DEPARTMENT OF ECOLOGY
State of Washington

2022-2023 WASHINGTON STATEWIDE

Recycling & Organics Characterization Study

State of Washington Department of Ecology

FINAL REPORT

CASCADIA CONSULTING GROUP

Acknowledgments

To the management and staff in the following jurisdictions and waste facilities who invited us into their places of work and allowed us to carry out the field work that resulted in this report, or who shared data for this report, we thank you for making this study possible.

- Green Earth Technology, Whatcom County
- Kittitas County Transfer Station, Kittitas County
- Lautenbach Recycling, Whatcom County
- Pioneer Recycling Services (Tacoma), Pierce County
- Silver Springs Organics, Thurston County
- Spokane County Transfer Station, Spokane County
- Spokane SMART Center, Spokane County
- Sudbury Landfill, Walla Walla County
- Thurston County Waste and Recovery Center (WARC), Thurston County
- West Vancouver Materials Recovery Center, Clark County

We also thank the jurisdictions that have supported this study's supplemental analysis by providing us access to existing data from previous studies.

- City of Seattle - Seattle Public Utilities
- Clark County - Solid Waste Operations and Education
- Douglas County - Solid Waste Department
- King County - King County Solid Waste Division and Waste Monitoring Program
- Klickitat County - Solid Waste Department

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Introduction

The 2022-2023 Recycling and Organics Characterization Study characterizes commingled Inbound and Outbound Recycling and Inbound Organics from a representative selection of facilities throughout Washington state. The Department of Ecology (Ecology) commissioned Cascadia Consulting Group (Cascadia) to complete this four-season study.

The main objective of this study is to track the types, quantities, waste generating sectors, systems of collection, and recoverability potential of materials in the recycling collection and processing system and the organics collection system. The findings of this study are included in this report and will allow Ecology, local governments, and other interested parties to assess trends over time and across geographic areas, generator types, and materials to support data-driven decision-making at the state and local levels. Specifically, the findings will assist with program improvements to reduce the presence of non-recoverable contaminant materials in diversion streams, such as the statewide Contamination Reduction Outreach Plan (CROP) and local CROPs.

Cascadia conducted previous studies of the disposal stream in 2009, 2015-2016, and 2020-2021. The 2022-2023 Recycling and Organics Characterization Study protocol is comparable to previous studies but focuses on recovery streams. The material examined in this study is a subset of the statewide recycling and organics streams and is not a complete representation of all recycling and composting activities statewide. Hauler-collected recycling and organics are the focus of this study because issues such as contamination are most concentrated in these substreams. Examples of substreams excluded from this study are recyclable materials, such as baled cardboard, that commercial generators deliver directly to recycling facilities; self-hauled material delivered directly to transfer stations and drop boxes; and food donated to food banks or composted in backyards.

The results of this study include:

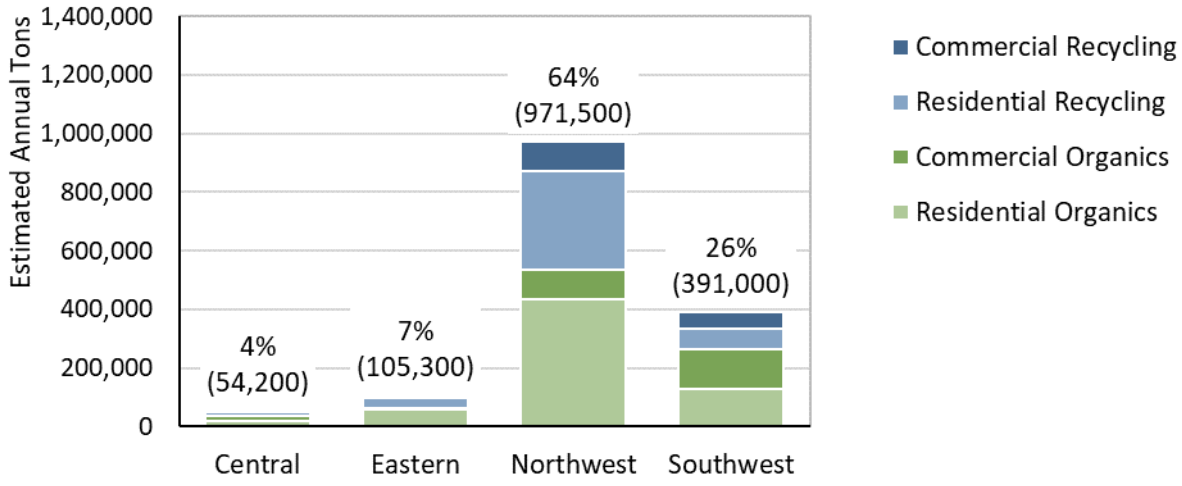
- Detailed composition results for the state's hauler-collected Inbound Recycling stream for each of Ecology's four regional designations—Central, Eastern, Northwest, and Southwest.
- Detailed statewide composition results for the state's Outbound Recycling Commodity and Residual Material streams.
- Detailed composition results for the state's hauler-collected Residential Inbound Organics stream for each regional designation.
- A supplementary analysis that combines the data collected during this study with six additional studies completed by other jurisdictions around the state for additional detail about the composition of those streams. (For a complete report on this analysis, please refer to Appendix E. Supplemental Composition Results.)

The main body of this report includes an overview of the study, including study definitions, a summary of the study methodology, and sampling outcomes, and the overall statewide composition results by stream and sector, including recoverability designations for each material type. Appendices include material type definitions, composition calculations, detailed composition tables, a summary of substreams not presented in the main report, and supplemental composition results of the study data combined with additional studies completed at the local level in Washington.

Key Findings

Based on 2021 annual recovery reports to Ecology[1], an estimated 624,300 tons of commingled recycling material and 897,700 tons of organic material (food and yard debris) are curbside-collected and hauled for processing statewide on an annual basis[2] (Figure 1). Within both the Inbound Recycling and Organics streams, approximately one third of material is from Commercial generators and two-thirds is from Residential generators.

Figure 1. Recovered Tons by Recovery Stream



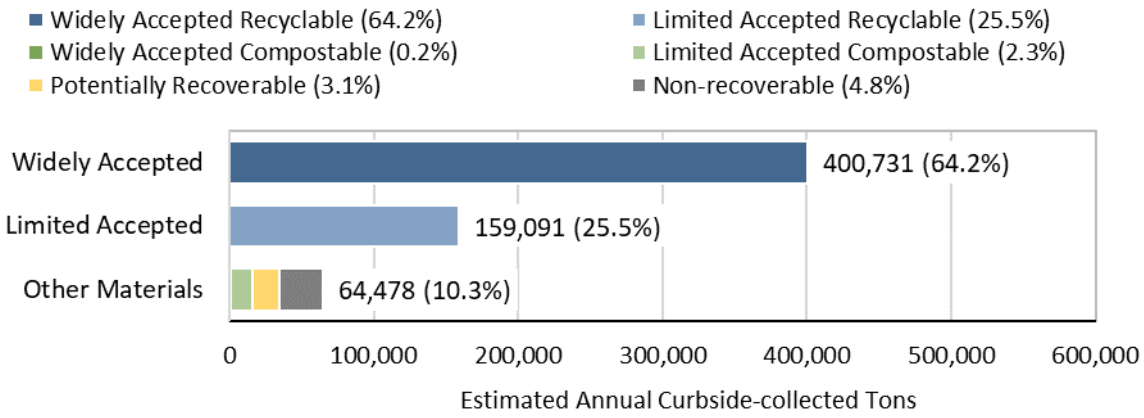
Inbound Recycling

In the statewide Inbound Recycling stream sampled in this study, an estimated 64.2 percent (400,731 tons) of hauler-collected material is Widely Accepted Recyclable, meaning it has consistently available recycling markets and is accepted in a majority of the state's curbside recycling programs (Figure 2). Limited Acceptable Recyclable materials account for an estimated 25.5 percent and Other Materials that do not belong in the recycling stream (compostable, Potentially Recoverable, and Non-recoverable materials) account for the remaining 10.3 percent.

[1] At the time of this report, the latest available annual tonnage data was from 2021. Source: Washington Department of Ecology, 2021. https://ecology.wa.gov/research-data/data-resources/solid-waste-recycling-data

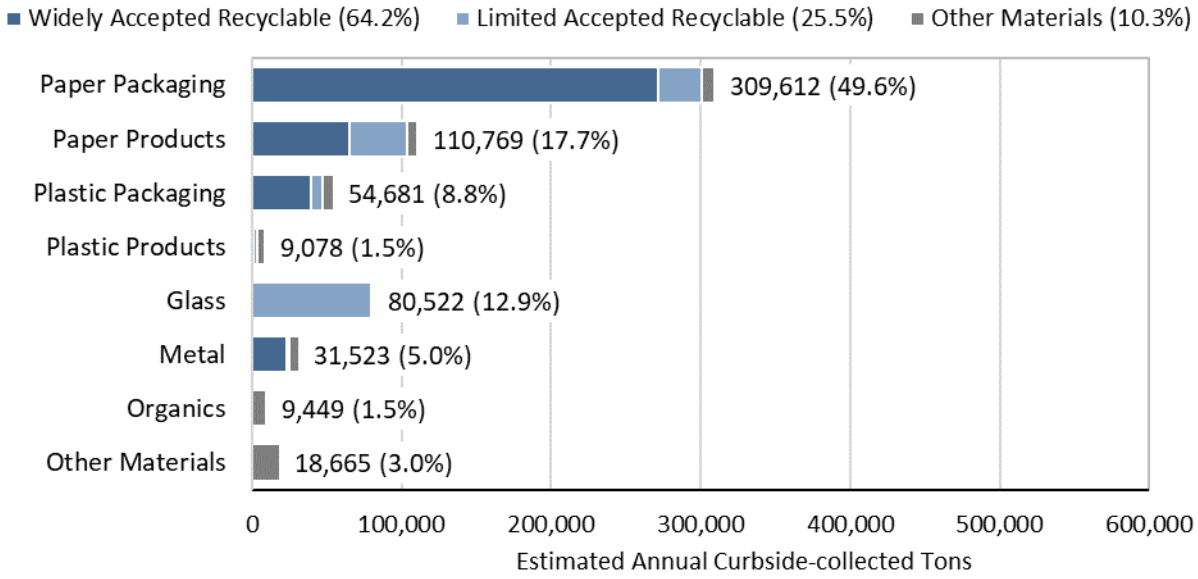
[2] Commingled recycling (included in this study) is a subset of recycling that occurs in the state and is not a complete representation of all recycling activities statewide.

Figure 2. Tons by Recoverability: Overall Hauler-collected Inbound Recycling



The most prevalent material class in the statewide hauler-collected Inbound Recycling stream is Paper Packaging (49.6% of material overall or 309,612 tons; Figure 3). Glass has the greatest proportion of Limited Accepted Recyclable materials (99.4% of the Glass class), followed by Paper Products (35.1% of the Paper Products class) and Paper Packaging (9.2% of the Paper Packaging class). None of the materials in the Organics or Other Materials classes are classified as Widely or Limited Accepted Recyclable.

Figure 3. Tons by Material Class: Overall Hauler-collected Inbound Recycling



Outbound Recycling

The annual tons of individual Outbound Recycling Commodity and Residual Material streams are not available for this study; composition results are shown as percentages in the figures below.

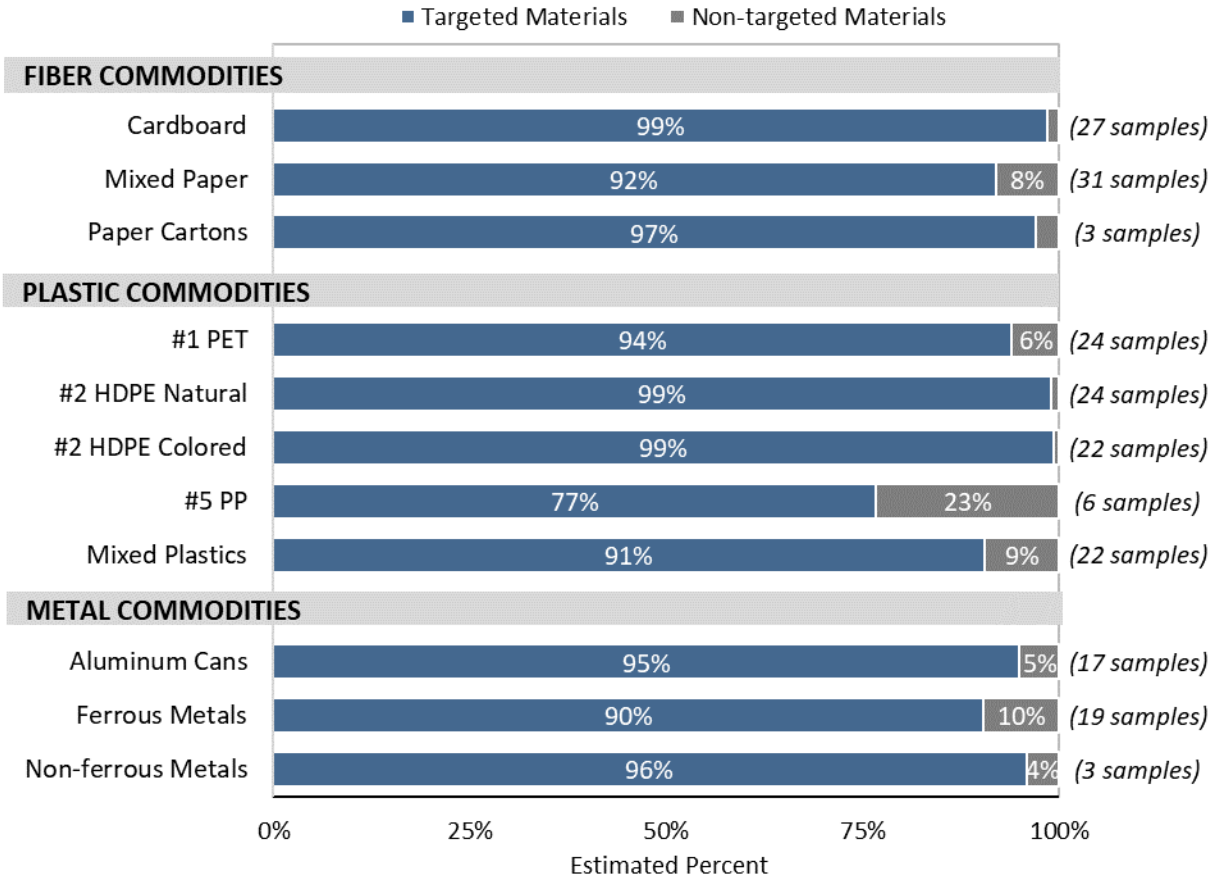
Commodities

Commodities are materials collected in the recycling stream that are considered to have market value. Commodities (such as paper, metal, and certain types of plastics) are separated into their own categories

during the sorting process at material recovery facilities (MRFs) and baled for shipment. Each commodity has a set of targeted material classes that are generally desirable within that commodity and non-targeted material classes that would be considered contaminants. For example, within the Cardboard commodity, Paper Packaging and Paper Products are targeted material classes while Metal is a non-targeted material class.

Figure 4 shows the proportion of targeted and non-targeted material classes in each commodity. Targeted materials account for 90 percent or more of all commodities except the PP commodity, which contains 77 percent targeted materials. Cardboard, HDPE Natural, and HDPE Colored commodities contain the greatest proportion of targeted materials at 99 percent.

Figure 4. Composition by Class: Outbound Commodities



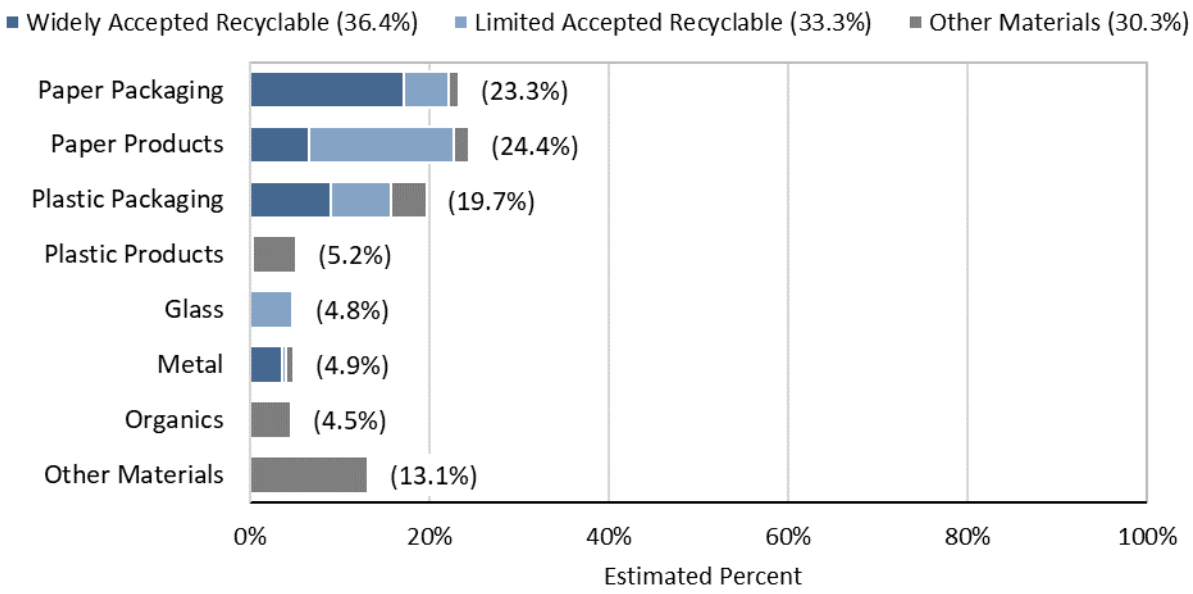
Residuals

Residual materials are the undesirable materials present in the recycling stream that are either removed or left over from the sorting process, depending on facility sorting procedures, and are destined for disposal. In some instances, commodity materials are misplaced during the sorting process and end up as residuals. In the Outbound Residuals substream, this study found that 36.4 percent of materials are Widely Accepted Recyclable and 33.3 percent are Limited Accepted Recyclable.

Materials classified as Paper Products account for the greatest proportion of Outbound Residuals (24.4%), followed by Paper Packaging (23.3%) and Plastic Packaging (19.7%; Figure 5). Glass has the

greatest proportion of Limited Accepted Recyclables (99.1% of the Glass class), followed by Paper Products (65.9% of the Paper Products class). The most prevalent material type in Outbound Residuals overall is Mixed Paper Products (15.2%).

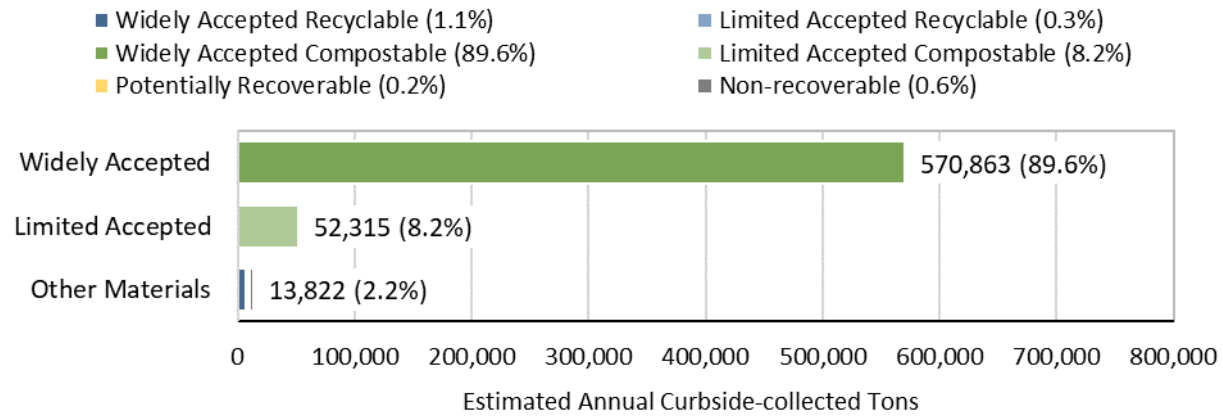
Figure 5. Composition by Material Class: Residuals



Residential Organics

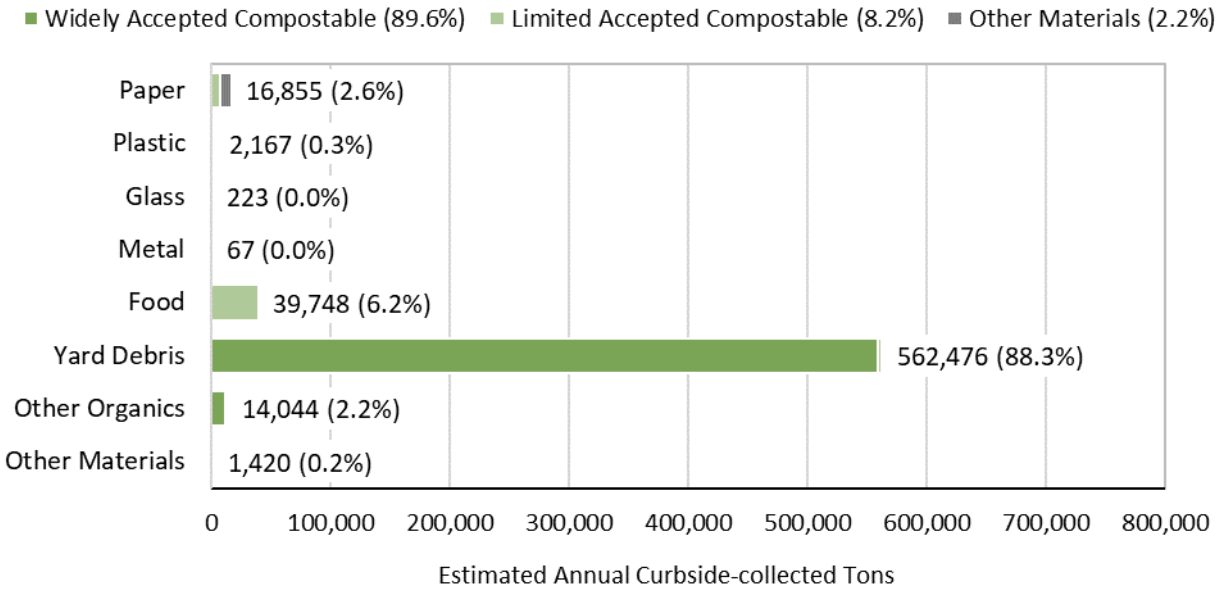
In the statewide Residential Inbound Organics stream, an estimated 89.6 percent (570,863 tons) of hauler-collected material is Widely Accepted Compostable in curbside organics programs. All other materials account for the remaining 10.4 percent (66,137 tons; Figure 6). The majority of the Residential Inbound Organics stream is yard waste, which helps explain the low contamination rate of all other (non-organic) materials found in the Residential Inbound Organics stream. Pre- and post-consumer food waste in the Residential Inbound Organics stream tend to have higher contamination levels, but are only accepted in some curbside organics programs. The ratio of yard waste and food waste (and therefore, contamination rates) is expected to change as Washington approaches compliance dates for the 2022 Organics Management Law, requiring diversion of organic materials away from the landfill.

Figure 6. Tons by Recoverability: Residential Inbound Organics



Materials in the three organics material classes (Food, Yard Debris, and Other Organics) account for the majority (96.7%) of the hauler-collected Residential Inbound Organics stream (Figure 7). Yard Debris specifically is the most prevalent material class, accounting for 88.3 percent of the Residential Inbound Organics stream.

Figure 7. Tons by Material Class: Residential Inbound Organics



Study Definitions

This section defines regional designations, sampling seasons, generators, material streams, and substreams. Definitions of specific material types evaluated in this study are included in Appendix A. Material Types and Recoverability Groups.

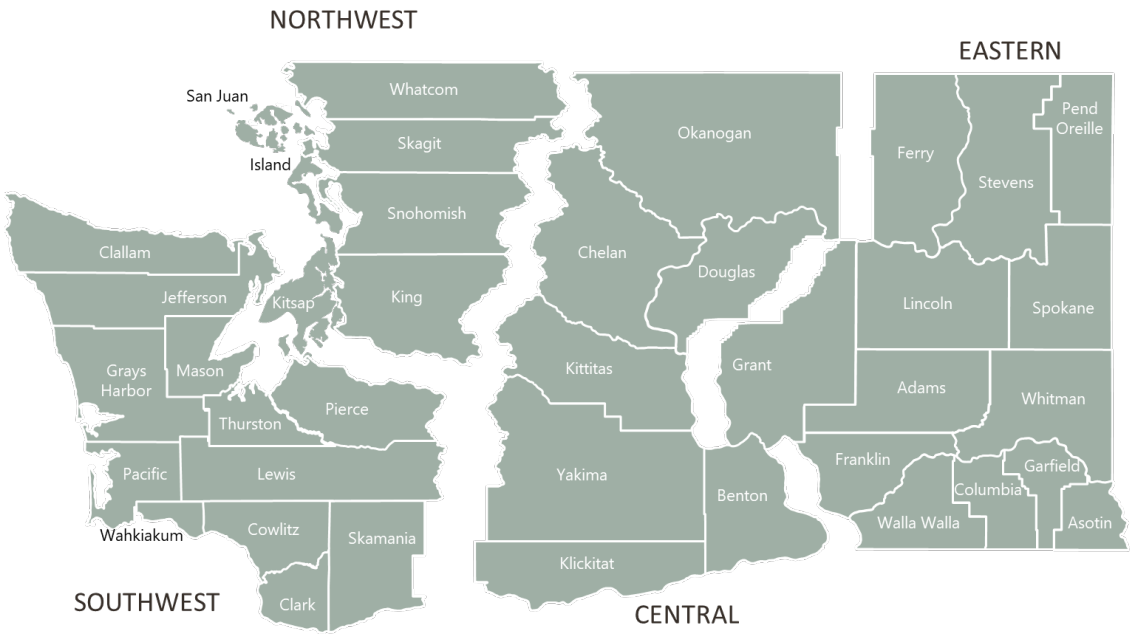
Regions

Field work was divided among four regions in Washington, as designated by the Department of Ecology's established regions: Central, Eastern, Northwest, and Southwest. Table 1 lists the counties in each region and Figure 8 shows the regional boundaries on a map.

Table 1. List of Counties by Region

Central	Eastern	Northwest	Southwest
Benton	Adams	Island	Clallam
Chelan	Asotin	King	Clark
Douglas	Columbia	Kitsap	Cowlitz
Kittitas	Ferry	San Juan	Grays Harbor
Klickitat	Franklin	Skagit	Jefferson
Okanogan	Garfield	Snohomish	Lewis
Yakima	Grant	Whatcom	Mason
	Lincoln		Pacific
	Pend Oreille		Pierce
	Spokane		Skamania
	Stevens		Thurston
	Walla Walla		Wahkiakum
	Whitman		

Figure 8. Regional Map



Sampling Seasons

Field work was completed during four separate seasons. Table 2 shows the dates when field work was conducted during each season, beginning with the fall season in 2022 and ending with the summer season in 2023.

Table 2. Seasonal Sampling Schedule by Material Stream

Season	Recycling	Inbound Organics
Fall	10/4/22 – 10/13/22	9/26/22 – 9/30/22
Winter	2/21/23 – 3/3/23	3/2/23 – 3/9/23
Spring	5/1/23 – 5/10/23	5/22/23 – 5/26/23
Summer	8/9/23 – 8/18/23	8/14/23 – 8/18/23

Generators

Generator refers to the origin of each inbound material stream, or the group that generated the solid waste material before it was collected by a commercial hauler and delivered to a material recovery facility (MRF) or compost facility for processing.[3] Outbound Recycling streams do not have an associated generator as they are composed of post-processed material at MRFs. The generators included in this study are:

- **Commercial**: non-residential properties including businesses, industries (such as factories, farms), institutions (such as correctional facilities, hospitals, churches), and governments (such as highways, parks).
- **Residential:**
  - Single-family: a residential property with a single dwelling or a residential property with fewer than five (up to four) dwelling units. Each dwelling unit typically has its own set of bins for collecting waste, recyclables, and organics.
  - Multifamily: a residential property with five or more dwelling units. Waste and recycling bins are typically shared among many dwelling units.

Primary Material Streams

Material stream refers to the types of materials studied. This study includes sampling from hauler-collected commingled recycling and organic material. Waste haulers that collect material from Commercial and Residential generators contract with local governments to operate a recycling or organics collection company; are certificated through a state franchise in a particular geographic area; or operate on the open market, depending on the jurisdiction and material stream.

The sampling universe for this study includes three specific primary waste streams—Inbound Recycling, Outbound Recycling, and Inbound Organics.

[3] "Recyclable materials" are defined as solid wastes that are separated for recycling or reuse, including, but not limited to, papers, metals, and glass, that are identified as recyclable material pursuant to a local comprehensive solid waste plan in Washington's Solid Waste Handling Standards (Chapter 173-350 WAC, Section 100: Definitions).

- **Recycling:** hauler-collected commingled recycling.
  - **Inbound Recycling:** incoming commingled recyclable material arriving at MRFs and transfer stations.
  - **Outbound Recycling:** outgoing (post-sort at MRFs) recyclables destined for recycling markets, or disposal in the case of residuals. Outbound residuals destinations include landfill and waste-to-energy incineration.
- **Inbound Organics:** incoming recovered organic material destined for composting or other organics recovery programs.

The three primary waste streams are further divided into substreams (defined in the next section).

Material Substreams

Each of the primary material streams has a unique set of substreams. The substreams for Inbound Recycling and Inbound Organics are further defined according to the collection system or accepted materials profile (Table 3). Outbound Recycling is further characterized by type of commodity stream and residual material (Table 4). Substreams are defined below.

Table 3. Inbound Substreams

Generator	Inbound Recycling Substreams	Inbound Organics Substreams
Commercial	• Fiber-heavy Commingled • Other Commingled	• Yard Debris Only • Food & Yard Debris • Post-consumer Food
Residential	• Commingled • Commingled (Glass-on-side) • Three-bin	• Yard Debris Only • Food & Yard Debris

Table 4. Outbound Recycling Substreams

Substream	Commodity or Residual Material
Outbound Recycling Commodities	• Cardboard • Mixed Paper • Paper Cartons • #1 Polyethylene Terephthalate (PET) Plastics • #2 High-density Polyethylene (HDPE) Natural Plastics • #2 HDPE Colored Plastics • #5 Polypropylene (PP) Plastics • Mixed Plastics • Aluminum Beverage Containers • Ferrous Metals • Non-ferrous Metals
Outbound Residual Materials	• Residuals

Inbound Recycling Substreams

This section defines each unique substream of Inbound Recycling material from Residential and Commercial generators.

Commercial

- **Commercial Fiber-heavy Commingled**: mixed recyclables that are predominantly cardboard and collected from businesses.
- **Commercial Other Commingled**: mixed recyclables collected from businesses.

Residential

- **Residential Curbside Commingled**: mixed recyclables collected from single-family and multifamily homes.
- **Residential Commingled (Glass-on-side):** residential commingled recyclables from single-family and multifamily homes collected in a single bin with glass on the side in a separate bin. Each bin was sampled separately.
- **Residential Three-bin**: residential commingled recyclables from single-family and multifamily homes that are collected as three separate streams, usually in a multi-bin truck. The three streams include cardboard, mixed paper, and remaining recyclables (also known as PTAG, or plastic-tin-aluminum-glass).

Outbound Recycling Substreams

The Outbound Recycling stream includes two substreams: Outbound Recycling Commodities and Outbound Residual Materials.

- **Outbound Recycling Commodities**: recyclable materials processed and sorted at MRFs that are baled and destined for recycling markets.
- **Outbound Residual Materials**: generally non-recyclable materials processed at MRFs that are rejected from commodity streams and are destined for disposal. May include recyclable materials.

Inbound Organics Substreams

This section defines each unique substream of Inbound Organics from Residential and Commercial generators.

Commercial

- **Commercial Yard Debris**: yard waste only collected from businesses.
- **Commercial Food & Yard Debris**: mixed food/yard waste collected from businesses.
- **Post-consumer Food**: post-consumer food waste recycling collected from businesses. Material must be classified as “post-consumer” by the compost facility due to permitting and/or regulatory requirements. Includes mixed pre- and post-consumer food waste. Excludes loads that are homogenous streams of pre-consumer food waste from businesses that have been separated, collected, and approved as such by the receiving facility.

Residential

- **Residential Single-family Yard Debris Only**: yard waste only collected from single-family homes.
- **Residential Single-family Food & Yard Debris**: mixed food/yard waste collected from single-family homes.

Summary of Methodology

This study can be broken down into four basic stages: Planning and Coordination, Data Collection, Data Analysis, and Summarizing the Results. The Planning and Coordination stage included:

1. Selecting representative counties to visit across the state.
2. Scheduling solid waste disposal facilities statewide for surveying and sampling.
3. Defining the waste sectors to include in the study.
4. Creating the list of material types to measure in the study.

Following the Planning and Coordination stage, Cascadia conducted four seasons of field work for Data Collection, which included:

1. Determining the composition of the recycling and organics streams through sampling and sorting.
2. Quantifying each material stream through vehicle surveys.

The Planning and Coordination and Data Collection phases are described in detail below. The methods used for Data Analysis are detailed in the Quantifying Inbound Recycling and Organics Annual Tons section and in Appendix B. Composition Calculations. A summary of the study results can be found in the Statewide Characterization Results section.

Planning and Coordination

This section includes a summary of the planning and coordination of field work, including facility selection and planned sample allocations.

Facility Selection

Ecology played an important role in the planning stage of this study to provide the framework for all subsequent data collection and analysis strategies. Ecology was initially responsible for contacting facilities to explain the purpose of the study, request the facility's participation in the study, collect facility data, and identify facility contacts. Eligible facilities included MRFs, transfer stations, and composting facilities. Cascadia provided Ecology with a detailed list of questions to ask during the recruitment phase.

Figure 9. Walkthrough of Participating Facility to Evaluate Outbound Recycling Sampling

After finalizing the list of participating facilities, Cascadia contacted each facility to coordinate field work logistics and establish an agreement for their participation. Cascadia then created a final schedule for field work and shared the schedule with each participating facility. Cascadia also completed an in-person site visit at each recycling facility prior to season one field work to gather information about available Outbound Recycling Commodities and Residual Materials; these site visits informed site-specific protocols for sampling Outbound Recycling. Before each scheduled visit, Cascadia contacted the facility to remind them of the visit, confirm arrangements, and address any concerns.

The participating counties and specific facilities are listed in Table 5 and Table 6.

Table 5. Facilities/Counties Included in the 2022-2023 Statewide Recycling and Organics Characterization Study, Recycling

Regional Designation	Facilities/Counties Visited for Statewide Study
Central	• Spokane SMART Center, Spokane County[4]
Eastern	• Spokane SMART Center, Spokane County
Northwest	• Lautenbach Recycling, Whatcom County; • Recology MRF, King County
Southwest	• Pioneer Recycling Services (Tacoma), Pierce County; • West Vancouver Materials Recovery Center, Clark County

[4] Inbound Recycling samples from the Central region were collected at the Spokane SMART Center, which is the primary receiving facility for recyclables generated in and hauled from the Central region. Central Inbound Recycling samples primarily contained material from Chelan and Kittitas Counties.

Table 6. Facilities/Counties Included in the 2022-2023 Statewide Recycling and Organics Characterization Study, Organics

Regional Designation	Facilities/Counties Visited for Statewide Study
Central	• Kittitas County Transfer Station, Kittitas County
Eastern	• Spokane County Transfer Station, Spokane County; • Sudbury Landfill, Walla Walla County
Northwest	• Green Earth Technology, Whatcom County
Southwest	• Silver Springs Organics, Thurston County; • Thurston County Waste and Recovery Center (WARC), Thurston County

Sample Allocation

The total minimum and maximum numbers of samples allocated to each stream over the course of the study are reported in Table 7. Due to the uncertainty of available Outbound Recycling samples during the Planning and Coordination phase, Cascadia adjusted the number of planned Inbound Recycling samples collected based on the availability of Outbound Recycling samples.

Table 7. Minimum and Maximum Planned Sample Counts by Stream

Stream	Minimum Sample Count	Maximum Sample Count
Inbound Recycling	192	320
Outbound Recycling	0	320
Inbound Organics	200	200

Following facility selection and site visits to determine the availability of the various recycling and organics substreams, the total planned Inbound Recycling and Organics samples were allocated between four seasons and four regions. Each season of field work spanned 13 days, for a total of 52 days of field work. During each season, the Recycling Team completed eight days of field work at facilities receiving recyclables and the Organics Team completed five days of field work at facilities receiving organics. The two teams often worked concurrently, but always independently of one another.

The total actual number of samples collected by stream, region, and season can be found in the Sampling Outcomes section.

Data Collection

This section includes a summary of the methods used to capture and sort samples.

Capturing Samples

A Surveyor conducted vehicle surveys at each facility to gather information from vehicles and select loads for sampling. Information gathered included:

- The material stream, substream, and, if loads were composed of material from multiple sectors, the estimated proportions of the sectors represented in each load
- County of origin
- Vehicle type

The Surveyor obtained the net weights for each vehicle surveyed. While the exact procedure for obtaining net weights differed slightly by facility, in general, the Surveyor collected the load net weight from vehicles whose net weight was listed on their ticket. For loads that must weigh out as they exit the facility, the Surveyor noted a transaction identifier (for example, ticket number or tare weight) on the Vehicle Survey Form. The Surveyor also gave a numbered card to the driver while noting the unique record number for that vehicle on the Vehicle Survey Form. The Surveyor then instructed the driver to give the card to scale house personnel upon exiting the facility, and scale house staff wrote the net weight of each vehicle on the appropriate card. The Surveyor collected the weight cards from the scale house at the end of each survey day and wrote the net weight of each vehicle on the Vehicle Survey Form.

To ensure that loads selected for sampling were representative of the material stream being studied, the Surveyor selected random inbound vehicles for sampling as they arrived at each facility during a sampling day. The Surveyor surveyed and counted all inbound vehicles. The Surveyor then applied the process described below to select loads from which to extract samples.

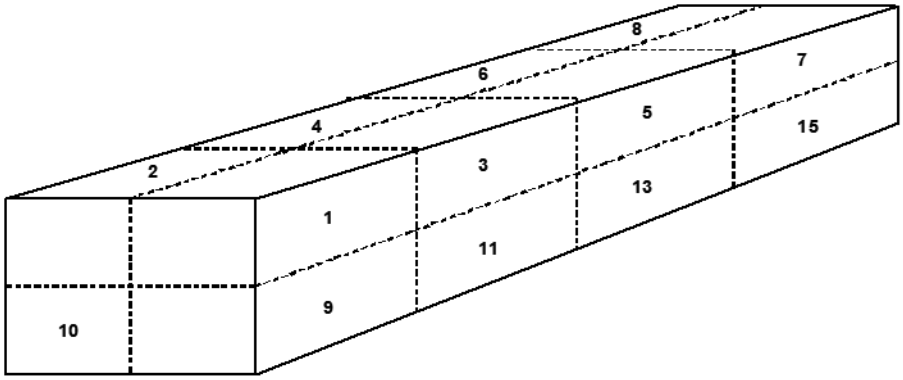
- For each sampling day and each material stream, the expected number, *L*, of arriving loads from each stream was estimated using data provided by the facility. The number *L* was then reduced by 20 percent (equal to 0.8 x *L*) to ensure that the targeted number of loads for each material stream could be selected on each sampling day, even if traffic was lighter than expected.
- Next, the sampling interval *n* was estimated to ensure systematic sampling of vehicles. If *r* represents the number of samples needed for the material stream and 0.8 x *L* represents the number of expected loads from the material stream, then *n* is calculated by dividing 0.8 x *L* by *r.* To facilitate this process, Cascadia constructed a Daily Vehicle Selection Sheet for each day, and every n^{th} vehicle was selected for sampling.

If the vehicle was eligible and the correct n^{th} vehicle, the Surveyor placed a Sample Placard on the vehicle's windshield or dashboard and directed the vehicle to the tipping area for sorting.

Inbound Streams

The Sort Crew Lead selected a sample from the load by superimposing an imaginary 16-cell grid (see Figure 10) over the dumped material. Then, with the assistance of a loader operator, they extracted a sample of material weighing approximately 200 pounds from a randomly selected cell. Each sample was labeled with the identifying sample ID number and digitally photographed.

Figure 10. 16-Cell Grid Applied to a Tipped Load



Outbound Recycling

The field crew collected samples of 12 different Outbound Recycling Commodities or Residual Materials per MRF. The sampling protocol for collecting Outbound Recycling samples varied by facility, and Cascadia created a customized sampling protocol for each facility prior to field work based on information learned during the Planning and Coordination phase.

Figure 11. Collecting Outbound Recycling Commodities

In general, the Sort Crew Lead worked closely with facility staff to collect samples of Outbound Recyclables safely, while also having the lowest possible impact on normal daily operations. Facility staff delivered the collected material to the sort crew. If the material delivered weighed more than the target sample weight, the sort crew randomly extracted a sample from the material, labeled the sample with a placard, and took a photograph. If the material weighed at or below the target sample weight, the entire pile was considered a single sample.

Sorting Samples

To determine the statewide 2022-2023 composition—the percentage of each material present in the recycling and organics streams—the sort crew hand-sorted each recycling or organics sample into 82 unique material types (see Appendix A. Material Types and Recoverability Groups). Hand-sorting and weighing every material type found in a sample produces accurate measurements that can be reliably converted to percentages and then applied to tonnage figures in order to quantify the material stream. The sorting protocol followed these four steps:

- **Step 1: Review methodology and sorting categories with the crew.** Before the sorting began, the sort crew reviewed the safety protocols, procedures, forms, and material definitions in detail.
- **Step 2: Photograph the sample.** The sort crew photographed the sample using a digital camera, ensuring that the Sample Placard identifying the sample was visible in each photo.
- **Step 3: Sort the sample.** Once the sample was placed on the sorting table, the sort crew sorted material by hand into the prescribed material types in plastic baskets. Individual members of the sort crew typically specialized in groups of materials, such as papers or plastics. The Sort Crew Lead monitored the accuracy of sorting, re-sorting any materials that were improperly classified. The complete list of material types and definitions are included in Appendix A. Material Types and Recoverability Groups.

Figure 12. Sorting Inbound Organics Samples at Kittitas Transfer Station

- **Step 4: Weigh the sample.** The sort crew verified the purity of each material as it was weighed using a pre-tared scale and recorded the data on the Sample Sorting and Characterization Form.

The sort crew then entered sample weights into a customized database, reviewed it for data entry errors, and exported the data to Microsoft Excel for analysis. Once fieldwork concluded, the Cascadia team calculated composition estimates by aggregating sample data using a weighted average procedure. The calculations for the weighted averages were based on the tonnage data provided by Ecology and, when necessary, vehicle survey data, as explained below in Quantifying Inbound Recycling and Organics

Annual Tons. The composition calculations and weighting factors are further described in Appendix B. Composition Calculations.

Quantifying Inbound Recycling and Organics Annual Tons

The first step in quantifying Washington's recycling and organics streams was to determine the total amount of recycling and organic material disposed statewide, specifically for material examined in this study. The tons reported in this study (1,522,000 tons of recycling and organics) represent a subset of the recycling and organic waste generated in Washington state. This study includes recycling and organics material that was collected curbside by commercial haulers and excludes other methods of recovery, such as recyclable material that residents self-haul to transfer stations or cardboard that businesses generate, bale, and deliver directly to recycling facilities.

To quantify annual tons, Cascadia identified the annual hauler-collected recycling and organics tons from Ecology's recovery reports and survey, which is completed annually by waste processing facilities. The reported tonnage data is from 2021, the most recent year available. Tons were reported separately by region and generator (Commercial or Residential).

To split Residential Inbound Recycling tons into Single-family and Multifamily generators, Cascadia used vehicle survey data to apply the percentage of Single-family versus Multifamily vehicle loads to the overall Residential tonnage. Cascadia also used vehicle survey data to estimate the number of Multifamily tons delivered in mixed loads along with Commercial tons, which are all reported to Ecology as Commercial tonnage, and to adjust the Commercial and Residential tonnages accordingly.

Ecology also provided monthly seasonal organics data for representative processing facilities in each region. To estimate how statewide Inbound Organics waste changes throughout the year, Cascadia applied the percentage of Inbound Organics generated in each season to the annual tonnage data for each region.

Approximately 624,300 tons were reported for the Inbound Recycling stream and approximately 897,700 tons were reported for the Inbound Organics stream.

Sampling Outcomes

Cascadia collected a total of 215 samples of Inbound Recycling, 251 samples of Outbound Recycling, and 202 samples of Inbound Organics, for a total of 668 samples across four regions (Table 8) and four seasons (Table 9). Outbound Recycling samples were not broken out by region or season. Most facilities combine inbound material from multiple counties for processing and cannot distinguish outbound products by region. Seasonal variation of the Outbound Recycling stream was not a focus of this study.

Table 8. Sample Counts by Region and Stream

Region	Inbound Recycling Samples	Inbound Organics Samples
Central	23	37
Eastern	63	54
Northwest	80	71
Southwest	49	40
Total	**215**	**202**

Table 9. Sample Counts by Season and Stream

Season	Inbound Recycling Samples	Inbound Organics Samples
Fall	63	40
Winter	52	51
Spring	55	60
Summer	45	51
Total	**215**	**202**

Data Limitations and Deviations from the Original Work Plan

Sample Counts

The original study plan called for dividing samples equally between the four regions and across the four seasons; however, each season of field work included some variability in regional sample allocations due to limited facility participation, availability of recycling and organics streams, and the number of sampling days distributed across the four regions. Samples were divided as equally as possible given those limiting factors.

For both the Inbound Recycling and Inbound Organics streams, a more detailed analysis of regional and seasonal covariation was intended, but was not possible due to low availability of samples in some sectors and substreams (not all regions were sampled during all seasons). Low sample counts in specific substreams limited the accuracy of their composition estimates due to wide confidence intervals. The composition results with too few samples to be considered representative of statewide recycling and organics collection programs are not included in the main body of this report.

Variability of Accepted Materials by Region

Characterizing the Inbound Recycling, Outbound Recycling, and Inbound Organics streams at the state level means that there will be less resolution at the regional and local levels. Collection programs vary widely throughout the state and no single recoverability framework will fully depict which materials are accepted in each program and what end markets are available. As a result, applications of these statewide results should carefully consider regional recoverability and market differences.

Due to these regional differences in recoverability, this report does not use the term "contamination" to describe the presence of materials that are considered unacceptable in certain streams. Instead, this report distinguishes among:

- "Widely Accepted" materials that are broadly accepted in curbside programs statewide and are rarely considered contaminants.
- "Limited Accepted" materials that are accepted in curbside collection in some jurisdictions but are considered contaminants in others.
- "Potentially Recoverable" and "Non-recoverable" materials that are rarely accepted for curbside collection and are typically considered contaminants. Potentially Recoverable materials could be recovered through specialty drop-off programs, but not through curbside collection.

In a region that accepts many materials in its curbside collection, the proportion of materials that are Potentially Recoverable or Non-recoverable will be a reasonable approximation of that region's contamination rate. In a region that accepts fewer materials in its curbside collection, the proportion of materials that are Limited Accepted, Potentially Recoverable, or Non-recoverable will be a reasonable approximation of that region's contamination rate. Statewide, these proportions represent the range (low estimate versus high estimate) of contaminant materials present at local levels.

See Appendix A. Material Types and Recoverability Groups for detailed definitions of these recoverability groupings and how individual material types are classified.

Outbound Recycling Commodities

In addition to the 11 Outbound Recycling Commodities included in this report, this study also intended to characterize the composition of Glass commodities if available. However, Glass was not available at the facilities for sampling at the time field work occurred. Glass materials may have been removed from the sorting process before sample collection occurred; processed elsewhere; used for other purposes, such as alternative daily cover (ADC); and/or disposed.

Other commodities were grouped together for reporting, due to low sampling counts or limited availability at some facilities. These include Clear Thermoforms, which were grouped with Mixed Plastics, and residuals that were produced at separate stages of the MRF sorting process, which were grouped into a single Outbound Residuals category.

Weather Delays

Because of unexpected road closures due to weather conditions, Inbound Organics sampling scheduled during the winter season in the Central Region was postponed until the spring season.

Statewide Characterization Results

This section presents overall statewide composition results and results by stream—Inbound Recycling, Outbound Recycling Commodities, and Inbound Organics. The results also include a separate section for Outbound Residual Materials composed of non-recyclable materials separated from Outbound Recycling Commodities during processing and destined for the landfill.

Interpreting the Results

This section provides an overview of the types of results presented in the remainder of the report and detailed information about how numbers are reported.

How Study Findings are Presented

For the Inbound Recycling and Organics streams, composition results are grouped by generator and substream and are presented in three formats:

- First, an overview of composition and quantity by recoverability group is presented as a stacked bar chart, with an emphasis on the recoverable materials in each stream.
- Second, composition and quantity by material class are presented as a stacked bar chart.
- Third, detailed composition and weight estimates for all 82 material types are presented in a table.

Regional and seasonal comparisons, if applicable, are presented by recoverability group and material class in stacked bar charts. A complete compositional estimate of the overall Residential Inbound Organics stream by season (fall, winter, spring, summer) is not included in this report due to sampling limitations at the regional level.

