Antrim County
Materials Management Planning Committee

Date: January 22, 2026
Time: 2:00 p.m. – 3:00 p.m.
Location: 203 E. Cayuga Street
Bellaire, MI 49615

PROPOSED AGENDA

  I. **Call to Order**

 II. **Public Comment**

III. **Approval of Agenda**

 IV. **Approval of October 23, 2025 Meeting Minutes (pgs. 2-4)**

  V. **MMPC Membership Reduction (pg. 5)**

 VI. **Election of Officers**

VII. **2026 Meeting Dates (pg. 7)**

VIII. **Materials Management Planning**

     a. **Process Update**

     b. **Data Review (pgs. 8-46)**

     c. **MMP LUG Survey (pgs. 47-57)**

     d. **MMP Business Survey (pgs. 58-68)**

     e. **MMP Resident Survey (pgs. 69-82)**

     f. **Goals and Objectives Discussion**

 IX. **Committee Member Comments**

  X. **Public Comment**

 XI. **Adjourn**

Posted:_____

Signature: _____

Antrim County
Materials Management Planning Committee Minutes
October 23, 2025 at 2:00 PM
Antrim County Government Center
203 E. Cayuga St., Bellaire, MI 49615

MMPC Member Attendance			
Andre Grobaski, GFL *rep. of a solid waste disposal facility*	*E*	Bill Hefferan, Antrim County *elected official of the county*	*P*
Melissa Zelenak, Sunshine Recycling *rep. of a hauler*	*P*	Mark Byard, Central Lake Township *elected official of a township*	*P*
Mark Bevelhymer, GFL *rep. of a materials recovery facility (MRF)*	*E*	Michelle Fox, Village of Central Lake *elected official of a city or village*	*E*
Vacancy *rep. of a composting facility*	-	Vacancy business rep. generating material	-
Vacancy *rep. of waste diversion, reuse, or reduction*	-	Isha Pithwa, Networks Northwest *rep. of the regional planning area*	*P*
Lindsey Mason, ECT *rep. of an environmental interest group*	*P*	*Attendance Key:* *P – Present* *A – Absent* *E - Excused Absence*	
Others in Attendance: Terry VanAlstine (Antrim County BOC), Aubree Carlisle (EGLE), Dean Whitt (Whitt Farms), Mathew Cooke (DPA – Networks Northwest)			

I. **Welcome and Introductions**

Melissa Zelenak, Chair, called the meeting to order at 2:05 p.m.

II. **Public Comment**

None.

III. **Review Proposed Agenda**

Motion by Andy Grobaski, supported by Mark Byard, to approve the August 28, 2025 MMPC agenda. Motion carried unanimously.

IV. Approval of July 24, 2025 Meeting Minutes

Motion by Mark Byard, supported by Bill Hefferan, to approve the July 24, 2025 MMPC meeting minutes. Motion carried unanimously.

V. Food Waste Presentation

VI. MMP Process Update

a. Process Update

Mathew Cooke provided an update on the MMP process:

- 180 Resident responses in Charlevoix County
- Kearney Township posting on their webpage for survey promotion
- Municipal data collection completion
- Business and LUG survey collection continues, identify non-responding units
- Filling compost vacancy on MMPC
- Review of County Resident Survey Analysis at next meeting

b. MMP Discussion

The MMPC members went through some question and answer prompts using polling software.

1. Is there anything you would like to learn about, relating to materials management, that would assist in the planning process?
    - Food Waste audits
    - Home composting
    - What is recycling costing the county vs how much is being recycled
    - What do existing contracts say? Do we need to add data?
2. What is one word that describes Antrim County materials management?
    - Necessary
    - Primitive
    - Basic
    - High potential
    - Educational opportunity
    - Bare minimum
3. What is the largest opportunity for materials management in Antrim County?

- ● Cutting cost
- ● Expand materials
- ● Special materials

4. What residential recycling goals do you have for Antrim County?

- ● Education
- ● Curbside
- ● Contracts for residential recycling

5. What commercial recycling goals do you have for Antrim County?

- ● Need to do it
- ● What is the cost?
- ● Feasibility study for businesses
- ● Logistics of this
- ● Textiles

VII.   Committee Member Comments

None.

VIII.   Public Comment

Dean Whitt introduced himself to the MMPC and has an interest in composting.

IX.   Adjourn

Melissa Zelenak, Chair, adjourned the meeting at 3:30 p.m.

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4

Thursday, January 22, 2026

To: Antrim 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!

MMPC Membership Reduction
After several attempts to fill the vacancies on the Antrim County Materials Management Planning Committee and running into issues with meeting quorum to hold official meetings, Chair Melissa Zelenak, Vice-Chair Lindsay Mason, and myself met with EGLE staff members Christina Miller and Tracy Tomaszewski. In our meeting we discussed the provision in 324.11572 Planning committee; membership; terms of Part 115 which states, "*If the CAA has difficulty finding qualified individuals to serve on the planning committee, the department may approve a reduction in the number of members of the planning committee.*"

The provision includes a minimum of 7 members which still must meet certain requirements (see below). When we have not had a quorum, there has been a consistent 4 members available for meeting business. With the current membership we have, we can rearrange members without eliminating any besides one of GFL's members. This would also be beneficial as GFL members have had difficulties both attending. The following is the motion sent to the Board of Commissioners, as the County Approval Agency for the MMP, being the authority for appointments to the MMPC.

Motion by _____, seconded by _____, to direct the Designated Planning **Agency to communicate with EGLE a reduction of members to the Antrim County Materials Management Planning Committee to include:**

1. *A representative of the solid waste disposal industry that provides service in the planning area.*
   o *Melissa Zelenak - Sunshine Recycling*
2. *A representative of a materials utilization facility that provides service in the planning area.*
   o *Mark Bevelhymer or Andre Grobaski - GFL*
3. *Two individuals, each of whom is either a member of an environmental interest group who resides in the planning area or a representative of the regional planning agency.*
   o *Isha Pithwa – Networks Northwest (RPA)*
   o *Lindsay Mason - Elk Rapids MMPC/ECT (Environmental Interest Group)*
4. *An elected official of the county.*
   o *Bill Hefferan - Antrim County Board of Commissioners*
5. *An elected official of a township in the planning area.*
   o *Mark Byard - Central Lake Township*
6. *An elected official of a city or village in the planning area.*
   o *Michelle Fox - Village of Central Lake*

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

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

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

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

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

2026 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 Antrim County Materials Management Planning Committee's 2026 Meeting Schedule.

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.

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6

2026 Antrim County
Materials Management Planning Committee Meeting Schedule

Meetings are generally held on the fourth Thursday of the month at 2:00 pm with meetings taking place at the Antrim County Government's Board of Commissioners Room (203 E. Cayuga St., Bellaire, MI 49615).

2:00 p.m. Thursday January 22 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

2:00 p.m. Thursday February 26 2026
Emmet County Recycling
7363 Pleasantview Lane
Harbor Springs, MI 49740

2:00 p.m. Thursday March 26 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

2:00 p.m. Thursday April 23 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

2:00 p.m. Thursday May 28 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

2:00 p.m. Thursday June 25 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

2:00 p.m. Thursday July 23 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

2:00 p.m. Thursday August 27 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

2:00 p.m. Thursday September 24 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

2:00 p.m. Thursday October 22 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

2:00 p.m. Thursday November 19 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

2:00 p.m. Thursday December 17 2026
Antrim County Government Center
Board of Commissioners Room
203 E. Cayuga St., Bellaire, MI 49615

Memo

TO: Mathew Cooke, Networks Northwest
FROM: Caitlyn Wouters and Kristen Wieland, RRS
DATE: January 8, 2026
RE: Antrim County MMP Data Analysis - DRAFT

Introduction

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

The baseline data will support the identification of strategies for meeting the Benchmark Recycling Standards, both in the near term and over the planning horizon. This memorandum presents a summary of the current materials generation and recovery conditions within Antrim County. It incorporates modeled data prepared by RRS, along with any available actual data provided by the Networks Northwest planning agency or county MMP Committee participants. 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 Antrim County is either readily recyclable or compostable**. Based on the available data, as described in detail within this memo, RRS estimates Antrim County is currently achieving the following countywide recycling rate (including traditional recycling and organics):

- **Countywide Recycling Rate Estimate:** 13.3%

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 Antrim County, RRS found the per capita MCW generation rate to be unusually high (12 pounds per person per day), so even modeled recycling data based on reported landfill tonnage would have been minimally informative. Having actual community-level data is the only way to monitor progress toward goals and therefore should be considered in all future MMP Committee discussions to ensure impact can be measured during implementation of the MMP. Additional information about the modeling and methodology can be found in the RRS MCW Modeling section of this report. Additional examples of data gaps for Antrim County include:

- Establishing consistent reporting of event participation and material quantities collected would improve the County's ability to quantify recovery, identify priority material streams, and track progress over time.
- 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.
- 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.
- 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.

Drop-off recycling locations are well distributed across the county, providing 24/7 access to recycling receptacles for paper, cardboard, glass, plastic bottles and jugs, and metal cans. With eight drop-off sites, the Conservation District's system exceeds the Benchmark Recycling Standard (BRS) for drop-off access. Antrim County should continue to monitor usage of the recycling locations, including periodically surveying participants to ensure the centers are meeting their needs, to ensure compliance with the BRS in Part 115, as well as monitoring the growth of single-family dwellings to determine access needs for curbside recycling, consistent with the BRS.

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 3,800 tons of landfill-bound materials leaving Antrim 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. As noted in a 2021 SEEDS study, Antrim, Benzie, Charlevoix, Kalkaska, Manistee and Missaukee Counties all have relatively small amounts 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 proximity to large scale composting operations in Grand Traverse County could present an opportunity for increased organics collection.

2. Plastic film totals over 1,800 tons of landfill-bound materials generated in Antrim 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 Antrim County is landfilling more than 1,500 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 1,400 tons in the county.

5. Mixed paper, estimated at over 1,100 tons 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 Antrim County, comprising over 900 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 Antrim 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, 1,119 tons)
- **ferrous metal** (426 tons)
- **#1 PET plastic** (bottle and non-bottle) (344 tons)
- **#2 HDPE plastic** (colored and natural) (185 tons)
- **white office paper** (174 tons)
- **magazines** (151 tons)
- **steel cans** (142 tons)
- **newspaper** (125 tons)
- **aluminum cans** (122 tons)
- **#5 PP plastic** (104 tons)
- **polycoated paper cups and cartons** (96 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 Antrim 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 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 363 tons annually in Antrim 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. Antrim County discards an estimated 181 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. Antrim County generates an estimated 13 tons annually, but a local recycler (BARC) offers a solution through community partnership.

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 Antrim 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. Employment data shows that aligning strategies with Antrim County's business profile ensures maximum diversion impact and supports progress toward Materials Management Plan goals.

- The concentration of establishments and employment in 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, lodging, and institutional food service operations in Antrim County.
- Similarly, the scale and growth of Retail Trade, Manufacturing, and Construction point to corrugated cardboard and other packaging materials as high-volume, readily recyclable commodities with strong recovery potential. These sectors collectively represent a significant share of establishments and jobs and are well-suited for targeted commercial recycling initiatives, improved access to recycling service, and outreach to private haulers and businesses.
- 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 Antrim County's evolving business profile, the County

can more effectively reduce disposal, increase recovery of high-value materials, and support progress toward its Materials Management Plan goals.

State Landfill Report

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

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

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

For this analysis, RRS reviewed EGLE's annual 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

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

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

ANTRIM COUNTY

TOTAL TONS LANDFILLED BY TYPE

Table 2 and Figure 1 below present the total tons of landfilled material in each of the five broad categories attributed to Antrim County on the annual landfill reports from 2020 to 2024. The largest share by weight is Municipal Solid Waste (MCW), representing approximately 82% of the total.

According to demographic data provided by Networks Northwest, originally sourced from the American Community Survey, Antrim County had an estimated population of 23,876 in 2023. This corresponds with an estimated MCW disposal rate of approximately 12 pounds per person per day based on the 5-year average reported tonnage, which is unusually high. For comparison, the state average reported by EGLE is 4.64 pounds per person per day.

One potential explanation for the elevated MCW per capita rate is robust commercial activity. Commercial waste contributes to the total landfilled tonnage but does not increase the resident population used in the per capita calculation, thereby inflating the apparent per capita disposal rate. However, this result could also reflect a reporting or categorization error, or it may accurately indicate a genuinely higher-than-typical disposal rate for the county's population. Improved data reporting and tracking infrastructure would help clarify these possibilities. **For planning purposes, the county should anticipate a waste generation rate that falls between the state average of 4.64 pounds per person per day and approximately 12 pounds per person per day.**

REPORTED LANDFILL WASTE TYPE, TONS[2]	2020	2021	2022	2023	2024	AVERAGE 2020 - 2024	% OF TOTAL AVERAGE
ADC	1.00	137.00	1,035.00	-	-	234.60	0%
C&D	1,194.00	1,033.00	1,256.00	1,807.97	1,789.74	1,416.14	2%
IW	7,334.00	10,262.00	6,569.00	8,395.63	9,736.89	8,459.50	13%
MCW	39,523.67	54,506.00	44,198.67	62,471.46	61,232.00	52,386.36	82%

[2] 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.

OTHER	170.00	136.00	766.00	255.10	5,352.76	1,335.97	2%
Grand Total	**48,222.67**	**66,074.00**	**53,824.67**	**72,930.16**	**78,111.39**	**48,222.67**	

Table 2: Michigan Landfill Waste Disposed by Antrim County by Type 2020 – 2024

MICHIGAN LANDFILL WASTE GENERATED BY ANTRIM COUNTY BY TYPE IN TONS, AVERAGE 2020 - 2024
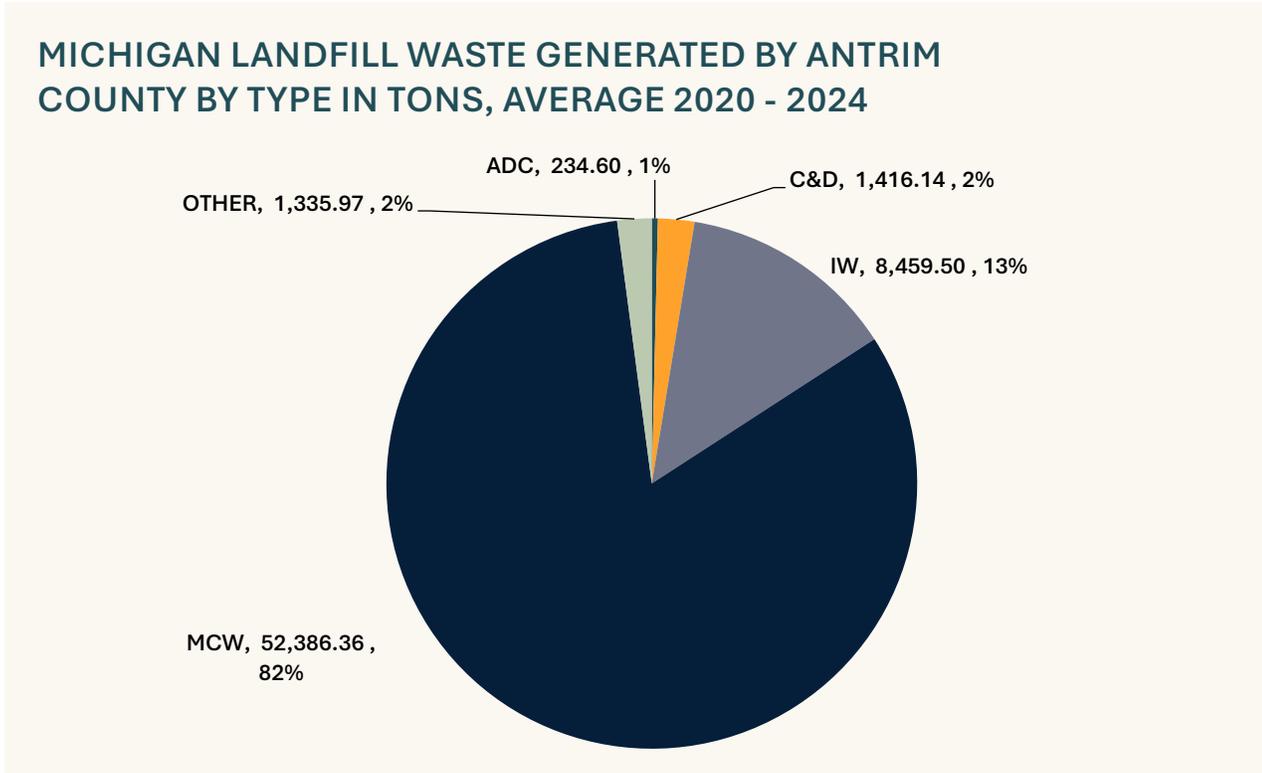

Figure 1: Michigan Landfill Waste Generated by Antrim County by Type in Tons, Average 2020 - 2024

DISPOSAL FACILITIES RECEIVING LANDFILLED MATERIAL FROM ANTRIM COUNTY IN FY 2024

Table 3 below lists the disposal facilities that received landfilled materials originating from Antrim County in 2024 and provides corresponding quantities, by material type, reported in tons. Table 4 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 Antrim County 2024

	Tons	Wexford County Landfill (Wexford County)	City Environmental Services, Inc of Waters (Crawford County) (City Environmental Services, Inc of Water)	Montmorency-Oscoda-Alpena SWMA (Montmorency County)	GFL North Michigan Landfill, LLC (Presque Isle County)	Glens Sanitary Landfill (Leelanau County)	Whitefeather Landfill (Bay County)
ADC	-	-	-	-	-	-	-
C&D	1,790	305	1,089	128	68	200	-
IW	9,737	-	9,357	-	-	275	105
MCW	61,232	56,132	2,230	2,013	733	117	8
OTHER	5,353	54	5,293	-	-	5	-
Grand Total	**78,111**	**56,491**	**17,970**	**2,140**	**801**	**597**	**112**

Table 3: Landfills Receiving Waste from Antrim County in 2024

	Wexford County Landfill (Wexford County)	City Environmental Services, Inc of Waters (Crawford County) (City Environmental Services, Inc of Water)	Montmorency-Oscoda-Alpena SWMA (Montmorency County)	GFL North Michigan Landfill, LLC (Presque Isle County)	Glens Sanitary Landfill (Leelanau County)	Whitefeather Landfill (Bay County)
Remaining Capacity (CY)	15,820,706	17,590,764	1,517,378	871,763	17,590,764	794,195
Capacity Used in 2024 (CY)	366,293	54,650	91,437	111,477	54,650	170,961
Est Years of Remaining Capacity	43 - 46	321 - 322	17	8 -9	321 - 322	5

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 be applied directly to the county's reported MCW tonnage to estimate the tons of each material category being landfilled.** However, because Antrim County's 2024 reported MCW tonnage appears unusually high and cannot be confirmed as representative of typical disposal conditions, **RRS applied the characterization model to an alternative baseline: the amount of MCW Antrim 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 Antrim 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 2 below illustrates the recyclability of municipal and commercial waste (MCW) by weight for materials currently landfilled, based on an estimated MCW tonnage of 21,360; the amount of MCW Antrim 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.

