

## **Charlevoix County Materials Management Planning Committee**

**Date:** January 22, 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 (pgs. 2-5)**
- V. Election of Officers**
- VI. 2026 Meeting Dates (pg. 7)**
- VII. Materials Management Planning**
  - a. Process Update**
  - b. Data Review (pgs. 8-47)**
  - c. MMP LUG Survey (pgs. 48-57)**
  - d. MMP Business Survey (pgs. 58-68)**
  - e. MMP Resident Survey (pgs. 69-82)**
  - f. Goals and Objectives Discussion**
- VIII. Committee Member Comments**
- IX. Public Comment**
- X. Adjourn**

**Posted:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

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**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**

| <b>MMPC Member Attendance</b>  |          |   |                            |
|--|----------|---|----------------------------|
| <i>Victor VanDeventer<br/>rep. of a solid waste disposal facility</i>  | <i>P</i> | <i>Annemarie Conway<br/>elected official of the county</i>    | <i>P</i>                   |
| <i>Kirk Miller<br/>rep. of a hauler</i>  | <i>P</i> | <i>Robin Hissong-Berry<br/>elected official of a township</i> | <i>P</i>                   |
| <i>Andre Grobaski<br/>rep. of a materials recovery facility (MRF)</i>  | <i>E</i> | <i>Tim Nemecek<br/>elected official of a city or village</i>  | <i>E</i>                   |
| <i>Sarah Roy<br/>rep. of a composting facility</i>   | <i>P</i> | <i>Jonathan Scheel<br/>business rep. generating material</i>  | <i>P</i>                   |
| <i>Mark Bevelhymmer<br/>rep. of waste diversion, reuse, or reduction</i>   | <i>E</i> | <i>Isha Pithwa<br/>rep. of the regional planning area</i>     | <i>P</i>                   |
| <i>Kyra Allen<br/>rep. of an environmental interest group</i>  | <i>P</i> | <i>Josh Chamberlain<br/>additional member per part 115</i>    | <i>E</i>                   |
|  |          | <i>Attendance Key:</i>  | <i>P – Present</i>         |
|  |          | <i>A – Absent</i>   | <i>E - Excused Absence</i> |
| 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.*

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#### **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.

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**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, January 22, 2026**

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

I hope that everyone had a great holiday season with friends and family, and are ready to hit the ground running on Materials Management Planning!

**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.

**MMP Surveys**

Attached you will find reviews of the Local Unit of Government, Business Survey, and Resident Survey (with updated numbers). Analysis of these surveys will be conducted for inclusion of the MMP document, and submitted for Committee review.

## 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](mailto:mathew.cooke@networksnorthwest.org) or phone: (231) 929-5056

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# Memo

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

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## 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*<sup>1</sup>, 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.

<sup>1</sup> <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<sup>2</sup>, allowable ADC sources include industrial byproducts such as ash, sludge, contaminated soils, foundry sand, and automotive shredder residue (“auto fluff”). Approved

<sup>2</sup> <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.

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

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

<sup>3</sup> 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.

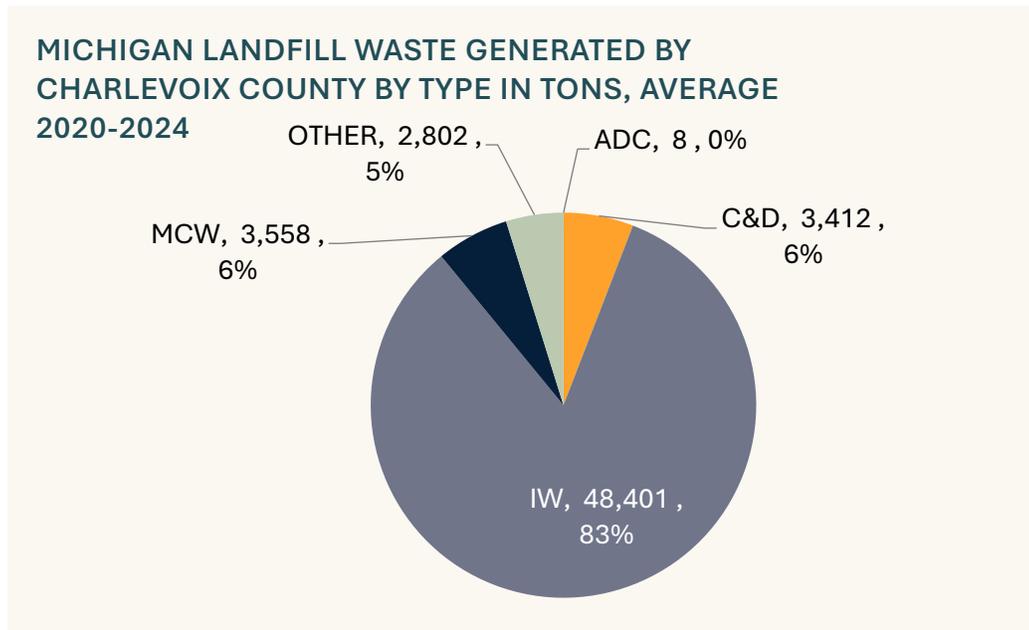


Figure 1: Michigan Landfill Waste Generated by Charlevoix County by Type in Tons, Average 2020 – 2024

**MICHIGAN LANDFILL WASTE GENERATED BY CHARLEVOIX COUNTY BY TYPE IN TONS, AVERAGE 2020-2023**

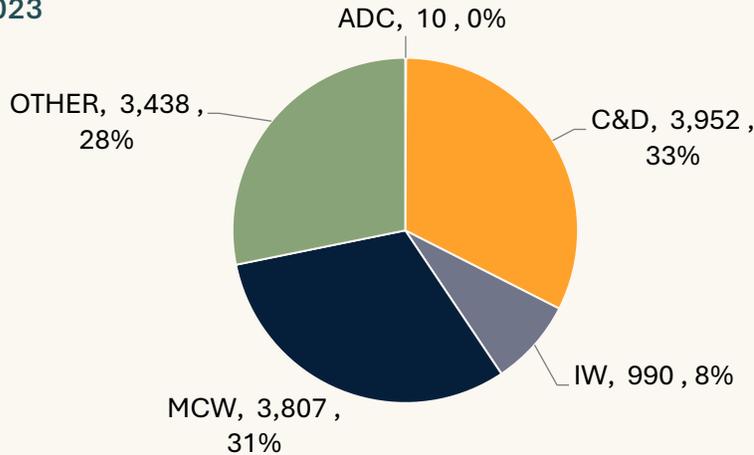


Figure 2: Michigan Landfill Waste Generated by Charlevoix County by Type in Tons, Average 2020 - 2023

**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        |
| <b>Grand Total</b> | <b>242,114</b> | <b>241,794</b> | <b>201</b> | <b>38</b> | <b>82</b> |

Table 3: Landfills Receiving Waste from Charlevoix County in 2024

|                                 | <b>City Environmental Services, Inc of Waters (Crawford County) (City Environmental Services, Inc of Water)</b> | <b>GFL North Michigan Landfill, LLC (Presque Isle County)</b> | <b>Montmorency-Oscoda-Alpena SWMA (Montmorency County)</b> | <b>Wexford County Landfill (Wexford County)</b> |
|---------------------------------|---|---|--|---|
| 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.

## LANDFILLED MCW MATERIAL RECYCLABILITY MODEL BY WEIGHT IN TONS FOR CHARLEVOIX COUNTY

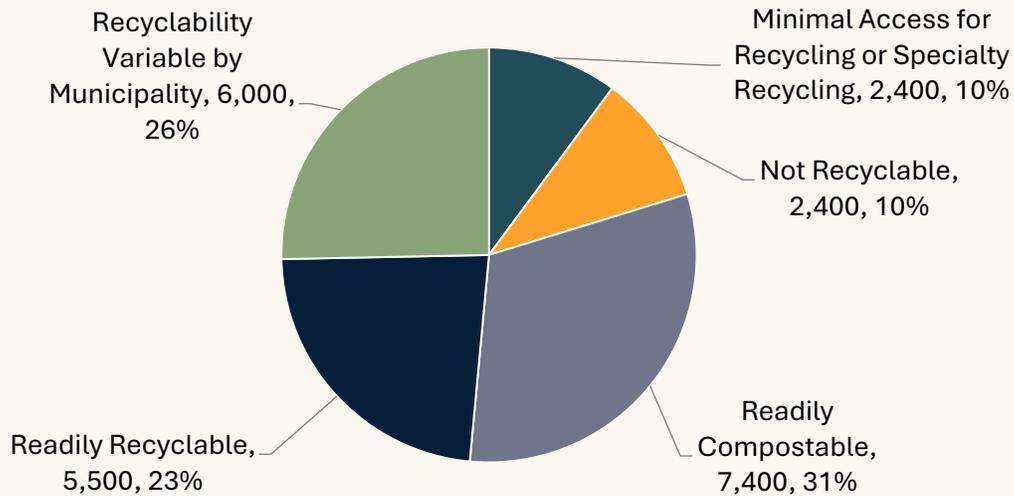


Figure 3: RRS Model, Landfilled MCW Recyclability by Weight in Tons

### 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.

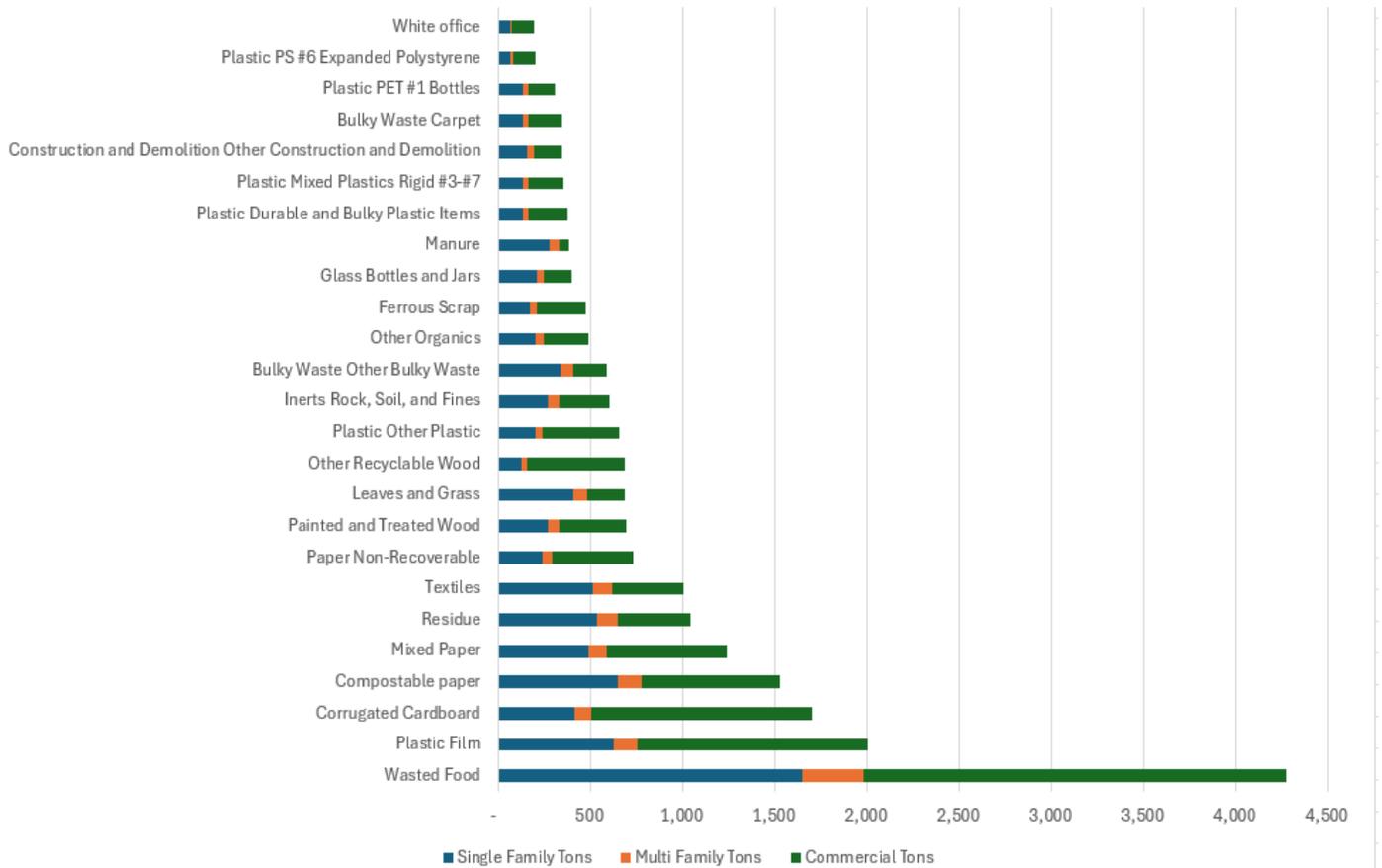


Figure 4: RRS Modeled MCW Composition by Weight

## 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                     |
|   |  |            |                                    | <b>\$ 234,165</b>        |
| 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                   |
|   |  |            |                                    | <b>\$ 3,408</b>          |
|   |  |            |                                    | <b>\$ 237,573</b>        |

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)<sup>4</sup>, and communities across the county provide a mix of municipal collection and drop-off options to manage these materials outside of the landfill.

<sup>4</sup> <https://legislature.mi.gov/Laws/MCL?objectName=mcl-324-11514&utm>

At the municipal level, the **City of Charlevoix**<sup>5</sup>, **City of East Jordan**<sup>6</sup>, and **Boyne City**<sup>7</sup> 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<sup>8</sup> 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 a relatively small

<sup>5</sup> <https://www.charlevoixmi.gov/DocumentCenter/View/152/Brush-Pickup-PDF>

<sup>6</sup> [https://www.eastjordancity.org/news\\_detail\\_T4\\_R13.php](https://www.eastjordancity.org/news_detail_T4_R13.php)

<sup>7</sup> [https://www.boynecity.gov/services/public\\_works/leaf\\_yard\\_waste.php](https://www.boynecity.gov/services/public_works/leaf_yard_waste.php)

<sup>8</sup> <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 |                  |              |                        |               | Tons Diversion | Percent Diversion |
|                                 |               |                    | Prevention                    | Rescue/ Recovery | Recycle**    | Centralized Composting |               |                |                   |
| 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%          |                   |
| <b>TOTAL</b>                    | <b>74,989</b> | <b>7,750</b>       | <b>1,179</b>                  | <b>729</b>       | <b>5,060</b> | <b>19,066</b>          | <b>26,034</b> | <b>34.7%</b>   |                   |

\*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.