For Outbound Recycling Commodities, results are grouped by general commodity type (Fiber, Plastics, or Metals) to facilitate comparison. For each group of commodities, composition results are presented in the following formats:

- First, an overview of commodity composition by recoverability group is presented as a stacked bar chart.
- Second, composition by material class is presented as a stacked bar chart, with an emphasis on the targeted materials for each commodity type.
- Third, detailed composition estimates are presented in a table. Estimates are rolled up to the class level for non-targeted materials (for example, materials in the Metal class for Mixed Paper commodities).

For Outbound Residual Materials, results are presented as they are for Outbound Recycling Commodities, but without an emphasis on target materials. The compositions of Outbound Recycling Commodities and Residual Materials are only reported as percentages; outbound tons are not well characterized in facility reports to Ecology and are not available for this study.

Appendix A. Material Types and Recoverability Groups provides list of material types that are included in each recoverability group. Appendix C. Detailed Composition Tables contains additional overall, regional, and seasonal composition tables for the Inbound Recycling and Organics streams. Appendix D.

Substream Sample Summary contains composition results at the class level for substreams and sectors with low sample counts that, as a result, are not fully representative of collection programs statewide.

Recoverability Grouping

Ecology classified materials into six recoverability groups based on potential methods of recovery and how availability may vary throughout Washington. Acceptable materials in recycling collection programs vary by region and jurisdiction; it is common that materials that are acceptable in one city or county are not acceptable in another. The definitions below align with the recoverability potential of each material in the majority of curbside collection programs statewide. A complete list of material types and recoverability designations is in Appendix A. Material Types and Recoverability Groups.

Examples of Limited Accepted Recyclables

Materials that are accepted in the recycling stream in some jurisdictions but considered unacceptable in other jurisdictions are classified as "Limited Accepted Recyclable." Examples include Flexible Plastic Packaging, Gable Top Containers, and Aseptic Containers.

- **Widely Accepted Recyclable** materials have consistently available recycling markets and are accepted in a majority of curbside recycling programs statewide.
- **Limited Accepted Recyclable** materials have inconsistent recycling markets and/or are accepted in some curbside recycling programs in the state.
- **Widely Accepted Compostable** materials are accepted in a majority of curbside organics collection programs statewide.
- **Limited Accepted Compostable** materials are accepted in some curbside organics collection programs in the state.
- **Potentially Recoverable** materials are those that can be recovered for beneficial uses through specialty recycling programs or other recovery programs designed for solid waste. Markets may exist for these materials, but may be underdeveloped or not currently utilized.
- **Non-recoverable** materials are those that are not readily recyclable or compostable or face other market-related barriers.

Reported Numbers and Rounding

Each detailed composition table presents the overall estimated percent composition of each recoverability group, material class, and material type by weight, including the 90 percent confidence interval for each (identified as "+/-"). The confidence interval describes the possible range of the composition estimate, at 90 percent statistical confidence, when taking into account variation between samples. The project team calculated the composition and confidence intervals according to the study's composition calculations and statistical procedures. See Appendix B. Composition Calculations for more information.

Except where noted, composition tables also present the estimated tons of each material type, calculated by applying estimated composition percentages to the total tons of recycling and organics collected during the relevant study period, as provided by Ecology.

To keep the composition tables and figures readable, estimated tonnages are rounded to the nearest ton, and estimated percentages are rounded to the nearest percent or tenth of a percent. Each number in the text uses the same rounding as the number in the figure or table being referenced. Percentages less than 0.05 percent are shown as 0.0 percent. True zeros in tables are displayed as a dash ("–"). Using the rounded percentages to calculate tonnages or sums may yield results that differ from the numbers shown in the report. All weight estimates represent units of tons per year unless otherwise noted.

Tons by Region and Generator

The tons for the Inbound Recycling and Organics streams are based on annual 2021 tonnages reported to Ecology by haulers and processors (2021 was the most recent data available). The composition findings presented in this report are based on samples collected during the 2022–2023 study applied to the 2021 reported tons.

This study includes only a subset of recycling and organic material collected statewide. Tons associated with material types in this report represent the estimated annual tons collected by haulers through curbside recovery programs. Table 10 shows the total annual tonnages of recycling and organics statewide, including non-hauler-collected streams that are not evaluated in this study.

Table 10. Total Annual Tons of Recycling and Organics Collected Statewide[5]

Material Stream	Annual Statewide Hauler-collected Tons
Materials collected for recovery (recycling and organics)	8,582,904
Solid waste disposed (recoverable and non-recoverable)	9,971,479
Solid waste generated (recoverable and non-recoverable)	18,554,383

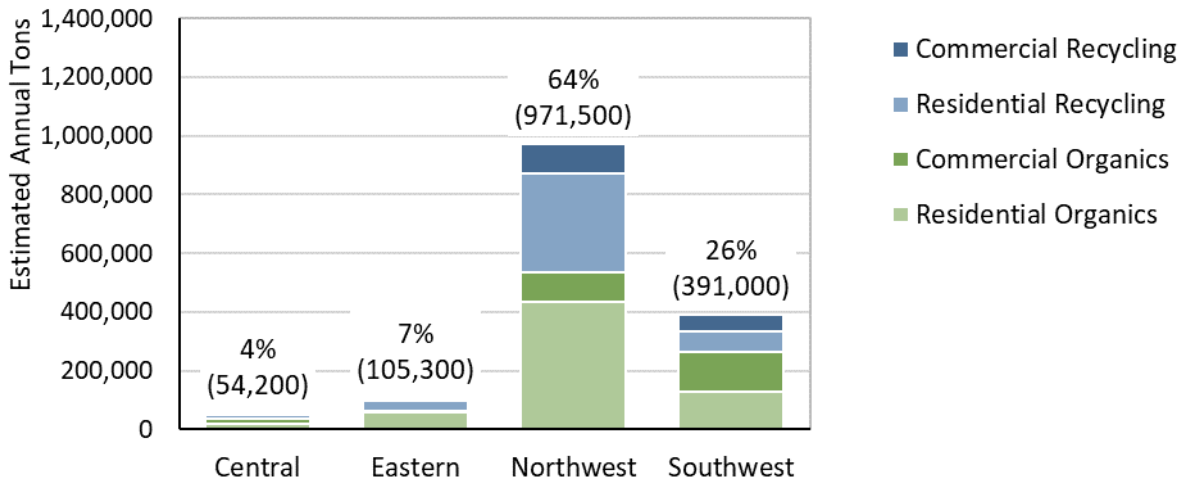
Based on 2021 hauler reports, an estimated 1,522,000 tons of recycling and organics material are collected annually by haulers statewide and represent the subset of tons targeted in this study. Of these annual hauler-collected tons, an estimated 624,300 tons (41%) are recycling and an estimated 897,700 tons (59%) are organics.

Regional subsets of hauler-collected recycling and organics are shown in Figure 13 and are broken down as follows:

- The Northwest region accounts for the majority (more than half) of recovered tons with an estimated 64 percent (971,500 tons) of statewide hauler-collected recycling and organics.
- The Southwest region accounts for approximately one-third (391,000 tons) of statewide hauler-collected recycling and organics.
- The Eastern region accounts for seven percent (105,300 tons) of statewide hauler-collected recycling and organics.
- The Central region accounts for four percent (54,200 tons) of statewide hauler-collected recycling and organics.

[5] Provided by Ecology: https://ecology.wa.gov/wastegenerationandrecovery-2021-2

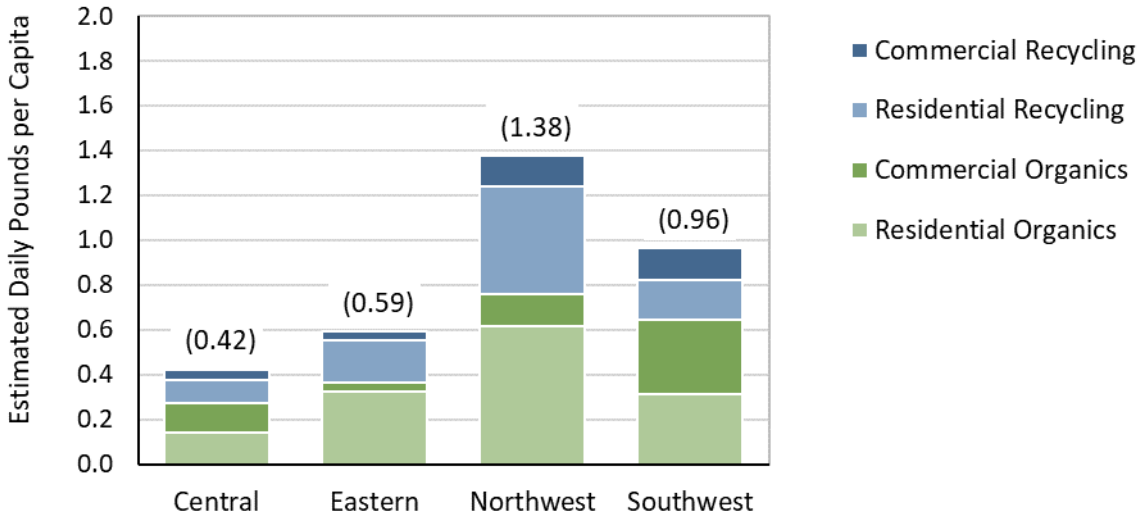
Figure 13. Recovered Tons by Recovery Stream and Region



Statewide, recycling and organics material collected per capita per day in streams targeted for this study is estimated at 1.07 pounds per day.

- The Northwest region accounts for 50 percent of the statewide population. Of the total estimated 1.38 pounds per capita per day in this region, 45 percent is Residential Inbound Organics, followed by Residential Inbound Recycling at 35 percent (Figure 14).
- The Southwest region accounts for 29 percent of the statewide population. Of the total estimated 0.96 pounds per capita per day in this region, 35 percent is Commercial Inbound Organics, followed by Residential Inbound Organics at 32 percent.
- The Central region accounts for 9 percent of the statewide population. Of the total estimated 0.42 pounds per capita per day in this region, 33 percent is Residential Inbound Organics, followed by Commercial Inbound Organics at 32 percent.
- The Eastern region accounts for 13 percent of the statewide population. Of the total estimated 0.59 pounds per capita per day in this region, 55 percent is Residential Inbound Organics, followed by Residential Inbound Recycling at 32 percent.

Figure 14. Estimated Recycling and Organics Collected per Capita by Region



Inbound Recycling

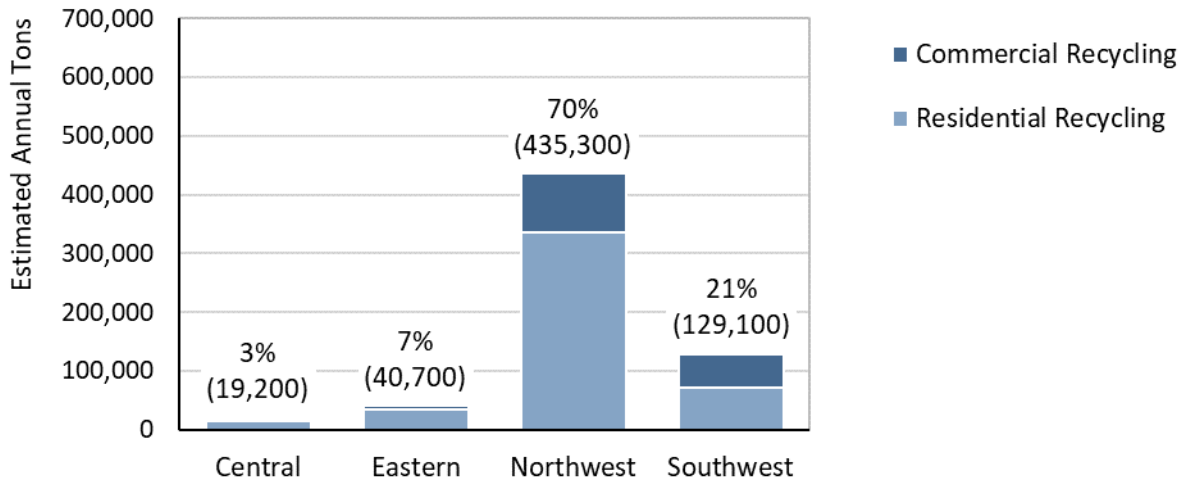
This section provides the characterization results for hauler-collected recyclable material arriving to MRFs and transfer stations.

Inbound Recycling Tons

An estimated 624,300 tons of the targeted recycling streams are collected statewide each year. Residential Inbound Recycling makes up approximately two-thirds (73% or 454,100 tons) and Commercial Inbound Recycling makes up the remaining one-third (27% or 170,200 tons; Figure 15) of the targeted tonnage.

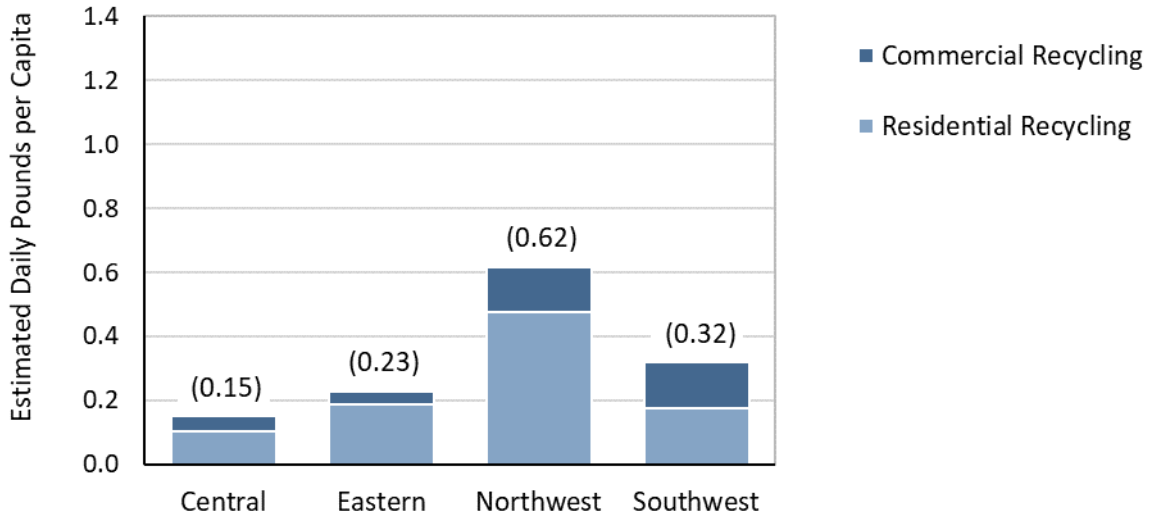
- In the Northwest region (70% of the estimated annual tons), approximately 23 percent of Inbound Recycling is from Commercial generators and 77 percent is from Residential generators.
- In the Southwest region (21% of the estimated annual tons), approximately 45 percent of Inbound Recycling is from Commercial generators and 55 percent is from Residential generators.
- In the Eastern region (7% of the estimated annual tons), approximately 17 percent of Inbound Recycling is from Commercial generators and 83 percent is from Residential generators.
- In the Central region (3% of the estimated annual tons), approximately 30 percent of Inbound Recycling is from Commercial generators and 70 percent is from Residential generators.

Figure 15. Estimated Annual Recycling Tons by Region



Statewide, recycling material collected per capita per day in streams targeted for this study is estimated at 0.44 pounds per day. The Northwest region generates the most recycling at 0.62 pounds per capita per day, followed by the Southwest region at 0.32 pounds per capita per day, the Eastern region at 0.23 pounds per capita per day, and the Central region at 0.15 pounds per capita per day (Figure 16).

Figure 16. Estimated Recycling Collected per Capita by Region



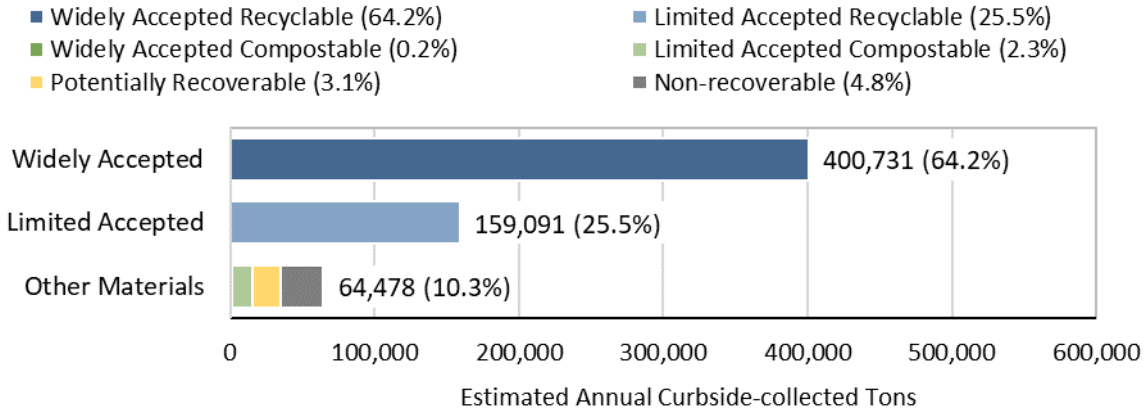
Inbound Recycling

This section includes an overview of the materials present in the hauler-collected Inbound Recycling stream (Residential and Commercial generators combined). The overview includes a breakdown of materials based on their recoverability group and material class, as well as the composition by region and by season. The annual tonnage of hauler-collected Inbound Recycling statewide is an estimated 624,300 tons.

Overview by Recoverability Group

In the statewide Inbound Recycling stream sampled in this study, an estimated 64.2 percent (400,731 tons) of hauler-collected material is Widely Accepted Recyclable, meaning it has consistently available recycling markets and is accepted in a majority of the state's curbside recycling programs (Figure 17). Limited Acceptable Recyclable materials account for an estimated 25.5 percent and Other Materials that do not belong in the recycling stream (compostable, Potentially Recoverable, and Non-recoverable materials) account for the remaining 10.3 percent.

Figure 17. Tons by Recoverability: Overall Hauler-collected Inbound Recycling



Overview by Material Class

The most prevalent material class in the statewide hauler-collected Inbound Recycling stream is Paper Packaging (49.6% of material overall or 309,612 tons; Figure 18). Glass has the greatest proportion of Limited Accepted Recyclable materials (99.4% of the Glass class), followed by Paper Products (35.1% of the Paper Products class) and Paper Packaging (9.2% of the Paper Packaging class). None of the materials in the Organics or Other Materials classes are classified as Widely or Limited Accepted Recyclable.

Figure 18. Tons by Material Class: Overall Hauler-collected Inbound Recycling

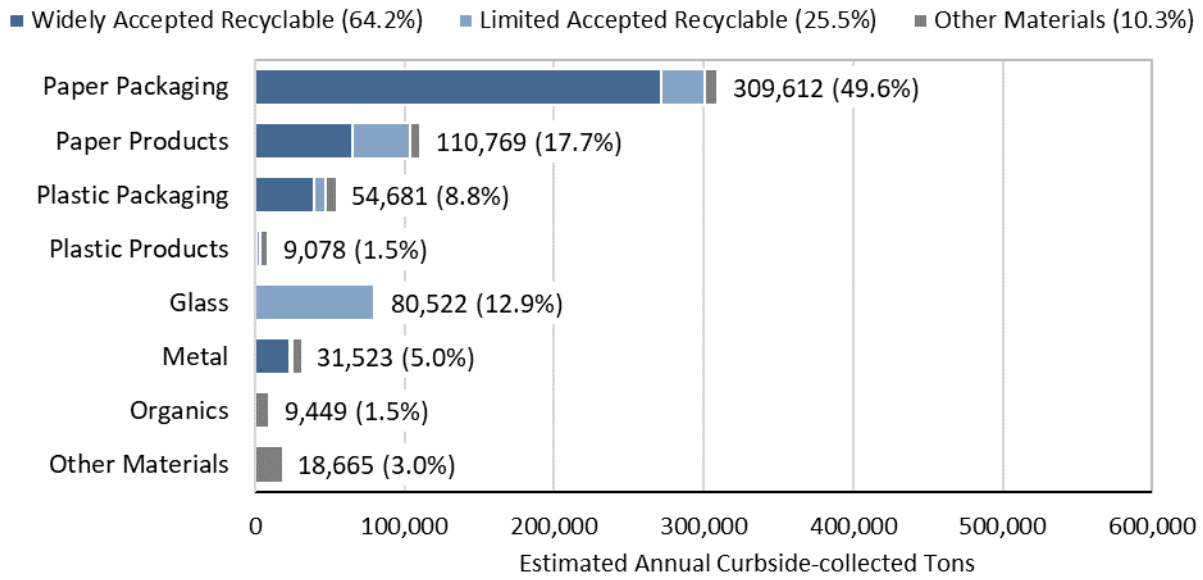


Table 11 shows the detailed composition of the statewide hauler-collected Inbound Recycling stream. The most prevalent Widely Accepted Recyclable material is Cardboard & Kraft Packaging (38.7% or 241,497 tons). Along with Cardboard & Kraft Packaging, Clear Glass Containers (6.0% or 37,656 tons) and Mixed Paper Products (5.5% or 34,534 tons) are the most prevalent material types overall in the statewide hauler-collected Inbound Recycling stream.

Table 11. Detailed Composition Table: Overall Hauler-collected Inbound Recycling

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**64.2%**	**2.9%**	**400,731**
Limited Accepted Recyclable	**25.5%**	**2.9%**	**159,091**
Widely Accepted Compostable	**0.2%**	**0.1%**	**970**
Limited Accepted Compostable	**2.3%**	**0.4%**	**14,598**
Potentially Recoverable	**3.1%**	**0.6%**	**19,139**
Non-recoverable	**4.8%**	**0.6%**	**29,772**
Paper Packaging	**49.6%**	**4.3%**	**309,612**
Cardboard & Kraft Packaging	38.7%	4.1%	241,497
Mixed Paper Packaging	4.9%	0.7%	30,358
Packaging Paper Cups	0.0%	0.0%	70
Aseptic Containers	0.2%	0.0%	1,066
Gable Top Containers	0.4%	0.1%	2,667
Other Polycoated Packaging	4.0%	1.0%	24,774
Single-use Food Service Compostable Paper	0.7%	0.2%	4,072
Other Compostable Paper Packaging	0.1%	0.0%	464
Newspaper Packaging	0.4%	0.3%	2,248
Remainder/Composite Paper Packaging	0.4%	0.1%	2,397
Plastic Packaging	**8.8%**	**1.5%**	**54,681**
#1 PETE Bottles	3.0%	0.5%	18,773
#1 PETE Non-bottles	1.2%	0.3%	7,798
#2 HDPE Natural Bottles	1.0%	0.3%	6,238
#2 HDPE Colored Bottles	0.8%	0.2%	4,853
#2 HDPE Jars & Tubs	0.4%	0.1%	2,219
#3 PVC Packaging	0.0%	0.0%	60
#4 LDPE Packaging	0.0%	0.0%	67
#5 PP Packaging	0.7%	0.1%	4,598
#6 PS Packaging	0.1%	0.0%	371
#7 Other/Unknown Packaging	0.4%	0.1%	2,292
PLA Compostable Food Packaging	0.0%	0.0%	41
EPS Expanded Polystyrene Packaging	0.1%	0.0%	651
Plastic Merchandise Bags	0.2%	0.0%	1,165
Transportation Packaging Film Plastic	0.3%	0.1%	1,778
Packaging Film Plastic	0.5%	0.1%	2,894
Flexible Plastic Packaging	0.1%	0.0%	370
Remainder/Composite Plastic	0.1%	0.0%	513
Metal	**5.0%**	**0.8%**	**31,523**
Aluminum Beverage Cans	2.1%	0.4%	13,017
Food Cans-Tinned	1.6%	0.3%	10,170
Aluminum Foil/Containers	0.1%	0.0%	435
Other Aluminum	0.2%	0.1%	1,020
Empty Aerosol Cans	0.1%	0.0%	315
Other Metal	1.1%	0.3%	6,565
Glass	**12.9%**	**2.8%**	**80,522**
Clear Glass Containers	6.0%	1.5%	37,656
Green Glass Containers	4.5%	1.0%	28,121
Other Colored Glass Containers	2.3%	0.6%	14,285
Plate Glass	0.0%	0.0%	27
Non-glass Ceramics	0.0%	0.1%	301
Remainder/Composite Glass	0.0%	0.0%	132

Material	Est. %	+ / -	Est. Tons
Paper Products	**17.7%**	**2.9%**	**110,769**
Newspaper Products	2.8%	0.6%	17,470
Cardboard & Kraft Paper Products	1.1%	1.0%	7,124
Magazines	4.6%	0.9%	28,481
High-grade Paper Products	1.9%	0.4%	11,993
Other Groundwood Paper Products	0.7%	0.2%	4,320
Mixed Paper Products	5.5%	1.0%	34,534
Product Paper Cups	0.0%	0.0%	2
Compostable Paper Products	0.4%	0.1%	2,413
Remainder/Composite Paper Products	0.7%	0.2%	4,431
Plastic Products	**1.5%**	**0.2%**	**9,078**
#1 PETE Products	0.1%	0.1%	670
#2 HDPE Products	0.0%	0.0%	68
#3 PVC Products	0.0%	0.0%	13
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	163
#6 PS Products	0.0%	0.0%	33
Bulky Rigid Plastic Products	0.4%	0.2%	2,228
PLA Compostable Plastic Bags & Film	0.0%	0.0%	30
PLA Compostable Plastic Utensils	0.0%	0.0%	18
#7 Other/Unknown Products	0.4%	0.1%	2,400
Plastic Garbage Bags	0.2%	0.1%	1,355
Plastic Non-bag Film Products	0.1%	0.0%	366
Remainder/Composite Plastic Products	0.3%	0.1%	1,734
Organics	**1.5%**	**0.4%**	**9,449**
Yard Debris	0.1%	0.1%	463
Food Processing Wastes	0.0%	0.0%	10
Other Compostables	0.0%	0.0%	104
Clean Wood	0.1%	0.0%	393
Fruits & Vegetables, Edible	0.1%	0.1%	769
Fruits & Vegetables, Non-edible	0.0%	0.0%	302
Homegrown Fruits & Vegetables	-	-	-
Meat, Edible	0.1%	0.0%	357
Meat, Non-edible	0.1%	0.1%	426
Mixed/Other Food Waste, Edible	0.7%	0.2%	4,629
Mixed/Other Food Waste, Non-edible	0.2%	0.2%	1,078
Animal Manure & Litter	0.0%	0.0%	71
Remainder/Composite Organics	0.1%	0.1%	848
Other Materials	**3.0%**	**0.5%**	**18,665**
Electronics & Small Appliances	0.2%	0.1%	1,489
Textiles (synthetic) & Shoes	0.7%	0.4%	4,593
Construction & Demolition Waste	0.1%	0.1%	651
Tanglers (non-plastic)	0.1%	0.0%	412
HHW/Special Waste	0.1%	0.1%	809
Diapers	0.2%	0.1%	1,214
Furniture/Bulky	0.0%	0.0%	17
Mixed Residue	1.5%	0.3%	9,480
Estimated Tons	**100%**		**624,300**
Sample Count			**215**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Inbound Recycling by Region

The Central region has the greatest proportion of Widely Accepted Recyclable materials (79%) in the hauler-collected Inbound Recycling stream (15 percentage points higher than Widely Accepted

Recyclables statewide; Figure 19). All other regions have between 61 and 73 percent Widely Accepted Recyclable materials. Paper Packaging is the most prevalent material class across all four regions (Figure 20). The Northwest hauler-collected Inbound Recycling stream is 17 percent Glass, notably higher than the other three regions.

Figure 19. Composition by Recoverability: Overall Hauler-collected Inbound Recycling by Region

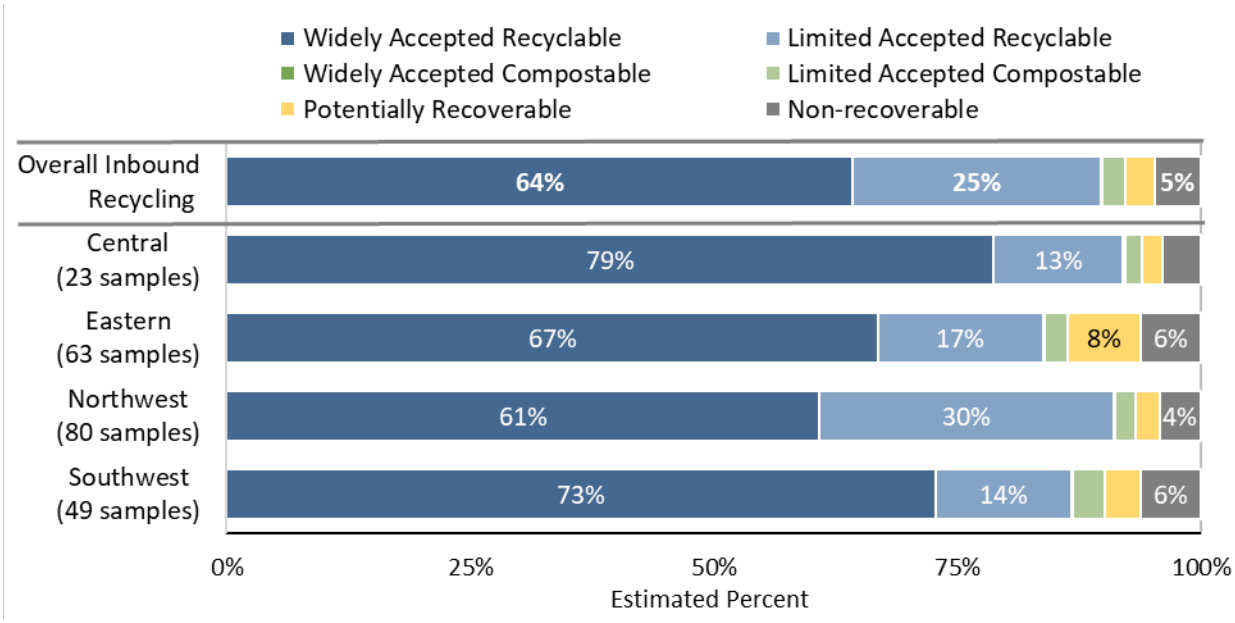
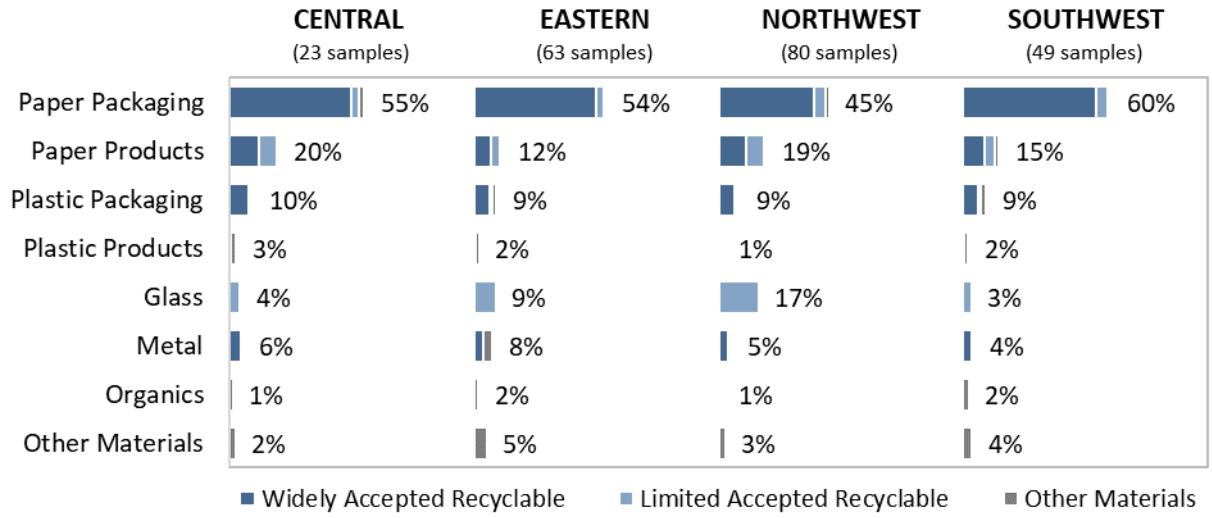


Figure 20. Composition by Class: Overall Hauler-collected Inbound Recycling by Region



Inbound Recycling by Season

Seasonal compositions confirm a lack of seasonal differences in recycling composition. Due to sampling limitations (see Data Limitations and Deviations from the Original Work Plan section above), these

seasonal compositions were not calculated with the same regional weighting factors and cannot be directly compared with the overall composition.

As shown in Figure 21, Widely Accepted Recyclables account for the greatest proportion of the hauler-collected Inbound Recycling stream throughout all seasons, though the proportion of Widely Accepted Recyclables diminishes slightly during the summer. During the summer season, both Potentially Recoverable and Non-recoverable material types each increase to five percent. Paper Packaging is the most prevalent material class across all four seasons (Figure 22).

Figure 21. Composition by Recoverability: Overall Hauler-collected Inbound Recycling by Season

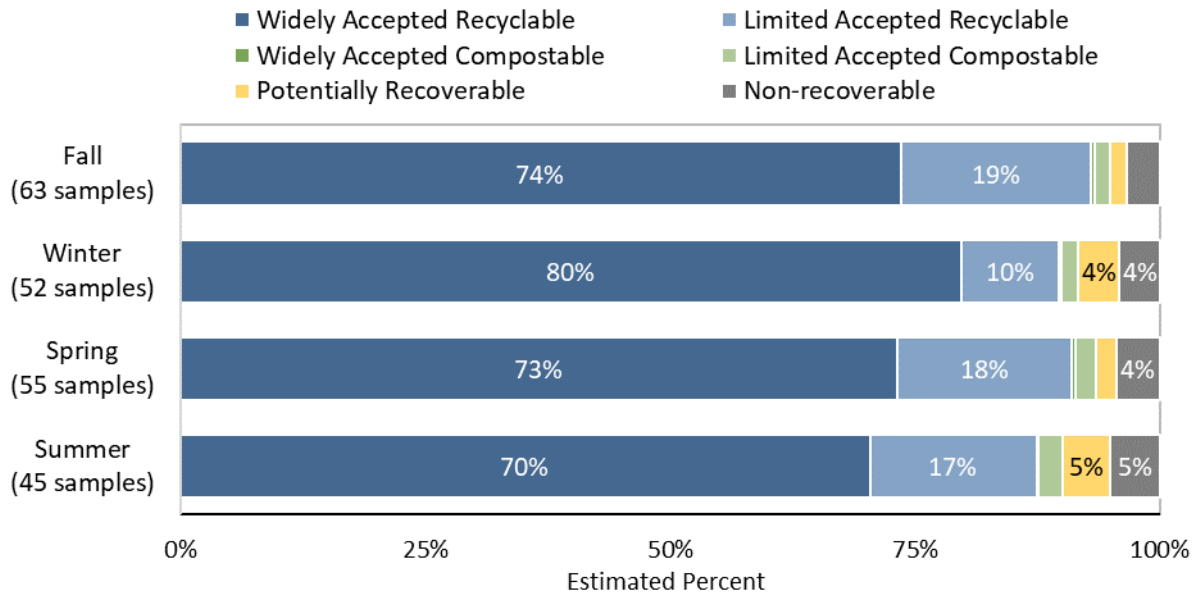
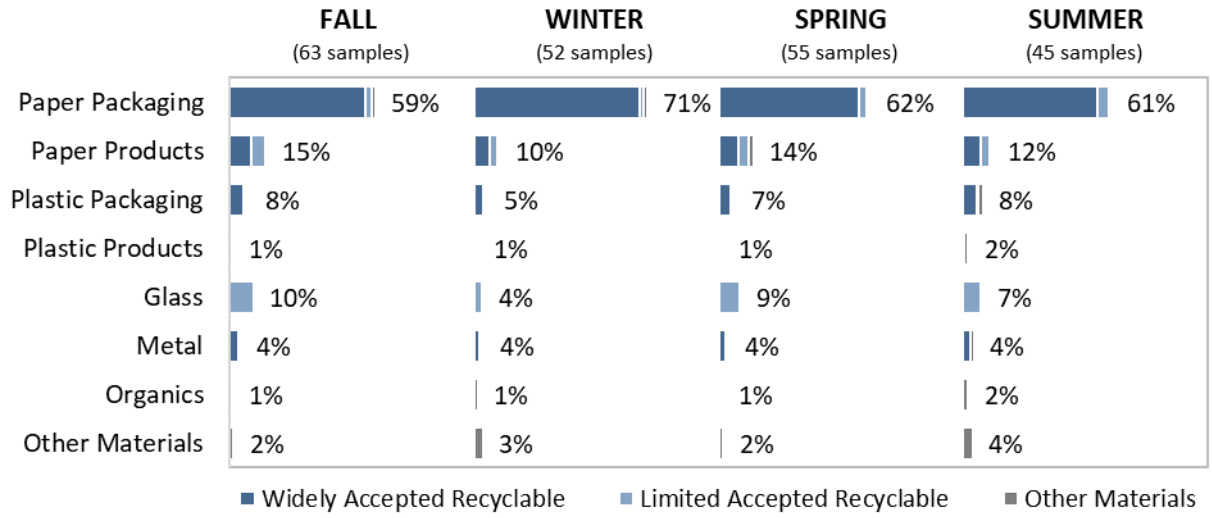


Figure 22. Composition by Class: Overall Hauler-collected Inbound Recycling by Season



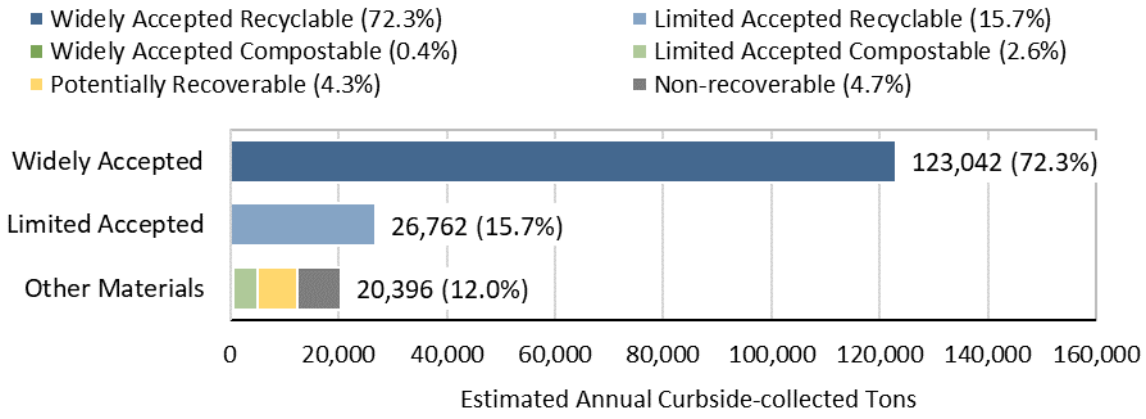
Commercial Recycling

This section includes an overview of the materials present in the hauler-collected Commercial Inbound Recycling stream. The overview includes a breakdown of materials based on their recoverability group and material class. The annual tonnage of hauler-collected Commercial Inbound Recycling statewide is an estimated 170,200 tons.

Overview by Recoverability Group

In the hauler-collected Commercial Inbound Recycling stream, an estimated 72.3 percent (123,042 tons) of material is Widely Accepted Recyclable in curbside recycling programs (Figure 23). Limited Acceptable materials account for 15.7 percent (26,762 tons) and Other Materials account for 12.0 percent (20,396 tons).

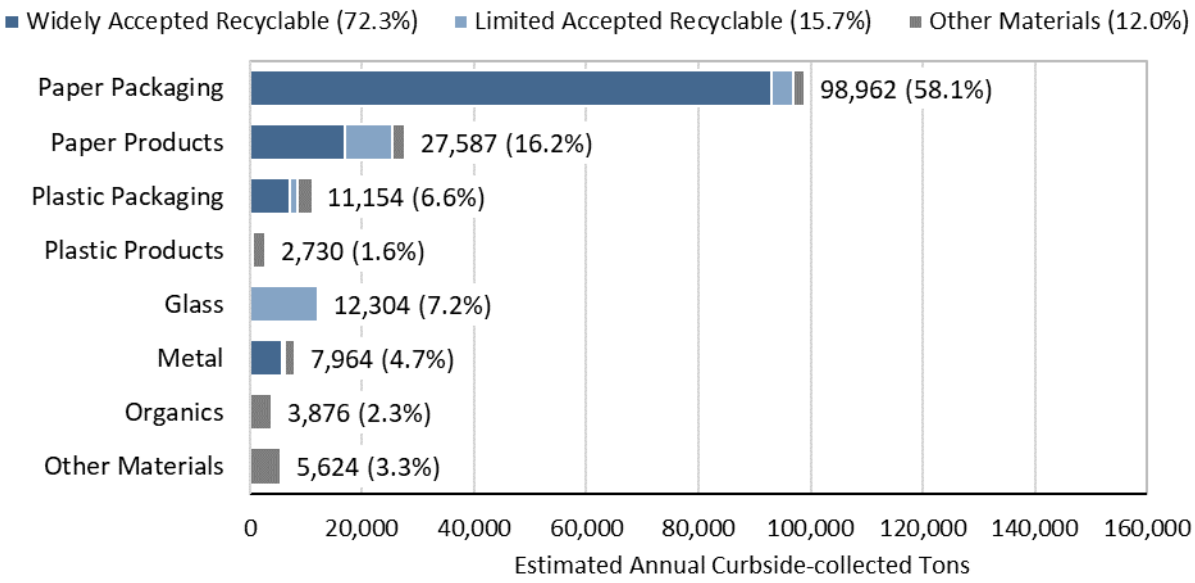
Figure 23. Tons by Recoverability: Commercial Inbound Recycling



Overview by Material Class

Materials in the Paper Packaging class account for the greatest proportion of the hauler-collected Commercial Inbound Recycling stream (58.1% or 98,962 tons), followed by Paper Products (16.2% or 27,587 tons; Figure 24). Paper Packaging is composed of the greatest proportion of Widely Accepted Recyclables (94.0% of the Paper Packaging class), followed by Metal (73.2% of the Metal class).

Figure 24. Tons by Material Class: Commercial Inbound Recycling



The most prevalent Widely Accepted Recyclable material is Cardboard & Kraft Packaging (51.4% or 87,549 tons; Table 12). Along with Cardboard & Kraft Packaging, Paper Products (4.3% or 7,295 tons) and Clear Glass Containers (3.8% or 6,439 tons) are the most prevalent material types overall in the hauler-collected Commercial Inbound Recycling stream.

Table 12. Detailed Composition Table: Commercial Inbound Recycling

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**72.3%**	**3.2%**	**123,042**
Limited Accepted Recyclable	**15.7%**	**2.9%**	**26,762**
Widely Accepted Compostable	**0.4%**	**0.4%**	**637**
Limited Accepted Compostable	**2.6%**	**0.8%**	**4,503**
Potentially Recoverable	**4.3%**	**1.7%**	**7,315**
Non-recoverable	**4.7%**	**0.9%**	**7,941**
Paper Packaging	**58.1%**	**4.7%**	**98,962**
Cardboard & Kraft Packaging	51.4%	5.1%	87,549
Mixed Paper Packaging	3.2%	1.3%	5,516
Packaging Paper Cups	0.0%	0.0%	45
Aseptic Containers	0.1%	0.0%	236
Gable Top Containers	0.3%	0.1%	432
Other Polycoated Packaging	1.8%	0.4%	3,103
Single-use Food Service Compostable Paper	0.4%	0.1%	652
Other Compostable Paper Packaging	0.1%	0.0%	160
Newspaper Packaging	0.5%	0.7%	895
Remainder/Composite Paper Packaging	0.2%	0.1%	375
Plastic Packaging	**6.6%**	**1.4%**	**11,154**
#1 PETE Bottles	1.9%	0.5%	3,190
#1 PETE Non-bottles	0.7%	0.2%	1,114
#2 HDPE Natural Bottles	0.7%	0.2%	1,250
#2 HDPE Colored Bottles	0.6%	0.2%	961
#2 HDPE Jars & Tubs	0.4%	0.3%	663
#3 PVC Packaging	0.0%	0.0%	20
#4 LDPE Packaging	0.0%	0.0%	10
#5 PP Packaging	0.5%	0.2%	785
#6 PS Packaging	0.0%	0.0%	80
#7 Other/Unknown Packaging	0.3%	0.1%	447
PLA Compostable Food Packaging	0.0%	0.0%	29
EPS Expanded Polystyrene Packaging	0.2%	0.1%	262
Plastic Merchandise Bags	0.2%	0.1%	418
Transportation Packaging Film Plastic	0.5%	0.4%	834
Packaging Film Plastic	0.5%	0.1%	845
Flexible Plastic Packaging	0.1%	0.0%	99
Remainder/Composite Plastic	0.1%	0.0%	145
Metal	**4.7%**	**1.3%**	**7,964**
Aluminum Beverage Cans	1.5%	0.5%	2,483
Food Cans-Tinned	2.0%	0.8%	3,351
Aluminum Foil/Containers	0.1%	0.0%	112
Other Aluminum	0.2%	0.1%	256
Empty Aerosol Cans	0.0%	0.0%	70
Other Metal	1.0%	0.8%	1,692
Glass	**7.2%**	**2.5%**	**12,304**
Clear Glass Containers	3.8%	1.3%	6,439
Green Glass Containers	2.1%	0.8%	3,541
Other Colored Glass Containers	1.3%	0.6%	2,247
Plate Glass	0.0%	0.0%	6
Non-glass Ceramics	0.0%	0.0%	35
Remainder/Composite Glass	0.0%	0.0%	36
Paper Products	**16.2%**	**5.0%**	**27,587**
Newspaper Products	2.4%	1.3%	4,114
Cardboard & Kraft Paper Products	1.7%	2.6%	2,926
Magazines	2.4%	0.9%	4,093
High-grade Paper Products	3.4%	1.3%	5,742
Other Groundwood Paper Products	0.7%	0.5%	1,190
Mixed Paper Products	4.3%	1.4%	7,295
Product Paper Cups	-	-	-
Compostable Paper Products	0.4%	0.1%	677
Remainder/Composite Paper Products	0.9%	0.5%	1,551
Plastic Products	**1.6%**	**0.4%**	**2,730**
#1 PETE Products	0.0%	0.0%	84
#2 HDPE Products	0.0%	0.0%	5
#3 PVC Products	-	-	-
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	57
#6 PS Products	0.0%	0.0%	9
Bulky Rigid Plastic Products	0.2%	0.2%	388
PLA Compostable Plastic Bags & Film	0.0%	0.0%	3
PLA Compostable Plastic Utensils	0.0%	0.0%	7
#7 Other/Unknown Products	0.3%	0.1%	482
Plastic Garbage Bags	0.5%	0.1%	769
Plastic Non-bag Film Products	0.1%	0.1%	184
Remainder/Composite Plastic Products	0.4%	0.2%	740
Organics	**2.3%**	**0.8%**	**3,876**
Yard Debris	0.2%	0.4%	409
Food Processing Wastes	-	-	-
Other Compostables	0.0%	0.1%	80
Clean Wood	0.1%	0.1%	147
Fruits & Vegetables, Edible	0.1%	0.1%	216
Fruits & Vegetables, Non-edible	0.1%	0.0%	115
Homegrown Fruits & Vegetables	-	-	-
Meat, Edible	0.1%	0.1%	158
Meat, Non-edible	0.0%	0.0%	19
Mixed/Other Food Waste, Edible	1.3%	0.7%	2,260
Mixed/Other Food Waste, Non-edible	0.1%	0.1%	207
Animal Manure & Litter	-	-	-
Remainder/Composite Organics	0.2%	0.1%	264
Other Materials	**3.3%**	**1.2%**	**5,624**
Electronics & Small Appliances	0.4%	0.3%	670
Textiles (synthetic) & Shoes	1.4%	1.1%	2,411
Construction & Demolition Waste	0.1%	0.1%	133
Tanglers (non-plastic)	0.1%	0.1%	106
HHW/Special Waste	0.3%	0.2%	485
Diapers	0.2%	0.2%	339
Furniture/Bulky	0.0%	0.0%	17
Mixed Residue	0.9%	0.3%	1,462
Estimated Tons	**100%**		**170,200**
Sample Count			**103**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Residential Recycling

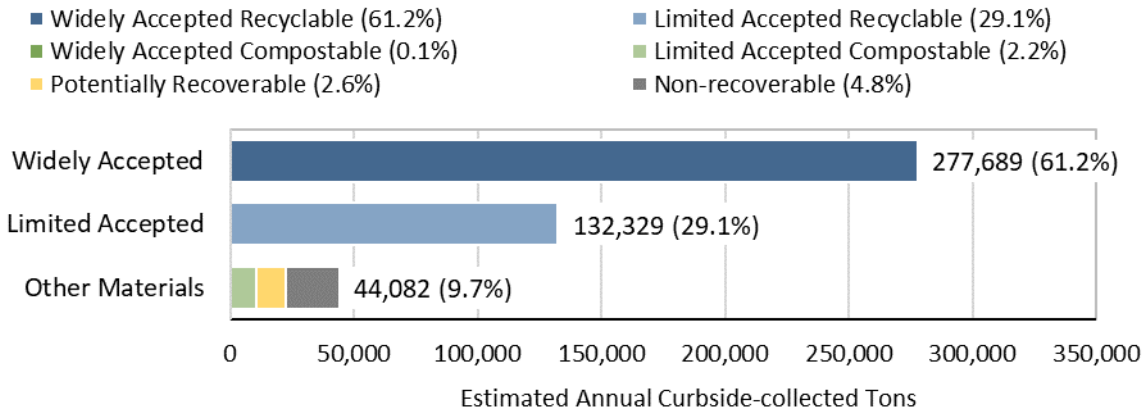
This section includes an overview of the materials present in the hauler-collected Residential Inbound Recycling stream, including a breakdown of materials based on their recoverability group and material class. The annual tonnage of hauler-collected Residential Inbound Recycling statewide is an estimated 454,100 tons. This includes material collected from both Single-family and Multifamily generators.

