 49713
- City of East Jordan
    - 107 Bartlett St. East Jordan, MI
- City of Charlevoix
    - 1030 Grant St, Charlevoix, MI 49720

- Melrose Township Transfer Station
    - 4449 State St, Boyne Falls, MI 49713

Additional single bin recycling drop-off's are available at the following locations:

- East Jordan Elementary School
- East Jordan Middle-High School
- East Jordan Senior Center
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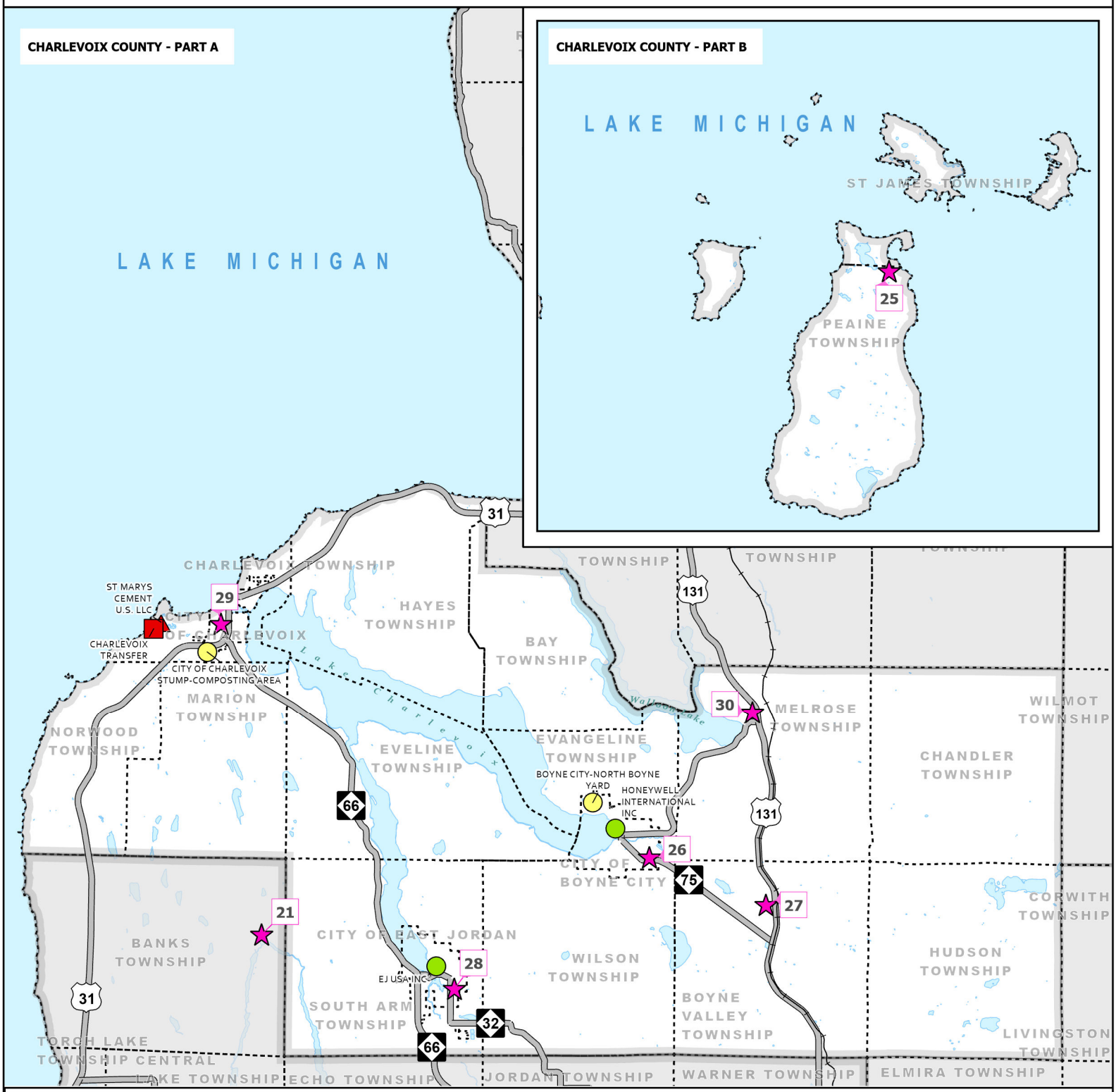
- Boyne City Elementary-Middle-High School
- Concord Academy Boyne
- Camp Michigania
- Boyne Falls Public School
- Shirly Roloff Center
- Charlevoix Elementary School
- Charlevoix Middle-High School

Detailed drop-off site information is available in appendix XX.