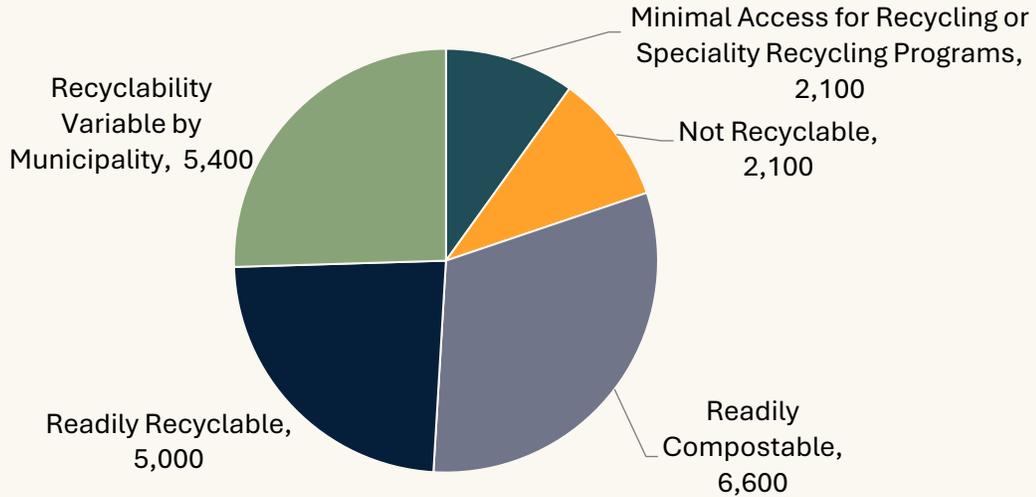**LANDFILLED MCW MATERIAL RECYCLABILITY MODEL BY WEIGHT IN TONS FOR ANTRIM COUNTY**

Figure 2: RRS Model, Landfilled MCW Recyclability by Weight in Tons

RRS MCW COMPOSITION MODEL BY WEIGHT

Figure 3 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.
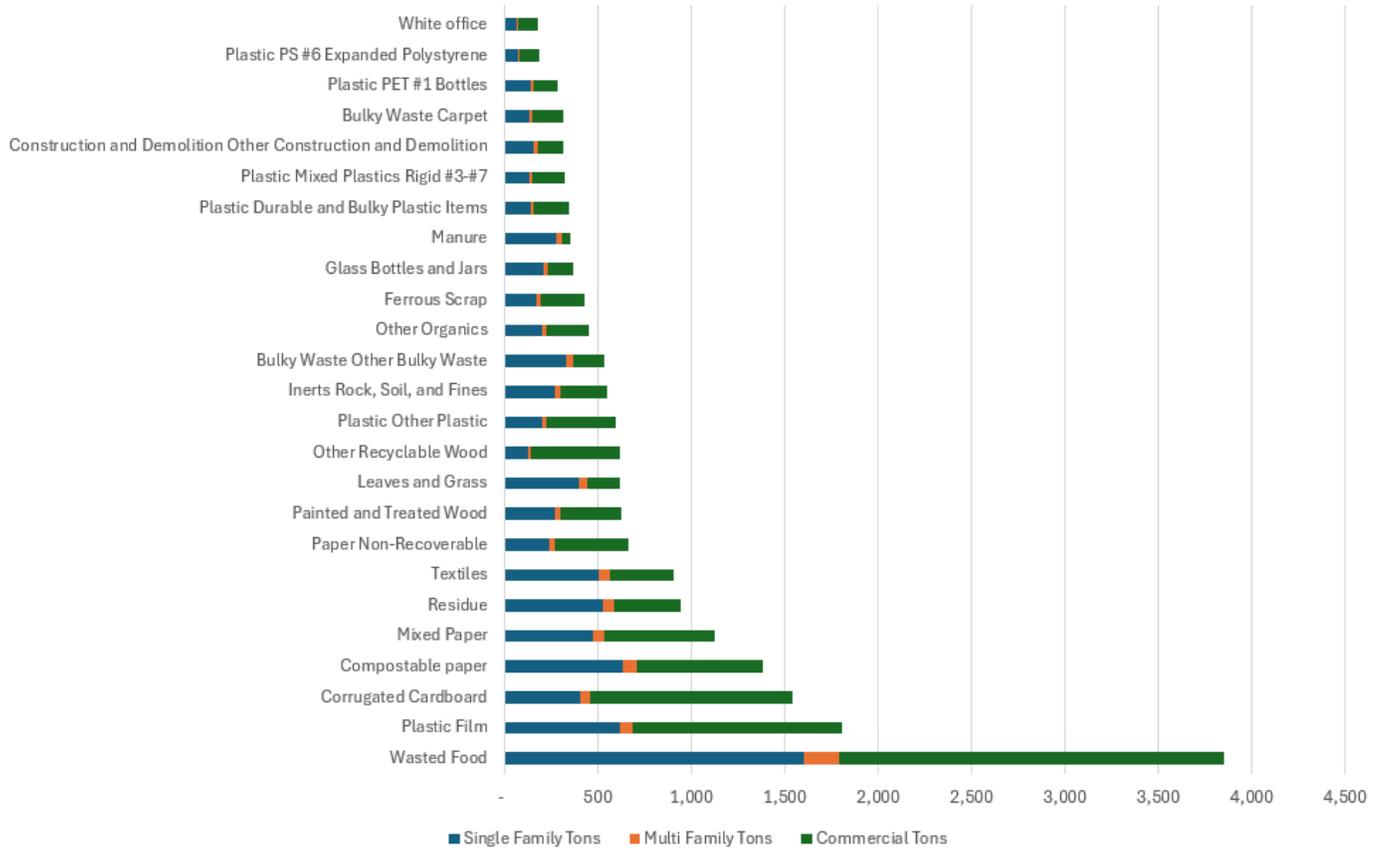
Figure 3: RRS Modeled MCW Composition by Weight

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. The following table illustrates the potential economic value of materials currently being landfilled by residents and businesses in Antrim County. It provides a breakdown of Antrim's estimated 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 Antrim County are currently landfilled each year.**

Type Modeled	Ease of recoverability	Total Tons	Recyclingmark ets.net value 9.15.25	Est Market Value of Tons
Corrugated Cardboard	Readily Recyclable	1,537	$ 65.00	$ 99,893
Mixed Paper	Readily Recyclable	1,119	$ 35.00	$ 39,155
Steel Cans	Readily Recyclable	142	$ 160.00	$ 22,798
White office	Readily Recyclable	174	$ 125.00	$ 21,778
Aluminum Cans	Readily Recyclable	122	$ 80.00	$ 9,764
Magazines	Readily Recyclable	151	$ 35.00	$ 5,279
Newspaper (ONP)	Readily Recyclable	125	$ 35.00	$ 4,388
Plastic HDPE #2 Bottles Natural	Readily Recyclable	89	$ 46.00	$ 4,075
Plastic PET #1 Bottles	Readily Recyclable	280	$ 5.75	$ 1,608
Paperboard Boxboard	Readily Recyclable	40	$ 35.00	$ 1,408
Plastic PET #1 Non-Bottle	Readily Recyclable	64	$ 5.75	$ 370
Plastic HDPE #2 Bottles colored	Readily Recyclable	96	$ 2.50	$ 239
Plastic HDPE #2 Non-Bottle colored and natural combined	Readily Recyclable	5	$ 0.50	$ 3
				$ 210,757
Plastic Film	Recyclability Variable by Municipality	1,804	$ 1.00	$ 1,804
Plastic PP#5	Recyclability Variable by Municipality	104	$ 7.50	$ 783
Plastic Mixed Plastics Rigid #3-#7	Recyclability Variable by Municipality	320	$ 1.50	$ 480
				$ 3,067
				$ 213,824

Figure 4: Example Recycling Market Values for 9.15.2025

Organic Material

Organic material includes edible surplus food, inedible food scraps, and yard debris such as leaves, brush, grass clippings and trimmings. In Michigan, yard clippings are prohibited from disposal in municipal solid waste landfills under Part 115 of the Natural Resources and Environmental Protection Act (NREPA) [3]. Despite this prohibition, waste characterization studies routinely indicate that yard materials still appear in disposed MCW streams (typically due to seasonal cleanouts, mixed loads, or limited access to convenient organics options). Within Antrim County, **Elk Rapids Village** and **Mancelona Village** operate municipal curbside yard waste collection programs; however, the tonnages collected through these programs are not currently available, limiting the County's ability to quantify organics diversion and track progress over time.

SEEDS ORGANICS ANALYSIS

A 2021 report[4] 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

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

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

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 Antrim County generated an estimated 6,149 tons of organic waste per year with approximately 41 tons diverted to permitted composting sites annually. Based on RRS's current model of landfilled MCW and the average MCW tons for the county, in 2024 RRS estimates that Antrim County generated approximately 6,600 tons of organic waste that was landfilled. **For planning purposes, Antrim County should estimate 6,149 – 6,600 tons of organic waste generated (food scraps, yard waste, brush, leaves, branches and trimmings) annually.**

SEEDS REPORT ESTIMATED ORGANICS GENERATION AND DIVERSION 2021

Figure 5 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, Antrim County's overall organics diversion rate would reach 22.8%. The 2021 study 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 Grand Traverse County could present an opportunity for increased organics collection. At the time, it was estimated that ~ 110 tons of food waste is generated per year from food stores within the county and ~240 tons per year from food processing operations.

ANNUAL TONS YARD AND FOOD WASTE

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

*Current Diversion tonnage is estimated based on 2021 survey data and 2019 EGLE Waste Data System (WDS) of reported volumes to permitted composting sites.

**Recycle includes backyard composting, community composting and animal feed. The estimated diversion by sub-category is included in the appendix.

Figure 5: 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. The table below applies both the state average MCW disposal rate of 4.6 pounds per person per day and the 12 pounds per person per day calculated from 2020 - 2024 reported landfill tonnages to illustrate the potential range of MCW volumes the county may need to manage in the coming decades.

	Projected County Population	Annual MCW Tons at 4.6 Lbs / PP / day	Annual MCW Tons at 12 Lbs / PP / day
2025	24,645	20,869	54,073
2030	25,045	21,208	54,951
2035	25,175	21,318	55,236
2040	25,000	21,170	54,852

| 2045 | 24,504 | 20,750 | 53,764 |
| 2050 | 23,992 | 20,316 | 52,641 |

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 Antrim County's commercial landscape and its implications for materials management planning. These data form the basis for Figure 6, Figure 7, and Figure 8 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**, Antrim County experienced notable growth in the number of business establishments, particularly in sectors associated with higher waste generation and recoverable materials. **Construction** increased from **82 to 97 establishments**, **Retail Trade** from **68 to 89**, **Accommodation and Food Services** from **41 to 58**, and **Health Care and Social Assistance** from **32 to 52** establishments. Growth was also observed in **Manufacturing** (38 to 44 establishments), **Professional, Scientific, and Technical Services** (26 to 47), and **Administrative Support and Waste Management Services** (23 to 31). These trends indicate an expanding and diversifying business 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 Antrim County include **Accommodation and Food Services (899 jobs)**, **Retail Trade (687 jobs)**, **Manufacturing (678 jobs)**, and **Construction (599 jobs)**. Employment growth was particularly strong in **Construction** (448 to 599 jobs), **Wholesale Trade** (52 to 98 jobs), and **Arts, Entertainment, and Recreation** (145 to 181 jobs). From a materials management perspective, these 2023 data reinforce several priority opportunities identified in EGLE's MMP guidance. The concentration of establishments and employment in 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, lodging, and institutional food service operations in Antrim County.

Similarly, the scale and growth of **Retail Trade**, **Manufacturing**, and **Construction** point to **corrugated cardboard** and other packaging materials as high-volume, readily recyclable commodities with strong recovery potential. These sectors collectively represent a significant share of establishments and jobs and are well-suited for **targeted commercial recycling initiatives**, improved access to recycling service, and outreach to private haulers and businesses.

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 Antrim County's evolving business profile, the County can more effectively reduce disposal, increase recovery of high-value materials, and support progress toward its Materials Management Plan goals.

INDUSTRY AND EMPLOYMENT

TOTAL NUMBER OF ESTABLISHMENTS
608

TOTAL NUMBER OF JOBS
3,831

TOP 5 INDUSTRIES
- » **Accomodation and Food Services**
- » **Retail and Trade**
- » **Manufacturing**
- » **Construction**
- » **Other services (except public administration)**

Figure 6 : Industry and Employment Statistics, Courtesy Networks Northwest

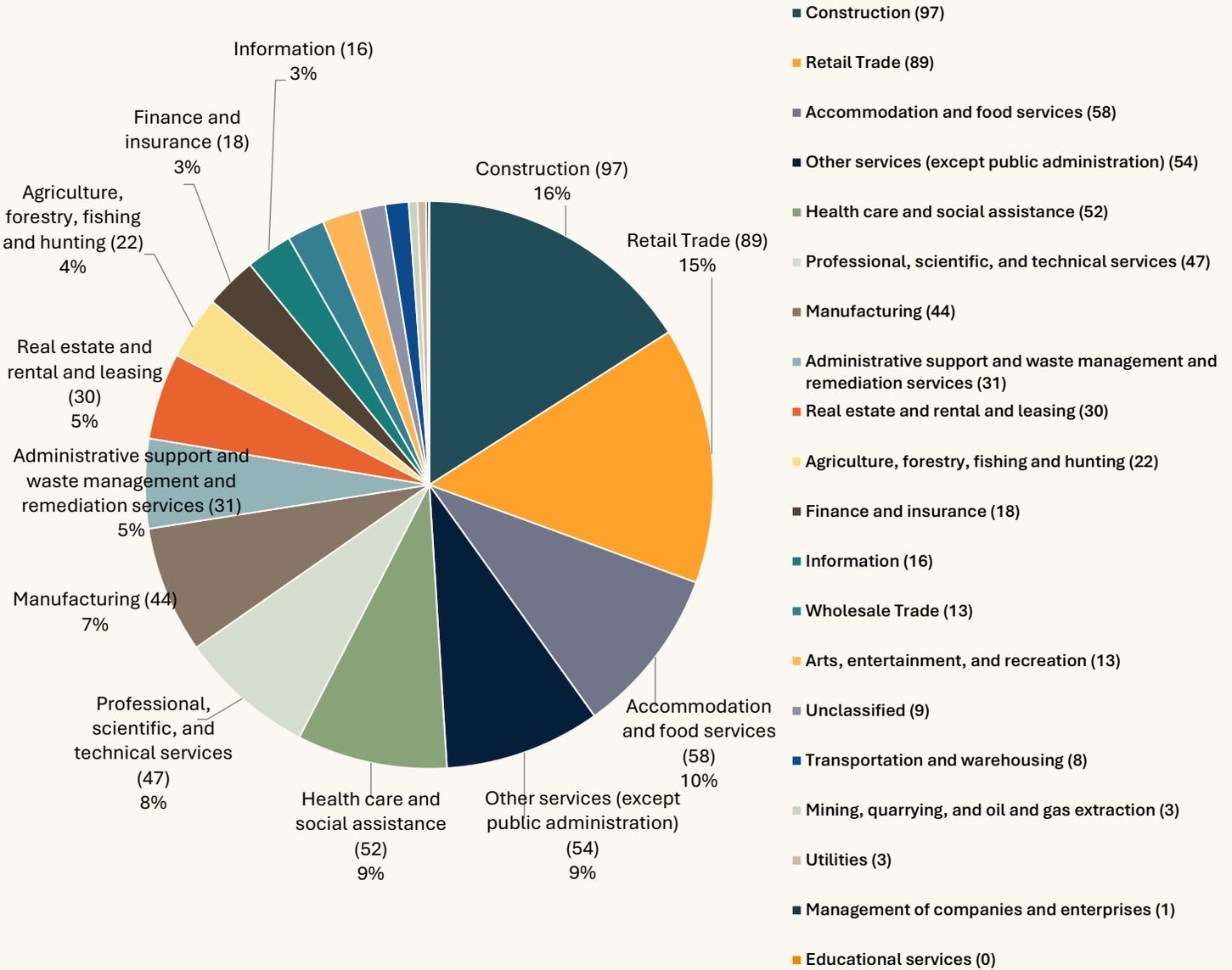## ANTRIM COUNTY BUSINESS SECTORS BY NAICS CODE (# OF ESTABLISHMENTS) 2023

- Construction (97)
- Retail Trade (89)
- Accommodation and food services (58)
- Other services (except public administration) (54)
- Health care and social assistance (52)
- Professional, scientific, and technical services (47)
- Manufacturing (44)
- Administrative support and waste management and remediation services (31)
- Real estate and rental and leasing (30)
- Agriculture, forestry, fishing and hunting (22)
- Finance and insurance (18)
- Information (16)
- Wholesale Trade (13)
- Arts, entertainment, and recreation (13)
- Unclassified (9)
- Transportation and warehousing (8)
- Mining, quarrying, and oil and gas extraction (3)
- Utilities (3)
- Management of companies and enterprises (1)
- Educational services (0)

Figure 7: Antrim Country Business Sectors by NAICS Code, # of Establishments. Data provided by Networks Northwest

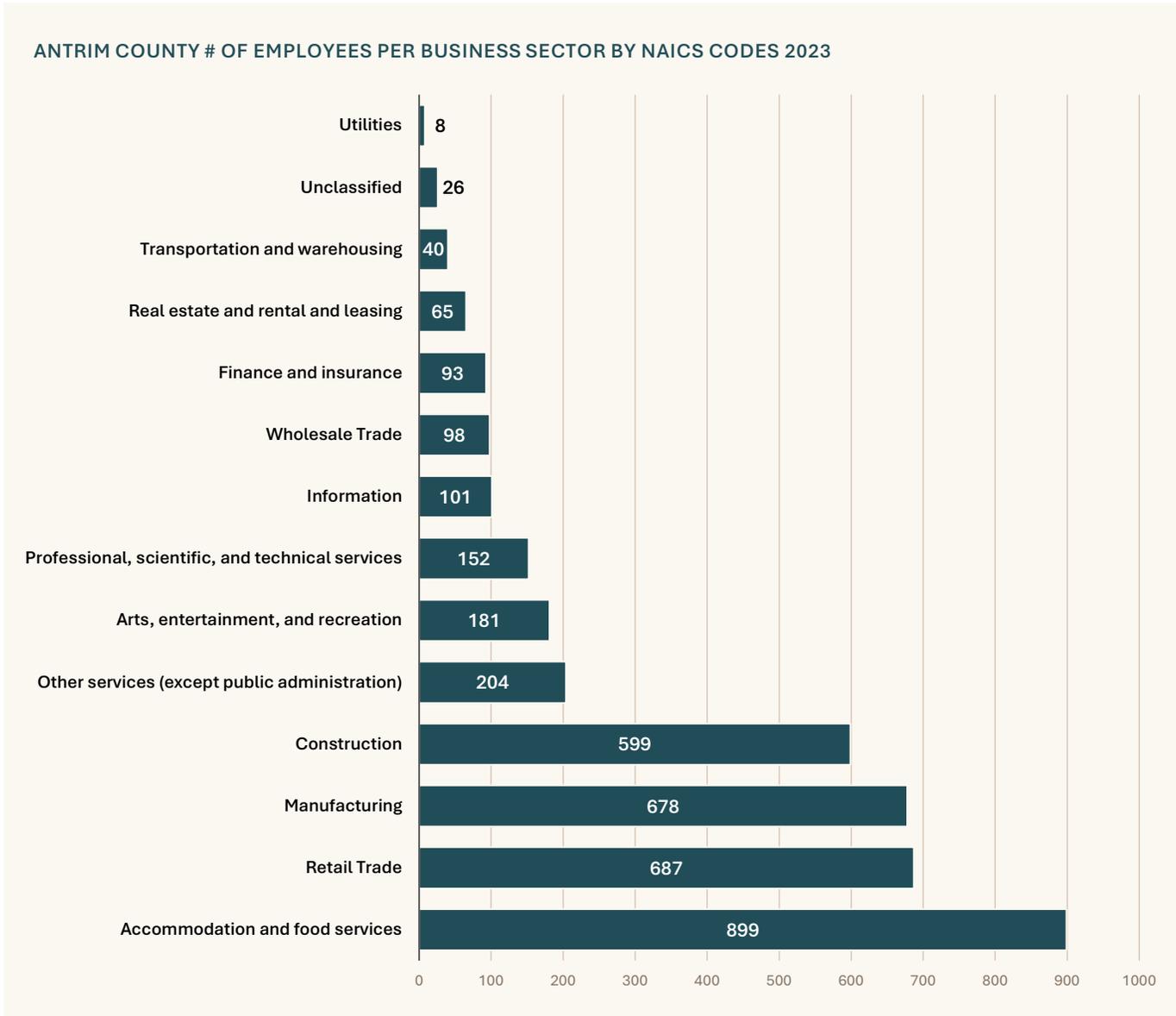## ANTRIM COUNTY # OF EMPLOYEES PER BUSINESS SECTOR BY NAICS CODES 2023

Figure 8: Antrim County # of Employees by NAICS Code, 2023. Data Provided by Networks Northwest

Compliance with Part 115 and Benchmark Recycling Standards

Antrim 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 Antrim 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. Antrim County's recycling program consists of drop-off sites managed by the Antrim County Conservation District. The drop-off locations include:

- **Alden** – Helena Township Hall, 8751 Helena Road, Alden

- **Bellaire** – Antrim County Transportation (ACT) Building, 4700 M-88

- **Central Lake** – Central Lake Governmental Center, 1622 M-88

- **Elk Rapids** – Elk Rapids Government Center, 315 Bridge Street

- **Ellsworth** – Behind the Ellsworth Dollar General, 9643 Lake Street

- **Kewadin** – Old Milton Township Hall, 7268 Cairn Hwy

- **Mancelona** – Mancelona Township Hall, 9610 M-88 Hwy South

- **Star Township** – Star Township Hall, 6886 Alba Hwy

Drop-off locations provide 24/7 access to recycling receptacles for paper, cardboard, glass, plastic bottles and jugs, and metal cans. With eight drop-off sites, the Conservation District's system exceeds the **Benchmark Recycling Standard** for drop-off access.