## INDUSTRY AND EMPLOYMENT



**TOTAL NUMBER OF ESTABLISHMENTS**

**903**



**TOTAL NUMBER OF JOBS**

**7,881**



**TOP 5 INDUSTRIES**

- » **Manufacturing**
- » **Accommodation and Food Services**
- » **Retail and Trade**
- » **Construction**
- » **Other services (except public administration)**

Figure 7: Industry and Employment Statistics, Courtesy Networks Northwest

**CHARLEVOIX COUNTY BUSINESS SECTORS BY NAICS CODES (# OF ESTABLISHMENTS) 2023**

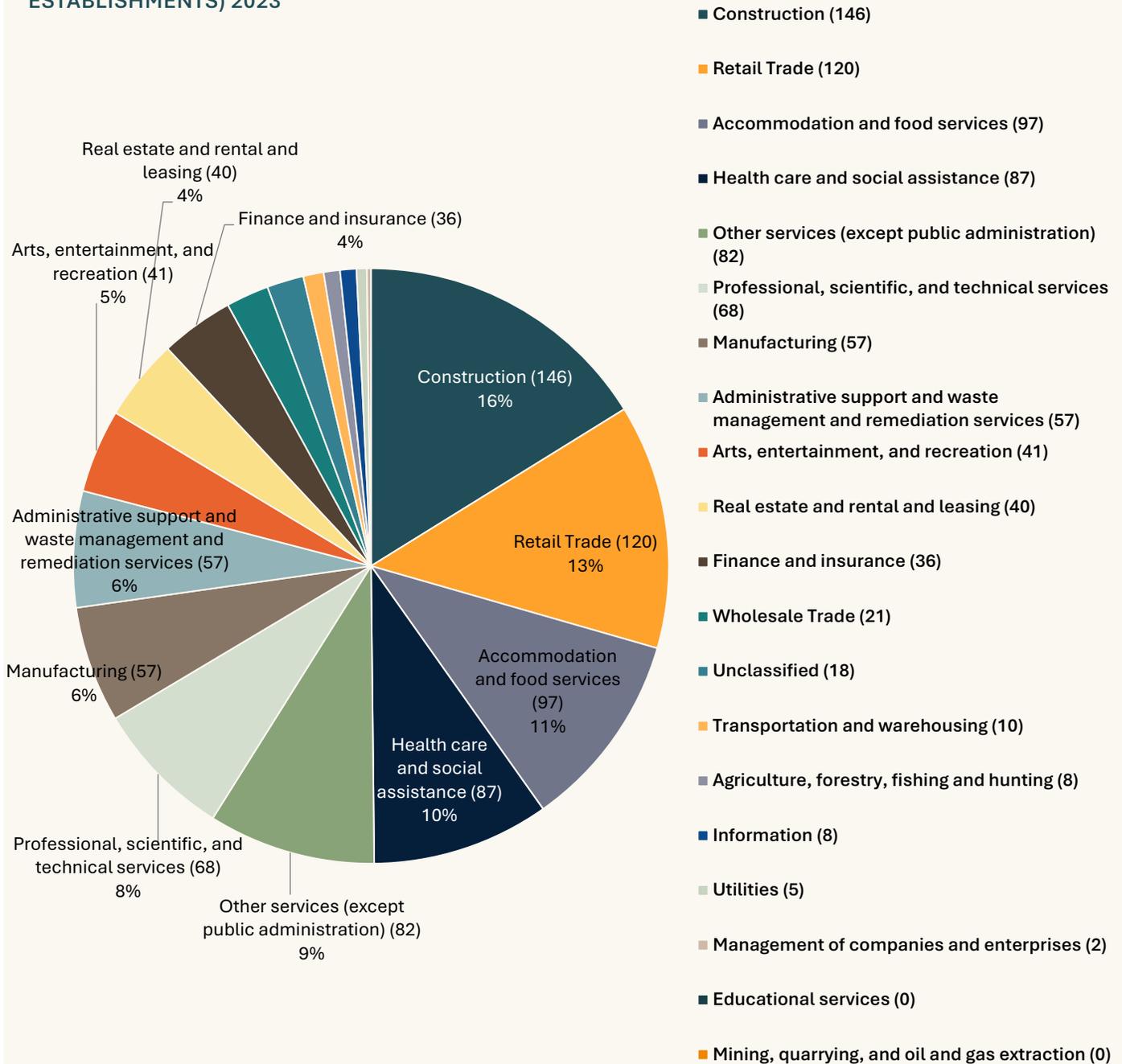


Figure 8: Charlevoix County Business Sectors by NAICS Code, # of Establishments. Data provided by Networks Northwest

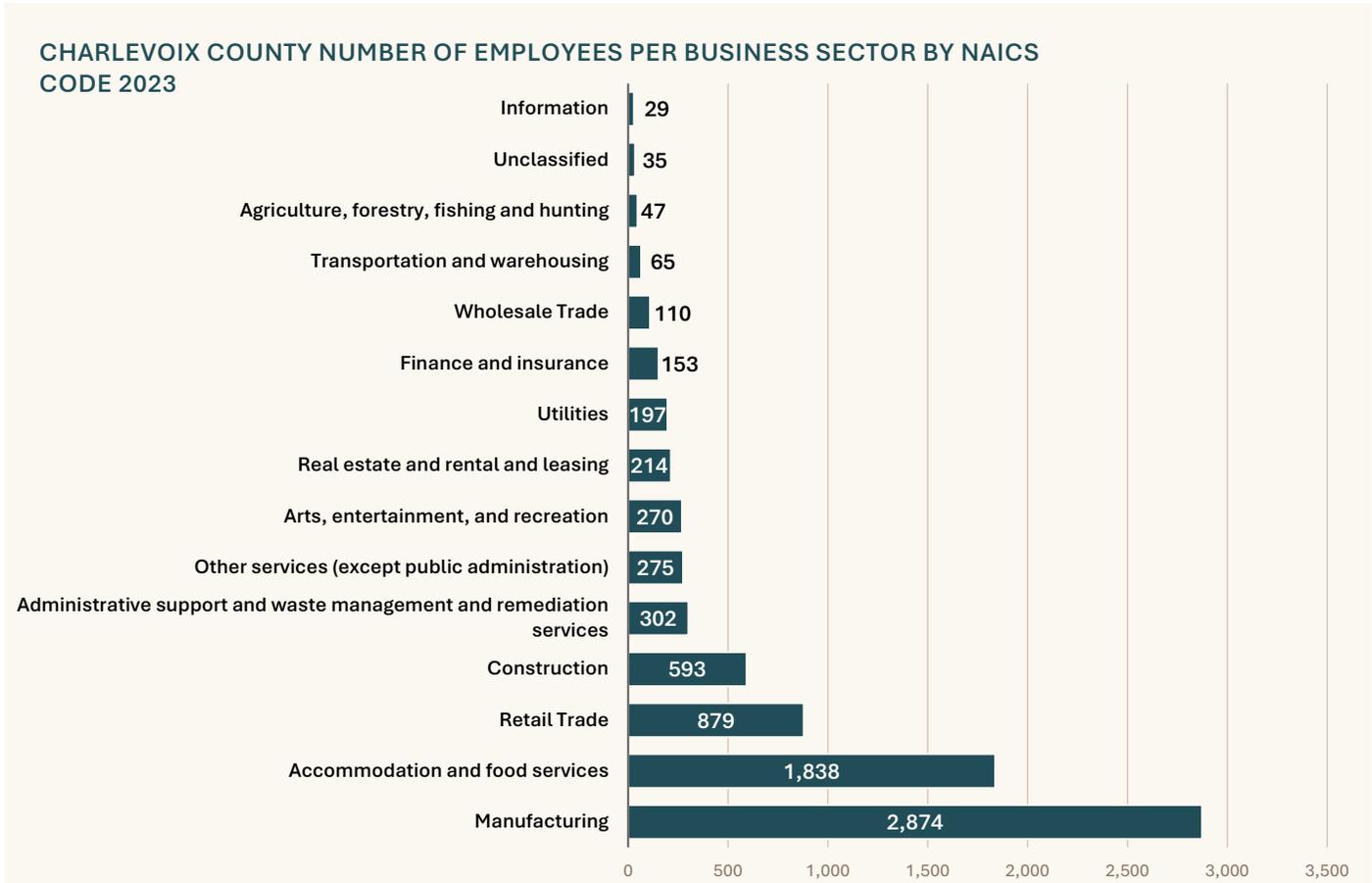


Figure 9: Charlevoix County # of Employees by NAICS Code, 2023. Data provided by Networks Northwest

## 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<sup>9</sup>. 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.

<sup>9</sup> <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.”<sup>10</sup>

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 <sup>11</sup> | POPULATION IN MULTI FAMILY HOMES <sup>12</sup> | RECYCLE CURB SIDESIDE SERVICE TYPE | RECYCLING DROP-OFF PROGRAM         |
|-----------------------|--------------------------------|----------------------|------------------|---|--|------------------------------------|------------------------------------|
| Bay Township          | Horton Bay CDP<br>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 |

<sup>10</sup> <https://www.legislature.mi.gov/documents/mcl/pdf/mcl-451-1994-ii-3-115.pdf>

<sup>11</sup> Single Family = 1-4 units, mobile homes and other types of housing.

<sup>12</sup> 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<br>Ironton CDP<br>Eveline Township | 1515 | 663 | 1503 | 12  | No Curbside Program | Charlevoix County Drop-Off Program |
| Hayes Township      | Bay Shore CDP (1 of 2)<br>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<br>Walloon Lake CDP           | 1405 | 585 | 1368 | 37  | No Curbside Program | Charlevoix County Drop-Off Program |
| Norwood Township    | Norwood CDP<br>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<br>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

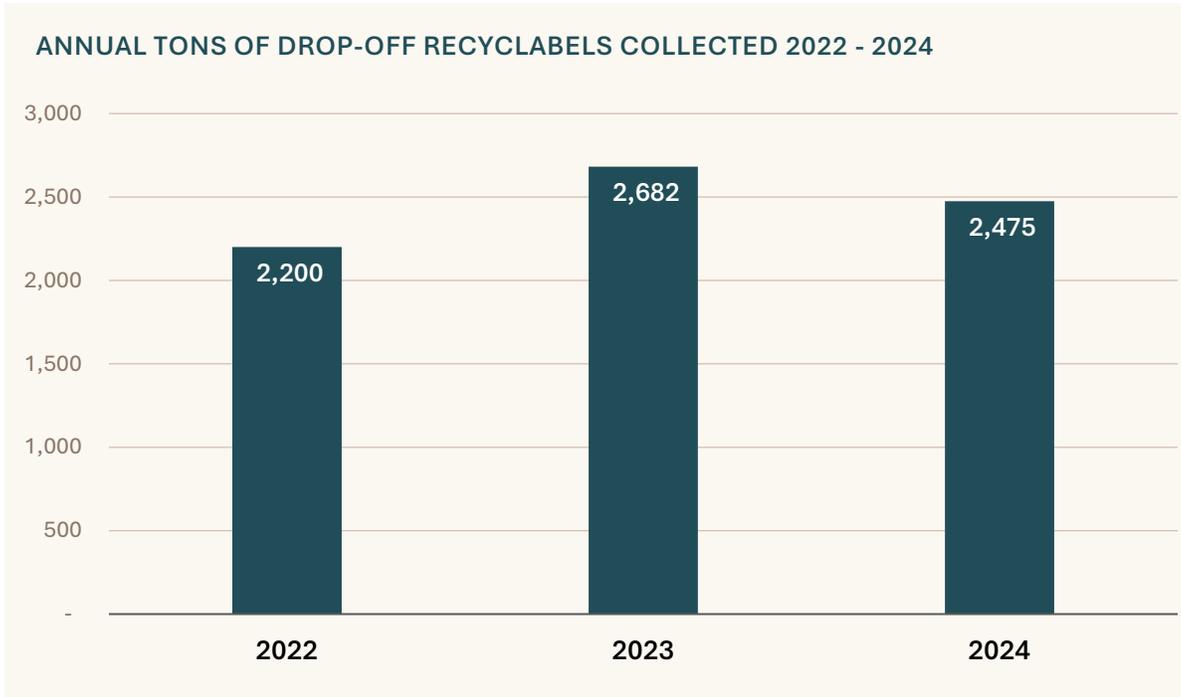


Figure 10: Charlevoix County Reported Drop-Off Recycling Tonnages

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”** includes 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.

$$\text{RECYCLING RATE} = \frac{\text{Total tons MSW Recycled and Composted}}{\text{Total tons of MSW Recycled, Composted, Landfilled, Incinerated}} \times 100$$

*Percent of waste recycled and composted*

$$\text{DIVERSION RATE} = \frac{\text{Total tons MSW Recycled, Composted, Diverted}}{\text{Total tons of MSW Recycled, Composted, Landfilled, Incinerated, Diverted}} \times 100$$

*Percent of waste diverted from disposal.*

*Including recycling, composting, reuse, recovery, donation, co-generation, digestion, etc.*

Figure 11: Recycling and Diversion Rate Definitions, EGLE, "Setting Materials Management Goals"<sup>13</sup>

## 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<sup>14</sup> to project recovered quantities using variables related to recycling access and recycling program design. The model draws on findings from The Recycling Partnership<sup>15</sup>, 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),

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

<sup>14</sup> <https://www.michigan.gov/egle/about/organization/materials-management/materials-management-in-michigan/mega-data-collection-project>

<sup>15</sup> <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<sup>16</sup>.

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.

<sup>16</sup> <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                          | <b>11.67%</b>  |
| <b>Updated Estimate 2024:</b><br>Reported MCW Tons.<br>Reported Recycling Tons.<br>Estimated Organics Tons.                 | 6,033                         | 3,474                  | 2,559                           | <b>57.58%</b>  |
| <b>Updated Estimate 2024:</b><br>State Average MCW per Capita Tons.<br>Reported Recycling Tons.<br>Estimated Organics Tons. | 25,421                        | 3,474                  | 21,947                          | <b>13.67%</b>  |

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.<sup>17</sup> 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.

<sup>17</sup> 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**<sup>18</sup> 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”

<sup>18</sup> [https://www.michigan.gov/-/media/Project/Websites/msp/EMHSD/Publications/Local\\_Disaster\\_Debris\\_Management\\_Plan\\_Template\\_2008\\_Final\\_Edition.pdf?rev=f548c2a196c248c69772fa733bc01714&utm](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<sup>19</sup>, 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.

<sup>19</sup> <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*<sup>20</sup>, including a negative correlation between wind speed and debris volume (as wind speed increases less debris observed). FEMA guidance<sup>21</sup> 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

<sup>20</sup> 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](https://www.srs.fs.usda.gov/pubs/ja/2011/ja_2011_hauer_001.pdf)

<sup>21</sup> [https://www.fema.gov/sites/default/files/2020-07/fema\\_325\\_public-assistance-debris-mgmt-plan\\_Guide\\_6-1-2007.pdf](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<sup>22</sup> 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

<sup>22</sup> [https://www.fema.gov/sites/default/files/2020-07/fema\\_325\\_public-assistance-debris-mgmt-plan\\_Guide\\_6-1-2007.pdf](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”<sup>23</sup>

## 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 |

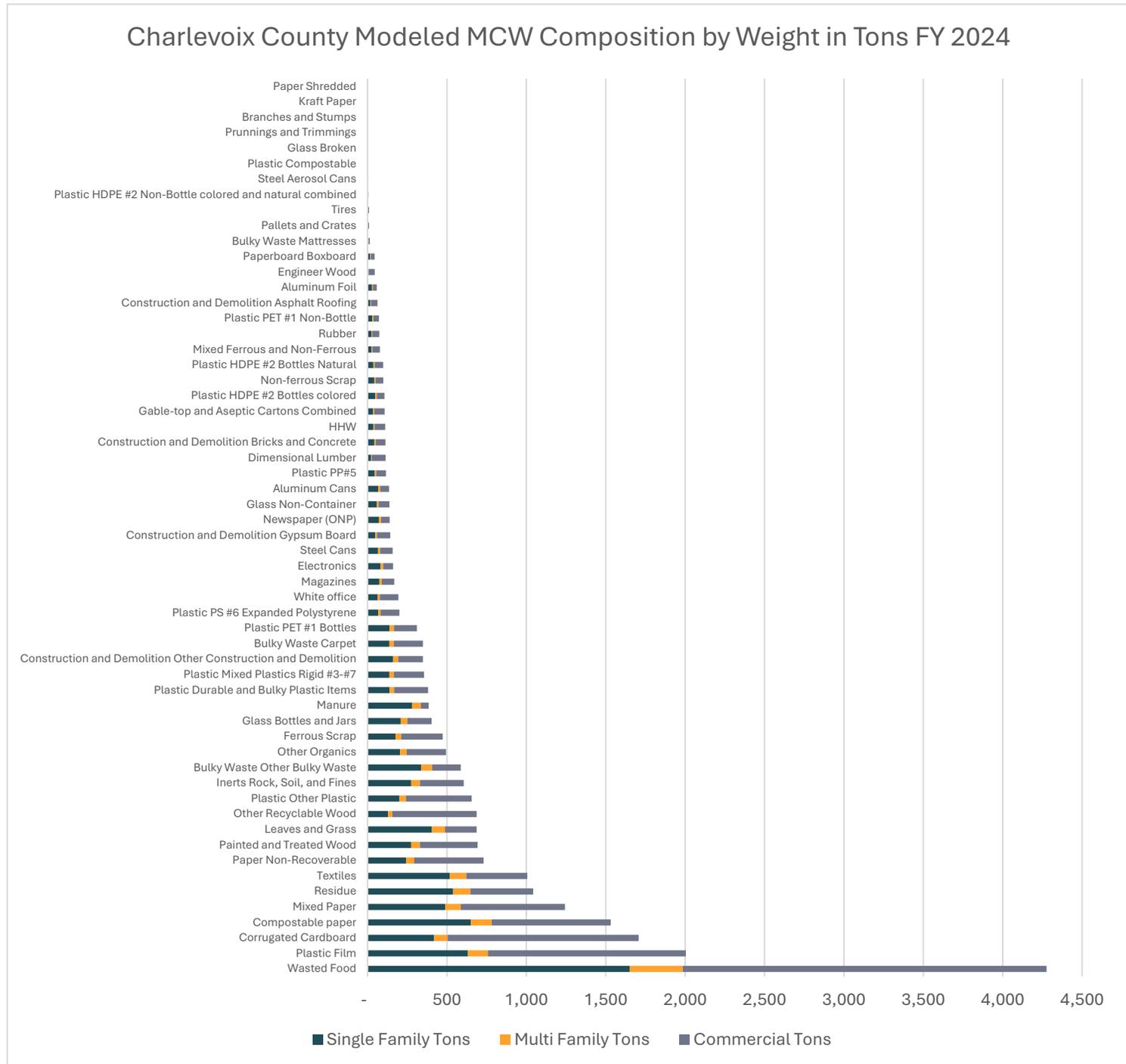
<sup>23</sup> [https://www.fema.gov/sites/default/files/2020-07/fema\\_325\\_public-assistance-debris-mgmt-plan\\_Guide\\_6-1-2007.pdf](https://www.fema.gov/sites/default/files/2020-07/fema_325_public-assistance-debris-mgmt-plan_Guide_6-1-2007.pdf)

|  |                       |               |                                 |
|--|-----------------------|---------------|---------------------------------|
| 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