Overview by Recoverability Group

In the hauler-collected Residential Inbound Recycling stream, an estimated 61.2 percent (277,689 tons) of material is Widely Accepted Recyclable in curbside recycling programs (Figure 25). Limited Acceptable

materials account for 29.1 percent (132,329 tons) and Other Materials account for 9.7 percent (44,082 tons).

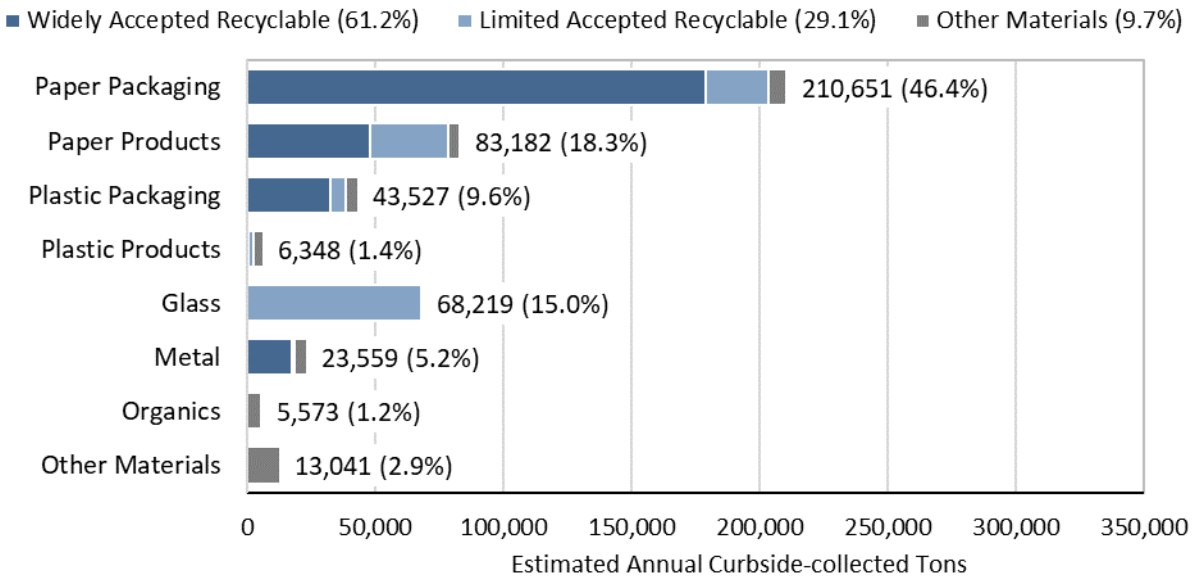
Figure 25. Tons by Recoverability: Residential Inbound Recycling



Overview by Material Class

The most prevalent material class in the hauler-collected Residential Inbound Recycling stream is Paper Packaging (46.4% or 210,651 tons; Figure 26). Paper Packaging has the greatest proportion of Widely Accepted Recyclables (84.9% of the Paper Packaging class), followed by Metal (73.7% of the Metal class).

Figure 26. Tons by Material Class: Residential Inbound Recycling



The most prevalent Widely Accepted Recyclable material in the hauler-collected Residential Inbound Recycling stream is Cardboard & Kraft Packaging (33.9% or 153,947 tons; Table 13). Along with Cardboard & Kraft Packaging, Clear Glass Containers (6.9% or 31,218 tons) and Mixed Paper Products (6.0% or 27,239 tons) are the most prevalent material types overall in the hauler-collected Residential Inbound Recycling stream.

Table 13. Detailed Composition Table: Residential Inbound Recycling

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**61.2%**	**3.8%**	**277,689**
Limited Accepted Recyclable	**29.1%**	**3.8%**	**132,329**
Widely Accepted Compostable	**0.1%**	**0.0%**	**333**
Limited Accepted Compostable	**2.2%**	**0.5%**	**10,095**
Potentially Recoverable	**2.6%**	**0.6%**	**11,824**
Non-recoverable	**4.8%**	**0.7%**	**21,831**
Paper Packaging	**46.4%**	**5.6%**	**210,651**
Cardboard & Kraft Packaging	33.9%	5.3%	153,947
Mixed Paper Packaging	5.5%	0.9%	24,843
Packaging Paper Cups	0.0%	0.0%	26
Aseptic Containers	0.2%	0.0%	830
Gable Top Containers	0.5%	0.1%	2,235
Other Polycoated Packaging	4.8%	1.3%	21,671
Single-use Food Service Compostable Paper	0.8%	0.3%	3,420
Other Compostable Paper Packaging	0.1%	0.0%	304
Newspaper Packaging	0.3%	0.4%	1,353
Remainder/Composite Paper Packaging	0.4%	0.1%	2,022
Plastic Packaging	**9.6%**	**1.9%**	**43,527**
#1 PETE Bottles	3.4%	0.6%	15,583
#1 PETE Non-bottles	1.5%	0.4%	6,683
#2 HDPE Natural Bottles	1.1%	0.5%	4,988
#2 HDPE Colored Bottles	0.9%	0.2%	3,892
#2 HDPE Jars & Tubs	0.3%	0.1%	1,556
#3 PVC Packaging	0.0%	0.0%	41
#4 LDPE Packaging	0.0%	0.0%	57
#5 PP Packaging	0.8%	0.2%	3,813
#6 PS Packaging	0.1%	0.0%	291
#7 Other/Unknown Packaging	0.4%	0.1%	1,845
PLA Compostable Food Packaging	0.0%	0.0%	12
EPS Expanded Polystyrene Packaging	0.1%	0.0%	389
Plastic Merchandise Bags	0.2%	0.0%	747
Transportation Packaging Film Plastic	0.2%	0.0%	944
Packaging Film Plastic	0.5%	0.1%	2,049
Flexible Plastic Packaging	0.1%	0.0%	271
Remainder/Composite Plastic	0.1%	0.1%	368
Metal	**5.2%**	**0.9%**	**23,559**
Aluminum Beverage Cans	2.3%	0.5%	10,534
Food Cans-Tinned	1.5%	0.3%	6,820
Aluminum Foil/Containers	0.1%	0.0%	323
Other Aluminum	0.2%	0.1%	764
Empty Aerosol Cans	0.1%	0.0%	245
Other Metal	1.1%	0.3%	4,873
Glass	**15.0%**	**3.7%**	**68,219**
Clear Glass Containers	6.9%	2.0%	31,218
Green Glass Containers	5.4%	1.4%	24,581
Other Colored Glass Containers	2.7%	0.8%	12,038
Plate Glass	0.0%	0.0%	20
Non-glass Ceramics	0.1%	0.1%	266
Remainder/Composite Glass	0.0%	0.0%	97

Material	Est. %	+ / -	Est. Tons
Paper Products	**18.3%**	**3.6%**	**83,182**
Newspaper Products	2.9%	0.6%	13,357
Cardboard & Kraft Paper Products	0.9%	0.9%	4,199
Magazines	5.4%	1.2%	24,389
High-grade Paper Products	1.4%	0.3%	6,251
Other Groundwood Paper Products	0.7%	0.3%	3,130
Mixed Paper Products	6.0%	1.3%	27,239
Product Paper Cups	0.0%	0.0%	2
Compostable Paper Products	0.4%	0.2%	1,736
Remainder/Composite Paper Products	0.6%	0.2%	2,881
Plastic Products	**1.4%**	**0.3%**	**6,348**
#1 PETE Products	0.1%	0.2%	586
#2 HDPE Products	0.0%	0.0%	62
#3 PVC Products	0.0%	0.0%	13
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	106
#6 PS Products	0.0%	0.0%	24
Bulky Rigid Plastic Products	0.4%	0.2%	1,839
PLA Compostable Plastic Bags & Film	0.0%	0.0%	28
PLA Compostable Plastic Utensils	0.0%	0.0%	11
#7 Other/Unknown Products	0.4%	0.1%	1,917
Plastic Garbage Bags	0.1%	0.0%	586
Plastic Non-bag Film Products	0.0%	0.0%	182
Remainder/Composite Plastic Products	0.2%	0.1%	994
Organics	**1.2%**	**0.4%**	**5,573**
Yard Debris	0.0%	0.0%	54
Food Processing Wastes	0.0%	0.0%	10
Other Compostables	0.0%	0.0%	24
Clean Wood	0.1%	0.0%	246
Fruits & Vegetables, Edible	0.1%	0.1%	553
Fruits & Vegetables, Non-edible	0.0%	0.0%	187
Homegrown Fruits & Vegetables	-	-	-
Meat, Edible	0.0%	0.0%	199
Meat, Non-edible	0.1%	0.1%	407
Mixed/Other Food Waste, Edible	0.5%	0.1%	2,369
Mixed/Other Food Waste, Non-edible	0.2%	0.2%	870
Animal Manure & Litter	0.0%	0.0%	71
Remainder/Composite Organics	0.1%	0.1%	584
Other Materials	**2.9%**	**0.6%**	**13,041**
Electronics & Small Appliances	0.2%	0.1%	819
Textiles (synthetic) & Shoes	0.5%	0.3%	2,182
Construction & Demolition Waste	0.1%	0.1%	518
Tanglers (non-plastic)	0.1%	0.1%	306
HHW/Special Waste	0.1%	0.0%	324
Diapers	0.2%	0.1%	875
Furniture/Bulky	-	-	-
Mixed Residue	1.8%	0.4%	8,018
Estimated Tons	**100%**		**454,100**
Sample Count			**112**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Outbound Recycling Commodities

This section presents the characterization results of outgoing (post-sort) recyclables destined for recycling markets. Total annual tons of individual Outbound Recycling Commodity streams were not available for this study. Composition results are shown as percentages.

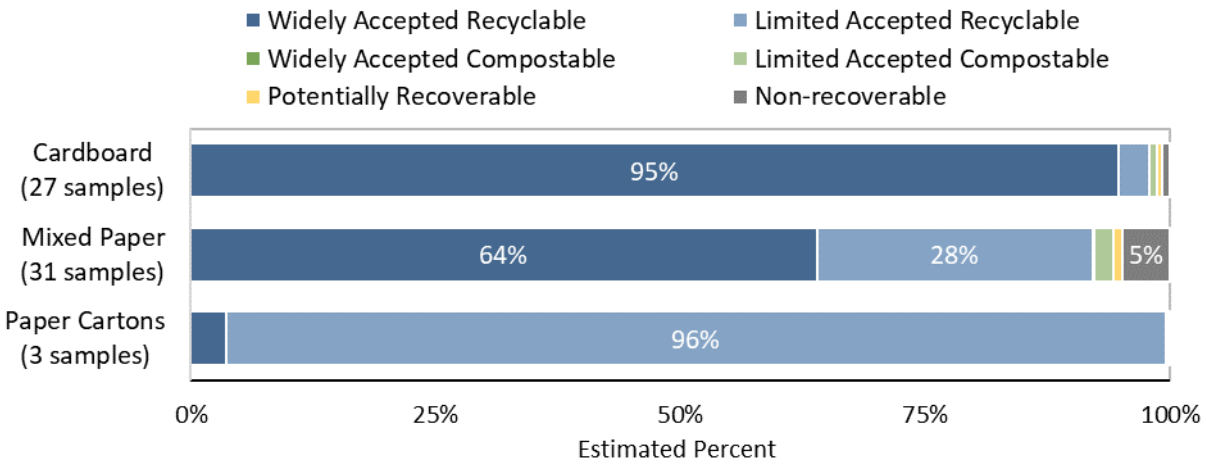
Fiber

Fiber includes Carboard, Mixed Paper, and Paper Cartons commodities.

Overview by Recoverability Group

Cardboard is made up of 95 percent Widely Accepted Recyclable materials, whereas Paper Cartons have a more limited market and are made up of 96 percent Limited Accepted Recyclable materials (Figure 27).

Figure 27. Composition by Recoverability: Outbound Fiber



Overview by Material Class

Cardboard and Paper Cartons are primarily composed of Paper Packaging (96% and 97%, respectively), while Mixed Paper is mostly split between Paper Packaging materials (40%) and Paper Products (52%; Figure 28). The Cardboard commodity is nearly 90 percent Cardboard & Kraft Packaging, the Mixed Paper commodity is approximately 23 percent Cardboard & Kraft Packaging and approximately 18 percent Mixed Paper Products, and the Paper Carton commodity is just over 95 percent Aseptic Containers and Gable Top Containers (Table 14).

Figure 28. Composition by Material Class: Outbound Fiber

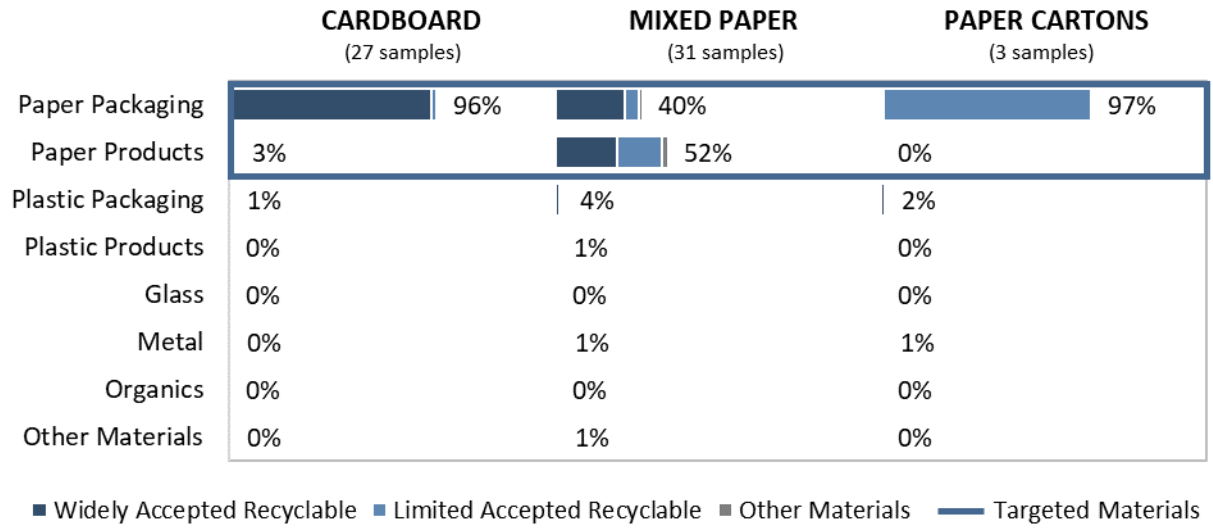


Table 14. Composition Table: Outbound Fiber

	CARDBOARD		MIXED PAPER		PAPER CARTONS	
Material	**Est. %**	**+ / -**	**Est. %**	**+ / -**	**Est. %**	**+ / -**
Widely Accepted Recyclable	**94.8%**	**1.5%**	**63.9%**	**3.8%**	**3.6%**	**0.9%**
Limited Accepted Recyclable	**3.0%**	**1.1%**	**28.2%**	**3.7%**	**96.0%**	**1.1%**
Widely Accepted Compostable	**0.0%**	**0.0%**	**0.1%**	**0.1%**	**-**	**-**
Limited Accepted Compostable	**0.8%**	**0.5%**	**1.9%**	**0.5%**	**0.1%**	**0.2%**
Potentially Recoverable	**0.5%**	**0.5%**	**1.0%**	**0.3%**	**0.1%**	**0.1%**
Non-recoverable	**0.9%**	**0.4%**	**4.9%**	**1.3%**	**0.2%**	**0.0%**
Paper Packaging	**95.9%**	**1.4%**	**40.0%**	**6.2%**	**96.9%**	**1.9%**
Cardboard & Kraft Packaging	89.7%	2.8%	23.3%	6.5%	0.8%	0.5%
Mixed Paper Packaging	3.1%	1.0%	8.9%	1.7%	0.5%	0.3%
Packaging Paper Cups	0.0%	0.0%	0.0%	0.0%	-	-
Aseptic Containers	0.1%	0.1%	0.2%	0.1%	17.1%	12.5%
Gable Top Containers	0.1%	0.0%	0.6%	0.2%	78.3%	12.1%
Other Polycoated Packaging	2.1%	0.8%	5.7%	1.2%	0.1%	0.1%
Single-use Food Service Compostable Paper	0.5%	0.4%	0.7%	0.2%	-	-
Other Compostable Paper Packaging	0.3%	0.4%	0.1%	0.1%	-	-
Newspaper Packaging	-	-	-	-	-	-
Remainder/Composite Paper Packaging	0.1%	0.0%	0.4%	0.1%	-	-
Paper Products	**2.6%**	**1.0%**	**52.0%**	**6.3%**	**0.1%**	**0.1%**
Newspaper Products	0.5%	0.3%	9.2%	2.7%	-	-
Cardboard & Kraft Paper Products	0.1%	0.1%	1.3%	1.8%	-	-
Magazines	0.7%	0.4%	11.5%	2.0%	-	-
High-grade Paper Products	0.2%	0.1%	6.7%	2.1%	-	-
Other Groundwood Paper Products	0.2%	0.2%	2.4%	1.1%	-	-
Mixed Paper Products	0.6%	0.3%	18.3%	3.0%	0.0%	0.0%
Product Paper Cups	-	-	-	-	-	-
Compostable Paper Products	0.0%	0.0%	1.0%	0.3%	-	-
Remainder/Composite Paper Products	0.4%	0.3%	1.6%	0.4%	0.0%	0.0%
Plastic Packaging	**0.7%**	**0.2%**	**3.9%**	**1.1%**	**1.8%**	**1.8%**
Plastic Products	**0.0%**	**0.0%**	**1.0%**	**0.4%**	**-**	**-**
Glass	**0.0%**	**0.0%**	**0.2%**	**0.1%**	**-**	**-**
Metal	**0.3%**	**0.3%**	**1.3%**	**0.4%**	**1.0%**	**1.2%**
Organics	**0.1%**	**0.1%**	**0.3%**	**0.1%**	**0.1%**	**0.2%**
Other Materials	**0.3%**	**0.2%**	**1.4%**	**0.6%**	**0.1%**	**0.0%**
Estimated Total	**100%**		**100%**		**100%**	
Sample Count		**27**		**31**		**3**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

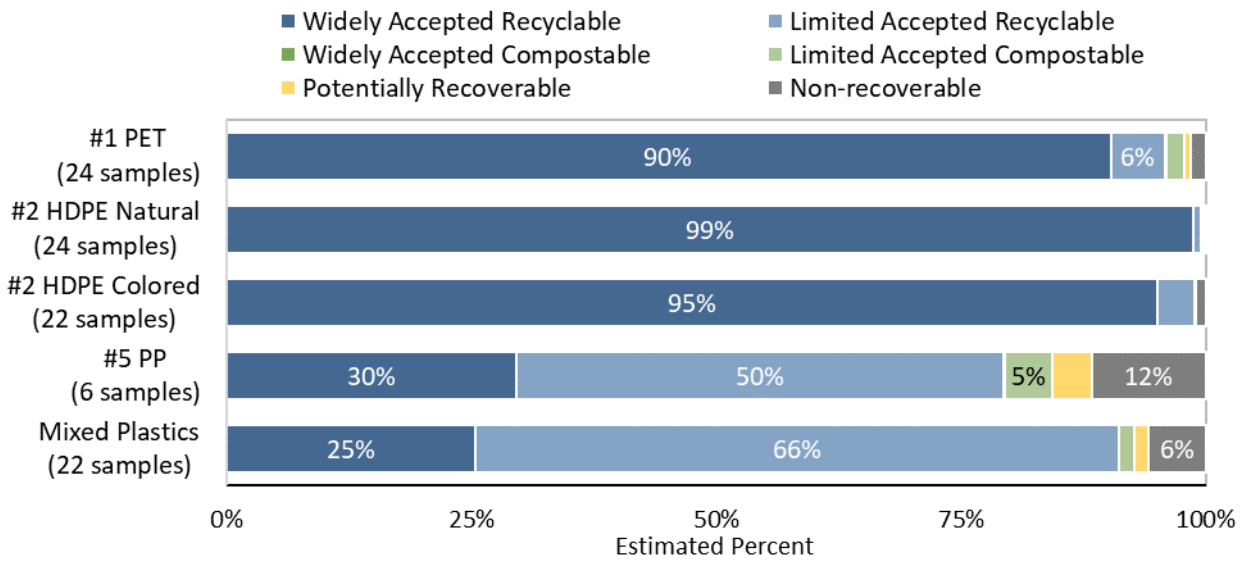
Plastics

Plastics includes PET (#1), HDPE (#2) Natural and Colored, PP (#5), and Mixed Plastics commodities.

Overview by Recoverability Group

PET and HPDE (Natural and Colored) commodities are made up of 90 percent or more Widely Accepted Recyclable materials, whereas PP and Mixed Plastics have more limited markets (Widely Accepted Recyclable materials account for only 30% and 25%, respectively; Figure 29). Limited Acceptable Recyclable materials make up a significant portion of PP (50%) and Mixed Plastics (66%).

Figure 29. Composition by Recoverability: Outbound Plastics



Overview by Material Class

The PET and HDPE (Natural and Colored) commodities are mostly Plastic Packaging, at 93 percent and 99 percent, respectively. The PP commodity is 71 percent Plastic Packaging and the Mixed Plastics commodity is 42 percent Plastic Packaging and 48 percent Plastic Products (Figure 30, Table 15).

Figure 30. Composition by Class: Outbound Plastics

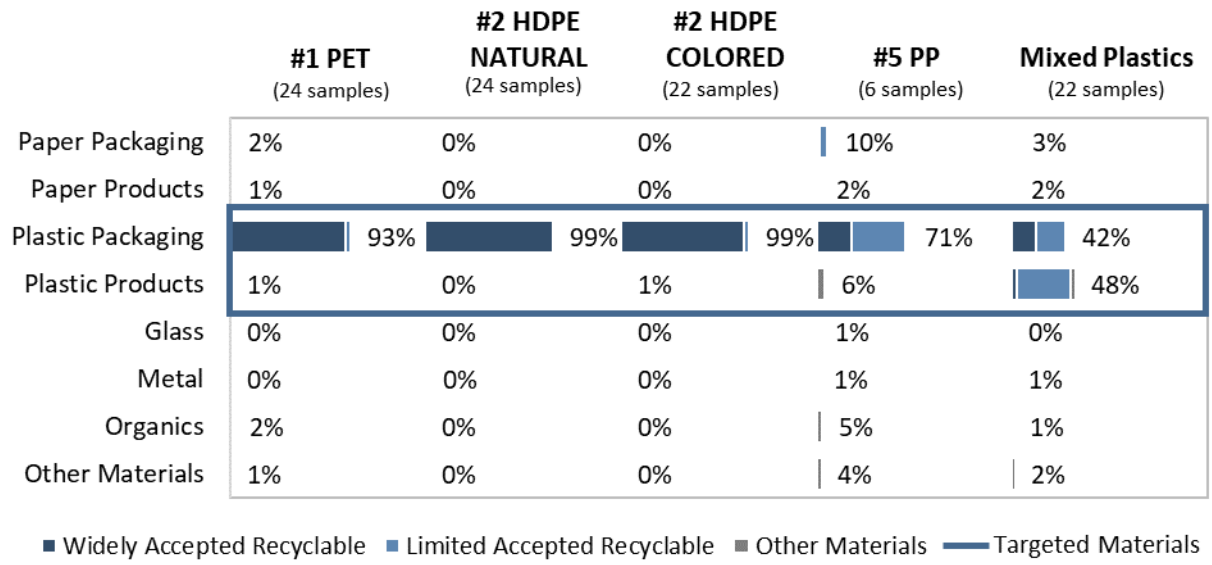


Table 15. Composition Table: Outbound Plastics

Material	#1 PET PLASTICS		#2 HDPE NATURAL PLASTICS		#2 HDPE COLORED PLASTICS		#5 PP PLASTICS		MIXED PLASTICS	
	Est. %	+ / -	Est. %	+ / -	Est. %	+ / -	Est. %	+ / -	Est. %	+ / -
Widely Accepted Recyclable	**90.3%**	**4.3%**	**98.8%**	**0.6%**	**95.1%**	**1.6%**	**29.7%**	**5.5%**	**25.4%**	**11.6%**
Limited Accepted Recyclable	**5.5%**	**2.3%**	**0.8%**	**0.4%**	**3.8%**	**1.6%**	**49.7%**	**6.0%**	**65.7%**	**12.2%**
Widely Accepted Compostable	**0.1%**	**0.2%**	-	-	-	-	**0.1%**	**0.1%**	**0.0%**	**0.0%**
Limited Accepted Compostable	**1.8%**	**1.4%**	**0.0%**	**0.0%**	**0.1%**	**0.1%**	**4.9%**	**6.9%**	**1.5%**	**2.1%**
Potentially Recoverable	**0.7%**	**0.4%**	**0.2%**	**0.2%**	**0.1%**	**0.1%**	**4.0%**	**4.3%**	**1.4%**	**1.0%**
Non-recoverable	**1.5%**	**0.9%**	**0.3%**	**0.1%**	**1.0%**	**0.4%**	**11.6%**	**2.5%**	**5.9%**	**3.1%**
Paper Packaging	**2.0%**	**0.8%**	**0.3%**	**0.1%**	**0.2%**	**0.1%**	**10.2%**	**3.9%**	**2.8%**	**1.8%**
Paper Products	**1.2%**	**0.4%**	**0.2%**	**0.1%**	**0.1%**	**0.1%**	**2.4%**	**1.6%**	**2.4%**	**1.7%**
Plastic Packaging	**93.0%**	**3.1%**	**99.0%**	**0.7%**	**98.6%**	**0.4%**	**70.6%**	**10.7%**	**42.1%**	**13.0%**
#1 PETE Bottles	73.1%	5.7%	0.8%	0.5%	0.9%	0.4%	15.4%	4.1%	4.6%	4.5%
#1 PETE Non-bottles	14.4%	2.4%	0.4%	0.3%	0.1%	0.1%	7.7%	4.8%	10.4%	8.7%
#2 HDPE Natural Bottles	0.3%	0.1%	94.3%	2.3%	2.8%	1.0%	0.8%	0.3%	0.1%	0.1%
#2 HDPE Colored Bottles	0.5%	0.2%	0.8%	0.4%	72.1%	4.9%	1.5%	0.6%	0.6%	0.5%
#2 HDPE Jars & Tubs	0.2%	0.2%	2.0%	0.8%	18.9%	2.6%	1.4%	1.2%	3.0%	2.6%
#3 PVC Packaging	-	-	-	-	-	-	0.1%	0.1%	0.0%	0.1%
#4 LDPE Packaging	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	0.1%	0.1%
#5 PP Packaging	2.7%	1.8%	0.4%	0.2%	1.7%	0.9%	33.3%	8.6%	19.2%	8.5%
#6 PS Packaging	0.3%	0.3%	0.0%	0.0%	0.1%	0.1%	1.1%	0.6%	0.3%	0.3%
#7 Other/Unknown Packaging	0.8%	0.3%	0.1%	0.1%	1.6%	0.8%	6.7%	3.9%	2.4%	1.6%
PLA Compostable Food Packaging	0.0%	0.0%	-	-	-	-	0.2%	0.1%	0.0%	0.0%
EPS Expanded Polystyrene Packaging	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	1.0%	0.5%	0.1%	0.0%
Plastic Merchandise Bags	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%
Transportation Packaging Film Plastic	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%	0.1%	0.1%	0.1%
Packaging Film Plastic	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	1.0%	1.0%	0.9%	1.2%
Flexible Plastic Packaging	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Remainder/Composite Plastic	0.1%	0.1%	0.0%	0.0%	0.3%	0.2%	-	-	0.2%	0.2%
Plastic Products	**0.9%**	**0.6%**	**0.1%**	**0.1%**	**0.7%**	**0.2%**	**6.2%**	**1.2%**	**48.5%**	**13.8%**
#1 PETE Products	-	-	-	-	-	-	-	-	-	-
#2 HDPE Products	-	-	0.0%	0.0%	0.1%	0.1%	-	-	3.7%	5.0%
#3 PVC Products	-	-	-	-	-	-	-	-	-	-
#4 LDPE Products	-	-	-	-	-	-	-	-	-	-
#5 PP Products	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	1.6%	1.6%
#6 PS Products	-	-	-	-	0.0%	0.0%	-	-	-	-
Bulky Rigid Plastic Products	0.2%	0.2%	-	-	0.1%	0.1%	-	-	39.9%	12.9%
PLA Compostable Plastic Bags & Film	0.0%	0.0%	-	-	-	-	-	-	-	-
PLA Compostable Plastic Utensils	-	-	-	-	-	-	-	-	0.0%	0.1%
#7 Other/Unknown Products	0.6%	0.5%	0.0%	0.0%	0.2%	0.1%	3.4%	1.2%	2.1%	1.0%
Plastic Garbage Bags	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.5%	0.8%
Plastic Non-bag Film Products	0.0%	0.0%	-	-	0.0%	0.0%	-	-	0.0%	0.1%
Remainder/Composite Plastic Products	0.1%	0.1%	-	-	0.2%	0.2%	2.7%	1.9%	0.6%	0.5%
Glass	**0.1%**	**0.1%**	**-**	**-**	**-**	**-**	**1.3%**	**1.3%**	**-**	**-**
Metal	**0.3%**	**0.1%**	**0.5%**	**0.4%**	**0.2%**	**0.1%**	**0.7%**	**0.2%**	**0.6%**	**0.3%**
Organics	**2.0%**	**1.7%**	**0.0%**	**0.0%**	**0.1%**	**0.1%**	**4.7%**	**7.1%**	**1.4%**	**2.0%**
Other Materials	**0.5%**	**0.4%**	**0.1%**	**0.1%**	**0.1%**	**0.1%**	**3.9%**	**3.8%**	**2.3%**	**1.7%**
Estimated Total	**100%**		**100%**		**100%**		**100%**		**100%**	
Sample Count		**24**		**24**		**22**		**6**		**22**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

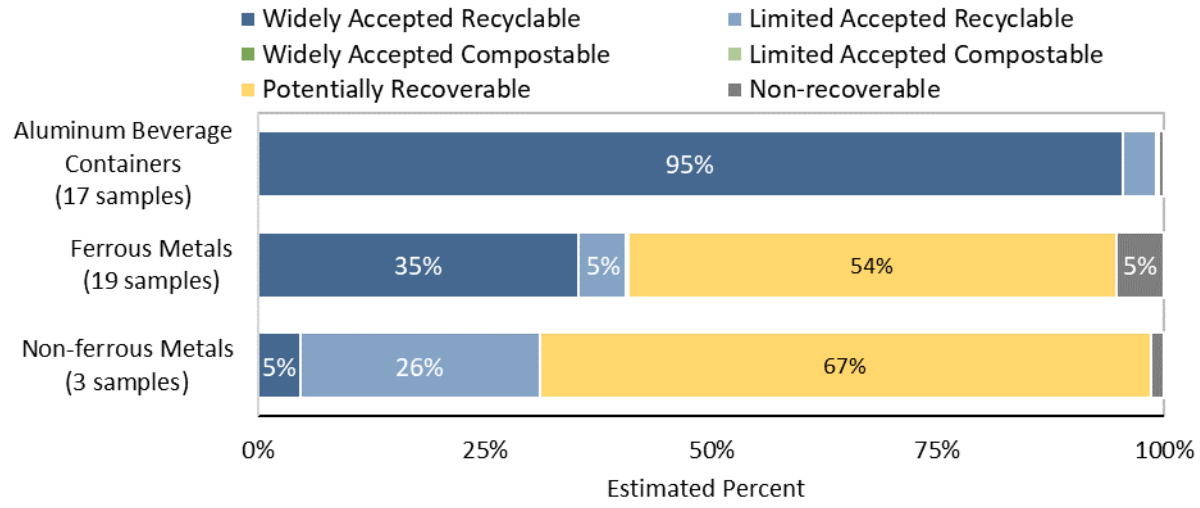
Metals

Metals includes Aluminum Beverage Containers, Ferrous Metals, and Non-ferrous Metals commodities.

Overview by Recoverability Group

The Aluminum Beverage Containers commodity is made up of 95 percent Widely Accepted Recyclable materials, Ferrous Metals is composed of 35 percent Widely Accepted Recyclable materials, and Non-ferrous Metals only includes 5 percent Widely Accepted Recyclable materials (Figure 31).

Figure 31. Composition by Recoverability: Outbound Metals



Overview by Material Class

Materials in the Metal class account for 90 percent or more of all three commodities (Figure 32). The Aluminum Beverage Cans commodity is almost 93 percent Aluminum Beverage Cans, the Ferrous Metals commodity is just over 51 percent Other Metals, and the non-Ferrous Metals commodity is just over 67 percent Other Metals (Table 16).

Figure 32. Composition by Material Class: Outbound Metals

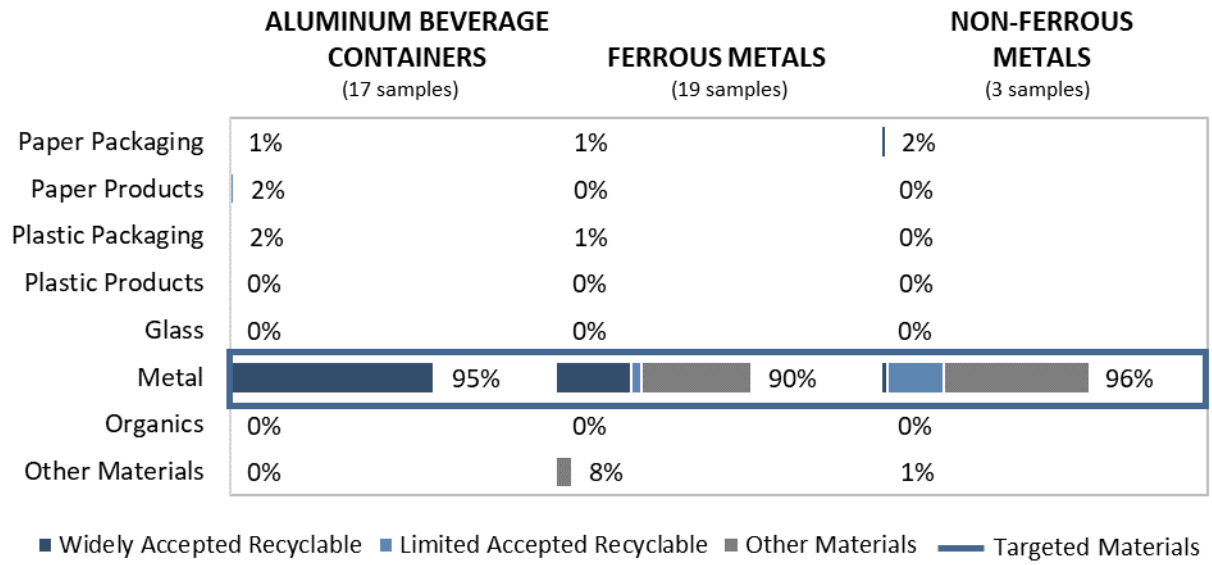


Table 16. Composition Table: Outbound Metals

Material	ALUMINUM BEVERAGE CONTAINERS Est. %	+ / -	FERROUS METALS Est. %	+ / -	NON-FERROUS METALS Est. %	+ / -
Widely Accepted Recyclable	**95.4%**	**2.7%**	**35.4%**	**16.7%**	**4.8%**	**4.0%**
Limited Accepted Recyclable	**3.6%**	**2.5%**	**5.2%**	**1.7%**	**26.3%**	**14.0%**
Widely Accepted Compostable	**0.0%**	**0.0%**	**0.0%**	**0.1%**	**-**	**-**
Limited Accepted Compostable	**0.1%**	**0.1%**	**0.2%**	**0.1%**	**-**	**-**
Potentially Recoverable	**0.3%**	**0.2%**	**53.9%**	**18.5%**	**67.4%**	**11.6%**
Non-recoverable	**0.6%**	**0.3%**	**5.3%**	**5.3%**	**1.5%**	**1.6%**
Paper Packaging	**0.9%**	**0.6%**	**0.6%**	**0.4%**	**2.0%**	**1.2%**
Paper Products	**2.2%**	**2.5%**	**0.4%**	**0.2%**	**0.3%**	**0.3%**
Plastic Packaging	**1.6%**	**0.7%**	**0.8%**	**0.4%**	**0.3%**	**0.3%**
Plastic Products	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.3%**	**0.4%**
Glass	**0.0%**	**0.1%**	**0.0%**	**0.1%**	**-**	**-**
Metal	**94.9%**	**2.9%**	**90.4%**	**6.4%**	**95.9%**	**0.6%**
Aluminum Beverage Cans	92.8%	3.3%	0.2%	0.1%	0.3%	0.3%
Food Cans-Tinned	1.4%	1.0%	34.5%	13.8%	2.2%	3.0%
Aluminum Foil/Containers	0.3%	0.2%	0.5%	0.5%	6.0%	8.1%
Other Aluminum	0.2%	0.2%	2.8%	1.3%	20.2%	15.5%
Empty Aerosol Cans	0.2%	0.3%	1.2%	0.6%	-	-
Other Metal	0.1%	0.1%	51.1%	17.7%	67.1%	11.5%
Organics	**0.0%**	**0.0%**	**0.1%**	**0.1%**	**0.1%**	**0.1%**
Other Materials	**0.2%**	**0.3%**	**7.5%**	**6.4%**	**1.1%**	**1.1%**
Estimated Total	**100%**		**100%**		**100%**	
Sample Count		**17**		**19**		**3**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Outbound Residual Materials

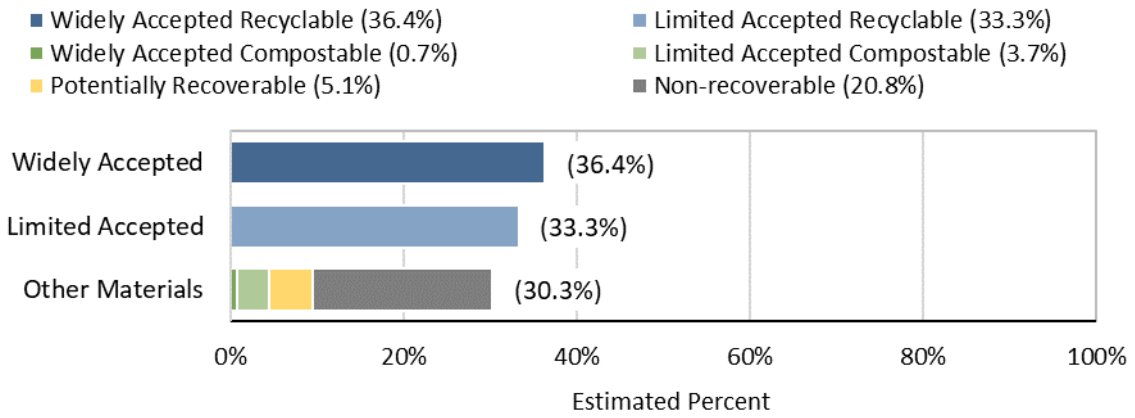
This section presents the characterization results of outgoing (post-sort) materials destined for disposal. The composition of the Outbound Residuals is reported in this section as percentages; tons of residual material are not reported consistently to Ecology and are not available for this analysis.

Residuals are materials that remain after processing and are typically disposed in a landfill or incinerated. Residuals are primarily composed of non-recoverable materials but may also include recyclable materials as a result of the sorting process. Residuals were sampled at multiple points throughout the sorting process.

Overview by Recoverability Group

An estimated 36.4 percent of materials in the Outbound Residuals substream are Widely Accepted Recyclable in curbside recycling programs (Figure 33). Limited Acceptable Recyclable materials account for 33.3 percent and Other Materials account for 30.3 percent.

Figure 33. Composition by Recoverability: Outbound Residuals



Overview by Material Class

Materials in the Paper Products class account for the greatest proportion of Outbound Residuals (24.4%), followed by Paper Packaging (23.3%) and Plastic Packaging (19.7%; Figure 34). Metal and Paper Packaging have the greatest proportions of Widely Accepted Recyclables (73.6% and 73.5%, respectively). The most prevalent material type overall in Outbound Residuals is Mixed Paper Products (15.2%; Table 17).

Figure 34. Composition by Material Class: Outbound Residuals

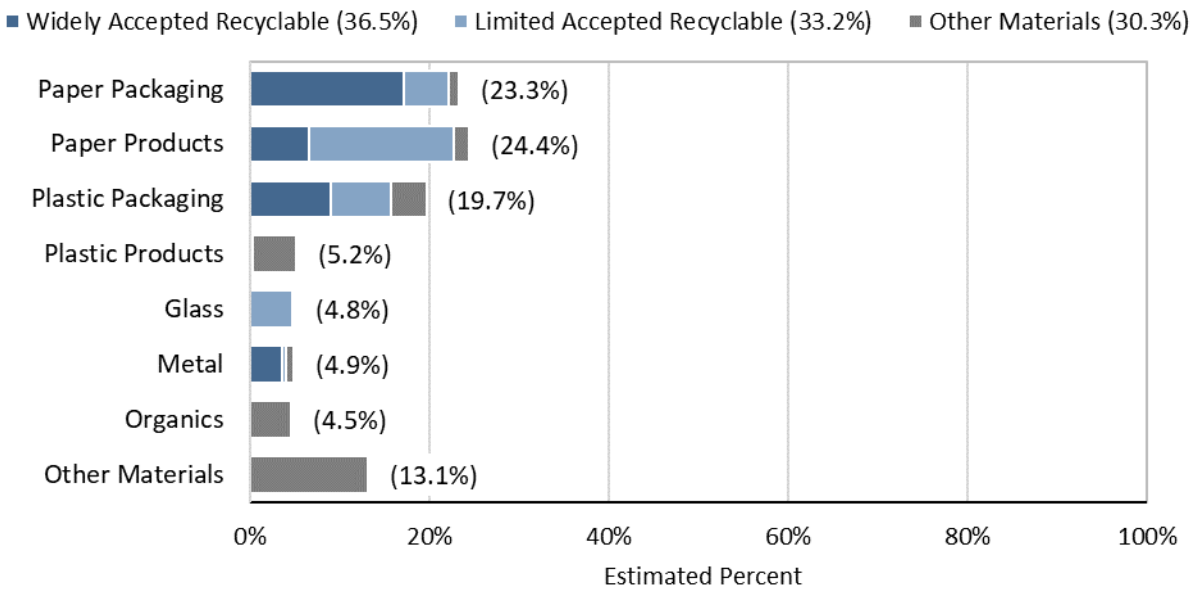


Table 17. Detailed Composition Table: Outbound Residuals

Material	Est. %	+ / -
Widely Accepted Recyclable	**36.4%**	**4.0%**
Limited Accepted Recyclable	**33.3%**	**4.4%**
Widely Accepted Compostable	**0.7%**	**0.4%**
Limited Accepted Compostable	**3.7%**	**1.1%**
Potentially Recoverable	**5.1%**	**1.6%**
Non-recoverable	**20.8%**	**3.6%**
Paper Packaging	**23.3%**	**3.4%**
Cardboard & Kraft Packaging	8.6%	2.6%
Mixed Paper Packaging	8.5%	2.5%
Packaging Paper Cups	0.1%	0.1%
Aseptic Containers	1.3%	0.3%
Gable Top Containers	2.0%	0.5%
Other Polycoated Packaging	1.6%	0.6%
Single-use Food Service Compostable Paper	0.2%	0.1%
Other Compostable Paper Packaging	0.2%	0.3%
Newspaper Packaging	0.1%	0.1%
Remainder/Composite Paper Packaging	0.7%	0.3%
Plastic Packaging	**19.7%**	**2.9%**
#1 PETE Bottles	4.1%	0.9%
#1 PETE Non-bottles	1.7%	0.5%
#2 HDPE Natural Bottles	1.2%	0.5%
#2 HDPE Colored Bottles	1.3%	0.4%
#2 HDPE Jars & Tubs	0.7%	0.2%
#3 PVC Packaging	0.1%	0.1%
#4 LDPE Packaging	0.0%	0.0%
#5 PP Packaging	3.6%	0.8%
#6 PS Packaging	0.5%	0.3%
#7 Other/Unknown Packaging	2.6%	0.6%
PLA Compostable Food Packaging	0.0%	0.0%
EPS Expanded Polystyrene Packaging	0.5%	0.1%
Plastic Merchandise Bags	0.5%	0.2%
Transportation Packaging Film Plastic	0.4%	0.1%
Packaging Film Plastic	1.6%	0.4%
Flexible Plastic Packaging	0.1%	0.1%
Remainder/Composite Plastic	0.9%	0.6%
Metal	**4.9%**	**1.1%**
Aluminum Beverage Cans	2.4%	0.7%
Food Cans-Tinned	1.2%	0.4%
Aluminum Foil/Containers	0.2%	0.1%
Other Aluminum	0.2%	0.1%
Empty Aerosol Cans	0.0%	0.0%
Other Metal	0.9%	0.4%
Glass	**4.8%**	**1.9%**
Clear Glass Containers	2.3%	1.0%
Green Glass Containers	1.4%	0.5%
Other Colored Glass Containers	1.1%	0.5%
Plate Glass	-	-
Non-glass Ceramics	0.0%	0.0%
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**24.4%**	**4.4%**
Newspaper Products	1.7%	0.5%
Cardboard & Kraft Paper Products	0.6%	0.5%
Magazines	3.0%	0.8%
High-grade Paper Products	1.2%	0.3%
Other Groundwood Paper Products	0.9%	0.6%
Mixed Paper Products	15.2%	4.5%
Product Paper Cups	-	-
Compostable Paper Products	0.8%	0.2%
Remainder/Composite Paper Products	1.0%	0.4%
Plastic Products	**5.2%**	**0.9%**
#1 PETE Products	0.1%	0.1%
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	0.1%	0.1%
#6 PS Products	0.0%	0.0%
Bulky Rigid Plastic Products	0.1%	0.1%
PLA Compostable Plastic Bags & Film	0.0%	0.0%
PLA Compostable Plastic Utensils	0.0%	0.0%
#7 Other/Unknown Products	3.2%	0.7%
Plastic Garbage Bags	0.5%	0.2%
Plastic Non-bag Film Products	0.0%	0.0%
Remainder/Composite Plastic Products	1.2%	0.4%
Organics	**4.5%**	**1.6%**
Yard Debris	0.1%	0.1%
Food Processing Wastes	-	-
Other Compostables	0.0%	0.0%
Clean Wood	0.6%	0.4%
Fruits & Vegetables, Edible	0.3%	0.2%
Fruits & Vegetables, Non-edible	0.2%	0.1%
Homegrown Fruits & Vegetables	-	-
Meat, Edible	0.1%	0.2%
Meat, Non-edible	0.0%	0.0%
Mixed/Other Food Waste, Edible	1.8%	0.9%
Mixed/Other Food Waste, Non-edible	0.0%	0.0%
Animal Manure & Litter	0.1%	0.1%
Remainder/Composite Organics	1.2%	1.1%
Other Materials	**13.1%**	**3.7%**
Electronics & Small Appliances	0.2%	0.2%
Textiles (synthetic) & Shoes	1.0%	0.5%
Construction & Demolition Waste	1.6%	0.9%
Tanglers (non-plastic)	0.1%	0.0%
HHW/Special Waste	0.2%	0.1%
Diapers	0.7%	0.3%
Furniture/Bulky	-	-
Mixed Residue	9.3%	3.6%
Estimated Tons	**100%**	
Sample Count		**53**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Inbound Organics

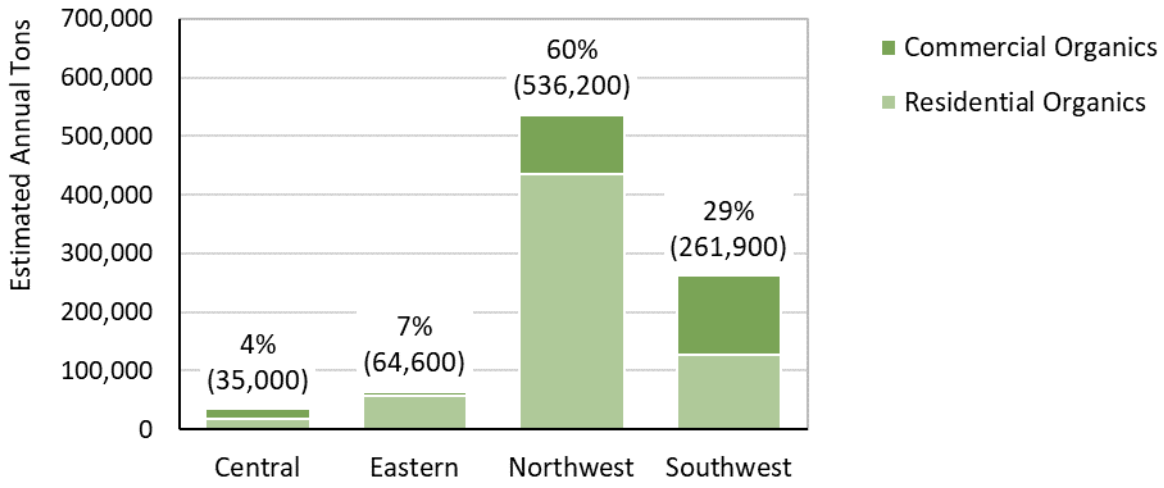
This section provides the characterization results for hauler-collected organic materials destined for composting or other organics recovery programs. This report presents results for Residential generators only. Due to the low number of organics samples collected from the Commercial sector, the estimated composition for this substream is not included in this report. The sampling results could not provide an accurate estimate of the statewide composition for that substream.