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. The figure 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." [5]

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 ANTRIM 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 two known municipal curbside collection programs for yard waste, located in **Elk Rapids Village** and **Mancelona Village**. Table 6 below provides a summary by community.

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

SUMMARY TABLE OF RECYCLING ACCESS BY COMMUNITY

COMMUNITY NAME	2020 CENSUS NAME	COMMUNITY POPULATION	# OF HOUSEHOLDS	POPULATION IN SINGLE FAMILY HOMES (1-4)	POPULATION IN MULTI-FAMILY HOMES (5+)	RECYCLING CURBSIDE ACCESS	RECYCLING DROP-OFF ACCESS
Ellsworth Village	Ellsworth Village	367	147	367	0	No Curbside Program	Antrim Conservation District Drop-Off
Banks Township	Banks township	1222	516	1222	0	No Curbside Program	Antrim Conservation District Drop-Off
Central Lake Village	Central Lake Village	960	416	916	44	No Curbside Program	Antrim Conservation District Drop-Off
Central Lake Township	Central Lake Township	1199	588	1177	22	No Curbside Program	Antrim Conservation District Drop-Off
Chestonia Township	Alba CDP (1 of 2)	136	53	136	0	No Curbside Program	Antrim Conservation District Drop-Off
Chestonia Township	Chestonia Township	376	162	376	0	No Curbside Program	Antrim Conservation District Drop-Off
Custer Township	Custer Township	1150	518	1069	81	No Curbside Program	Antrim Conservation District Drop-Off
Echo Township	Echo Township	952	369	952	0	No Curbside Program	Antrim Conservation District Drop-Off
Elk Rapids Village	Elk Rapids Village	1528	728	1321	207	No Curbside Program	Antrim Conservation District Drop-Off
Elk Rapids Township	Elk Rapids Township	993	489	906	87	No Curbside Program	Antrim Conservation District Drop-Off
Forest Home Township	Bellaire Village (1 of 2)	469	185	435	34	No Curbside Program	Antrim Conservation District Drop-Off
Forest Home Township	Forest Home Township	1206	604	1201	5	No Curbside Program	Antrim Conservation District Drop-Off
Helena Township	Alden CDP	123	75	123	0	No Curbside Program	Antrim Conservation District Drop-Off
Helena Township	Helena Township	814	413	755	59	No Curbside Program	Antrim Conservation District Drop-Off
Jordan Township	Jordan Township	888	367	888	0	No Curbside Program	Antrim Conservation District Drop-Off
Kearney Township	Bellaire Village (1 of 2)	582	238	540	42	No Curbside Program	Antrim Conservation District Drop-Off
Kearney Township	Kearney Township	1198	506	1082	116	No Curbside Program	Antrim Conservation District Drop-Off
Mancelona Township	Lakes of the North CDP (1 of 2)	596	278	596	0	No Curbside Program	Antrim Conservation District Drop-Off
Mancelona Village	Mancelona Village	1345	498	1310	35	No Curbside Program	Antrim Conservation District Drop-Off
Mancelona Township	Mancelona Township	2371	876	2349	22	No Curbside Program	Antrim Conservation District Drop-Off

Milton Township	Milton Township	2355	991	2355	0	No Curbside Program	Antrim Conservation District Drop-Off
Star Township	Alba CDP (1 of 2)	151	60	151	0	No Curbside Program	Antrim Conservation District Drop-Off
Star Township	Lakes of the North CDP (1 of 2)	448	183	448	0	No Curbside Program	Antrim Conservation District Drop-Off
Star Township	Star Township	429	180	424	5	No Curbside Program	Antrim Conservation District Drop-Off
Torch Lake Township	Eastport CDP	206	97	206	0	No Curbside Program	Antrim Conservation District Drop-Off
Torch Lake Township	Torch Lake Township	1006	478	1006	0	No Curbside Program	Antrim Conservation District Drop-Off
Warner Township	Warner Township	364	134	364	0	No Curbside Program	Antrim Conservation District Drop-Off

Table 6: Summary of Recycling Access by Community

Data Currently Available

The Conservation District has provided tonnage data for recyclable materials collected at the drop-off locations from 2018 through 2024. This is a valuable dataset, and RRS strongly recommends that the County continue to obtain and track these tonnages throughout the MMP planning process and beyond to support performance monitoring over time. Notably, the drop-off tonnages show an overall upward trend across this period, indicating increasing participation and/or improved capture through the drop-off system.

Across this period, the data indicate that approximately **2,100 tons of recyclable material** were collected on average each year. At present, however, there is no available information regarding recyclable tonnages that may have been collected curbside from residents or commercial businesses. Similarly, there is no data on industrial recycling activity that may be occurring in the county. While two municipalities manage curbside yard waste collection programs, tonnage data are not available. In addition, tonnages of organic material that may have been delivered to municipal or private composting or mulching facilities are not currently tracked or reported.

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.
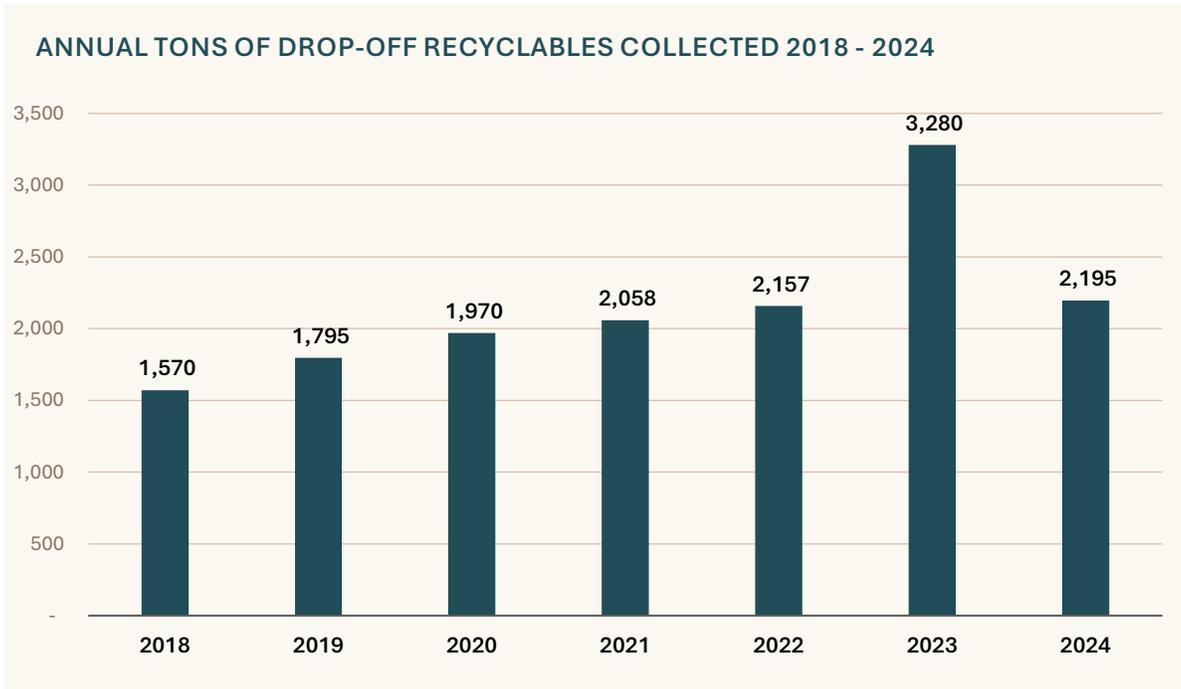
ANNUAL TONS OF DROP-OFF RECYCLABLES COLLECTED 2018 - 2024

Figure 9: Annual Tons of Antrim County Drop-Off Recycling

Recycling Rate Estimates

RECYCLING RATE VS DIVERSION RATE

As noted previously, RRS estimates an MCW generation of 4.6 to 12 pounds per person per day from the available data. This MCW generation rate represents the average quantity of **waste disposed** per person per day and is used to estimate total disposal system demand.

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

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

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

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 10: Recycling and Diversion Rate Definitions, EGLE, "Setting Materials Management Goals"[6]

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[7] to project recovered quantities using variables related to recycling access and recycling program design. The model draws on findings from The Recycling Partnership[8], 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),

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

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

[8] 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 [9].

Based on the 2020 – 2023 MegaData Project, the projected recycling rates are as follows [10]:

- **Residential Recycling Rate Estimate (Recycling + Compost):** 15.6%

- **Commercial Recycling Rate Estimate:** 5.6%

- **Countywide Recycling Rate Estimate:** 10.4%

Since completion of the Mega Data Project, Antrim County now has reported 2024 recycling tonnage from the Antrim County Conservation District drop-off sites, totaling 2,195 tons. While reported tonnages of diverted organic materials are not available, applying the Mega Data estimate of approximately 888 tons per year of organics diversion results in an estimated **3,082 tons recycled in 2024** (2,195 tons of traditional recyclables plus 888 tons of organics).

The reported tonnage of MCW disposed on average from 2020 - 2024 is 52,386 tons. Using this disposal figure, the estimated countywide recycling rate would be approximately 5.5%, which is significantly lower than the 10.4% recycling rate projected during the Mega Data Project. However, this disposal tonnage corresponds to an implied disposal rate of roughly 12 pounds per person per day, which is unusually high. 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 23,127 tons of MCW disposed annually in Antrim County.

Using the estimated **3,082 tons diverted** and **23,127 tons landfilled**, the countywide recycling rate for 2024 is estimated at approximately **13.3%**.

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. Antrim County has a clear opportunity to improve the accuracy of future recycling rate calculations by clarifying and standardizing landfill reporting procedures and by

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

[10] Note: the MegaData project used the term "Diversion Rate" referring to traditional recyclables and organics composting. Per the most recent EGLE definitions shared on May 15, 2025 at the Michigan Recycling Coalition Conference and available online at the following link, this document will use the term "Recycling Rate" referring to traditional recyclables and organics composted. https://www.michigan.gov/-/media/Project/Websites/egle/Documents/Programs/MMD/Recycling/MMP-Goals-MRC-Presentation-Slides.pdf

establishing systems to consistently track and report organic material composting. Doing so would enable the County to calculate a measured recycling rate and more effectively track progress toward the goals established in the MMP.

Table 7: Estimated Waste Diversion Rates

ANTRIM COUNTY	TOTAL WASTE GENERATION (TONS)	TOTAL RECYCLING (TONS)	TOTAL REQUIRING DISPOSAL (TONS)	RECYCLING RATE
MegaData Estimates, 2020-2023	22,002	2,292	19,710	**10.42%**

Updated Estimate 2024:
    Reported MCW Average 2020-2024.
    Reported Recycling Tons.
    Estimated Organics Tons.
	55,469	3,083	52,386	**5.56%**

Updated Estimate 2024:
    State Average MCW per Capita Tons.
    Reported Recycling Tons.
    Estimated Organics Tons.
	23,127	3,083	20,044	**13.33%**

Recycling Data Gaps

Several significant data gaps limit Antrim 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

The Antrim Conservation District[11] (ACD) coordinates Household Hazardous Waste (HHW) collection events that provide residents with a safe disposal option for a wide range of hard-to-manage materials. Based on ACD's published program information, commonly accepted items include tires (under specified size limits), fluorescent light bulbs, mercury-containing items, pesticides, used motor oil, oil-based and latex paints, electronics, cleaners and household chemicals, propane tanks, fertilizers, gasoline and kerosene, pool chemicals, poisons, automotive fluids, batteries, and other materials such as plastic boat wrap. ACD also provides electronics drop-off at its office during normal business hours, offering a year-round pathway for residents to manage these items outside of event dates.

In addition to countywide programming, the Village of Elk Rapids advertises a Super Recycling Day[12] that expands access to specialty material collection, including white goods (appliances), mattresses, and a variety of other household items not typically accepted through standard recycling channels.

At this time, tonnage data are not readily available for materials collected through these HHW events, electronics drop-offs, or special collection days. Establishing consistent reporting of event participation and material quantities collected would improve the County's ability to quantify recovery, identify priority material streams, and track progress over time.

Construction & Demolition (C&D) Debris

Based on landfill reporting, C&D waste accounts for an average of just 2% of total landfill tonnage over the last 5 years as shown in Table 2 above. 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, with some landfills actively seeking C&D debris by offering discounted rates. According to US EPA reports, the amount of construction and demolition waste generated in the United States is more than twice that of MCW. This variance suggests that Antrim County's C&D tonnage may be under-reported. A true representation of the C&D debris generated in the county would require

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[11] https://www.antrimcd.com/household-hazardous-waste-days.html?utm
[12] https://www.elkrapids.org/village-news/super-recycling-day-accepted-items-list?utm

either reporting on an ongoing basis or periodic waste characterization studies that focus on C&D. [13] 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. Achieving this requires clear, consistent communication and convenient processes, whether through voluntary programs or mandatory policies. 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.

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

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[13] 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 would be 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.

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 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 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 Antrim 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**[14] 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" by documenting the infrastructure, roles, and material pathways that emergency management will depend on during surge conditions.

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

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[15], which for Antrim County is **1,024 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.

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 shown in Table 8. These calculations are based on methodology

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

laid out in a published 2011 study *Rapid Assessment of Tree Debris Following Urban Forest Ice Storms*[16], including a negative correlation between wind speed and debris volume (as wind speed increases less debris observed). FEMA guidance[17] 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.

COUNTY NAME	SYSTEM MILES	WIND SPEED MPH	ICE THICKNESS (INCHES)	SCENARIO 1 DEBRIS ESTIMATE CUBIC YARDS
Antrim	1,024	10	0.25	99,824
		20	0.25	62,445
		30	0.25	25,065
		10	0.50	199,648
		20	0.50	124,889
		30	0.50	50,130
		10	0.75	299,473
		20	0.75	187,334
		30	0.75	75,195
		10	1.00	399,297
		20	1.00	249,778
		30	1.00	100,259

Table 8: 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 Antrim County, the model inputs include **10,147 households**, a **Heavy vegetation** classification, and a **Light commercial property** designation. Heavy vegetation is typically associated with mature neighborhoods and wooded areas 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

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[16] 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

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

residential land uses, which influences the proportion of construction and demolition (C&D) debris expected in the debris stream.

The resulting debris estimates, segmented by precipitation condition and wind speed category, are presented in the Table 9. 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 Antrim County.

COUNTY	HOUSEHOLDS	COMMERCIAL PROPERTY	VEGETATION	WIND SPEED	PRECIPITATION	SCENARIO 2 DEBRIS ESTIMATE CUBIC YARDS
Antrim	10,147	Light	Heavy	74-95 MPH	None to Light	30,441
				74-95 MPH	Medium - Heavy	36,529
				96-110 MPH	None to Light	121,764
				96-110 MPH	Medium - Heavy	146,117
				111-129 MPH	None to Light	395,733
				111-129 MPH	Medium - Heavy	474,880
				130-156 MPH	None to Light	761,025
				130-156 MPH	Medium - Heavy	913,230
				157+ MPH	None to Light	1,217,640
				157+ MPH	Medium - Heavy	1,461,168

Table 9: RRS Estimated Severe Weather Debris Volumes CY

In addition to debris volume estimates, it is important to consider anticipated debris composition. FEMA guidance [18] 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 as shown in Figure 11.

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

Types of Disasters	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
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 11: FEMA-325 "Figure 6.2 – Typical Debris Streams for Different Types of Disasters"[19]

Facility Inventory

Name	Address	Address	Description
Hooks & Chains Recycling	3385 Alba Rd	Mancelona	Materials Recovery Facility
Central Lake Township Waste Receiving Station	3510 North M-88	Central Lake	Processing & Transfer Facility
Village of Elk Rapids Trash Compactor	8228 Herrman Rd.	Elk Rapids	Processing & Transfer Facility
Antrim County Solid Waste Facility	10164 M-32	Elmira	Processing & Transfer Facility
Antrim Conservation District Household Hazardous Waste Days	Multiple locations	Multiple locations	Other Source Separated Facility
Antrim County Recycling - Ellsworth Site	9627 Lake Street	Ellsworth	Other Source Separated Facility
Antrim County Recycling - Mancelona Site	9610 S M 88 Hwy	Mancelona	Other Source Separated Facility

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

Antrim County Recycling - Alden Site	8751 Helena Rd	Alden	Other Source Separated Facility
Antrim County Recycling - Kewadin Site	7262 Cairn Hwy	Kewadin	Other Source Separated Facility
Antrim County Recycling - Elk Rapids	321 Bridge St	Elk Rapids	Other Source Separated Facility
Antrim County Recycling - Bellaire Site	4700 S M88 Hwy	Bellaire	Other Source Separated Facility
Antrim County Recycling - Star Township Site	6775 Alba Hwy.	Elmira	Other Source Separated Facility
Antrim County Recycling - Central Lake Site	1622 North M-88	Central Lake	Other Source Separated Facility
Village of Bellaire brush and leaf drop-off	South Court St.	Bellaire	Compost Facility
Mancelona DPW Garage Yard Waste & Brush Drop Off	404 Center St	Mancelona	Compost Facility
Village of Bellaire brush and leaf drop-off	South Court St.	Bellaire	Other Organics Facility