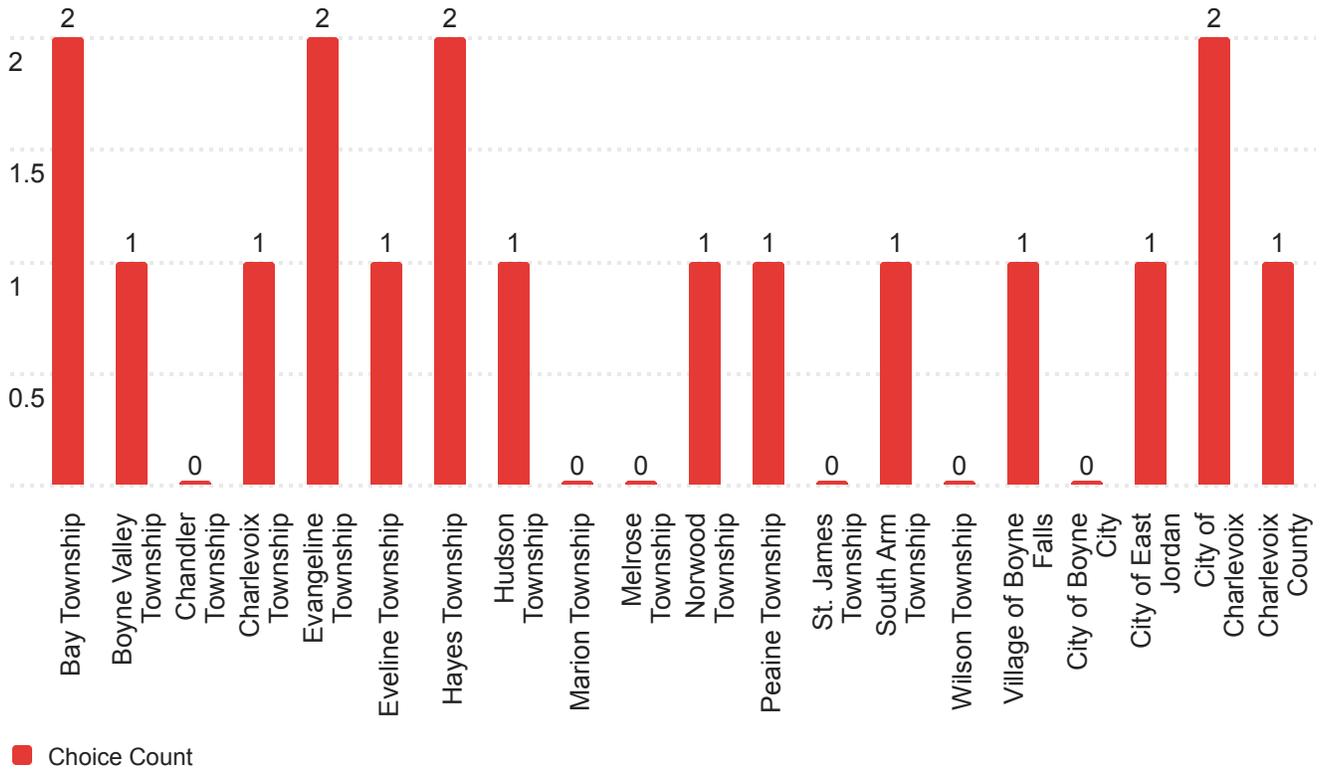
| Industry   | 2018 | 2023 |
|--|------|------|
| Construction   | 117  | 146  |
| Retail Trade   | 114  | 120  |
| Accommodation and food services                                      | 79   | 97   |
| Health care and social assistance                                    | 55   | 87   |
| Other services (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 |       |

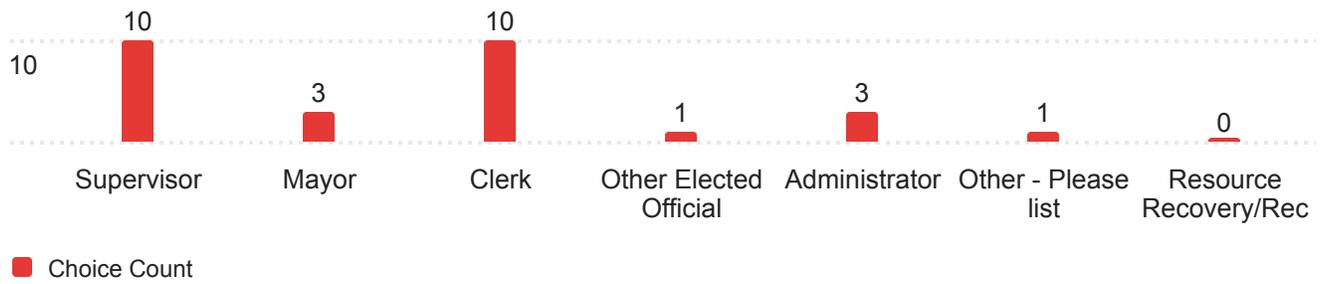
### Q1B - Which Charlevoix municipality do you represent?

18 Responses



### Q2 - What best describes your role with your community? - Selected Choice

28 Responses



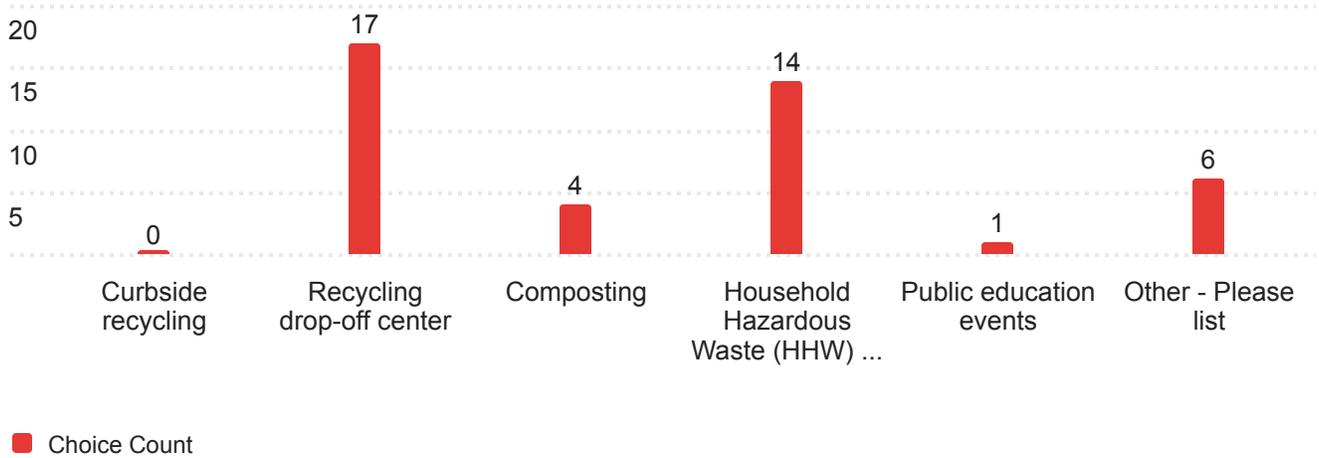
### Q2\_7\_TEXT - Other - Please list - Text

Other - Please list - Text

treasurer

### Q3 - What types of materials management programs or services are currently implemented or supported by your community? Select all that apply. - Selected Choice

25 Responses



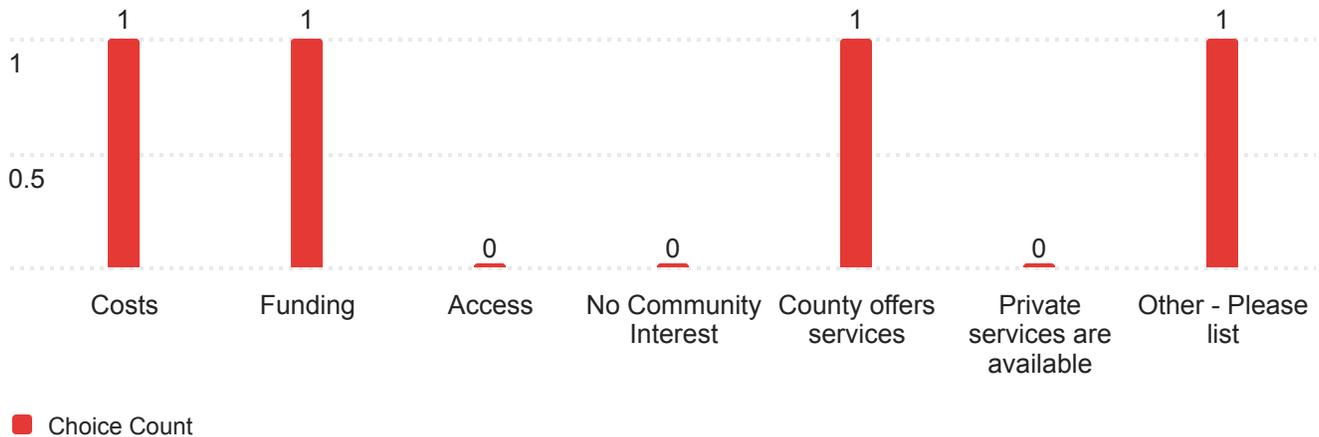
### Q3A\_7\_TEXT - Other - Please list - Text

Other - Please list - Text

Sorry I could not go back and correct that it is county not us.

### Q3A - If you do not offer recycling, household hazardous waste, or composting, why? Select all that apply. - Selected Choice

2 Responses



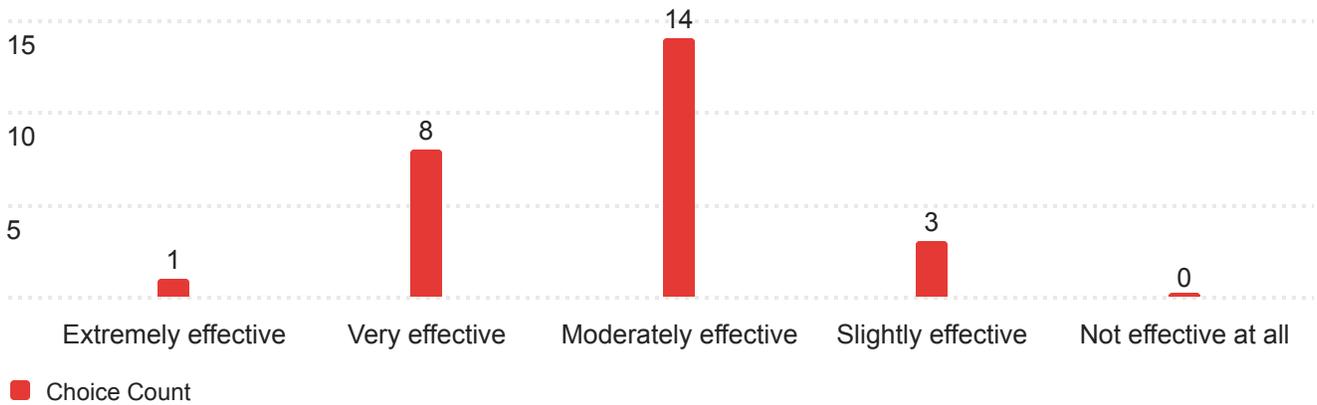
### Q3A\_7\_TEXT - Other - Please list - Text

Other - Please list - Text

Sorry I could not go back and correct that it is county not us.

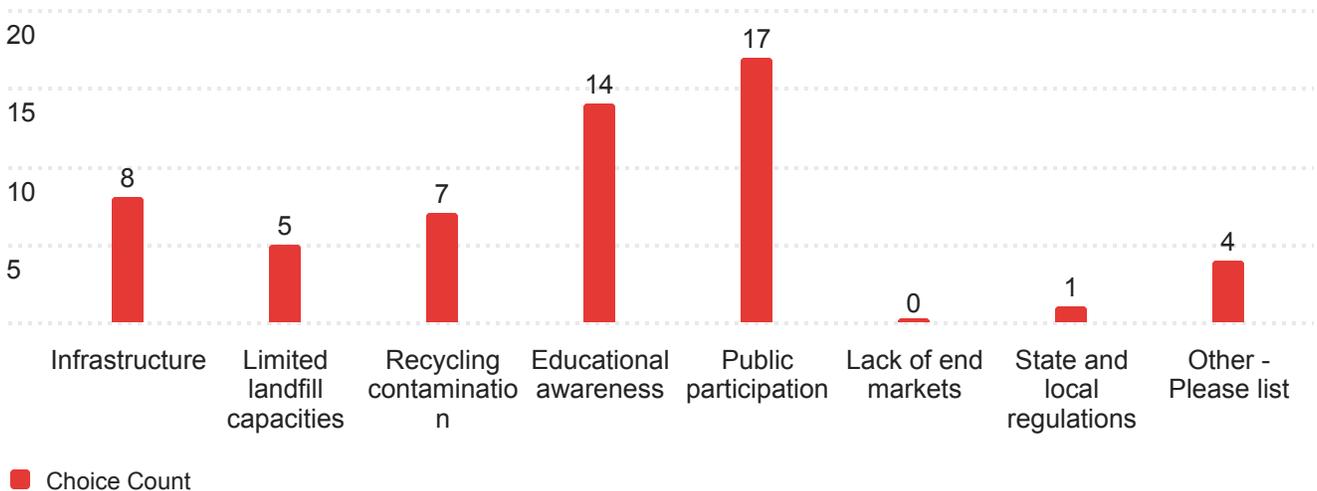
### Q4 - How would you rate the effectiveness of the current materials management infrastructure and services within your community?

26 Responses



### Q5 - What do you believe are the biggest materials management challenges facing your community? Select all that apply. - Selected Choice

25 Responses



## Q5\_8\_TEXT - Other - Please list - Text

Other - Please list - Text

Price

Barge costs to the mainland/ Age and condition of processing equipment

location

Junk in yards

## Q6 - How well are different types of materials currently managed within your cou...

| Field                               | Min  | Max  | Mean | Standard Deviation | Variance | Responses | Sum   |
|-------------------------------------|------|------|------|--------------------|----------|-----------|-------|
| Paper                               | 1.00 | 6.00 | 2.28 | 1.04               | 1.08     | 25        | 57.00 |
| Plastics                            | 1.00 | 6.00 | 2.38 | 0.92               | 0.85     | 26        | 62.00 |
| Glass                               | 1.00 | 6.00 | 2.40 | 1.02               | 1.04     | 25        | 60.00 |
| Metals                              | 1.00 | 6.00 | 2.88 | 1.27               | 1.61     | 24        | 69.00 |
| Construction Debris                 | 1.00 | 6.00 | 3.76 | 1.38               | 1.90     | 21        | 79.00 |
| Electronic Waste                    | 1.00 | 6.00 | 3.08 | 1.32               | 1.74     | 24        | 74.00 |
| Mattresses                          | 1.00 | 6.00 | 3.52 | 1.20               | 1.45     | 25        | 88.00 |
| Tires                               | 2.00 | 6.00 | 3.81 | 1.24               | 1.54     | 26        | 99.00 |
| Household Hazardous Waste           | 1.00 | 6.00 | 2.88 | 1.37               | 1.87     | 25        | 72.00 |
| White Goods (appliances)            | 2.00 | 6.00 | 3.68 | 1.35               | 1.82     | 25        | 92.00 |
| Bulky Waste (furniture, mattresses) | 1.00 | 6.00 | 3.40 | 1.23               | 1.52     | 25        | 85.00 |
| Yard Waste                          | 1.00 | 6.00 | 3.64 | 1.65               | 2.71     | 25        | 91.00 |
| Prescription Drugs                  | 1.00 | 6.00 | 3.08 | 1.52               | 2.31     | 25        | 77.00 |

## Q7 - What should be the primary focus of the updated County Materials Management Plan from your community's perspective? An example could be increased recycling participation and access within the community or launching a compost option in the community.

16 Responses

What should be the primary focus of the updated County Materials Management Plan from your community's perspective? An example could be increased recycling participation and access within the community or launching a compost option in the community.

How to continue what is currently offered. But watch out for higher cost to the taxpayers.

recycling participation would be huge for our township

Increased participation - although I'm not sure how effective that will be with the current drop off center. A composting option would be great.

Compost option and expanded recycling

Curbside

Composting options, pharmaceuticals/OTC/prescriptions disposal

Increased recycling participation; education about the benefits of recycling and composting

Increase funding opportunities and education

Getting the bins emptied often enough. Letting the site know if there are any problems and how much volume is being processed.

Curbside pick up

Creating a comprehensive compost and recycling stockfeed market in our county.

investigate curb side recycling

We live so far away from any recycling or compost facilities that it makes it impossible for our residents to participate.

