DRAFT REPORT

County Solid Waste Characterization Study



March 2025

MSW CONSULTANTS



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1. INTRODUCTION

Ontario County (County), located in the Finger Lakes area of New York, is a popular vacation destination that is home to over 112,000 residents. Residents live within the County's 26 municipalities comprised of a mix of cities, towns and villages. The County's Department of Sustainability and Solid Waste Management (Department) administers the Local Solid Waste Management Plan (LSWMP) that identifies the economic and environmental goals of the County and State related to the conservation of resources, encouragement of waste diversion, and the implementation of recycling and organics programs including advanced recyclers.

The reduction in waste generation and alternatives to traditional landfill disposal are of increasing importance for the County as the County Board of Supervisors recently voted to close the Ontario County Landfill by December 31, 2028. The County-owned landfill, located in the Town of Seneca and operated by Casella, is permitted to receive 2,999 tons per day from multiple counties, including Ontario. The onsite Materials Recovery Facility (MRF), also operated by Casella, may or may not remain operational following the closure of the landfill.

As part of the Department's ongoing solid waste management efforts, MSW Consultants was retained to perform a 2025 Waste Characterization Study (WCS). The 2025 WCS serves as an update to a similar study performed in 2022, analyzing municipal solid waste (MSW) disposed at the landfill. Both studies were single season studies, although the 2022 WCS took place in summer (June) and the 2025 WCS occurred in winter (January).

The 2022 and 2025 studies targeted representative samples from the inbound municipalities and haulers for the residential and commercial generator sectors based on tonnage data provided by the County, and only Ontario County waste was targeted. The 2025 WCS included an add-on task of sampling inbound recycling samples at the County's material recovery facility (MRF) operated by Casella.

2. ONTARIO COUNTY WASTE AND RECYCLING GENERATION

Based on the sampling protocol of the 2022 WCS and review of annual tonnage data, the following generator sectors were defined in the 2025 WCS for both refuse and recycling sample targets:

- **Residential – Private Hauler:** material collected by third-party private haulers from single-family and multi-family residences throughout the County,
- **Residential – Municipal Hauler:** material collected by municipal haulers from single-family residences throughout the County,
- **Residential – Convenience Center:** residential drop-off (self-haul) locations at convenience centers/transfer stations for refuse and recycling, and
- **Industrial/Commercial/Institutional (ICI):** material collected from businesses and institutions within the County, such as restaurants, offices, manufacturing, retail, medical facilities and schools.

Table 2-1 shows three years of annual scale data provided by the County for the Casella operated landfill and MRF. Annual tonnage data for 2024 shows a moderate increase in landfill tonnage and relatively consistent recycling generation over the last few years.

Table 2-1 Annual Ontario County Waste and Recycling Tonnage (2022-2024)

	Tons		
Generator	2022	2023	2024
MSW to Landfill	54,475	54,525	57,513
Recyclables to MRF	7,256	6,168	7,070
Total	61,731	60,693	64,582

Reported refuse tonnage data provided did not break down inbound materials by generator sector (residential, ICI) or hauler type. Table 2-2 shows the results of a detailed review of landfill scale transactions to assign inbound waste tons to generator and hauler type based on County feedback and fieldwork observations.[1]

Table 2-2 Allocated Ontario County MSW Disposal

Generator	2023 Tons	2023 Pct	Implied 2024 Tons
Residential Total	37,698	69.1%	39,763
Residential Convenience Center	6,404	11.7%	6,754
Residential Private Hauler	21,842	40.1%	23,038
Residential Municipal	9,452	17.3%	9,970
ICI	16,828	30.9%	17,750
Total	54,525	100.0%	57,513

Table 2-3 provides the same results of allocating annual recycling tonnage to generator sectors and hauler types at the MRF. Recycling scale data provided a breakdown of inbound residential and ICI tons and hauler types were verified during fieldwork.

Table 2-3 Allocated Ontario County Recyclables Disposal

Generator	2023 Tons	2023 Pct	Implied 2024 Tons
Residential Total	3,974	64.4%	4,554
Residential Convenience Center	839	13.6%	961
Residential Private Hauler	1,734	28.1%	1,987
Residential Municipal	1,401	22.7%	1,606
ICI	2,195	35.5%	2,515
Total	6,168	100.0%	7,070

The tonnages shown above have been used for the purpose of aggregating composition results, and for reporting on countywide disposed MSW and recycled material quantities. The availability of

[1] It should be noted that the basis for both MSW and recycling allocations were supplemented by random sampling during the field data collection, described later in this report.

accurate underlying tonnages in this 2025 WCS is a distinct improvement over the 2022 WCS, which did not incorporate such a detailed analysis of underlying scale data.

3. STUDY DESIGN

Elements of the study design and field operations are summarized in the following subsections.

3.1 SAMPLE TARGETS

Table 3-1 and Table 3-2 show the stratified sampling targets for refuse and recycling based on tonnage data provided by the County and Casella.

Table 3-1 Refuse Sampling Plan

Hauler	Targeted	Actual
Casella	20	21
Miscellaneous Haulers	10	10
K&D Disposal	8	7
Finger Lakes Refuse Disposal	6	5
Lyons Road Trash Removal	4	5
Canandaigua City DPW	2	4
Total	50	52

Table 3-2 Recycling Sampling Plan

Hauler	Targeted	Actual
Miscellaneous Haulers (inc. Casella)	9	14
Appleton Disposal	7	4
Canandaigua City DPW	3	0
Canandaigua Town	2	4
Lyons Road Trash Removal	2	3
Finger Lakes Refuse Disposal	2	3
Town of Gorham	0	2
Total	25	30

As shown in these tables, sample targets were allocated across the many haulers and municipalities collecting material in Ontario County. Refuse tonnage data provided by the County did not specify generator sector and therefore the sampling plan was supplemented in the field based on driver interviews and available trucks for sampling. Recycling scale data provided a better view of inbound vehicles separated by residential and ICI tonnage. Recycling trucks were selected during a sampling window between Monday afternoon and Thursday morning. Not all targeted haulers (e.g., City of Canandaigua) arrived during the sampling window at the MRF; therefore, alternate vehicles were selected.

A stratified “nth” truck approach was used for refuse and recycling when feasible; however, because inbound Ontario loads infrequently arrive at the landfill and MRF, the scalehouses for both facilities also assisted in directing targeted Ontario loads to the sort team on arrival to the landfill tip face and MRF tip floor.

Table 3-3 summarizes the total samples captured for both refuse and recyclables. Over 16,000 pounds of materials were intercepted during the study, and sample weight targets were met

Table 3-3 Samples Collected by Stream

	Refuse		Recyclables	
Generator Sector	Samples	Sorted Lbs	Samples	Sorted Lbs
Residential Private Hauler	22	5,039	15	2,085
Residential Municipal Hauler	6	1,319	2	296
Residential Convenience Centers	5	1,214	8	1,114
Industrial/Commercial/Institutional (ICI)	19	4,234	5	736
Total	52	11,806	30	4,231
Average pounds per sample		*229*		*143*

3.2 MATERIAL CATEGORIES

The refuse material categories used for the 2025 WCS are shown in Table 3-4. These categories remained unchanged from the 2022 WCS for comparability and representativeness of the County's collection programs. This table also presents a "divertibility" classification for each material category, which shows the potential to reduce waste to landfill and includes the following designations:

- **Targeted Recyclable**: includes commonly accepted curbside or drop-off program recyclables for residents and businesses such as recyclable fiber and plastic, metal and glass containers.
- **Compostable Organics –** organic items typically accepted in organics collection programs including food waste, compostable paper (uncoated fiber such as paper towels) and yard waste (grass, leaves, prunings and trimmings).
- **Special Collection –** includes materials not readily acceptable in curbside recycling but that may be accepted at municipal drop-off locations or third-party recyclers such as electronic and household hazardous waste, retail film, tires and mattresses.
- **Not Readily Recoverable –** includes all other materials that are not currently readily recoverable in Ontario County such as bulky items, textiles, diapers, construction and demolition materials and composite products.

Table 3-4 Refuse Material Categories and Divertibility Classifications

Material Category	Material Category
Paper	**Metals**
Corrugated Cardboard/Kraft Paper (Uncoated)	Aluminum Cans & Containers
Newsprint	Other Aluminum
Magazines	Tin/Steel Containers
High Grade Office Paper	Other Ferrous
Mixed Recyclable Paper	Other Non-Ferrous
Aseptic Containers/Gable Top Cartons	Oil Filters
Compostable Paper	**Organics**
Remainder/Composite Paper	Food Waste
Plastic	Wood - Clean/Untreated
PET (#1) Bottles/Jars	Wood - Painted/Stained/Treated
PET (#1) Non-Bottle Containers	Textiles - Clothing
HDPE (#2) Natural Containers	Textiles - Non-Clothing
HDPE (#2) Colored Containers	Shoes/Belts/Leather
Clean Retail Film Bags	Disposable Diapers & Sanitary Products
Clean Industrial/Commercial Film (Non-Bag)	Yard Waste
Contaminated Film/Other Film	Remainder/Composite Organic
Plastic Containers #3 - #7	**Inorganics**
Expanded Polystyrene	Drywall/Gypsum Board
Bulky Durable Plastic Products	Asphalt, Brick, Concrete, & Rocks
Remainder/Composite Plastic	Carpet & Carpet Padding
E-Waste/HHW	Other Construction & Demolition
Electronic Waste	Bulky Items
HHW	Furniture
Glass	Mattresses/Box Springs
Clear Glass Containers	Tires
Brown Glass Containers	Other/Not Classified
Green Glass Containers	Fines
Remainder/Composite Glass	

Key: *Targeted Recyclable* *Compostable Organics* *Special Collection* *Not Readily Recoverable*

The same material categories were used for the recycling sorts. However, mixed cullet and "opaque bagged material" categories were added to better evaluate the recycling composition as these materials are typically readily found in inbound recycling. It was confirmed with MRF and County staff that the sorting should replicate MRF operations where clear bags of recycling are opened on the processing line but opaque bags (no matter what the material) are not opened. As a result, opaque bags were weighed but not opened. Table 3-5 shows the recycling material categories and their recoverability potential, which includes the following categories:

- **Targeted Fiber –** includes recyclable paper products such as cardboard, newsprint, magazines and mixed paper.
- **Targeted Plastic –** includes rigid #1-#7 plastic containers such as bottles, jars, cups and thermoforms.
- **Targeted Metal –** includes aluminum and tin/steel food, beverage and other product containers, other aluminum (foil trays and sheets) and ferrous scrap metal.
- **Targeted Glass –** includes glass food, beverage and other product bottles, jars and containers, any color. Also includes 2" plus mixed cullet (broken glass) if can be identified as a bottle, jar or other container.
- **Contaminant –** items not currently targeted for recycling such as expanded polystyrene, film plastics, composite items, organics and household goods.