Table 10: Materials Management Infrastructure

Appendix
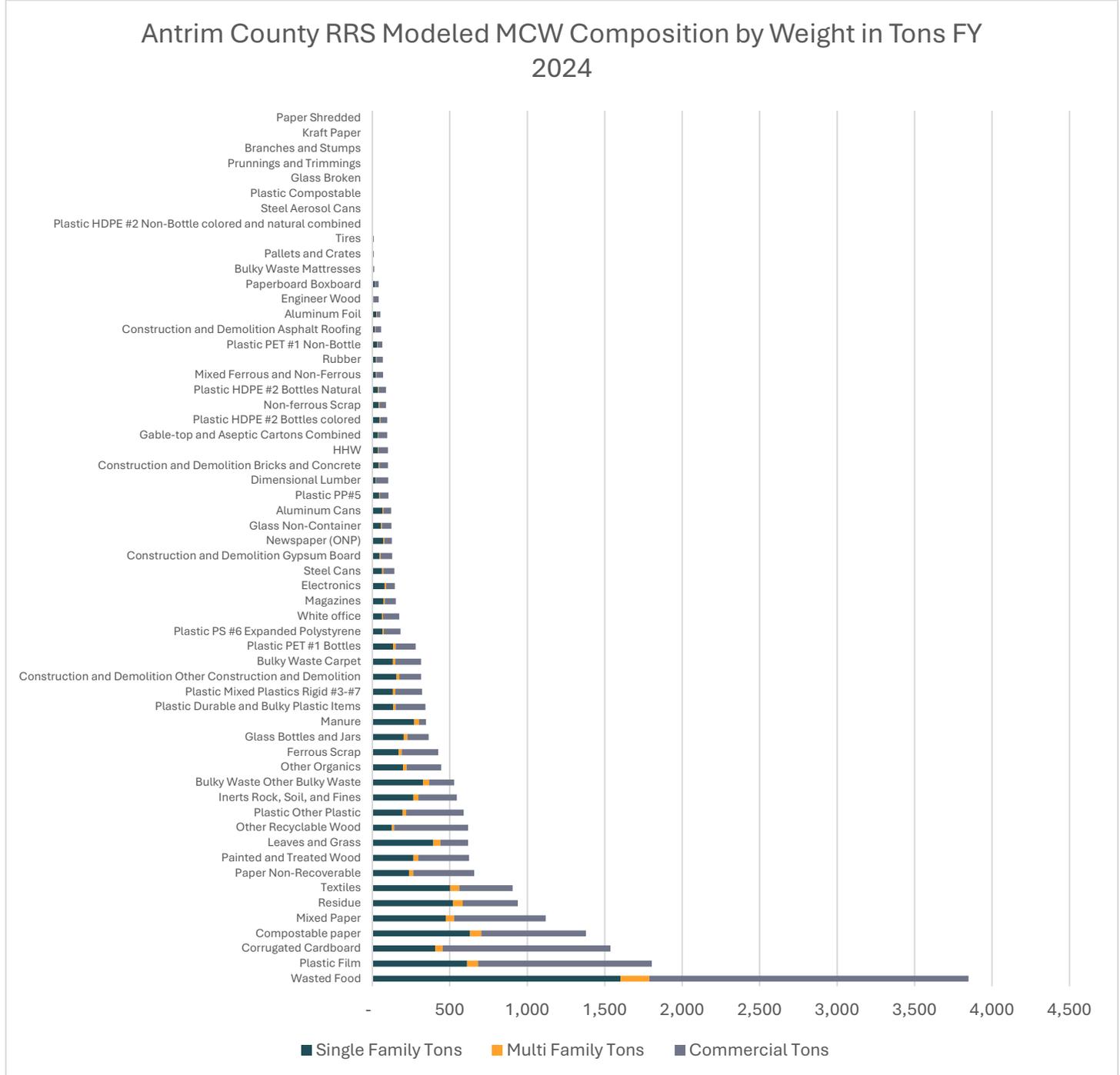
RRS MCW Composition Model

Figure 12: Antrim County RRS-Modeled MCW Composition 2024

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

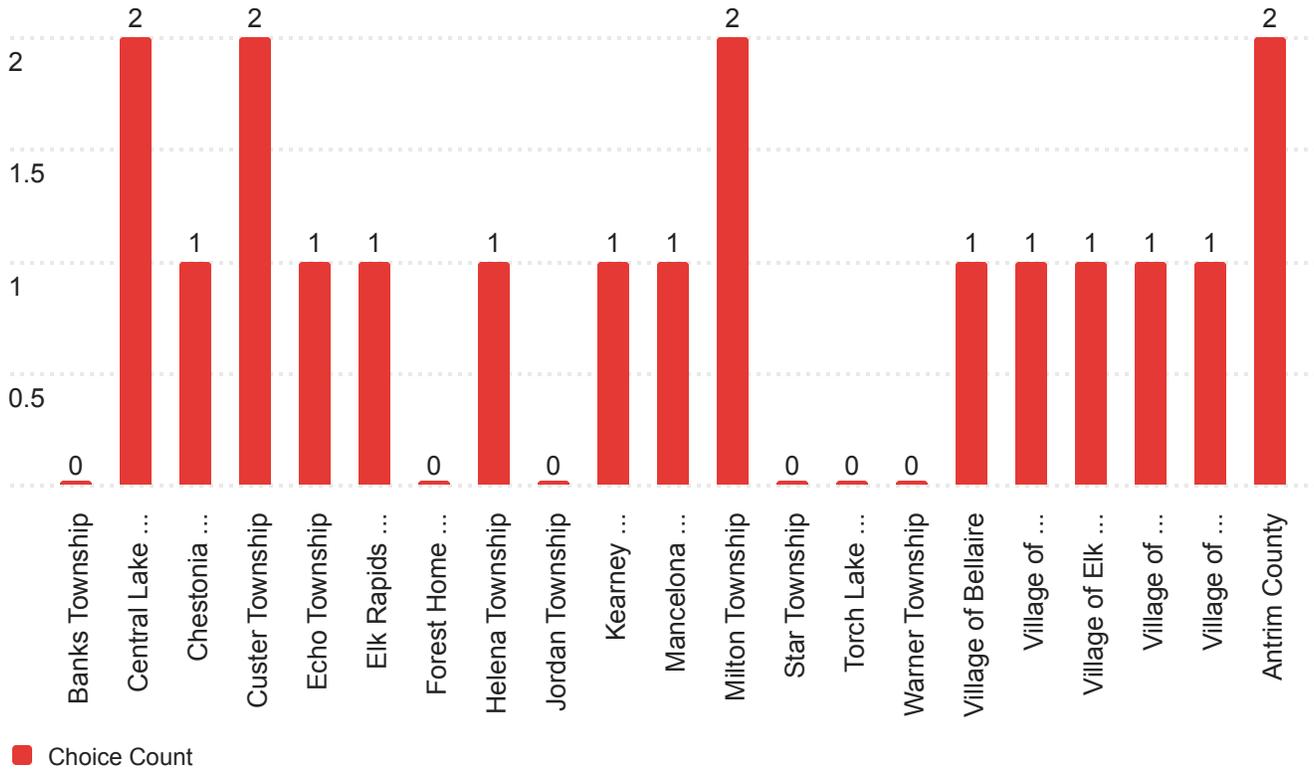| Industry	2018	2023
Construction (97)	82	97
Retail Trade (89)	68	89
Accommodation and food services (58)	41	58
Other services (except public administration) (54)	52	54
Health care and social assistance (52)	32	52
Professional, scientific, and technical services (47)	26	47
Manufacturing (44)	38	44
Administrative support and waste management and remediation services (31)	23	31
Real estate and rental and leasing (30)	24	30
Agriculture, forestry, fishing and hunting (22)	19	22
Finance and insurance (18)	19	18
Information (16)	8	16
Wholesale Trade (13)	13	13
Arts, entertainment, and recreation (13)	10	13
Unclassified (9)	7	9

JOBS

Industry	2018	2023
Agriculture, forestry, fishing and hunting	N/A	N/A
Mining, quarrying, and oil and gas extraction	N/A	N/A
Management of companies and enterprises	N/A	N/A
Administrative support and waste management and remediation services	71	N/A
Educational services	N/A	N/A
Health care and social assistance	218	N/A
Accommodation and food services	932	899
Retail Trade	605	687
Manufacturing	918	678
Construction	448	599
Other services (except public administration)	215	204
Arts, entertainment, and recreation	145	181
Professional, scientific, and technical services	125	152
Information	85	101
Wholesale Trade	52	98

Transportation and warehousing (8)	12	8		Finance and insurance	92	93
Mining, quarrying, and oil and gas extraction (3)	1	3		Real estate and rental and leasing	87	65
Utilities (3)	2	3		Transportation and warehousing	N/A	40
Management of companies and enterprises (1)	N/A	1		Unclassified	23	26
Educational services (0)	N/A	0		Utilities	N/A	8

Q1A - Which Antrim municipality do you represent?

19 Responses

Chart showing Choice Count by municipality:
- Banks Township: 0
- Central Lake ...: 2
- Chestonia ...: 1
- Custer Township: 2
- Echo Township: 1
- Elk Rapids ...: 1
- Forest Home ...: 0
- Helena Township: 1
- Jordan Township: 0
- Kearney ...: 1
- Mancelona ...: 1
- Milton Township: 2
- Star Township: 0
- Torch Lake ...: 0
- Warner Township: 0
- Village of Bellaire: 1
- Village of ...: 1
- Village of Elk ...: 1
- Village of ...: 1
- Village of ...: 1
- Antrim County: 2

Choice Count

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

23 Responses

Chart showing Choice Count by role:
- Supervisor: 6
- Mayor: 0
- Clerk: 11
- Other Elected Official: 0
- Administrator: 3
- Other - Please list: 1
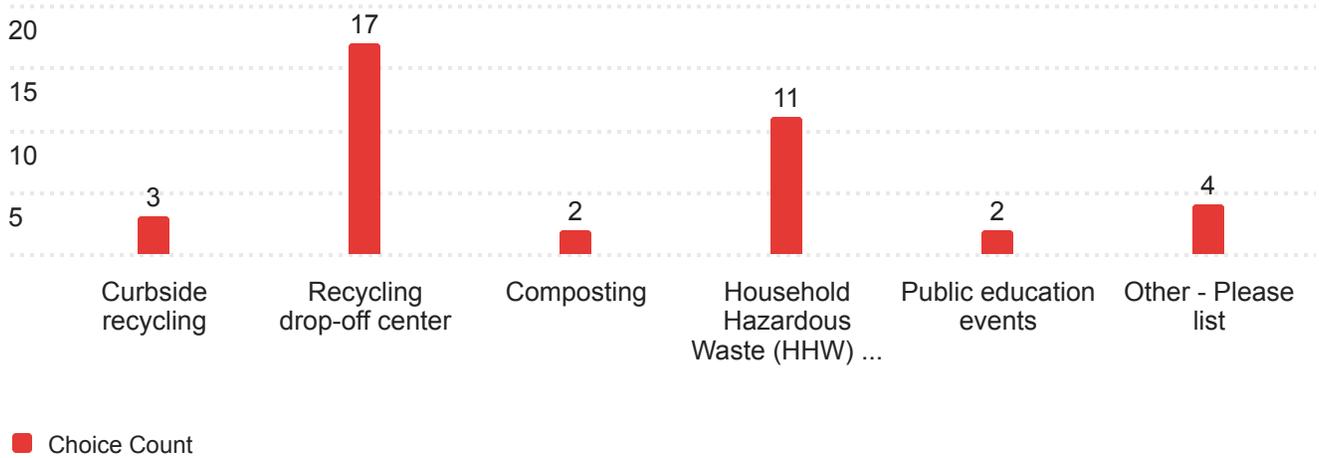- Resource Recovery/Rec: 0

Choice Count
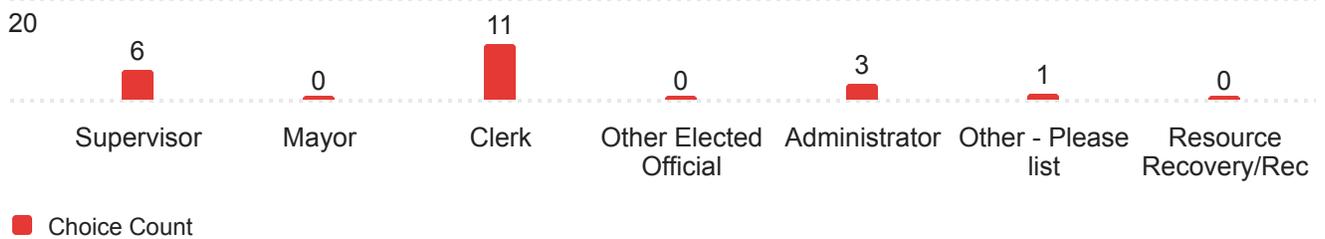
Q2_7_TEXT - Other - Please list - Text

Other - Please list - Text

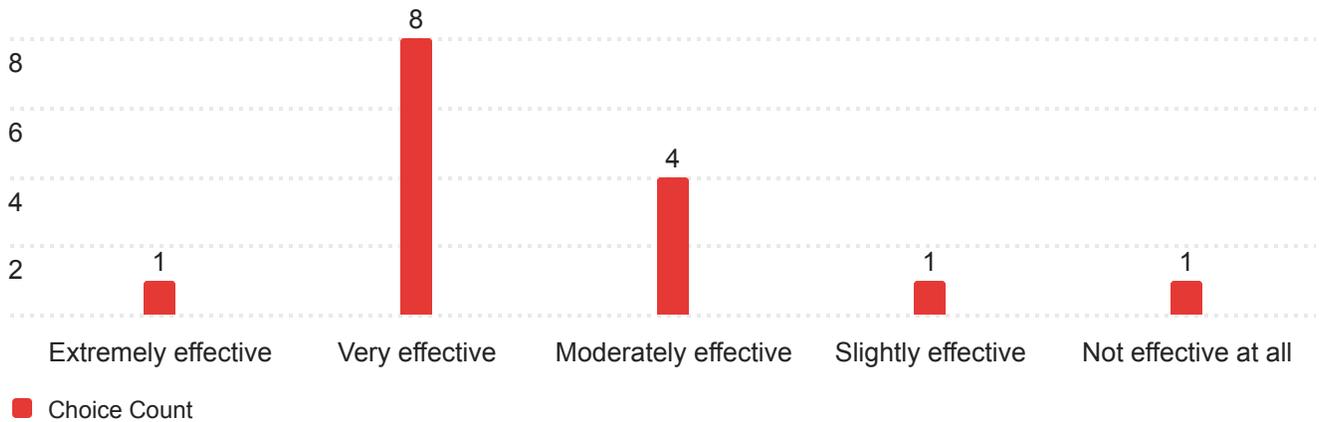Materials Management Committee Member

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

19 Responses

Choice Count

Curbside recycling	3
Recycling drop-off center	17
Composting	2
Household Hazardous Waste (HHW) ...	11
Public education events	2
Other - Please list	4

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

15 Responses

Choice Count

Extremely effective	1
Very effective	8
Moderately effective	4
Slightly effective	1
Not effective at all	1

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

16 Responses

■ Choice Count
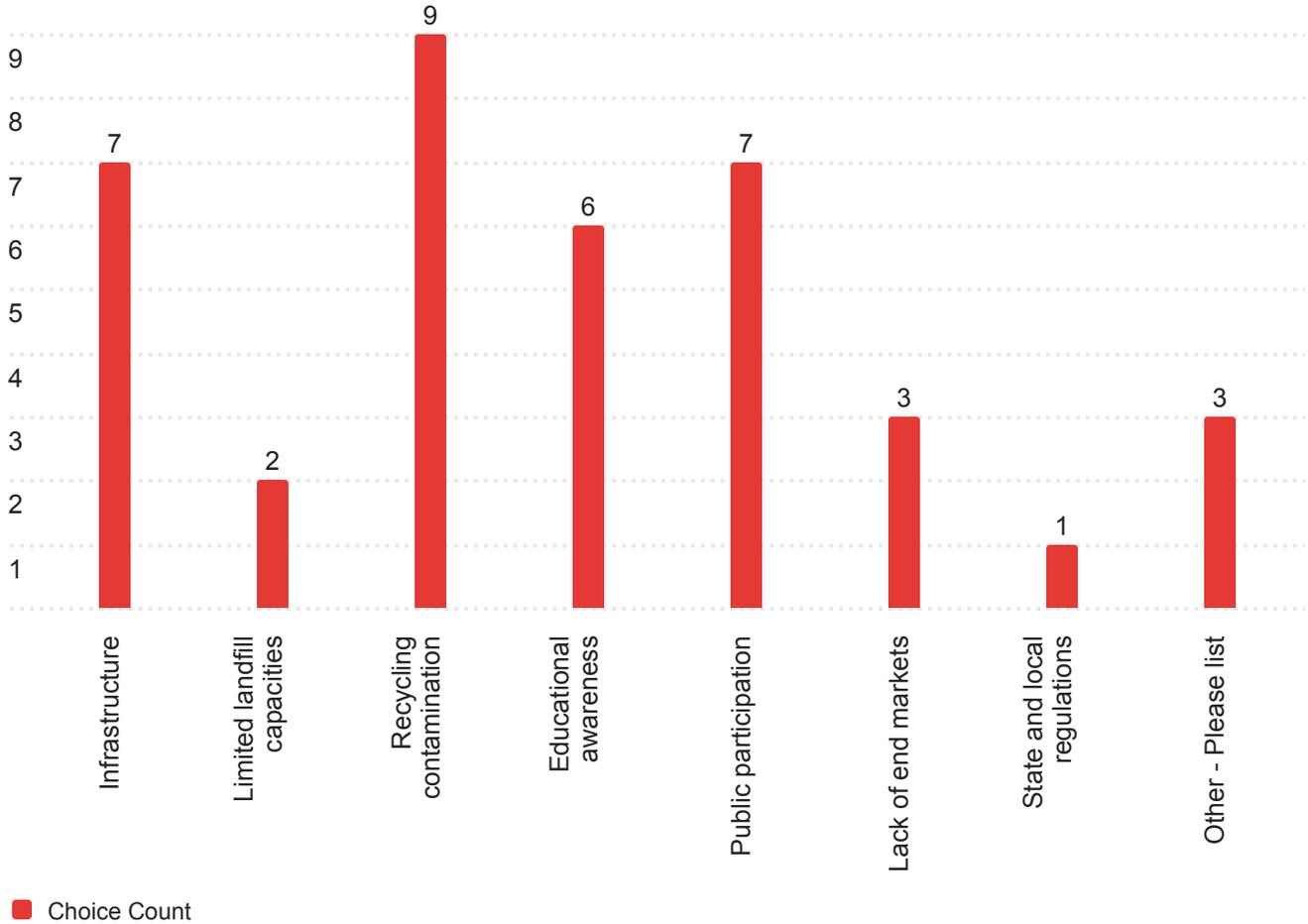
Q5_8_TEXT - Other - Please list - Text

Other - Please list - Text

Transfer Station Replacement Equipment Cost.

lack of control over non recycled items being deposited in recycling containers

Resistance to change, costs, communication

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	4.00	2.13	0.81	0.65	15	32.00
Plastics	1.00	4.00	2.20	0.75	0.56	15	33.00
Glass	1.00	4.00	2.13	0.72	0.52	15	32.00
Metals	1.00	6.00	2.67	1.30	1.69	15	40.00
Construction Debris	1.00	6.00	3.27	1.61	2.60	15	49.00
Electronic Waste	1.00	6.00	2.87	1.45	2.12	15	43.00
Matresses	2.00	6.00	3.53	1.36	1.85	15	53.00
Tires	2.00	6.00	3.73	1.48	2.20	15	56.00
Household Hazardous Waste	1.00	4.00	2.80	0.91	0.83	15	42.00
White Goods (appliances)	1.00	6.00	3.67	1.58	2.49	15	55.00
Bulky Waste (furniture, mattresses)	2.00	6.00	3.87	1.45	2.12	15	58.00
Yard Waste	1.00	6.00	3.36	1.72	2.94	14	47.00
Prescription Drugs	2.00	6.00	2.93	0.96	0.92	14	41.00

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.

9 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.

increased recycling participation. Curb side pickup for it.

Q6A answer - More constructive ways to handle * mattresses/maybe some sort of shredder *Tires/Encourage use in asphalt mix (shredded granulized) More Frequent Hazardous waste collections.

For this question Q7 - Have not had an opportunity to look at the existing plan.

Compost option for the township residents.

Increase ease of disposal of non-landfill materials, offering composting of biodegradable materials, and recycling curbside county wide.

More monitoring on permanent living situations with campers on properties and regulation of sanitary waste from them.