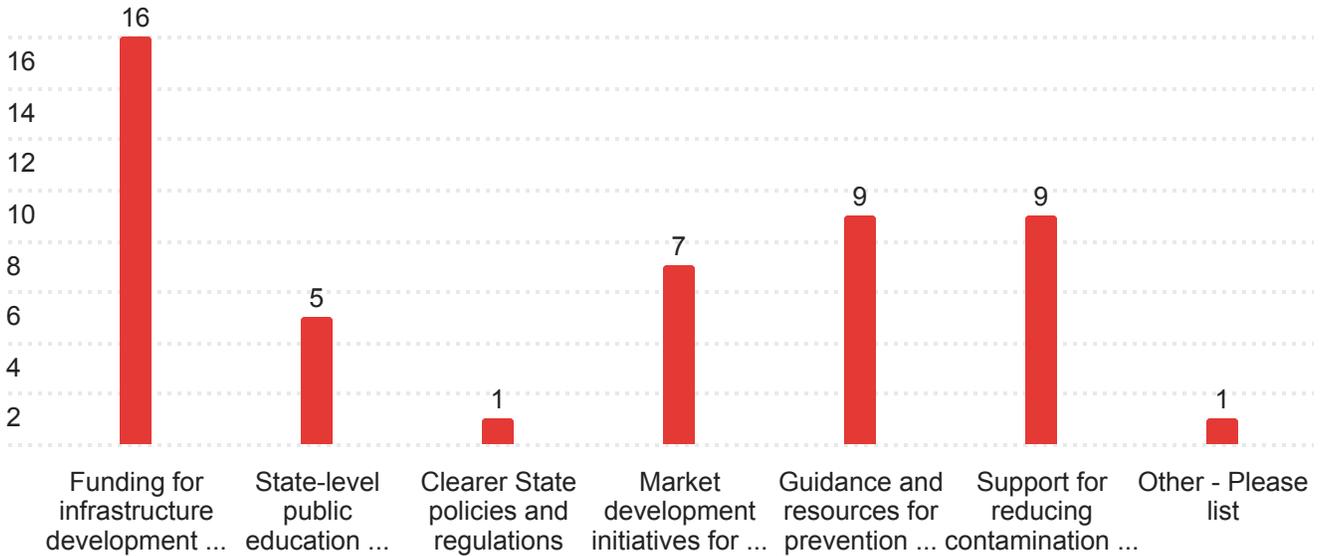
Designating tree/lawn debris drop-off locations within Charlevoix County

Community Access

Curbside recycling and composting

### Q8 - Which of the following areas should receive the most attention in the updated County plan to best support your community's materials management efforts? Select your top three. - Selected Choice

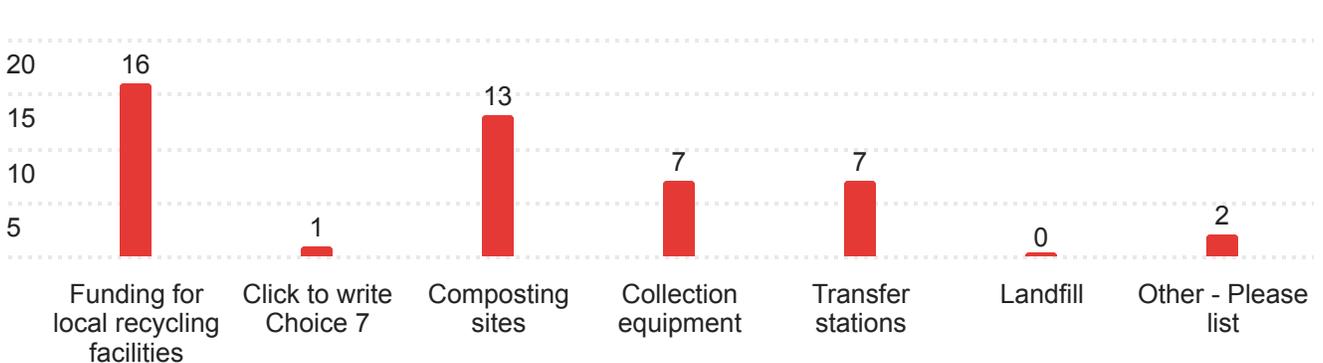
23 Responses



Choice Count

### Q9 - What types of infrastructure investments are most needed in your county to improve materials management? Select all that apply. - Selected Choice

23 Responses

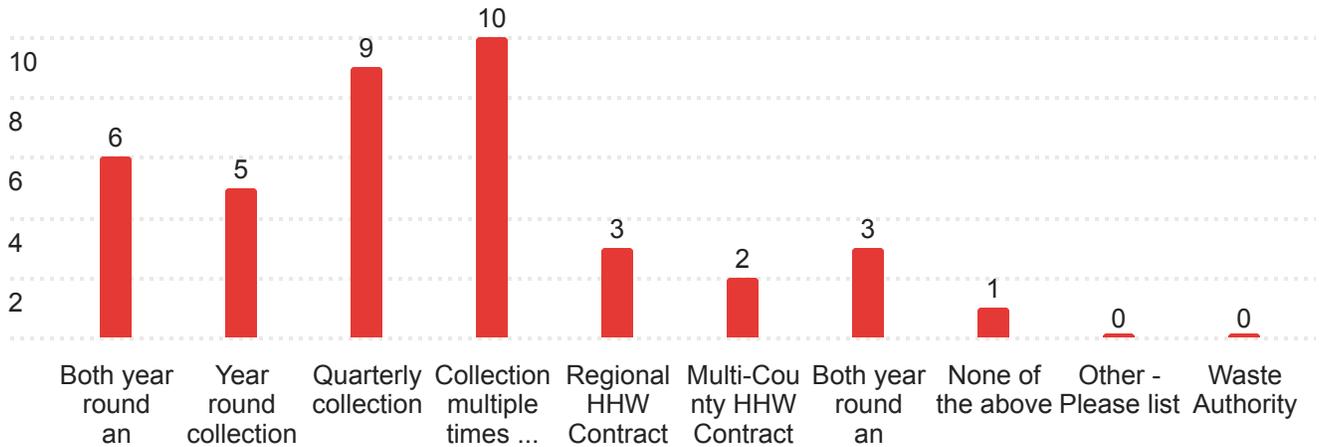


Choice Count

Q10 - Do you see value in pursuing the opportunity for region-wide collection of household hazardous waste year round, waste authority, or a single regional contract for collection events? Select all that apply. - Selected Choice

Selected Choice

24 Responses



Choice Count

Q11 - What are the most effective ways to educate the public within your county about proper recycling and waste reduction practices? Select all that apply. - Selected Choice

24 Responses



Choice Count

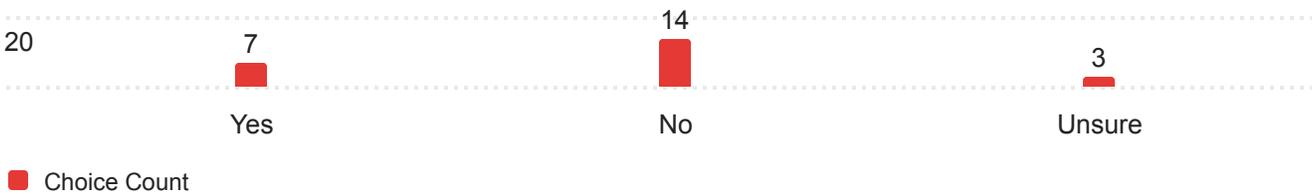
### Q12 - What are the biggest barriers to increasing recycling rates for materials in your community? - Selected Choice

24 Responses



### Q13 - After your communities recycling is collected, do you know where it goes to?

24 Responses



### Q13A - If yes, could you please list where they end up? (such as a recycling end-market organization or Emmet County Materials Recovery Facility (MRF))

If yes, could you please list where they end up? (such as a recycling end-market organization or Emmet County Materials Recovery Facility (MRF))

Traverse city facility

I believe GFL

Kalkaska Recycling Facility

MRF or an end-market organization

GFL in Traverse City.

### Q14 - How does your community currently pay for recycling? Select all that apply. - Selected Choice

20 Responses



### Q14\_5\_TEXT - Other - please list - Text

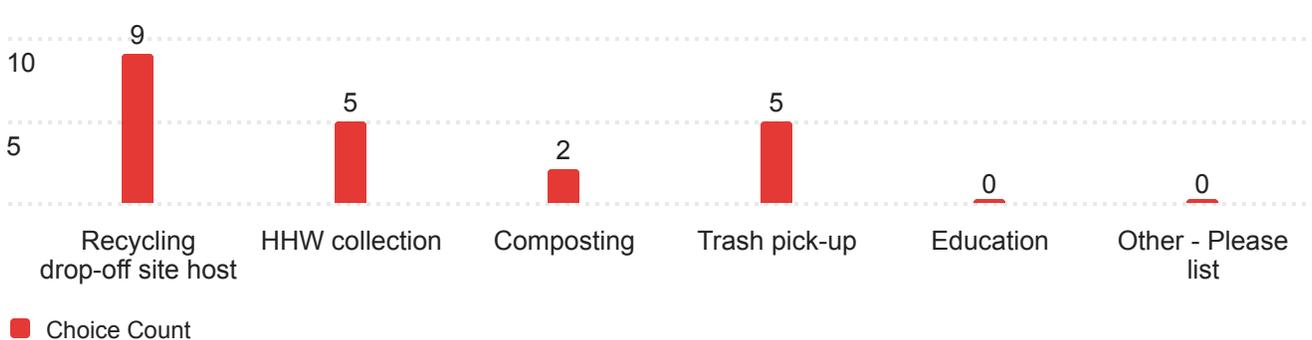
Other - please list - Text

County provides bins and pick-up we pay staff and provide site

We have a "dump" day once a year. That is the only recycling we do. That is paid for out of taxes and it's really not recycling. I don't think our township would stomach an increases in taxes for recycling.

### Q15 - What costs are associated with your communities recycling programs and services funding? Select all that apply. - Selected Choice

20 Responses



### Q16 - Could you provide an estimate of how much your community expends on material management services and programs? Please use a \$XXX,XXX format.

No data found - your filters may be too exclusive!

## Q17 - Is there anything else you would like us to know about materials management and your community?

Is there anything else you would like us to know about materials management and your community?

---

No new taxes! Government overreach at its finest!

When developing a plan for materials management, please consider the constraints associated with the transfer from Beaver Island to the mainland. As you are aware, materials can only be shipped when the ferry or barge preventing year round residents an option for disposal of some waste during the winter months. This may be having an environmental impact and the team may consider a discussion surrounding this concern.

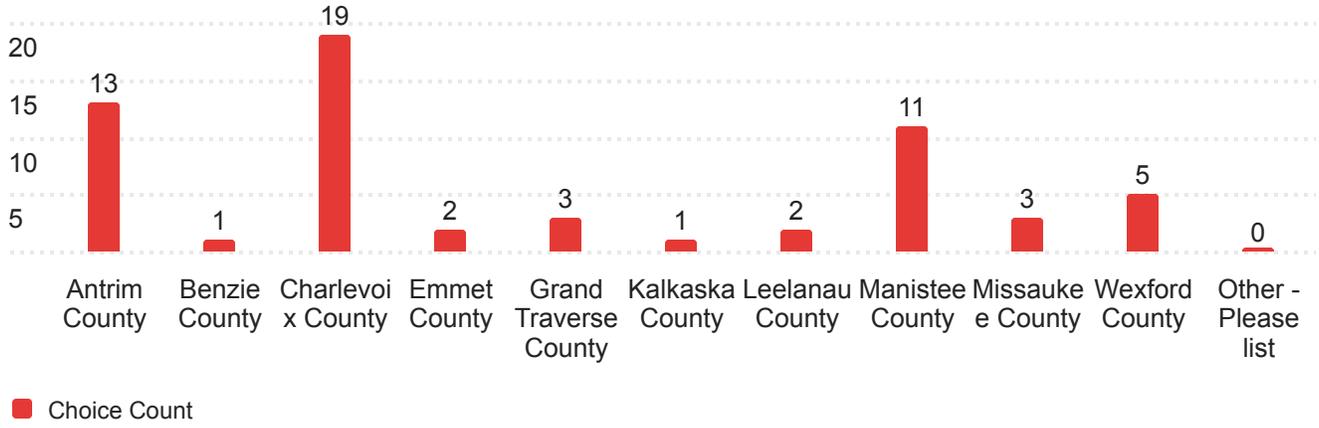
Hayes Township does not pay for any materials management program - our residents pay for their individual trash pickup and rely upon the County for recycling

People want to do it correctly. Do not always know how or where to find clear answers.

Our residents won't pay additional money for recycling unless they choose to do it on their own with their trash collection company and to the best of my knowledge, no one recycles in our township (unless they take it to Gaylord or Boyne City).

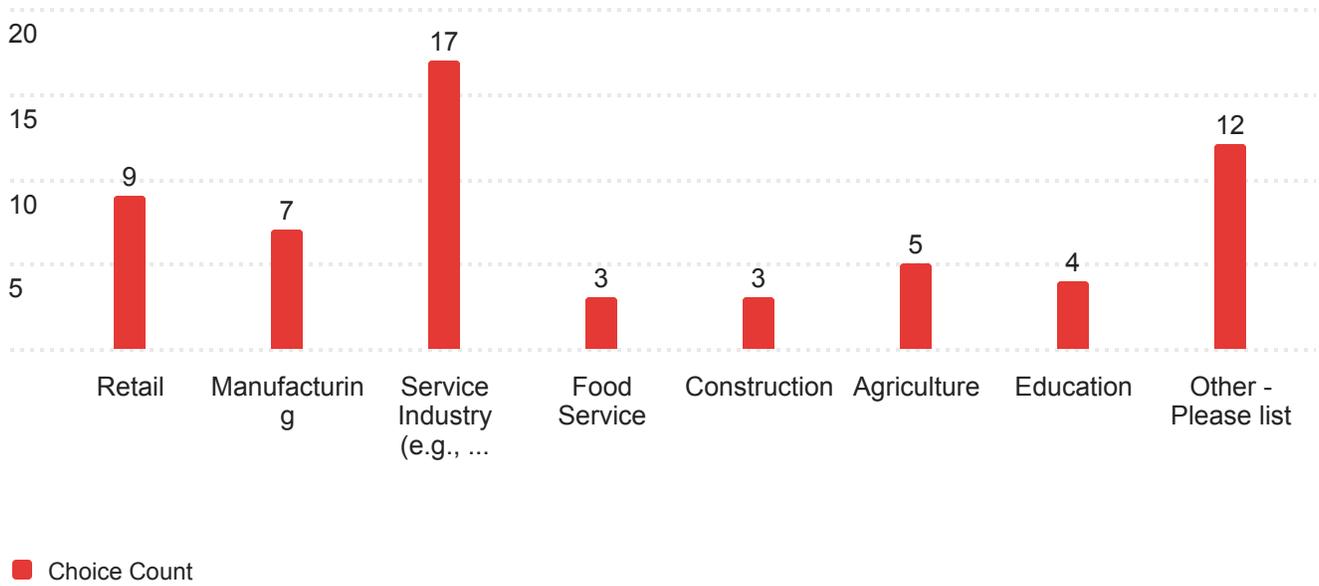
## Q1 - What County does your business primarily operate in? - Selected Choice

60 Responses



## Q2 - What sector best describes your primary business activity? - Selected Choice

60 Responses



## Q2\_8\_TEXT - Other - Please list - Text

Other - Please list - Text

Conservation

Governmental

Municipality

Non-profit - environmental

County Gov. Law Enforcement

municipality

Government

Distillery and tasting rooms

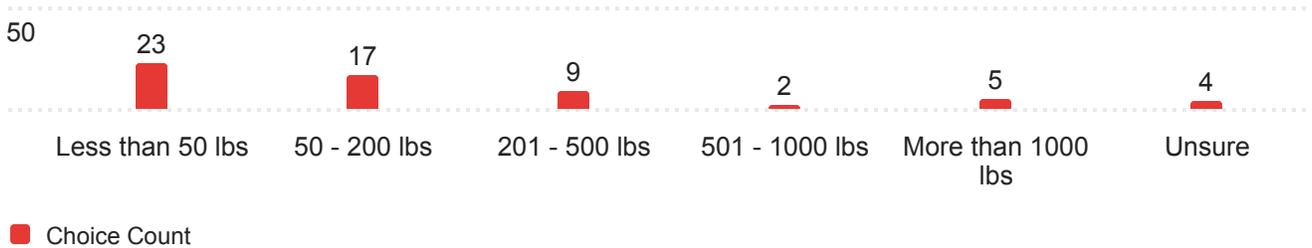
Government

Workforce Development

gov

### Q3 - Approximately how much total non-hazardous waste (trash, recycling, etc.) does your business generate on average per week?