Table 3-5 Recycling Material Categories and Recoverability

Material Category	Material Category
Paper	**Metals**
Corrugated Cardboard/Kraft Paper (Uncoated)	Aluminum Cans & Containers
Newsprint	Other Aluminum
Magazines	Tin/Steel Containers
High Grade Office Paper	Other Ferrous
Mixed Recyclable Paper	Other Non-Ferrous
Aseptic Containers/Gable Top Cartons	Oil Filters
Compostable Paper	**Organics**
Remainder/Composite Paper	Food Waste
Plastic	Wood - Clean/Untreated
PET (#1) Bottles/Jars	Wood - Painted/Stained/Treated
PET (#1) Non-Bottle Containers	Textiles - Clothing
HDPE (#2) Natural Containers	Textiles - Non-Clothing
HDPE (#2) Colored Containers	Shoes/Belts/Leather
Clean Retail Film Bags	Disposable Diapers & Sanitary Products
Clean Industrial/Commercial Film (Non-Bag)	Yard Waste
Contaminated Film/Other Film	Remainder/Composite Organic
Plastic Containers #3 thru #7	**Inorganics**
Expanded Polystyrene	Drywall/Gypsum Board
Bulky Durable Plastic Products	Asphalt, Brick, Concrete & Rocks
Remainder/Composite Plastic	Carpet & Carpet Padding
E-Waste/HHW	Other Construction & Demolition
Electronic Waste	Bulky Items
HHW	Furniture
Glass	Mattresses/Box Springs
Clear Glass Containers	Tires
Brown Glass Containers	Other/Not Classified
Green Glass Containers	Fines
Remainder/Composite Glass	Opaque Bagged Material
Cullet	

Key: *Targeted Fiber* *Targeted Plastic* *Targeted Metal* *Targeted Glass* *Contaminant*

This table also indicates whether each category is targeted at the MRF, or else represents a contaminant that should not be in the recycling stream.

3.3 FIELD DATA COLLECTION

The 2025 WCS study took place in January 2025 and largely followed the 2022 WCS methodology for comparability of results. Winter weather delays resulted in the previously planned seven-day 2025 WCS extending into ten days; however, representative days and trucks were still captured at the landfill and MRF. Refuse sorting took place at the Ontario County landfill located at 1879 NY-5, Stanley, NY 14561, while the recycling sort was located at the onsite MRF located at 3555 County Rd 49 Stanley, NY 14561.

Only Ontario County loads were targeted at the landfill and MRF, which both receive waste from other counties. Therefore, scalehouse staff and drivers were asked to confirm the origin of loads, including the county of origin and generator sector. Once a load was selected for sampling it was directed to tip in the designated area so a "grab" sample of material could be retrieved from a randomly selected cell of the load. The minimum sample weight was 200 pounds for refuse samples and 125 pounds for recycling samples, following industry standards (ASTM D5231-92 (2024), *Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste)*.

Figure 3-1 shows images of the landfill tip face and MRF tip floor used for sample retrieval and sort operations.

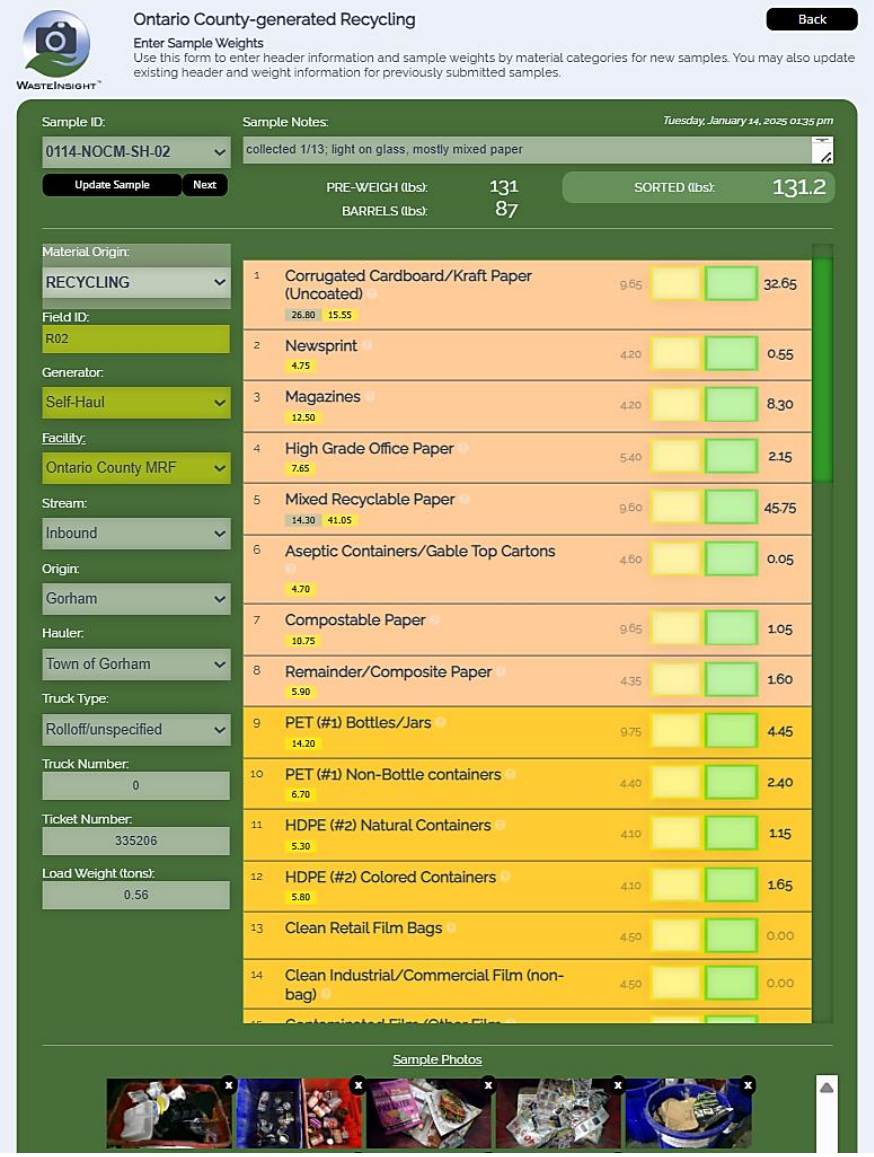
Figure 3-1 Sort Site Layout at Landfill and MRF



After samples were collected, they were assigned a unique sample ID and staged for sorting by the MSW Consultants professional sort crew. The sort crew used a 4' x 8' table to open bags and separate material by group and category into 5-gallon buckets, 18-gallon bins and 35-gallon barrels. At the

conclusion of each sample all material was weighed and recorded using an electronic tablet with built-in functionality to verify sample ID, total targeted weight and any missing or erroneously entered values in real-time. Figure 3-2 provides a screenshot of the tablet-based app that was used to record data in the field. As shown, this robust interface gives the field supervisor detailed information to assure the accuracy and completeness of sample data in real time.

Figure 3-2 Data Recording App (Screenshot)



Data was uploaded regularly throughout the day allowing for additional in-office quality control and setting up the results for the analysis performed in the next section.

3.4 DATA ANALYSIS

The statistical methods used in this study for manually sorted MSW samples follow the US EPA's guidance on solid (hazardous) waste sampling.[2] This approach involves converting the weight of each material category within a sample into a percentage of the sample's total weight. The average percentage and margin of error are then calculated across all samples. The resulting statistical measures are provided in the results:

- **Sample Mean**: The sample mean, or average, composition is considered the "most likely" fraction for each material category in the waste stream.
- **Margin of Error**: Margins of error (MOE) are calculated for each material category to provide a measure of the uncertainty in the sample mean. Because the estimated composition percentage is based on sampling, there is inherent variability in the estimate. The MOE quantifies this variability, reflecting the possible difference between the sample mean and the true population value due to sampling error. MOEs are calculated at a 90 percent level of confidence in this study.

4. REFUSE COMPOSITION RESULTS

This section presents the results of the aggregate, residential and ICI disposed MSW streams and includes comparisons between the 2025 and 2022 studies.

4.1 COUNTYWIDE AGGREGATE MSW

Figure 4-1 shows the aggregate composition by material group for the combined residential (Private Hauler, Municipal Hauler, Convenience Center) and ICI generator sectors. Organics and Paper are shown to be the largest material groups disposed of at the landfill.

[2] *Hazardous Waste Test Methods/SW-846*, Chapter 9: Sampling Plans, US EPA, November 22, 2023.

Figure 4-1 Disposed Aggregate MSW Composition

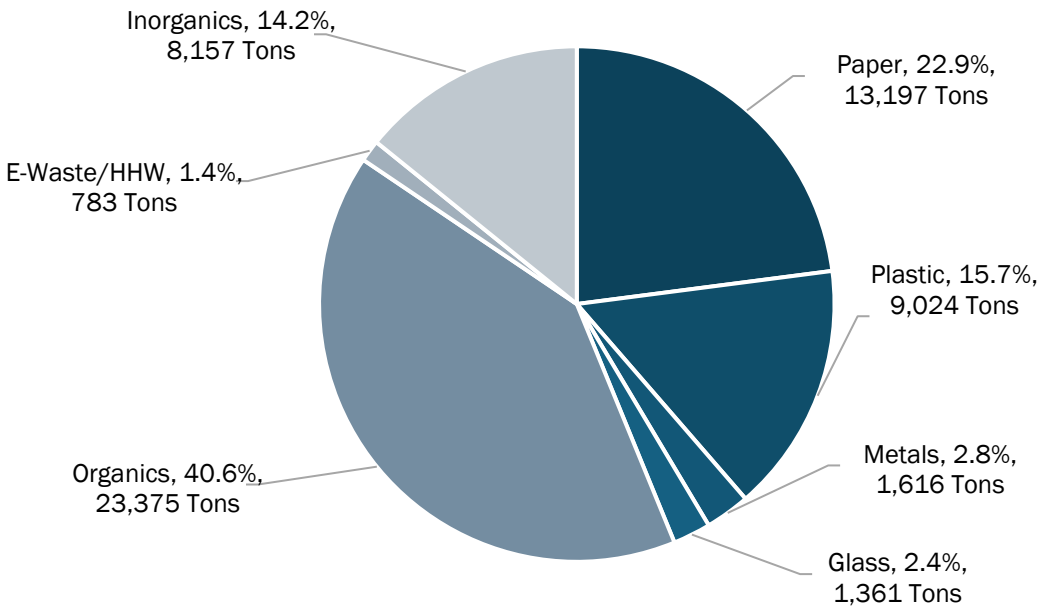


Figure 4-2 recasts these results to illustrate the divertibility of disposed MSW. Over 18 percent of the disposed waste stream was made up of Targeted Recyclables, with almost 33 percent of the waste stream potentially recoverable through Organics and Special Collection programs. It is important to note, some fraction of potentially recoverable materials were too degraded or contaminated for recovery, such as moisture or food soiled fibers or film, and so this figure should be considered a higher estimate of truly recyclable materials being disposed.