Recycling - program to encourage businesses to recycle at their location; control over materials that go into recycling containers (not sure how this could be done) but it is a real problem at the M-88 location.
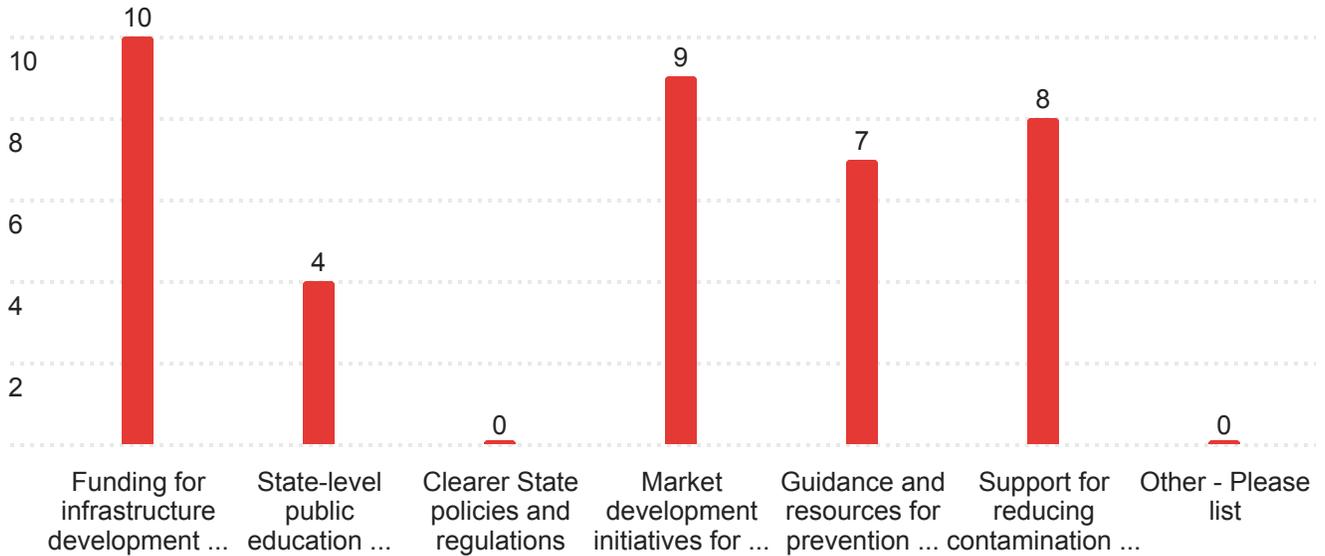
Equity in opportunity and access to increase participation in available materials management while launching missing opportunities like composting for businesses and homes.

Effective recycling programs

County wide MMP facility akin to Emmet County...

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
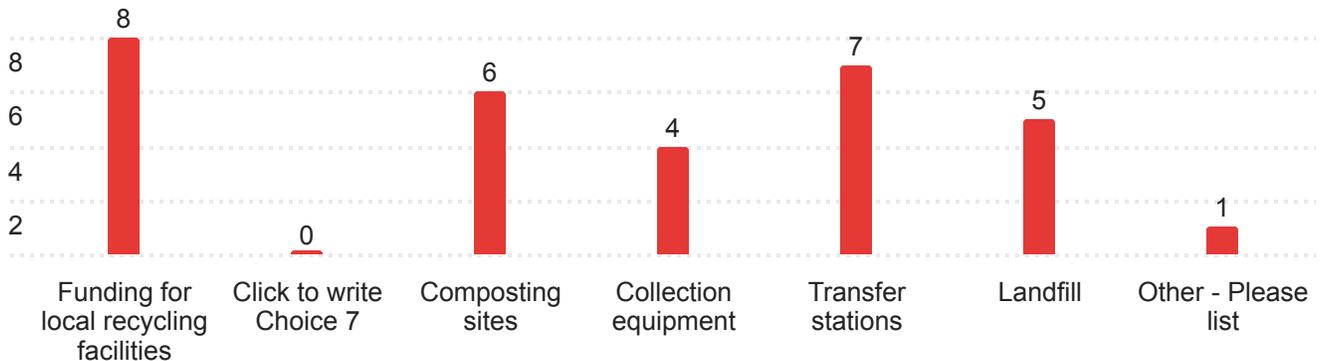
14 Responses

	Funding for infrastructure development ...	State-level public education ...	Clearer State policies and regulations	Market development initiatives for ...	Guidance and resources for prevention ...	Support for reducing contamination ...	Other - Please list
Choice Count	10	4	0	9	7	8	0

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

11 Responses

	Funding for local recycling facilities	Click to write Choice 7	Composting sites	Collection equipment	Transfer stations	Landfill	Other - Please list
Choice Count	8	0	6	4	7	5	1

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

14 Responses
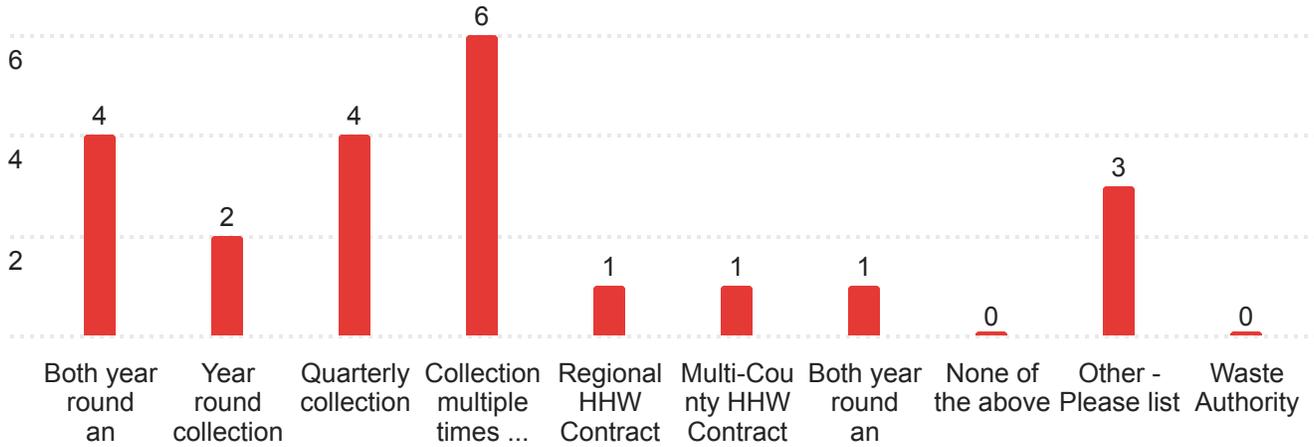
■ Choice Count

Q10_9_TEXT - Other - Please list - Text
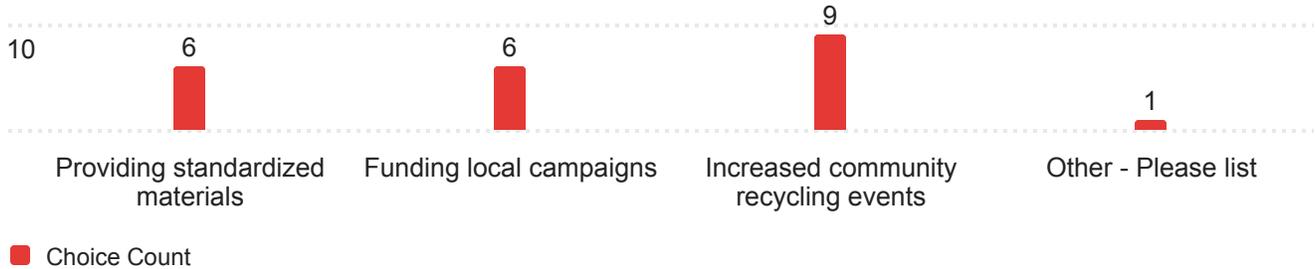
Other - Please list - Text

Q9 other list answer - Processing Equipment/public or private

Year round is probably cost prohibitive but more frequently than once a year. Quarterly is a suggestion.

Whatever allows for more frequent and closer collection. Residents don't want to hold on to it for a year, and don't want to drive an hour for disposal.

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
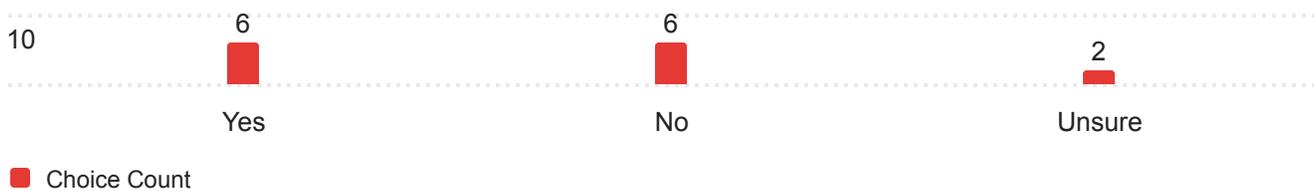
14 Responses

Providing standardized materials	Funding local campaigns	Increased community recycling events	Other - Please list
6	6	9	1

■ Choice Count

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

14 Responses

Funding	Access	Education	Other - Please list
2	3	7	2

■ Choice Count

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

14 Responses

Yes	No	Unsure
6	6	2

■ Choice Count

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))

Yes, But I am not aware of what is done with it

GFL Transfer Station, Elmira

recycling facilities not sure where in our area

GFL

GFL's Elmira Transfer Station

GFL

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

13 Responses

Recycling Millage: 7, PA 69 Funding: 0, Property Taxes: 1, County Funding: 4, Other - please list: 1
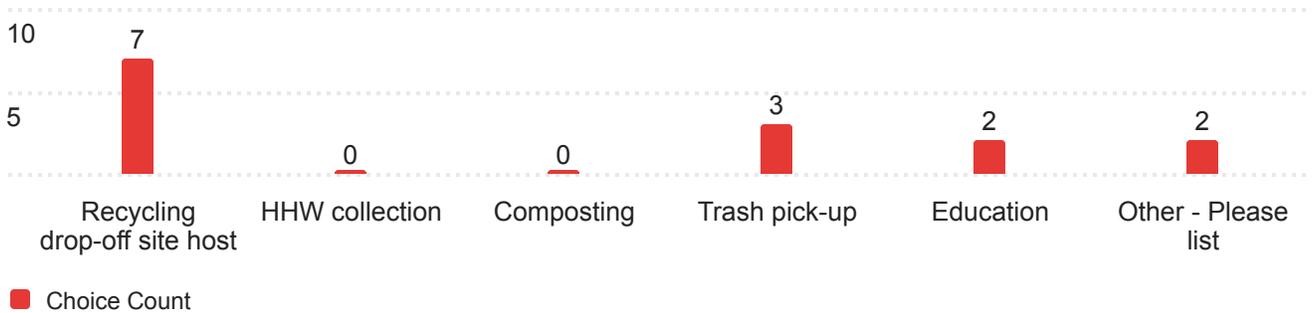
Choice Count

Q14_5_TEXT - Other - please list - Text

Other - please list - Text

Personal Contracts wiith Waste Company

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

13 Responses

7	0	0	3	2	2
Recycling drop-off site host	HHW collection	Composting	Trash pick-up	Education	Other - Please list

■ Choice Count

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?

yes, that is why I am interested in serving upon this committee.

Approximately $70,000 per year with approximately half of that recomposed through receipts at the transfer station

Because of the large amount of visitors in the area, public waste containers are often used for household waste and recycling. We need to create a system where residents can also get rid of large items easily and frequently as they tend to end up in landfills.

I believe the biggest problem, at least in the Bellaire area, is that the recycling containers, in the summer, seem to get used as garbage facilities instead of recycling facilities. Also for those of us that live outside the village, there is no place for us to dispose of yard waste. I also get calls at the Township regarding where to dispose of yard waste. This would be a great area to address in your planning.

Forgot to note (and could not go back): Village sponsors an annual single-day recycling event open to all in the expanded community. Residents are grateful for the opportunity to bring white goods and large items that are not standard household recycling. More events like that might help with education, and might keep down some of the illegal drops at recycling centers. Lots of public education is needed. Most don't know what or how to recycle.

Increase the percentage rate of received materials that are actually recycled.

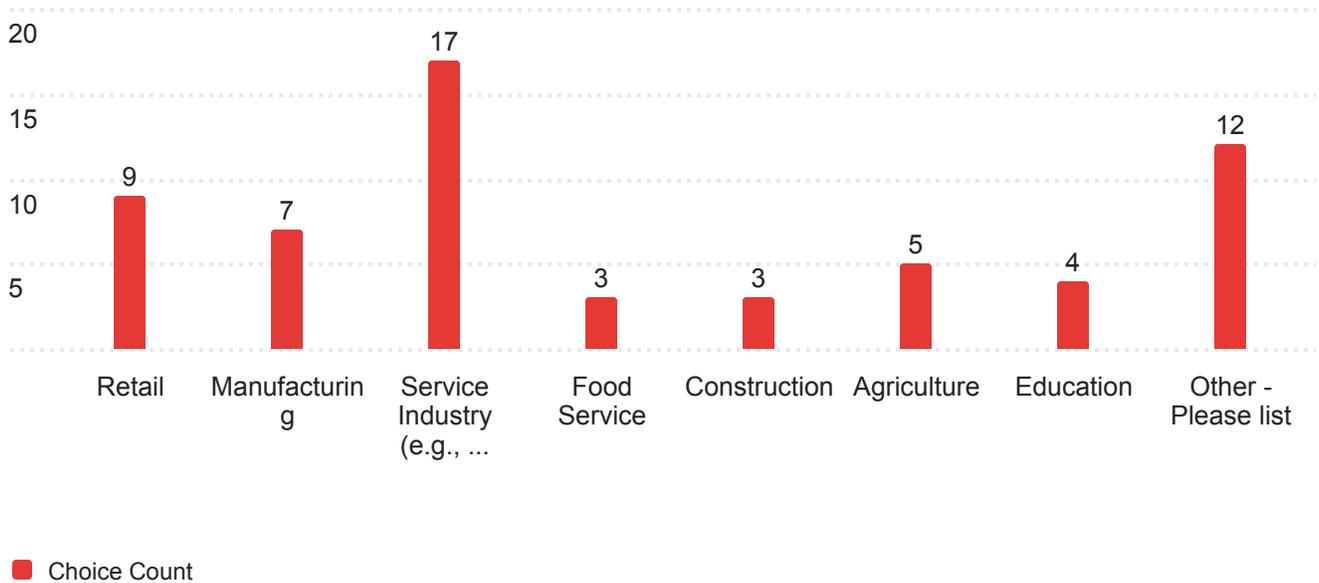some of the questions didn't have a block to answer or type in additional info

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

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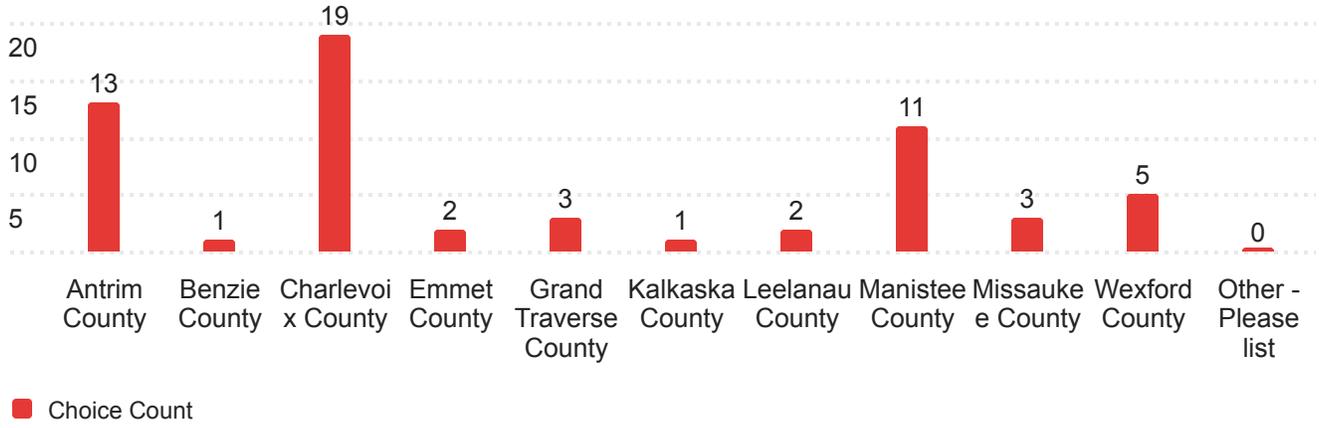
Q2 - What sector best describes your primary business activity? - Selected Choice

60 Responses

Q2_8_TEXT - Other - Please list - Text

Other - Please list - Text

Conservation

Governmental

Municipality

Non-profit - environmental

County Gov. Law Enforcement
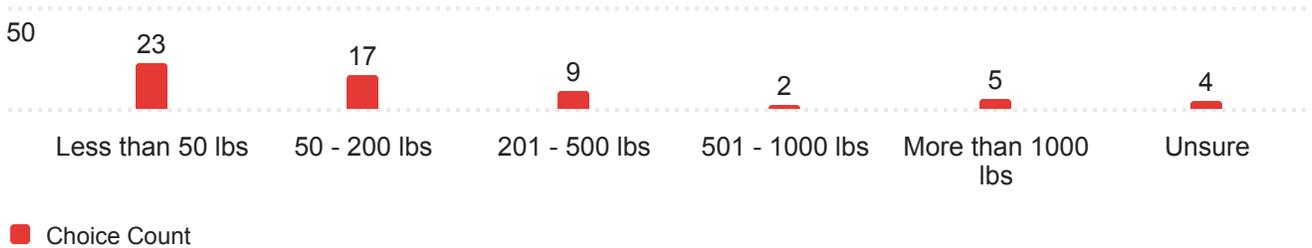
municipality

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?
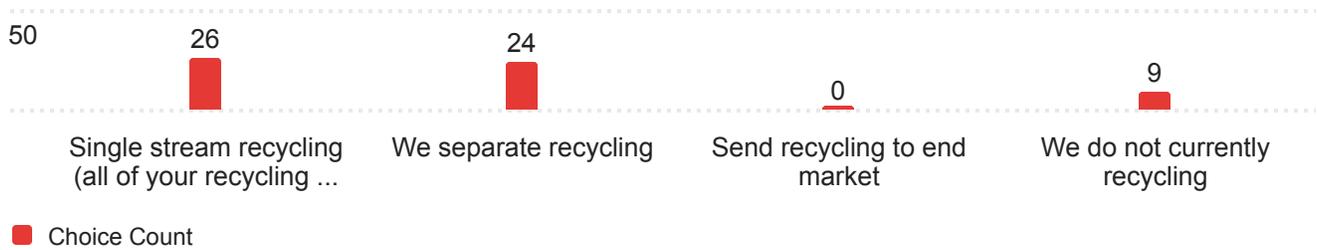
60 Responses

	Less than 50 lbs	50 - 200 lbs	201 - 500 lbs	501 - 1000 lbs	More than 1000 lbs	Unsure
Choice Count	23	17	9	2	5	4

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

50	

- Single stream recycling (all of your recycling ... : 26
- We separate recycling : 24
- Send recycling to end market : 0
- We do not currently recycling : 9

■ Choice Count

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

23 Responses

- Cardboard : 22
- Paper (mixed, office, newspaper) : 16
- Plastics (bottles, containers, ... : 19
- Glass : 8
- Metals (aluminum, steel) : 11
- Food Waste : 3
- Other - Please list : 2

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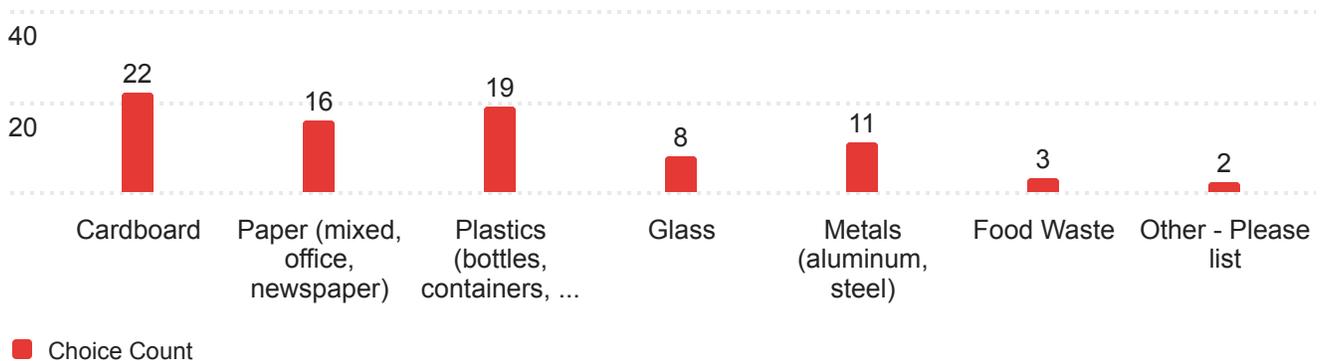
Q5B - What materials are you sending to an end market? Please feel free to share what end market you work with.