60 Responses

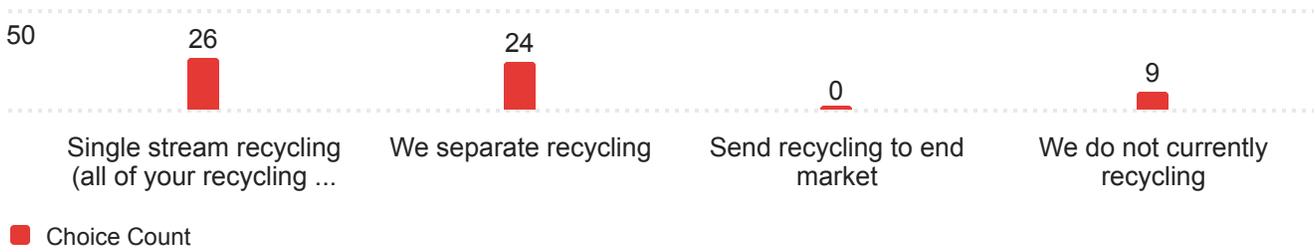


### Q4\_1 - Estimated Recycling to Waste Rate

| Field                             | Min  | Max   | Mean  | Standard Deviation | Variance | Responses | Sum     |
|-----------------------------------|------|-------|-------|--------------------|----------|-----------|---------|
| Estimated Recycling to Waste Rate | 0.00 | 92.00 | 48.36 | 24.59              | 604.60   | 55        | 2660.00 |

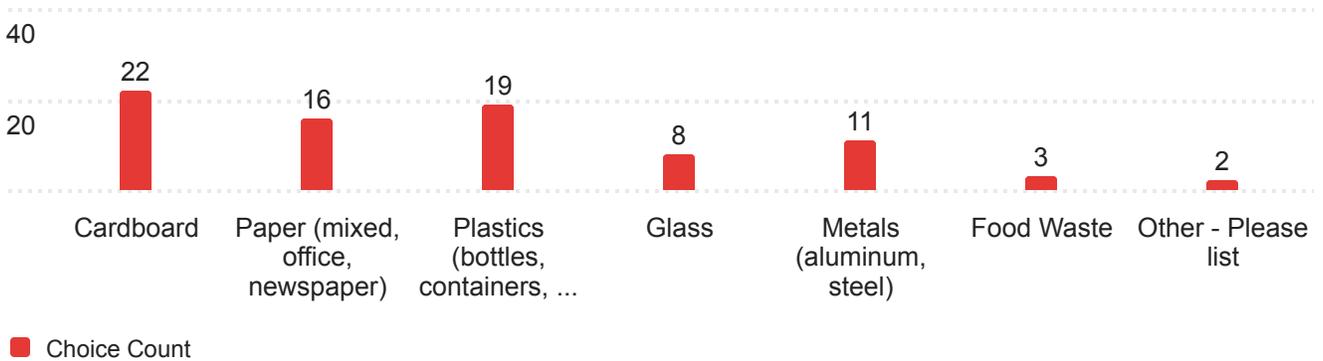
## Q5 - How does your business recycle?

59 Responses



## Q5A - Which of the following materials does your business currently separate for recycling? Select all that apply. - Selected Choice

23 Responses



## Q5B - What materials are you sending to an end market? Please feel free to share what end market you work with.

No data found - your filters may be too exclusive!

## Q5C - If you do not recycle, why?

If you do not recycle, why?

Too much work, only have a waste dumpster, nothing to put recycling in, and we aren't going to haul it to town.

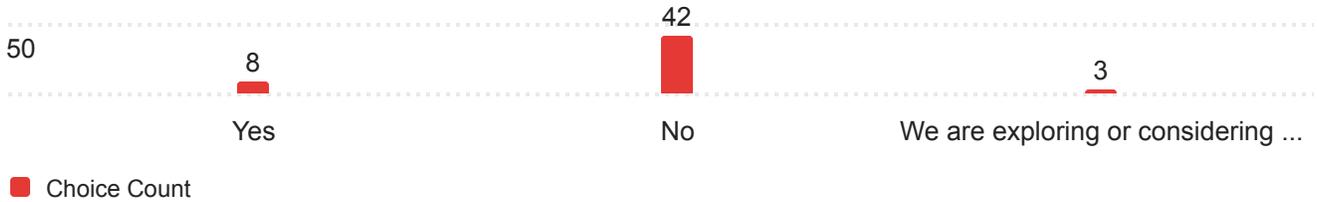
I do not believe in it.

Difficulty in imposing on subcontractors at the construction site. Need for separate dumpsters and recycling service pick-up. We have one client committed to recycling his home renovation, and he is sorting and hauling the material on his own.

Where? This county and frankly state are way behind the capabilities of most states in the US. You need systems to support and encourage by making it easy. If it were accessible, we'd be recycling.

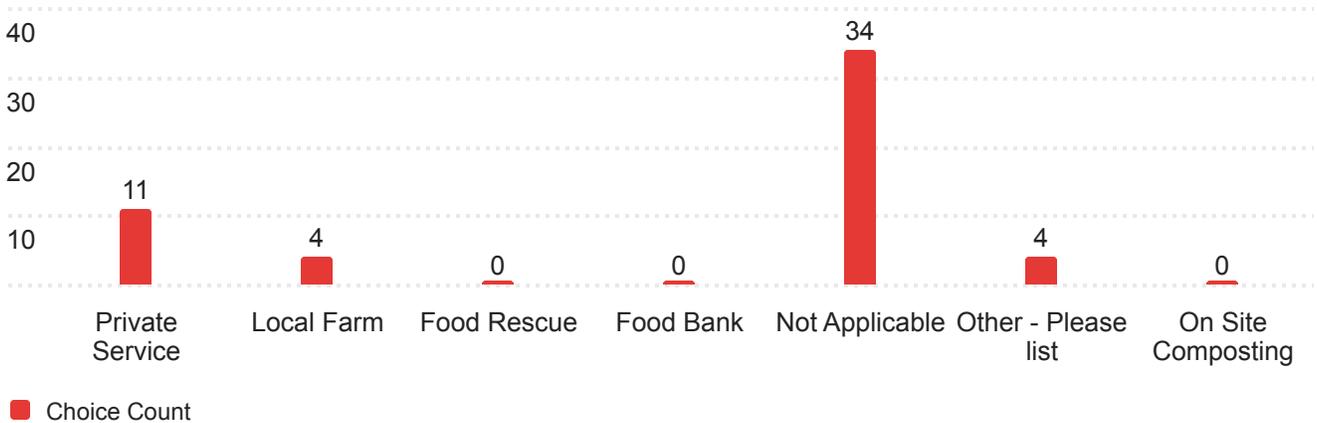
### Q6 - Does your business currently participate in any composting or organic waste diversion programs?

53 Responses



### Q7 - How do you currently handle your food waste collection? Select all that apply. - Selected Choice

52 Responses



### Q7\_6\_TEXT - Other - Please list - Text

Other - Please list - Text

We vermicompost in our office

We take care of it ourselves and put it into our own fields

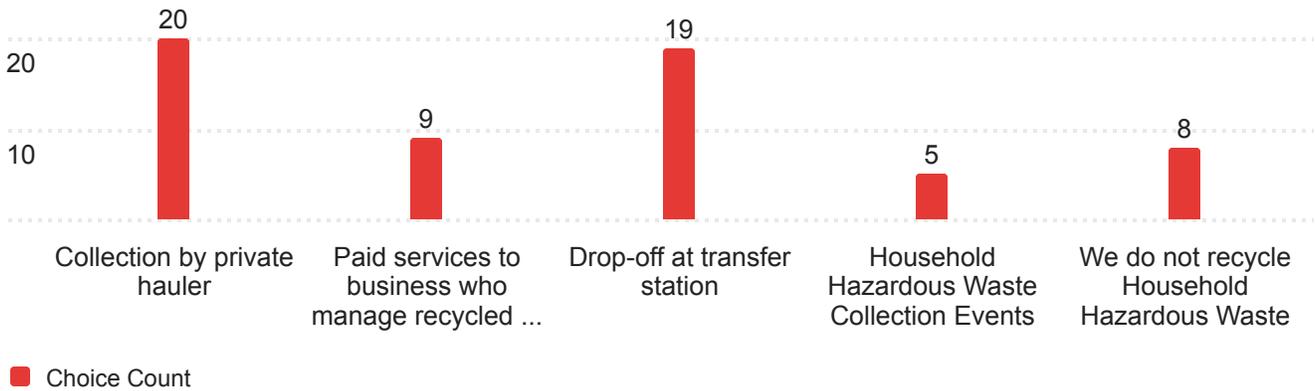
Garbage

on Site composting.

For ques above Q6 note - Farm waste consists of manure which is composted, supplemental, and put on the fields increasing carbon sequestration.

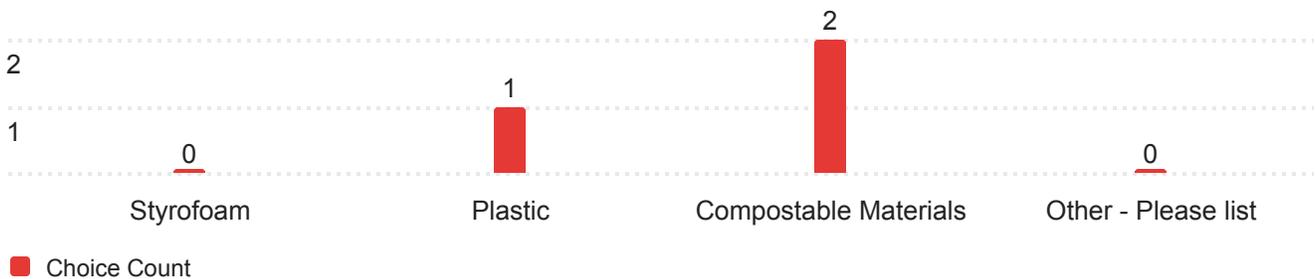
### Q8 - How is your business non-hazardous waste recycling picked up? Select all that apply.

53 Responses



### Q9 - If you're business offers take-away, what materials do you utilize for to-go orders? Select all that apply - Selected Choice

2 Responses



### Q10 - What are the primary methods your business currently uses for the disposal of non-recyclable/non-compostable waste? Select all that apply. - Selected Choice

53 Responses



### Q10\_3\_TEXT - Other - Please list - Text

Other - Please list - Text

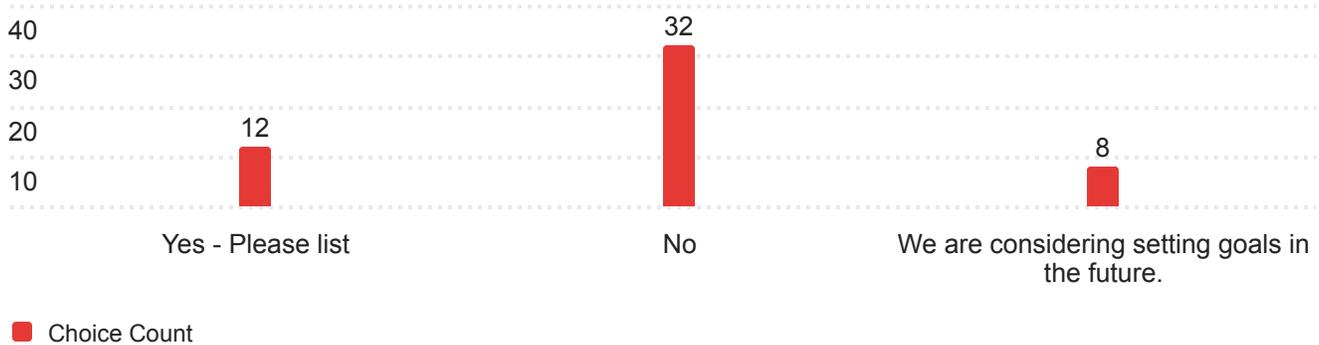
Donate our spent grain to feed cows

County Recycling

None

## Q11 - Does your business currently have any specific goals or initiatives related to reducing waste generation or increasing recycling/composting rates? - Selected Choice

52 Responses



### Q11\_1\_TEXT - Yes - Please list - Text

Yes - Please list - Text

We typically host a composting workshop at least once annually to help educate the community, we also practice vermicomposting at the office, and have separate recycling and trash bins to encourage recycling as much as possible.

We would like to recycle more and wish we had options of commercial composting

We always strive to enhance our recycling needs,

The farm re-uses and repurposes as many items/materials as possible

Our strategic plan highlights how we can recycle more plastic within our manufacturing operations.

Finding a cost effective way to recycle glass bottles

Year-over-year reduction of non-recyclable waste materials.

Our business is based on taking in used/old sails boat sails. We send the sail cloth off to Portland, Maine where it is repurposed into totes and bags of different sizes. Sea Bags.com

We would love to have our community have recycling pick up. Maybe a seperate bin like our garbage bins but a different color.

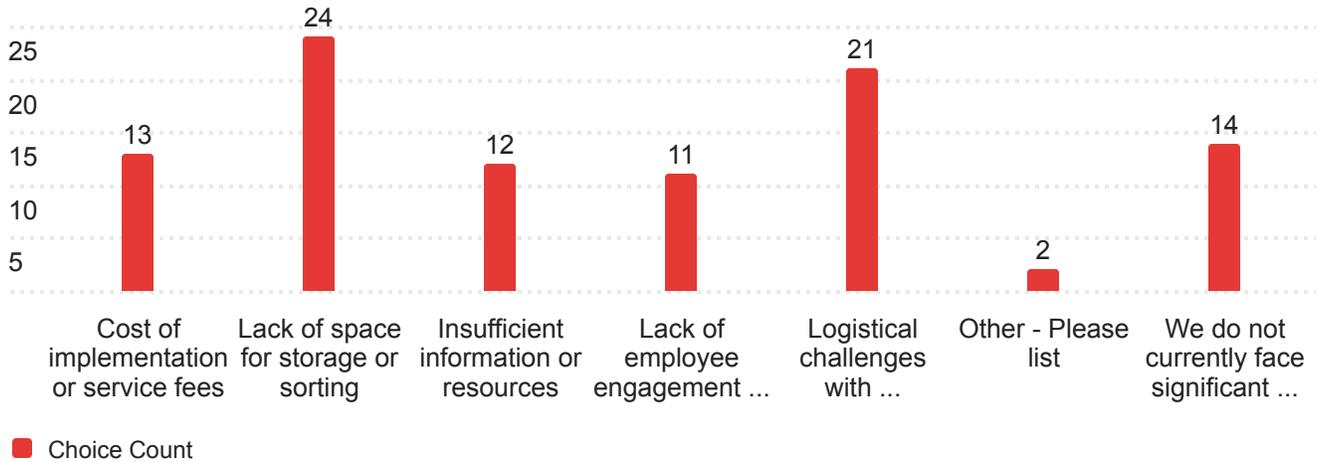
Efficiency and responsibility

Zero waste

As a plastics manufacturer, we are continuously exploring ways to reuse not only our own recycled plastics but also to transform our plastic waste into new products.

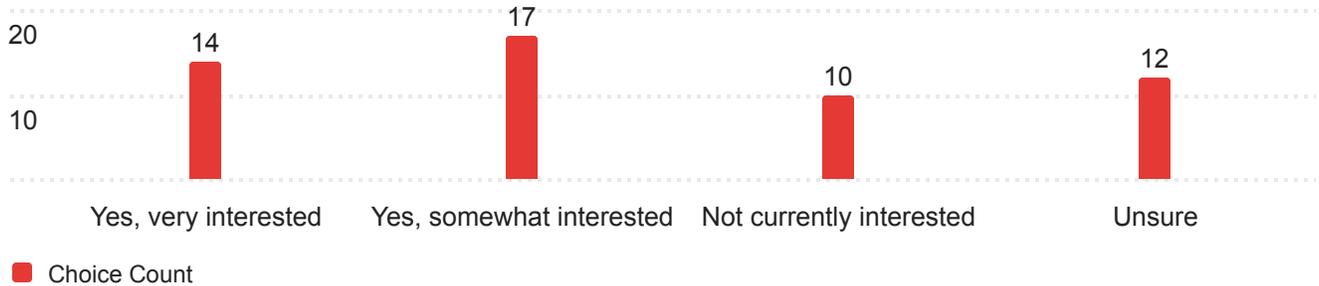
### Q12 - What are the biggest challenges your business faces in implementing or expanding sustainable materials management practices (e.g., recycling, composting)? Select all that apply. - Selected Choice

52 Responses



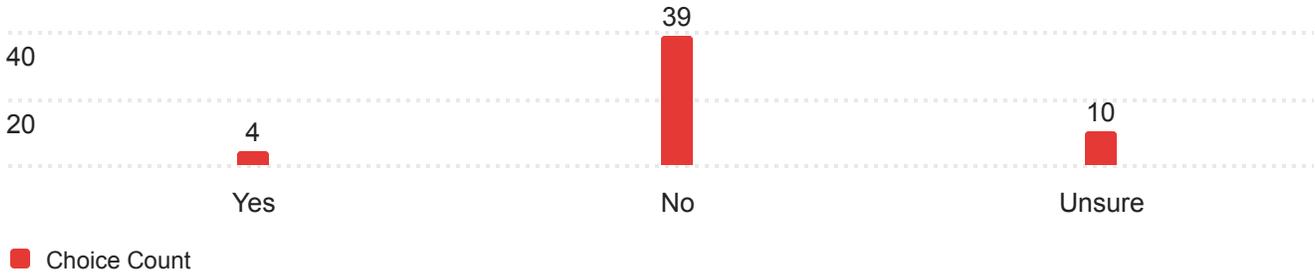
### Q13 - Is your business interested in learning more about or participating in local programs or initiatives that support business recycling, composting, or waste reduction?