Inbound Organics Tons

An estimated 897,700 tons of the targeted organics streams are collected statewide each year. According to tonnage data provided by Ecology, Residential Inbound Organics account for an estimated 71 percent (637,000 tons) of organics collected statewide, and Commercial Inbound Organics (not included in this report) account for the remaining 29 percent (260,700 tons; Figure 35) of the targeted tonnage.[6]

- In the Southwest region, approximately 52 percent of hauler-collected Inbound Organics is from Commercial generators and 48 percent is from Residential generators.
- In the Central region, approximately 49 percent of hauler-collected Inbound Organics is from Commercial generators and 51 percent is from Residential generators.
- In the Northwest region, approximately 19 percent of hauler-collected Inbound Organics is from Commercial generators and 81 percent is from Residential generators.
- In the Eastern region, approximately 11 percent of hauler-collected Inbound Organics is from Commercial generators and 89 percent is from Residential generators.

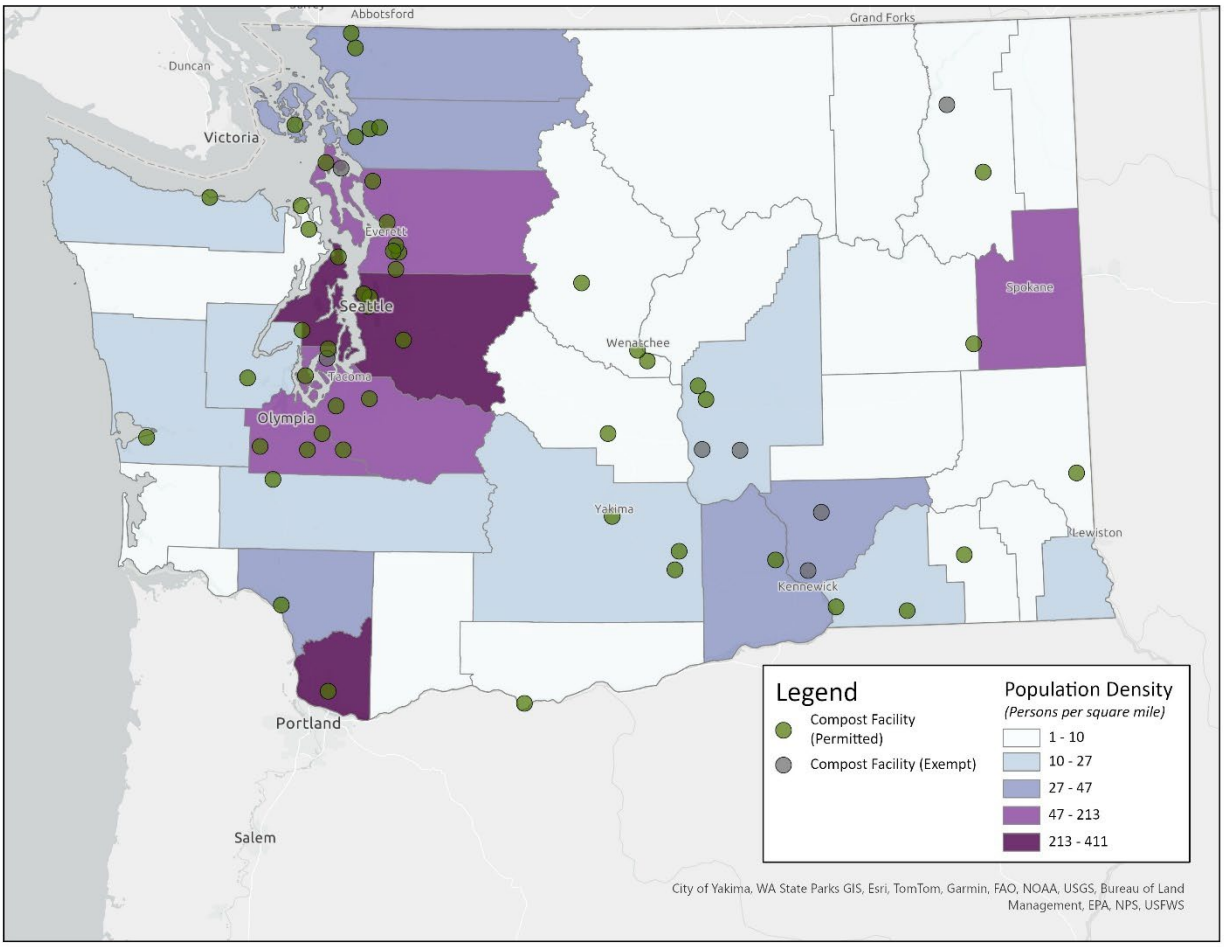
Figure 35. Estimated Annual Organics Tons by Region



[6] The amount of Commercial Inbound Organics tons is likely an underestimate because haulers operating on the open market for commercial organics collection are not required to report tons to Ecology.

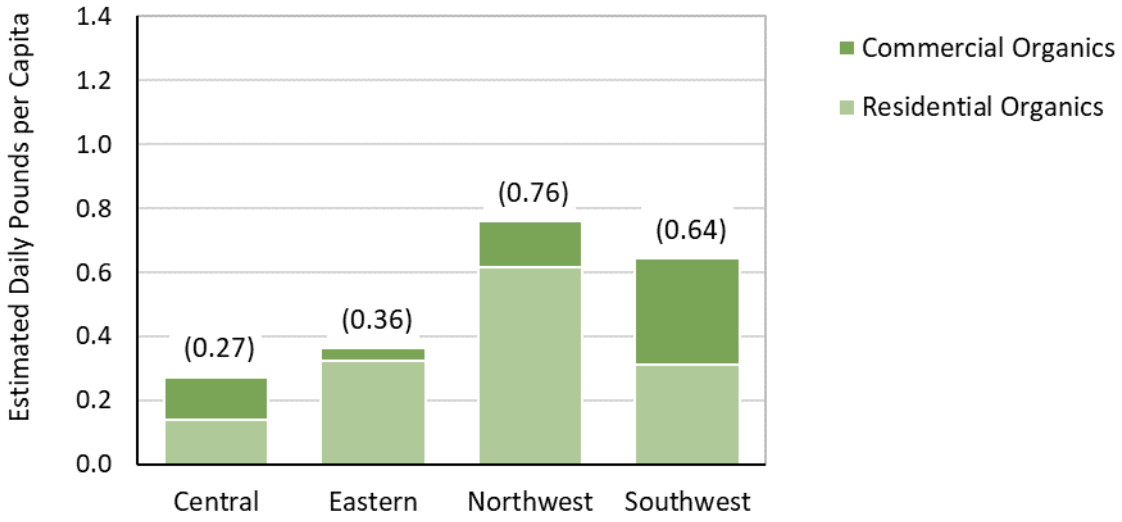
The regional distribution of hauler-collected Inbound Organics is also reflected in population density and the location of compost facilities statewide (Figure 36). Regions that generate more organics (Northwest and Southwest) also have higher population densities and more compost facilities.

Figure 36. Map of Compost Facilities in Washington State



Statewide, organic material collected per capita per day in streams targeted for this study is estimated at 0.63 pounds per day. The Northwest region generates the most hauler-collected Inbound Organics at 0.76 pounds per capita per day, followed by the Southwest region at 0.64 pounds per capita per day, the Eastern region at 0.36 pounds per capita per day, and the Central region at 0.27 pounds per capita per day (Figure 37).

Figure 37. Estimated Organics Collected per Capita by Region



Residential Organics

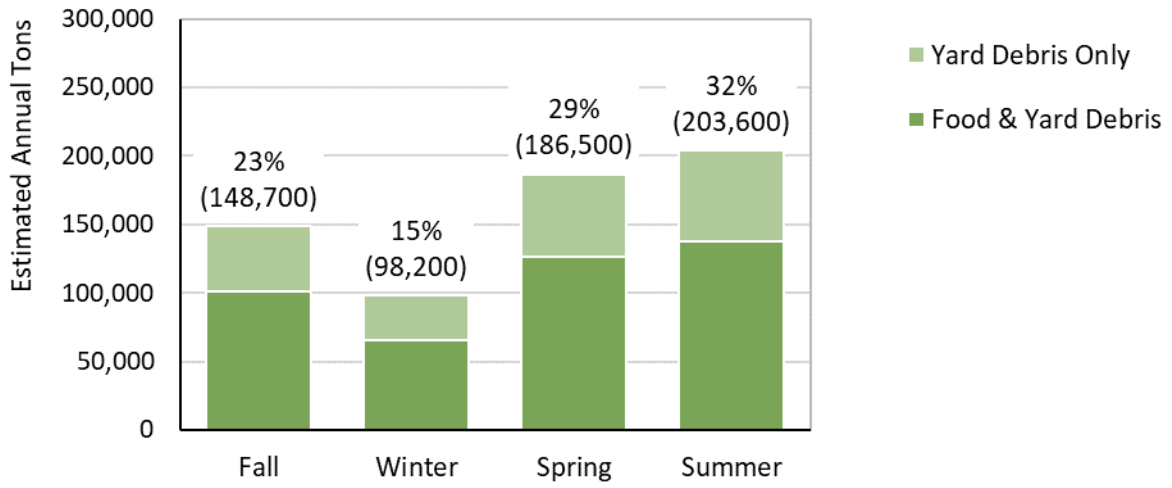
This section includes an overview of the materials present in the hauler-collected Residential Inbound Organics stream. The overview includes the estimated Residential Inbound Organics tons by substream and season and a breakdown of materials based on their recoverability group and material class. The annual tonnage of hauler-collected Residential Inbound Organics statewide is an estimated 637,000 tons. This includes material collected from Single-family generators only.

Figure 38 shows the estimated tons of two hauler-collected Residential Inbound Organics substreams, Yard Debris Only and Food & Yard Debris, throughout the year. Both substreams contain over 90 percent Yard Debris materials, but food waste is only accepted in the Food & Yard Debris substream.

Because Yard Debris materials make up a significant portion of the Residential Inbound Organics stream (87.3%), the amount of organic material produced and processed statewide varies seasonally. Due to lack of landscaping activity in the winter, haulers in the Eastern region do not collect Residential Inbound Organics from December to February each year.

Seasonal tons are approximated from monthly tonnage reports provided by a limited number of organics processing facilities in Washington state. A complete compositional estimate of hauler-collected Residential Inbound Organics by season (fall, winter, spring, summer) is not included in this report due to sampling limitations at the regional level. Samples were not collected in every region during each season of field work, which limited how much the analysis could accommodate regional and seasonal variation simultaneously.

Figure 38. Estimated Residential Organics Tons by Collection Stream and Season



Residential Inbound Organics by Region

Statewide, Widely Accepted Compostable materials account for approximately 90 percent of the hauler-collected Residential Inbound Organics stream (Figure 39). All regions have 88 percent or more Widely Accepted Compostable materials, and the Central region has the greatest proportion of Widely Accepted Compostable materials (nearly 100%). In the Central and Eastern regions, 98 percent of the Residential Inbound Organics stream is Yard Debris (Figure 40). In the Northwest region, 87 percent is Yard Debris, and in the Southwest region, 88 percent is Yard Debris.

Figure 39. Composition by Recoverability: Residential Inbound Organics by Region

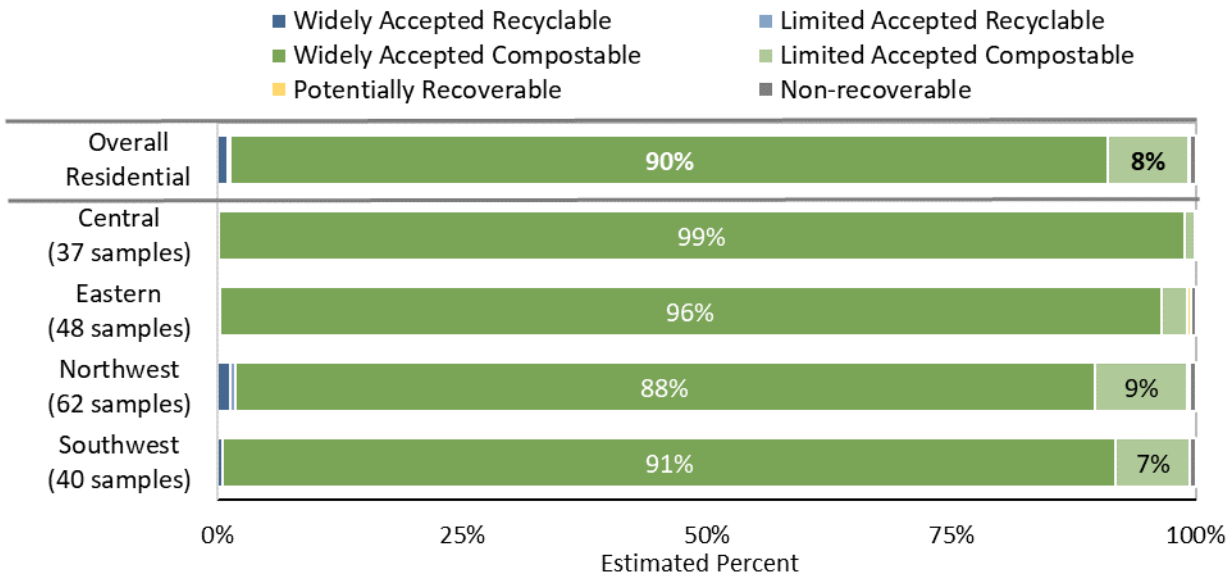
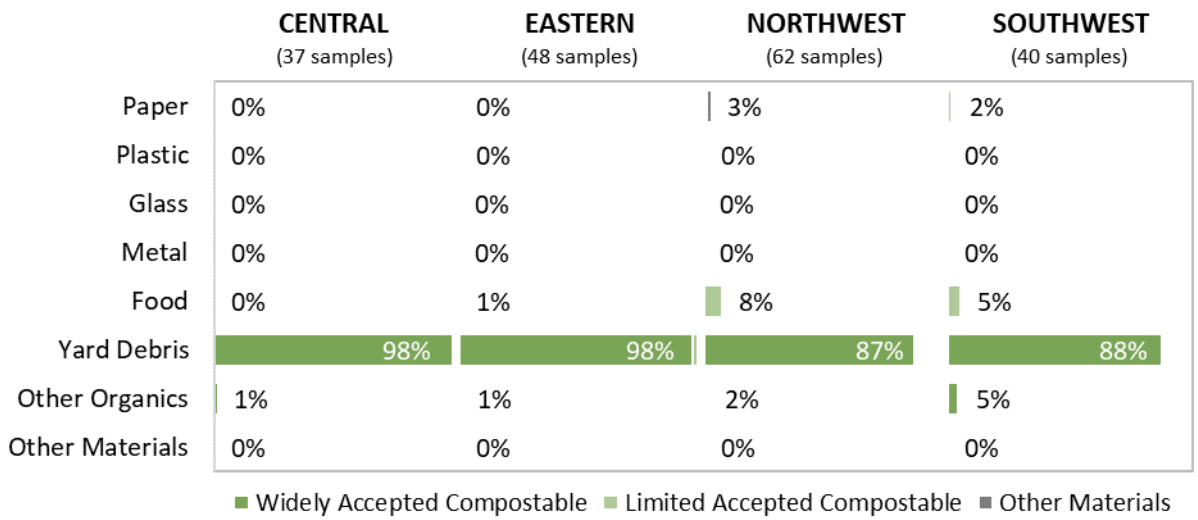


Figure 40. Composition by Material Class: Residential Inbound Organics by Region

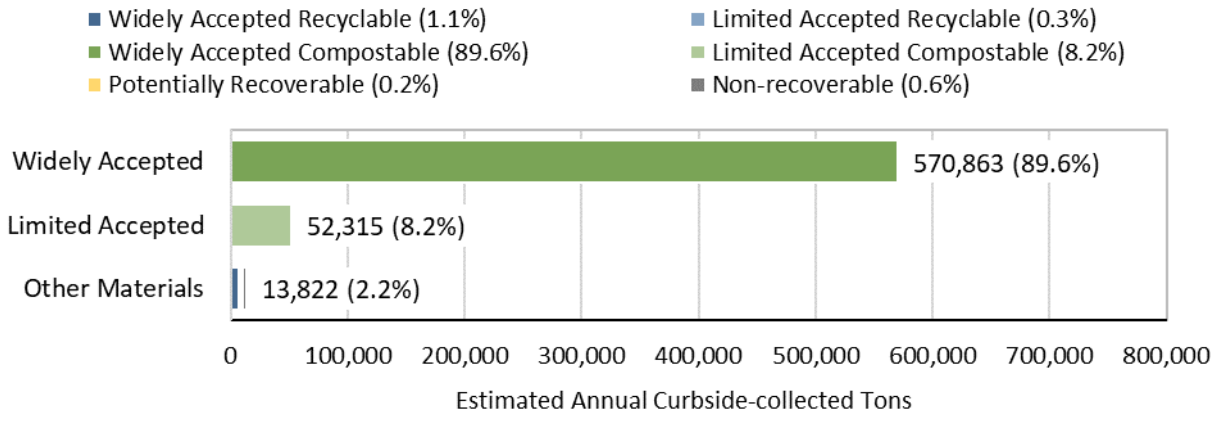


Overview by Recoverability Group

In the hauler-collected Residential Inbound Organics stream, an estimated 89.6 percent (570,863 tons) of material is Widely Accepted Compostable in curbside organics programs (Figure 41). Limited Accepted Compostable materials, including food waste, account for 8.2 percent (52,315 tons) of the stream and Other Materials account for the remaining 2.2 percent (13,822 tons).

Potential contaminants in the hauler-collected Residential Inbound Organics stream (represented by the Limited Accepted and Other Materials categories in Figure 41) include lightweight items like plastic film bags and related debris. The compositions by weight presented throughout this report may not fully illustrate the volume of lightweight potential contaminants in the Residential Inbound Organics stream.[7]

Figure 41. Tons by Recoverability: Residential Inbound Organics

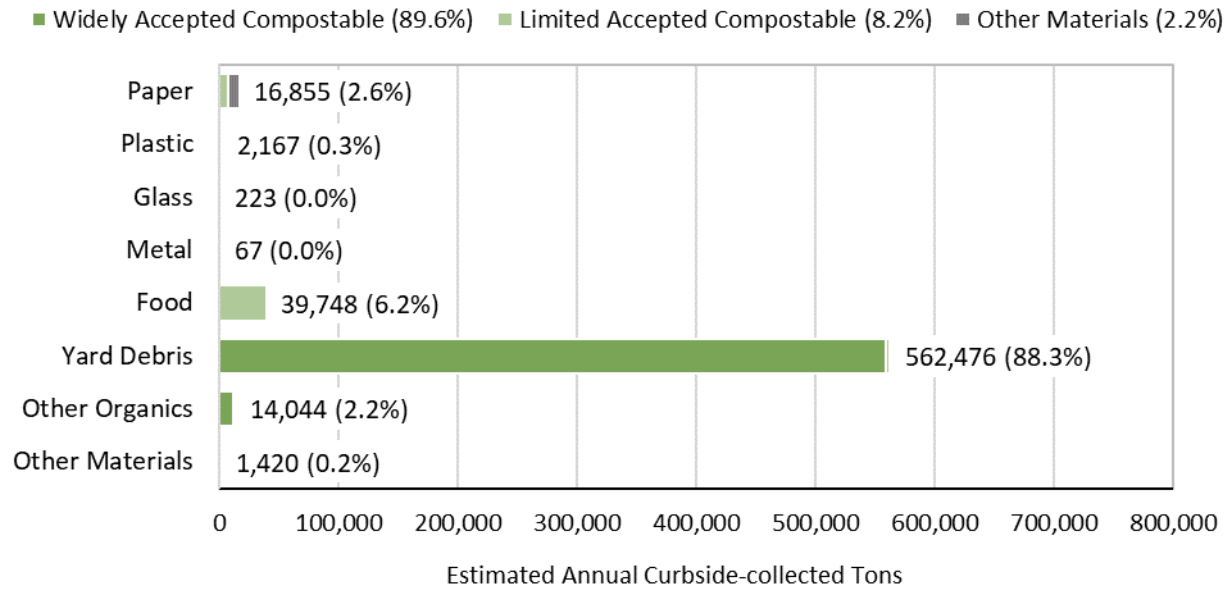


[7] This gap in analysis will be further vetted through facility interviews via a research study that Cascadia is conducting for HB 1033: Developing recommendations for compostable products. A final report with this information included is due to the Legislature by September 2024.

Overview by Material Class

Organic materials are split into three material classes (Food, Yard Debris, and Other Organics) for the figure below. Yard Debris includes Homegrown Fruits & Vegetables and Other Organics includes Clean Wood. Materials combined in the three organics material classes account for the majority (96.7%) of the hauler-collected Residential Inbound Organics stream (Figure 42). Yard Debris specifically is the most prevalent material class, accounting for 88.3 percent of the stream.

Figure 42. Tons by Material Class: Residential Inbound Organics



The most prevalent Widely Accepted Compostable material is Yard Debris (87.7% or 558,665 tons; Table 18). Along with Yard Debris, the most prevalent composted material types overall in the hauler-collected Residential Inbound Organics stream are Fruits & Vegetables, Non-edible (2.0% or 13,023 tons) and Clean Wood (1.9% or 12,131 tons).

Table 18. Detailed Composition Table: Residential Inbound Organics

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**1.1%**	**0.3%**	**6,984**
Limited Accepted Recyclable	**0.3%**	**0.1%**	**2,034**
Widely Accepted Compostable	**89.6%**	**2.2%**	**570,863**
Limited Accepted Compostable	**8.2%**	**2.0%**	**52,315**
Potentially Recoverable	**0.2%**	**0.1%**	**1,055**
Non-recoverable	**0.6%**	**0.2%**	**3,749**
Paper Packaging	**1.7%**	**0.5%**	**10,564**
Cardboard & Kraft Packaging	0.7%	0.2%	4,488
Mixed Paper Packaging	0.2%	0.1%	1,304
Packaging Paper Cups	0.0%	0.0%	2
Aseptic Containers	0.0%	0.0%	44
Gable Top Containers	0.1%	0.1%	582
Other Polycoated Packaging	0.1%	0.1%	780
Single-use Food Service Compostable Paper	0.4%	0.1%	2,540
Other Compostable Paper Packaging	0.1%	0.1%	535
Newspaper Packaging	-	-	-
Remainder/Composite Paper Packaging	0.0%	0.0%	288
Plastic Packaging	**0.1%**	**0.0%**	**570**
#1 PETE Bottles	0.0%	0.0%	67
#1 PETE Non-bottles	0.0%	0.0%	59
#2 HDPE Natural Bottles	0.0%	0.0%	21
#2 HDPE Colored Bottles	0.0%	0.0%	54
#2 HDPE Jars & Tubs	0.0%	0.0%	6
#3 PVC Packaging	-	-	-
#4 LDPE Packaging	-	-	-
#5 PP Packaging	0.0%	0.0%	88
#6 PS Packaging	0.0%	0.0%	19
#7 Other/Unknown Packaging	0.0%	0.0%	20
PLA Compostable Food Packaging	0.0%	0.0%	58
EPS Expanded Polystyrene Packaging	0.0%	0.0%	12
Plastic Merchandise Bags	0.0%	0.0%	27
Transportation Packaging Film Plastic	0.0%	0.0%	12
Packaging Film Plastic	0.0%	0.0%	110
Flexible Plastic Packaging	0.0%	0.0%	5
Remainder/Composite Plastic	0.0%	0.0%	11
Metal	**0.0%**	**0.0%**	**67**
Aluminum Beverage Cans	0.0%	0.0%	33
Food Cans-Tinned	0.0%	0.0%	13
Aluminum Foil/Containers	0.0%	0.0%	10
Other Aluminum	-	-	-
Empty Aerosol Cans	-	-	-
Other Metal	0.0%	0.0%	11
Glass	**0.0%**	**0.0%**	**223**
Clear Glass Containers	0.0%	0.0%	84
Green Glass Containers	0.0%	0.0%	63
Other Colored Glass Containers	0.0%	0.0%	39
Plate Glass	-	-	-
Non-glass Ceramics	0.0%	0.0%	22
Remainder/Composite Glass	0.0%	0.0%	15

Material	Est. %	+ / -	Est. Tons
Paper Products	**1.0%**	**0.3%**	**6,291**
Newspaper Products	0.0%	0.0%	61
Cardboard & Kraft Paper Products	0.0%	0.0%	97
Magazines	0.0%	0.0%	50
High-grade Paper Products	0.1%	0.1%	500
Other Groundwood Paper Products	-	-	-
Mixed Paper Products	0.0%	0.0%	115
Product Paper Cups	-	-	-
Compostable Paper Products	0.8%	0.3%	4,782
Remainder/Composite Paper Products	0.1%	0.1%	685
Plastic Products	**0.3%**	**0.1%**	**1,597**
#1 PETE Products	-	-	-
#2 HDPE Products	0.0%	0.0%	230
#3 PVC Products	0.0%	0.0%	0
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	13
#6 PS Products	0.0%	0.0%	3
Bulky Rigid Plastic Products	0.0%	0.0%	169
PLA Compostable Plastic Bags & Film	0.1%	0.1%	818
PLA Compostable Plastic Utensils	0.0%	0.0%	23
#7 Other/Unknown Products	0.0%	0.0%	210
Plastic Garbage Bags	0.0%	0.0%	70
Plastic Non-bag Film Products	0.0%	0.0%	36
Remainder/Composite Plastic Products	0.0%	0.0%	24
Organics	**96.7%**	**0.8%**	**616,268**
Yard Debris	87.7%	2.4%	558,665
Food Processing Wastes	-	-	-
Other Compostables	0.0%	0.0%	66
Clean Wood	1.9%	0.8%	12,131
Fruits & Vegetables, Edible	1.9%	0.7%	12,108
Fruits & Vegetables, Non-edible	2.0%	0.9%	13,023
Homegrown Fruits & Vegetables	0.6%	0.2%	3,811
Meat, Edible	0.2%	0.1%	967
Meat, Non-edible	0.1%	0.1%	879
Mixed/Other Food Waste, Edible	1.4%	0.7%	8,798
Mixed/Other Food Waste, Non-edible	0.6%	0.4%	3,971
Animal Manure & Litter	0.3%	0.2%	1,626
Remainder/Composite Organics	0.0%	0.0%	221
Other Materials	**0.2%**	**0.1%**	**1,420**
Electronics & Small Appliances	0.0%	0.0%	0
Textiles (synthetic) & Shoes	0.0%	0.0%	49
Construction & Demolition Waste	0.1%	0.1%	944
Tanglers (non-plastic)	0.0%	0.0%	6
HHW/Special Waste	0.0%	0.0%	3
Diapers	0.0%	0.0%	14
Furniture/Bulky	-	-	-
Mixed Residue	0.1%	0.0%	404
Estimated Tons	**100%**		**637,000**
Sample Count			**187**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Appendix A. Material Types and Recoverability Groups

Table 19 defines the 82 material types evaluated in this study, organized by material class and recoverability group.

Table 19. Material List and Definitions

Material Class	Recoverability Group	Material Type	Material Type Definition
Paper Packaging	Widely Accepted Recyclable	Cardboard & Kraft Packaging	Unwaxed Kraft paper corrugated containers and boxes, unless poly- or foil-laminated. Includes cardboard boxes and brown Kraft paper bags and packaging paper.
Paper Packaging	Widely Accepted Recyclable	Mixed Paper Packaging	Low-grade recyclable papers, including non-corrugated paperboard packaging, and other packaging made from groundwood paper. Includes egg cartons, and cereal and cracker boxes.
Paper Packaging	Widely Accepted Recyclable	Packaging Paper Cups	Cups made of uncoated paper material used to contain a beverage purchased from an establishment (for example, soda purchased from a fast food restaurant). Does not include plastic-coated paper cups.
Paper Packaging	Limited Accepted Recyclable	Aseptic Containers	Multi-layer paper packaging designed to keep food and other putrescible contents fresh. Includes items like paper soup cartons and paper juice cartons.
Paper Packaging	Limited Accepted Recyclable	Gable Top Containers	Polycoated paper packaging often used for liquid products such as milk, plant-based beverages, and juice. Most are opened by pushing open with a screw top closure or the gables at the top back and pulling the top (spout) out.
Paper Packaging	Limited Accepted Recyclable	Other Polycoated Packaging	Other polycoated paper packaging. Includes ice cream cartons and frozen food boxes. Does not include aseptic and gable top containers.
Paper Packaging	Widely Accepted Compostable	Single-use Food Service Compostable Paper	Includes paper or paper packaging soiled with food that was used in a “single-use food service” capacity. Examples include paper plates, compostable paper cups (no plastic

Material Class	Recoverability Group	Material Type	Material Type Definition
			coating), pizza boxes, french-fry containers. Does not include napkins or paper towels.
Paper Packaging	Limited Accepted Compostable	Other Compostable Paper Packaging	Non-food service packaging paper that may be composted such as waxed cardboard boxes, and all containers except cups from fast food establishments.
Paper Packaging	Potentially Recoverable	Newspaper Packaging	Shredded newspaper packing material.
Paper Packaging	Non-recoverable	Remainder/Composite Paper Packaging	Non-recyclable and non-compostable types of papers such as paper packaging with metal or plastic parts (except aseptic packaging). Examples would include plastic lined or metal handled take-out food containers.
Paper Products	Widely Accepted Recyclable	Newspaper Products	Printed groundwood newsprint, including glossy ads and Sunday edition magazines that are delivered with the newspaper (unless these are found separately during sorting).
Paper Products	Widely Accepted Recyclable	Cardboard & Kraft Paper Products	Unwaxed Kraft paper and corrugated products, unless poly- or foil-laminated. Could include cat scratching pads.
Paper Products	Widely Accepted Recyclable	Magazines	Magazines, catalogs, and similar products with glossy paper. Includes Sunday edition news magazines, if found separate from the newspaper.
Paper Products	Widely Accepted Recyclable	High-grade Paper Products	High-grade white or light-colored bond and copy machine papers and envelopes, and continuous-feed computer printouts and forms of all types, except multiple copy carbonless paper.
Paper Products	Limited Accepted Recyclable	Other Groundwood Paper Products	Non-packing products made from groundwood paper, including phone books, some tablet paper, and paperback books.
Paper Products	Limited Accepted Recyclable	Mixed Paper Products	Low-grade recyclable papers, including colored papers, notebook or other lined paper, envelopes with plastic windows, non-corrugated paperboard, carbonless copy

Material Class	Recoverability Group	Material Type	Material Type Definition
			paper, and junk mail. This includes shredded paper.
Paper Products	Limited Accepted Recyclable	Product Paper Cups	Cups made of paper material purchased with the intent of future use (for example, a package of paper cups purchased for a birthday party). Does not include plastic-coated paper cups.
Paper Products	Widely Accepted Compostable	Compostable Paper Products	Non-packaging papers that can be composted. Includes paper soiled with food that was not used in a "food service" capacity. Examples include napkins, paper towels, plates (if purchased empty), coffee filters, and tissue. Also includes shredded paper and newspapers used to contain food waste.
Paper Products	Non-recoverable	Remainder/Composite Paper Products	Non-recyclable and non-compostable types of paper products such as carbon paper and hardcover books, and composite materials containing paper mixed with metal or plastic parts.
Plastic Packaging	Widely Accepted Recyclable	#1 Polyethylene Terephthalate (PETE) Bottles	Includes plastic bottles bearing the #1, such as carbonated drink bottles and water bottles. Lids and caps are left attached to containers when feasible.
Plastic Packaging	Widely Accepted Recyclable	#1 PETE Non-bottles	Includes plastic non-bottle packaging bearing the #1, and would include oven-ready meal trays and other packaging.
Plastic Packaging	Widely Accepted Recyclable	#2 High-density Propylene (HDPE) Natural Bottles	Includes milk jugs and water jugs and any natural bottle bearing the #2. Lids and caps are left attached to containers when feasible.
Plastic Packaging	Widely Accepted Recyclable	#2 HDPE Colored Bottles	Includes detergent bottles, some personal care product bottles, and any opaque plastic bottle bearing the #2. Lids and caps are left attached to containers when feasible.
Plastic Packaging	Widely Accepted Recyclable	#2 HDPE Jars & Tubs	Yogurt and margarine tubs and any packaging jar or tub bearing the #2. Lids and caps are left attached to containers when feasible. This category includes five-gallon

Material Class	Recoverability Group	Material Type	Material Type Definition
			plastic pails (with or without handles) and lids.
Plastic Packaging	Limited Accepted Recyclable	#3 Polyvinyl Chloride (PVC) Packaging	Includes any plastic bottle or container marked with a #3. Lids and caps are left attached to containers when feasible.
Plastic Packaging	Limited Accepted Recyclable	#4 Low-density Polyethylene (LDPE) Packaging	Includes any plastic bottle or container marked with the #4. Lids and caps are left attached to containers when feasible.
Plastic Packaging	Limited Accepted Recyclable	#5 Polypropylene (PP) Packaging	Includes any plastic packaging marked with the #5 as well as plastic straws. Lids and caps are left attached to containers when feasible.
Plastic Packaging	Limited Accepted Recyclable	#6 Polystyrene (PS) Packaging	Includes any plastic packaging marked with the #6 such as compact disc cases, some plastic to-go beverage cups, and any other rigid PS packaging. Lids and caps are left attached to containers when feasible.
Plastic Packaging	Limited Accepted Recyclable	#7 Other/Unknown Packaging	Includes all non-numbered plastic packaging and any other plastic packaging product not listed in another category. Lids and caps are left attached to containers when feasible. This includes plastic strapping.
Plastic Packaging	Limited Accepted Compostable	Polylactic Acid (PLA) Compostable Food Packaging	Any compostable plastic packaging or food containers made from corn, potato, sugarcane, or any other compostable resin that are marked with the words “compostable” or “#7 PLA” in the plastic identifier. Lids and caps are left attached to containers when feasible. Includes materials from food service providers (for example, restaurants, food trucks, food vendors), grocery stores, and other retailers. Examples include takeout containers, produce packaging, meat/produce trays IF compostable. Does not include utensils and straws.
Plastic Packaging	Potentially Recoverable	EPS Expanded Polystyrene Packaging	Includes packing peanuts, coolers, egg cartons, meat trays, take out containers, and other polystyrene foam packaging.

Material Class	Recoverability Group	Material Type	Material Type Definition
Plastic Packaging	Potentially Recoverable	Plastic Merchandise Bags	Will include all grocery, shopping, and merchandise bags.
Plastic Packaging	Potentially Recoverable	Transportation Packaging Film Plastic	Includes bubble wrap and shrink wrap and any other packaging film used in a typically industrial manner.
Plastic Packaging	Non-recoverable	Packaging Film Plastic	Includes other types of packaging film such as cling wrap, bread and food bags, and plastic potato chip bags.
Plastic Packaging	Non-recoverable	Flexible Plastic Packaging	Means plastic pouches made of thicker, multi-layer flexible material. May have a flat bottom so that package would stand up on its own, but not always. Material is thicker than potato chip bags and frozen vegetable bags. Includes plastic coffee bags; juice pouches; baby food pouches – may have plastic screw top; soup pouches; salad dressing pouches; wine pouches; backpacking meals in pouches; soap refill pouches; laundry detergent pouches; and other similar items.
Plastic Packaging	Non-recoverable	Remainder/Composite Plastic	Other types of packaging that are not one of the above materials and items that are composites of multiple plastics and plastics mixed with other materials. An example of this material type is some bathroom silicone sealant tubes designed to be used with an applicator gun. These tubes frequently have plastic bodies and tips but metal end caps.
Plastic Products	Widely Accepted Recyclable	#1 PET Products	Includes any PET product bearing the #1 and used in a non-packaging application.
Plastic Products	Widely Accepted Recyclable	#2 HDPE Products	Includes any other non-packaging product bearing the #2.
Plastic Products	Limited Accepted Recyclable	#3 PVC Products	Includes any non-packaging product bearing the #3 but also including plastic piping, and some toys.
Plastic Products	Limited Accepted Recyclable	#4 LDPE Products	Includes any other non-packaging product bearing the #4.

Material Class	Recoverability Group	Material Type	Material Type Definition
Plastic Products	Limited Accepted Recyclable	#5 PP Products	Includes any plastic non-packaging product bearing the #5 but also includes some reusable food containers.
Plastic Products	Limited Accepted Recyclable	#6 PS Products	Includes any plastic non-packaging product bearing the #6 but also includes plastic tableware.
Plastic Products	Limited Accepted Recyclable	Bulky Rigid Plastic Products	Large (larger than a five-gallon bucket), wholly plastic products intended to be used multiple times over a long period. Examples include garbage cans, some large children's toys, and plastic furniture.
Plastic Products	Limited Accepted Compostable	PLA Compostable Plastic Bags & Film	Bags and film made of PLA designed to compost. Includes compostable plastic items, such as film "plastic" bags made of materials such as corn starch, potato, or soy (such as BioBag, EcoSafe).
Plastic Products	Limited Accepted Compostable	PLA Compostable Plastic Utensils	Includes utensils (such as cups/lids, bowls, clamshells, plates, trays, cutlery, and straws that are not from food service providers) marked with the words "compostable" or "#7 PLA" in the plastic identifier.
Plastic Products	Non-recoverable	#7 Other/Unknown Products	Includes all non-packaging, non-numbered plastic product not listed in another category. Examples could include some toys, household products, disposable plastic products (food utensils), durable plastic products (toothbrushes, dinnerware), and electronic media (CDs and DVDs).
Plastic Products	Non-recoverable	Plastic Garbage Bags	Includes all bags whose primary use is to hold trash or garbage.
Plastic Products	Non-recoverable	Plastic Non-bag Film Products	Includes plastic painter's sheeting for drop cloths, other plastic tarps, shower curtains, and any other film product not used for packaging purposes.
Plastic Products	Non-recoverable	Remainder/Composite Plastic Products	Includes all other types of non-packaging plastic that are not one of the above materials and items that are composites of multiple plastics and plastics mixed with other materials. This section also includes plastic sheeting and tarps that are

Material Class	Recoverability Group	Material Type	Material Type Definition
			contaminated with other materials such as paint or concrete residue. Examples would include plastic toys with metal attachments.
Glass	Widely Accepted Recyclable	Clear Glass Containers	Bottles and jars made from clear glass.
Glass	Widely Accepted Recyclable	Green Glass Containers	Bottles and jars made from green glass.
Glass	Widely Accepted Recyclable	Other Colored Glass Containers	Bottles and jars made from brown glass. Note that blue glass was included with brown glass.
Glass	Non-recoverable	Plate Glass	Flat glass products such as windows, mirrors, and flat products.
Glass	Non-recoverable	Non-glass Ceramics	Ceramics not composed of true glass and not typically used as building materials. Examples include dishes and crockware.
Glass	Non-recoverable	Remainder/Composite Glass	Other types of glass products and scrap that do not fit into the above materials, including light bulbs, glassware, oven-safe baking dishes such as Pyrex, and non-C&D fiberglass. Note that ceramics (plates and knickknacks) will not be included here but will be placed in “Non-glass Ceramics” above.
Metal	Widely Accepted Recyclable	Aluminum Beverage Cans	Aluminum beverage cans.
Metal	Widely Accepted Recyclable	Food Cans-Tinned	Including zinc or tin-coated steel food containers. This material includes bi-metal beverage cans, but not paint cans or other types of cans.
Metal	Limited Accepted Recyclable	Aluminum Foil/Containers	Aluminum foil, food trays, and similar items.
Metal	Limited Accepted Recyclable	Other Aluminum	Aluminum scrap and products that do not fit into the above two materials.

Material Class	Recoverability Group	Material Type	Material Type Definition
Metal	Limited Accepted Recyclable	Empty Aerosol Cans	EMPTY, mixed material/metal aerosol cans.
Metal	Potentially Recoverable	Other Metal	Mixed metal items such as motors, metal window blinds, metal tableware and utensils. Other metal that are too contaminated to be marketed. Includes large electronics that are predominantly metal (such as a washer and dryer), and other bulky metal items (such as patio furniture).
Organics	Widely Accepted Compostable	Fruits & Vegetables, Edible	The edible portion of food that comes from a plant but does not appear to have grown on the customer's property. Includes fruits and vegetables in the original or another container when the container weight is less than 10 percent of the total weight.
Organics	Widely Accepted Compostable	Fruits & Vegetables, Non-edible	The non-edible portions of food that comes from plants. Examples include fruit peels, vegetable peelings, potato skins, pits, cores, and juiced oranges.
Organics	Widely Accepted Compostable	Homegrown Fruits & Vegetables	Food that comes from a plant growing on or cleared from the customer's property. Examples include fruits and vegetables disposed of because of falling or pruning from trees and gardens.
Organics	Widely Accepted Compostable	Meat, Edible	The edible portion of non-dairy food that comes from an animal. Examples include eggs and eggs in shell, fresh meat, cooked meat, and meat scraps. Does not include dairy products such as cheese and milk. Includes meat in the original or another container when the container weight is less than 10 percent of the total weight.
Organics	Widely Accepted Compostable	Meat, Non-edible	The non-edible portions of food that come from an animal. Examples include eggshells, bones, gristle and meat trimmings, fish skins, and seafood shells.
Organics	Widely Accepted Compostable	Mixed/Other Food Waste, Edible	Any food that cannot be put in the above categories BUT deemed edible. Examples include food items that are a combination of the above categories, as well as unused tea

Material Class	Recoverability Group	Material Type	Material Type Definition
			packets, grains, crackers, bread, dairy, and cereal. Includes food in the original or another container when the container weight is less than 10 percent of the total weight.
Organics	Widely Accepted Compostable	Mixed/Other Food Waste, Non-edible	Any food that cannot be put in the above categories AND deemed non-edible. Examples include food items that are a combination of the above categories, as well as coffee grounds, used tea packets, and visibly non-edible grains, crackers, bread, dairy, and cereal.
Organics	Widely Accepted Compostable	Yard Debris	Includes leaves, grass clippings, sod, garden wastes, brush, prunings, logs under six inches, and clumped soil and rocks associated with yard debris.
Organics	Widely Accepted Compostable	Food Processing Wastes	Processing wastes that are left over from growing and processing fruit, vegetables, meat, seafood, or other foods and that are treated as a waste (for example, meat packing plant waste, fish processing waste). Does not include food residuals from restaurants or grocery stores or food purchased as groceries. Does not include food from home gardens, fishing, hunting, or other home food processing.
Organics	Widely Accepted Compostable	Other Compostables	Other compostable organic materials not included above, such as hair, popsicle sticks, chopsticks, and toothpicks.
Organics	Widely Accepted Compostable	Clean Wood	Wood that has not been processed, including stumps of trees and shrubs, with the adhering soil (if any), and other natural woods, such as logs and branches in excess of six inches in diameter. Also includes dimensional lumber (wood commonly used in construction for framing and related uses), wood pallets, crates, and similar shipping containers, other untreated wood products, and wood by-products such as sawdust and shavings.

Material Class	Recoverability Group	Material Type	Material Type Definition
Organics	Non-recoverable	Animal Manure & Litter	All animal manures and soiled bedding and litter whether derived from an agricultural or residential origin. Includes kitty litter.
Organics	Non-recoverable	Remainder/Composite Organics	Other organics or composite materials that contain organics that do not easily fit into the above materials. Includes crop residues. Examples include dryer lint, cigarette butts, candles, and grease. Also includes organic items whose durability makes them hard to compost. Examples include organic textiles such as cotton, wool, and leather, wine corks, burlap sacks, and rope.
Other Materials	Potentially Recoverable	Electronics & Small Appliances	Computer monitors, television sets, and other electronics including cell phones, answering machines, electronic toys, stereos, radios, tape decks, other audio/visual equipment, VCRs, DVD players, computer processors, mice, keyboards, disk drives, printers, scanners, gaming systems, tablet computers, e-readers, and laptops. Also includes small electric appliances such as toasters, blenders, microwave ovens, power tools, curling irons, and light fixtures.
Other Materials	Potentially Recoverable	Textiles (synthetic) & Shoes	Clothing, rags, and accessories made of synthetic textiles such as woven nylon, rayon, polyester, and other materials. Examples include pants, shirts, fabric purses, bed sheets, towels, and shoes.
Other Materials	Potentially Recoverable	Construction & Demolition Waste	Treated/contaminated wood, gypsum, insulation, rock/concrete/bricks, loose soil and rocks, asphalt shingles/roofing, other construction debris, and mixed fine building material scraps.
Other Materials	Non-recoverable	Tanglers (non-plastic)	Unaccepted, non-plastic items that are long and thin. Examples include electrical cords, garden hoses, caution tape (and similar tape), streamers, and chains. All plastic long, thin items like twine, rope and strapping are in a separate category (“Other Plastics”).
Other Materials	Non-recoverable	HHW/Special Waste	Potentially hazardous products such as radioactive or dangerous waste(s),

Material Class	Recoverability Group	Material Type	Material Type Definition
			ammunition, explosives, paints and solvents, old gasoline, solvents, antifreeze, asbestos, glues and adhesives, hot ashes, caulking compounds and grouts, hazardous cleaners and household chemicals, pesticides/herbicides, oil/gas/fuel tanks, any substances or products containing potentially hazardous chemicals. Also includes non-hazardous soaps, cleaners, medicines, cosmetics, fire extinguishers, and other household chemicals. FULL aerosol containers and roadkill/dead animals are also included here. Hypodermic needles and other items used to puncture or lacerate the skin.
Other Materials	Non-recoverable	Diapers	Disposable baby diapers and adult protective undergarments.
Other Materials	Non-recoverable	Furniture/Bulky	Furniture made of mixed materials and in any condition. Mattresses made of mixed materials and in any condition. General category of flooring applications consisting of various natural or synthetic fibers bonded to some type of backing material.
Other Materials	Non-recoverable	Mixed Residue	Items not defined in the above categories will be included here. Examples include non-distinguishable fines, Q-tips/cotton swabs, sports equipment (for example, a basketball).

Appendix B. Composition Calculations

Recycling and organics material composition estimates were calculated using a method that gives equal weighting or "importance" to each sample. Confidence intervals (error ranges) were calculated based on assumptions of normality in the composition estimates.

In the descriptions of calculation methods, these variables are used frequently:

- *i* denotes an individual sample
- *j* denotes the material type
- c_j is the weight of the material type (or material class or recoverability group) *j* in a sample
- *w* is the weight of an entire sample
- r_j is the composition estimate for material type *j* (*r* stands for ratio)
- *s* denotes a particular stream or substream of the material stream
- *n* denotes the number of samples in the particular group being analyzed at that step

Estimating the Composition

For a given stratum (that is, for the samples belonging to the same stream from the same area), the composition estimate denoted by r_j represents the ratio of the material type's weight to the total weight of all the samples in the stratum. This estimate was derived by summing each material type's weight across all of the selected samples belonging to a given stratum and dividing by the sum of the total weight of material for all of the samples in that stratum, as shown in the following equation:

$$r_j = \frac{\sum_i c_{ij}}{\sum_i w_i}$$

where:

- *c* = weight of particular material type
- *w* = sum of all component weights
- for *i* = 1 to *n*, where *n* = number of selected samples
- for *j* = 1 to *m*, where *m* = number of material types

For example, the following simplified scenario involves three samples. For the purposes of this example, in Table 20 only the weights of the material type Clean Wood are shown.

Table 20. Unweighted Composition Example

Measurement	Sample 1	Sample 2
Weight (*c*) of Clean Wood (in lbs.)	5	3
Total sample weight (*w*) (in lbs.)	80	70

$$r_{Clean\ Wood} = \sum \frac{5+3+4}{80+70+90} = 0.05$$

To find the composition estimate for the material type Clean Wood, the weights for that material are added for all selected samples and divided by the total sample weights of those samples. The resulting composition is 0.05, or 5 percent. In other words, 5 percent of the sampled material, by weight, is Clean Wood. This finding is then projected onto the stratum being examined in this step of the analysis.

The confidence interval for this estimate was derived in two steps. First, the variance around the estimate was calculated, accounting for the fact that the ratio included two random variables (the material type and total sample weights). The variance of the ratio estimator equation follows:[8]

$$\mathrm{Var}(r_j) \approx \left(\frac{1}{n}\right)\left(\frac{1}{\overline{w}^2}\right)\left(\frac{\sum_i \left(c_{ij-} r_j w_j\right)^2}{n-1}\right)$$

where:

$$\overline{w} = \frac{\sum_i w_i}{n}$$

Second, the confidence interval at the 90 percent confidence level was calculated for a material type's mean as follows:

$$r_j \pm \left(z\sqrt{\mathrm{Var}(r_j)}\right)$$

where *z* = the value of the *z*-statistic (1.645) corresponding to a 90 percent confidence level.

Composition results for strata were then combined, using a weighted averaging method, to estimate the composition of larger portions of the material stream. For example, the Central, Eastern, Northwest, and Southwest regions were combined to estimate the composition for the Inbound Recycling stream. The relative tonnages associated with each stratum served as the weighting factors. The calculation was performed as follows:

$$O_j = \left(p_1 * r_{j1}\right) + \left(p_2 * r_{j2}\right) + \left(p_3 * r_{j3}\right) + \cdots$$

where:

- *p* = the proportion of tonnage contributed by the noted material stratum (the weighting factor)
- *r* = ratio of component weight to total material weight in the noted material stratum (the composition percent for the given material type)
- for *j* = 1 to *m*, where *m* = number of material type

For example, the above equation is illustrated in Table 21 using three material strata.

Table 21. Weighted Composition Example

Measurement	Stratum 1	Stratum 2	Stratum 3
Ratio (*r*) of Clean Wood	5%	10%	10%

[8] For more information regarding the variance calculation, refer to *Sampling Techniques, 3rd Edition* by William G. Cochran, John Wiley & Sons, Inc., Indianapolis, Indiana, 1977.