Figure 4-2 Disposed Aggregate MSW Divertibility

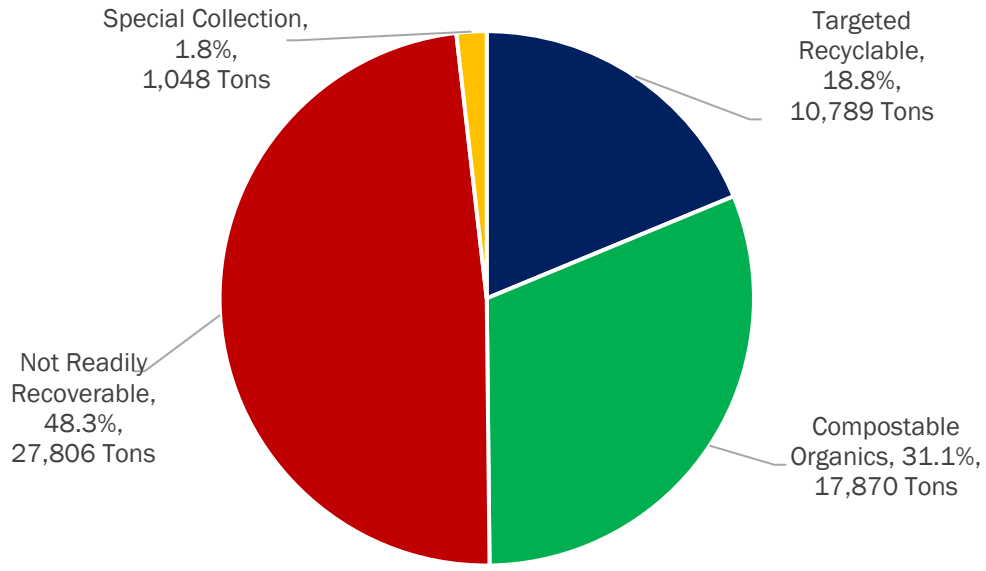


Table 4-1 presents the weighted aggregate results for the combined residential and ICI generator sectors. Consistent with industry standards, the margin of error is calculated at a 90 percent level of confidence.

Table 4-1 Detailed Aggregate Disposed MSW Composition

Material Category	Mean	MOE	Tons	Material Category	Mean	MOE	Tons
Paper	**22.9%**	**2.6%**	**13,197**	**Glass**	**2.4%**	**0.9%**	**1,361**
Corrugated Cardboard/Kraft Paper	5.2%	1.2%	2,966	Clear Glass Containers	0.9%	0.2%	534
Newsprint	0.1%	0.0%	79	Brown Glass Containers	0.2%	0.0%	109
Magazines	0.3%	0.1%	193	Green Glass Containers	0.5%	0.1%	292
High Grade Office Paper	0.4%	0.1%	228	Remainder/Composite Glass	0.7%	0.2%	426
Mixed Recyclable Paper	4.8%	1.1%	2,751	**Organics**	**40.6%**	**4.3%**	**23,375**
Aseptic Containers/Gable Top Cartons	0.3%	0.1%	199	Food Waste	23.6%	5.5%	13,595
Compostable Paper	7.1%	1.7%	4,105	Wood - Clean/Untreated	3.8%	0.9%	2,194
Remainder/Composite Paper	4.7%	1.1%	2,677	Wood - Painted/Stained/Treated	1.2%	0.3%	683
Plastic	**15.7%**	**2.0%**	**9,024**	Textiles - Clothing	1.3%	0.3%	732
PET (#1) Bottles/Jars	1.1%	0.3%	655	Textiles - Non-Clothing	1.6%	0.4%	938
PET (#1) Non-Bottle Containers	0.5%	0.1%	268	Shoes/Belts/Leather	0.4%	0.1%	206
HDPE (#2) Natural Containers	0.3%	0.1%	182	Diapers & Sanitary Products	3.8%	0.9%	2,173
HDPE (#2) Colored Containers	0.5%	0.1%	259	Yard Waste	0.3%	0.1%	170
Clean Retail Film Bags	0.1%	0.0%	37	Remainder/Composite Organic	4.7%	1.1%	2,683
Clean Industrial/Commercial Film	0.5%	0.1%	300	**E-Waste/HHW**	**1.4%**	**0.4%**	**783**
Contaminated Film/Other Film	5.8%	1.4%	3,349	Electronic Waste	0.8%	0.2%	438
Plastic Containers #3 thru #7	1.3%	0.3%	750	HHW	0.6%	0.1%	345
Expanded Polystyrene	0.2%	0.1%	128	**Inorganics**	**14.2%**	**3.2%**	**8,157**
Bulky Durable Plastic Products	3.3%	0.8%	1,904	Drywall/Gypsum Board	0.6%	0.1%	317
Remainder/Composite Plastic	2.1%	0.5%	1,191	Asphalt, Brick, Concrete & Rocks	0.0%	Not Found	0
Metals	**2.8%**	**0.5%**	**1,616**	Carpet & Carpet Padding	1.9%	0.4%	1,101
Aluminum Cans & Containers	0.5%	0.1%	302	Other Construction & Demolition	1.3%	0.3%	745
Other Aluminum	0.4%	0.1%	224	Bulky Items	4.5%	1.0%	2,579
Tin/Steel Containers	0.8%	0.2%	480	Furniture	1.7%	0.4%	976
Other Ferrous	0.6%	0.1%	319	Mattresses/Box Springs	0.2%	0.0%	97
Other Non-Ferrous	0.5%	0.1%	290	Tires	0.2%	0.1%	131
Oil Filters	0.0%	0.0%	2	Other/Not Classified	1.9%	0.4%	1,074
				Fines	2.0%	0.5%	1,139
				Total	**100.0%**		**57,513**
				Sample Count	*52*		

Key: *Targeted Recyclable* *Compostable Organics* *Special Collection* *Not Readily Recoverable*

The top ten most prevalent material categories disposed in the aggregate MSW are shown in Figure 4-3. Compostable Organics including Food Waste and Compostable Paper are the largest material categories; however, it should be noted that the food waste category may be slightly elevated due to the presence of packaging that could not be readily separated from food.

Figure 4-3 Top 10 Material Categories in Disposed Aggregate MSW



4.2 RESIDENTIAL WASTE COMPOSITION

Figure 4-4 shows the aggregate residential waste disposed by material group, with Organics being the largest contributor at almost 44 percent. This figure combines Residential Private Hauler, Residential Municipal Hauler and Residential Convenience Center hauler types.

Figure 4-4 Disposed Residential MSW Composition

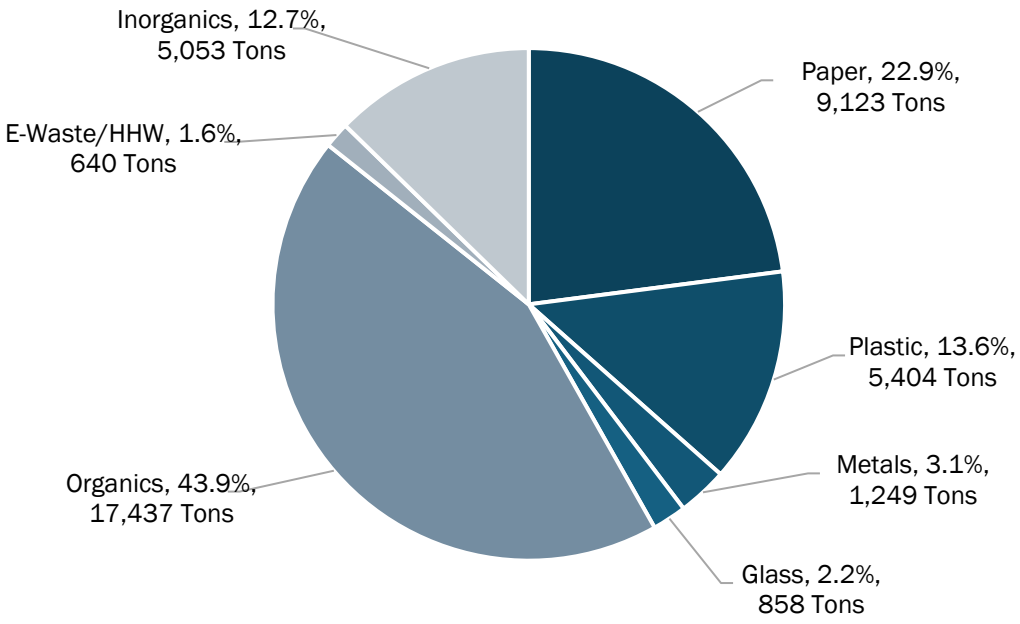


Figure 4-5 shows the divertibility of residential MSW, with over 56 percent of the waste stream being potentially divertible through curbside and drop-off recycling programs, potential organics diversion, and special collection programs.