53 Responses



### Q14 - Does your business anticipate any significant changes in the types or volumes of materials it generates in the next 3-5 years?

53 Responses



### Q14A - If yes, what types of waste do you expect to increase in the next 3-5 years?

If yes, what types of waste do you expect to increase in the next 3-5 years?

More volume of glass bottles, plastic, cardboard, food waste as business grows

Decrease/retiring

Hopefully, a decrease in plastic will occur as we transition to biobased plastics.

Filter aid

### Q15 - Does your business produce a material (by-product or otherwise) that could be recycled, but you do not have an end-user or alternative use for?

53 Responses



### Q15A - If yes, what materials could be recycled but need an end user or alternative use for?

If yes, what materials could be recycled but need an end user or alternative use for?

Compostable cups, styrofoam

Totes & Bags

Food waste

Styrofoam, wood scraps

cardboard and other compostable paper materials

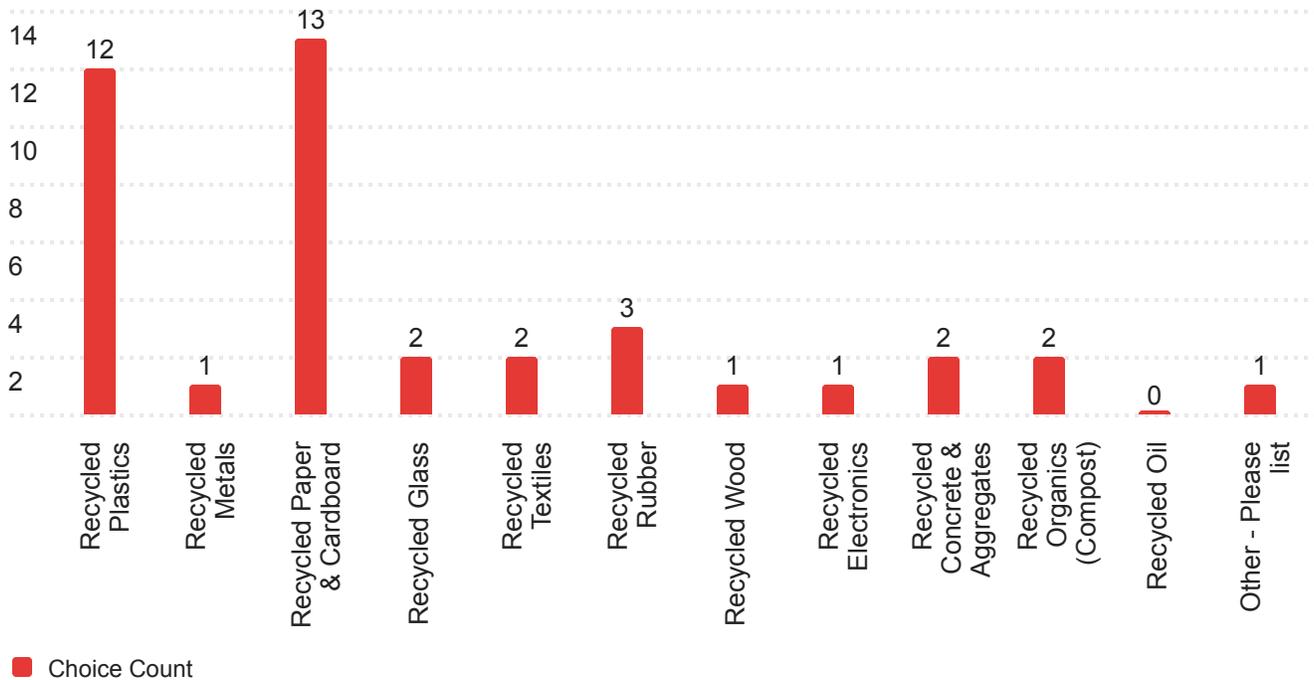
### Q16 - Does your business purchase recycled materials for use?

52 Responses



### Q16A - If yes, what typed of recycled materials do you purchase? Select all that apply. - Selected Choice

21 Responses



### Q16B - What recycled materials could your business purchase to utilize if they were available?

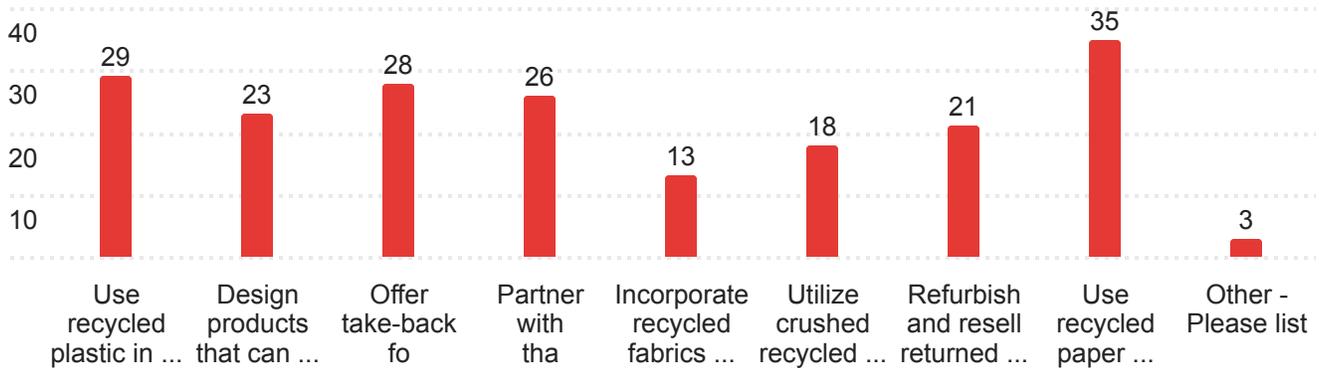
What recycled materials could your business purchase to utilize if they were available?

SHRINK WRAP, LUMBER

anything we could

### Q17 - How could businesses better engage with the circular economy through re-use of recycled materials? Select all that apply. - Selected Choice

47 Responses



Choice Count

### Q17\_9\_TEXT - Other - Please list - Text

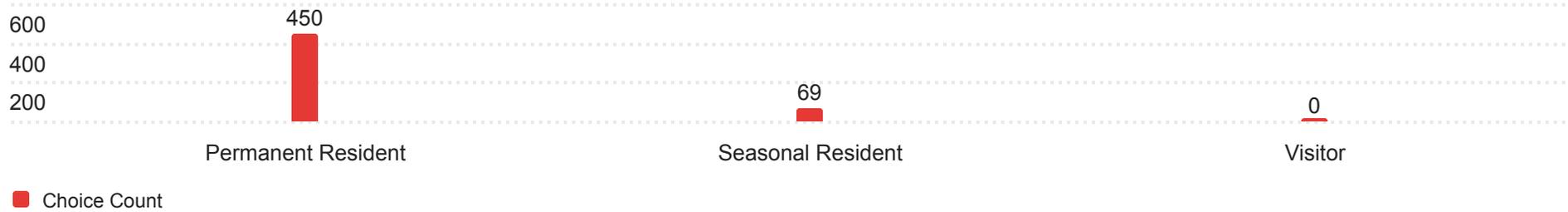
Other - Please list - Text

recycle for new roads to make materials cheaper

It's not applicable to my business.

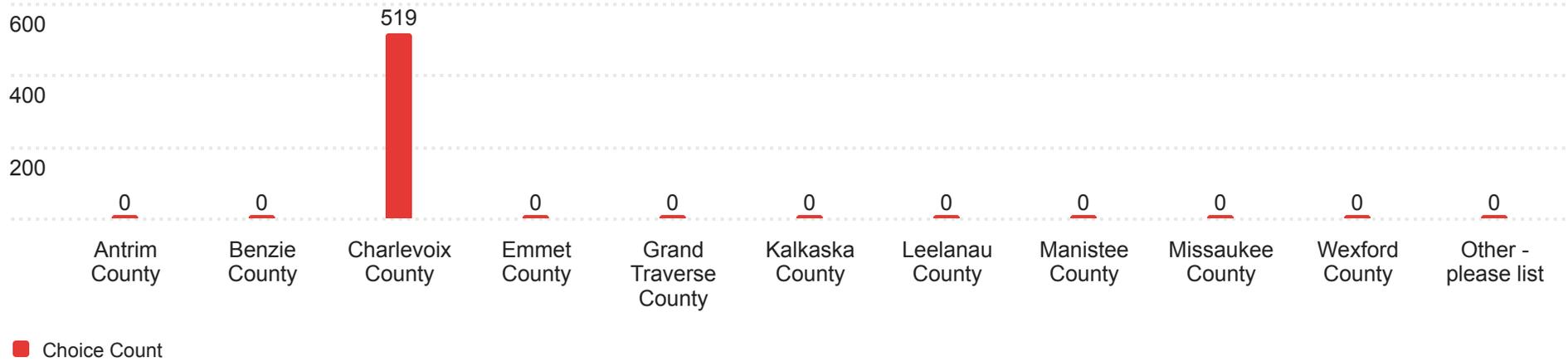
Q1 - Are you a permanent resident, seasonal resident, or visitor in the Northwest Lower Michigan region? This includes Antrim County, Benzie County, Charlevoix County, Emmet County, Grand Traverse County, Kalkaska County, Leelanau County, Manistee County, Missaukee County, and Wexford County

519 Responses



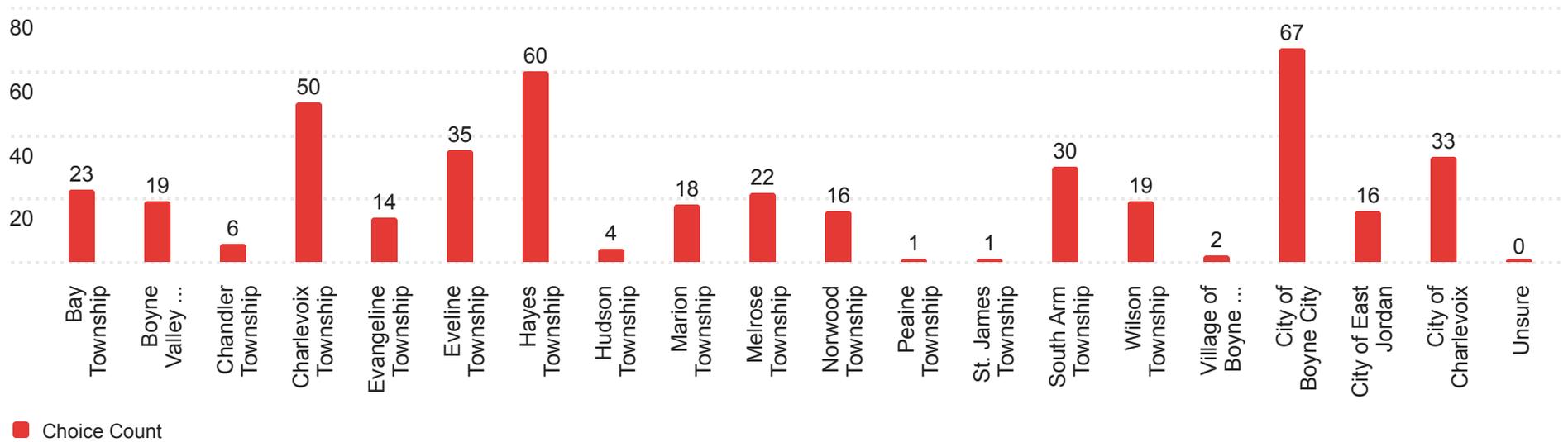
Q2 - What is your County of residence, permanent or seasonal? - Selected Choice

519 Responses



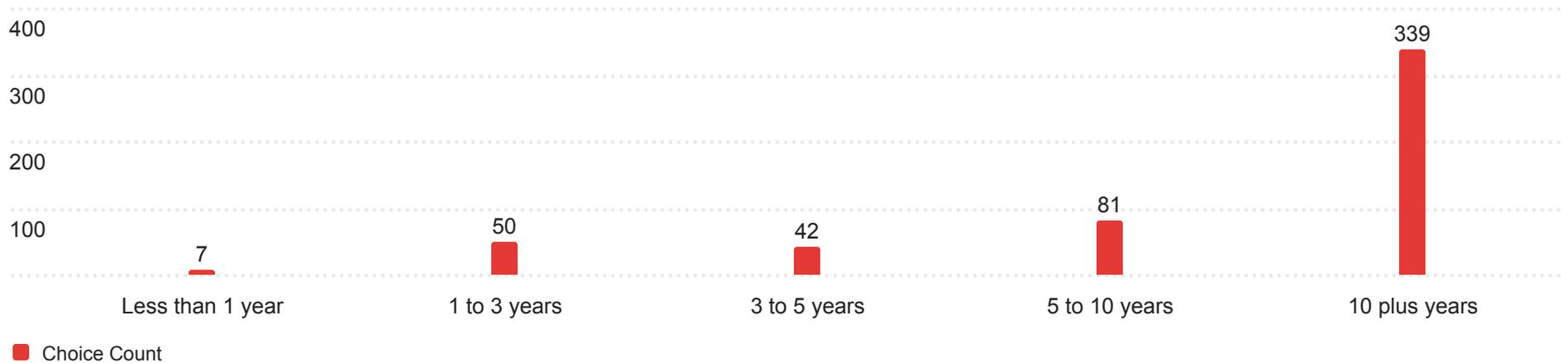
## Q2B - What Charlevoix County municipality (Township, City, or Village) do you reside in?

436 Responses



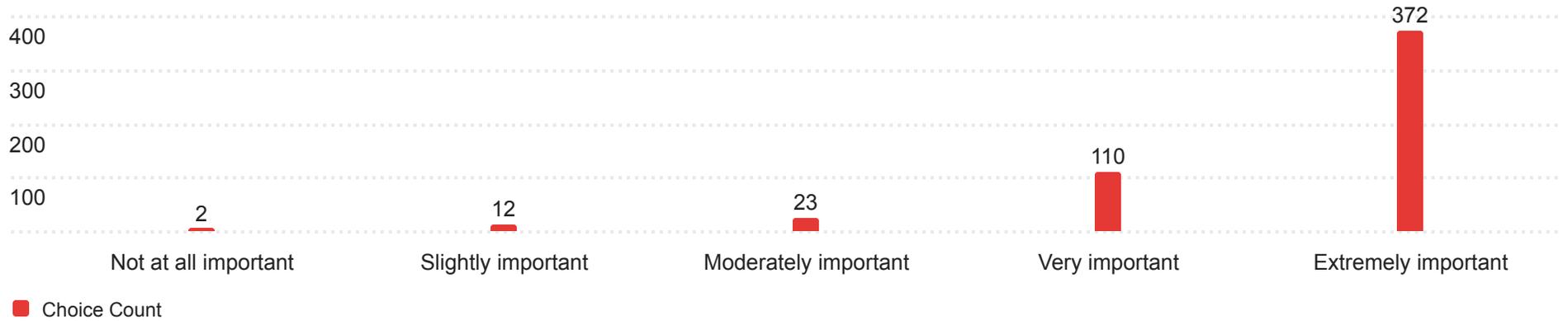
## Q4 - How long have you lived at your primary residence?