Measurement	Stratum 1	Stratum 2	Stratum 3
Tonnage	25,000	100,000	50,000
Proportion of tonnage (*p*)	14.3%	57.1%	28.6%

To estimate the larger portions of the material stream, the composition results for the three strata are combined as follows:

$$O_{Clean\ Wood} = (0.143 * 0.05) + (0.57 * 0.10) + (0.286 * 0.10) = 0.093 = 9.3\%$$

Therefore, 9.3 percent of this examined portion of the material stream is Clean Wood.

The variance of the weighted average was calculated as follows:

$$\mathrm{Var}O_j = \left({p_1}^2 * \widehat{V_{r_{J1}}}\right) + \left({p_2}^2 * \widehat{V_{r_{J2}}}\right) + \left({p_3}^2 * \widehat{V_{r_{J3}}}\right) + \cdots$$

where:

$\widehat{V_{r_j}}$ = the variance of the composition estimate for the material *j* in the overall material stream.

Appendix C. Detailed Composition Tables

Inbound Recycling

Table 22. Detailed Composition Table: Overall Hauler-collected Inbound Recycling

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**64.2%**	**2.9%**	**400,731**
Limited Accepted Recyclable	**25.5%**	**2.9%**	**159,091**
Widely Accepted Compostable	**0.2%**	**0.1%**	**970**
Limited Accepted Compostable	**2.3%**	**0.4%**	**14,598**
Potentially Recoverable	**3.1%**	**0.6%**	**19,139**
Non-recoverable	**4.8%**	**0.6%**	**29,772**
Paper Packaging	**49.6%**	**4.3%**	**309,612**
Cardboard & Kraft Packaging	38.7%	4.1%	241,497
Mixed Paper Packaging	4.9%	0.7%	30,358
Packaging Paper Cups	0.0%	0.0%	70
Aseptic Containers	0.2%	0.0%	1,066
Gable Top Containers	0.4%	0.1%	2,667
Other Polycoated Packaging	4.0%	1.0%	24,774
Single-use Food Service Compostable Paper	0.7%	0.2%	4,072
Other Compostable Paper Packaging	0.1%	0.0%	464
Newspaper Packaging	0.4%	0.3%	2,248
Remainder/Composite Paper Packaging	0.4%	0.1%	2,397
Plastic Packaging	**8.8%**	**1.5%**	**54,681**
#1 PETE Bottles	3.0%	0.5%	18,773
#1 PETE Non-bottles	1.2%	0.3%	7,798
#2 HDPE Natural Bottles	1.0%	0.3%	6,238
#2 HDPE Colored Bottles	0.8%	0.2%	4,853
#2 HDPE Jars & Tubs	0.4%	0.1%	2,219
#3 PVC Packaging	0.0%	0.0%	60
#4 LDPE Packaging	0.0%	0.0%	67
#5 PP Packaging	0.7%	0.1%	4,598
#6 PS Packaging	0.1%	0.0%	371
#7 Other/Unknown Packaging	0.4%	0.1%	2,292
PLA Compostable Food Packaging	0.0%	0.0%	41
EPS Expanded Polystyrene Packaging	0.1%	0.0%	651
Plastic Merchandise Bags	0.2%	0.0%	1,165
Transportation Packaging Film Plastic	0.3%	0.1%	1,778
Packaging Film Plastic	0.5%	0.1%	2,894
Flexible Plastic Packaging	0.1%	0.0%	370
Remainder/Composite Plastic	0.1%	0.0%	513
Metal	**5.0%**	**0.8%**	**31,523**
Aluminum Beverage Cans	2.1%	0.4%	13,017
Food Cans-Tinned	1.6%	0.3%	10,170
Aluminum Foil/Containers	0.1%	0.0%	435
Other Aluminum	0.2%	0.1%	1,020
Empty Aerosol Cans	0.1%	0.0%	315
Other Metal	1.1%	0.3%	6,565
Glass	**12.9%**	**2.8%**	**80,522**
Clear Glass Containers	6.0%	1.5%	37,656
Green Glass Containers	4.5%	1.0%	28,121
Other Colored Glass Containers	2.3%	0.6%	14,285
Plate Glass	0.0%	0.0%	27
Non-glass Ceramics	0.0%	0.1%	301
Remainder/Composite Glass	0.0%	0.0%	132

Material	Est. %	+ / -	Est. Tons
Paper Products	**17.7%**	**2.9%**	**110,769**
Newspaper Products	2.8%	0.6%	17,470
Cardboard & Kraft Paper Products	1.1%	1.0%	7,124
Magazines	4.6%	0.9%	28,481
High-grade Paper Products	1.9%	0.4%	11,993
Other Groundwood Paper Products	0.7%	0.2%	4,320
Mixed Paper Products	5.5%	1.0%	34,534
Product Paper Cups	0.0%	0.0%	2
Compostable Paper Products	0.4%	0.1%	2,413
Remainder/Composite Paper Products	0.7%	0.2%	4,431
Plastic Products	**1.5%**	**0.2%**	**9,078**
#1 PETE Products	0.1%	0.1%	670
#2 HDPE Products	0.0%	0.0%	68
#3 PVC Products	0.0%	0.0%	13
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	163
#6 PS Products	0.0%	0.0%	33
Bulky Rigid Plastic Products	0.4%	0.2%	2,228
PLA Compostable Plastic Bags & Film	0.0%	0.0%	30
PLA Compostable Plastic Utensils	0.0%	0.0%	18
#7 Other/Unknown Products	0.4%	0.1%	2,400
Plastic Garbage Bags	0.2%	0.1%	1,355
Plastic Non-bag Film Products	0.1%	0.0%	366
Remainder/Composite Plastic Products	0.3%	0.1%	1,734
Organics	**1.5%**	**0.4%**	**9,449**
Yard Debris	0.1%	0.1%	463
Food Processing Wastes	0.0%	0.0%	10
Other Compostables	0.0%	0.0%	104
Clean Wood	0.1%	0.0%	393
Fruits & Vegetables, Edible	0.1%	0.1%	769
Fruits & Vegetables, Non-edible	0.0%	0.0%	302
Homegrown Fruits & Vegetables	-	-	-
Meat, Edible	0.1%	0.0%	357
Meat, Non-edible	0.1%	0.1%	426
Mixed/Other Food Waste, Edible	0.7%	0.2%	4,629
Mixed/Other Food Waste, Non-edible	0.2%	0.2%	1,078
Animal Manure & Litter	0.0%	0.0%	71
Remainder/Composite Organics	0.1%	0.1%	848
Other Materials	**3.0%**	**0.5%**	**18,665**
Electronics & Small Appliances	0.2%	0.1%	1,489
Textiles (synthetic) & Shoes	0.7%	0.4%	4,593
Construction & Demolition Waste	0.1%	0.1%	651
Tanglers (non-plastic)	0.1%	0.0%	412
HHW/Special Waste	0.1%	0.1%	809
Diapers	0.2%	0.1%	1,214
Furniture/Bulky	0.0%	0.0%	17
Mixed Residue	1.5%	0.3%	9,480
Estimated Tons	**100%**		**624,300**
Sample Count			**215**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 23. Detailed Composition Table: Hauler-collected Inbound Recycling- Central Region

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**73.8%**	**2.3%**	**14,165**
Limited Accepted Recyclable	**16.5%**	**1.5%**	**3,164**
Widely Accepted Compostable	**0.2%**	**0.1%**	**34**
Limited Accepted Compostable	**2.1%**	**0.7%**	**410**
Potentially Recoverable	**2.5%**	**1.0%**	**482**
Non-recoverable	**4.9%**	**1.1%**	**944**
Paper Packaging	**55.2%**	**3.8%**	**10,603**
Cardboard & Kraft Packaging	40.6%	3.5%	7,791
Mixed Paper Packaging	9.0%	1.2%	1,723
Packaging Paper Cups	0.0%	0.0%	6
Aseptic Containers	0.2%	0.1%	37
Gable Top Containers	0.5%	0.1%	93
Other Polycoated Packaging	2.9%	0.7%	552
Single-use Food Service Compostable Paper	0.8%	0.3%	152
Other Compostable Paper Packaging	0.1%	0.1%	19
Newspaper Packaging	0.6%	0.7%	118
Remainder/Composite Paper Packaging	0.6%	0.2%	111
Plastic Packaging	**10.0%**	**1.0%**	**1,929**
#1 PETE Bottles	3.7%	0.4%	714
#1 PETE Non-bottles	1.4%	0.2%	270
#2 HDPE Natural Bottles	1.2%	0.2%	230
#2 HDPE Colored Bottles	1.1%	0.2%	203
#2 HDPE Jars & Tubs	0.3%	0.1%	55
#3 PVC Packaging	0.0%	0.0%	7
#4 LDPE Packaging	0.0%	0.0%	3
#5 PP Packaging	0.7%	0.1%	133
#6 PS Packaging	0.1%	0.0%	14
#7 Other/Unknown Packaging	0.4%	0.1%	79
PLA Compostable Food Packaging	-	-	-
EPS Expanded Polystyrene Packaging	0.2%	0.0%	37
Plastic Merchandise Bags	0.2%	0.1%	40
Transportation Packaging Film Plastic	0.2%	0.0%	29
Packaging Film Plastic	0.4%	0.1%	78
Flexible Plastic Packaging	0.0%	0.0%	9
Remainder/Composite Plastic	0.1%	0.2%	28
Metal	**5.6%**	**0.7%**	**1,072**
Aluminum Beverage Cans	2.9%	0.3%	560
Food Cans-Tinned	1.7%	0.3%	331
Aluminum Foil/Containers	0.1%	0.0%	16
Other Aluminum	0.0%	0.0%	1
Empty Aerosol Cans	0.0%	0.0%	5
Other Metal	0.8%	0.5%	159
Glass	**4.1%**	**1.1%**	**797**
Clear Glass Containers	1.9%	0.6%	368
Green Glass Containers	1.2%	0.5%	222
Other Colored Glass Containers	1.0%	0.3%	193
Plate Glass	-	-	-
Non-glass Ceramics	0.0%	0.0%	2
Remainder/Composite Glass	0.1%	0.1%	11

Material		Est. %	+ / -	Est. Tons
Paper Products		**19.8%**	**3.9%**	**3,803**
Newspaper Products		3.3%	0.7%	632
Cardboard & Kraft Paper Products		0.7%	0.9%	129
Magazines		6.1%	2.3%	1,181
High-grade Paper Products		1.8%	1.1%	345
Other Groundwood Paper Products		0.9%	0.2%	173
Mixed Paper Products		6.4%	1.3%	1,234
Product Paper Cups		0.0%	0.0%	2
Compostable Paper Products		0.3%	0.1%	52
Remainder/Composite Paper Products		0.3%	0.1%	55
Plastic Products		**1.4%**	**0.9%**	**269**
#1 PETE Products		-	-	-
#2 HDPE Products		-	-	-
#3 PVC Products		-	-	-
#4 LDPE Products		-	-	-
#5 PP Products	Opps		0.0%	5
#6 PS Products		0.0%	0.0%	0
Bulky Rigid Plastic Products	Opps		0.4%	66
PLA Compostable Plastic Bags & Film	Opps		0.0%	2
PLA Compostable Plastic Utensils	Opps		0.0%	2
#7 Other/Unknown Products	Opps		0.2%	153
Plastic Garbage Bags	Opps		0.1%	44
Plastic Non-bag Film Products	Opps		1.4%	191
Remainder/Composite Plastic Products	Opps		0.1%	37
Organics		**1.4%**	**0.7%**	**267**
Yard Debris		0.0%	0.0%	3
Food Processing Wastes		-	-	-
Other Compostables		0.0%	0.0%	3
Clean Wood		0.1%	0.1%	28
Fruits & Vegetables, Edible		0.1%	0.1%	12
Fruits & Vegetables, Non-edible		0.1%	0.1%	18
Homegrown Fruits & Vegetables		-	-	-
Meat, Edible		0.0%	0.0%	2
Meat, Non-edible		0.0%	0.0%	5
Mixed/Other Food Waste, Edible		0.7%	0.4%	133
Mixed/Other Food Waste, Non-edible		0.1%	0.1%	16
Animal Manure & Litter		0.1%	0.1%	11
Remainder/Composite Organics		0.2%	0.1%	38
Other Materials		**2.4%**	**0.5%**	**460**
Electronics & Small Appliances		0.0%	0.0%	1
Textiles (synthetic) & Shoes		0.3%	0.1%	51
Construction & Demolition Waste		0.2%	0.3%	47
Tanglers (non-plastic)		0.0%	0.0%	3
HHW/Special Waste		0.0%	0.0%	7
Diapers		0.3%	0.2%	60
Furniture/Bulky		-	-	-
Mixed Residue		1.5%	0.3%	290
Estimated Tons		**100%**		**19,200**
Sample Count				**23**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 24. Detailed Composition Table: Hauler-collected Inbound Recycling- Eastern Region

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**66.8%**	**4.2%**	**27,182**
Limited Accepted Recyclable	**16.9%**	**3.8%**	**6,897**
Widely Accepted Compostable	**0.1%**	**0.1%**	**55**
Limited Accepted Compostable	**2.4%**	**0.7%**	**982**
Potentially Recoverable	**7.5%**	**4.1%**	**3,061**
Non-recoverable	**6.2%**	**1.4%**	**2,522**
Paper Packaging	**54.1%**	**4.4%**	**22,034**
Cardboard & Kraft Packaging	43.6%	4.4%	17,731
Mixed Paper Packaging	6.4%	1.0%	2,595
Packaging Paper Cups	0.0%	0.0%	5
Aseptic Containers	0.2%	0.0%	66
Gable Top Containers	0.2%	0.0%	73
Other Polycoated Packaging	2.5%	0.8%	1,017
Single-use Food Service Compostable Paper	0.8%	0.3%	319
Other Compostable Paper Packaging	0.2%	0.2%	69
Newspaper Packaging	-	-	-
Remainder/Composite Paper Packaging	0.4%	0.1%	159
Plastic Packaging	**9.2%**	**1.4%**	**3,748**
#1 PETE Bottles	3.1%	0.7%	1,268
#1 PETE Non-bottles	0.9%	0.2%	369
#2 HDPE Natural Bottles	1.2%	0.2%	468
#2 HDPE Colored Bottles	0.8%	0.3%	327
#2 HDPE Jars & Tubs	0.3%	0.1%	110
#3 PVC Packaging	0.0%	0.0%	1
#4 LDPE Packaging	0.0%	0.0%	4
#5 PP Packaging	0.8%	0.2%	311
#6 PS Packaging	0.1%	0.1%	54
#7 Other/Unknown Packaging	0.4%	0.1%	166
PLA Compostable Food Packaging	-	-	-
EPS Expanded Polystyrene Packaging	0.1%	0.1%	55
Plastic Merchandise Bags	0.2%	0.0%	66
Transportation Packaging Film Plastic	0.4%	0.2%	171
Packaging Film Plastic	0.4%	0.1%	165
Flexible Plastic Packaging	0.1%	0.0%	45
Remainder/Composite Plastic	0.4%	0.6%	167
Metal	**7.6%**	**3.2%**	**3,089**
Aluminum Beverage Cans	1.9%	0.3%	761
Food Cans-Tinned	1.6%	0.2%	665
Aluminum Foil/Containers	0.0%	0.0%	16
Other Aluminum	0.1%	0.1%	37
Empty Aerosol Cans	0.0%	0.0%	14
Other Metal	3.9%	3.1%	1,596
Glass	**8.7%**	**2.7%**	**3,554**
Clear Glass Containers	3.9%	1.1%	1,584
Green Glass Containers	1.9%	0.7%	788
Other Colored Glass Containers	2.9%	1.3%	1,177
Plate Glass	0.0%	0.0%	0
Non-glass Ceramics	0.0%	0.0%	4
Remainder/Composite Glass	0.0%	0.0%	1

Material	Est. %	+ / -	Est. Tons
Paper Products	**11.6%**	**2.2%**	**4,739**
Newspaper Products	3.3%	0.8%	1,333
Cardboard & Kraft Paper Products	0.1%	0.1%	37
Magazines	2.6%	0.9%	1,077
High-grade Paper Products	1.1%	0.4%	439
Other Groundwood Paper Products	0.7%	0.4%	289
Mixed Paper Products	2.6%	0.6%	1,073
Product Paper Cups	-	-	-
Compostable Paper Products	0.4%	0.2%	147
Remainder/Composite Paper Products	0.8%	0.6%	343
Plastic Products	**1.9%**	**0.6%**	**787**
#1 PETE Products	-	-	-
#2 HDPE Products	-	-	-
#3 PVC Products	-	-	-
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	9
#6 PS Products	0.0%	0.0%	1
Bulky Rigid Plastic Products	0.5%	0.3%	212
PLA Compostable Plastic Bags & Film	-	-	-
PLA Compostable Plastic Utensils	-	-	-
#7 Other/Unknown Products	0.8%	0.5%	331
Plastic Garbage Bags	0.1%	0.0%	46
Plastic Non-bag Film Products	0.0%	0.0%	10
Remainder/Composite Plastic Products	0.4%	0.3%	178
Organics	**1.6%**	**0.9%**	**639**
Yard Debris	0.1%	0.1%	23
Food Processing Wastes	-	-	-
Other Compostables	0.0%	0.0%	1
Clean Wood	0.1%	0.1%	31
Fruits & Vegetables, Edible	0.4%	0.5%	147
Fruits & Vegetables, Non-edible	0.0%	0.0%	12
Homegrown Fruits & Vegetables	-	-	-
Meat, Edible	0.0%	0.0%	1
Meat, Non-edible	0.0%	0.0%	5
Mixed/Other Food Waste, Edible	0.6%	0.4%	252
Mixed/Other Food Waste, Non-edible	0.1%	0.1%	30
Animal Manure & Litter	-	-	-
Remainder/Composite Organics	0.3%	0.3%	136
Other Materials	**5.2%**	**2.8%**	**2,110**
Electronics & Small Appliances	0.2%	0.2%	63
Textiles (synthetic) & Shoes	2.2%	2.8%	914
Construction & Demolition Waste	0.5%	0.5%	196
Tanglers (non-plastic)	0.0%	0.0%	17
HHW/Special Waste	0.1%	0.1%	30
Diapers	0.1%	0.1%	26
Furniture/Bulky	-	-	-
Mixed Residue	2.1%	0.8%	864
Estimated Tons	**100%**		**40,700**
Sample Count			**63**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 25. Detailed Composition Table: Hauler-collected Inbound Recycling- Northwest Region

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**60.8%**	**4.1%**	**264,593**
Limited Accepted Recyclable	**30.2%**	**4.0%**	**131,577**
Widely Accepted Compostable	**0.2%**	**0.2%**	**683**
Limited Accepted Compostable	**2.1%**	**0.5%**	**9,141**
Potentially Recoverable	**2.5%**	**0.8%**	**10,821**
Non-recoverable	**4.2%**	**0.7%**	**18,484**
Paper Packaging	**45.3%**	**6.1%**	**197,318**
Cardboard & Kraft Packaging	34.6%	5.7%	150,675
Mixed Paper Packaging	4.4%	0.9%	19,035
Packaging Paper Cups	0.0%	0.0%	61
Aseptic Containers	0.2%	0.0%	745
Gable Top Containers	0.5%	0.1%	2,052
Other Polycoated Packaging	4.2%	1.4%	18,104
Single-use Food Service Compostable Paper	0.6%	0.3%	2,602
Other Compostable Paper Packaging	0.1%	0.0%	310
Newspaper Packaging	0.5%	0.5%	2,166
Remainder/Composite Paper Packaging	0.4%	0.1%	1,568
Plastic Packaging	**8.6%**	**2.1%**	**37,290**
#1 PETE Bottles	3.0%	0.6%	12,997
#1 PETE Non-bottles	1.4%	0.4%	6,131
#2 HDPE Natural Bottles	1.0%	0.5%	4,175
#2 HDPE Colored Bottles	0.7%	0.2%	2,990
#2 HDPE Jars & Tubs	0.4%	0.1%	1,806
#3 PVC Packaging	0.0%	0.0%	39
#4 LDPE Packaging	0.0%	0.0%	51
#5 PP Packaging	0.8%	0.2%	3,402
#6 PS Packaging	0.1%	0.0%	245
#7 Other/Unknown Packaging	0.3%	0.1%	1,496
PLA Compostable Food Packaging	0.0%	0.0%	39
EPS Expanded Polystyrene Packaging	0.1%	0.0%	336
Plastic Merchandise Bags	0.1%	0.0%	562
Transportation Packaging Film Plastic	0.2%	0.1%	784
Packaging Film Plastic	0.4%	0.1%	1,859
Flexible Plastic Packaging	0.0%	0.0%	178
Remainder/Composite Plastic	0.0%	0.0%	201
Metal	**5.1%**	**1.0%**	**22,131**
Aluminum Beverage Cans	2.2%	0.6%	9,568
Food Cans-Tinned	1.7%	0.4%	7,340
Aluminum Foil/Containers	0.1%	0.0%	339
Other Aluminum	0.2%	0.1%	735
Empty Aerosol Cans	0.1%	0.0%	259
Other Metal	0.9%	0.4%	3,890
Glass	**16.5%**	**3.9%**	**71,951**
Clear Glass Containers	7.7%	2.1%	33,714
Green Glass Containers	6.0%	1.5%	26,208
Other Colored Glass Containers	2.7%	0.8%	11,697
Plate Glass	0.0%	0.0%	5
Non-glass Ceramics	0.1%	0.1%	274
Remainder/Composite Glass	0.0%	0.0%	53

Material	Est. %	+ / -	Est. Tons
Paper Products	**19.3%**	**4.0%**	**84,085**
Newspaper Products	3.2%	0.8%	14,040
Cardboard & Kraft Paper Products	0.9%	0.9%	3,770
Magazines	5.4%	1.3%	23,643
High-grade Paper Products	1.8%	0.5%	7,836
Other Groundwood Paper Products	0.8%	0.3%	3,471
Mixed Paper Products	6.3%	1.4%	27,319
Product Paper Cups	-	-	-
Compostable Paper Products	0.4%	0.2%	1,617
Remainder/Composite Paper Products	0.5%	0.2%	2,388
Plastic Products	**1.2%**	**0.3%**	**5,371**
#1 PETE Products	0.1%	0.2%	519
#2 HDPE Products	0.0%	0.0%	68
#3 PVC Products	0.0%	0.0%	13
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	93
#6 PS Products	0.0%	0.0%	6
Bulky Rigid Plastic Products	0.4%	0.2%	1,529
PLA Compostable Plastic Bags & Film	0.0%	0.0%	9
PLA Compostable Plastic Utensils	0.0%	0.0%	17
#7 Other/Unknown Products	0.2%	0.1%	1,052
Plastic Garbage Bags	0.2%	0.1%	956
Plastic Non-bag Film Products	0.1%	0.0%	231
Remainder/Composite Plastic Products	0.2%	0.1%	877
Organics	**1.3%**	**0.5%**	**5,759**
Yard Debris	0.1%	0.1%	398
Food Processing Wastes	0.0%	0.0%	10
Other Compostables	0.0%	0.0%	60
Clean Wood	0.0%	0.0%	215
Fruits & Vegetables, Edible	0.1%	0.1%	342
Fruits & Vegetables, Non-edible	0.0%	0.0%	164
Homegrown Fruits & Vegetables	-	-	-
Meat, Edible	0.0%	0.0%	211
Meat, Non-edible	0.1%	0.1%	291
Mixed/Other Food Waste, Edible	0.6%	0.3%	2,699
Mixed/Other Food Waste, Non-edible	0.2%	0.2%	839
Animal Manure & Litter	-	-	-
Remainder/Composite Organics	0.1%	0.1%	530
Other Materials	**2.6%**	**0.6%**	**11,395**
Electronics & Small Appliances	0.2%	0.1%	686
Textiles (synthetic) & Shoes	0.5%	0.4%	2,366
Construction & Demolition Waste	0.0%	0.0%	31
Tanglers (non-plastic)	0.1%	0.1%	257
HHW/Special Waste	0.1%	0.1%	259
Diapers	0.1%	0.1%	449
Furniture/Bulky	0.0%	0.0%	17
Mixed Residue	1.7%	0.4%	7,330
Estimated Tons	**100%**		**435,300**
Sample Count			**80**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 26. Detailed Composition Table: Hauler-collected Inbound Recycling- Southwest Region

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**72.7%**	**2.6%**	**93,858**
Limited Accepted Recyclable	**14.0%**	**2.9%**	**18,060**
Widely Accepted Compostable	**0.1%**	**0.1%**	**176**
Limited Accepted Compostable	**3.2%**	**0.8%**	**4,154**
Potentially Recoverable	**3.8%**	**0.9%**	**4,852**
Non-recoverable	**6.2%**	**1.1%**	**8,001**
Paper Packaging	**60.3%**	**3.7%**	**77,909**
Cardboard & Kraft Packaging	48.7%	4.4%	62,923
Mixed Paper Packaging	5.7%	1.7%	7,386
Packaging Paper Cups	-	-	-
Aseptic Containers	0.2%	0.0%	220
Gable Top Containers	0.4%	0.1%	473
Other Polycoated Packaging	4.1%	0.7%	5,230
Single-use Food Service Compostable Paper	0.8%	0.2%	1,037
Other Compostable Paper Packaging	0.0%	0.0%	59
Newspaper Packaging	-	-	-
Remainder/Composite Paper Packaging	0.4%	0.1%	581
Plastic Packaging	**9.4%**	**1.0%**	**12,123**
#1 PETE Bottles	3.1%	0.4%	3,970
#1 PETE Non-bottles	0.8%	0.1%	1,088
#2 HDPE Natural Bottles	1.1%	0.2%	1,411
#2 HDPE Colored Bottles	1.1%	0.3%	1,383
#2 HDPE Jars & Tubs	0.2%	0.0%	258
#3 PVC Packaging	0.0%	0.0%	15
#4 LDPE Packaging	0.0%	0.0%	11
#5 PP Packaging	0.6%	0.1%	787
#6 PS Packaging	0.0%	0.0%	61
#7 Other/Unknown Packaging	0.4%	0.1%	572
PLA Compostable Food Packaging	0.0%	0.0%	2
EPS Expanded Polystyrene Packaging	0.2%	0.0%	221
Plastic Merchandise Bags	0.4%	0.2%	505
Transportation Packaging Film Plastic	0.6%	0.5%	779
Packaging Film Plastic	0.6%	0.1%	796
Flexible Plastic Packaging	0.1%	0.0%	140
Remainder/Composite Plastic	0.1%	0.1%	124
Metal	**4.3%**	**0.7%**	**5,489**
Aluminum Beverage Cans	1.8%	0.4%	2,270
Food Cans-Tinned	1.5%	0.4%	1,904
Aluminum Foil/Containers	0.1%	0.0%	68
Other Aluminum	0.2%	0.1%	247
Empty Aerosol Cans	0.0%	0.0%	38
Other Metal	0.7%	0.3%	962
Glass	**3.3%**	**3.1%**	**4,279**
Clear Glass Containers	1.6%	1.3%	2,036
Green Glass Containers	0.7%	0.8%	902
Other Colored Glass Containers	1.0%	1.1%	1,228
Plate Glass	0.0%	0.0%	20
Non-glass Ceramics	0.0%	0.0%	22
Remainder/Composite Glass	0.1%	0.1%	70

Material	Est. %	+ / -	Est. Tons
Paper Products	**14.7%**	**4.4%**	**18,998**
Newspaper Products	1.3%	0.3%	1,617
Cardboard & Kraft Paper Products	2.5%	3.4%	3,224
Magazines	2.2%	0.5%	2,899
High-grade Paper Products	2.6%	1.1%	3,374
Other Groundwood Paper Products	0.3%	0.1%	433
Mixed Paper Products	4.0%	0.8%	5,209
Product Paper Cups	-	-	-
Compostable Paper Products	0.5%	0.1%	609
Remainder/Composite Paper Products	1.3%	0.7%	1,633
Plastic Products	**2.1%**	**0.5%**	**2,689**
#1 PETE Products	0.1%	0.2%	151
#2 HDPE Products	-	-	-
#3 PVC Products	-	-	-
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	59
#6 PS Products	0.0%	0.0%	25
Bulky Rigid Plastic Products	0.3%	0.2%	444
PLA Compostable Plastic Bags & Film	0.0%	0.0%	20
PLA Compostable Plastic Utensils	-	-	-
#7 Other/Unknown Products	0.7%	0.3%	948
Plastic Garbage Bags	0.3%	0.1%	332
Plastic Non-bag Film Products	0.0%	0.0%	46
Remainder/Composite Plastic Products	0.5%	0.3%	663
Organics	**2.2%**	**0.7%**	**2,818**
Yard Debris	0.0%	0.0%	32
Food Processing Wastes	-	-	-
Other Compostables	0.0%	0.0%	41
Clean Wood	0.1%	0.1%	103
Fruits & Vegetables, Edible	0.2%	0.2%	270
Fruits & Vegetables, Non-edible	0.1%	0.1%	112
Homegrown Fruits & Vegetables	-	-	-
Meat, Edible	0.1%	0.1%	143
Meat, Non-edible	0.1%	0.1%	126
Mixed/Other Food Waste, Edible	1.2%	0.4%	1,578
Mixed/Other Food Waste, Non-edible	0.2%	0.2%	197
Animal Manure & Litter	0.0%	0.1%	63
Remainder/Composite Organics	0.1%	0.1%	153
Other Materials	**3.7%**	**0.9%**	**4,796**
Electronics & Small Appliances	0.6%	0.4%	740
Textiles (synthetic) & Shoes	1.0%	0.4%	1,276
Construction & Demolition Waste	0.3%	0.2%	370
Tanglers (non-plastic)	0.1%	0.1%	135
HHW/Special Waste	0.4%	0.2%	511
Diapers	0.5%	0.4%	697
Furniture/Bulky	-	-	-
Mixed Residue	0.8%	0.2%	1,067
Estimated Tons	**100%**		**129,100**
Sample Count			**49**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 27. Detailed Composition Table: Hauler-collected Inbound Recycling- Fall Season

Material	Est. %	+ / -
Widely Accepted Recyclable	**73.5%**	**3.8%**
Limited Accepted Recyclable	**19.5%**	**4.1%**
Widely Accepted Compostable	**0.3%**	**0.3%**
Limited Accepted Compostable	**1.5%**	**0.5%**
Potentially Recoverable	**1.7%**	**0.5%**
Non-recoverable	**3.4%**	**0.6%**
Paper Packaging	**59.4%**	**5.9%**
Cardboard & Kraft Packaging	51.2%	6.3%
Mixed Paper Packaging	4.4%	0.7%
Packaging Paper Cups	-	-
Aseptic Containers	0.1%	0.0%
Gable Top Containers	0.2%	0.0%
Other Polycoated Packaging	2.4%	0.4%
Single-use Food Service Compostable Paper	0.6%	0.2%
Other Compostable Paper Packaging	0.0%	0.0%
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	0.4%	0.1%
Plastic Packaging	**7.7%**	**1.7%**
#1 PETE Bottles	2.4%	0.5%
#1 PETE Non-bottles	0.9%	0.3%
#2 HDPE Natural Bottles	1.0%	0.3%
#2 HDPE Colored Bottles	0.8%	0.2%
#2 HDPE Jars & Tubs	0.3%	0.2%
#3 PVC Packaging	0.0%	0.0%
#4 LDPE Packaging	0.0%	0.0%
#5 PP Packaging	0.5%	0.2%
#6 PS Packaging	0.1%	0.0%
#7 Other/Unknown Packaging	0.4%	0.1%
PLA Compostable Food Packaging	-	-
EPS Expanded Polystyrene Packaging	0.2%	0.1%
Plastic Merchandise Bags	0.1%	0.0%
Transportation Packaging Film Plastic	0.3%	0.1%
Packaging Film Plastic	0.3%	0.1%
Flexible Plastic Packaging	0.0%	0.0%
Remainder/Composite Plastic	0.2%	0.2%
Metal	**4.1%**	**1.0%**
Aluminum Beverage Cans	1.8%	0.5%
Food Cans-Tinned	1.7%	0.5%
Aluminum Foil/Containers	0.0%	0.0%
Other Aluminum	0.0%	0.0%
Empty Aerosol Cans	0.0%	0.0%
Other Metal	0.5%	0.2%
Glass	**9.8%**	**3.8%**
Clear Glass Containers	4.4%	1.7%
Green Glass Containers	3.0%	1.2%
Other Colored Glass Containers	2.3%	1.1%
Plate Glass	0.0%	0.0%
Non-glass Ceramics	0.0%	0.0%
Remainder/Composite Glass	0.0%	0.0%

Material	Est. %	+ / -
Paper Products	**15.2%**	**4.0%**
Newspaper Products	3.0%	1.2%
Cardboard & Kraft Paper Products	0.4%	0.3%
Magazines	3.9%	1.2%
High-grade Paper Products	1.6%	0.6%
Other Groundwood Paper Products	1.1%	0.5%
Mixed Paper Products	4.5%	1.5%
Product Paper Cups	-	-
Compostable Paper Products	0.2%	0.1%
Remainder/Composite Paper Products	0.5%	0.3%
Plastic Products	**1.0%**	**0.3%**
#1 PETE Products	0.1%	0.1%
#2 HDPE Products	0.0%	0.0%
#3 PVC Products	0.0%	0.0%
#4 LDPE Products	-	-
#5 PP Products	0.0%	0.0%
#6 PS Products	0.0%	0.0%
Bulky Rigid Plastic Products	0.2%	0.1%
PLA Compostable Plastic Bags & Film	0.0%	0.0%
PLA Compostable Plastic Utensils	0.0%	0.0%
#7 Other/Unknown Products	0.2%	0.1%
Plastic Garbage Bags	0.1%	0.0%
Plastic Non-bag Film Products	0.0%	0.0%
Remainder/Composite Plastic Products	0.3%	0.2%
Organics	**1.1%**	**0.5%**
Yard Debris	0.0%	0.0%
Food Processing Wastes	0.0%	0.0%
Other Compostables	-	-
Clean Wood	0.3%	0.3%
Fruits & Vegetables, Edible	0.2%	0.2%
Fruits & Vegetables, Non-edible	0.0%	0.0%
Homegrown Fruits & Vegetables	-	-
Meat, Edible	0.1%	0.1%
Meat, Non-edible	0.0%	0.0%
Mixed/Other Food Waste, Edible	0.3%	0.2%
Mixed/Other Food Waste, Non-edible	0.0%	0.0%
Animal Manure & Litter	0.0%	0.0%
Remainder/Composite Organics	0.1%	0.1%
Other Materials	**1.6%**	**0.4%**
Electronics & Small Appliances	0.1%	0.1%
Textiles (synthetic) & Shoes	0.2%	0.1%
Construction & Demolition Waste	0.3%	0.2%
Tanglers (non-plastic)	0.0%	0.0%
HHW/Special Waste	0.2%	0.1%
Diapers	0.0%	0.0%
Furniture/Bulky	-	-
Mixed Residue	0.7%	0.2%
Estimated Tons	**100%**	
Sample Count		**63**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 28. Detailed Composition Table: Hauler-collected Inbound Recycling- Winter Season

Material	Est. %	+ / -
Widely Accepted Recyclable	**79.8%**	**3.5%**
Limited Accepted Recyclable	**9.9%**	**2.2%**
Widely Accepted Compostable	**0.3%**	**0.2%**
Limited Accepted Compostable	**1.7%**	**0.4%**
Potentially Recoverable	**4.2%**	**1.6%**
Non-recoverable	**4.1%**	**0.9%**
Paper Packaging	**70.7%**	**4.6%**
Cardboard & Kraft Packaging	62.4%	5.6%
Mixed Paper Packaging	5.2%	1.2%
Packaging Paper Cups	0.0%	0.0%
Aseptic Containers	0.1%	0.0%
Gable Top Containers	0.3%	0.1%
Other Polycoated Packaging	1.4%	0.5%
Single-use Food Service Compostable Paper	0.1%	0.1%
Other Compostable Paper Packaging	0.3%	0.1%
Newspaper Packaging	0.4%	0.4%
Remainder/Composite Paper Packaging	0.5%	0.1%
Plastic Packaging	**5.5%**	**1.0%**
#1 PETE Bottles	1.6%	0.4%
#1 PETE Non-bottles	0.7%	0.2%
#2 HDPE Natural Bottles	0.7%	0.1%
#2 HDPE Colored Bottles	0.4%	0.1%
#2 HDPE Jars & Tubs	0.2%	0.1%
#3 PVC Packaging	-	-
#4 LDPE Packaging	0.0%	0.0%
#5 PP Packaging	0.4%	0.1%
#6 PS Packaging	0.0%	0.0%
#7 Other/Unknown Packaging	0.2%	0.1%
PLA Compostable Food Packaging	0.0%	0.0%
EPS Expanded Polystyrene Packaging	0.2%	0.1%
Plastic Merchandise Bags	0.1%	0.0%
Transportation Packaging Film Plastic	0.5%	0.4%
Packaging Film Plastic	0.3%	0.1%
Flexible Plastic Packaging	0.1%	0.0%
Remainder/Composite Plastic	0.0%	0.0%
Metal	**3.8%**	**1.3%**
Aluminum Beverage Cans	1.2%	0.3%
Food Cans-Tinned	1.1%	0.2%
Aluminum Foil/Containers	0.1%	0.0%
Other Aluminum	0.1%	0.1%
Empty Aerosol Cans	0.0%	0.0%
Other Metal	1.3%	1.1%
Glass	**3.5%**	**1.3%**
Clear Glass Containers	1.5%	0.5%
Green Glass Containers	1.1%	0.7%
Other Colored Glass Containers	0.9%	0.4%
Plate Glass	-	-
Non-glass Ceramics	0.0%	0.0%
Remainder/Composite Glass	0.1%	0.0%

Material	Est. %	+ / -
Paper Products	**10.3%**	**2.8%**
Newspaper Products	1.6%	0.4%
Cardboard & Kraft Paper Products	1.2%	1.9%
Magazines	2.0%	0.6%
High-grade Paper Products	1.3%	0.6%
Other Groundwood Paper Products	0.1%	0.1%
Mixed Paper Products	3.5%	0.8%
Product Paper Cups	0.0%	0.0%
Compostable Paper Products	0.3%	0.1%
Remainder/Composite Paper Products	0.3%	0.1%
Plastic Products	**1.2%**	**0.4%**
#1 PETE Products	0.0%	0.0%
#2 HDPE Products	0.0%	0.0%
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	0.0%	0.0%
#6 PS Products	0.0%	0.0%
Bulky Rigid Plastic Products	0.3%	0.1%
PLA Compostable Plastic Bags & Film	-	-
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	0.3%	0.1%
Plastic Garbage Bags	0.1%	0.1%
Plastic Non-bag Film Products	0.2%	0.3%
Remainder/Composite Plastic Products	0.2%	0.2%
Organics	**1.4%**	**0.4%**
Yard Debris	0.2%	0.2%
Food Processing Wastes	-	-
Other Compostables	0.0%	0.0%
Clean Wood	0.1%	0.1%
Fruits & Vegetables, Edible	0.1%	0.0%
Fruits & Vegetables, Non-edible	0.0%	0.0%
Homegrown Fruits & Vegetables	-	-
Meat, Edible	0.0%	0.0%
Meat, Non-edible	0.1%	0.1%
Mixed/Other Food Waste, Edible	0.5%	0.2%
Mixed/Other Food Waste, Non-edible	0.3%	0.2%
Animal Manure & Litter	-	-
Remainder/Composite Organics	0.1%	0.1%
Other Materials	**3.5%**	**1.1%**
Electronics & Small Appliances	0.0%	0.0%
Textiles (synthetic) & Shoes	1.1%	1.0%
Construction & Demolition Waste	0.5%	0.5%
Tanglers (non-plastic)	0.0%	0.0%
HHW/Special Waste	0.2%	0.2%
Diapers	0.3%	0.2%
Furniture/Bulky	-	-
Mixed Residue	1.3%	0.4%
Estimated Tons	**100%**	
Sample Count		**52**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 29. Detailed Composition Table: Hauler-collected Inbound Recycling- Spring Season

Material	Est. %	+ / -
Widely Accepted Recyclable	**73.2%**	**3.6%**
Limited Accepted Recyclable	**17.8%**	**3.3%**
Widely Accepted Compostable	**0.4%**	**0.4%**
Limited Accepted Compostable	**2.1%**	**0.4%**
Potentially Recoverable	**2.1%**	**0.7%**
Non-recoverable	**4.4%**	**0.8%**
Paper Packaging	**61.7%**	**5.4%**
Cardboard & Kraft Packaging	53.5%	5.5%
Mixed Paper Packaging	4.1%	0.8%
Packaging Paper Cups	0.0%	0.0%
Aseptic Containers	0.2%	0.1%
Gable Top Containers	0.3%	0.1%
Other Polycoated Packaging	2.4%	0.7%
Single-use Food Service Compostable Paper	0.7%	0.3%
Other Compostable Paper Packaging	0.1%	0.1%
Newspaper Packaging	0.1%	0.1%
Remainder/Composite Paper Packaging	0.3%	0.1%
Plastic Packaging	**6.7%**	**1.3%**
#1 PETE Bottles	2.3%	0.5%
#1 PETE Non-bottles	0.8%	0.2%
#2 HDPE Natural Bottles	0.8%	0.2%
#2 HDPE Colored Bottles	0.5%	0.2%
#2 HDPE Jars & Tubs	0.4%	0.1%
#3 PVC Packaging	0.0%	0.0%
#4 LDPE Packaging	0.0%	0.0%
#5 PP Packaging	0.5%	0.2%
#6 PS Packaging	0.0%	0.0%
#7 Other/Unknown Packaging	0.4%	0.1%
PLA Compostable Food Packaging	0.0%	0.0%
EPS Expanded Polystyrene Packaging	0.1%	0.0%
Plastic Merchandise Bags	0.1%	0.0%
Transportation Packaging Film Plastic	0.2%	0.2%
Packaging Film Plastic	0.4%	0.1%
Flexible Plastic Packaging	0.0%	0.0%
Remainder/Composite Plastic	0.0%	0.0%
Metal	**3.9%**	**1.1%**
Aluminum Beverage Cans	1.4%	0.4%
Food Cans-Tinned	1.3%	0.6%
Aluminum Foil/Containers	0.1%	0.0%
Other Aluminum	0.3%	0.1%
Empty Aerosol Cans	0.0%	0.0%
Other Metal	0.7%	0.4%
Glass	**8.6%**	**3.0%**
Clear Glass Containers	4.6%	1.8%
Green Glass Containers	2.6%	1.0%
Other Colored Glass Containers	1.4%	0.5%
Plate Glass	-	-
Non-glass Ceramics	0.0%	0.1%
Remainder/Composite Glass	0.0%	0.0%

Material	Est. %	+ / -
Paper Products	**14.3%**	**3.1%**
Newspaper Products	2.3%	0.8%
Cardboard & Kraft Paper Products	0.6%	0.8%
Magazines	2.5%	0.8%
High-grade Paper Products	2.7%	1.2%
Other Groundwood Paper Products	0.4%	0.2%
Mixed Paper Products	4.0%	1.0%
Product Paper Cups	-	-
Compostable Paper Products	0.4%	0.2%
Remainder/Composite Paper Products	1.4%	0.5%
Plastic Products	**1.5%**	**0.4%**
#1 PETE Products	0.0%	0.0%
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	0.0%	0.0%
#6 PS Products	0.0%	0.0%
Bulky Rigid Plastic Products	0.5%	0.3%
PLA Compostable Plastic Bags & Film	0.0%	0.0%
PLA Compostable Plastic Utensils	0.0%	0.0%
#7 Other/Unknown Products	0.3%	0.1%
Plastic Garbage Bags	0.3%	0.1%
Plastic Non-bag Film Products	0.0%	0.0%
Remainder/Composite Plastic Products	0.3%	0.1%
Organics	**1.3%**	**0.5%**
Yard Debris	0.3%	0.4%
Food Processing Wastes	-	-
Other Compostables	-	-
Clean Wood	0.1%	0.1%
Fruits & Vegetables, Edible	0.1%	0.1%
Fruits & Vegetables, Non-edible	0.1%	0.0%
Homegrown Fruits & Vegetables	-	-
Meat, Edible	0.0%	0.0%
Meat, Non-edible	0.0%	0.0%
Mixed/Other Food Waste, Edible	0.6%	0.2%
Mixed/Other Food Waste, Non-edible	0.0%	0.0%
Animal Manure & Litter	-	-
Remainder/Composite Organics	0.1%	0.0%
Other Materials	**1.9%**	**0.7%**
Electronics & Small Appliances	0.4%	0.4%
Textiles (synthetic) & Shoes	0.2%	0.1%
Construction & Demolition Waste	0.1%	0.1%
Tanglers (non-plastic)	0.0%	0.0%
HHW/Special Waste	0.1%	0.1%
Diapers	0.1%	0.1%
Furniture/Bulky	-	-
Mixed Residue	1.0%	0.3%
Estimated Tons	**100%**	
Sample Count		**55**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 30. Detailed Composition Table: Hauler-collected Inbound Recycling- Summer Season

Material	Est. %	+ / -
Widely Accepted Recyclable	**70.4%**	**3.9%**
Limited Accepted Recyclable	**17.0%**	**2.8%**
Widely Accepted Compostable	**0.2%**	**0.1%**
Limited Accepted Compostable	**2.4%**	**0.9%**
Potentially Recoverable	**4.8%**	**2.1%**
Non-recoverable	**5.1%**	**1.0%**
Paper Packaging	**60.7%**	**4.6%**
Cardboard & Kraft Packaging	51.1%	5.7%
Mixed Paper Packaging	3.6%	0.7%
Packaging Paper Cups	0.0%	0.0%
Aseptic Containers	0.3%	0.2%
Gable Top Containers	0.3%	0.1%
Other Polycoated Packaging	4.2%	1.3%
Single-use Food Service Compostable Paper	0.4%	0.1%
Other Compostable Paper Packaging	0.1%	0.1%
Newspaper Packaging	0.6%	0.9%
Remainder/Composite Paper Packaging	0.1%	0.1%
Plastic Packaging	**8.0%**	**1.2%**
#1 PETE Bottles	2.8%	0.7%
#1 PETE Non-bottles	1.0%	0.2%
#2 HDPE Natural Bottles	0.7%	0.2%
#2 HDPE Colored Bottles	0.8%	0.2%
#2 HDPE Jars & Tubs	0.2%	0.1%
#3 PVC Packaging	0.0%	0.0%
#4 LDPE Packaging	0.0%	0.0%
#5 PP Packaging	0.5%	0.1%
#6 PS Packaging	0.0%	0.0%
#7 Other/Unknown Packaging	0.1%	0.0%
PLA Compostable Food Packaging	0.0%	0.0%
EPS Expanded Polystyrene Packaging	0.1%	0.0%
Plastic Merchandise Bags	0.3%	0.1%
Transportation Packaging Film Plastic	0.4%	0.3%
Packaging Film Plastic	0.8%	0.3%
Flexible Plastic Packaging	0.1%	0.0%
Remainder/Composite Plastic	0.1%	0.1%
Metal	**4.4%**	**1.1%**
Aluminum Beverage Cans	1.8%	0.3%
Food Cans-Tinned	1.1%	0.2%
Aluminum Foil/Containers	0.0%	0.0%
Other Aluminum	0.1%	0.1%
Empty Aerosol Cans	0.0%	0.0%
Other Metal	1.3%	1.0%
Glass	**7.3%**	**2.0%**
Clear Glass Containers	3.0%	0.8%
Green Glass Containers	2.7%	0.9%
Other Colored Glass Containers	1.6%	0.6%
Plate Glass	0.0%	0.0%
Non-glass Ceramics	-	-
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**11.7%**	**2.2%**
Newspaper Products	1.4%	0.5%
Cardboard & Kraft Paper Products	0.3%	0.3%
Magazines	2.8%	1.1%
High-grade Paper Products	2.8%	1.1%
Other Groundwood Paper Products	0.3%	0.1%
Mixed Paper Products	3.3%	0.7%
Product Paper Cups	-	-
Compostable Paper Products	0.3%	0.1%
Remainder/Composite Paper Products	0.5%	0.2%
Plastic Products	**2.0%**	**0.5%**
#1 PETE Products	0.1%	0.2%
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	0.0%	0.0%
#6 PS Products	0.0%	0.0%
Bulky Rigid Plastic Products	0.4%	0.2%
PLA Compostable Plastic Bags & Film	0.0%	0.0%
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	0.9%	0.3%
Plastic Garbage Bags	0.3%	0.2%
Plastic Non-bag Film Products	0.1%	0.1%
Remainder/Composite Plastic Products	0.2%	0.1%
Organics	**2.1%**	**0.9%**
Yard Debris	0.0%	0.0%
Food Processing Wastes	-	-
Other Compostables	0.1%	0.1%
Clean Wood	0.1%	0.1%
Fruits & Vegetables, Edible	0.1%	0.1%
Fruits & Vegetables, Non-edible	0.1%	0.1%
Homegrown Fruits & Vegetables	-	-
Meat, Edible	0.0%	0.0%
Meat, Non-edible	0.1%	0.1%
Mixed/Other Food Waste, Edible	1.3%	0.8%
Mixed/Other Food Waste, Non-edible	0.1%	0.1%
Animal Manure & Litter	0.1%	0.1%
Remainder/Composite Organics	0.2%	0.1%
Other Materials	**3.8%**	**1.6%**
Electronics & Small Appliances	0.4%	0.4%
Textiles (synthetic) & Shoes	1.6%	1.4%
Construction & Demolition Waste	0.0%	0.0%
Tanglers (non-plastic)	0.1%	0.1%
HHW/Special Waste	0.1%	0.1%
Diapers	0.4%	0.4%
Furniture/Bulky	0.0%	0.0%
Mixed Residue	1.1%	0.4%
Estimated Tons	**100%**	
Sample Count		**45**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Outbound Recycling Commodities