Figure 4-5 Disposed Residential MSW Divertibility

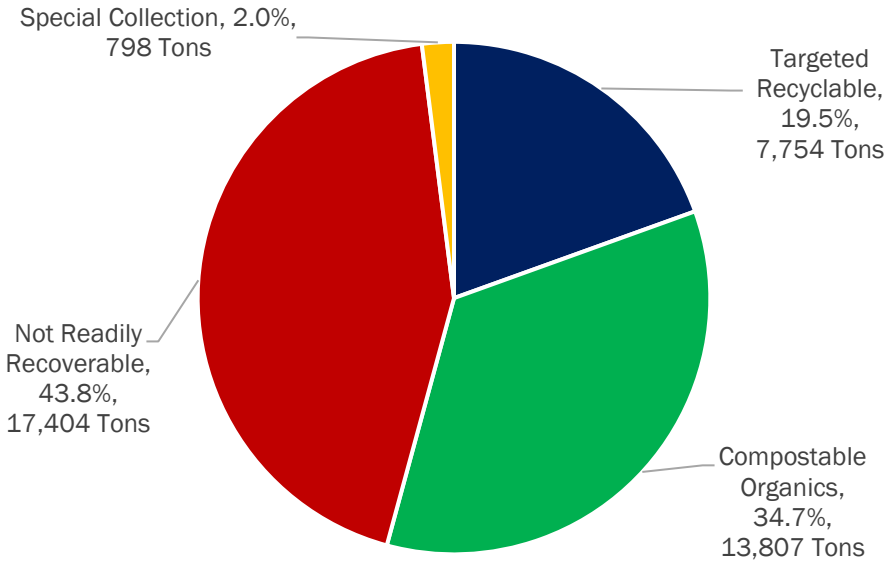


Table 4-2 provides the detailed statistical analysis of residential MSW composition in tabular format by material group and category, and divertibility classification.

Table 4-2 Detailed Residential Waste Composition

Material Category	Mean	MOE	Tons	Material Category	Mean	MOE	Tons
Paper	**22.9%**	**5.3%**	**9,123**	**Glass**	**2.2%**	**0.5%**	**858**
Corrugated Cardboard/Kraft Paper	4.2%	1.0%	1,675	Clear Glass Containers	1.2%	0.3%	470
Newsprint	0.1%	0.0%	48	Brown Glass Containers	0.2%	0.1%	97
Magazines	0.4%	0.1%	169	Green Glass Containers	0.5%	0.1%	183
High Grade Office Paper	0.4%	0.1%	140	Remainder/Composite Glass	0.3%	0.1%	108
Mixed Recyclable Paper	5.5%	1.3%	2,167	**Organics**	**43.9%**	**10.2%**	**17,437**
Aseptic Containers/Gable Top Cartons	0.3%	0.1%	103	Food Waste	26.9%	6.3%	10,715
Compostable Paper	7.4%	1.7%	2,958	Wood - Clean/Untreated	0.2%	0.1%	89
Remainder/Composite Paper	4.7%	1.1%	1,863	Wood - Painted/Stained/Treated	0.7%	0.2%	277
Plastic	**13.6%**	**3.2%**	**5,404**	Textiles - Clothing	1.7%	0.4%	694
PET (#1) Bottles/Jars	1.3%	0.3%	518	Textiles - Non-Clothing	2.1%	0.5%	821
PET (#1) Non-Bottle Containers	0.6%	0.1%	230	Shoes/Belts/Leather	0.5%	0.1%	204
HDPE (#2) Natural Containers	0.3%	0.1%	126	Diapers & Sanitary Products	5.2%	1.2%	2,056
HDPE (#2) Colored Containers	0.6%	0.1%	223	Yard Waste	0.3%	0.1%	134
Clean Retail Film Bags	0.0%	0.0%	17	Remainder/Composite Organic	6.2%	1.4%	2,447
Clean Industrial/Commercial Film	0.0%	0.0%	19	**E-Waste/HHW**	**1.6%**	**0.4%**	**640**
Contaminated Film/Other Film	5.6%	1.3%	2,224	Electronic Waste	0.9%	0.2%	345
Plastic Containers #3 thru #7	1.4%	0.3%	569	HHW	0.7%	0.2%	294
Expanded Polystyrene	0.3%	0.1%	105	**Inorganics**	**12.7%**	**3.0%**	**5,053**
Bulky Durable Plastic Products	1.9%	0.4%	764	Drywall/Gypsum Board	0.2%	0.0%	77
Remainder/Composite Plastic	1.5%	0.4%	610	Asphalt, Brick, Concrete & Rocks	0.0%	Not Found	0
Metals	**3.1%**	**0.7%**	**1,249**	Carpet & Carpet Padding	2.1%	0.5%	837
Aluminum Cans & Containers	0.6%	0.1%	246	Other Construction & Demolition	0.6%	0.1%	228
Other Aluminum	0.5%	0.1%	203	Bulky Items	3.8%	0.9%	1,492
Tin/Steel Containers	0.8%	0.2%	334	Furniture	1.4%	0.3%	575
Other Ferrous	0.6%	0.1%	254	Mattresses/Box Springs	0.2%	0.1%	97
Other Non-Ferrous	0.5%	0.1%	210	Tires	0.1%	0.0%	45
Oil Filters	0.0%	0.0%	2	Other/Not Classified	2.1%	0.5%	844
				Fines	2.2%	0.5%	858
				Total	**100.0%**		**39,763**
				Sample Count	*33*		

Key: *Targeted Recyclable* *Compostable Organics* *Special Collection* *Not Readily Recoverable*

The composition results for Residential Private Hauler, Residential Municipal Hauler and Residential Convenience Center are shown in Table 4-3. Statistical results are not included due to the limited number of samples obtained from the Residential Municipal Hauler and Residential Convenience Center hauler types.

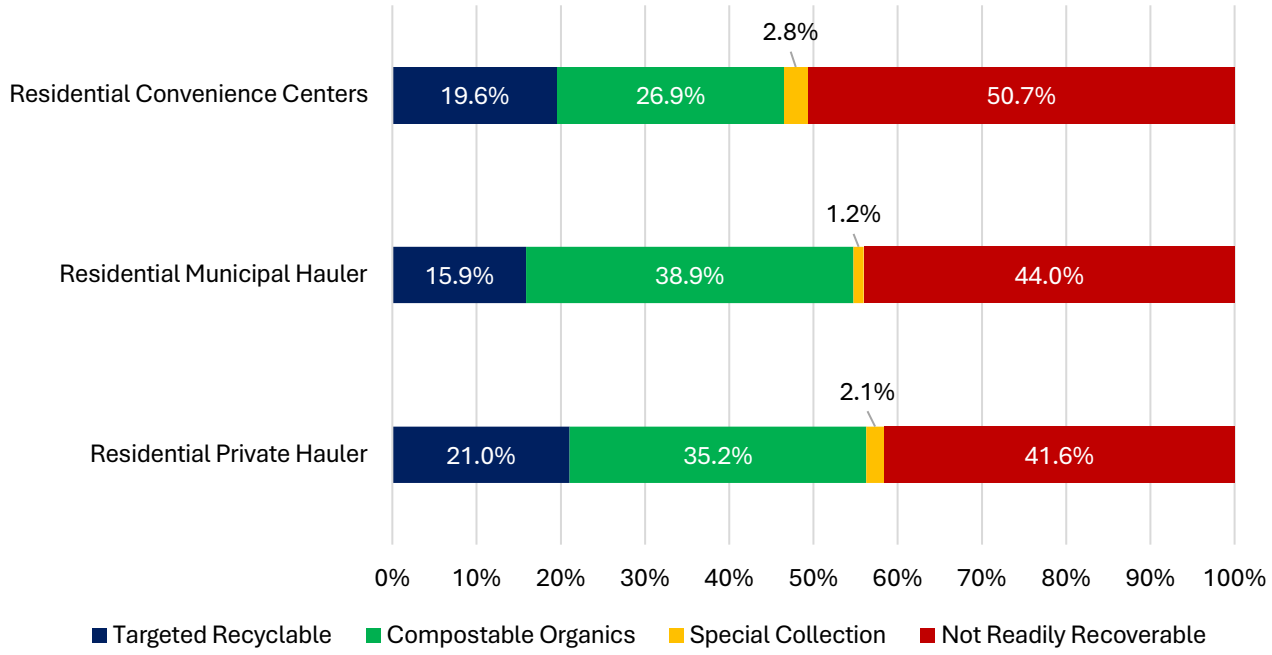
Table 4-3 Residential Waste Composition by Hauler Type

Material Category	Residential Private Hauler	Residential Municipal Hauler	Residential Convenience Centers	Material Category	Residential Private Hauler	Residential Municipal Hauler	Residential Convenience Centers
Paper	**23.9%**	**20.9%**	**22.5%**	**Glass**	**2.5%**	**1.3%**	**2.2%**
Corrugated Cardboard/Kraft Paper	4.8%	1.9%	5.7%	Clear Glass Containers	1.3%	1.0%	1.1%
Newsprint	0.1%	0.1%	0.1%	Brown Glass Containers	0.3%	0.1%	0.2%
Magazines	0.4%	0.3%	0.8%	Green Glass Containers	0.7%	0.2%	0.2%
High Grade Office Paper	0.1%	0.8%	0.4%	Remainder/Composite Glass	0.2%	0.1%	0.8%
Mixed Recyclable Paper	5.8%	5.0%	5.0%	**Organics**	43.4%	48.8%	38.2%
Aseptic Containers/Gable Top Cartons	0.2%	0.4%	0.2%	Food Waste	27.3%	30.3%	20.7%
Compostable Paper	7.6%	8.2%	5.7%	Wood - Clean/Untreated	0.3%	0.0%	0.4%
Remainder/Composite Paper	4.9%	4.2%	4.6%	Wood - Painted/Stained/Treated	0.6%	0.5%	1.5%
Plastic	**13.5%**	**13.6%**	**13.8%**	Textiles - Clothing	**1.5%**	**2.2%**	**1.9%**
PET (#1) Bottles/Jars	1.4%	1.1%	1.2%	Textiles - Non-Clothing	2.2%	2.1%	1.5%
PET (#1) Non-Bottle Containers	0.6%	0.5%	0.6%	Shoes/Belts/Leather	0.6%	0.4%	0.4%
HDPE (#2) Natural Containers	0.3%	0.3%	0.2%	Diapers & Sanitary Products	5.2%	5.4%	4.9%
HDPE (#2) Colored Containers	0.5%	0.6%	0.7%	Yard Waste	0.3%	0.3%	0.5%
Clean Retail Film Bags	0.0%	0.0%	0.0%	Remainder/Composite Organic	5.5%	7.5%	6.4%
Clean Industrial/Commercial Film	0.1%	0.0%	0.0%	**E-Waste/HHW**	1.6%	0.7%	2.8%
Contaminated Film/Other Film	5.6%	6.0%	4.9%	Electronic Waste	1.1%	0.5%	0.5%
Plastic Containers #3 thru #7	1.4%	1.5%	1.5%	HHW	0.5%	0.2%	2.3%
Expanded Polystyrene	0.3%	0.2%	0.2%	**Inorganics**	11.3%	12.2%	18.3%
Bulky Durable Plastic Products	1.7%	2.1%	2.4%	Drywall/Gypsum Board	0.2%	0.0%	0.3%
Remainder/Composite Plastic	1.5%	1.3%	2.1%	Asphalt, Brick, Concrete & Rocks	0.0%	0.0%	0.0%
Metals	**3.7%**	**2.5%**	**2.3%**	Carpet & Carpet Padding	**1.6%**	**2.2%**	**3.8%**
Aluminum Cans & Containers	0.7%	0.5%	0.4%	Other Construction & Demolition	0.6%	0.4%	0.7%
Other Aluminum	0.5%	0.6%	0.3%	Bulky Items	3.6%	4.6%	3.0%
Tin/Steel Containers	1.0%	0.7%	0.4%	Furniture	0.7%	0.0%	6.2%
Other Ferrous	0.7%	0.4%	0.7%	Mattresses/Box Springs	0.4%	0.0%	0.0%
Other Non-Ferrous	0.6%	0.4%	0.5%	Tires	0.0%	0.4%	0.0%
Oil Filters	0.0%	0.0%	0.0%	Other/Not Classified	2.0%	2.3%	2.3%
				Fines	0.0220833	0.0218968	0.0193781
				Total	1	1	1
				Sample Count	22	6	5