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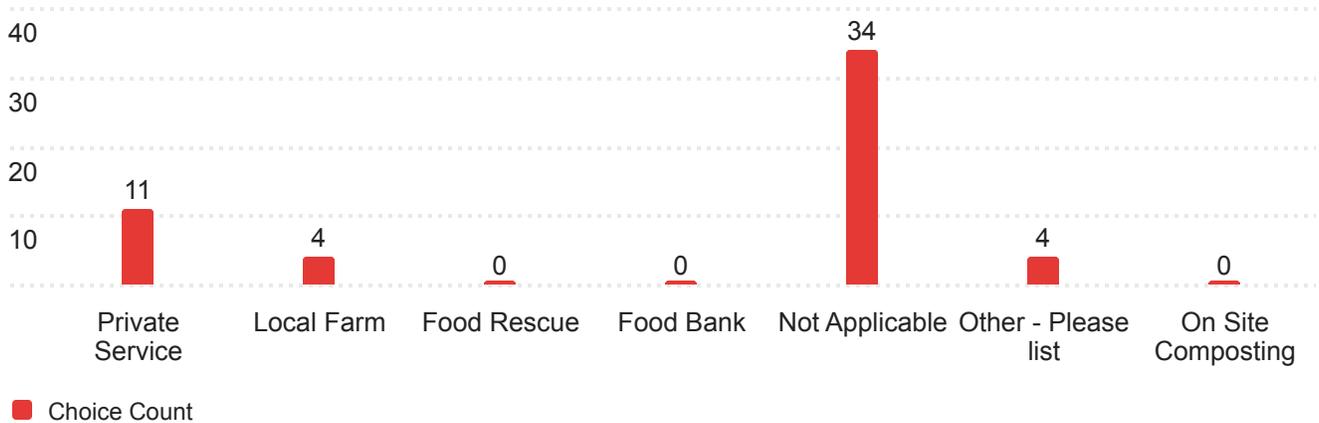
Q6 - Does your business currently participate in any composting or organic waste diversion programs?

53 Responses

	Yes	No	We are exploring or considering ...
Choice Count	8	42	3
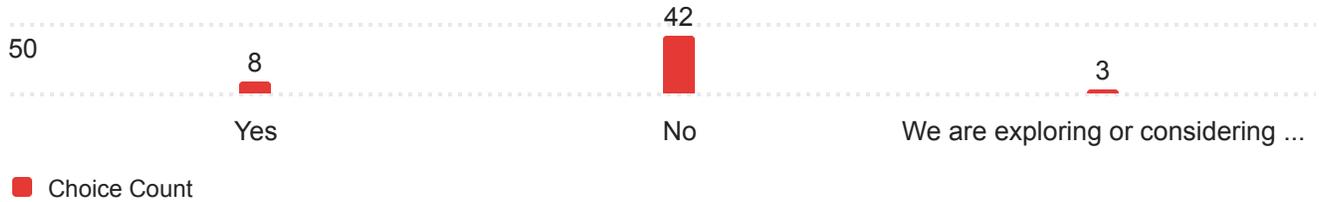
Q7 - How do you currently handle your food waste collection? Select all that apply. - Selected Choice

52 Responses

	Private Service	Local Farm	Food Rescue	Food Bank	Not Applicable	Other - Please list	On Site Composting
Choice Count	11	4	0	0	34	4	0

Q7_6_TEXT - Other - Please list - Text

Other - Please list - Text

We vermicompost in our office

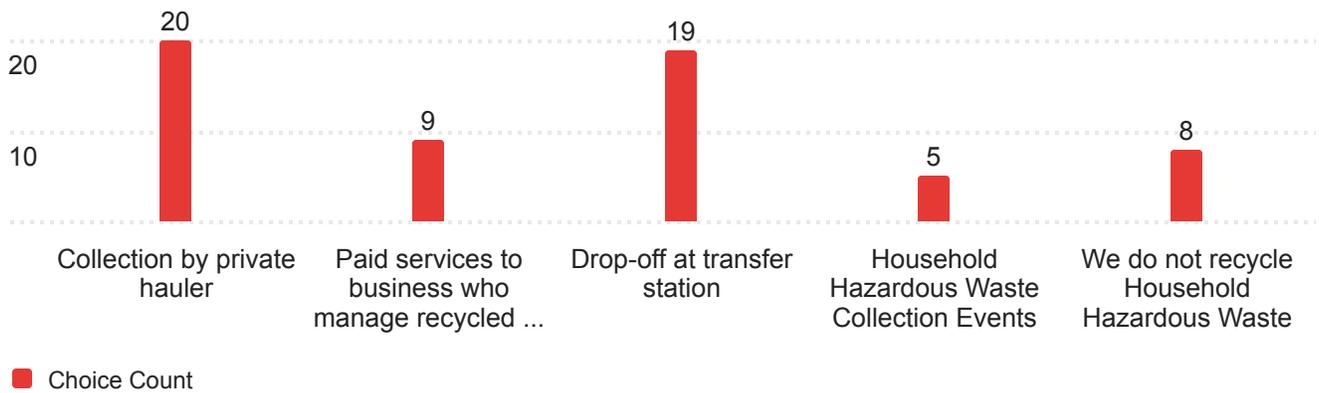We take care of it ourselves and put it into our own fields

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.
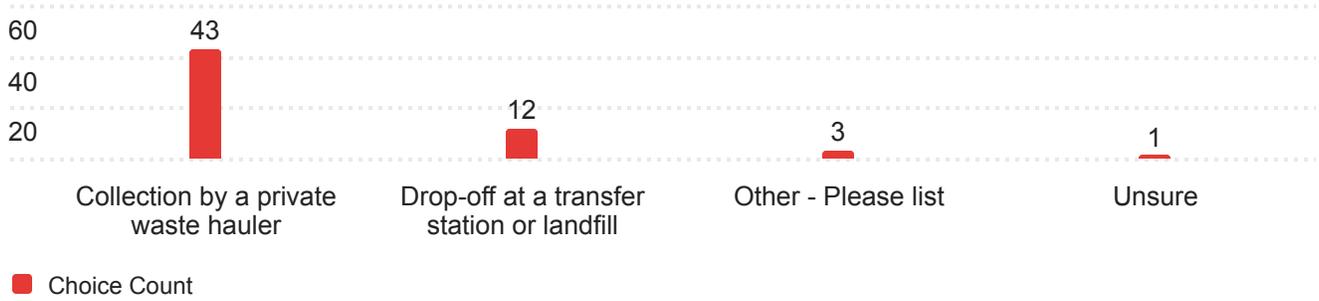
53 Responses

Choice Count

	Collection by private hauler	Paid services to business who manage recycled ...	Drop-off at transfer station	Household Hazardous Waste Collection Events	We do not recycle Household Hazardous Waste
	20	9	19	5	8

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

Choice Count

Styrofoam	Plastic	Compostable Materials	Other - Please list
0	1	2	0
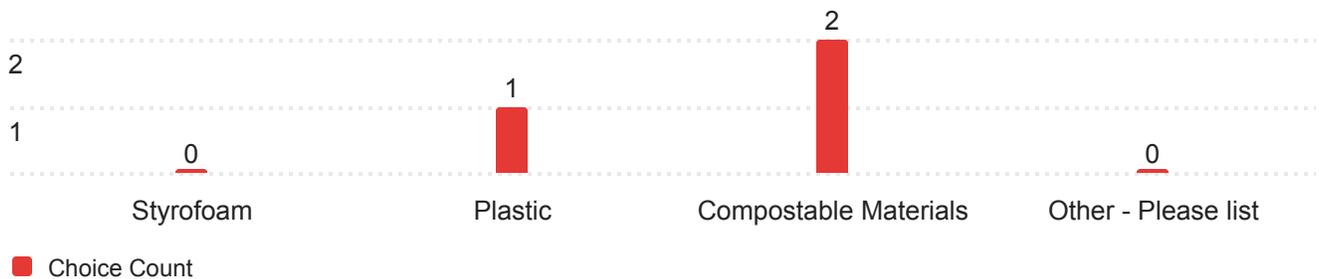
Q10 - What are the primary methods your business currently uses for the disposal of non-recyclable/non-compostable waste? Select all that apply. - Selected Choice

53 Responses

Chart values:
- Collection by a private waste hauler: 43
- Drop-off at a transfer station or landfill: 12
- Other - Please list: 3
- Unsure: 1

■ Choice Count

Q10_3_TEXT - Other - Please list - Text
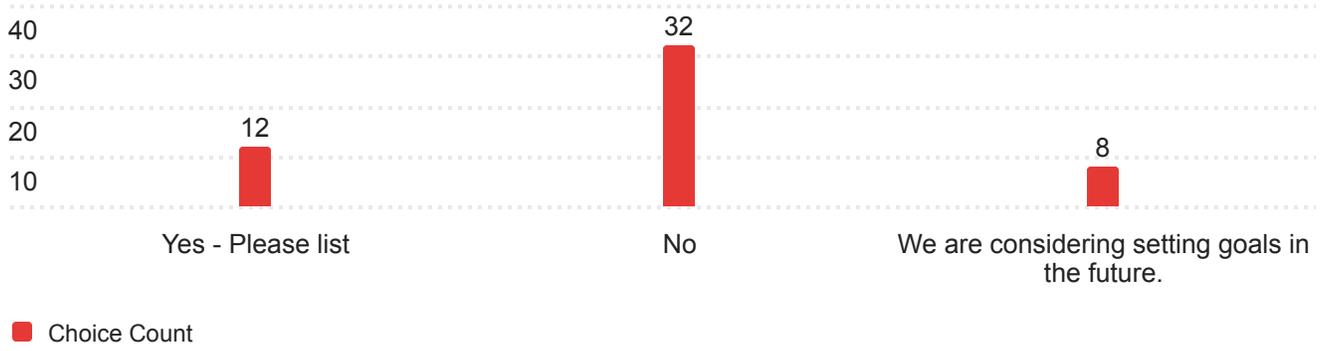
Other - Please list - Text

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

Choice Count

	Yes - Please list	No	We are considering setting goals in the future.
Choice Count	12	32	8

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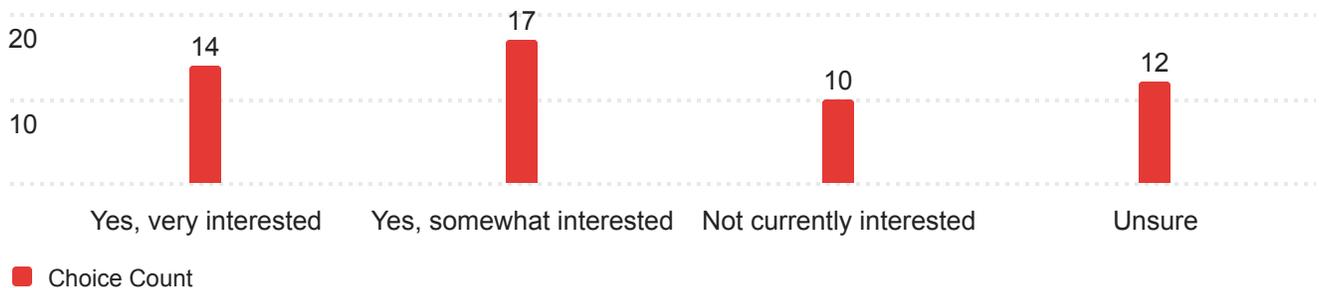
Q12 - What are the biggest challenges your business faces in implementing or expanding sustainable materials management practices (e.g., recycling, composting)? Select all that apply. - Selected Choice

52 Responses

| Category	Choice Count
Cost of implementation or service fees	13
Lack of space for storage or sorting	24
Insufficient information or resources	12
Lack of employee engagement ...	11
Logistical challenges with ...	21
Other - Please list	2
We do not currently face significant ...	14

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

Category	Choice Count
Yes, very interested	14
Yes, somewhat interested	17
Not currently interested	10
Unsure	12

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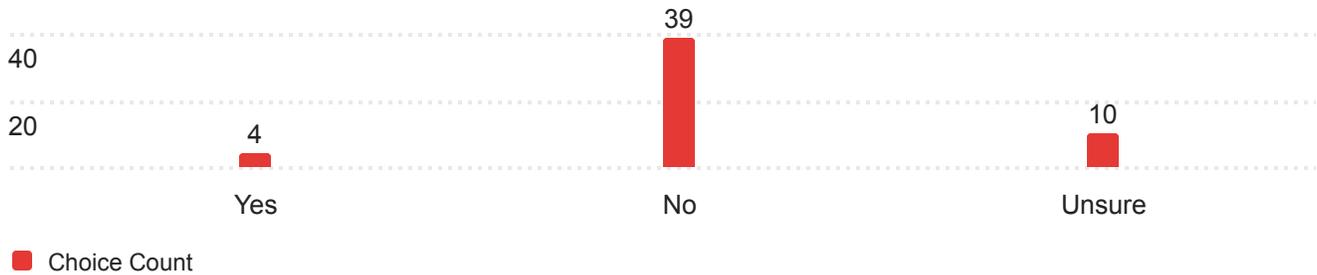
Q14A - If yes, what types of waste do you expect to increase in the next 3-5 years?

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

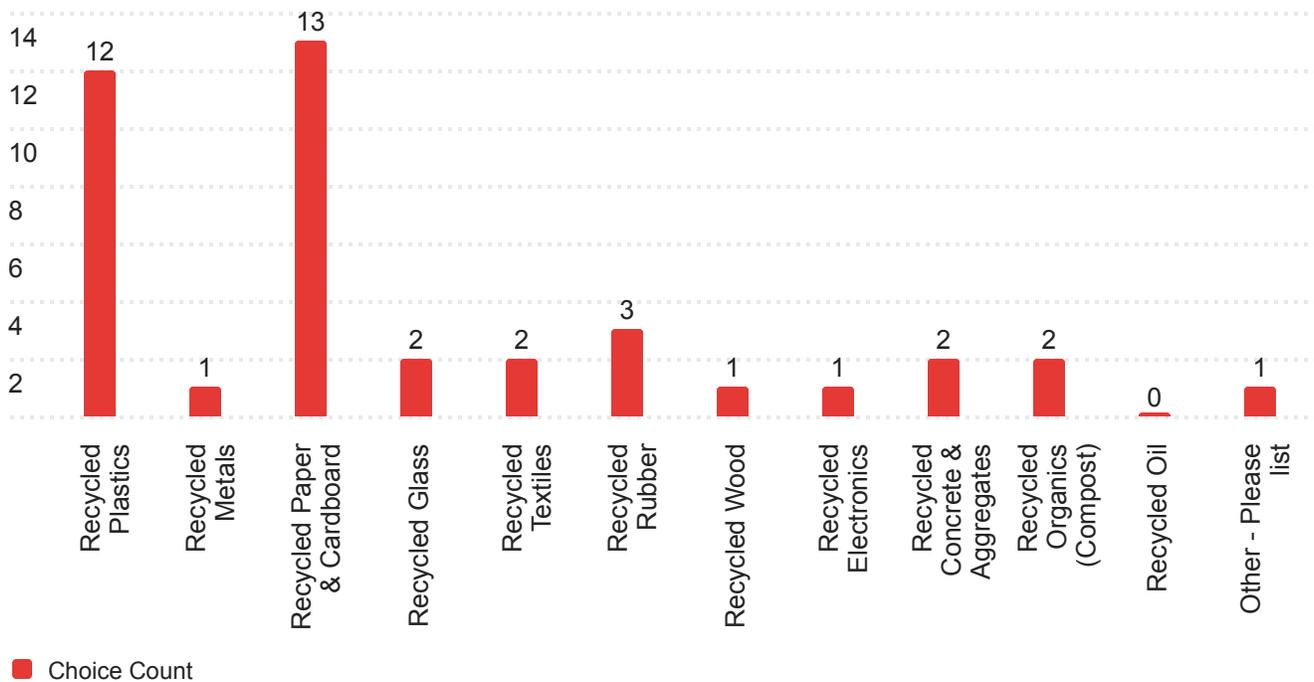cardboard and other compostable paper materials

Q16 - Does your business purchase recycled materials for use?
52 Responses

Choice Count: Yes 23, No 14, Unsure 11, We would if available 4

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

Choice Count: Recycled Plastics 12, Recycled Metals 1, Recycled Paper & Cardboard 13, Recycled Glass 2, Recycled Textiles 2, Recycled Rubber 3, Recycled Wood 1, Recycled Electronics 1, Recycled Concrete & Aggregates 2, Recycled Organics (Compost) 2, Recycled Oil 0, Other - Please list 1

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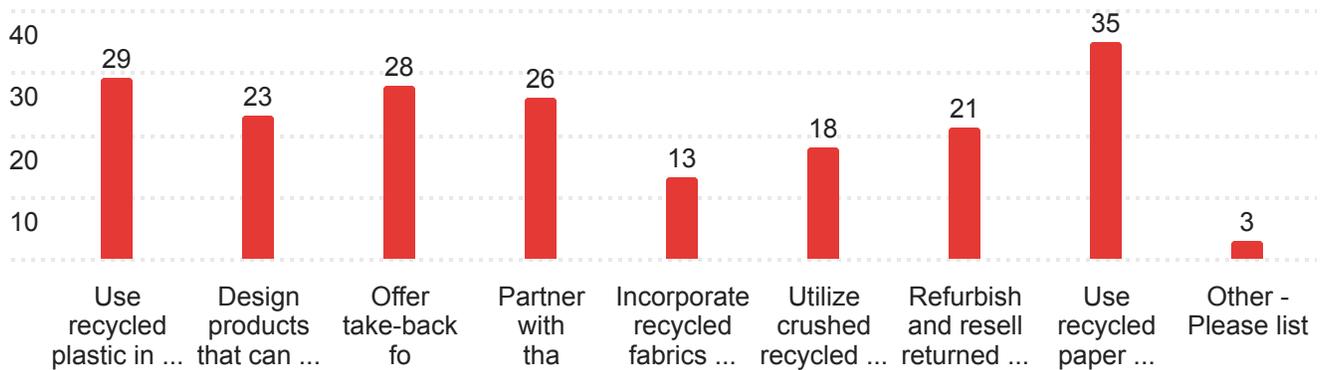
What recycled materials could your business purchase to utilize if they were available?