MATERIALS MANAGEMENT PLANNING

CHARLEVOIX COUNTY DROP OFF SITES LOCATION MAP



MAP LEGEND

- Michigan Scrap Tire Collection Sites and Scrap Tire Processors
- Michigan Recycling Establishments
- Michigan Solid Waste Processing Facilities and Transfer Stations
- Treatment Storage Disposal Facilities
- Michigan Compost Facilities
- Drop Off Sites
- Michigan Part 115 Solid Waste Landfills
- Water Bodies
- Township Boundaries
- Charlevoix County Boundary

N W E S

0 3 5 10 15 Miles

Networks Northwest
Talent / Business / Community

	CHARLEVOIX COUNTY DROP-OFF SITES											
#	**Township**	**Site Name**	**Address**	**Address Notes**	**Public or private**	**Operating status**	**Estimated Days of Operation**	**Number and Size of Bins**	**Open 24/7 Or Enter Hours of Operation**	**Fence (Security Measure)**	**Capacity of composting food waste. Yard waste or other Organics drop -off**	**Materials Streams Received**
25	St. James and Hayes Township	Beaver Island Transfer Station	36770 East Side Dr, Beaver Island, MI 49782	-	Public	Open	Mon - Sat	9 40 Yard enclosed garage 6 40 Yard Enclosed Recycle 4 30 Yard OPEN TOP	Winter – (Mon to Sat) 11 AM to 5 PM Summer- (Mon to Sat) 8 AM to 5 PM	Gate Access, Security Cameras	Does not accept yard waste. The facility also has a food composting program, accepting all types of food scraps, including dairy, meat, and bones. (recheck this information)	Residential and Commercial
26	City of Boyne City	Boyne City Location	1251 Boyne Ave, Boyne City, MI 49712	East of Charlevoix County Road Commission, off Beardsley Street	Public	Open	7 days a week.	220 Yard open tracks. 12 Bins	8 AM to 8 PM	Gated Access.	This location does not accept yard waste or food waste for composting	Residential
27	Boyne Valley Township	Boyne Valley Township	1408 S Addis Rd, Boyne Falls, MI 49713	Addis Road, West of US 131	Public	Open	Summer Hours: Wednesday, 2 pm–7 pm. Winter Hours: Wednesday, 2 pm–6 pm; Saturday, 8 am–2 pm.	Unknown	The hours for the recycling drop-off are seasonal and subject to change. Updated online	Unknown	This location does not accept yard waste or food waste for composting	Residential
28	City of East Jordan	East Jordan Location	107 Bartlett St.	Behind EMS Building/Across from Save-A-lot	Public	Licensed	7 days a week.	9 Bins	24 hours a day	Not Fenced	Accepts food waste	Residential
29	City of Charlevoix	Charlevoix County Recycling Location	1030 Grant St, Charlevoix, MI 49720	Next to the County Sheriff's Office / County Jail, 1030 Grant St., Charlevoix	Public	Open	7 days a week.	15 Bins (recheck)	8 AM to 8 PM	Not Fenced	City Or Township pickup Yard waste.	Residential
30	Melrose and Chandler Township	Melrose Township Transfer Station	4449 State St, Boyne Falls, MI 49713	State St., west of Clarion Village, across from the Marathon Station	Public	Open	Mon and Sat	Unknown	Monday: 1:00 PM – 5:00 PM Saturday: 9:00 AM – 3:00 PM	Not Fenced	Grass and weed	Residential