Key: *Targeted Recyclable* *Compostable Organics* *Special Collection* *Not Readily Recoverable*

Figure 4-6 compares the divertibility of residential MSW by hauler type. The potential to recover Targeted Recyclables from the residential sector is relatively the same across all three hauler types, with Residential Municipal Hauler disposing of the lowest quantity of Targeted Recyclables in 2025.

Figure 4-6 Recoverability by Residential Hauler Type



4.3 ICI WASTE COMPOSITION

Figure 4-7 shows the composition of the ICI MSW by material group, with Organics, Paper and Plastics as the top three contributors.

Figure 4-7 Disposed ICI MSW Composition

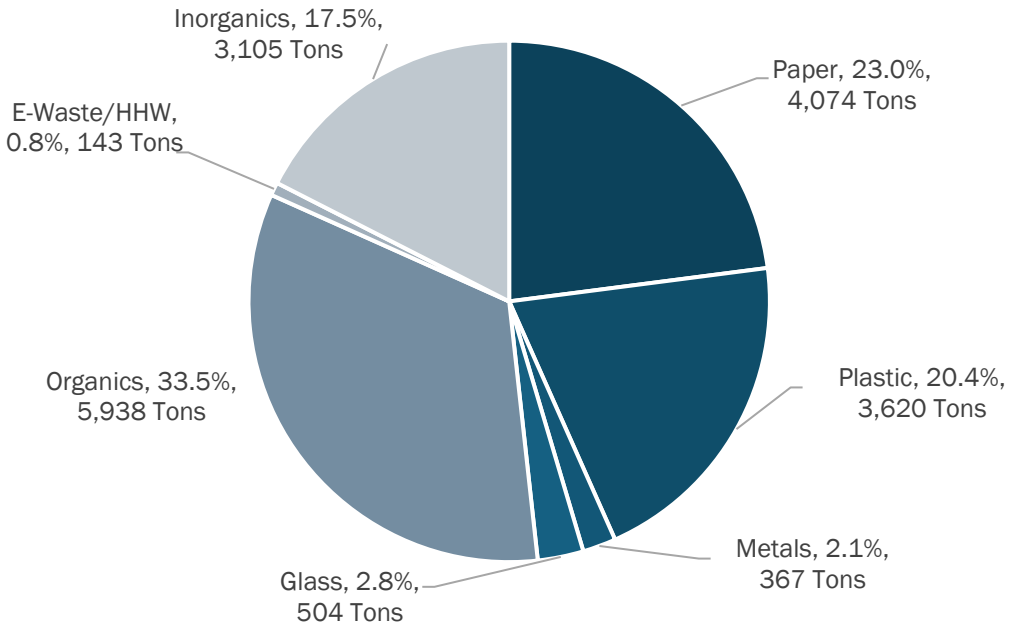


Figure 4-8 highlights that the largest portion of disposed ICI waste, at almost 59 percent, is Not Readily Recoverable. However, Targeted Recyclables make up just over 17 percent of the ICI MSW, with 7 percent of this material being divertible cardboard.

Figure 4-8 Divertibility of ICI MSW Composition

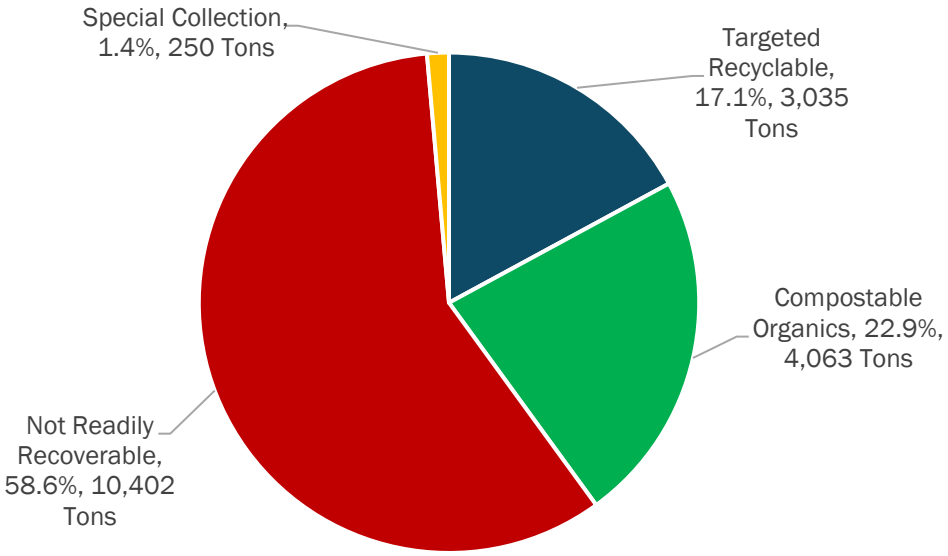


Table 4-4 presents the detailed ICI composition results.

Table 4-4 Detailed ICI Waste Composition Results

Material Category	Mean	+/-	Tons	Material Category	Mean	+/-	Tons
Paper	**23.0%**	**5.0%**	**4,074**	**Glass**	**2.8%**	**2.7%**	**504**
Corrugated Cardboard/Kraft Paper	7.3%	1.2%	1,291	Clear Glass Containers	0.4%	0.3%	64
Newsprint	0.2%	0.1%	30	Brown Glass Containers	0.1%	0.1%	13
Magazines	0.1%	0.1%	24	Green Glass Containers	0.6%	0.4%	109
High Grade Office Paper	0.5%	0.4%	88	Remainder/Composite Glass	1.8%	2.6%	317
Mixed Recyclable Paper	3.3%	1.1%	584	**Organics**	**33.5%**	**5.6%**	**5,938**
Aseptic Containers/Gable Top Cartons	0.5%	0.3%	96	Food Waste	16.2%	5.1%	2,880
Compostable Paper	6.5%	2.3%	1,147	Wood - Clean/Untreated	11.9%	5.9%	2,106
Remainder/Composite Paper	4.6%	1.6%	813	Wood - Painted/Stained/Treated	2.3%	1.6%	406
Plastic	**20.4%**	**4.2%**	**3,620**	Textiles - Clothing	0.2%	0.2%	38
PET (#1) Bottles/Jars	0.8%	0.3%	137	Textiles - Non-Clothing	0.7%	0.5%	117
PET (#1) Non-Bottle Containers	0.2%	0.1%	39	Shoes/Belts/Leather	0.0%	0.0%	2
HDPE (#2) Natural Containers	0.3%	0.2%	56	Diapers & Sanitary Products	0.7%	0.5%	117
HDPE (#2) Colored Containers	0.2%	0.1%	36	Yard Waste	0.2%	0.3%	36
Clean Retail Film Bags	0.1%	0.2%	21	Remainder/Composite Organic	1.3%	1.1%	236
Clean Industrial/Commercial Film	1.6%	0.7%	281	**E-Waste/HHW**	**0.8%**	**0.7%**	**143**
Contaminated Film/Other Film	6.3%	2.1%	1,125	Electronic Waste	0.5%	0.6%	93
Plastic Containers #3 thru #7	1.0%	0.4%	181	HHW	0.3%	0.3%	50
Expanded Polystyrene	0.1%	0.1%	23	**Inorganics**	**17.5%**	**4.8%**	**3,105**
Bulky Durable Plastic Products	6.4%	3.3%	1,141	Drywall/Gypsum Board	1.4%	1.7%	240
Remainder/Composite Plastic	3.3%	1.4%	581	Asphalt, Brick, Concrete & Rocks	0.0%	0.0%	0
Metals	**2.1%**	**0.7%**	**367**	Carpet & Carpet Padding	1.5%	1.4%	264
Aluminum Cans & Containers	0.3%	0.1%	56	Other Construction & Demolition	2.9%	2.3%	516
Other Aluminum	0.1%	0.1%	21	Bulky Items	6.1%	2.5%	1,086
Tin/Steel Containers	0.8%	0.5%	146	Furniture	2.3%	2.2%	401
Other Ferrous	0.4%	0.3%	65	Mattresses/Box Springs	0.0%	0.0%	0
Other Non-Ferrous	0.4%	0.3%	80	Tires	0.5%	0.6%	86
Oil Filters	0.0%	0.0%	0	Other/Not Classified	1.3%	0.8%	230
				Fines	1.6%	0.9%	281
				Total	**100.0%**		**17,750**
				Sample Count	*19*		

Key: *Targeted Recyclable* *Compostable Organics* *Special Collection* *Not Readily Recoverable*

4.4 COMPARISON BETWEEN 2022 AND 2025

Several time series comparisons are shown between 2022 and 2025 due to the similar methodology used for both studies. Note that the ability to compare results is somewhat limited because the 2022 WCS did not undertake a detailed scale transaction analysis to validate the contribution of underlying residential and ICI hauler types to the overall disposed MSW stream.