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

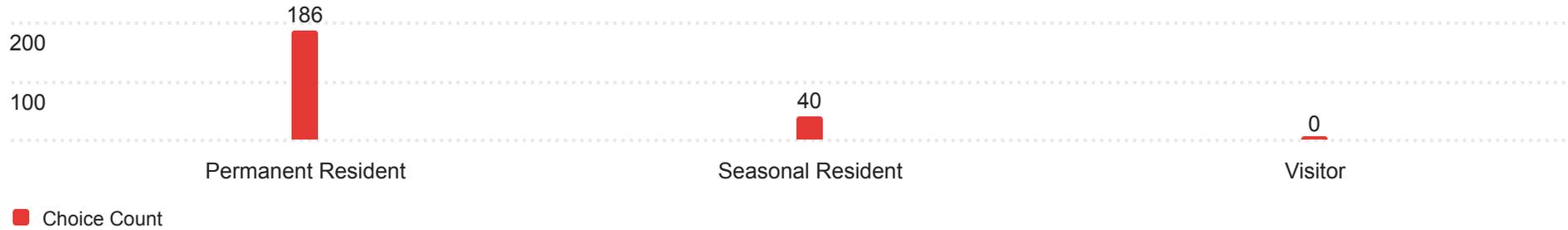
Q17_9_TEXT - Other - Please list - Text

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

226 Responses

	Permanent Resident	Seasonal Resident	Visitor
Choice Count	186	40	0

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

226 Responses

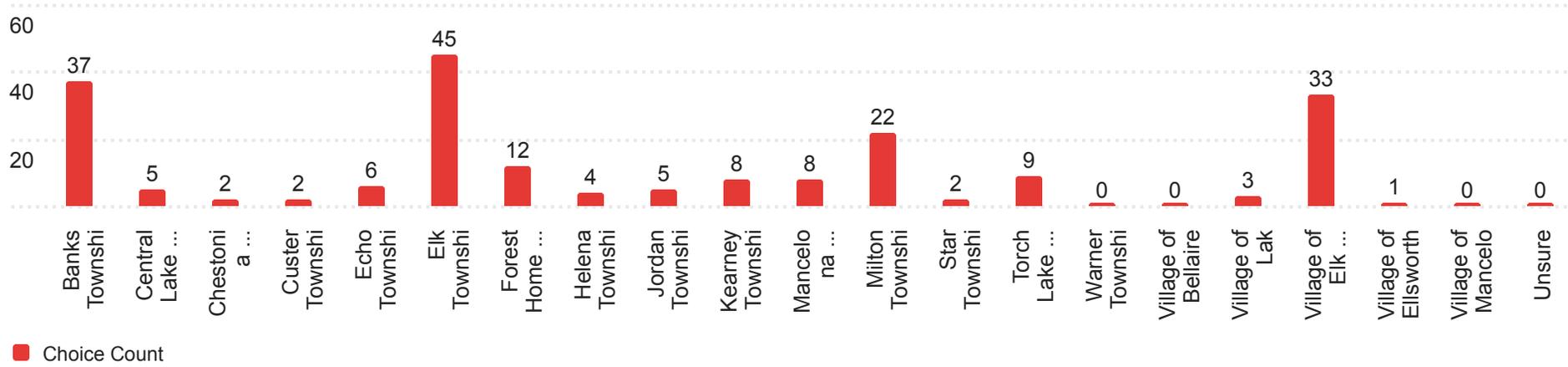|	Antrim County	Benzie County	Charlevoix County	Emmet County	Grand Traverse County	Kalkaska County	Leelanau County	Manistee County	Missaukee County	Wexford County	Other - please list
Choice Count	226	0	0	0	0	0	0	0	0	0	0
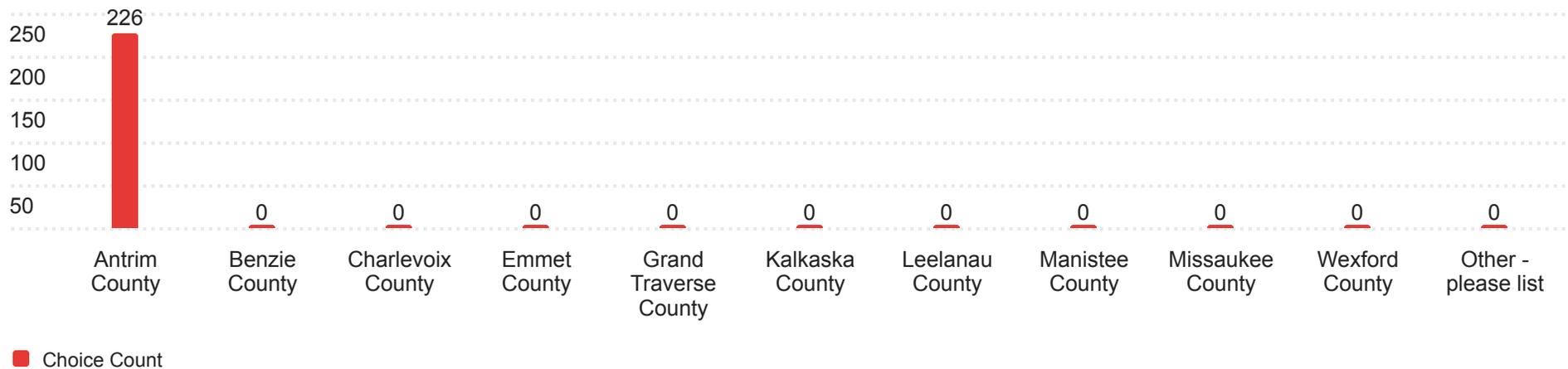
Q2A - Which Antrim County municipality (Township, City, or Village) do you reside in?

204 Responses

Banks Townshi: 37
Central Lake ...: 5
Chestoni a ...: 2
Custer Townshi: 2
Echo Townshi: 6
Elk Townshi: 45
Forest Home ...: 12
Helena Townshi: 4
Jordan Townshi: 5
Kearney Townshi: 8
Mancelo na ...: 8
Milton Townshi: 22
Star Townshi: 2
Torch Lake ...: 9
Warner Townshi: 0
Village of Bellaire: 0
Village of Lak: 3
Village of Elk ...: 33
Village of Ellsworth: 1
Village of Mancelo: 0
Unsure: 0

■ Choice Count

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

226 Responses

Less than 1 year: 11
1 to 3 years: 31
3 to 5 years: 24
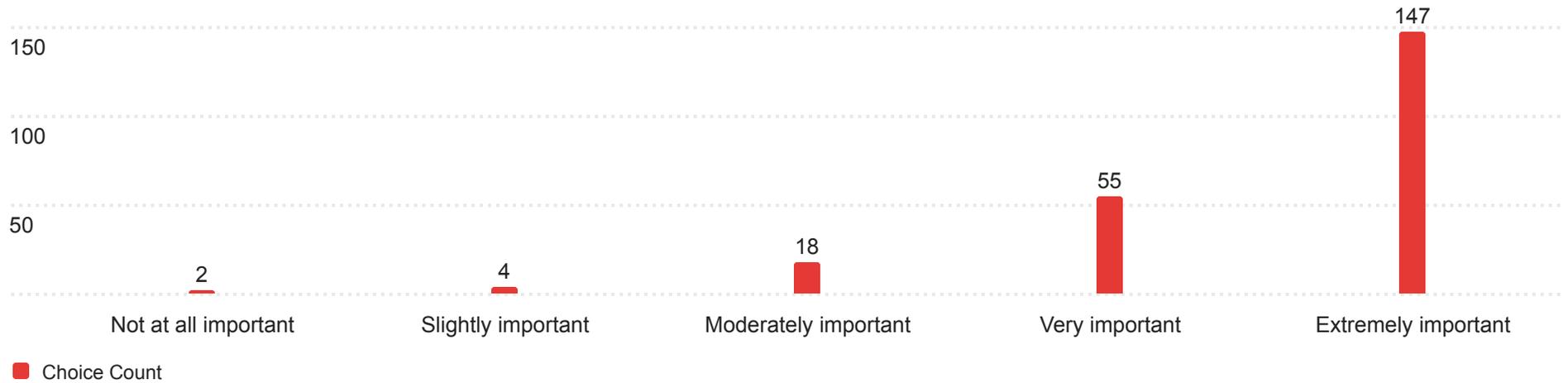5 to 10 years: 39
10 plus years: 121

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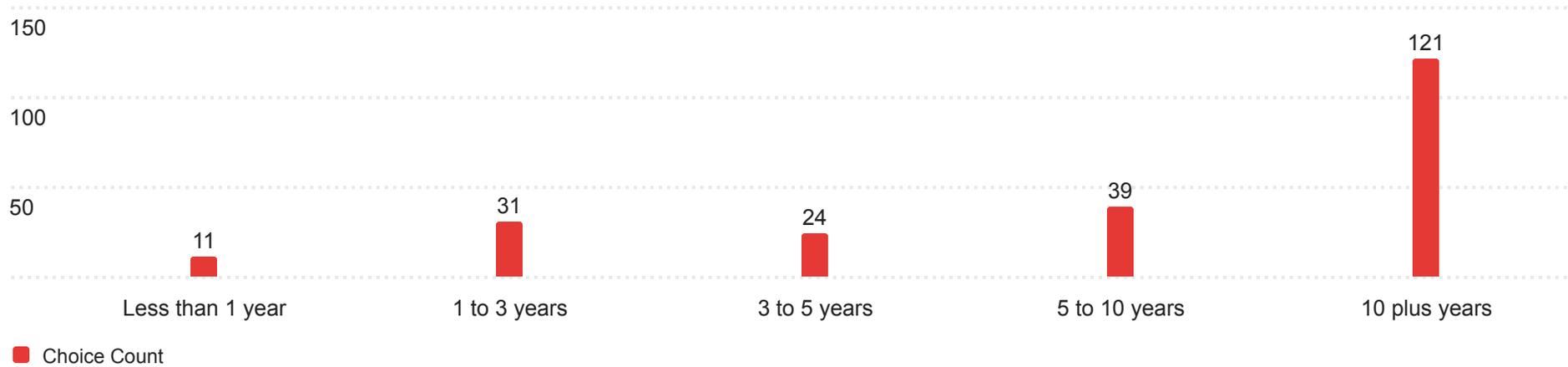
Q5 - How important do you believe recycling is for our communities, environment, and natural resources?

226 Responses

|	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Choice Count	2	7	15	60	142
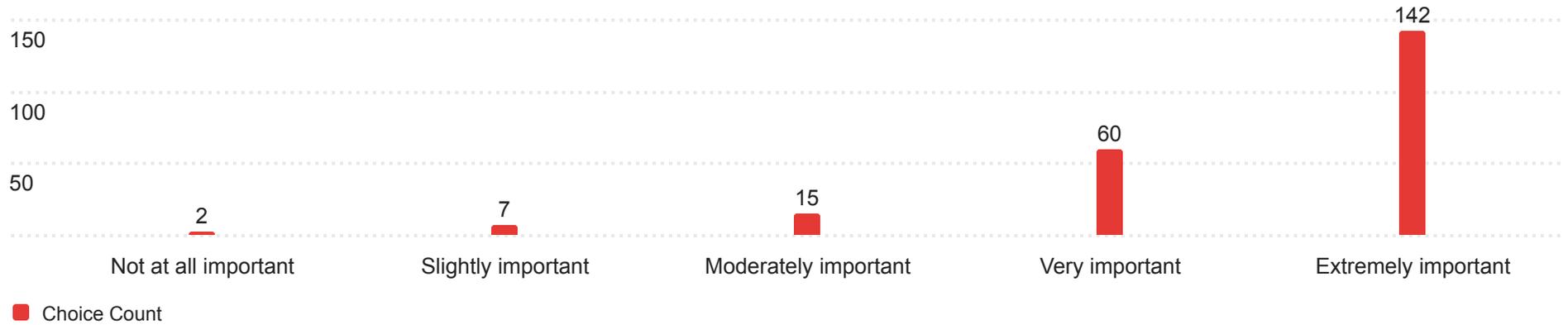
Q6 - How important is it for our community to reduce the amount of waste going into landfills?

226 Responses

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Choice Count	2	4	18	55	147

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

225 Responses
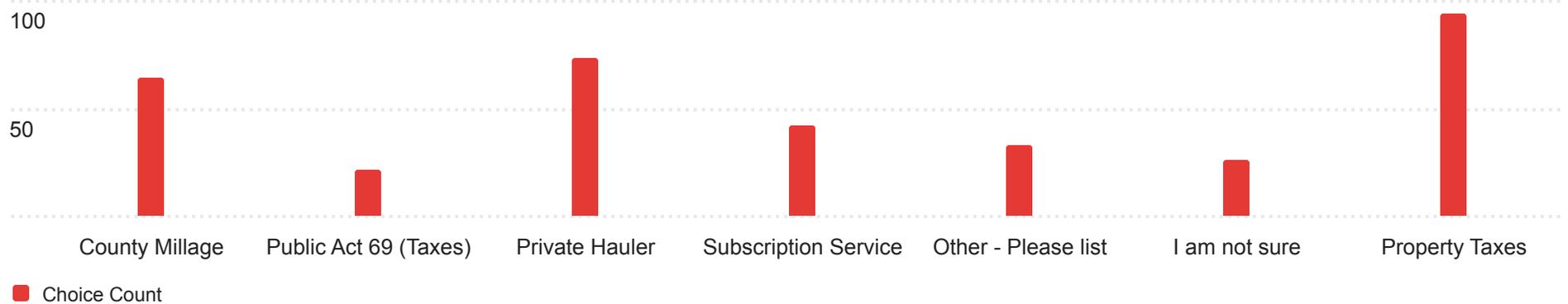
Other responses to paying for materials management included purchasing pre-paid trash bags, transfer stations, or covered by taxes, water bills, or rent/association dues.
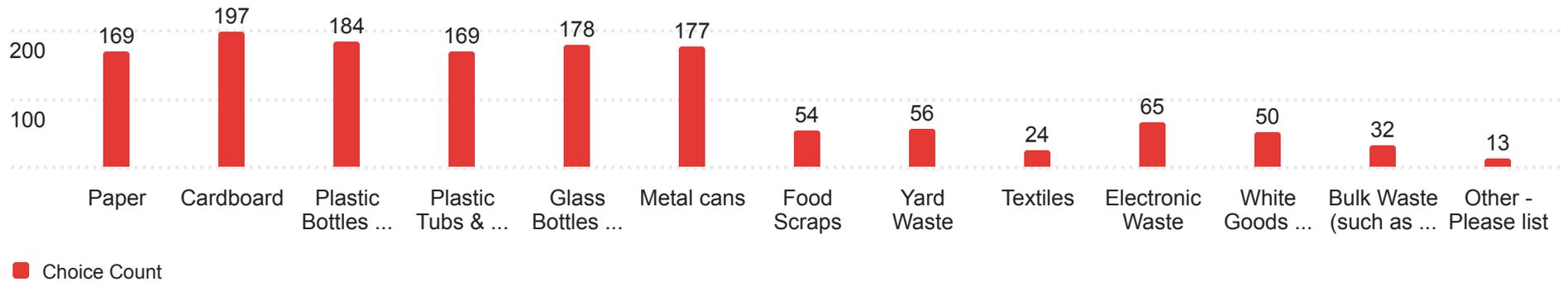
Q8 - Does your household currently participate in recycling?

225 Responses

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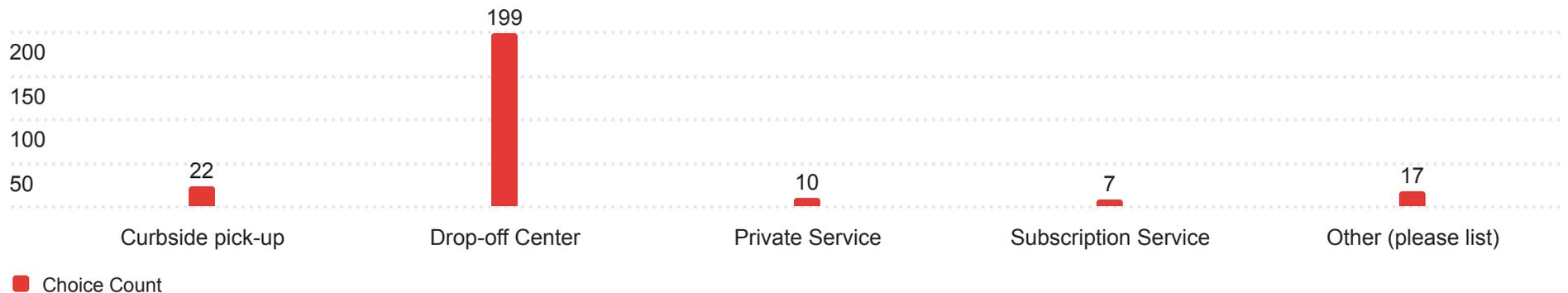
204 Responses

Paper 169, Cardboard 197, Plastic Bottles ... 184, Plastic Tubs & ... 169, Glass Bottles ... 178, Metal cans 177, Food Scraps 54, Yard Waste 56, Textiles 24, Electronic Waste 65, White Goods ... 50, Bulk Waste (such as ... 32, Other - Please list 13

■ Choice Count

Other responses to materials recycled at home included household hazardous waste (delivered to local collections), beverage cans, and egg cartons.

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

204 Responses

Curbside pick-up 22, Drop-off Center 199, Private Service 10, Subscription Service 7, Other (please list) 17

■ Choice Count
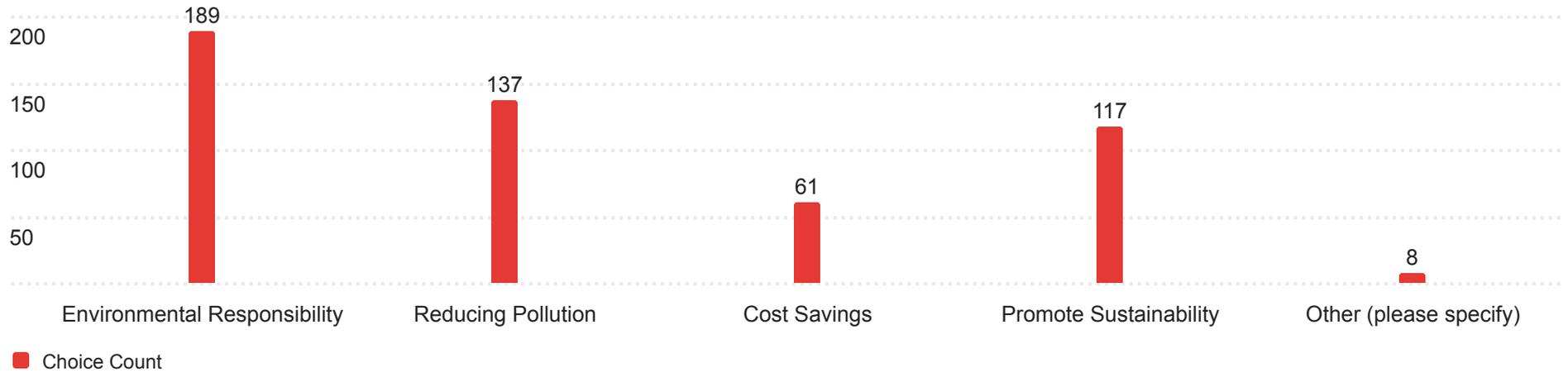
Other ways recycling is collected include at home composting of yard and food waste, local collection sites, Township clean up days, and reuse organizations.

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

Legend: ■ Choice Count

Values shown:
- Environmental Responsibility: 189
- Reducing Pollution: 137
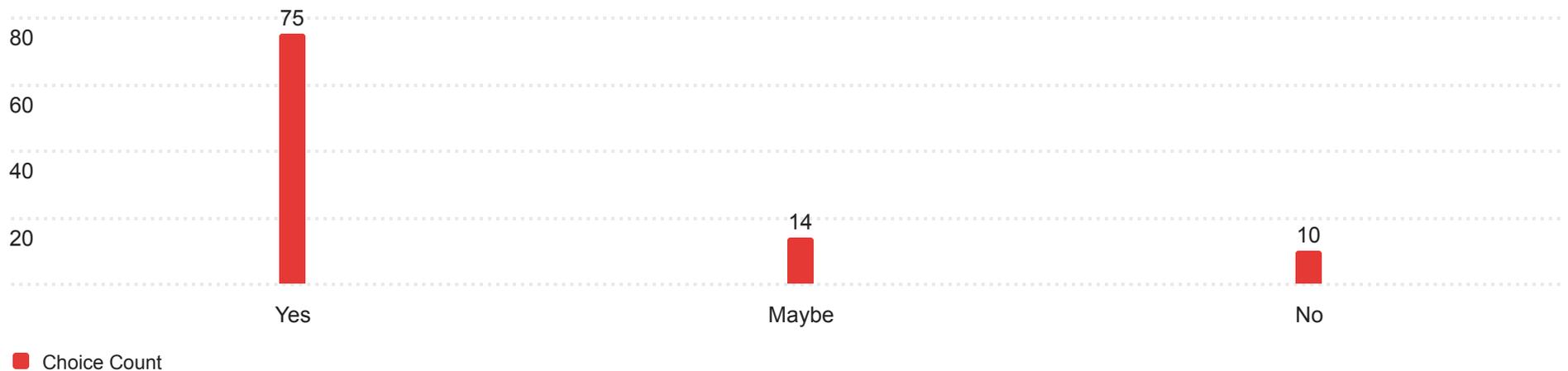- Cost Savings: 61
- Promote Sustainability: 117
- Other (please specify): 8

Other reasons for recycling include environmental concerns and potential cost savings.