519 Responses



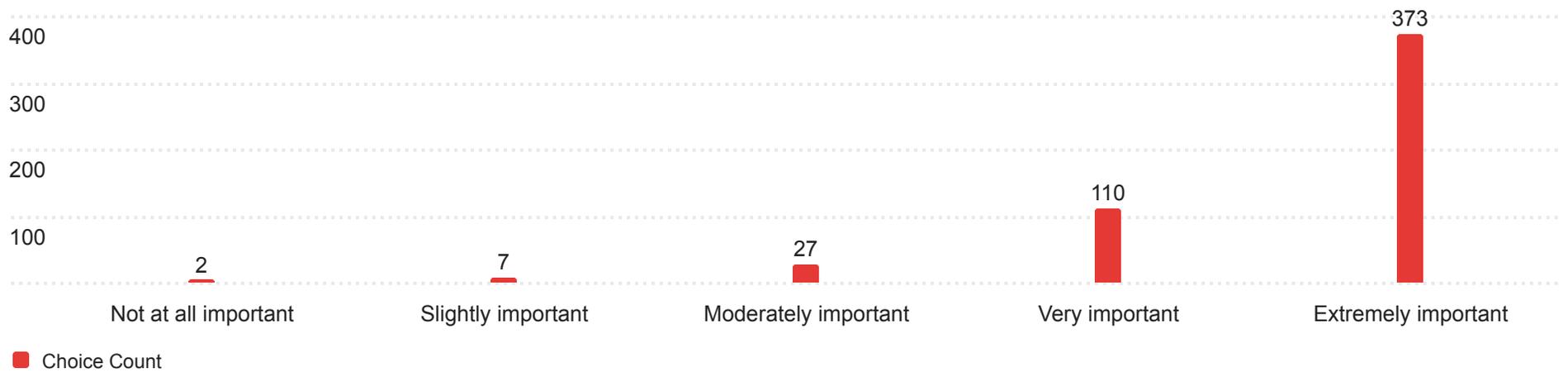
### Q5 - How important do you believe recycling is for our communities, environment, and natural resources?

519 Responses



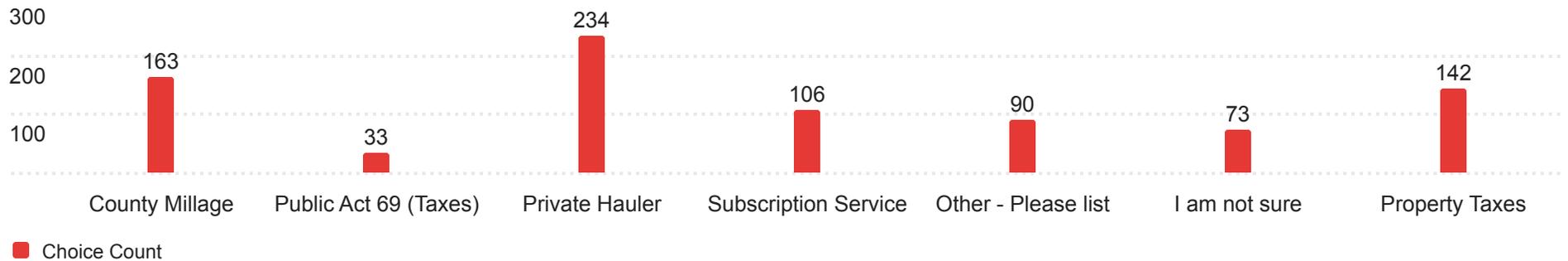
### Q6 - How important is it for our community to reduce the amount of waste going into landfills?

519 Responses



## Q7 - How do you pay for material management (Trash, Recycling, Organics, etc.) services? Select all that apply. - Selected Choice

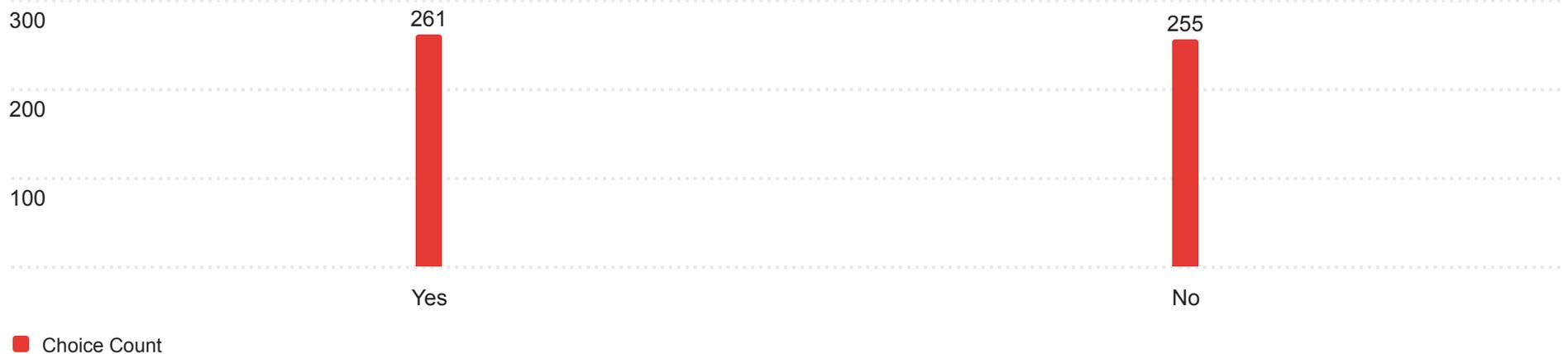
518 Responses



*Other ways that residents pay for materials management included 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.*

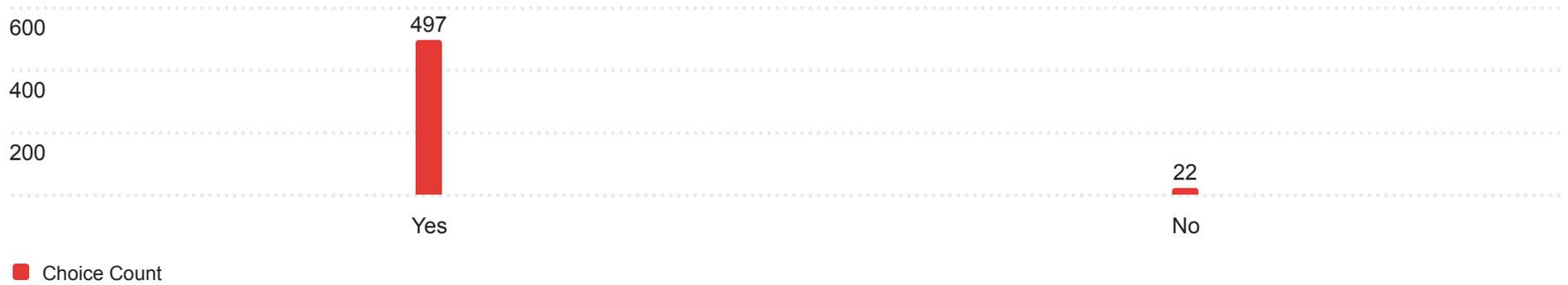
## Q7A - Are you aware of the Charlevoix County Recycling Millage?

516 Responses



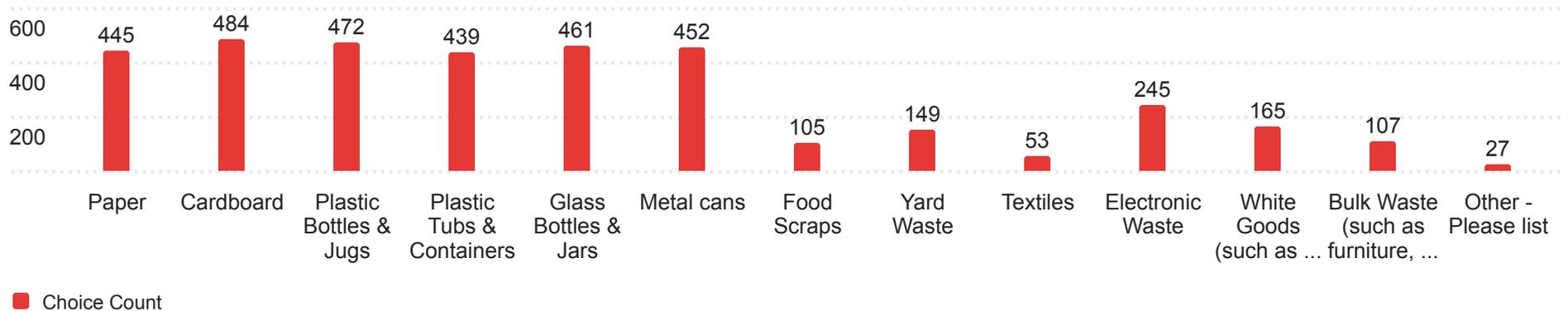
## Q8 - Does your household currently participate in recycling?

519 Responses



## Q8A - If yes, what types of materials do you typically recycle at home? Select all that apply. - Selected Choice

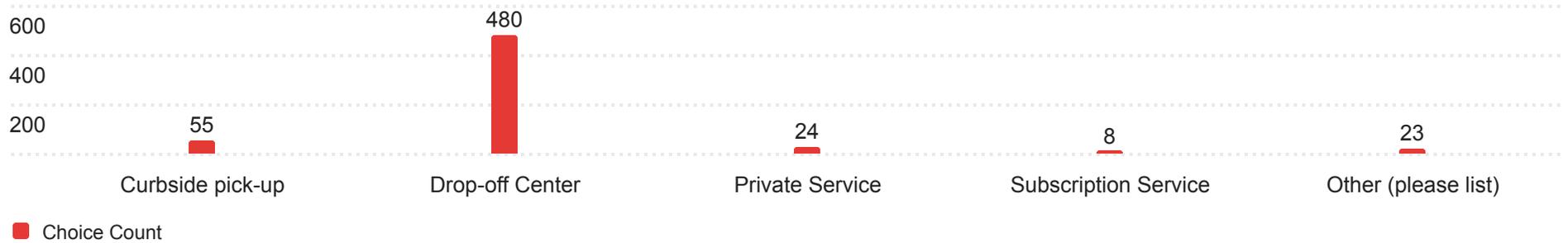
497 Responses



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.

## Q8B - How is your recycling collected? Select all that apply. - Selected Choice

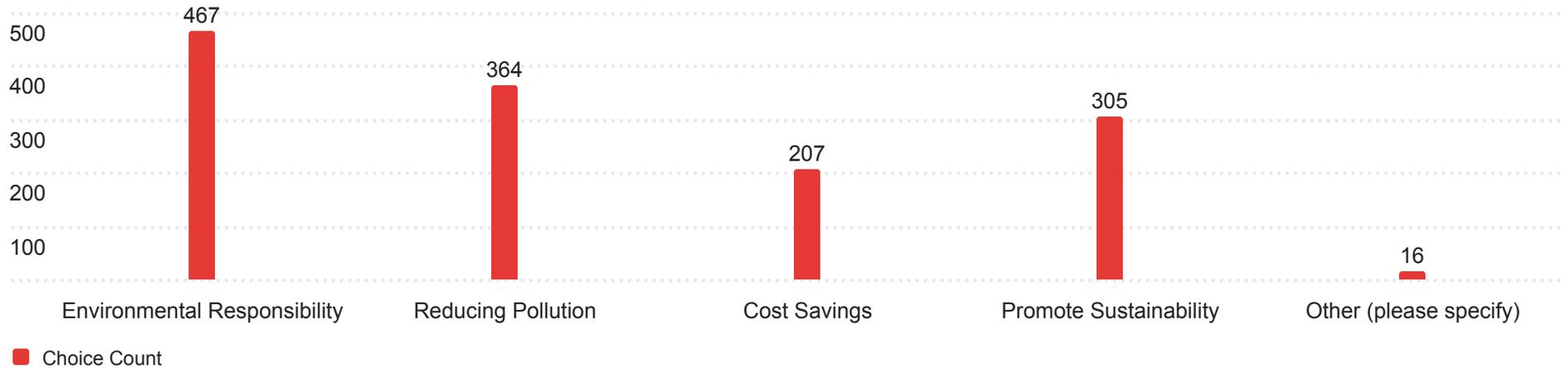
496 Responses



Other ways recycling is collected include donating to resale stores, taking recyclables to recycling drop-off sites or local recycling centers.

## Q8C - What are your main reasons for recycling? Select all that apply. - Selected Choice

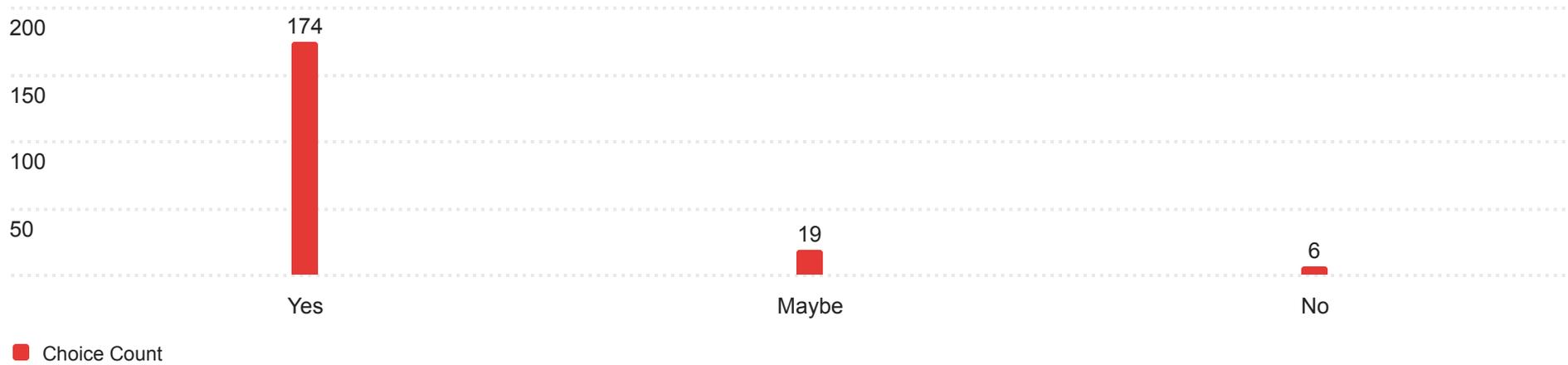
497 Responses



Other reasons for recycling included environmental and economic benefit, saving money on trash collection, and practicality of trash bin space.

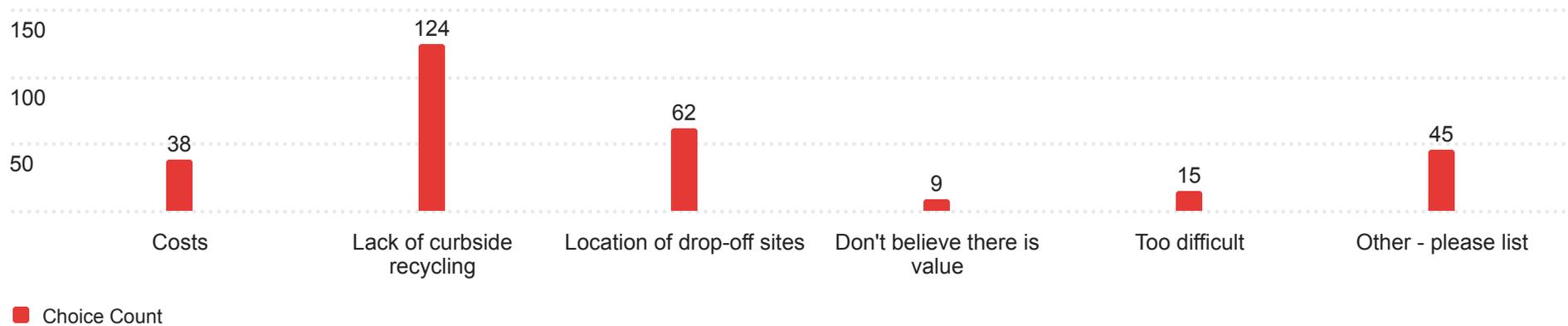
### Q9 - If you don't recycle, would you be interested in increased recycling availability?

199 Responses



### Q10 - Are there barriers that prevent you from recycling? Select all that apply. - Selected Choice

195 Responses

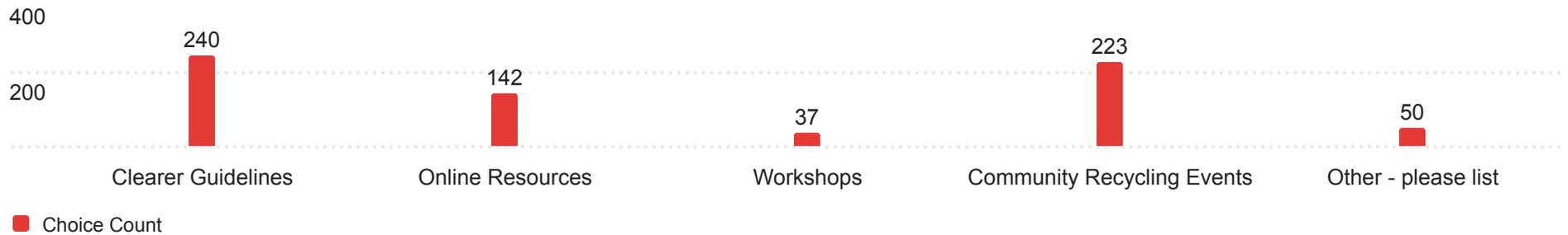


Additional recycling barriers mentioned included lack of convenience (location, curbside pick-up availability, full drop site bins), lack of knowledge on what is allowed or if recycling actually is recycled, and lack of services for yard waste and more HHW events.