Figure 4-9 shows a comparison of Residential Private Hauler waste composition between the 2022 and 2025 studies, by material group. The results are largely similar between studies, with slight increases in disposed Organics, Inorganics, Metals, and E-Waste/HHW in 2025. It is encouraging that Paper, Plastics and Glass decreased, suggesting improvements may have been made to the recovery of Targeted Recyclables in recycling collection programs. However, it is also possible that there are slight seasonal differences in waste composition, which could influence this comparison because the field work was completed in different seasons.

Figure 4-9 Residential Private Hauler MSW Comparison by Material Group (2022 vs 2025)

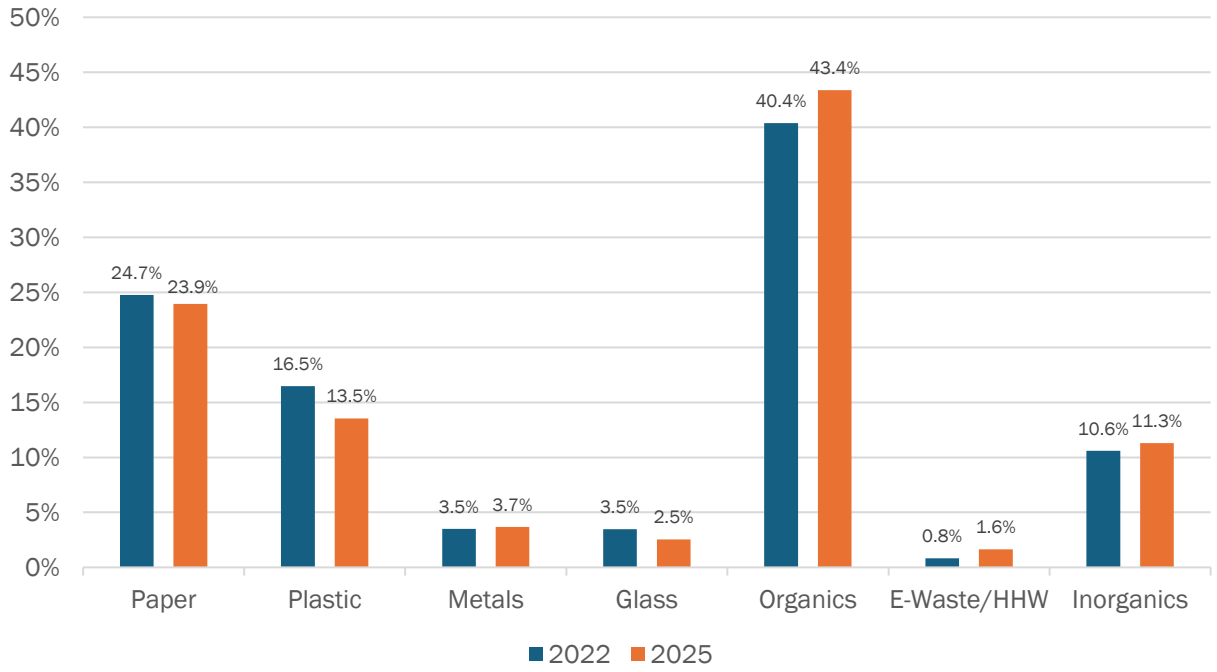


Figure 4-10 shows that divertibility of Residential Private Hauler waste in 2025 was similar to the prior study.

Figure 4-10 Residential Private Hauler MSW Comparison by Divertibility Classification (2022 vs 2025)

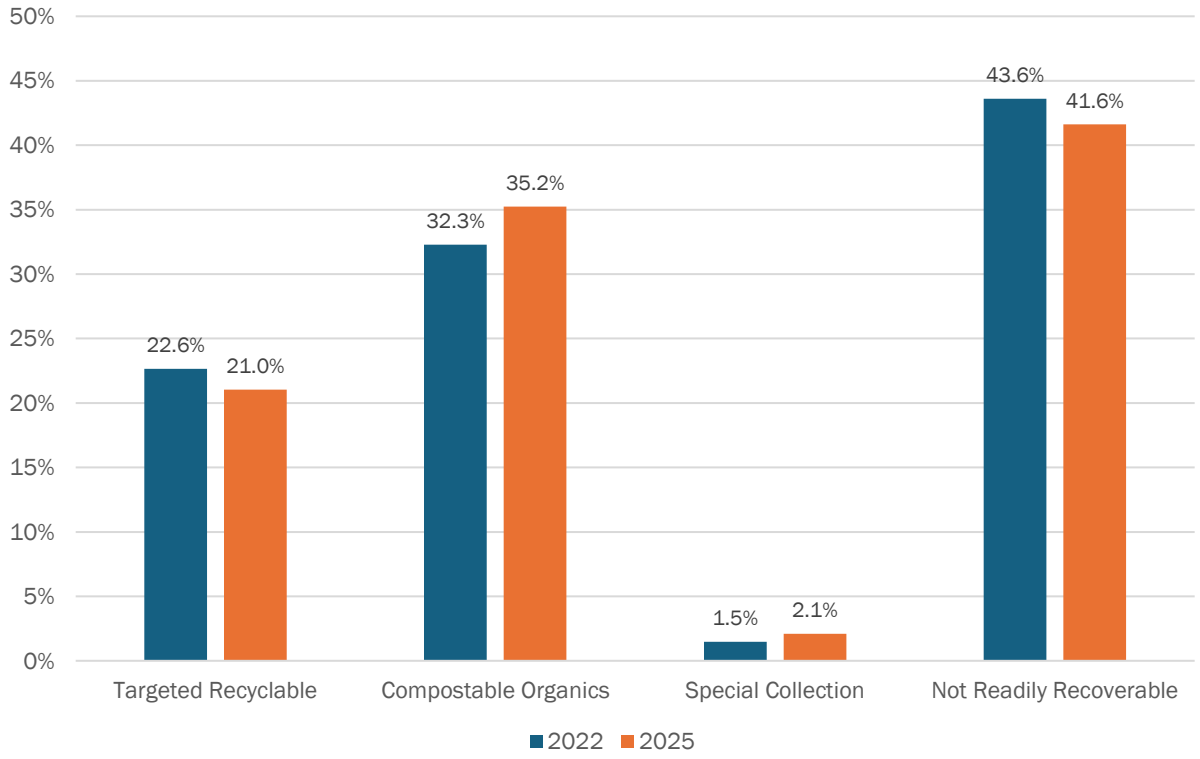


Figure 4-11 compares the results of disposed ICI MSW by material group between the 2022 and 2025 WCS. There appears to have been a decrease in Paper since 2022, although this could also be influenced by seasonality.

Figure 4-11 ICI MSW Comparison by Material Group (2022 vs 2025)

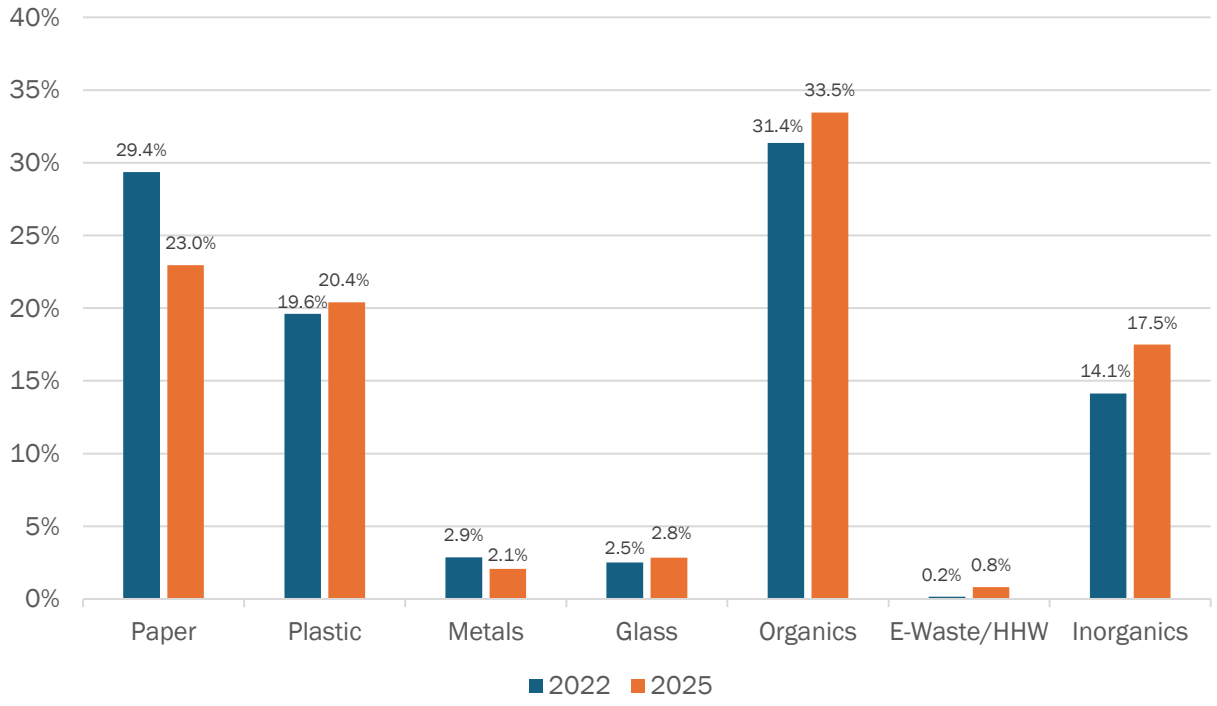
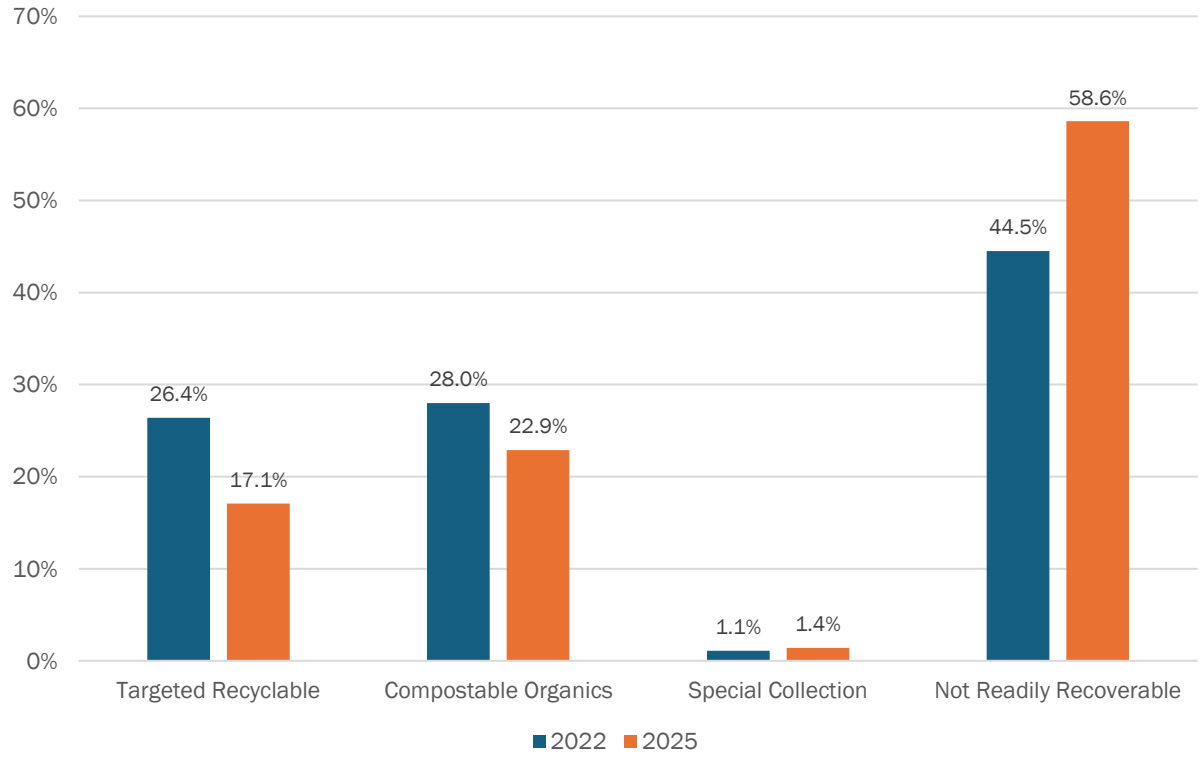