Table 31. Detailed Composition Table: Outbound Commodity- Cardboard

Material	Est. %	+ / -
Widely Accepted Recyclable	**94.8%**	**1.5%**
Limited Accepted Recyclable	**3.0%**	**1.1%**
Widely Accepted Compostable	**0.0%**	**0.0%**
Limited Accepted Compostable	**0.8%**	**0.5%**
Potentially Recoverable	**0.5%**	**0.5%**
Non-recoverable	**0.9%**	**0.4%**
Paper Packaging	**95.9%**	**1.4%**
Cardboard & Kraft Packaging	89.7%	2.8%
Mixed Paper Packaging	3.1%	1.0%
Packaging Paper Cups	0.0%	0.0%
Aseptic Containers	0.1%	0.1%
Gable Top Containers	0.1%	0.0%
Other Polycoated Packaging	2.1%	0.8%
Single-use Food Service Compostable Paper	0.5%	0.4%
Other Compostable Paper Packaging	0.3%	0.4%
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	0.1%	0.0%
Plastic Packaging	**0.7%**	**0.2%**
#1 PETE Bottles	0.1%	0.0%
#1 PETE Non-bottles	0.1%	0.0%
#2 HDPE Natural Bottles	0.1%	0.1%
#2 HDPE Colored Bottles	0.1%	0.1%
#2 HDPE Jars & Tubs	0.0%	0.0%
#3 PVC Packaging	-	-
#4 LDPE Packaging	0.0%	0.0%
#5 PP Packaging	0.0%	0.0%
#6 PS Packaging	0.0%	0.0%
#7 Other/Unknown Packaging	0.0%	0.0%
PLA Compostable Food Packaging	-	-
EPS Expanded Polystyrene Packaging	0.0%	0.0%
Plastic Merchandise Bags	0.0%	0.0%
Transportation Packaging Film Plastic	0.0%	0.0%
Packaging Film Plastic	0.1%	0.1%
Flexible Plastic Packaging	0.0%	0.0%
Remainder/Composite Plastic	0.0%	0.0%
Metal	**0.3%**	**0.3%**
Aluminum Beverage Cans	0.0%	0.0%
Food Cans-Tinned	0.1%	0.0%
Aluminum Foil/Containers	0.0%	0.0%
Other Aluminum	0.0%	0.0%
Empty Aerosol Cans	-	-
Other Metal	0.2%	0.3%
Glass	**0.0%**	**0.0%**
Clear Glass Containers	-	-
Green Glass Containers	-	-
Other Colored Glass Containers	-	-
Plate Glass	-	-
Non-glass Ceramics	0.0%	0.0%
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**2.6%**	**1.0%**
Newspaper Products	0.5%	0.3%
Cardboard & Kraft Paper Products	0.1%	0.1%
Magazines	0.7%	0.4%
High-grade Paper Products	0.2%	0.1%
Other Groundwood Paper Products	0.2%	0.2%
Mixed Paper Products	0.6%	0.3%
Product Paper Cups	-	-
Compostable Paper Products	0.0%	0.0%
Remainder/Composite Paper Products	0.4%	0.3%
Plastic Products	**0.0%**	**0.0%**
#1 PETE Products	-	-
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	-	-
#6 PS Products	-	-
Bulky Rigid Plastic Products	-	-
PLA Compostable Plastic Bags & Film	-	-
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	0.0%	0.0%
Plastic Garbage Bags	0.0%	0.0%
Plastic Non-bag Film Products	-	-
Remainder/Composite Plastic Products	0.0%	0.0%
Organics	**0.1%**	**0.1%**
Yard Debris	0.0%	0.0%
Food Processing Wastes	-	-
Other Compostables	0.0%	0.0%
Clean Wood	0.0%	0.0%
Fruits & Vegetables, Edible	0.0%	0.0%
Fruits & Vegetables, Non-edible	-	-
Homegrown Fruits & Vegetables	-	-
Meat, Edible	-	-
Meat, Non-edible	-	-
Mixed/Other Food Waste, Edible	0.0%	0.0%
Mixed/Other Food Waste, Non-edible	-	-
Animal Manure & Litter	-	-
Remainder/Composite Organics	0.0%	0.0%
Other Materials	**0.3%**	**0.2%**
Electronics & Small Appliances	-	-
Textiles (synthetic) & Shoes	0.1%	0.2%
Construction & Demolition Waste	0.1%	0.1%
Tanglers (non-plastic)	0.0%	0.0%
HHW/Special Waste	0.0%	0.0%
Diapers	-	-
Furniture/Bulky	-	-
Mixed Residue	0.1%	0.2%
Estimated Tons	**100%**	
Sample Count		**27**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 32. Detailed Composition Table: Outbound Commodity- Mixed Paper

Material	Est. %	+ / -
Widely Accepted Recyclable	**63.9%**	**3.8%**
Limited Accepted Recyclable	**28.2%**	**3.7%**
Widely Accepted Compostable	**0.1%**	**0.1%**
Limited Accepted Compostable	**1.9%**	**0.5%**
Potentially Recoverable	**1.0%**	**0.3%**
Non-recoverable	**4.9%**	**1.3%**
Paper Packaging	**40.0%**	**6.2%**
Cardboard & Kraft Packaging	23.3%	6.5%
Mixed Paper Packaging	8.9%	1.7%
Packaging Paper Cups	0.0%	0.0%
Aseptic Containers	0.2%	0.1%
Gable Top Containers	0.6%	0.2%
Other Polycoated Packaging	5.7%	1.2%
Single-use Food Service Compostable Paper	0.7%	0.2%
Other Compostable Paper Packaging	0.1%	0.1%
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	0.4%	0.1%
Plastic Packaging	**3.9%**	**1.1%**
#1 PETE Bottles	0.8%	0.2%
#1 PETE Non-bottles	0.6%	0.3%
#2 HDPE Natural Bottles	0.2%	0.1%
#2 HDPE Colored Bottles	0.2%	0.1%
#2 HDPE Jars & Tubs	0.2%	0.1%
#3 PVC Packaging	-	-
#4 LDPE Packaging	-	-
#5 PP Packaging	0.4%	0.2%
#6 PS Packaging	0.1%	0.1%
#7 Other/Unknown Packaging	0.2%	0.1%
PLA Compostable Food Packaging	0.0%	0.0%
EPS Expanded Polystyrene Packaging	0.1%	0.0%
Plastic Merchandise Bags	0.1%	0.0%
Transportation Packaging Film Plastic	0.2%	0.1%
Packaging Film Plastic	0.7%	0.2%
Flexible Plastic Packaging	0.0%	0.0%
Remainder/Composite Plastic	0.0%	0.0%
Metal	**1.3%**	**0.4%**
Aluminum Beverage Cans	0.6%	0.2%
Food Cans-Tinned	0.5%	0.3%
Aluminum Foil/Containers	0.1%	0.0%
Other Aluminum	0.0%	0.0%
Empty Aerosol Cans	0.0%	0.0%
Other Metal	0.1%	0.1%
Glass	**0.2%**	**0.1%**
Clear Glass Containers	0.1%	0.1%
Green Glass Containers	0.0%	0.0%
Other Colored Glass Containers	0.0%	0.0%
Plate Glass	-	-
Non-glass Ceramics	-	-
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**52.0%**	**6.3%**
Newspaper Products	9.2%	2.7%
Cardboard & Kraft Paper Products	1.3%	1.8%
Magazines	11.5%	2.0%
High-grade Paper Products	6.7%	2.1%
Other Groundwood Paper Products	2.4%	1.1%
Mixed Paper Products	18.3%	3.0%
Product Paper Cups	-	-
Compostable Paper Products	1.0%	0.3%
Remainder/Composite Paper Products	1.6%	0.4%
Plastic Products	**1.0%**	**0.4%**
#1 PETE Products	-	-
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	0.0%	0.0%
#6 PS Products	0.0%	0.0%
Bulky Rigid Plastic Products	0.0%	0.0%
PLA Compostable Plastic Bags & Film	0.0%	0.0%
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	0.6%	0.4%
Plastic Garbage Bags	0.1%	0.0%
Plastic Non-bag Film Products	0.0%	0.0%
Remainder/Composite Plastic Products	0.3%	0.1%
Organics	**0.3%**	**0.1%**
Yard Debris	0.0%	0.0%
Food Processing Wastes	0.0%	0.0%
Other Compostables	0.0%	0.0%
Clean Wood	0.1%	0.1%
Fruits & Vegetables, Edible	0.0%	0.0%
Fruits & Vegetables, Non-edible	0.0%	0.0%
Homegrown Fruits & Vegetables	-	-
Meat, Edible	0.0%	0.0%
Meat, Non-edible	0.0%	0.0%
Mixed/Other Food Waste, Edible	0.1%	0.1%
Mixed/Other Food Waste, Non-edible	0.0%	0.0%
Animal Manure & Litter	-	-
Remainder/Composite Organics	0.1%	0.1%
Other Materials	**1.4%**	**0.6%**
Electronics & Small Appliances	0.1%	0.1%
Textiles (synthetic) & Shoes	0.3%	0.1%
Construction & Demolition Waste	0.0%	0.0%
Tanglers (non-plastic)	0.1%	0.0%
HHW/Special Waste	0.0%	0.0%
Diapers	0.1%	0.1%
Furniture/Bulky	-	-
Mixed Residue	0.7%	0.5%
Estimated Tons	**100%**	
Sample Count		**31**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 33. Detailed Composition Table: Outbound Commodity- Paper Cartons

Material	Est. %	+ / -
Widely Accepted Recyclable	**3.6%**	**0.9%**
Limited Accepted Recyclable	**96.0%**	**1.1%**
Widely Accepted Compostable	**-**	**-**
Limited Accepted Compostable	**0.1%**	**0.2%**
Potentially Recoverable	**0.1%**	**0.1%**
Non-recoverable	**0.2%**	**0.0%**
Paper Packaging	**96.9%**	**1.9%**
Cardboard & Kraft Packaging	0.8%	0.5%
Mixed Paper Packaging	0.5%	0.3%
Packaging Paper Cups	-	-
Aseptic Containers	17.1%	12.5%
Gable Top Containers	78.3%	12.1%
Other Polycoated Packaging	0.1%	0.1%
Single-use Food Service Compostable Paper	-	-
Other Compostable Paper Packaging	-	-
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	-	-
Plastic Packaging	**1.8%**	**1.8%**
#1 PETE Bottles	1.4%	1.5%
#1 PETE Non-bottles	0.2%	0.1%
#2 HDPE Natural Bottles	0.0%	0.1%
#2 HDPE Colored Bottles	0.0%	0.0%
#2 HDPE Jars & Tubs	-	-
#3 PVC Packaging	-	-
#4 LDPE Packaging	-	-
#5 PP Packaging	0.0%	0.0%
#6 PS Packaging	-	-
#7 Other/Unknown Packaging	-	-
PLA Compostable Food Packaging	-	-
EPS Expanded Polystyrene Packaging	-	-
Plastic Merchandise Bags	0.0%	0.0%
Transportation Packaging Film Plastic	-	-
Packaging Film Plastic	0.0%	0.0%
Flexible Plastic Packaging	-	-
Remainder/Composite Plastic	0.0%	0.1%
Metal	**1.0%**	**1.2%**
Aluminum Beverage Cans	0.2%	0.2%
Food Cans-Tinned	0.3%	0.4%
Aluminum Foil/Containers	0.0%	0.0%
Other Aluminum	0.2%	0.2%
Empty Aerosol Cans	0.2%	0.3%
Other Metal	0.1%	0.1%
Glass	**-**	**-**
Clear Glass Containers	-	-
Green Glass Containers	-	-
Other Colored Glass Containers	-	-
Plate Glass	-	-
Non-glass Ceramics	-	-
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**0.1%**	**0.1%**
Newspaper Products	-	-
Cardboard & Kraft Paper Products	-	-
Magazines	-	-
High-grade Paper Products	-	-
Other Groundwood Paper Products	-	-
Mixed Paper Products	0.0%	0.0%
Product Paper Cups	-	-
Compostable Paper Products	-	-
Remainder/Composite Paper Products	0.0%	0.0%
Plastic Products	**-**	**-**
#1 PETE Products	-	-
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	-	-
#6 PS Products	-	-
Bulky Rigid Plastic Products	-	-
PLA Compostable Plastic Bags & Film	-	-
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	-	-
Plastic Garbage Bags	-	-
Plastic Non-bag Film Products	-	-
Remainder/Composite Plastic Products	-	-
Organics	**0.1%**	**0.2%**
Yard Debris	-	-
Food Processing Wastes	-	-
Other Compostables	-	-
Clean Wood	-	-
Fruits & Vegetables, Edible	-	-
Fruits & Vegetables, Non-edible	-	-
Homegrown Fruits & Vegetables	-	-
Meat, Edible	-	-
Meat, Non-edible	-	-
Mixed/Other Food Waste, Edible	0.1%	0.2%
Mixed/Other Food Waste, Non-edible	-	-
Animal Manure & Litter	-	-
Remainder/Composite Organics	-	-
Other Materials	**0.1%**	**0.0%**
Electronics & Small Appliances	-	-
Textiles (synthetic) & Shoes	-	-
Construction & Demolition Waste	-	-
Tanglers (non-plastic)	-	-
HHW/Special Waste	-	-
Diapers	-	-
Furniture/Bulky	-	-
Mixed Residue	0.1%	0.0%
Estimated Tons	**100%**	
Sample Count		**3**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 34. Detailed Composition Table: Outbound Commodity- #1 PET Plastics

Material	Est. %	+ / -
Widely Accepted Recyclable	**90.3%**	**4.3%**
Limited Accepted Recyclable	**5.5%**	**2.3%**
Widely Accepted Compostable	**0.1%**	**0.2%**
Limited Accepted Compostable	**1.8%**	**1.4%**
Potentially Recoverable	**0.7%**	**0.4%**
Non-recoverable	**1.5%**	**0.9%**
Paper Packaging	**2.0%**	**0.8%**
Cardboard & Kraft Packaging	0.5%	0.4%
Mixed Paper Packaging	0.5%	0.3%
Packaging Paper Cups	0.1%	0.1%
Aseptic Containers	0.2%	0.1%
Gable Top Containers	0.3%	0.3%
Other Polycoated Packaging	0.2%	0.2%
Single-use Food Service Compostable Paper	0.0%	0.0%
Other Compostable Paper Packaging	0.0%	0.0%
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	0.1%	0.1%
Plastic Packaging	**93.0%**	**3.1%**
#1 PETE Bottles	73.1%	5.7%
#1 PETE Non-bottles	14.4%	2.4%
#2 HDPE Natural Bottles	0.3%	0.1%
#2 HDPE Colored Bottles	0.5%	0.2%
#2 HDPE Jars & Tubs	0.2%	0.2%
#3 PVC Packaging	-	-
#4 LDPE Packaging	0.0%	0.0%
#5 PP Packaging	2.7%	1.8%
#6 PS Packaging	0.3%	0.3%
#7 Other/Unknown Packaging	0.8%	0.3%
PLA Compostable Food Packaging	0.0%	0.0%
EPS Expanded Polystyrene Packaging	0.2%	0.1%
Plastic Merchandise Bags	0.0%	0.0%
Transportation Packaging Film Plastic	0.0%	0.0%
Packaging Film Plastic	0.2%	0.1%
Flexible Plastic Packaging	0.1%	0.1%
Remainder/Composite Plastic	0.1%	0.1%
Metal	**0.3%**	**0.1%**
Aluminum Beverage Cans	0.3%	0.1%
Food Cans-Tinned	0.0%	0.0%
Aluminum Foil/Containers	0.0%	0.0%
Other Aluminum	0.0%	0.0%
Empty Aerosol Cans	-	-
Other Metal	0.0%	0.0%
Glass	**0.1%**	**0.1%**
Clear Glass Containers	0.0%	0.1%
Green Glass Containers	0.0%	0.0%
Other Colored Glass Containers	-	-
Plate Glass	-	-
Non-glass Ceramics	-	-
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**1.2%**	**0.4%**
Newspaper Products	0.1%	0.0%
Cardboard & Kraft Paper Products	0.0%	0.0%
Magazines	0.1%	0.2%
High-grade Paper Products	0.2%	0.2%
Other Groundwood Paper Products	0.0%	0.0%
Mixed Paper Products	0.5%	0.2%
Product Paper Cups	-	-
Compostable Paper Products	0.1%	0.1%
Remainder/Composite Paper Products	0.1%	0.1%
Plastic Products	**0.9%**	**0.6%**
#1 PETE Products	-	-
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	0.1%	0.1%
#6 PS Products	-	-
Bulky Rigid Plastic Products	0.2%	0.2%
PLA Compostable Plastic Bags & Film	0.0%	0.0%
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	0.6%	0.5%
Plastic Garbage Bags	0.0%	0.0%
Plastic Non-bag Film Products	0.0%	0.0%
Remainder/Composite Plastic Products	0.1%	0.1%
Organics	**2.0%**	**1.7%**
Yard Debris	-	-
Food Processing Wastes	-	-
Other Compostables	-	-
Clean Wood	0.1%	0.2%
Fruits & Vegetables, Edible	0.0%	0.1%
Fruits & Vegetables, Non-edible	-	-
Homegrown Fruits & Vegetables	-	-
Meat, Edible	-	-
Meat, Non-edible	-	-
Mixed/Other Food Waste, Edible	1.7%	1.4%
Mixed/Other Food Waste, Non-edible	-	-
Animal Manure & Litter	-	-
Remainder/Composite Organics	0.2%	0.2%
Other Materials	**0.5%**	**0.4%**
Electronics & Small Appliances	0.1%	0.1%
Textiles (synthetic) & Shoes	0.1%	0.1%
Construction & Demolition Waste	0.2%	0.3%
Tanglers (non-plastic)	-	-
HHW/Special Waste	0.0%	0.0%
Diapers	-	-
Furniture/Bulky	-	-
Mixed Residue	0.1%	0.1%
Estimated Tons	**100%**	
Sample Count		**24**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 35. Detailed Composition Table: Outbound Commodity- #2 HDPE Natural Plastics

Material	Est. %	+ / -
Widely Accepted Recyclable	**98.8%**	**0.6%**
Limited Accepted Recyclable	**0.8%**	**0.4%**
Widely Accepted Compostable	**-**	**-**
Limited Accepted Compostable	**0.0%**	**0.0%**
Potentially Recoverable	**0.2%**	**0.2%**
Non-recoverable	**0.3%**	**0.1%**
Paper Packaging	**0.3%**	**0.1%**
Cardboard & Kraft Packaging	0.0%	0.0%
Mixed Paper Packaging	0.0%	0.0%
Packaging Paper Cups	-	-
Aseptic Containers	0.0%	0.0%
Gable Top Containers	0.1%	0.1%
Other Polycoated Packaging	0.0%	0.0%
Single-use Food Service Compostable Paper	-	-
Other Compostable Paper Packaging	-	-
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	0.0%	0.0%
Plastic Packaging	**99.0%**	**0.7%**
#1 PETE Bottles	0.8%	0.5%
#1 PETE Non-bottles	0.4%	0.3%
#2 HDPE Natural Bottles	94.3%	2.3%
#2 HDPE Colored Bottles	0.8%	0.4%
#2 HDPE Jars & Tubs	2.0%	0.8%
#3 PVC Packaging	-	-
#4 LDPE Packaging	0.0%	0.0%
#5 PP Packaging	0.4%	0.2%
#6 PS Packaging	0.0%	0.0%
#7 Other/Unknown Packaging	0.1%	0.1%
PLA Compostable Food Packaging	-	-
EPS Expanded Polystyrene Packaging	0.1%	0.1%
Plastic Merchandise Bags	0.0%	0.0%
Transportation Packaging Film Plastic	0.0%	0.1%
Packaging Film Plastic	0.1%	0.0%
Flexible Plastic Packaging	0.0%	0.0%
Remainder/Composite Plastic	0.0%	0.0%
Metal	**0.5%**	**0.4%**
Aluminum Beverage Cans	0.2%	0.1%
Food Cans-Tinned	0.2%	0.3%
Aluminum Foil/Containers	0.0%	0.0%
Other Aluminum	-	-
Empty Aerosol Cans	-	-
Other Metal	0.0%	0.0%
Glass	**-**	**-**
Clear Glass Containers	-	-
Green Glass Containers	-	-
Other Colored Glass Containers	-	-
Plate Glass	-	-
Non-glass Ceramics	-	-
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**0.2%**	**0.1%**
Newspaper Products	0.0%	0.0%
Cardboard & Kraft Paper Products	-	-
Magazines	0.0%	0.0%
High-grade Paper Products	0.0%	0.0%
Other Groundwood Paper Products	0.0%	0.1%
Mixed Paper Products	0.0%	0.0%
Product Paper Cups	-	-
Compostable Paper Products	0.0%	0.0%
Remainder/Composite Paper Products	0.0%	0.0%
Plastic Products	**0.1%**	**0.1%**
#1 PETE Products	-	-
#2 HDPE Products	0.0%	0.0%
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	0.0%	0.0%
#6 PS Products	-	-
Bulky Rigid Plastic Products	-	-
PLA Compostable Plastic Bags & Film	-	-
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	0.0%	0.0%
Plastic Garbage Bags	0.0%	0.0%
Plastic Non-bag Film Products	-	-
Remainder/Composite Plastic Products	-	-
Organics	**0.0%**	**0.0%**
Yard Debris	-	-
Food Processing Wastes	-	-
Other Compostables	-	-
Clean Wood	-	-
Fruits & Vegetables, Edible	-	-
Fruits & Vegetables, Non-edible	-	-
Homegrown Fruits & Vegetables	-	-
Meat, Edible	-	-
Meat, Non-edible	-	-
Mixed/Other Food Waste, Edible	-	-
Mixed/Other Food Waste, Non-edible	-	-
Animal Manure & Litter	-	-
Remainder/Composite Organics	0.0%	0.0%
Other Materials	**0.1%**	**0.1%**
Electronics & Small Appliances	-	-
Textiles (synthetic) & Shoes	-	-
Construction & Demolition Waste	-	-
Tanglers (non-plastic)	-	-
HHW/Special Waste	-	-
Diapers	-	-
Furniture/Bulky	-	-
Mixed Residue	0.1%	0.1%
Estimated Tons	**100%**	
Sample Count		**24**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 36. Detailed Composition Table: Outbound Commodity- #2 HDPE Colored Plastics

Material	Est. %	+ / -
Widely Accepted Recyclable	**95.1%**	**1.6%**
Limited Accepted Recyclable	**3.8%**	**1.6%**
Widely Accepted Compostable	**-**	**-**
Limited Accepted Compostable	**0.1%**	**0.1%**
Potentially Recoverable	**0.1%**	**0.1%**
Non-recoverable	**1.0%**	**0.4%**
Paper Packaging	**0.2%**	**0.1%**
Cardboard & Kraft Packaging	0.0%	0.0%
Mixed Paper Packaging	0.0%	0.0%
Packaging Paper Cups	-	-
Aseptic Containers	0.0%	0.0%
Gable Top Containers	0.1%	0.1%
Other Polycoated Packaging	0.0%	0.0%
Single-use Food Service Compostable Paper	-	-
Other Compostable Paper Packaging	-	-
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	0.1%	0.0%
Plastic Packaging	**98.6%**	**0.4%**
#1 PETE Bottles	0.9%	0.4%
#1 PETE Non-bottles	0.1%	0.1%
#2 HDPE Natural Bottles	2.8%	1.0%
#2 HDPE Colored Bottles	72.1%	4.9%
#2 HDPE Jars & Tubs	18.9%	2.6%
#3 PVC Packaging	-	-
#4 LDPE Packaging	0.0%	0.0%
#5 PP Packaging	1.7%	0.9%
#6 PS Packaging	0.1%	0.1%
#7 Other/Unknown Packaging	1.6%	0.8%
PLA Compostable Food Packaging	-	-
EPS Expanded Polystyrene Packaging	0.0%	0.0%
Plastic Merchandise Bags	0.0%	0.0%
Transportation Packaging Film Plastic	0.0%	0.0%
Packaging Film Plastic	0.1%	0.1%
Flexible Plastic Packaging	0.0%	0.0%
Remainder/Composite Plastic	0.3%	0.2%
Metal	**0.2%**	**0.1%**
Aluminum Beverage Cans	0.1%	0.0%
Food Cans-Tinned	0.1%	0.0%
Aluminum Foil/Containers	0.0%	0.0%
Other Aluminum	0.0%	0.0%
Empty Aerosol Cans	0.0%	0.0%
Other Metal	-	-
Glass	**-**	**-**
Clear Glass Containers	-	-
Green Glass Containers	-	-
Other Colored Glass Containers	-	-
Plate Glass	-	-
Non-glass Ceramics	-	-
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**0.1%**	**0.1%**
Newspaper Products	0.0%	0.0%
Cardboard & Kraft Paper Products	0.0%	0.0%
Magazines	-	-
High-grade Paper Products	0.1%	0.1%
Other Groundwood Paper Products	-	-
Mixed Paper Products	0.0%	0.0%
Product Paper Cups	-	-
Compostable Paper Products	0.0%	0.0%
Remainder/Composite Paper Products	0.0%	0.0%
Plastic Products	**0.7%**	**0.2%**
#1 PETE Products	-	-
#2 HDPE Products	0.1%	0.1%
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	0.1%	0.1%
#6 PS Products	0.0%	0.0%
Bulky Rigid Plastic Products	0.1%	0.1%
PLA Compostable Plastic Bags & Film	-	-
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	0.2%	0.1%
Plastic Garbage Bags	0.0%	0.0%
Plastic Non-bag Film Products	0.0%	0.0%
Remainder/Composite Plastic Products	0.2%	0.2%
Organics	**0.1%**	**0.1%**
Yard Debris	-	-
Food Processing Wastes	-	-
Other Compostables	-	-
Clean Wood	-	-
Fruits & Vegetables, Edible	-	-
Fruits & Vegetables, Non-edible	-	-
Homegrown Fruits & Vegetables	-	-
Meat, Edible	-	-
Meat, Non-edible	-	-
Mixed/Other Food Waste, Edible	0.1%	0.1%
Mixed/Other Food Waste, Non-edible	-	-
Animal Manure & Litter	-	-
Remainder/Composite Organics	-	-
Other Materials	**0.1%**	**0.1%**
Electronics & Small Appliances	-	-
Textiles (synthetic) & Shoes	-	-
Construction & Demolition Waste	-	-
Tanglers (non-plastic)	-	-
HHW/Special Waste	0.1%	0.1%
Diapers	-	-
Furniture/Bulky	-	-
Mixed Residue	0.0%	0.0%
Estimated Tons	**100%**	
Sample Count		**22**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 37. Detailed Composition Table: Outbound Commodity- #5 PP Plastics

Material	Est. %	+ / -
Widely Accepted Recyclable	**29.7%**	**5.5%**
Limited Accepted Recyclable	**49.7%**	**6.0%**
Widely Accepted Compostable	**0.1%**	**0.1%**
Limited Accepted Compostable	**4.9%**	**6.9%**
Potentially Recoverable	**4.0%**	**4.3%**
Non-recoverable	**11.6%**	**2.5%**
Paper Packaging	**10.2%**	**3.9%**
Cardboard & Kraft Packaging	0.9%	0.8%
Mixed Paper Packaging	1.4%	1.2%
Packaging Paper Cups	0.3%	0.5%
Aseptic Containers	2.8%	0.9%
Gable Top Containers	2.4%	1.2%
Other Polycoated Packaging	0.3%	0.2%
Single-use Food Service Compostable Paper	0.1%	0.2%
Other Compostable Paper Packaging	0.1%	0.1%
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	1.9%	1.0%
Plastic Packaging	**70.6%**	**10.7%**
#1 PETE Bottles	15.4%	4.1%
#1 PETE Non-bottles	7.7%	4.8%
#2 HDPE Natural Bottles	0.8%	0.3%
#2 HDPE Colored Bottles	1.5%	0.6%
#2 HDPE Jars & Tubs	1.4%	1.2%
#3 PVC Packaging	0.1%	0.1%
#4 LDPE Packaging	0.2%	0.2%
#5 PP Packaging	33.3%	8.6%
#6 PS Packaging	1.1%	0.6%
#7 Other/Unknown Packaging	6.7%	3.9%
PLA Compostable Food Packaging	0.2%	0.1%
EPS Expanded Polystyrene Packaging	1.0%	0.5%
Plastic Merchandise Bags	0.1%	0.1%
Transportation Packaging Film Plastic	0.2%	0.1%
Packaging Film Plastic	1.0%	1.0%
Flexible Plastic Packaging	0.0%	0.0%
Remainder/Composite Plastic	-	-
Metal	**0.7%**	**0.2%**
Aluminum Beverage Cans	0.4%	0.1%
Food Cans-Tinned	0.1%	0.1%
Aluminum Foil/Containers	0.1%	0.0%
Other Aluminum	0.0%	0.0%
Empty Aerosol Cans	-	-
Other Metal	0.0%	0.0%
Glass	**1.3%**	**1.3%**
Clear Glass Containers	0.9%	0.9%
Green Glass Containers	0.2%	0.3%
Other Colored Glass Containers	0.0%	0.0%
Plate Glass	0.1%	0.2%
Non-glass Ceramics	0.1%	0.1%
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**2.4%**	**1.6%**
Newspaper Products	0.0%	0.0%
Cardboard & Kraft Paper Products	-	-
Magazines	0.0%	0.0%
High-grade Paper Products	0.1%	0.0%
Other Groundwood Paper Products	-	-
Mixed Paper Products	1.3%	1.6%
Product Paper Cups	-	-
Compostable Paper Products	0.1%	0.1%
Remainder/Composite Paper Products	0.9%	0.9%
Plastic Products	**6.2%**	**1.2%**
#1 PETE Products	-	-
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	0.0%	0.1%
#6 PS Products	-	-
Bulky Rigid Plastic Products	-	-
PLA Compostable Plastic Bags & Film	-	-
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	3.4%	1.2%
Plastic Garbage Bags	0.1%	0.1%
Plastic Non-bag Film Products	-	-
Remainder/Composite Plastic Products	2.7%	1.9%
Organics	**4.7%**	**7.1%**
Yard Debris	0.0%	0.0%
Food Processing Wastes	-	-
Other Compostables	-	-
Clean Wood	0.0%	0.1%
Fruits & Vegetables, Edible	-	-
Fruits & Vegetables, Non-edible	-	-
Homegrown Fruits & Vegetables	-	-
Meat, Edible	-	-
Meat, Non-edible	-	-
Mixed/Other Food Waste, Edible	4.4%	6.8%
Mixed/Other Food Waste, Non-edible	-	-
Animal Manure & Litter	-	-
Remainder/Composite Organics	0.3%	0.1%
Other Materials	**3.9%**	**3.8%**
Electronics & Small Appliances	-	-
Textiles (synthetic) & Shoes	2.7%	4.1%
Construction & Demolition Waste	-	-
Tanglers (non-plastic)	-	-
HHW/Special Waste	-	-
Diapers	-	-
Furniture/Bulky	-	-
Mixed Residue	1.2%	0.9%
Estimated Tons	**100%**	
Sample Count		**6**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 38. Detailed Composition Table: Outbound Commodity- Mixed Plastics

Material	Est. %	+ / -
Widely Accepted Recyclable	**25.4%**	**11.6%**
Limited Accepted Recyclable	**65.7%**	**12.2%**
Widely Accepted Compostable	**0.0%**	**0.0%**
Limited Accepted Compostable	**1.5%**	**2.1%**
Potentially Recoverable	**1.4%**	**1.0%**
Non-recoverable	**5.9%**	**3.1%**
Paper Packaging	**2.8%**	**1.8%**
Cardboard & Kraft Packaging	1.9%	1.4%
Mixed Paper Packaging	0.2%	0.2%
Packaging Paper Cups	0.0%	0.0%
Aseptic Containers	0.1%	0.1%
Gable Top Containers	0.1%	0.1%
Other Polycoated Packaging	0.4%	0.3%
Single-use Food Service Compostable Paper	0.0%	0.0%
Other Compostable Paper Packaging	0.0%	0.0%
Newspaper Packaging	0.0%	0.0%
Remainder/Composite Paper Packaging	0.1%	0.1%
Plastic Packaging	**42.1%**	**13.0%**
#1 PETE Bottles	4.6%	4.5%
#1 PETE Non-bottles	10.4%	8.7%
#2 HDPE Natural Bottles	0.1%	0.1%
#2 HDPE Colored Bottles	0.6%	0.5%
#2 HDPE Jars & Tubs	3.0%	2.6%
#3 PVC Packaging	0.0%	0.1%
#4 LDPE Packaging	0.1%	0.1%
#5 PP Packaging	19.2%	8.5%
#6 PS Packaging	0.3%	0.3%
#7 Other/Unknown Packaging	2.4%	1.6%
PLA Compostable Food Packaging	0.0%	0.0%
EPS Expanded Polystyrene Packaging	0.1%	0.0%
Plastic Merchandise Bags	0.1%	0.1%
Transportation Packaging Film Plastic	0.1%	0.1%
Packaging Film Plastic	0.9%	1.2%
Flexible Plastic Packaging	0.0%	0.0%
Remainder/Composite Plastic	0.2%	0.2%
Metal	**0.6%**	**0.3%**
Aluminum Beverage Cans	0.3%	0.1%
Food Cans-Tinned	0.1%	0.1%
Aluminum Foil/Containers	0.0%	0.0%
Other Aluminum	-	-
Empty Aerosol Cans	-	-
Other Metal	0.2%	0.2%
Glass	**-**	**-**
Clear Glass Containers	-	-
Green Glass Containers	-	-
Other Colored Glass Containers	-	-
Plate Glass	-	-
Non-glass Ceramics	-	-
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**2.4%**	**1.7%**
Newspaper Products	0.1%	0.1%
Cardboard & Kraft Paper Products	-	-
Magazines	0.0%	0.0%
High-grade Paper Products	0.4%	0.3%
Other Groundwood Paper Products	0.9%	1.0%
Mixed Paper Products	0.8%	0.9%
Product Paper Cups	-	-
Compostable Paper Products	0.1%	0.1%
Remainder/Composite Paper Products	0.1%	0.1%
Plastic Products	**48.5%**	**13.8%**
#1 PETE Products	-	-
#2 HDPE Products	3.7%	5.0%
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	1.6%	1.6%
#6 PS Products	-	-
Bulky Rigid Plastic Products	39.9%	12.9%
PLA Compostable Plastic Bags & Film	-	-
PLA Compostable Plastic Utensils	0.0%	0.1%
#7 Other/Unknown Products	2.1%	1.0%
Plastic Garbage Bags	0.5%	0.8%
Plastic Non-bag Film Products	0.0%	0.1%
Remainder/Composite Plastic Products	0.6%	0.5%
Organics	**1.4%**	**2.0%**
Yard Debris	-	-
Food Processing Wastes	-	-
Other Compostables	-	-
Clean Wood	0.0%	0.0%
Fruits & Vegetables, Edible	0.1%	0.1%
Fruits & Vegetables, Non-edible	0.0%	0.0%
Homegrown Fruits & Vegetables	-	-
Meat, Edible	-	-
Meat, Non-edible	-	-
Mixed/Other Food Waste, Edible	1.2%	1.9%
Mixed/Other Food Waste, Non-edible	-	-
Animal Manure & Litter	-	-
Remainder/Composite Organics	0.0%	0.0%
Other Materials	**2.3%**	**1.7%**
Electronics & Small Appliances	0.7%	0.8%
Textiles (synthetic) & Shoes	0.3%	0.4%
Construction & Demolition Waste	-	-
Tanglers (non-plastic)	0.8%	0.6%
HHW/Special Waste	0.1%	0.2%
Diapers	0.2%	0.4%
Furniture/Bulky	-	-
Mixed Residue	0.3%	0.2%
Estimated Tons	**100%**	
Sample Count		**22**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 39. Detailed Composition Table: Outbound Commodity- Aluminum Beverage Containers

Material	Est. %	+ / -
Widely Accepted Recyclable	**95.4%**	**2.7%**
Limited Accepted Recyclable	**3.6%**	**2.5%**
Widely Accepted Compostable	**0.0%**	**0.0%**
Limited Accepted Compostable	**0.1%**	**0.1%**
Potentially Recoverable	**0.3%**	**0.2%**
Non-recoverable	**0.6%**	**0.3%**
Paper Packaging	**0.9%**	**0.6%**
Cardboard & Kraft Packaging	0.1%	0.1%
Mixed Paper Packaging	0.3%	0.2%
Packaging Paper Cups	-	-
Aseptic Containers	0.2%	0.2%
Gable Top Containers	0.1%	0.1%
Other Polycoated Packaging	0.1%	0.2%
Single-use Food Service Compostable Paper	0.0%	0.1%
Other Compostable Paper Packaging	-	-
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	0.1%	0.1%
Plastic Packaging	**1.6%**	**0.7%**
#1 PETE Bottles	0.5%	0.2%
#1 PETE Non-bottles	0.2%	0.2%
#2 HDPE Natural Bottles	-	-
#2 HDPE Colored Bottles	0.0%	0.1%
#2 HDPE Jars & Tubs	0.0%	0.0%
#3 PVC Packaging	-	-
#4 LDPE Packaging	-	-
#5 PP Packaging	0.3%	0.1%
#6 PS Packaging	0.1%	0.1%
#7 Other/Unknown Packaging	0.2%	0.1%
PLA Compostable Food Packaging	0.0%	0.0%
EPS Expanded Polystyrene Packaging	0.1%	0.0%
Plastic Merchandise Bags	-	-
Transportation Packaging Film Plastic	0.0%	0.0%
Packaging Film Plastic	0.1%	0.1%
Flexible Plastic Packaging	0.1%	0.1%
Remainder/Composite Plastic	0.0%	0.0%
Metal	**94.9%**	**2.9%**
Aluminum Beverage Cans	92.8%	3.3%
Food Cans-Tinned	1.4%	1.0%
Aluminum Foil/Containers	0.3%	0.2%
Other Aluminum	0.2%	0.2%
Empty Aerosol Cans	0.2%	0.3%
Other Metal	0.1%	0.1%
Glass	**0.0%**	**0.1%**
Clear Glass Containers	0.0%	0.0%
Green Glass Containers	-	-
Other Colored Glass Containers	0.0%	0.1%
Plate Glass	-	-
Non-glass Ceramics	-	-
Remainder/Composite Glass	-	-
Paper Products	**2.2%**	**2.5%**
Newspaper Products	0.0%	0.0%
Cardboard & Kraft Paper Products	-	-
Magazines	0.0%	0.1%
High-grade Paper Products	0.0%	0.0%
Other Groundwood Paper Products	-	-
Mixed Paper Products	2.0%	2.5%
Product Paper Cups	-	-
Compostable Paper Products	0.0%	0.0%
Remainder/Composite Paper Products	0.0%	0.0%
Plastic Products	**0.0%**	**0.0%**
#1 PETE Products	-	-
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	-	-
#6 PS Products	-	-
Bulky Rigid Plastic Products	-	-
PLA Compostable Plastic Bags & Film	-	-
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	0.0%	0.0%
Plastic Garbage Bags	-	-
Plastic Non-bag Film Products	-	-
Remainder/Composite Plastic Products	0.0%	0.0%
Organics	**0.0%**	**0.0%**
Yard Debris	0.0%	0.0%
Food Processing Wastes	-	-
Other Compostables	-	-
Clean Wood	-	-
Fruits & Vegetables, Edible	-	-
Fruits & Vegetables, Non-edible	-	-
Homegrown Fruits & Vegetables	-	-
Meat, Edible	-	-
Meat, Non-edible	-	-
Mixed/Other Food Waste, Edible	-	-
Mixed/Other Food Waste, Non-edible	0.0%	0.0%
Animal Manure & Litter	-	-
Remainder/Composite Organics	-	-
Other Materials	**0.2%**	**0.3%**
Electronics & Small Appliances	0.0%	0.1%
Textiles (synthetic) & Shoes	0.0%	0.1%
Construction & Demolition Waste	-	-
Tanglers (non-plastic)	-	-
HHW/Special Waste	-	-
Diapers	-	-
Furniture/Bulky	-	-
Mixed Residue	0.1%	0.2%
Estimated Tons	**100%**	
Sample Count		**17**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 40. Detailed Composition Table: Outbound Commodity- Ferrous Metals

Material	Est. %	+ / -
Widely Accepted Recyclable	**35.4%**	**16.7%**
Limited Accepted Recyclable	**5.2%**	**1.7%**
Widely Accepted Compostable	**0.0%**	**0.1%**
Limited Accepted Compostable	**0.2%**	**0.1%**
Potentially Recoverable	**53.9%**	**18.5%**
Non-recoverable	**5.3%**	**5.3%**
Paper Packaging	**0.6%**	**0.4%**
Cardboard & Kraft Packaging	0.2%	0.1%
Mixed Paper Packaging	0.1%	0.1%
Packaging Paper Cups	-	-
Aseptic Containers	0.1%	0.1%
Gable Top Containers	0.1%	0.1%
Other Polycoated Packaging	0.0%	0.1%
Single-use Food Service Compostable Paper	-	-
Other Compostable Paper Packaging	-	-
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	0.2%	0.2%
Plastic Packaging	**0.8%**	**0.4%**
#1 PETE Bottles	0.2%	0.1%
#1 PETE Non-bottles	0.1%	0.1%
#2 HDPE Natural Bottles	0.0%	0.0%
#2 HDPE Colored Bottles	0.0%	0.0%
#2 HDPE Jars & Tubs	-	-
#3 PVC Packaging	-	-
#4 LDPE Packaging	-	-
#5 PP Packaging	0.1%	0.2%
#6 PS Packaging	0.0%	0.0%
#7 Other/Unknown Packaging	0.1%	0.0%
PLA Compostable Food Packaging	-	-
EPS Expanded Polystyrene Packaging	0.1%	0.0%
Plastic Merchandise Bags	0.1%	0.1%
Transportation Packaging Film Plastic	0.0%	0.0%
Packaging Film Plastic	0.1%	0.1%
Flexible Plastic Packaging	0.0%	0.0%
Remainder/Composite Plastic	0.0%	0.0%
Metal	**90.4%**	**6.4%**
Aluminum Beverage Cans	0.2%	0.1%
Food Cans-Tinned	34.5%	13.8%
Aluminum Foil/Containers	0.5%	0.5%
Other Aluminum	2.8%	1.3%
Empty Aerosol Cans	1.2%	0.6%
Other Metal	51.1%	17.7%
Glass	**0.0%**	**0.1%**
Clear Glass Containers	-	-
Green Glass Containers	0.0%	0.1%
Other Colored Glass Containers	-	-
Plate Glass	-	-
Non-glass Ceramics	-	-
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**0.4%**	**0.2%**
Newspaper Products	-	-
Cardboard & Kraft Paper Products	0.0%	0.0%
Magazines	0.0%	0.1%
High-grade Paper Products	0.1%	0.1%
Other Groundwood Paper Products	-	-
Mixed Paper Products	0.1%	0.1%
Product Paper Cups	-	-
Compostable Paper Products	0.2%	0.1%
Remainder/Composite Paper Products	0.0%	0.1%
Plastic Products	**0.0%**	**0.0%**
#1 PETE Products	-	-
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	-	-
#6 PS Products	-	-
Bulky Rigid Plastic Products	-	-
PLA Compostable Plastic Bags & Film	-	-
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	-	-
Plastic Garbage Bags	0.0%	0.0%
Plastic Non-bag Film Products	-	-
Remainder/Composite Plastic Products	0.0%	0.0%
Organics	**0.1%**	**0.1%**
Yard Debris	-	-
Food Processing Wastes	-	-
Other Compostables	-	-
Clean Wood	0.0%	0.1%
Fruits & Vegetables, Edible	-	-
Fruits & Vegetables, Non-edible	-	-
Homegrown Fruits & Vegetables	-	-
Meat, Edible	-	-
Meat, Non-edible	-	-
Mixed/Other Food Waste, Edible	0.0%	0.1%
Mixed/Other Food Waste, Non-edible	-	-
Animal Manure & Litter	-	-
Remainder/Composite Organics	0.0%	0.0%
Other Materials	**7.5%**	**6.4%**
Electronics & Small Appliances	2.6%	1.9%
Textiles (synthetic) & Shoes	0.1%	0.1%
Construction & Demolition Waste	-	-
Tanglers (non-plastic)	0.3%	0.3%
HHW/Special Waste	0.3%	0.5%
Diapers	-	-
Furniture/Bulky	0.7%	1.2%
Mixed Residue	3.5%	5.2%
Estimated Tons	**100%**	
Sample Count		**19**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 41. Detailed Composition Table: Outbound Commodity- Non-ferrous metals

Material	Est. %	+ / -
Widely Accepted Recyclable	**4.8%**	**4.0%**
Limited Accepted Recyclable	**26.3%**	**14.0%**
Widely Accepted Compostable	**-**	**-**
Limited Accepted Compostable	**-**	**-**
Potentially Recoverable	**67.4%**	**11.6%**
Non-recoverable	**1.5%**	**1.6%**
Paper Packaging	**2.0%**	**1.2%**
Cardboard & Kraft Packaging	2.0%	1.2%
Mixed Paper Packaging	-	-
Packaging Paper Cups	-	-
Aseptic Containers	-	-
Gable Top Containers	-	-
Other Polycoated Packaging	-	-
Single-use Food Service Compostable Paper	-	-
Other Compostable Paper Packaging	-	-
Newspaper Packaging	-	-
Remainder/Composite Paper Packaging	-	-
Plastic Packaging	**0.3%**	**0.3%**
#1 PETE Bottles	-	-
#1 PETE Non-bottles	-	-
#2 HDPE Natural Bottles	-	-
#2 HDPE Colored Bottles	-	-
#2 HDPE Jars & Tubs	-	-
#3 PVC Packaging	-	-
#4 LDPE Packaging	-	-
#5 PP Packaging	-	-
#6 PS Packaging	-	-
#7 Other/Unknown Packaging	0.1%	0.1%
PLA Compostable Food Packaging	-	-
EPS Expanded Polystyrene Packaging	-	-
Plastic Merchandise Bags	-	-
Transportation Packaging Film Plastic	-	-
Packaging Film Plastic	0.3%	0.3%
Flexible Plastic Packaging	-	-
Remainder/Composite Plastic	-	-
Metal	**95.9%**	**0.6%**
Aluminum Beverage Cans	0.3%	0.3%
Food Cans-Tinned	2.2%	3.0%
Aluminum Foil/Containers	6.0%	8.1%
Other Aluminum	20.2%	15.5%
Empty Aerosol Cans	-	-
Other Metal	67.1%	11.5%
Glass	**-**	**-**
Clear Glass Containers	-	-
Green Glass Containers	-	-
Other Colored Glass Containers	-	-
Plate Glass	-	-
Non-glass Ceramics	-	-
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**0.3%**	**0.3%**
Newspaper Products	-	-
Cardboard & Kraft Paper Products	0.1%	0.1%
Magazines	0.3%	0.3%
High-grade Paper Products	-	-
Other Groundwood Paper Products	-	-
Mixed Paper Products	-	-
Product Paper Cups	-	-
Compostable Paper Products	-	-
Remainder/Composite Paper Products	-	-
Plastic Products	**0.3%**	**0.4%**
#1 PETE Products	-	-
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	-	-
#6 PS Products	-	-
Bulky Rigid Plastic Products	-	-
PLA Compostable Plastic Bags & Film	-	-
PLA Compostable Plastic Utensils	-	-
#7 Other/Unknown Products	0.3%	0.3%
Plastic Garbage Bags	-	-
Plastic Non-bag Film Products	-	-
Remainder/Composite Plastic Products	0.1%	0.1%
Organics	**0.1%**	**0.1%**
Yard Debris	-	-
Food Processing Wastes	-	-
Other Compostables	-	-
Clean Wood	-	-
Fruits & Vegetables, Edible	-	-
Fruits & Vegetables, Non-edible	-	-
Homegrown Fruits & Vegetables	-	-
Meat, Edible	-	-
Meat, Non-edible	-	-
Mixed/Other Food Waste, Edible	-	-
Mixed/Other Food Waste, Non-edible	-	-
Animal Manure & Litter	-	-
Remainder/Composite Organics	0.1%	0.1%
Other Materials	**1.1%**	**1.1%**
Electronics & Small Appliances	-	-
Textiles (synthetic) & Shoes	0.3%	0.3%
Construction & Demolition Waste	-	-
Tanglers (non-plastic)	0.9%	1.2%
HHW/Special Waste	-	-
Diapers	-	-
Furniture/Bulky	-	-
Mixed Residue	-	-
Estimated Tons	**100%**	
Sample Count		**3**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Outbound Residual Materials