	CHARLEVOIX COUNTY DROP-OFF SITES											
#	**Township**	**Site Name**	**Address**	**Address Notes**	**Public or private**	**Operating status**	**Estimated Days of Operation**	**Number and Size of Bins**	**Open 24/7 Or Enter Hours of Operation**	**Fence (Security Measure)**	**Capacity of composting food waste. Yard waste or other Organics drop -off**	**Materials Streams Received**
	East Jordan	East Jordan Elementary School	304 4th St. East Jordan, MI 49727	Located in parking lot	Private	Open	During School Year	1 Bin		Cameras on site	No Compost or Yard Waste	Residential
	East Jordan	East Jordan Middle/High School	101 Maple St., East Jordan, MI 49727	Located behind Building	Private	Open	During School Year	1 Bin		Cameras on site	No Compost or Yard Waste	Residential
	East Jordan	East Jordan Senior Center	951 Mill St., East Jordan, MI 49727	Located behind Building	Private	Open	Mon - Fri	1 Bin	7:00 AM 3:30 PM	Cameras on site	No Compost or Yard Waste	Residential
	East Jordan	Grandvue Medical Facility	1728 S. Peninsula Rd, East Jordan, MI 49727	Located in parking lot behind building	Private	Open	7 days a week.	1 Bin	24 hours a day	Cameras on site	No Compost or Yard Waste	Residential
	Boyne City	Boyne City Elementary/Middle/High School	930 Brockway St., Boyne City, MI, 49712	Located near Bus Garage	Private	Open	During School Year	1 Bin		Cameras on site	No Compost or Yard Waste	Residential
	Boyne City	Concord Academy Boyne	401 E. Deitz, Boyne City, MI, 49712	Located in parking lot	Private	Open	During School Year	1 Bin		Cameras on site	No Compost or Yard Waste	Residential
	Boyne City	Camp Michigania	3006 Camp Sherwood Rd., Boyne City, MI, 49712	Located near Food Hall	Private	Open	Summer Months Only	1 Bin	24 hours a day	Cameras on site	No Compost or Yard Waste	Residential
	Boyne Falls	Boyne Falls Public School	1662 M-75, Boyne Falls, MI, 49713	Located behind Building	Private	Open	During School Year	1 Bin		Cameras on site	No Compost or Yard Waste	Residential
	Charlevoix City	Shirly Roloff Center	13513 Division St., Charlevoix, MI 49720	Located in West Parking Lot	Private	Open		1 Bin	24 hours a day	Cameras on site	No Compost or Yard Waste	Residential
	Charlevoix City	Charlevoix Elementary School	108 E. Garfield Ave., Charlevoix, MI, 49720	Located West of Building in Parking Lot	Private	Open	During School Year	1 Bin		Cameras on site	No Compost or Yard Waste	Residential
	Charlevoix City	Charlevoix Middle/High School	5200 Marion Center Rd., Charlevoix, MI 49720	Located on Southeast Loading Dock	Private	Open	During School Year	1 Bin		Cameras on site	No Compost or Yard Waste	Residential

CHARLEVOIX COUNTY LANDFILL SITES													
County	**Township**	**Site Name**	**Address**	**Public or private**	**Operating status**	**Facility Type**	**License Expiration**	**Operating hours**	**Facility Total Size**	**Area Authorized for Disposal of Solid Waste**	**Unconstructed Areas WITH Financial Assurance**	**Unconstructed Areas WITHOUT Financial Assurance**	**Closed Units**
Charlevoix	Charlevoix Township	St. Mary's Cement Inc	16000 Bells Bay Road Charlevoix, MI 49720	Private - St. Mary's Cement Inc	Active - Accepting	Type III Low Hazard Industrial Landfill	April 16, 2030	Unknown	69.67 acres	Phase I, consisting of 11.51 acres and Phase II, consisting of 8.49 acres. This area's total acreage is **20 acres.**	None	The area(s) identified as Phase III, Phase IV, and Phase V. This area's total acreage is **17.46 acres.**	None

Charlevoix County MMP Goals and Objectives Worksheet

Charlevoix County is committed to advancing responsible waste management practices that support a healthier environment and a more sustainable future. In pursuit of this commitment, the County has developed a series of strategic goals designed to strengthen recycling participation, improve material recovery, and reduce the volume of waste sent to landfills. These efforts align directly with the State of Michigan's broader objective of achieving a 45% municipal solid waste recycling rate, ensuring that local actions contribute meaningfully to statewide progress. The following goals outline Charlevoix County's planned direction and priorities as we work collaboratively with residents, businesses, and community partners to enhance recycling efficiency and environmental stewardship across the region.