Figure 4-12 compares the divertibility of ICI waste in 2022 and 2025. The decrease in Targeted Recyclables and Organics could suggest improvements to collection programs and diversion efforts but may also be related to seasonality.

Figure 4-12 ICI MSW Comparison by Divertibility Class



5. RECYCLING COMPOSITION RESULTS

This section presents the composition of recycling at the Ontario County MRF for both the residential and ICI generator sectors. Table 5-1 shows the aggregate composition of inbound mixed recyclables, which included 25 residential samples and five ICI samples, further detailed in Table 3-3. Fewer ICI samples were targeted because these tend to be primarily corrugated cardboard "no sort" loads that have less variability in commodities and were therefore not prioritized for sampling by the County.

Table 5-1 Mixed Recycling Composition Results

Material Category	Mean	MOE	Tons	Material Category	Mean	MOE	Tons
Paper	**60.9%**	**18.9%**	**4,306**	**Glass**	**15.9%**	**4.9%**	**1,126**
Corrugated Cardboard/Kraft Paper	35.5%	11.0%	2,513	Clear Glass Containers	7.3%	2.3%	518
Newsprint	1.5%	0.5%	104	Brown Glass Containers	1.8%	0.6%	128
Magazines	3.3%	1.0%	231	Green Glass Containers	3.9%	1.2%	277
High Grade Office Paper	2.1%	0.7%	152	Remainder/Composite Glass	0.9%	0.3%	63
Mixed Recyclable Paper	15.9%	4.9%	1,126	Cullet	2.0%	0.6%	140
Aseptic Containers/Gable Top Cartons	0.4%	0.1%	31	**Organics**	**1.2%**	**0.4%**	**82**
Compostable Paper	0.7%	0.2%	47	Food Waste	0.8%	0.2%	56
Remainder/Composite Paper	1.5%	0.5%	103	Wood - Clean/Untreated	0.0%	0.0%	1
				Wood - Painted/Stained/Treated	0.0%	0.0%	2
Plastic	**11.3%**	**3.5%**	**800**	Textiles - Clothing	0.0%	0.0%	4
PET (#1) Bottles/Jars	2.5%	0.8%	179	Textiles - Non-Clothing	0.0%	0.0%	2
PET (#1) Non-Bottle Containers	0.9%	0.3%	67	Shoes/Belts/Leather	0.0%	0.0%	0
HDPE (#2) Natural Containers	1.9%	0.6%	136	Diapers & Sanitary Products	0.2%	0.0%	11
HDPE (#2) Colored Containers	1.7%	0.5%	117	Yard Waste	0.0%	Not Found	0
Clean Retail Film Bags	0.0%	0.0%	0	Remainder/Composite Organic	0.1%	0.0%	8
Clean Industrial/Commercial Film	0.0%	Not Found	0	**E-Waste/HHW**	**0.2%**	**0.1%**	**13**
Contaminated Film/Other Film	0.6%	0.2%	39	Electronic Waste	0.1%	0.0%	10
Plastic Containers #3 thru #7	2.0%	0.6%	144	HHW	0.0%	0.0%	3
Expanded Polystyrene	0.2%	0.1%	12	**Inorganics**	**6.0%**	**1.9%**	**426**
Bulky Durable Plastic Products	0.9%	0.3%	61	Drywall/Gypsum Board	0.0%	Not Found	0
Remainder/Composite Plastic	0.6%	0.2%	44	Asphalt, Brick, Concrete & Rocks	0.0%	Not Found	0
				Carpet & Carpet Padding	0.0%	Not Found	0
Metals	**4.5%**	**1.4%**	**317**	Other Construction & Demolition	0.0%	0.0%	2
Aluminum Cans & Containers	0.9%	0.3%	64	Bulky Items	0.2%	0.1%	14
Other Aluminum	0.1%	0.0%	7	Furniture	0.0%	Not Found	0
Tin/Steel Containers	2.9%	0.9%	203	Mattresses/Box Springs	0.0%	Not Found	0
Other Ferrous	0.5%	0.2%	35	Tires	0.0%	Not Found	0
Other Non-Ferrous	0.1%	0.0%	9	Other/Not Classified	0.3%	0.1%	22
Oil Filters	0.0%	Not Found	0	Fines	1.3%	0.4%	93
				Opaque Bagged Material	4.2%	1.3%	295
				Total	**100%**		**7,070**
				Sample Count	*30*		

Key: *Targeted Fiber* *Targeted Plastic* *Targeted Metal* *Targeted Glass* *Contaminant*

Figure 5-1 displays the current recoverability of inbound mixed recyclables. The County's recyclables were found to contain only 13 percent contamination, which is quite clean by single stream recycling standards. However, the small sample sizes for each generator sector and hauler type limit the ability to differentiate recycling composition by generator.

Figure 5-1 Recoverability of Inbound Mixed Recyclables

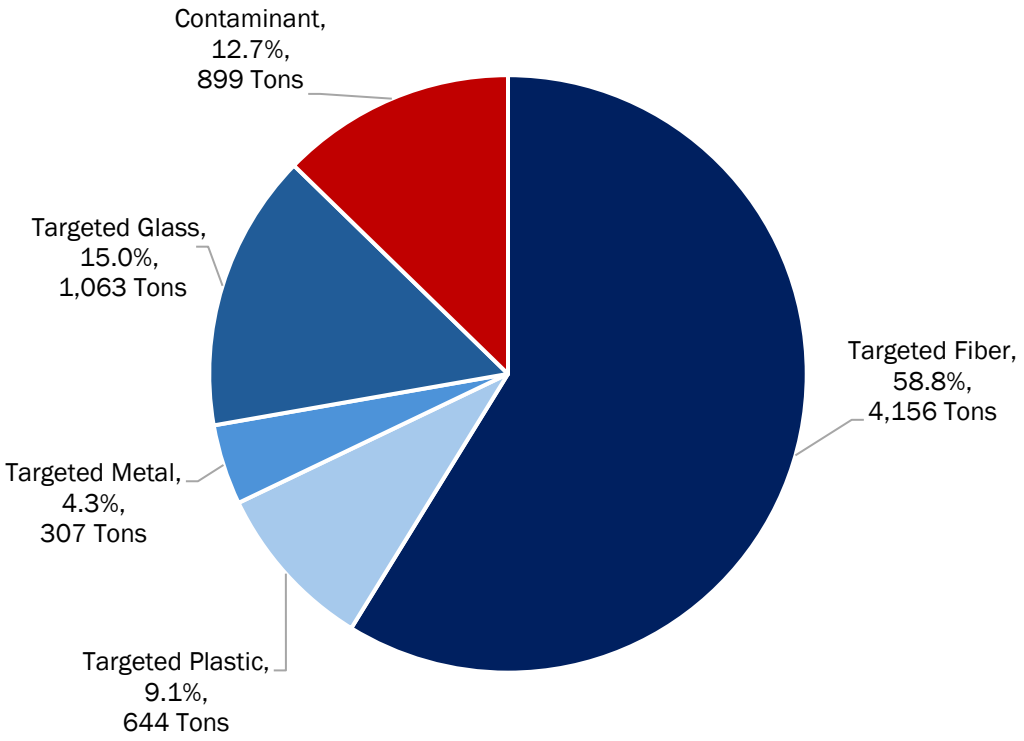


Figure 5-2 shows the level of contamination observed from each generator sector, although it must be noted that these results are not statistically rigorous. Residential Private Hauler routes were found to have the highest level of contamination, which may be expected for this sector due to collection method and educational outreach; however, it may also be attributed to the higher sample size for this hauler type.