Table 42. Detailed Composition Table: Residuals

Material	Est. %	+ / -
Widely Accepted Recyclable	**36.4%**	**4.0%**
Limited Accepted Recyclable	**33.3%**	**4.4%**
Widely Accepted Compostable	**0.7%**	**0.4%**
Limited Accepted Compostable	**3.7%**	**1.1%**
Potentially Recoverable	**5.1%**	**1.6%**
Non-recoverable	**20.8%**	**3.6%**
Paper Packaging	**23.3%**	**3.4%**
Cardboard & Kraft Packaging	8.6%	2.6%
Mixed Paper Packaging	8.5%	2.5%
Packaging Paper Cups	0.1%	0.1%
Aseptic Containers	1.3%	0.3%
Gable Top Containers	2.0%	0.5%
Other Polycoated Packaging	1.6%	0.6%
Single-use Food Service Compostable Paper	0.2%	0.1%
Other Compostable Paper Packaging	0.2%	0.3%
Newspaper Packaging	0.1%	0.1%
Remainder/Composite Paper Packaging	0.7%	0.3%
Plastic Packaging	**19.7%**	**2.9%**
#1 PETE Bottles	4.1%	0.9%
#1 PETE Non-bottles	1.7%	0.5%
#2 HDPE Natural Bottles	1.2%	0.5%
#2 HDPE Colored Bottles	1.3%	0.4%
#2 HDPE Jars & Tubs	0.7%	0.2%
#3 PVC Packaging	0.1%	0.1%
#4 LDPE Packaging	0.0%	0.0%
#5 PP Packaging	3.6%	0.8%
#6 PS Packaging	0.5%	0.3%
#7 Other/Unknown Packaging	2.6%	0.6%
PLA Compostable Food Packaging	0.0%	0.0%
EPS Expanded Polystyrene Packaging	0.5%	0.1%
Plastic Merchandise Bags	0.5%	0.2%
Transportation Packaging Film Plastic	0.4%	0.1%
Packaging Film Plastic	1.6%	0.4%
Flexible Plastic Packaging	0.1%	0.1%
Remainder/Composite Plastic	0.9%	0.6%
Metal	**4.9%**	**1.1%**
Aluminum Beverage Cans	2.4%	0.7%
Food Cans-Tinned	1.2%	0.4%
Aluminum Foil/Containers	0.2%	0.1%
Other Aluminum	0.2%	0.1%
Empty Aerosol Cans	0.0%	0.0%
Other Metal	0.9%	0.4%
Glass	**4.8%**	**1.9%**
Clear Glass Containers	2.3%	1.0%
Green Glass Containers	1.4%	0.5%
Other Colored Glass Containers	1.1%	0.5%
Plate Glass	-	-
Non-glass Ceramics	0.0%	0.0%
Remainder/Composite Glass	-	-

Material	Est. %	+ / -
Paper Products	**24.4%**	**4.4%**
Newspaper Products	1.7%	0.5%
Cardboard & Kraft Paper Products	0.6%	0.5%
Magazines	3.0%	0.8%
High-grade Paper Products	1.2%	0.3%
Other Groundwood Paper Products	0.9%	0.6%
Mixed Paper Products	15.2%	4.5%
Product Paper Cups	-	-
Compostable Paper Products	0.8%	0.2%
Remainder/Composite Paper Products	1.0%	0.4%
Plastic Products	**5.2%**	**0.9%**
#1 PETE Products	0.1%	0.1%
#2 HDPE Products	-	-
#3 PVC Products	-	-
#4 LDPE Products	-	-
#5 PP Products	0.1%	0.1%
#6 PS Products	0.0%	0.0%
Bulky Rigid Plastic Products	0.1%	0.1%
PLA Compostable Plastic Bags & Film	0.0%	0.0%
PLA Compostable Plastic Utensils	0.0%	0.0%
#7 Other/Unknown Products	3.2%	0.7%
Plastic Garbage Bags	0.5%	0.2%
Plastic Non-bag Film Products	0.0%	0.0%
Remainder/Composite Plastic Products	1.2%	0.4%
Organics	**4.5%**	**1.6%**
Yard Debris	0.1%	0.1%
Food Processing Wastes	-	-
Other Compostables	0.0%	0.0%
Clean Wood	0.6%	0.4%
Fruits & Vegetables, Edible	0.3%	0.2%
Fruits & Vegetables, Non-edible	0.2%	0.1%
Homegrown Fruits & Vegetables	-	-
Meat, Edible	0.1%	0.2%
Meat, Non-edible	0.0%	0.0%
Mixed/Other Food Waste, Edible	1.8%	0.9%
Mixed/Other Food Waste, Non-edible	0.0%	0.0%
Animal Manure & Litter	0.1%	0.1%
Remainder/Composite Organics	1.2%	1.1%
Other Materials	**13.1%**	**3.7%**
Electronics & Small Appliances	0.2%	0.2%
Textiles (synthetic) & Shoes	1.0%	0.5%
Construction & Demolition Waste	1.6%	0.9%
Tanglers (non-plastic)	0.1%	0.0%
HHW/Special Waste	0.2%	0.1%
Diapers	0.7%	0.3%
Furniture/Bulky	-	-
Mixed Residue	9.3%	3.6%
Estimated Tons	**100%**	
Sample Count		**53**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Inbound Organics

Table 43. Detailed Composition Table: Residential Inbound Organics

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**1.1%**	**0.3%**	**6,984**
Limited Accepted Recyclable	**0.3%**	**0.1%**	**2,034**
Widely Accepted Compostable	**89.6%**	**2.2%**	**570,863**
Limited Accepted Compostable	**8.2%**	**2.0%**	**52,315**
Potentially Recoverable	**0.2%**	**0.1%**	**1,055**
Non-recoverable	**0.6%**	**0.2%**	**3,749**
Paper Packaging	**1.7%**	**0.5%**	**10,564**
Cardboard & Kraft Packaging	0.7%	0.2%	4,488
Mixed Paper Packaging	0.2%	0.1%	1,304
Packaging Paper Cups	0.0%	0.0%	2
Aseptic Containers	0.0%	0.0%	44
Gable Top Containers	0.1%	0.1%	582
Other Polycoated Packaging	0.1%	0.1%	780
Single-use Food Service Compostable Paper	0.4%	0.1%	2,540
Other Compostable Paper Packaging	0.1%	0.1%	535
Newspaper Packaging	-	-	-
Remainder/Composite Paper Packaging	0.0%	0.0%	288
Plastic Packaging	**0.1%**	**0.0%**	**570**
#1 PETE Bottles	0.0%	0.0%	67
#1 PETE Non-bottles	0.0%	0.0%	59
#2 HDPE Natural Bottles	0.0%	0.0%	21
#2 HDPE Colored Bottles	0.0%	0.0%	54
#2 HDPE Jars & Tubs	0.0%	0.0%	6
#3 PVC Packaging	-	-	-
#4 LDPE Packaging	-	-	-
#5 PP Packaging	0.0%	0.0%	88
#6 PS Packaging	0.0%	0.0%	19
#7 Other/Unknown Packaging	0.0%	0.0%	20
PLA Compostable Food Packaging	0.0%	0.0%	58
EPS Expanded Polystyrene Packaging	0.0%	0.0%	12
Plastic Merchandise Bags	0.0%	0.0%	27
Transportation Packaging Film Plastic	0.0%	0.0%	12
Packaging Film Plastic	0.0%	0.0%	110
Flexible Plastic Packaging	0.0%	0.0%	5
Remainder/Composite Plastic	0.0%	0.0%	11
Metal	**0.0%**	**0.0%**	**67**
Aluminum Beverage Cans	0.0%	0.0%	33
Food Cans-Tinned	0.0%	0.0%	13
Aluminum Foil/Containers	0.0%	0.0%	10
Other Aluminum	-	-	-
Empty Aerosol Cans	-	-	-
Other Metal	0.0%	0.0%	11
Glass	**0.0%**	**0.0%**	**223**
Clear Glass Containers	0.0%	0.0%	84
Green Glass Containers	0.0%	0.0%	63
Other Colored Glass Containers	0.0%	0.0%	39
Plate Glass	-	-	-
Non-glass Ceramics	0.0%	0.0%	22
Remainder/Composite Glass	0.0%	0.0%	15
Paper Products	**1.0%**	**0.3%**	**6,291**
Newspaper Products	0.0%	0.0%	61
Cardboard & Kraft Paper Products	0.0%	0.0%	97
Magazines	0.0%	0.0%	50
High-grade Paper Products	0.1%	0.1%	500
Other Groundwood Paper Products	-	-	-
Mixed Paper Products	0.0%	0.0%	115
Product Paper Cups	-	-	-
Compostable Paper Products	0.8%	0.3%	4,782
Remainder/Composite Paper Products	0.1%	0.1%	685
Plastic Products	**0.3%**	**0.1%**	**1,597**
#1 PETE Products	-	-	-
#2 HDPE Products	0.0%	0.0%	230
#3 PVC Products	0.0%	0.0%	0
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	13
#6 PS Products	0.0%	0.0%	3
Bulky Rigid Plastic Products	0.0%	0.0%	169
PLA Compostable Plastic Bags & Film	0.1%	0.1%	818
PLA Compostable Plastic Utensils	0.0%	0.0%	23
#7 Other/Unknown Products	0.0%	0.0%	210
Plastic Garbage Bags	0.0%	0.0%	70
Plastic Non-bag Film Products	0.0%	0.0%	36
Remainder/Composite Plastic Products	0.0%	0.0%	24
Organics	**96.7%**	**0.8%**	**616,268**
Yard Debris	87.7%	2.4%	558,665
Food Processing Wastes	-	-	-
Other Compostables	0.0%	0.0%	66
Clean Wood	1.9%	0.8%	12,131
Fruits & Vegetables, Edible	1.9%	0.7%	12,108
Fruits & Vegetables, Non-edible	2.0%	0.9%	13,023
Homegrown Fruits & Vegetables	0.6%	0.2%	3,811
Meat, Edible	0.2%	0.1%	967
Meat, Non-edible	0.1%	0.1%	879
Mixed/Other Food Waste, Edible	1.4%	0.7%	8,798
Mixed/Other Food Waste, Non-edible	0.6%	0.4%	3,971
Animal Manure & Litter	0.3%	0.2%	1,626
Remainder/Composite Organics	0.0%	0.0%	221
Other Materials	**0.2%**	**0.1%**	**1,420**
Electronics & Small Appliances	0.0%	0.0%	0
Textiles (synthetic) & Shoes	0.0%	0.0%	49
Construction & Demolition Waste	0.1%	0.1%	944
Tanglers (non-plastic)	0.0%	0.0%	6
HHW/Special Waste	0.0%	0.0%	3
Diapers	0.0%	0.0%	14
Furniture/Bulky	-	-	-
Mixed Residue	0.1%	0.0%	404
Estimated Tons	**100%**		**637,000**
Sample Count			**187**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 44. Detailed Composition Table: Residential Inbound Organics- Central Region

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**0.0%**	**0.0%**	**5**
Limited Accepted Recyclable	**0.1%**	**0.1%**	**15**
Widely Accepted Compostable	**98.8%**	**0.5%**	**17,682**
Limited Accepted Compostable	**1.1%**	**0.4%**	**189**
Potentially Recoverable	**0.0%**	**0.0%**	**2**
Non-recoverable	**0.0%**	**0.0%**	**7**
Paper Packaging	**0.0%**	**0.0%**	**5**
Cardboard & Kraft Packaging	0.0%	0.0%	3
Mixed Paper Packaging	0.0%	0.0%	1
Packaging Paper Cups	0.0%	0.0%	0
Aseptic Containers	-	-	-
Gable Top Containers	-	-	-
Other Polycoated Packaging	-	-	-
Single-use Food Service Compostable Paper	0.0%	0.0%	0
Other Compostable Paper Packaging	-	-	-
Newspaper Packaging	-	-	-
Remainder/Composite Paper Packaging	0.0%	0.0%	1
Plastic Packaging	**0.0%**	**0.0%**	**4**
#1 PETE Bottles	-	-	-
#1 PETE Non-bottles	0.0%	0.0%	0
#2 HDPE Natural Bottles	-	-	-
#2 HDPE Colored Bottles	-	-	-
#2 HDPE Jars & Tubs	-	-	-
#3 PVC Packaging	-	-	-
#4 LDPE Packaging	-	-	-
#5 PP Packaging	-	-	-
#6 PS Packaging	-	-	-
#7 Other/Unknown Packaging	-	-	-
PLA Compostable Food Packaging	-	-	-
EPS Expanded Polystyrene Packaging	0.0%	0.0%	1
Plastic Merchandise Bags	0.0%	0.0%	1
Transportation Packaging Film Plastic	-	-	-
Packaging Film Plastic	0.0%	0.0%	3
Flexible Plastic Packaging	-	-	-
Remainder/Composite Plastic	-	-	-
Metal	**-**	**-**	**-**
Aluminum Beverage Cans	-	-	-
Food Cans-Tinned	-	-	-
Aluminum Foil/Containers	-	-	-
Other Aluminum	-	-	-
Empty Aerosol Cans	-	-	-
Other Metal	-	-	-
Glass	**-**	**-**	**-**
Clear Glass Containers	-	-	-
Green Glass Containers	-	-	-
Other Colored Glass Containers	-	-	-
Plate Glass	-	-	-
Non-glass Ceramics	-	-	-
Remainder/Composite Glass	-	-	-

Material	Est. %	+ / -	Est. Tons
Paper Products	**0.1%**	**0.1%**	**21**
Newspaper Products	-	-	-
Cardboard & Kraft Paper Products	0.0%	0.0%	0
Magazines	-	-	-
High-grade Paper Products	0.0%	0.0%	0
Other Groundwood Paper Products	-	-	-
Mixed Paper Products	0.1%	0.1%	15
Product Paper Cups	-	-	-
Compostable Paper Products	0.0%	0.0%	5
Remainder/Composite Paper Products	-	-	-
Plastic Products	**0.0%**	**0.0%**	**2**
#1 PETE Products	-	-	-
#2 HDPE Products	-	-	-
#3 PVC Products	0.0%	0.0%	0
#4 LDPE Products	-	-	-
#5 PP Products	-	-	-
#6 PS Products	-	-	-
Bulky Rigid Plastic Products	-	-	-
PLA Compostable Plastic Bags & Film	-	-	-
PLA Compostable Plastic Utensils	-	-	-
#7 Other/Unknown Products	0.0%	0.0%	0
Plastic Garbage Bags	0.0%	0.0%	1
Plastic Non-bag Film Products	0.0%	0.0%	0
Remainder/Composite Plastic Products	0.0%	0.0%	0
Organics	**99.8%**	**0.1%**	**17,866**
Yard Debris	97.3%	1.3%	17,420
Food Processing Wastes	-	-	-
Other Compostables	-	-	-
Clean Wood	1.5%	1.0%	262
Fruits & Vegetables, Edible	0.1%	0.0%	12
Fruits & Vegetables, Non-edible	0.0%	0.0%	7
Homegrown Fruits & Vegetables	0.9%	0.4%	159
Meat, Edible	-	-	-
Meat, Non-edible	-	-	-
Mixed/Other Food Waste, Edible	0.0%	0.0%	6
Mixed/Other Food Waste, Non-edible	-	-	-
Animal Manure & Litter	0.0%	0.0%	0
Remainder/Composite Organics	0.0%	0.0%	1
Other Materials	**0.0%**	**0.0%**	**1**
Electronics & Small Appliances	-	-	-
Textiles (synthetic) & Shoes	0.0%	0.0%	0
Construction & Demolition Waste	-	-	-
Tanglers (non-plastic)	0.0%	0.0%	0
HHW/Special Waste	-	-	-
Diapers	0.0%	0.0%	0
Furniture/Bulky	-	-	-
Mixed Residue	0.0%	0.0%	0
Estimated Tons	**100%**		**17,900**
Sample Count			**37**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 45. Detailed Composition Table: Residential Inbound Organics- Eastern Region

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**0.2%**	**0.2%**	**98**
Limited Accepted Recyclable	**0.1%**	**0.1%**	**50**
Widely Accepted Compostable	**96.3%**	**1.9%**	**55,644**
Limited Accepted Compostable	**2.6%**	**1.7%**	**1,522**
Potentially Recoverable	**0.4%**	**0.4%**	**248**
Non-recoverable	**0.4%**	**0.3%**	**237**
Paper Packaging	**0.3%**	**0.2%**	**193**
Cardboard & Kraft Packaging	0.1%	0.1%	64
Mixed Paper Packaging	0.0%	0.0%	12
Packaging Paper Cups	-	-	-
Aseptic Containers	-	-	-
Gable Top Containers	-	-	-
Other Polycoated Packaging	0.0%	0.0%	1
Single-use Food Service Compostable Paper	0.1%	0.1%	56
Other Compostable Paper Packaging	0.0%	0.0%	4
Newspaper Packaging	-	-	-
Remainder/Composite Paper Packaging	0.1%	0.1%	56
Plastic Packaging	**0.0%**	**0.0%**	**20**
#1 PETE Bottles	0.0%	0.0%	6
#1 PETE Non-bottles	-	-	-
#2 HDPE Natural Bottles	-	-	-
#2 HDPE Colored Bottles	0.0%	0.0%	4
#2 HDPE Jars & Tubs	-	-	-
#3 PVC Packaging	-	-	-
#4 LDPE Packaging	-	-	-
#5 PP Packaging	0.0%	0.0%	1
#6 PS Packaging	-	-	-
#7 Other/Unknown Packaging	0.0%	0.0%	0
PLA Compostable Food Packaging	-	-	-
EPS Expanded Polystyrene Packaging	0.0%	0.0%	1
Plastic Merchandise Bags	0.0%	0.0%	1
Transportation Packaging Film Plastic	-	-	-
Packaging Film Plastic	0.0%	0.0%	6
Flexible Plastic Packaging	0.0%	0.0%	0
Remainder/Composite Plastic	0.0%	0.0%	0
Metal	**0.0%**	**0.0%**	**8**
Aluminum Beverage Cans	0.0%	0.0%	5
Food Cans-Tinned	0.0%	0.0%	1
Aluminum Foil/Containers	0.0%	0.0%	2
Other Aluminum	-	-	-
Empty Aerosol Cans	-	-	-
Other Metal	0.0%	0.0%	0
Glass	**0.0%**	**0.1%**	**21**
Clear Glass Containers	0.0%	0.1%	21
Green Glass Containers	-	-	-
Other Colored Glass Containers	-	-	-
Plate Glass	-	-	-
Non-glass Ceramics	-	-	-
Remainder/Composite Glass	-	-	-

Material	Est. %	+ / -	Est. Tons
Paper Products	**0.1%**	**0.1%**	**63**
Newspaper Products	-	-	-
Cardboard & Kraft Paper Products	-	-	-
Magazines	-	-	-
High-grade Paper Products	0.0%	0.0%	5
Other Groundwood Paper Products	-	-	-
Mixed Paper Products	0.0%	0.0%	14
Product Paper Cups	-	-	-
Compostable Paper Products	0.1%	0.0%	33
Remainder/Composite Paper Products	0.0%	0.0%	11
Plastic Products	**0.2%**	**0.2%**	**129**
#1 PETE Products	-	-	-
#2 HDPE Products	-	-	-
#3 PVC Products	-	-	-
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	3
#6 PS Products	0.0%	0.0%	2
Bulky Rigid Plastic Products	0.0%	0.0%	8
PLA Compostable Plastic Bags & Film	0.0%	0.0%	3
PLA Compostable Plastic Utensils	-	-	-
#7 Other/Unknown Products	0.1%	0.2%	84
Plastic Garbage Bags	0.0%	0.0%	7
Plastic Non-bag Film Products	0.0%	0.1%	22
Remainder/Composite Plastic Products	0.0%	0.0%	1
Organics	**98.8%**	**0.7%**	**57,121**
Yard Debris	95.6%	2.0%	55,261
Food Processing Wastes	-	-	-
Other Compostables	0.0%	0.0%	5
Clean Wood	0.7%	0.6%	378
Fruits & Vegetables, Edible	0.1%	0.1%	74
Fruits & Vegetables, Non-edible	0.2%	0.1%	112
Homegrown Fruits & Vegetables	1.9%	1.7%	1,107
Meat, Edible	0.1%	0.2%	53
Meat, Non-edible	0.1%	0.1%	55
Mixed/Other Food Waste, Edible	0.0%	0.0%	23
Mixed/Other Food Waste, Non-edible	0.0%	0.0%	2
Animal Manure & Litter	0.0%	0.0%	24
Remainder/Composite Organics	0.0%	0.0%	27
Other Materials	**0.4%**	**0.4%**	**246**
Electronics & Small Appliances	0.0%	0.0%	0
Textiles (synthetic) & Shoes	0.0%	0.0%	10
Construction & Demolition Waste	0.4%	0.4%	235
Tanglers (non-plastic)	-	-	-
HHW/Special Waste	-	-	-
Diapers	-	-	-
Furniture/Bulky	-	-	-
Mixed Residue	-	-	-
Estimated Tons	**100%**		**57,800**
Sample Count			**48**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 46. Detailed Composition Table: Residential Inbound Organics- Northwest Region

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**1.4%**	**0.4%**	**6,149**
Limited Accepted Recyclable	**0.4%**	**0.2%**	**1,912**
Widely Accepted Compostable	**87.9%**	**3.1%**	**382,008**
Limited Accepted Compostable	**9.5%**	**2.8%**	**41,125**
Potentially Recoverable	**0.2%**	**0.1%**	**794**
Non-recoverable	**0.6%**	**0.2%**	**2,712**
Paper Packaging	**2.2%**	**0.7%**	**9,394**
Cardboard & Kraft Packaging	0.9%	0.4%	3,946
Mixed Paper Packaging	0.3%	0.1%	1,215
Packaging Paper Cups	0.0%	0.0%	2
Aseptic Containers	0.0%	0.0%	44
Gable Top Containers	0.1%	0.1%	582
Other Polycoated Packaging	0.2%	0.2%	778
Single-use Food Service Compostable Paper	0.5%	0.1%	2,190
Other Compostable Paper Packaging	0.1%	0.1%	489
Newspaper Packaging	-	-	-
Remainder/Composite Paper Packaging	0.0%	0.0%	149
Plastic Packaging	**0.1%**	**0.0%**	**416**
#1 PETE Bottles	0.0%	0.0%	26
#1 PETE Non-bottles	0.0%	0.0%	58
#2 HDPE Natural Bottles	0.0%	0.0%	10
#2 HDPE Colored Bottles	0.0%	0.0%	7
#2 HDPE Jars & Tubs	-	-	-
#3 PVC Packaging	-	-	-
#4 LDPE Packaging	-	-	-
#5 PP Packaging	0.0%	0.0%	83
#6 PS Packaging	0.0%	0.0%	19
#7 Other/Unknown Packaging	0.0%	0.0%	20
PLA Compostable Food Packaging	0.0%	0.0%	58
EPS Expanded Polystyrene Packaging	0.0%	0.0%	11
Plastic Merchandise Bags	0.0%	0.0%	26
Transportation Packaging Film Plastic	0.0%	0.0%	11
Packaging Film Plastic	0.0%	0.0%	74
Flexible Plastic Packaging	0.0%	0.0%	3
Remainder/Composite Plastic	0.0%	0.0%	10
Metal	**0.0%**	**0.0%**	**49**
Aluminum Beverage Cans	0.0%	0.0%	22
Food Cans-Tinned	0.0%	0.0%	10
Aluminum Foil/Containers	0.0%	0.0%	7
Other Aluminum	-	-	-
Empty Aerosol Cans	-	-	-
Other Metal	0.0%	0.0%	11
Glass	**0.0%**	**0.0%**	**167**
Clear Glass Containers	0.0%	0.0%	39
Green Glass Containers	0.0%	0.0%	63
Other Colored Glass Containers	0.0%	0.0%	28
Plate Glass	-	-	-
Non-glass Ceramics	0.0%	0.0%	22
Remainder/Composite Glass	0.0%	0.0%	15

Material	Est. %	+ / -	Est. Tons
Paper Products	**1.1%**	**0.4%**	**4,592**
Newspaper Products	0.0%	0.0%	51
Cardboard & Kraft Paper Products	0.0%	0.0%	34
Magazines	0.0%	0.0%	50
High-grade Paper Products	0.1%	0.2%	491
Other Groundwood Paper Products	-	-	-
Mixed Paper Products	0.0%	0.0%	73
Product Paper Cups	-	-	-
Compostable Paper Products	0.7%	0.3%	3,223
Remainder/Composite Paper Products	0.2%	0.1%	671
Plastic Products	**0.3%**	**0.1%**	**1,366**
#1 PETE Products	-	-	-
#2 HDPE Products	0.1%	0.1%	230
#3 PVC Products	-	-	-
#4 LDPE Products	-	-	-
#5 PP Products	0.0%	0.0%	11
#6 PS Products	0.0%	0.0%	2
Bulky Rigid Plastic Products	0.0%	0.1%	162
PLA Compostable Plastic Bags & Film	0.2%	0.1%	747
PLA Compostable Plastic Utensils	0.0%	0.0%	23
#7 Other/Unknown Products	0.0%	0.0%	122
Plastic Garbage Bags	0.0%	0.0%	49
Plastic Non-bag Film Products	0.0%	0.0%	13
Remainder/Composite Plastic Products	0.0%	0.0%	7
Organics	**96.1%**	**1.1%**	**417,558**
Yard Debris	86.4%	3.4%	375,527
Food Processing Wastes	-	-	-
Other Compostables	0.0%	0.0%	22
Clean Wood	1.5%	1.0%	6,459
Fruits & Vegetables, Edible	2.3%	0.9%	9,988
Fruits & Vegetables, Non-edible	2.4%	1.3%	10,324
Homegrown Fruits & Vegetables	0.4%	0.2%	1,671
Meat, Edible	0.1%	0.1%	599
Meat, Non-edible	0.1%	0.0%	276
Mixed/Other Food Waste, Edible	1.8%	1.0%	7,874
Mixed/Other Food Waste, Non-edible	0.8%	0.6%	3,663
Animal Manure & Litter	0.2%	0.2%	1,003
Remainder/Composite Organics	0.0%	0.0%	150
Other Materials	**0.3%**	**0.1%**	**1,157**
Electronics & Small Appliances	-	-	-
Textiles (synthetic) & Shoes	0.0%	0.0%	31
Construction & Demolition Waste	0.2%	0.1%	704
Tanglers (non-plastic)	0.0%	0.0%	2
HHW/Special Waste	0.0%	0.0%	2
Diapers	0.0%	0.0%	13
Furniture/Bulky	-	-	-
Mixed Residue	0.1%	0.1%	404
Estimated Tons	**100%**		**434,700**
Sample Count			**62**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Table 47. Detailed Composition Table: Residential Inbound Organics- Southwest Region

Material	Est. %	+ / -	Est. Tons
Widely Accepted Recyclable	**0.6%**	**0.2%**	**731**
Limited Accepted Recyclable	**0.0%**	**0.0%**	**56**
Widely Accepted Compostable	**91.3%**	**3.1%**	**115,528**
Limited Accepted Compostable	**7.5%**	**2.7%**	**9,479**
Potentially Recoverable	**0.0%**	**0.0%**	**12**
Non-recoverable	**0.6%**	**0.6%**	**793**
Paper Packaging	**0.8%**	**0.2%**	**972**
Cardboard & Kraft Packaging	0.4%	0.2%	475
Mixed Paper Packaging	0.1%	0.1%	76
Packaging Paper Cups	-	-	-
Aseptic Containers	-	-	-
Gable Top Containers	-	-	-
Other Polycoated Packaging	0.0%	0.0%	2
Single-use Food Service Compostable Paper	0.2%	0.1%	294
Other Compostable Paper Packaging	0.0%	0.0%	42
Newspaper Packaging	-	-	-
Remainder/Composite Paper Packaging	0.1%	0.1%	83
Plastic Packaging	**0.1%**	**0.1%**	**131**
#1 PETE Bottles	0.0%	0.0%	35
#1 PETE Non-bottles	0.0%	0.0%	2
#2 HDPE Natural Bottles	0.0%	0.0%	11
#2 HDPE Colored Bottles	0.0%	0.0%	42
#2 HDPE Jars & Tubs	0.0%	0.0%	6
#3 PVC Packaging	-	-	-
#4 LDPE Packaging	-	-	-
#5 PP Packaging	0.0%	0.0%	4
#6 PS Packaging	0.0%	0.0%	1
#7 Other/Unknown Packaging	0.0%	0.0%	0
PLA Compostable Food Packaging	-	-	-
EPS Expanded Polystyrene Packaging	0.0%	0.0%	0
Plastic Merchandise Bags	-	-	-
Transportation Packaging Film Plastic	0.0%	0.0%	1
Packaging Film Plastic	0.0%	0.0%	28
Flexible Plastic Packaging	0.0%	0.0%	1
Remainder/Composite Plastic	0.0%	0.0%	1
Metal	**0.0%**	**0.0%**	**10**
Aluminum Beverage Cans	0.0%	0.0%	6
Food Cans-Tinned	0.0%	0.0%	2
Aluminum Foil/Containers	0.0%	0.0%	2
Other Aluminum	-	-	-
Empty Aerosol Cans	-	-	-
Other Metal	-	-	-
Glass	**0.0%**	**0.0%**	**34**
Clear Glass Containers	0.0%	0.0%	24
Green Glass Containers	-	-	-
Other Colored Glass Containers	0.0%	0.0%	11
Plate Glass	-	-	-
Non-glass Ceramics	-	-	-
Remainder/Composite Glass	-	-	-

Material	Est. %	+ / -	Est. Tons
Paper Products	**1.3%**	**0.6%**	**1,615**
Newspaper Products	0.0%	0.0%	10
Cardboard & Kraft Paper Products	0.0%	0.1%	62
Magazines	-	-	-
High-grade Paper Products	0.0%	0.0%	4
Other Groundwood Paper Products	-	-	-
Mixed Paper Products	0.0%	0.0%	14
Product Paper Cups	-	-	-
Compostable Paper Products	1.2%	0.5%	1,521
Remainder/Composite Paper Products	0.0%	0.0%	4
Plastic Products	**0.1%**	**0.0%**	**99**
#1 PETE Products	-	-	-
#2 HDPE Products	-	-	-
#3 PVC Products	-	-	-
#4 LDPE Products	-	-	-
#5 PP Products	-	-	-
#6 PS Products	-	-	-
Bulky Rigid Plastic Products	-	-	-
PLA Compostable Plastic Bags & Film	0.1%	0.0%	68
PLA Compostable Plastic Utensils	-	-	-
#7 Other/Unknown Products	0.0%	0.0%	3
Plastic Garbage Bags	0.0%	0.0%	12
Plastic Non-bag Film Products	-	-	-
Remainder/Composite Plastic Products	0.0%	0.0%	16
Organics	**97.7%**	**0.8%**	**123,723**
Yard Debris	87.2%	3.9%	110,458
Food Processing Wastes	-	-	-
Other Compostables	0.0%	0.0%	38
Clean Wood	4.0%	1.7%	5,032
Fruits & Vegetables, Edible	1.6%	0.9%	2,034
Fruits & Vegetables, Non-edible	2.0%	1.4%	2,580
Homegrown Fruits & Vegetables	0.7%	0.3%	873
Meat, Edible	0.2%	0.2%	316
Meat, Non-edible	0.4%	0.4%	548
Mixed/Other Food Waste, Edible	0.7%	0.4%	896
Mixed/Other Food Waste, Non-edible	0.2%	0.1%	307
Animal Manure & Litter	0.5%	0.6%	598
Remainder/Composite Organics	0.0%	0.0%	43
Other Materials	**0.0%**	**0.0%**	**16**
Electronics & Small Appliances	-	-	-
Textiles (synthetic) & Shoes	0.0%	0.0%	8
Construction & Demolition Waste	0.0%	0.0%	4
Tanglers (non-plastic)	0.0%	0.0%	4
HHW/Special Waste	0.0%	0.0%	1
Diapers	-	-	-
Furniture/Bulky	-	-	-
Mixed Residue	-	-	-
Estimated Tons	**100%**		**126,600**
Sample Count			**40**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

Composition Data Results Excel Files

To access the four Excel workbooks that contain the summarized composition data findings that are presented in this report, download this report as a PDF and open it in Adobe Acrobat. The Excel files are included as Attachments. At the time of publication, Attachments in Adobe Acrobat can be found by navigating to the Menu and then selecting View, Show/Hide, Side panels, and Attachments. Double-click each workbook to open it in Excel.

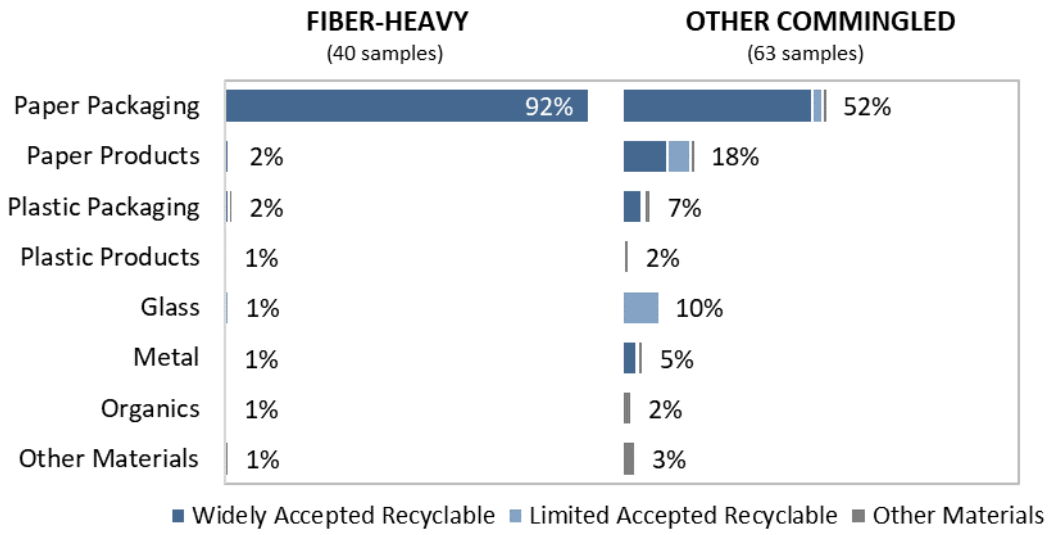
Appendix D. Substream Sample Summary

This section summarizes sampling results from various substreams including substreams with limited numbers of samples. These summaries are not representative of all collection programs statewide.

Commercial Recycling Substreams

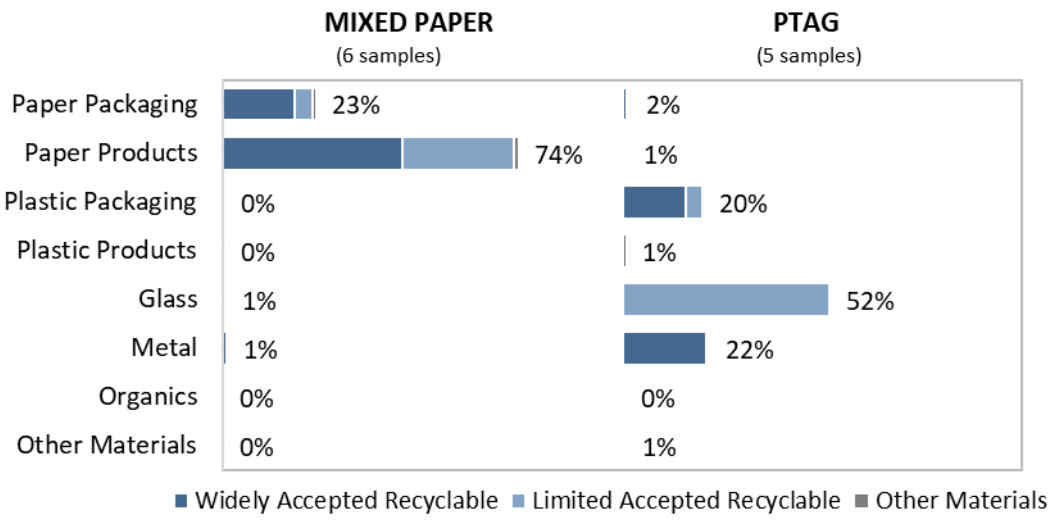
Commingled Recycling

Figure 43. Tons by Material Class: Commercial Commingled



Commercial Two-bin

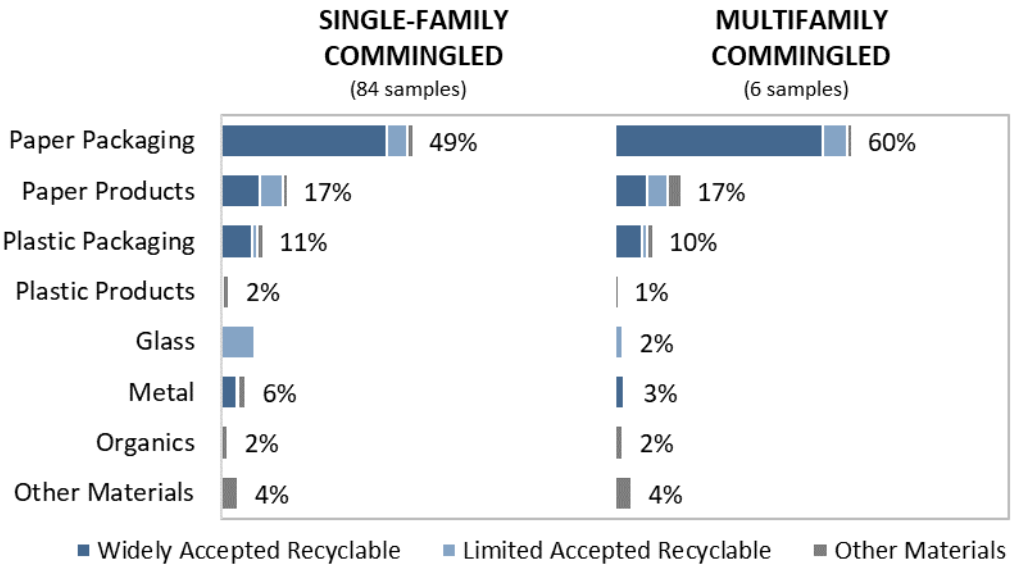
Figure 44. Tons by Material Class: Commercial Two-bin



Residential Recycling Substreams

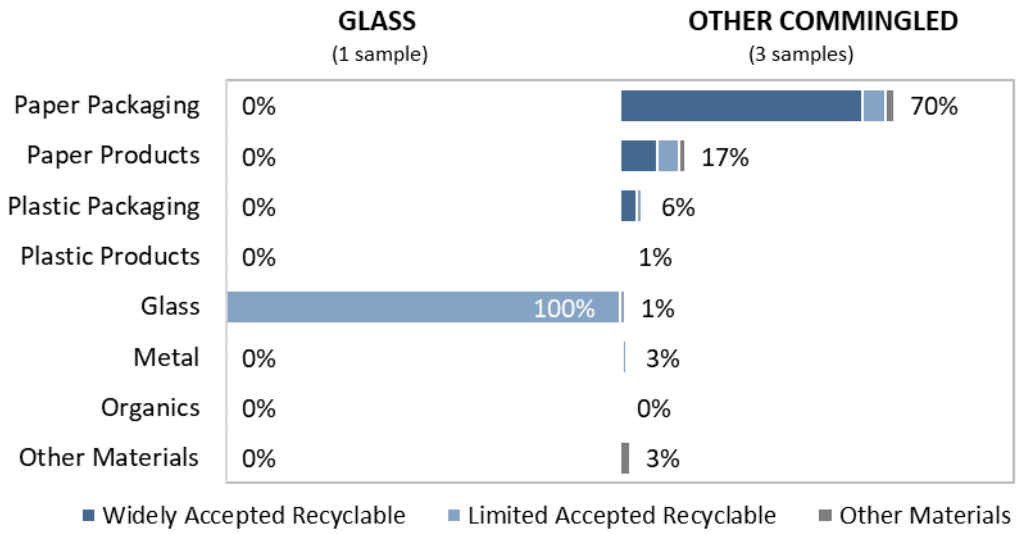
Commingled Recycling

Figure 45. Tons by Material Class: Residential Generator



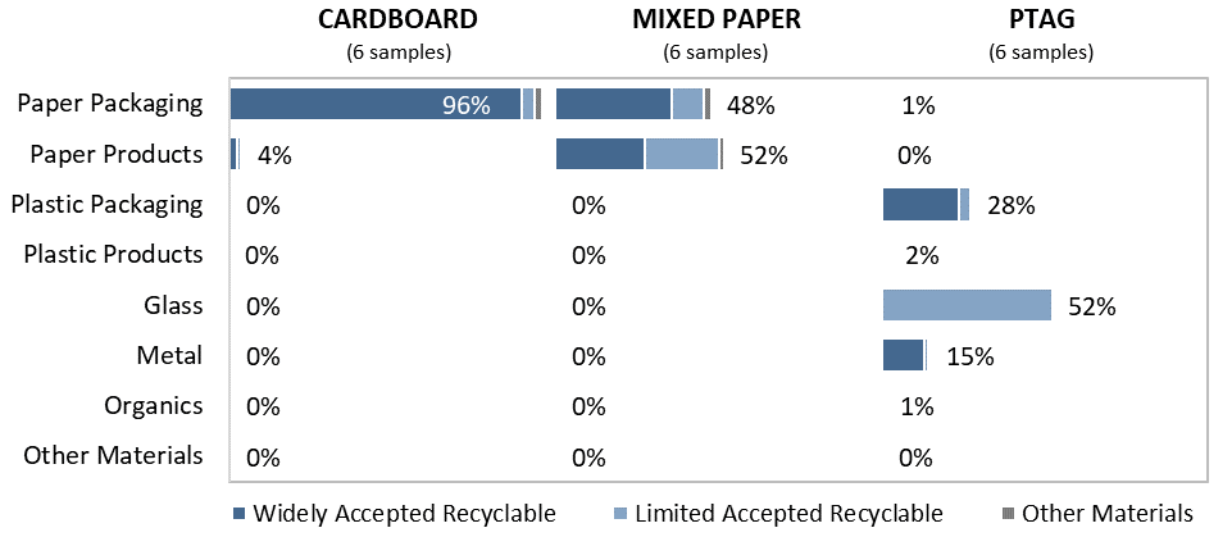
Residential Commingled (Glass-on-side)

Figure 46. Tons by Material Class: Residential Commingled (Glass-on-side)



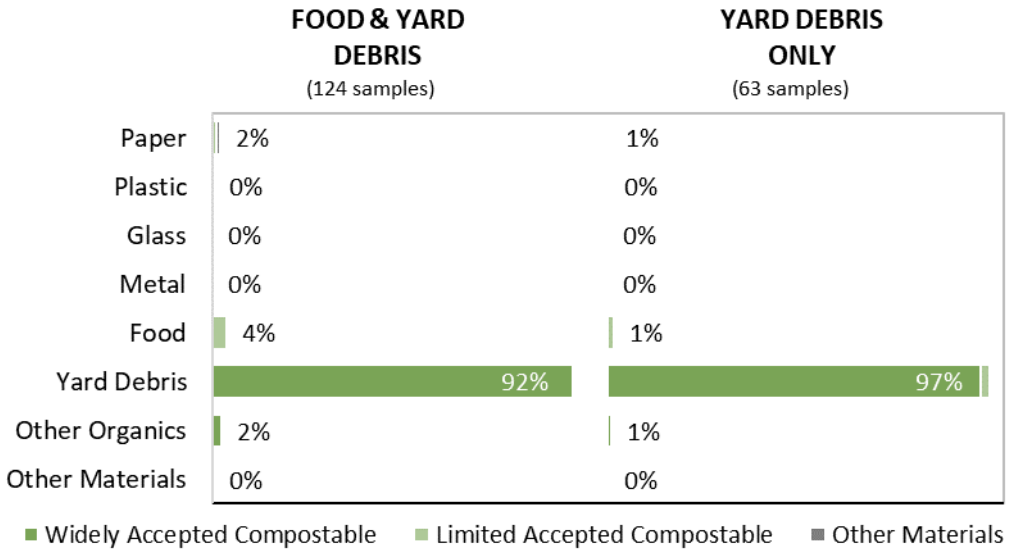
Residential Three-bin

Figure 47. Tons by Material Class: Residential Three-bin



Residential Organics Substreams

Figure 48. Tons by Material Class: Residential Organics Substreams



Appendix E. Supplemental Composition Results

This section presents composition results for the supplemental analysis, which incorporates composition data from recent studies conducted by Clark, Douglas, King, and Klickitat Counties and by the City of Seattle into the main statewide study. The goal of the supplemental analysis is to synthesize results from across the state and to provide greater regional and county representation.

Six additional studies were incorporated:

- Douglas County 2021 Contamination Reduction and Outreach Plan
- Klickitat County 2021 Recycling Contamination Reduction and Outreach Plan
- King County 2019 Materials Recovery Facility Assessment: Recyclables Characterization
- King County 2022 Organics Characterization Report
- City of Seattle 2021-2022 Residential and Commercial Organics Composition Study
- Clark County 2019 Residuals Characterization Test Results

Table 48 identifies which streams were evaluated in each local study and when each study was conducted.

Table 48. Local Studies Included in the Supplemental Analysis

Jurisdiction	Region	Stream	Study Year
Douglas County	Central	Inbound Recycling	2021
Klickitat County	Central	Inbound Recycling	2021
King County (excludes Seattle)	Northwest	Inbound Recycling, Outbound Commodities, Outbound Residuals, Inbound Organics	2019 (recycling streams), 2022 (Inbound Organics)
City of Seattle	Northwest	Inbound Organics	2021-2022
Clark County	Southwest	Outbound Residuals	2019

Summary of Methodology

Incorporating composition data from the six additional studies into the main statewide study required adjusting the material lists and commodity types, as detailed below. For all streams, composition results for the final material types were aggregated across studies using a weighted average procedure based on regional tonnage data provided by Ecology.

Material Lists

To combine the existing composition data from the six additional studies with data from the main statewide study, Cascadia merged their material lists. The studies were completed independently by

local governments and so each study originally used a unique list of material types and grouped them differently depending on the study's needs. For example, the level of detail for yard waste materials across the three organics studies (two materials for the statewide study, four for King County, and two for the City of Seattle) varied enough that the material types needed to be merged into a single material type ("Yard Debris") to accurately describe the materials covered in all three studies.

Table 49 and Table 50 show how the 82 material types in the statewide study were assigned to new material types for the supplemental analysis. Cascadia created separate material lists for the recycling streams (Inbound Recycling, Outbound Recycling Commodities, and Outbound Residual Materials) and the Inbound Organics stream.