Goal: Establish regular education and outreach that promotes desired recycling behaviors and other waste reduction efforts.	**Goal:** Increase the effectiveness of and access to recycling drop-off sites and curbside recycling to meet the Benchmark Recycling Standard and needs of the community.
Objectives: ● Underscore the benefits of recycling and composting vs. landfilling ● Develop and promote a "Single Stream Recycling" Guide ● Develop, implement, and evaluate a recycling contamination reduction campaign for all drop-off sites ● Engage with local schools on the benefits of materials management ● Improve awareness of and participation in all materials management programs and services to reduce reliance on landfills to build trust and transparency in recycling activities. ● Increase awareness of the importance of recycling and the programs that are available to residents and businesses ● Increase the participation in materials management programs ● Reduce the amount of wasted food and food scraps that is sent to landfills ● Reduce blight and litter in the community	**Objectives:** ● Continually evaluate the number and locations of recycling drop-off sites in Charlevoix County to maintain compliance with the Benchmark Recycling Standard and the needs of the residents and businesses ● Provide access to food scrap drop-off at high-traffic recycling drop-off sites ● Establish secure, fenced and monitored drop-off locations to prevent illegal dumping and maintain site cleanliness ● Offer business access to recycling drop-off sites for a fee ● Regularly evaluate the effectiveness of recycling centers in meeting goals and expectations of the community ● Establish a fund balance to allow site improvements or expansions over time.
Targets: ☐ Voter approval of 2028 Recycling Millage Renewal ☐ Reduce the contamination rate at all county drop-off sites by X% by the end of 20XX ☐ Establish a comprehensive digital and print recycling guide for residents and businesses? ☐ Distribute the recycling guide to XX% of all county postal patrons by 20XX ☐ Designate and fund an organization to provide recycling education across the county	**Targets:** ☐ Addition of XX drop-off sites in County by 20XX ☐ Implement food scrap collection at XX high traffic drop-off sites by 20XX ☐ Install security fencing and cameras at XX% of existing drop-off locations by 20XX

☐ Develop a recycling campaign that creates widespread awareness of the value of recycling ☐ Create a backyard composting campaign that increases participation in backyard composting. ☐ Create alternative ways for residents to learn about waste reduction and management, recycling, and organics.	
Goal: Improve data collection	**Goal:** Evaluate the benefits of strategic collaborations for improved services and reduced costs
Objectives: ● Develop data management procedures to track and report on all managed materials on a regular basis.	**Objectives:** ● Encourage public-private partnerships to increase access of sustainable practices ● Encourage and enable Local Units of Government to work together on increased recycling diversion rates ● Promote the development of local markets for recycled materials to enhance economic viability and reduce transportation costs. ● Invite public-private partnerships that would promote environmental and economic prosperity in the county.
Targets: ☐ By 20XX begin tracking better recycling data from drop-off sites to include: ☐ Tonnages by material type ☐ End User/Destination of recycled materials ☐ Ensure 100% of new material management contracts include a provision for reporting tonnages by material type and end user/destination by 20XX ☐ Implement a waste hauler registration/licensing mechanism within the county that requires data reporting and a registration fee that pays for the administrative costs of the service. ☐ Improve recovery of food scraps/wasted food by X tons by 20XX ☐ Improve recovery of plastic film by X tons by 20XX ☐ Improve recovery of corrugated cardboard by X tons by 20XX ☐	**Targets:** ☐ Hold a joint informational meeting every year with Local Units of Government on MMP progress and funding ☐ Issue a Request for Qualifications (RFQ) to explore vendors interested in partnerships with the County for material-specific solutions. ☐ Evaluate a partnership with Emmet County to haul and process organic materials collected at drop-off centers. ☐ Identify reuse partners in the region that could support the increased reuse of select items

Goal: Develop programs to address Special Materials Management	**Goal:** Commercial and Industrial Recycling
Objectives: ● Expand access and convenience for residents to properly dispose of Household Hazardous Waste (HHW) ● Establish convenient collection infrastructure for electronics, batteries, and other special wastes ● Promote proper disposal of pharmaceuticals and sharps. ● Offer agricultural tire recycling at least once per year	**Objectives:** ● Bring awareness to the amount of C&D debris being generated and landfilled. ● Encourage the reuse and recycling of C&D debris from all major construction projects. ● Engage major generators (e.g., resorts, hospitals, schools, marinas, construction firms) to promote recycling and source reduction during construction/renovations and in daily operations
Targets: ☐ Increase the number of annual HHW collection events from the current amount to XX per year by 20XX ☐ Establish a permanent, accessible drop-off location for batteries and fluorescent light bulbs by 20XX. ☐ Divert XXXX pounds of electronics and other waste (e.g., light bulbs, battery disposal) from landfill disposal annually by 2031 ☐ Explore a intergovernmental agreement to establish joint HHW collections across the region. ☐ Increase the number of tires collected by X each year ☐ Improve recovery of expanded polystyrene (EPS) foam by X tons by 20XX ☐ Improve recovery of mattresses by X tons (or count?) by 20XX ☐ Improve the recovery of electronics by X tons by 20XX ☐	**Targets:** ☐ Develop educational outreach materials aimed at construction contractors that specifically promote C&D recycling/reuse by 20XX. ☐

Goal:	**Goal:**
Objectives:	**Objectives:** ● ● ●

Targets: ☐	**Targets:**
Goal:	**Goal:**
Objectives: • • •	**Objectives:** • • •
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