Figure 5-2 Contaminants in Recycling by Generator Sector

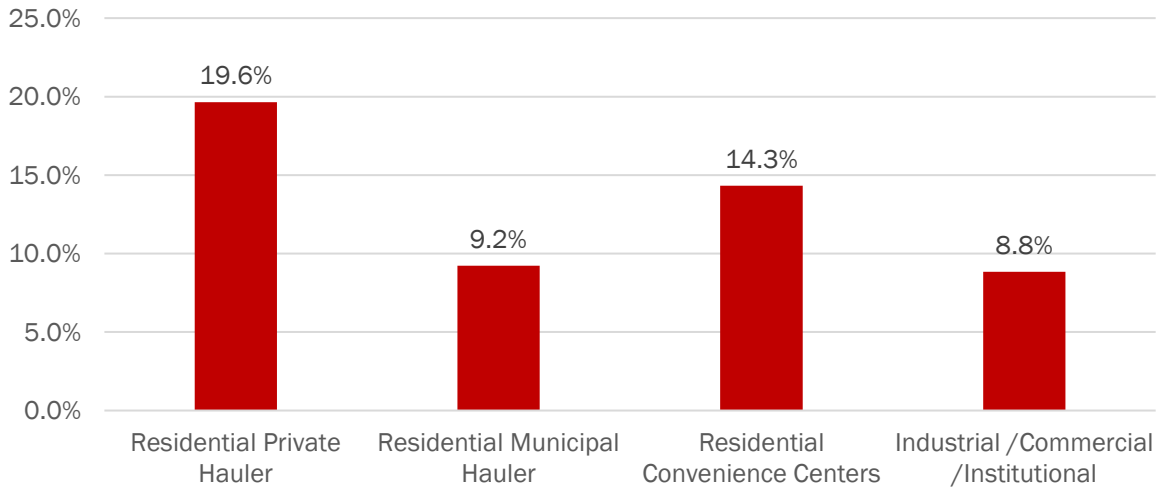


Figure 5-3 compares the recoverability potential of residential versus ICI recycling. As stated above, only five samples of ICI recycling were targeted; however, the loads observed were deemed to be representative of typical inbound ICI recycling at the County MRF.

Figure 5-3 Recoverability of Residential vs ICI Recycling

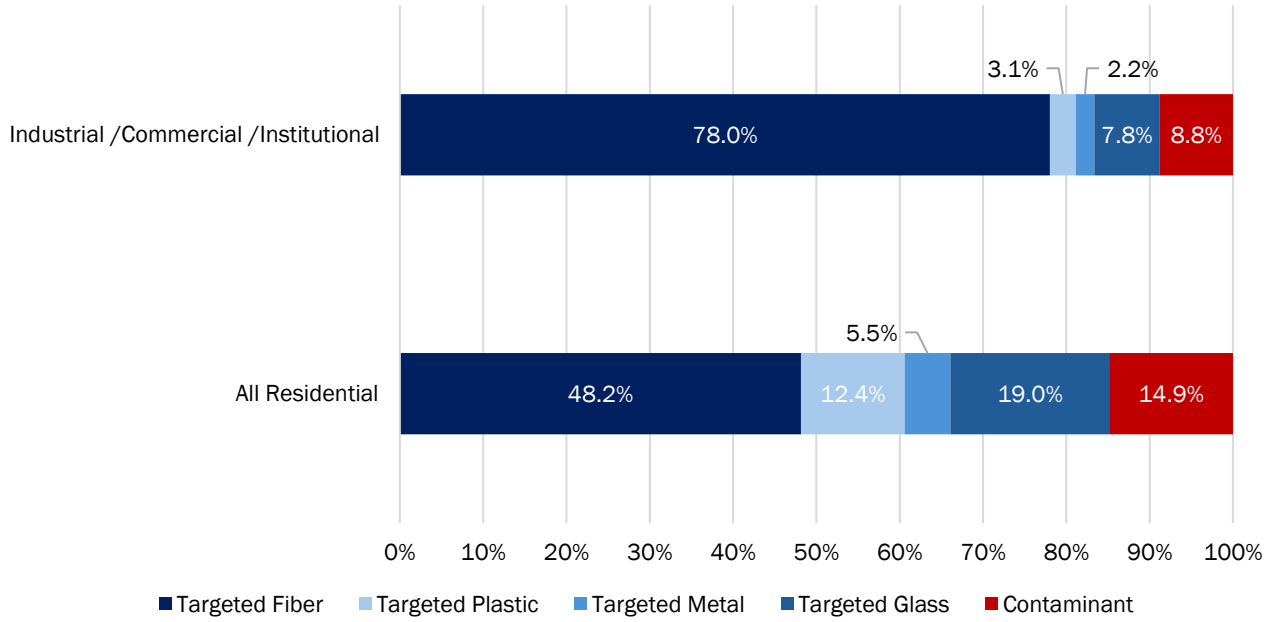
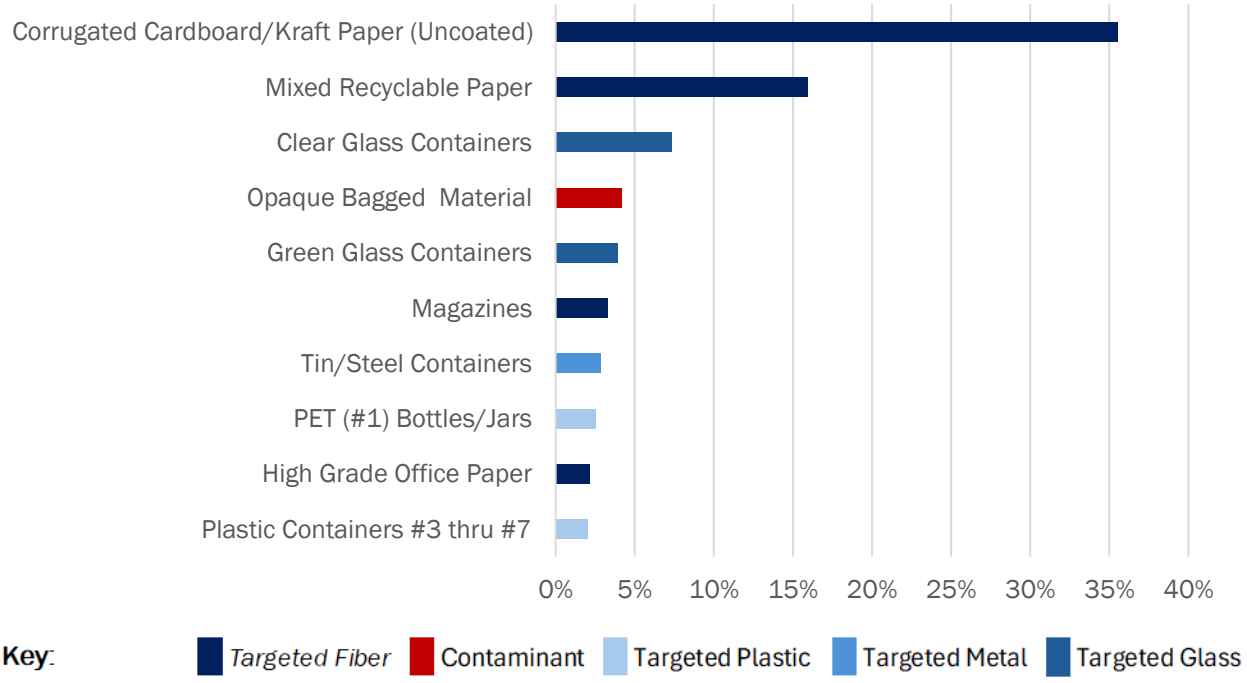


Figure 5-4 shows the top ten material categories in the aggregate residential and ICI recycling, with only one contaminant, Bagged Material, present.

Figure 5-4 Mixed Recycling Top 10 Material Categories



6. CONCLUSIONS AND RECOMMENDATIONS

MSW Consultants provides the following conclusions and recommendations to highlight the 2025 WCS findings and steps toward future studies.

6.1 CONCLUSIONS

- The 2025 WCS provides a valuable dataset for Ontario County Sustainability and Solid Waste Management Department staff responsible for implementing the LSWMP and other programs related to waste diversion and improved recycling.
- The study found that over 18% of the aggregate disposed waste stream is comprised of Targeted Recyclables that could have been potentially captured in the County's existing curbside or drop-off recycling programs.
- For the refuse data, the Residential Private Hauler and ICI generator sectors were representatively sampled based on the tonnage data provided and fieldwork findings. Less samples were taken for the Residential Municipal and Convenience Center haulers, based on tonnage data and County guidance; however, MSW Consultants believes representative refuse loads for these hauler types were obtained at the landfill.
- Despite inclement weather delays, the 2025 WCS was successful in capturing representative samples across generator sectors and hauler types at both the landfill and the MRF.
- The 2025 WCS was successful in updating the baseline 2022 WCS. Comparison results were largely similar between studies showing only moderate fluctuations in material groups between years.
- The opposing seasons in the 2022 and 2025 WCS (summer, winter) provided a snapshot of seasonal differences. Future studies should be performed as a two-season study, or in identical seasons over multiple years (avoiding winter).
- When the 2022 WCS was conducted, the study did not analyze underlying data to aggregate the residential stream and therefore the results were presented by hauler type only. There were not enough samples to combine the residential results, nor to combine residential and ICI results into an aggregate countywide MSW composition. As a result, the comparisons for the 2025 WCS results with 2022 are limited.
- The recycling characterization data for the 2025 WCS with an aggregate contamination rate under 13 percent suggests the County's recycling programs are performing well compared to similar municipalities.

6.2 RECOMMENDATIONS

- A waste characterization study should be repeated by Ontario County prior to the 2028 landfill closure to add to the County's dataset and analyze waste diversion efforts prior to a reduction in local landfill disposal.
- Following the closure of the Ontario County landfill, the County should consider replicating waste characterization studies at future disposal sites, including possible partnerships with adjacent counties utilizing the same site(s).
- The Ontario County landfill receives a large volume of construction and demolition (C&D) debris and bulky wastes. Future County characterization studies at the landfill (or new disposal sites) should include volumetric visual surveys of these loads to characterize these waste streams for potential diversion opportunities.

- While the County's recycling scale data differentiates between ICI and residential inbound tonnage, the refuse scale data does not, impairing the development of a robust sampling plan targeting each generator sector and hauler type proportionally. MSW Consultants recommends:
    - The landfill scale data system be updated to allow inbound ICI versus residential waste to be recorded, similar to the MRF scale, or
    - Conduct several days or even one week of gate surveys prior to the next waste characterization study to provide better clarity on the inbound tonnage by generator sector and truck type.
- The incidence of Targeted Recyclables in the disposed MSW stream suggests that education and outreach to residents and businesses is needed on an ongoing basis. Additionally, the significant quantities of organics (food waste, compostable paper, yard waste) in the waste stream present an opportunity for an organics collection program as a benefit to the County's future diversion efforts.



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