## Q11 - What information or resources about recycling and waste reduction would you find helpful?

Select all that apply. - Selected Choice

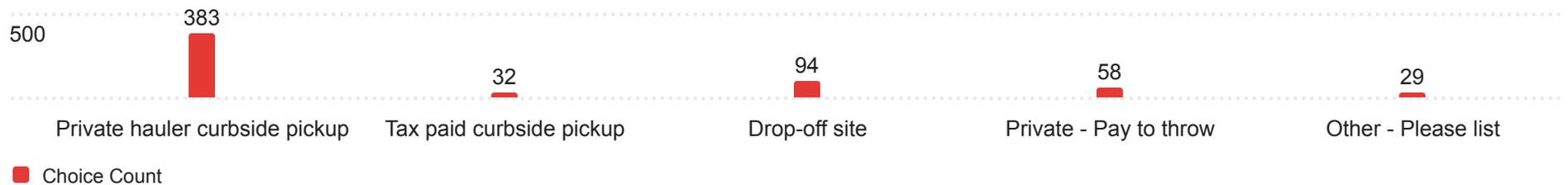
385 Responses



Other responses to information and resources helpful for waste reduction and recycling included 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.

## Q12 - How does your household typically dispose of trash (i.e. non-recyclable waste)? Select all that apply. - Selected Choice

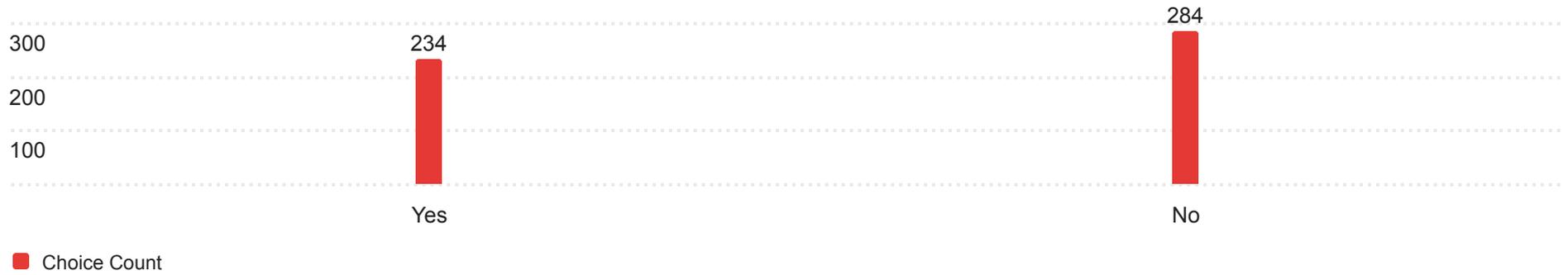
516 Responses



Other ways household trash is disposed of included prepaid trash bags, subscription dumpsters, rent or association dues covering dumpsters, or disposal at third party locations such as employers or hauling downstate.

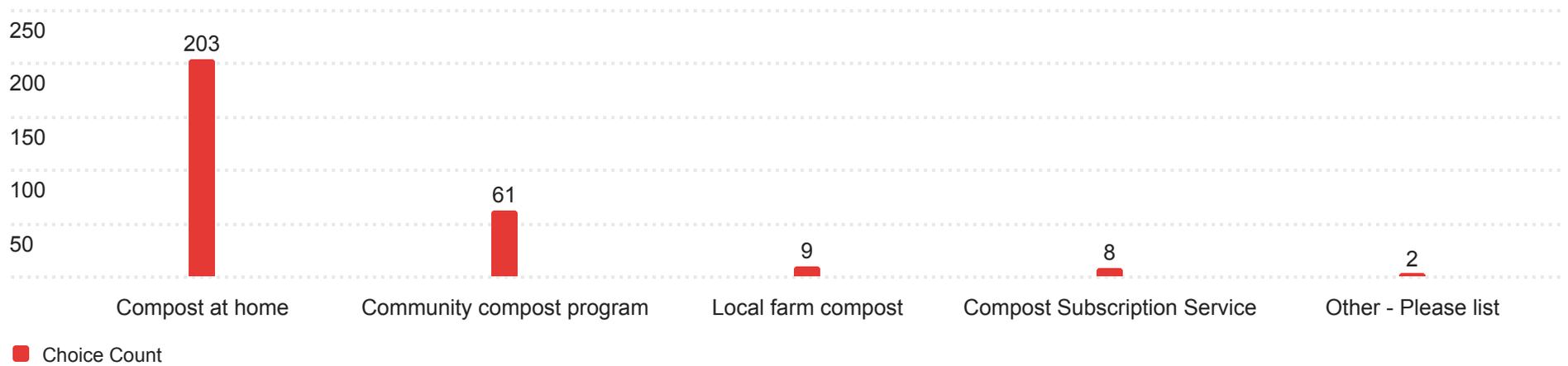
### Q13 - Do you participate in composting?

518 Responses



### Q13A - How do you compost? Select all that apply. - Selected Choice

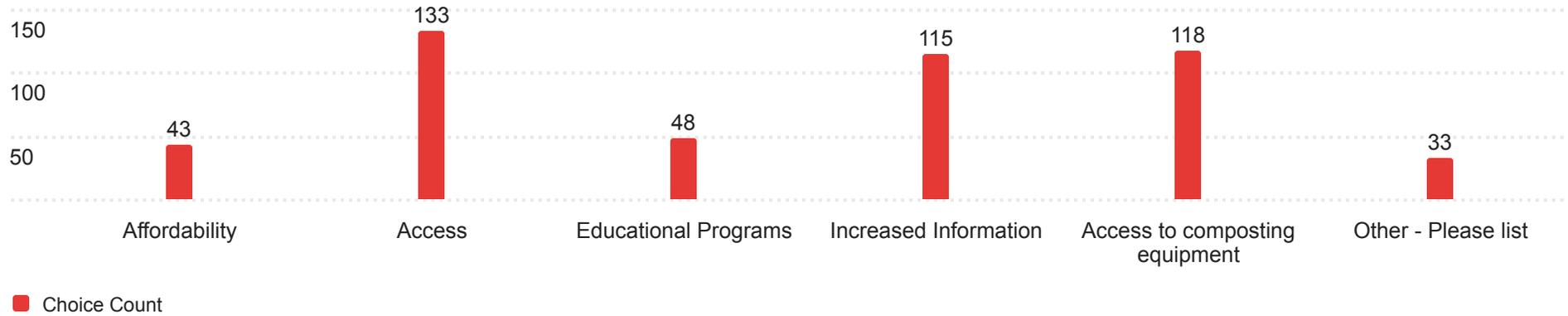
234 Responses



Other composting methods included utilizing Emmet County’s composting drop-off.

### Q13B - If you do not utilize compost programs, what would encourage you to participate in composting? Select all that apply. - Selected Choice

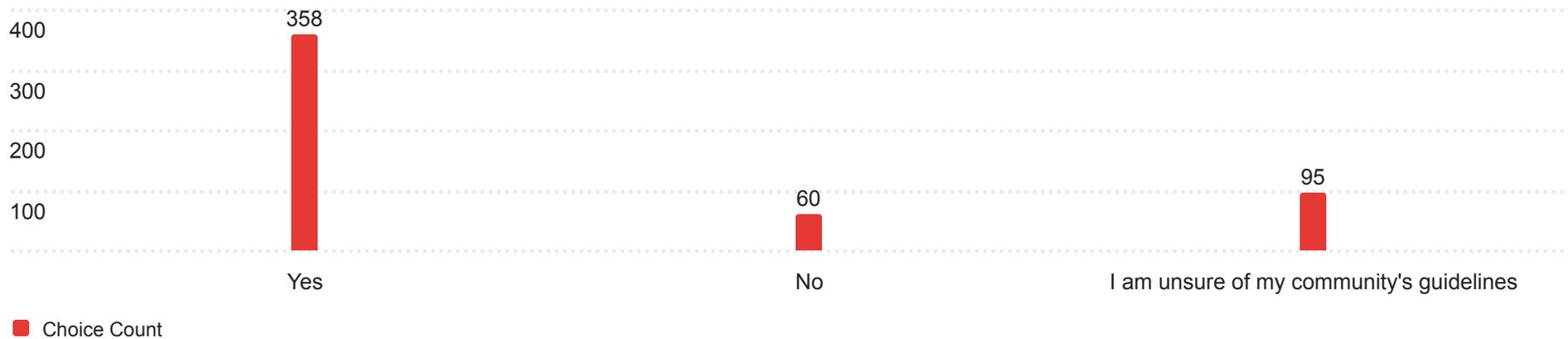
247 Responses



Other ways that composting can be encouraged include addressing concerns of smells, animals and pests, multi-unit options, and increasing composting education.

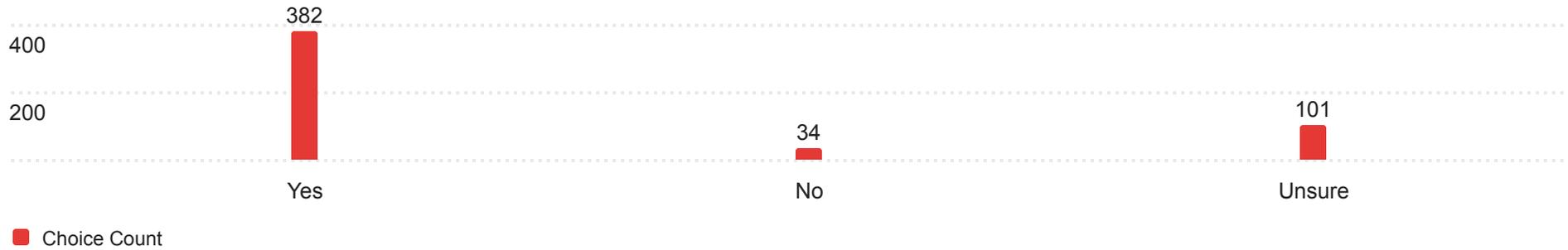
### Q14 - Are the rules and guidelines clear for recycling in your community clear?

513 Responses



### Q15 - Do you know what recycling items are not accepted by your local program?

517 Responses



### Q17 - What ways could our communities be doing a better job of managing waste and resources?

Select all that apply. - Selected Choice

429 Responses



Other ways to improve managing waste and resources included curbside and single stream recycling, increasing education opportunities, transparency of recycling, increased household hazardous waste and difficult to recycle item collection.

## Q18 - What services would you like to see offered in your community? Select all that apply. - Selected Choice

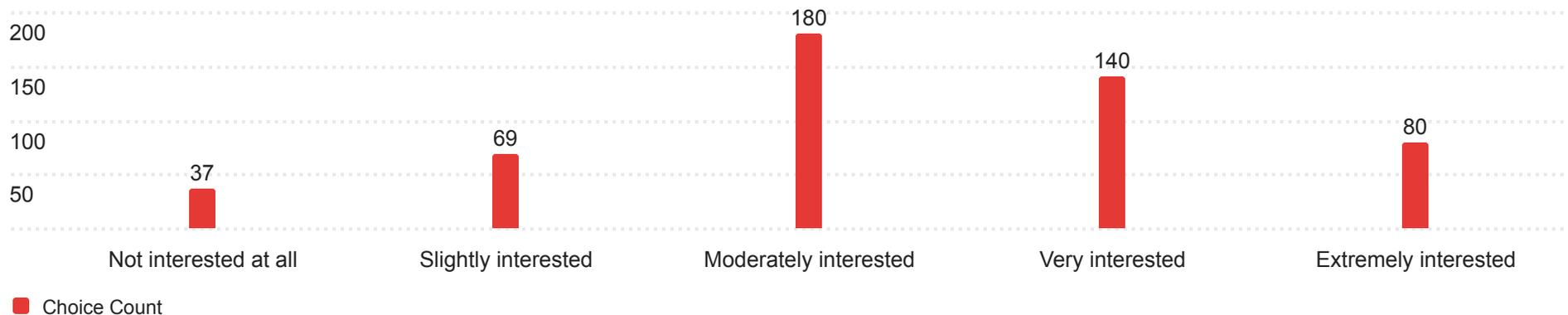
449 Responses



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.

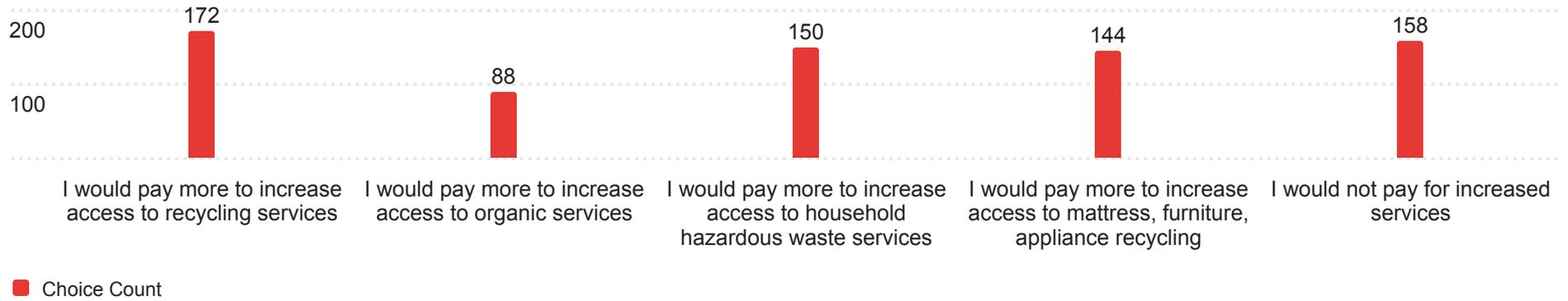
## Q19 - How interested are you in learning more about waste reduction and management, recycling, and organics in your community?

506 Responses



## Q20 - Are you willing to pay for increased service and access? Select all that apply.

473 Responses

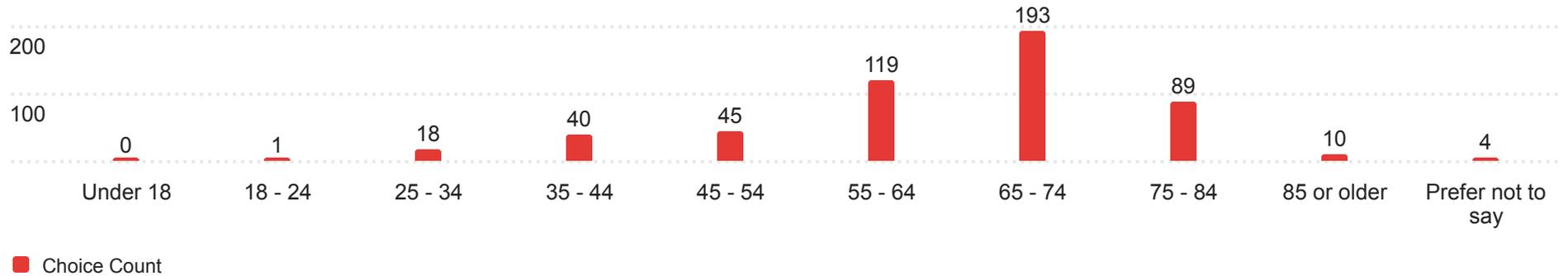


## Q21 Are there any other considerations in regards to materials management (trash, recycling, organics, etc.) planning that should be considered or examined by the respective Materials Management Planning Committees?

Considerations and thoughts 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.

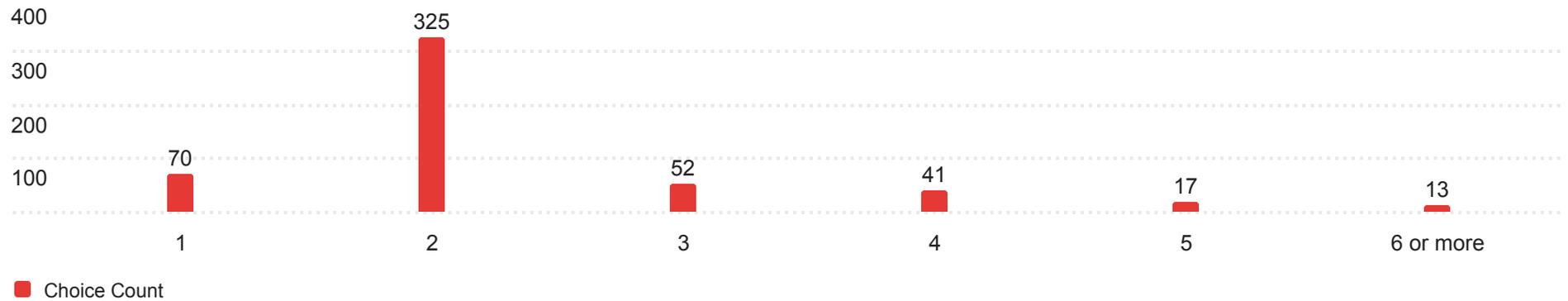
## Q22 - What age range do you fall into?

519 Responses



## Q23 - Which of the following describes the number of people, including yourself, living in your household?

518 Responses



## Q24 - Which of the following best describes your total annual household income?

512 Responses