Q9 - If you don't recycle, would you be interested in increased recyling availability?
99 Responses

Legend: ■ Choice Count

Values shown:
- Yes: 75
- Maybe: 14
- No: 10

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

111 Responses

Choice	Count
Costs	20
Lack of curbside recycling	58
Location of drop-off sites	39
Don't believe there is value	5
Too difficult	9
Other - please list	28

■ Choice Count
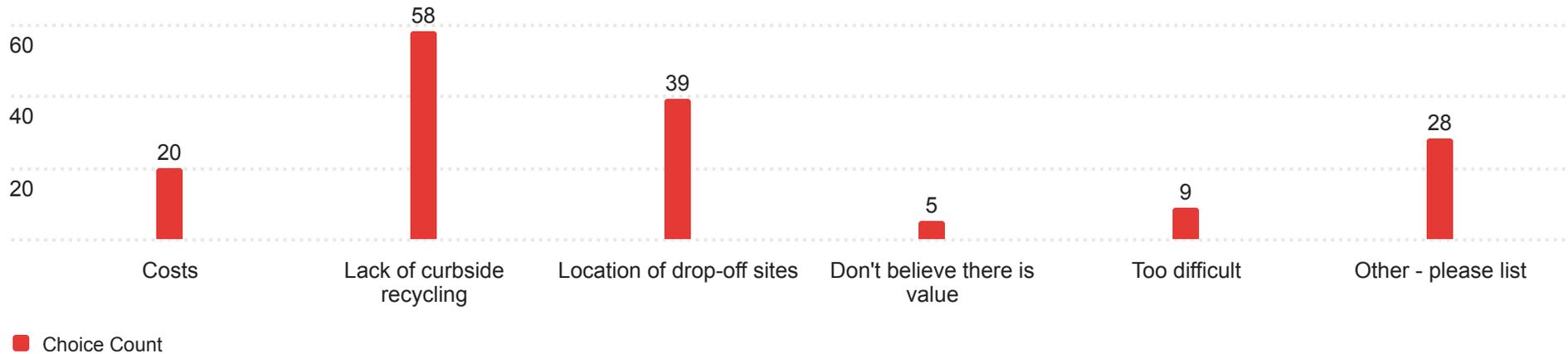
Other barriers that prevent recycling were access issues such as distance and bins being full and transparency and confidence of recycled materials.

Q11 - What information or resources about recycling and waste reduction would you find helpful? Select all that apply. - Selected Choice

167 Responses

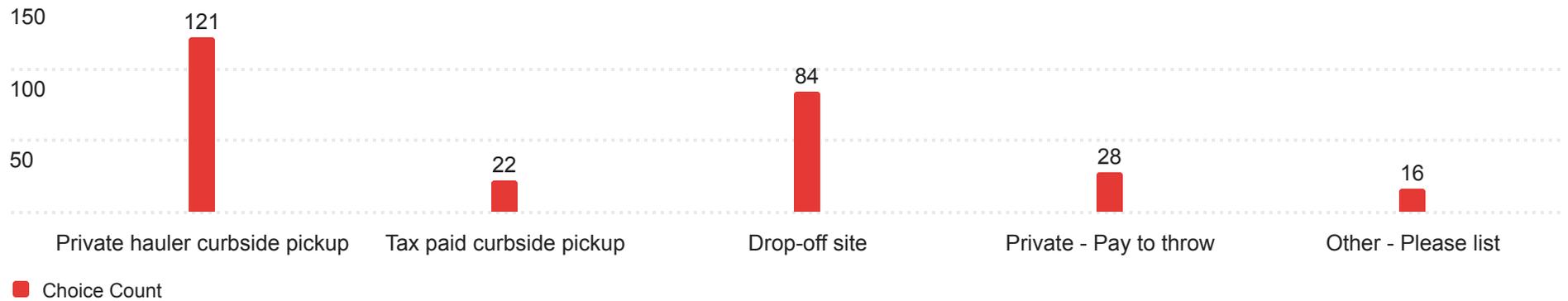| Choice	Count
Clearer Guidelines	103
Online Resources	69
Workshops	23
Community Recycling Events	93
Other - please list	14

■ Choice Count

Other information and resources mentioned were promotion and education for all, transparency of materials reused vs. landfilled, and improved accessibility of services.

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

226 Responses

Private hauler curbside pickup: 121
Tax paid curbside pickup: 22
Drop-off site: 84
Private - Pay to throw: 28
Other - Please list: 16

■ Choice Count
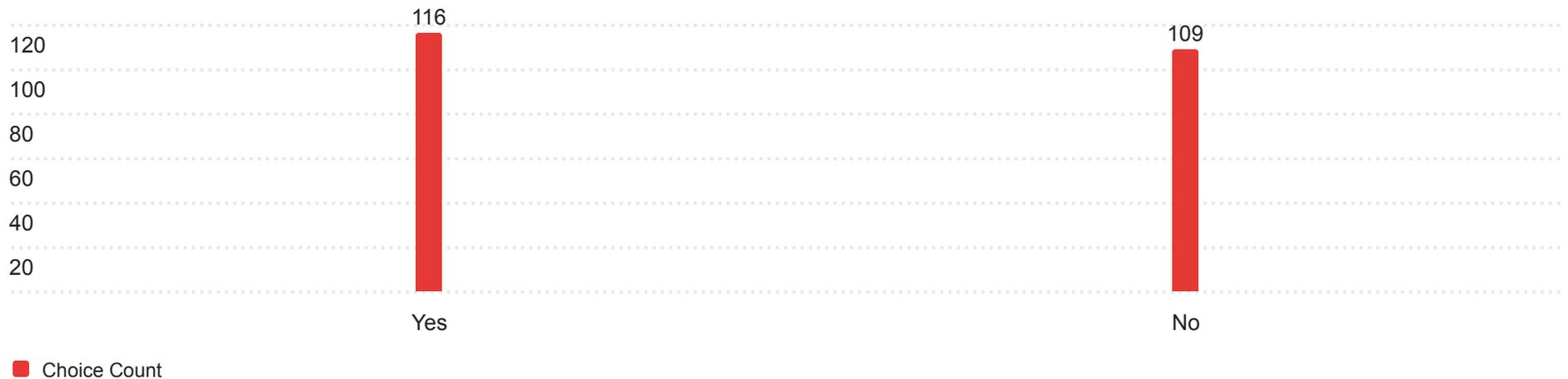
Other methods of trash disposal include taking trash to work or business dumpsters, condo association dumpsters, or at home composting or burn pits.

Q13 - Do you participate in composting?

225 Responses

Yes: 116
No: 109

■ Choice Count

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

115 Responses

100	
50	

87 — Compost at home
33 — Community compost program
18 — Local farm compost
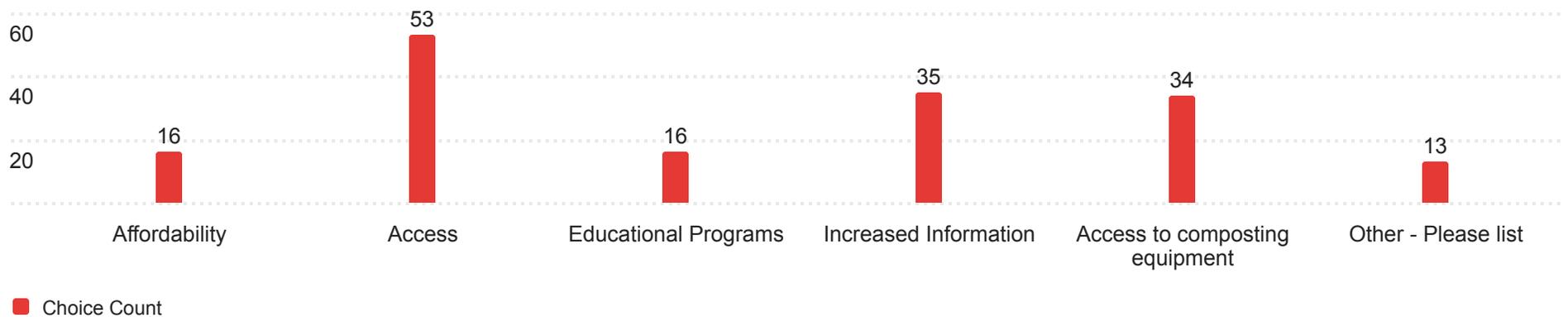7 — Compost Subscription Service
2 — Other - Please list

■ Choice Count

Other composting methods were taken to Traverse City or only doing yard waste.

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

91 Responses

60	
40	
20	

16 — Affordability
53 — Access
16 — Educational Programs
35 — Increased Information
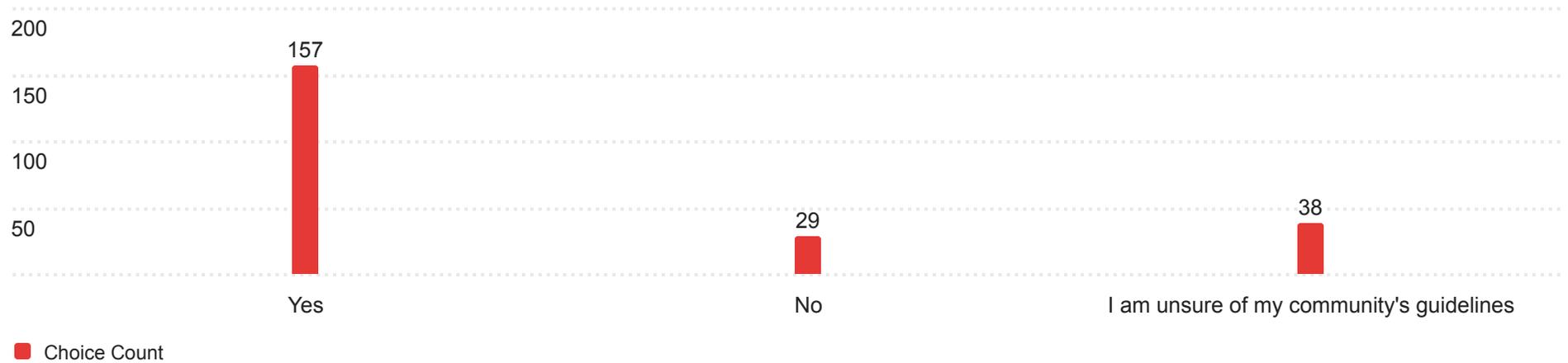34 — Access to composting equipment
13 — Other - Please list

■ Choice Count

Other ways to encourage composting were lack of space or ability, pest issues, and education of what composting is.

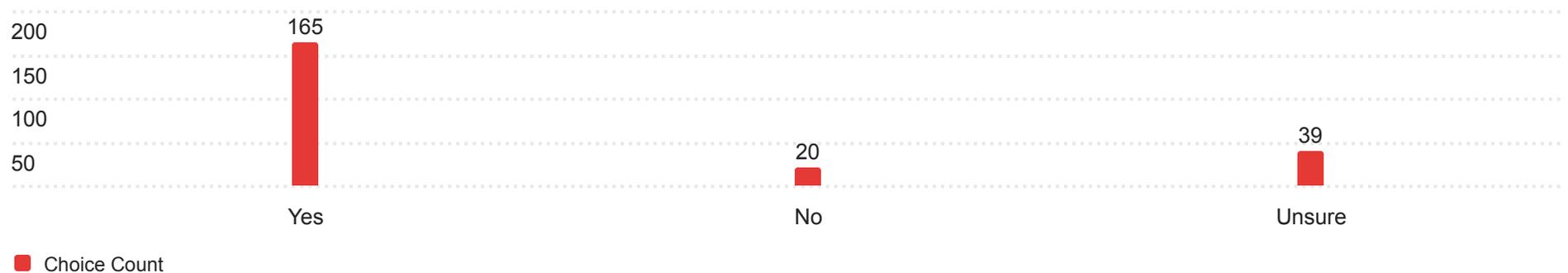## Q14 - Are the rules and guidelines clear for recycling in your community clear?

224 Responses

200

157

150

100

50

29

38

Yes

No

I am unsure of my community's guidelines

■ Choice Count

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

224 Responses

200

165

150

100

50

20

39

Yes

No

Unsure

■ Choice Count

Q16 - Are there any specific types of waste or materials that you find particularly difficult to recycle or dispose of properly? Please list all.
Materials that residents find difficult to recycle or dispose of included bulky items and construction waste (like furniture, mattresses, appliances, tires, wood), household hazardous waste items, specialty items (Styrofoam, plastic bags, light bulbs), and electronic waste.

Q17 - What ways could our communities be doing a better job of managing waste and resources? Select all that apply. - Selected Choice

179 Responses

	Reducing waste	Reusing items	Composting more	Other - Please list
Count	139	108	90	22

■ Choice Count

Other ways communities can do a better job include curbside recycling implementation, more promotion of recycling events, and education and transparency of collected materials.

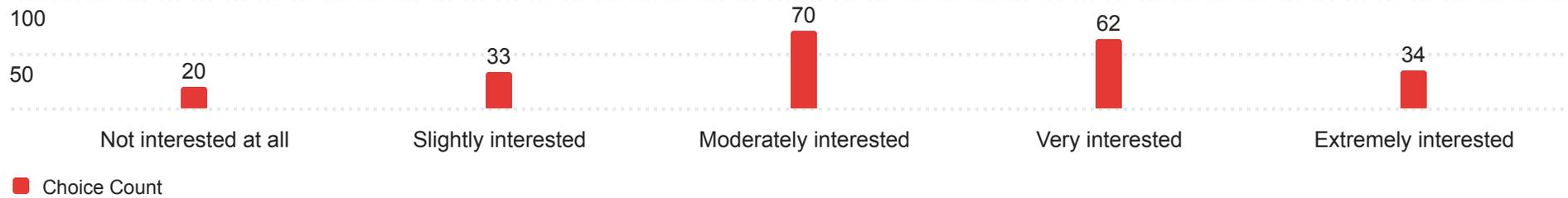## Q18 - What services would you like to see offered in your community? Select all that apply. - Selected Choice

197 Responses

Subscription Compost Program	Increased recycling access	Bulk Waste Pick-up	Green Waste Pick-up	Electornic Waste Drop-Off	More Household Hazardous Waste ...	Other - Please list
45	77	89	65	116	109	25

■ Choice Count

Additional services included curbside pickup, more access to household hazardous waste and bulky items, and concerns of costs and transparency.
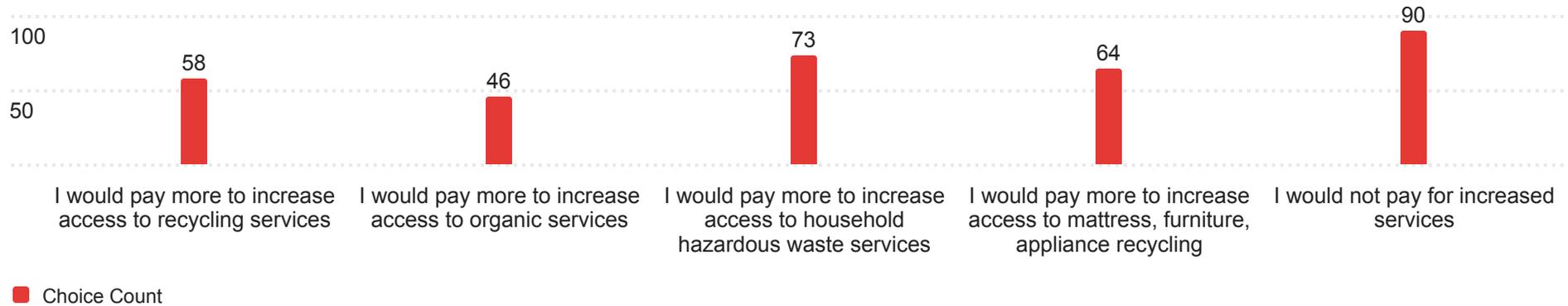
Q19 - How interested are you in learning more about waste reduction and management, recycling, and organics in your community?

219 Responses

	Not interested at all	Slightly interested	Moderately interested	Very interested	Extremely interested
Choice Count	20	33	70	62	34

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

215 Responses

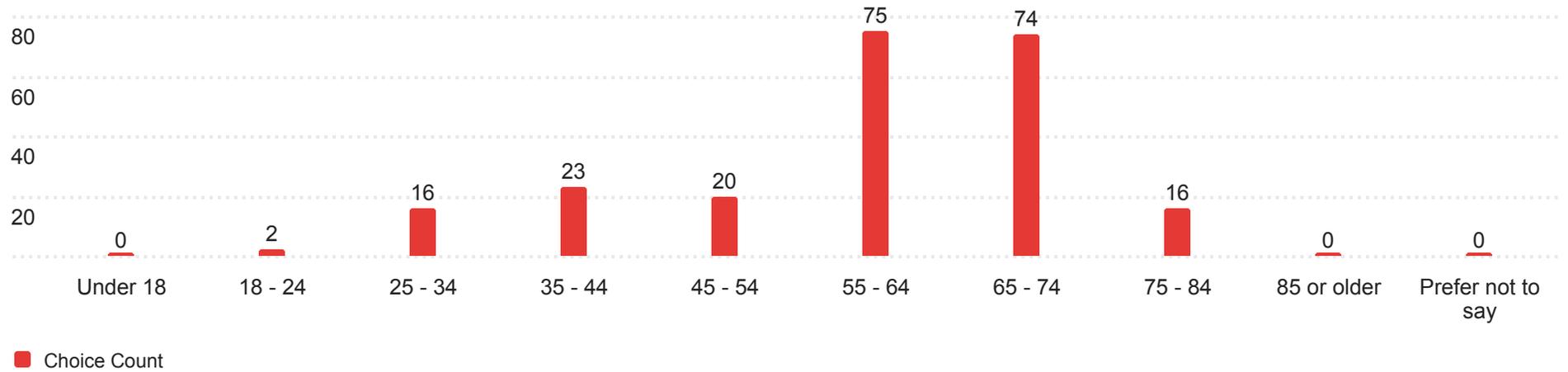|	I would pay more to increase access to recycling services	I would pay more to increase access to organic services	I would pay more to increase access to household hazardous waste services	I would pay more to increase access to mattress, furniture, appliance recycling	I would not pay for increased services
Choice Count	58	46	73	64	90

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 for the MMPC included programs and partnerships like Zero Waste in Schools or upcycling workshops, policy changes such as extended producer responsibility and curbside services, adding drop-off site access, improving infrastructure for bulky items, household hazardous waste, and composting, and furthering education, promotion, and enforcement, and costs of services and programs.
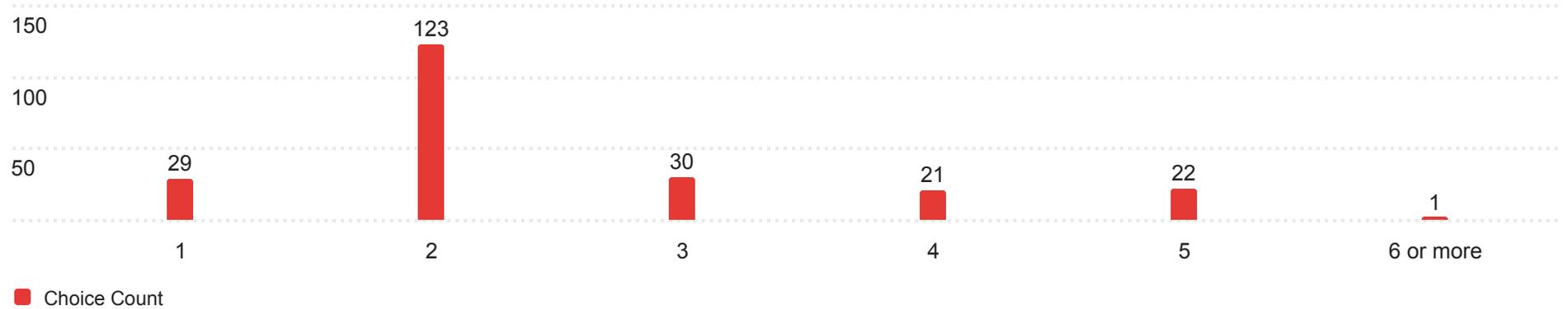
Q22 - What age range do you fall into?

226 Responses

Choice Count

Under 18	18 - 24	25 - 34	35 - 44	45 - 54	55 - 64	65 - 74	75 - 84	85 or older	Prefer not to say
0	2	16	23	20	75	74	16	0	0

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

226 Responses

Choice Count

1	2	3	4	5	6 or more
29	123	30	21	22	1

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

226 Responses

Choice Count