Table 49. Supplemental Material Type Assignments- Recycling Streams

Material Class	Supplemental Analysis Material	Statewide Study 2023 Material
Paper	Cardboard & Kraft Packaging	Cardboard & Kraft Packaging
Paper	Cardboard & Kraft Packaging	Cardboard & Kraft Paper Products
Paper	Aseptic & Gable Top Containers	Aseptic Containers
Paper	Aseptic & Gable Top Containers	Gable Top Containers
Paper	Mixed Paper	Mixed Paper Packaging
Paper	Mixed Paper	Other Polycoated Packaging
Paper	Mixed Paper	Packaging Paper Cups
Paper	Mixed Paper	Newspaper Products
Paper	Mixed Paper	Magazines
Paper	Mixed Paper	High-grade Paper Products
Paper	Mixed Paper	Other Groundwood Paper Products
Paper	Mixed Paper	Mixed Paper Products
Paper	Mixed Paper	Product Paper Cups
Paper	Compostable Food-soiled Paper Products	Single-use Food Service Compostable Paper
Paper	Compostable Food-soiled Paper Products	Other Compostable Paper Packaging
Paper	Compostable Food-soiled Paper Products	Compostable Paper Products
Paper	Other Paper	Newspaper Packaging
Paper	Other Paper	Remainder/Composite Paper Packaging
Paper	Other Paper	Remainder/Composite Paper Products

Material Class	Supplemental Analysis Material	Statewide Study 2023 Material
Metal	Aluminum Beverage Cans	Aluminum Beverage Cans
Metal	Aluminum Foil/Containers	Aluminum Foil/Containers
Metal	Food Cans-Tinned	Food Cans-Tinned
Metal	Empty Aerosol Cans	Empty Aerosol Cans
Metal	Other Metal	Other Aluminum
Metal	Other Metal	Other Metal
Glass	Glass Containers	Clear Glass Containers
Glass	Glass Containers	Green Glass Containers
Glass	Glass Containers	Other Colored Glass Containers
Glass	Other Glass	Plate Glass
Glass	Other Glass	Non-glass Ceramics
Glass	Other Glass	Remainder/Composite Glass
Organics	Edible Food	Fruits & Vegetables, Edible
Organics	Edible Food	Meat, Edible
Organics	Edible Food	Mixed/Other Food Waste, Edible
Organics	Non-edible Food	Fruits & Vegetables, Non-edible
Organics	Non-edible Food	Meat, Non-edible
Organics	Non-edible Food	Mixed/Other Food Waste, Non-edible
Organics	Non-edible Food	Food Processing Wastes
Organics	Yard Debris	Homegrown Fruits & Vegetables
Organics	Yard Debris	Yard Debris
Organics	Other Compostables	Other Compostables
Organics	Other Compostables	Clean Wood
Plastic	#1 PETE & #2 HDPE Packaging	#1 PETE Bottles
Plastic	#1 PETE & #2 HDPE Packaging	#1 PETE Non-bottles
Plastic	#1 PETE & #2 HDPE Packaging	#2 HDPE Natural Bottles
Plastic	#1 PETE & #2 HDPE Packaging	#2 HDPE Colored Bottles
Plastic	#1 PETE & #2 HDPE Packaging	#2 HDPE Jars & Tubs

Material Class	Supplemental Analysis Material	Statewide Study 2023 Material
Plastic	#4 LDPE	#4 LDPE Packaging
Plastic	#4 LDPE	#4 LDPE Products
Plastic	#5 PP	#5 PP Packaging
Plastic	#5 PP	#5 PP Products
Plastic	#6 PS Packaging	#6 PS Packaging
Plastic	EPS Expanded Polystyrene	EPS Expanded Polystyrene Packaging
Plastic	PLA Compostable Plastics	PLA Compostable Food Packaging
Plastic	PLA Compostable Plastics	PLA Compostable Plastic Bags & Film
Plastic	PLA Compostable Plastics	PLA Compostable Plastic Utensils
Plastic	Plastic Merchandise Bags & Film	Plastic Merchandise Bags
Plastic	Plastic Garbage Bags	Plastic Garbage Bags
Plastic	Other Plastic Film	Packaging Film Plastic
Plastic	Other Plastic Film	Transportation Packaging Film Plastic
Plastic	Other Plastic Film	Flexible Plastic Packaging
Plastic	Other Plastic Film	Plastic Non-bag Film Products
Plastic	Bulky Rigid Plastics	Bulky Rigid Plastic Products
Plastic	Other Plastics	#3 PVC Packaging
Plastic	Other Plastics	#7 Other/Unknown Packaging
Plastic	Other Plastics	Remainder/Composite Plastic
Plastic	Other Plastics	#1 PETE Products
Plastic	Other Plastics	#2 HDPE Products
Plastic	Other Plastics	#3 PVC Products
Plastic	Other Plastics	#6 PS Products
Plastic	Other Plastics	#7 Other/Unknown Products
Plastic	Other Plastics	Remainder/Composite Plastic Products
Other Materials	Tanglers (non-plastic)	Tanglers (non-plastic)
Other Materials	HHW/Special Waste	HHW/Special Waste

Material Class	Supplemental Analysis Material	Statewide Study 2023 Material
Other Materials	Electronics & Small Appliances	Electronics & Small Appliances
Other Materials	Diapers	Diapers
Other Materials	Textiles & Shoes	Textiles (synthetic) & Shoes
Other Materials	Construction Materials	Construction & Demolition Waste
Other Materials	Furniture/Bulky	Furniture/Bulky
Other Materials	Other Materials	Animal Manure & Litter
Other Materials	Other Materials	Remainder/Composite Organics
Other Materials	Other Materials	Mixed Residue

Table 50. Supplemental Material Type Assignments- Inbound Organics

Material Class	Supplemental Analysis Material	Statewide Study 2023 Material
Organics	Fruits & Vegetables, Edible	Fruits & Vegetables, Edible
Organics	Fruits & Vegetables, Non-edible	Fruits & Vegetables, Non-edible
Organics	Other Food Waste, Edible	Meat, Edible
Organics	Other Food Waste, Edible	Mixed/Other Food Waste, Edible
Organics	Other Food Waste, Non-edible	Meat, Non-edible
Organics	Other Food Waste, Non-edible	Mixed/Other Food Waste, Non-edible
Organics	Other Food Waste, Non-edible	Food Processing Wastes
Organics	Yard Debris	Homegrown Fruits & Vegetables
Organics	Yard Debris	Yard Debris
Organics	Other Compostable Organics	Other Compostables
Organics	Other Compostable Organics	Clean Wood
Organics	Animal Feces	Animal Manure & Litter
Organics	Other Organics	Remainder/Composite Organics

Material Class	Supplemental Analysis Material	Statewide Study 2023 Material
Paper	Single-use Food Service Compostable Paper	Packaging Paper Cups
Paper	Single-use Food Service Compostable Paper	Single-use Food Service Compostable Paper
Paper	Single-use Food Service Compostable Paper	Compostable Paper Products
Paper	Other Compostable Paper	Cardboard & Kraft Packaging
Paper	Other Compostable Paper	Mixed Paper Packaging
Paper	Other Compostable Paper	Other Compostable Paper Packaging
Paper	Other Compostable Paper	Newspaper Products
Paper	Other Compostable Paper	Cardboard & Kraft Paper Products
Paper	Other Compostable Paper	High-grade Paper Products
Paper	Other Compostable Paper	Other Groundwood Paper Products
Paper	Other Paper	Newspaper Packaging
Paper	Other Paper	Aseptic Containers
Paper	Other Paper	Gable Top Containers
Paper	Other Paper	Other Polycoated Packaging
Paper	Other Paper	Remainder/Composite Paper Packaging
Paper	Other Paper	Magazines
Paper	Other Paper	Mixed Paper Products
Paper	Other Paper	Product Paper Cups
Paper	Other Paper	Remainder/Composite Paper Products
Plastic	Compostable Rigid Plastic	PLA Compostable Food Packaging
Plastic	Compostable Rigid Plastic	PLA Compostable Plastic Utensils
Plastic	Compostable Film Plastic	PLA Compostable Plastic Bags & Film
Plastic	Non-compostable Rigid Plastic	#1 PETE Bottles
Plastic	Non-compostable Rigid Plastic	#1 PETE Non-bottles
Plastic	Non-compostable Rigid Plastic	#2 HDPE Natural Bottles
Plastic	Non-compostable Rigid Plastic	#2 HDPE Colored Bottles

Material Class	Supplemental Analysis Material	Statewide Study 2023 Material
Plastic	Non-compostable Rigid Plastic	#2 HDPE Jars & Tubs
Plastic	Non-compostable Rigid Plastic	#3 PVC Packaging
Plastic	Non-compostable Rigid Plastic	#4 LDPE Packaging
Plastic	Non-compostable Rigid Plastic	#5 PP Packaging
Plastic	Non-compostable Rigid Plastic	#6 PS Packaging
Plastic	Non-compostable Rigid Plastic	#7 Other/Unknown Packaging
Plastic	Non-compostable Rigid Plastic	EPS Expanded Polystyrene Packaging
Plastic	Non-compostable Rigid Plastic	Remainder/Composite Plastic
Plastic	Non-compostable Rigid Plastic	#1 PETE Products
Plastic	Non-compostable Rigid Plastic	#2 HDPE Products
Plastic	Non-compostable Rigid Plastic	#3 PVC Products
Plastic	Non-compostable Rigid Plastic	#4 LDPE Products
Plastic	Non-compostable Rigid Plastic	#5 PP Products
Plastic	Non-compostable Rigid Plastic	#6 PS Products
Plastic	Non-compostable Rigid Plastic	#7 Other/Unknown Products
Plastic	Non-compostable Rigid Plastic	Bulky Rigid Plastic Products
Plastic	Non-compostable Rigid Plastic	Remainder/Composite Plastic Products
Plastic	Non-compostable Film Plastic	Plastic Merchandise Bags
Plastic	Non-compostable Film Plastic	Packaging Film Plastic
Plastic	Non-compostable Film Plastic	Transportation Packaging Film Plastic
Plastic	Non-compostable Film Plastic	Flexible Plastic Packaging
Plastic	Non-compostable Film Plastic	Plastic Garbage Bags
Plastic	Non-compostable Film Plastic	Plastic Non-bag Film Products
Metal	Aluminum Beverage Cans	Aluminum Beverage Cans
Metal	Aluminum Foil/Containers	Aluminum Foil/Containers
Metal	Other Aluminum	Other Aluminum
Metal	Food Cans-Tinned	Food Cans-Tinned
Metal	Empty Aerosol Cans	Empty Aerosol Cans

Material Class	Supplemental Analysis Material	Statewide Study 2023 Material
Metal	Other Metal	Other Metal
Glass	Clear Glass Containers	Clear Glass Containers
Glass	Green Glass Containers	Green Glass Containers
Glass	Other Colored Glass Containers	Other Colored Glass Containers
Glass	Non-glass Ceramics	Non-glass Ceramics
Glass	Other Glass	Plate Glass
Glass	Other Glass	Remainder/Composite Glass
Other Materials	Other Materials	Tanglers (non-plastic)
Other Materials	Other Materials	HHW/Special Waste
Other Materials	Other Materials	Electronics & Small Appliances
Other Materials	Other Materials	Diapers
Other Materials	Other Materials	Textiles (synthetic) & Shoes
Other Materials	Other Materials	Construction & Demolition Waste
Other Materials	Other Materials	Furniture/Bulky
Other Materials	Other Materials	Mixed Residue

Outbound Recycling Commodity Types

Of the 11 Outbound Recycling Commodities reported in the main statewide analysis, eight were also reported in the additional Outbound Recycling Commodities study from King County and are included in the supplemental analysis (Table 51). Paper Cartons and #5 PP commodities were excluded from the supplemental analysis. Ferrous Metals and Non-ferrous Metals were combined into a single commodity, Mixed Metals.

Table 51. Outbound Recycling Substreams- Supplemental Analysis

Substream	Commodity
Outbound Recycling Commodities	• Cardboard • Mixed Paper • #1 PET Plastics • #2 HDPE Natural Plastics • #2 HDPE Colored Plastics • Mixed Plastics • Aluminum Beverage Containers • Mixed Metals

Supplemental Characterization Results

How Study Findings are Presented

For the Inbound Recycling and Organics streams, composition results are grouped by generator and substream and are presented in three formats:

- First, an overview of composition and quantity by recoverability group is presented as a stacked bar chart, with an emphasis on the recoverable materials in each stream.
- Second, composition and quantity by material class are presented in a stacked bar chart.
- Third, detailed composition and weight estimates by material types are presented in a table.

Unlike in the main statewide study, confidence intervals (identified as "+/-" in composition tables) are not presented for the supplemental analysis. Information about individual samples, where is necessary to calculate confidence intervals, was not available for all additional studies.

In the main statewide study, composition estimates for the overall hauler-collected Inbound Organics and Commercial Organics streams are not reported because of the low number of Commercial Organics samples. In the supplemental analysis, Commercial samples from the King County and City of Seattle organics studies are used to generate composition estimates for these two streams, along with the Commercial Organics samples from the statewide study.

For Outbound Recycling Commodities, results are grouped by general commodity type (Fiber, Plastics, or Metals) to facilitate comparison. For each group of commodities and for Outbound Residual Materials, composition results are presented in the following formats:

- First, an overview of commodity or residuals composition by recoverability group is presented as a stacked bar chart.
- Second, composition by material class is presented in a stacked bar chart.
- Third, detailed composition estimates by material type are presented in a table.

The compositions of Outbound Recycling Commodities and Residual Materials are only reported as percentages; outbound tons are not well characterized in facility reports to Ecology and are not available for this analysis.

Inbound Recycling

This section provides the characterization results of the hauler-collected recyclable material arriving to MRFs and transfer stations.

Generally, results from the supplemental analysis show a greater proportion of Limited Accepted Recyclables and fewer Widely Accepted Recyclables than results from the statewide study. The supplemental analysis shows a greater proportion of Limited Accepted Recyclables in the Paper class in particular.

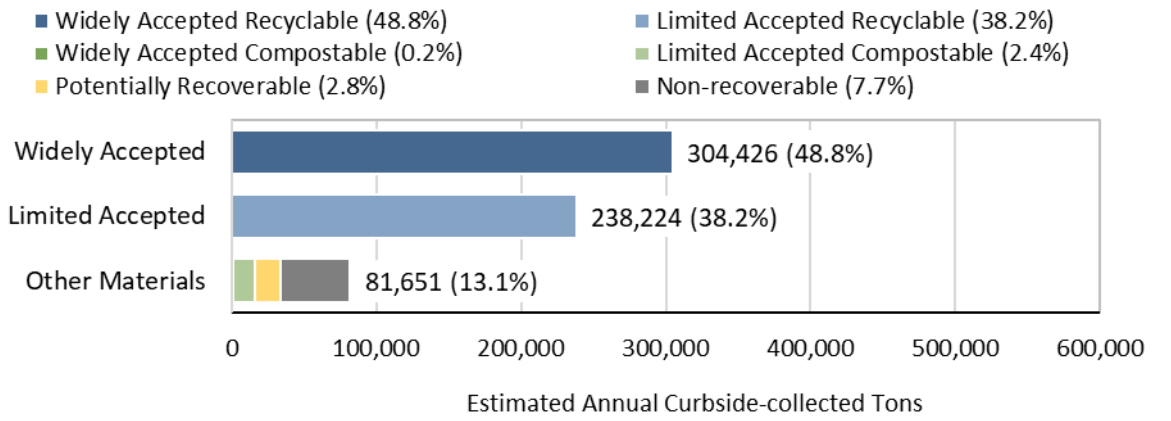
Inbound Recycling

This section includes an overview of the materials present in the hauler-collected Inbound Recycling stream (Residential and Commercial generators combined). The overview includes a breakdown of materials based on their recoverability group and material class. The annual tonnage of hauler-collected Inbound Recycling statewide is an estimated 624,300 tons.

Overview by Recoverability Group

In the hauler-collected Inbound Recycling stream analyzed across studies, an estimated 48.8 percent (304,426 tons) of material is Widely Accepted Recyclable, meaning it has consistently available recycling markets and is accepted in a majority of the state's curbside recycling programs (Figure 49). Limited Acceptable Recyclable materials account for an estimated 38.2 percent and Other Materials that do not belong in the recycling stream (compostable, Potentially Recoverable, and Non-recoverable materials) account for the remaining 13.1 percent.

Figure 49. Supplemental Results: Tons by Recoverability for Overall Hauler-collected Inbound Recycling



Overview by Material Class

The most prevalent material class based on the supplemental analysis is Paper Packaging (67.4% of material overall or 420,488 tons; Figure 50). Glass has the greatest proportion of Limited Accepted Recyclable materials (92.0% of the Glass class), followed by Paper (37.6% of the Paper class) and Plastic (11.5% of the Plastic class). None of the materials in the Organics or Other Materials classes are classified as Widely or Limited Accepted Recyclable.

Figure 50. Supplemental Results: Tons by Material Class for Overall Hauler-collected Inbound Recycling

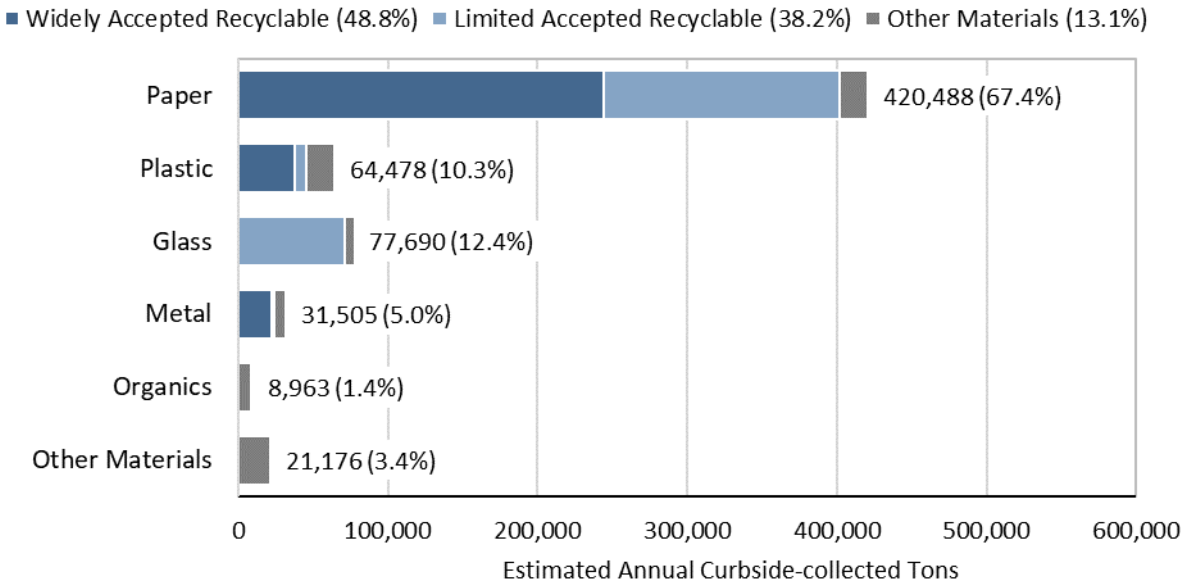


Table 52 shows the detailed composition of the statewide hauler-collected Inbound Recycling stream. The most prevalent Widely Accepted Recyclable material is Cardboard & Kraft Packaging (39.1% or 244,176 tons).

Table 52. Supplemental Results: Detailed Composition Table for Overall Hauler-collected Inbound Recycling

Material	Est. %	Est. Tons	Material	Est. %	Est. Tons
Widely Accepted Recyclable	**48.8%**	**304,426**	**Widely Accepted Compostable**	**0.2%**	**1,305**
Limited Accepted Recyclable	**38.2%**	**238,224**	**Limited Accepted Compostable**	**2.4%**	**15,166**
Potentially Recoverable	**2.8%**	**17,211**	**Non-recoverable**	**7.7%**	**47,969**
Paper	**67.4%**	**420,488**	**Plastic**	**10.3%**	**64,478**
Cardboard & Kraft Packaging	39.1%	244,176	#1 PETE & #2 HDPE Packaging	6.1%	37,782
Aseptic & Gable Top Containers	0.6%	3,651	#4 LDPE	0.0%	70
Mixed Paper	24.7%	154,357	#5 PP	0.7%	4,652
Compostable Food-soiled Paper Products	1.2%	7,385	#6 PS Packaging	0.1%	717
Other Paper	1.7%	10,919	Bulky Rigid Plastics	0.3%	1,973
Metal	**5.0%**	**31,505**	PLA Compostable Plastics	0.0%	123
Aluminum Beverage Cans	2.0%	12,584	EPS Expanded Polystyrene	0.1%	841
Food Cans-Tinned	1.6%	9,883	Plastic Merchandise Bags & Film	0.3%	1,661
Aluminum Foil/Containers	0.2%	958	Plastic Garbage Bags	0.2%	1,467
Empty Aerosol Cans	0.1%	356	Other Plastic Film	0.9%	5,468
Other Metal	1.2%	7,724	Other Plastics	1.6%	9,725
Glass	**12.4%**	**77,690**	**Other Materials**	**3.4%**	**21,176**
Glass Containers	11.5%	71,490	Electronics & Small Appliances	0.2%	1,467
Other Glass	1.0%	6,200	Textiles & Shoes	0.8%	4,714
Organics	**1.4%**	**8,963**	Construction Materials	0.1%	805
Yard Debris	0.1%	403	Tanglers (non-plastic)	0.1%	688
Other Compostables	0.1%	901	HHW/Special Waste	0.2%	986
Edible Food	0.9%	5,879	Diapers	0.2%	1,153
Non-edible Food	0.3%	1,780	Furniture/Bulky	0.0%	183
			Other Materials	1.8%	11,181
Estimated Total				**100%**	**624,300**
Sample Count				316	

Percentages for material types may not total 100% due to rounding.

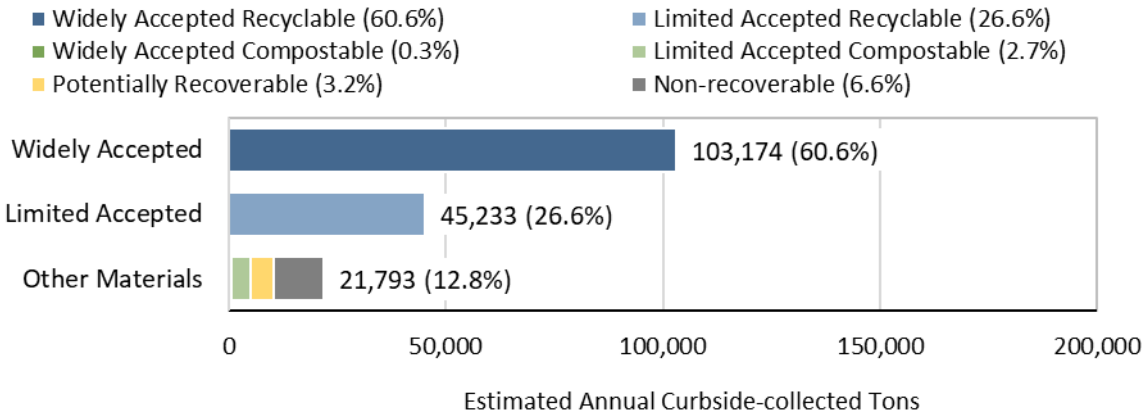
Commercial Recycling

This section includes an overview of the materials present in the hauler-collected Commercial Inbound Recycling stream. The overview includes a breakdown of materials based on their recoverability group and material class. The annual tonnage of hauler-collected Commercial Inbound Recycling statewide is an estimated 170,200 tons.

Overview by Recoverability Group

In the Commercial Inbound Recycling stream analyzed across studies, an estimated 60.6 percent (103,174 tons) of hauler-collected material is Widely Accepted Recyclable, meaning it has consistently available recycling markets and is accepted in a majority of the state's curbside recycling programs (Figure 51). Limited Acceptable Recyclable materials account for an estimated 26.6 percent and Other Materials that do not belong in the recycling stream (compostable, Potentially Recoverable, and Non-recoverable materials) account for the remaining 12.8 percent.

Figure 51. Supplemental Results: Tons by Recoverability for Commercial Inbound Recycling



Overview by Material Class

The most prevalent material class based on the supplemental analysis is Paper Packaging (75.3% of material overall or 128,101 tons; Figure 52). Glass has the greatest proportion of Limited Accepted Recyclable materials (92.3% of the Glass class), followed by Paper (25.6% of the Paper class) and Plastic (9.7% of the Plastic class). None of the materials in the Organics or Other Materials classes are classified as Widely or Limited Accepted Recyclable.

Figure 52. Supplemental Results: Tons by Material Class for Commercial Inbound Recycling

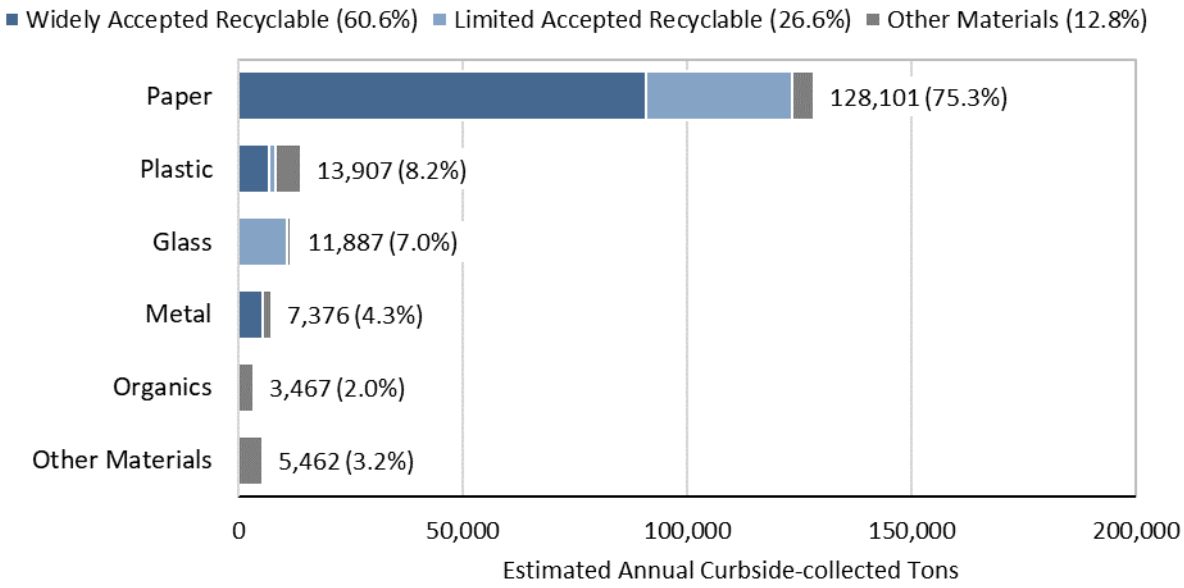


Table 53 shows the detailed composition of the hauler-collected Commercial Inbound Recycling stream. The most prevalent Widely Accepted Recyclable material is Cardboard & Kraft Packaging (53.3% or 90,707 tons) comprising more than half of all commercial inbound recycling.

Table 53. Supplemental Results: Detailed Composition Table for Commercial Inbound Recycling

Material	Est. %	Est. Tons	Material	Est. %	Est. Tons
Widely Accepted Recyclable	**60.6%**	**103,174**	**Widely Accepted Compostable**	**0.3%**	**550**
Limited Accepted Recyclable	**26.6%**	**45,233**	**Limited Accepted Compostable**	**2.7%**	**4,519**
Potentially Recoverable	**3.2%**	**5,477**	**Non-recoverable**	**6.6%**	**11,247**
Paper	**75.3%**	**128,101**	**Plastic**	**8.2%**	**13,907**
Cardboard & Kraft Packaging	53.3%	90,707	#1 PETE & #2 HDPE Packaging	4.1%	7,027
Aseptic & Gable Top Containers	0.4%	715	#4 LDPE	0.0%	10
Mixed Paper	18.8%	32,034	#5 PP	0.5%	807
Compostable Food-soiled Paper Products	0.9%	1,566	#6 PS Packaging	0.1%	105
Other Paper	1.8%	3,080	Bulky Rigid Plastics	0.3%	430
Metal	**4.3%**	**7,376**	PLA Compostable Plastics	0.0%	36
Aluminum Beverage Cans	1.4%	2,327	EPS Expanded Polystyrene	0.2%	291
Food Cans-Tinned	1.8%	3,113	Plastic Merchandise Bags & Film	0.3%	494
Aluminum Foil/Containers	0.1%	99	Plastic Garbage Bags	0.5%	798
Empty Aerosol Cans	0.0%	63	Other Plastic Film	1.1%	1,920
Other Metal	1.0%	1,774	Other Plastics	1.2%	1,988
Glass	**7.0%**	**11,887**	**Other Materials**	**3.2%**	**5,462**
Glass Containers	6.4%	10,970	Electronics & Small Appliances	0.4%	672
Other Glass	0.5%	917	Textiles & Shoes	1.2%	2,055
Organics	**2.0%**	**3,467**	Construction Materials	0.1%	191
Yard Debris	0.2%	349	Tanglers (non-plastic)	0.1%	101
Other Compostables	0.1%	201	HHW/Special Waste	0.3%	460
Edible Food	1.5%	2,542	Diapers	0.2%	306
Non-edible Food	0.2%	375	Furniture/Bulky	0.0%	20
			Other Materials	1.0%	1,656
Estimated Total				**100%**	**170,200**
Sample Count				163	

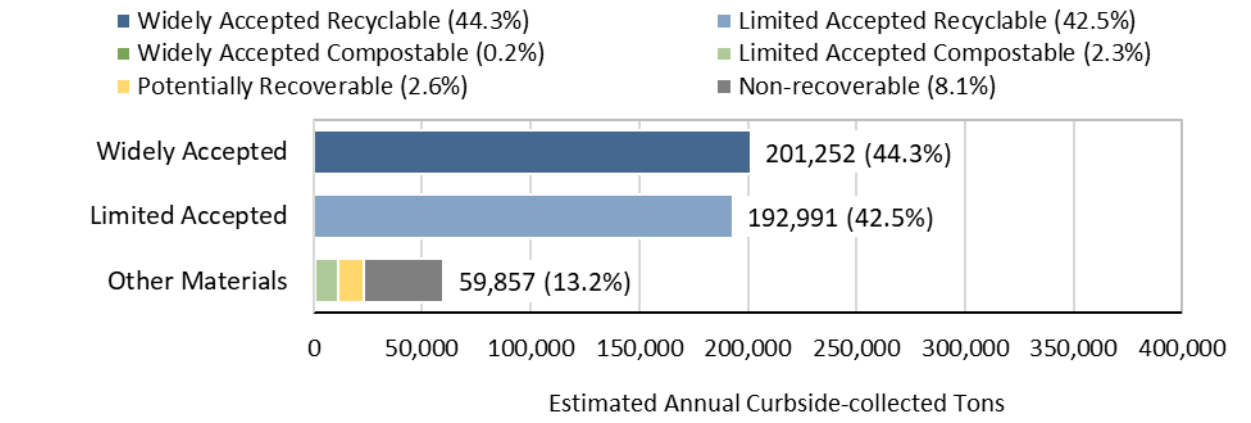
Percentages for material types may not total 100% due to rounding.

Residential Recycling

Overview by Recoverability Group

In the Residential Inbound Recycling stream analyzed across studies, an estimated 44.3 percent (201,252 tons) of hauler-collected material is Widely Accepted Recyclable, meaning it has consistently available recycling markets and is accepted in a majority of the state's curbside recycling programs (Figure 53). Limited Acceptable Recyclable materials account for an estimated 42.5 percent and Other Materials that do not belong in the recycling stream (compostable, Potentially Recoverable, and Non-recoverable materials) account for the remaining 13.2 percent.

Figure 53. Supplemental Results: Tons by Recoverability for Residential Inbound Recycling



Overview by Material Class

The most prevalent material class based on the supplemental analysis is Paper (46.4% of material overall or 292,387 tons; Figure 54). Glass has the greatest proportion of Limited Accepted Recyclable materials (92.0% of the Glass class), followed by Paper (42.8% of the Paper class) and Plastic (12.0% of the Plastic class). None of the materials in the Organics or Other Materials classes are classified as Widely or Limited Accepted Recyclable.

Figure 54. Supplemental Results: Tons by Material Class for Residential Inbound Recycling

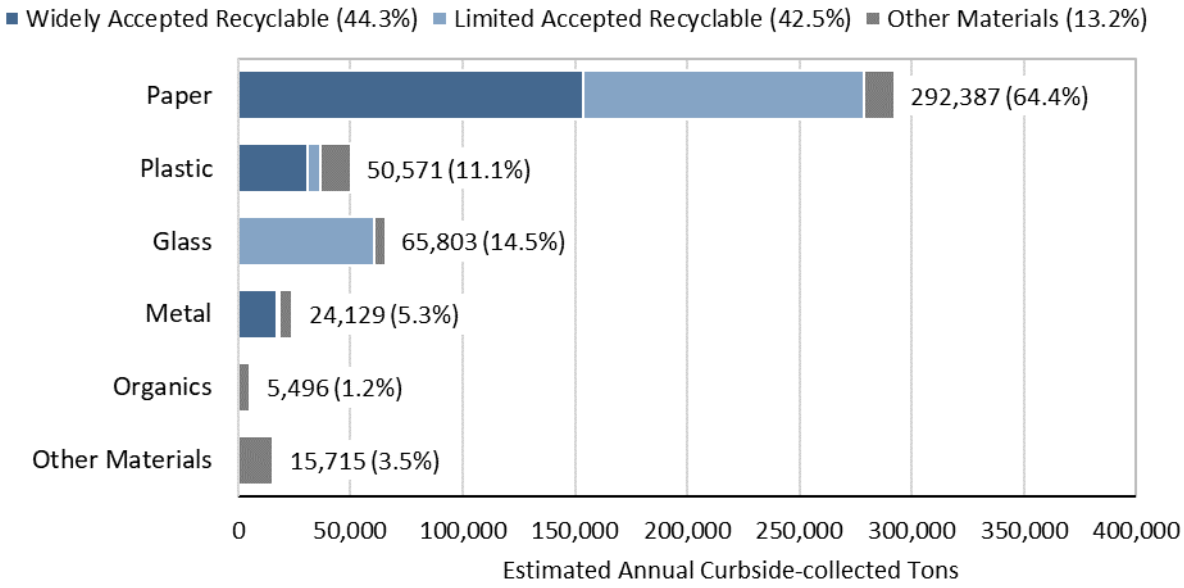


Table 54 shows the detailed composition of the hauler-collected Residential Inbound Recycling stream. The most prevalent Widely Accepted Recyclable material is Cardboard & Kraft Packaging (33.8% or 153,469 tons).

Table 54. Supplemental Results: Detailed Composition Table for Residential Inbound Recycling

Material	Est. %	Est. Tons	Material	Est. %	Est. Tons
Widely Accepted Recyclable	**44.3%**	**201,252**	**Widely Accepted Compostable**	**0.2%**	**754**
Limited Accepted Recyclable	**42.5%**	**192,991**	**Limited Accepted Compostable**	**2.3%**	**10,647**
Potentially Recoverable	**2.6%**	**11,734**	**Non-recoverable**	**8.1%**	**36,722**
Paper	**64.4%**	**292,387**	**Plastic**	**11.1%**	**50,571**
Cardboard & Kraft Packaging	33.8%	153,469	#1 PETE & #2 HDPE Packaging	6.8%	30,755
Aseptic & Gable Top Containers	0.6%	2,937	#4 LDPE	0.0%	60
Mixed Paper	26.9%	122,323	#5 PP	0.8%	3,845
Compostable Food-soiled Paper Products	1.3%	5,819	#6 PS Packaging	0.1%	612
Other Paper	1.7%	7,839	Bulky Rigid Plastics	0.3%	1,543
Metal	**5.3%**	**24,129**	PLA Compostable Plastics	0.0%	87
Aluminum Beverage Cans	2.3%	10,257	EPS Expanded Polystyrene	0.1%	550
Food Cans-Tinned	1.5%	6,770	Plastic Merchandise Bags & Film	0.3%	1,167
Aluminum Foil/Containers	0.2%	859	Plastic Garbage Bags	0.1%	669
Empty Aerosol Cans	0.1%	293	Other Plastic Film	0.8%	3,548
Other Metal	1.3%	5,950	Other Plastics	1.7%	7,736
Glass	**14.5%**	**65,803**	**Other Materials**	**3.5%**	**15,715**
Glass Containers	13.3%	60,520	Electronics & Small Appliances	0.2%	794
Other Glass	1.2%	5,283	Textiles & Shoes	0.6%	2,659
Organics	**1.2%**	**5,496**	Construction Materials	0.1%	614
Yard Debris	0.0%	54	Tanglers (non-plastic)	0.1%	587
Other Compostables	0.2%	700	HHW/Special Waste	0.1%	525
Edible Food	0.7%	3,337	Diapers	0.2%	847
Non-edible Food	0.3%	1,405	Furniture/Bulky	0.0%	163
			Other Materials	2.1%	9,525
Estimated Total				**100%**	**454,100**
Sample Count				153	

Percentages for material types may not total 100% due to rounding.

Outbound Recycling Commodities

This section presents the characterization results of outgoing (post-sort) recyclables destined for recycling markets. Total annual tons of individual Outbound Recycling Commodity streams were not available for this study. Composition results are shown as percentages.

Generally, results from the supplemental analysis are similar to those from the statewide study. Mixed Paper commodities have a greater proportion of Limited Accepted Recyclable materials than in the main statewide study.

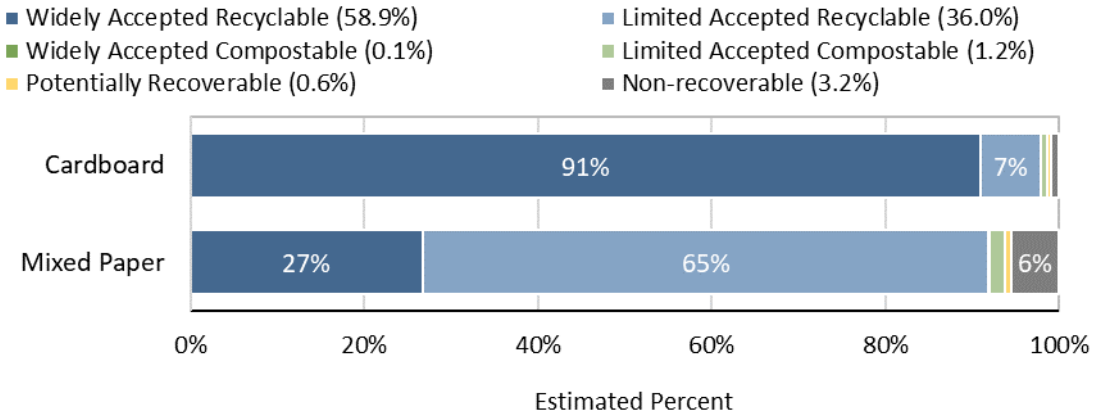
Fiber

Fiber includes Carboard and Mixed Paper commodities.

Overview by Recoverability Group

Across studies, Cardboard is made up of 91 percent Widely Accepted Recyclable materials, whereas Mixed Paper has a more limited market and is made up of 65 percent Limited Accepted Recyclable materials (Figure 55).

Figure 55. Supplemental Results: Composition by Recoverability for Outbound Fiber



Overview by Material Class

Cardboard and Mixed Paper are both primarily composed of Paper materials (98% and 92%, respectively; Figure 56). The Cardboard commodity is 90.5 percent Cardboard & Kraft Packaging, and the Mixed Paper commodity is 23.7 percent Cardboard & Kraft Packaging and 63.5 percent Mixed Paper (Table 55).

Figure 56. Supplemental Results: Composition by Material Class for Outbound Fiber

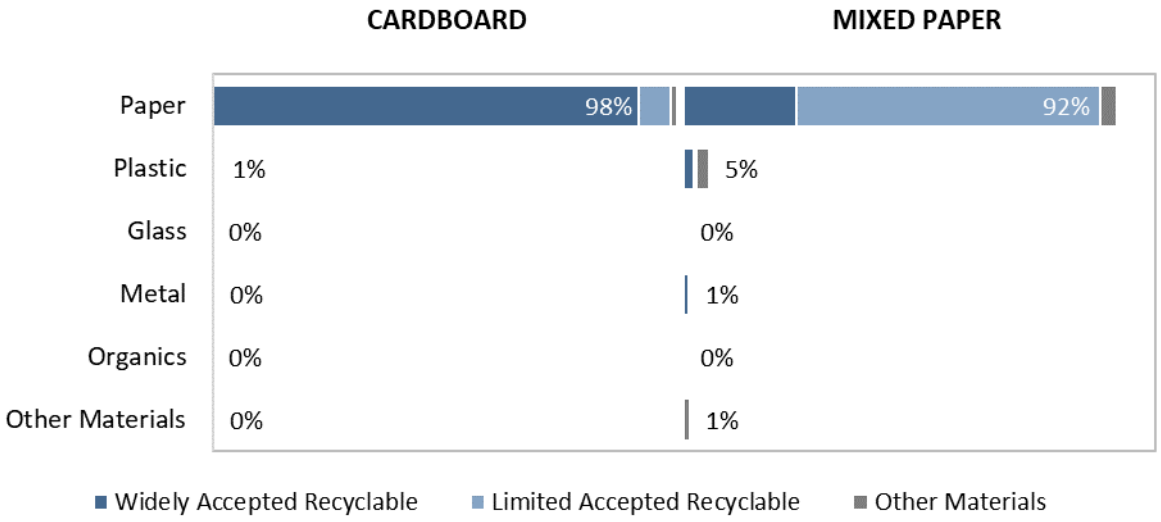


Table 55. Supplemental Results: Detailed Composition Table for Outbound Fiber

	Cardboard	Mixed Paper
Material	**Est. %**	**Est. %**
Widely Accepted Recyclable	**90.9%**	**26.8%**
Limited Accepted Recyclable	**7.0%**	**65.1%**
Widely Accepted Compostable	**0.0%**	**0.1%**
Limited Accepted Compostable	**0.7%**	**1.7%**
Potentially Recoverable	**0.5%**	**0.7%**
Non-recoverable	**0.9%**	**5.5%**
Paper	**98.4%**	**91.9%**
Cardboard & Kraft Packaging	90.5%	23.7%
Aseptic & Gable Top Containers	0.1%	0.9%
Mixed Paper	6.7%	63.5%
Compostable Food-soiled Paper Products	0.7%	1.6%
Other Paper	0.5%	2.2%
Plastic	**0.9%**	**5.2%**
#1 PETE & #2 HDPE Packaging	0.3%	2.1%
#4 LDPE	0.0%	0.0%
#5 PP	0.2%	0.4%
#6 PS Packaging	0.0%	0.1%
Bulky Rigid Plastics	-	0.0%
PLA Compostable Plastics	-	0.0%
EPS Expanded Polystyrene	0.0%	0.1%
Plastic Merchandise Bags & Film	0.0%	0.1%
Plastic Garbage Bags	0.0%	0.1%
Other Plastic Film	0.1%	1.0%
Other Plastics	0.1%	1.2%
Metal	**0.3%**	**1.2%**
Aluminum Beverage Cans	0.0%	0.6%
Food Cans-Tinned	0.1%	0.4%
Aluminum Foil/Containers	0.0%	0.1%
Empty Aerosol Cans	-	0.0%
Other Metal	0.2%	0.1%
Glass	**0.0%**	**0.2%**
Glass Containers	0.0%	0.2%
Other Glass	0.0%	0.0%
Organics	**0.0%**	**0.2%**
Yard Debris	0.0%	0.0%
Other Compostables	0.0%	0.1%
Edible Food	0.0%	0.1%
Non-edible Food	-	0.0%
Other Materials	**0.4%**	**1.3%**
Electronics & Small Appliances	-	0.1%
Textiles & Shoes	0.2%	0.3%
Construction Materials	0.1%	0.0%
Tanglers (non-plastic)	0.0%	0.1%
HHW/Special Waste	0.0%	0.0%
Diapers	0.0%	0.1%
Furniture/Bulky	-	-
Other Materials	0.2%	0.7%
Estimated Total	**100%**	**100%**
Sample Count	34	38

Percentages for material types may not total 100% due to rounding.

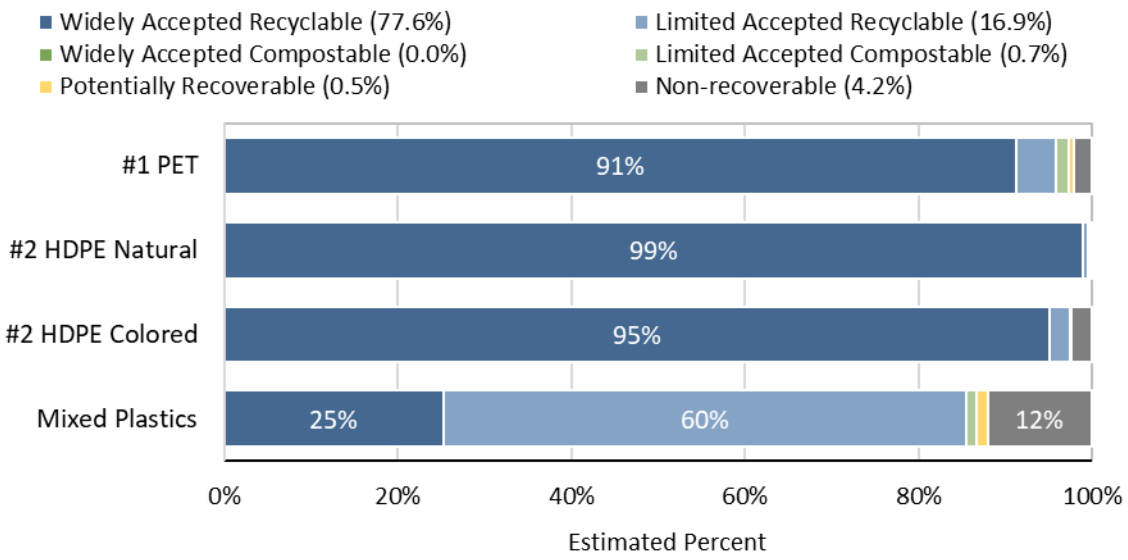
Plastics

Plastics includes PET (#1), HDPE (#2) Natural and Colored, and Mixed Plastics commodities.

Overview by Recoverability Group

Across studies, PET and HPDE (Natural and Colored) commodities are made up of 90 percent or more Widely Accepted Recyclable materials, whereas Mixed Plastics has more limited markets (Widely Accepted Recyclable materials account for only 25%; Figure 57). Limited Acceptable Recyclable materials make up a significant portion of Mixed Plastics (60%).

Figure 57. Supplemental Results: Composition by Recoverability for Outbound Plastics



Overview by Material Class

All plastic commodities are primarily composed of Plastic materials (Figure 58). Specifically, #1 PET and #2 HDP Packaging make up more than 90 percent of PET and HDPE plastics (Table 56). The material lists for the additional commodities studies were not detailed enough to report compositions for #1 and #2 plastics separately.

The three most prevalent material types in the Mixed Plastics commodity are Bulky Rigid Plastics (37.3%), #1 PET and #2 HDPE Packaging (23.1%), and #5 PP (19.5%).

Figure 58. Supplemental Results: Composition by Material Class for Outbound Plastics

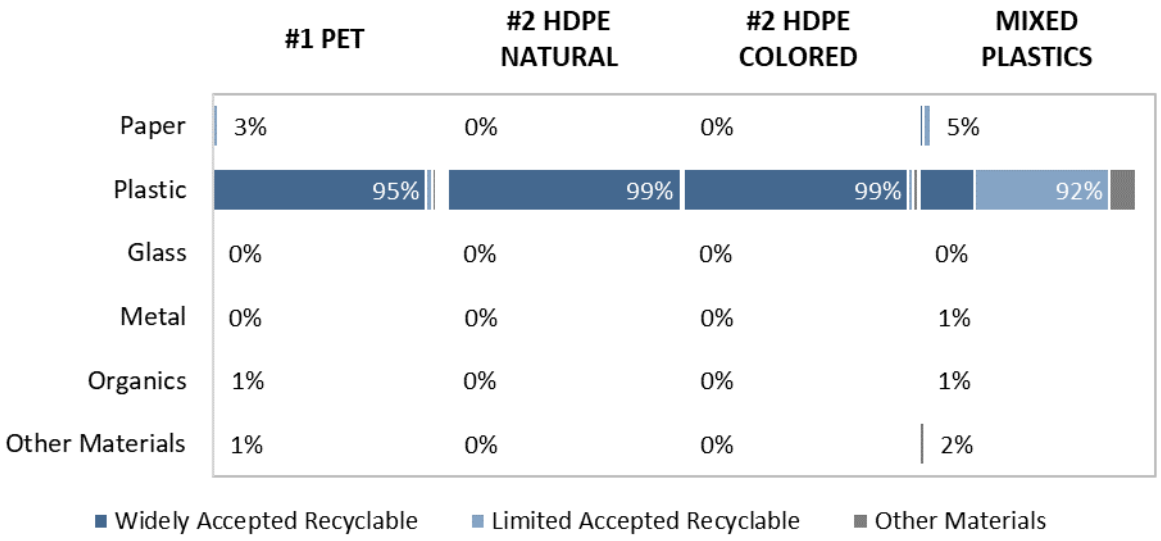


Table 56. Supplemental Results: Detailed Composition Table for Outbound Plastics

Material	#1 PET Plastics Est. %	#2 HDPE Natural Plastics Est. %	#2 HDPE Colored Plastics Est. %	Mixed Plastics Est. %
Widely Accepted Recyclable	**91.3%**	**98.9%**	**95.1%**	**25.3%**
Limited Accepted Recyclable	**4.5%**	**0.6%**	**2.3%**	**60.2%**
Widely Accepted Compostable	**0.1%**	**0.0%**	**0.0%**	**0.0%**
Limited Accepted Compostable	**1.4%**	**0.0%**	**0.1%**	**1.1%**
Potentially Recoverable	**0.6%**	**0.1%**	**0.1%**	**1.3%**
Non-recoverable	**2.2%**	**0.3%**	**2.4%**	**12.1%**
Paper	**2.6%**	**0.4%**	**0.4%**	**4.9%**
Cardboard & Kraft Packaging	0.4%	0.1%	0.0%	1.5%
Aseptic & Gable Top Containers	0.4%	0.1%	0.1%	0.3%
Mixed Paper	1.5%	0.2%	0.2%	2.8%
Compostable Food-soiled Paper Products	0.1%	0.0%	0.0%	0.1%
Other Paper	0.2%	0.0%	0.1%	0.2%
Plastic	**95.0%**	**99.2%**	**99.3%**	**91.6%**
#1 PETE & #2 HDPE Packaging	90.5%	98.5%	95.0%	23.1%
#4 LDPE	0.0%	0.0%	0.0%	0.1%
#5 PP	2.1%	0.3%	1.6%	19.5%
#6 PS Packaging	0.2%	0.0%	0.1%	0.4%
Bulky Rigid Plastics	0.2%	-	0.4%	37.3%
PLA Compostable Plastics	0.0%	-	-	0.1%
EPS Expanded Polystyrene	0.2%	0.1%	0.0%	0.3%
Plastic Merchandise Bags & Film	0.0%	0.1%	0.0%	0.2%
Plastic Garbage Bags	0.0%	0.0%	0.0%	0.4%
Other Plastic Film	0.3%	0.1%	0.1%	1.5%
Other Plastics	1.4%	0.1%	2.0%	8.9%
Metal	**0.3%**	**0.4%**	**0.2%**	**0.7%**
Aluminum Beverage Cans	0.3%	0.2%	0.1%	0.5%
Food Cans-Tinned	0.0%	0.2%	0.0%	0.1%
Aluminum Foil/Containers	0.0%	0.0%	0.0%	0.0%
Empty Aerosol Cans	0.0%	-	0.0%	-
Other Metal	0.0%	0.0%	0.0%	0.1%
Glass	**0.0%**	**-**	**-**	**-**
Glass Containers	0.0%	-	-	-
Other Glass	-	-	-	-
Organics	**1.4%**	**-**	**0.1%**	**1.0%**
Yard Debris	-	-	0.0%	-
Other Compostables	0.1%	-	-	0.0%
Edible Food	1.3%	-	0.1%	0.9%
Non-edible Food	0.0%	-	0.0%	0.0%
Other Materials	**0.6%**	**0.0%**	**0.1%**	**1.9%**
Electronics & Small Appliances	0.1%	-	-	0.5%
Textiles & Shoes	0.1%	-	0.0%	0.2%
Construction Materials	0.2%	-	0.0%	0.0%
Tanglers (non-plastic)	0.0%	-	-	0.6%
HHW/Special Waste	0.0%	-	0.0%	0.1%
Diapers	-	-	-	0.3%
Furniture/Bulky	-	-	-	-
Other Materials	0.3%	0.0%	0.0%	0.2%
Estimated Total	**100%**	**100%**	**100%**	**100%**
Sample Count	32	32	27	31

Percentages for material types may not total 100% due to rounding.

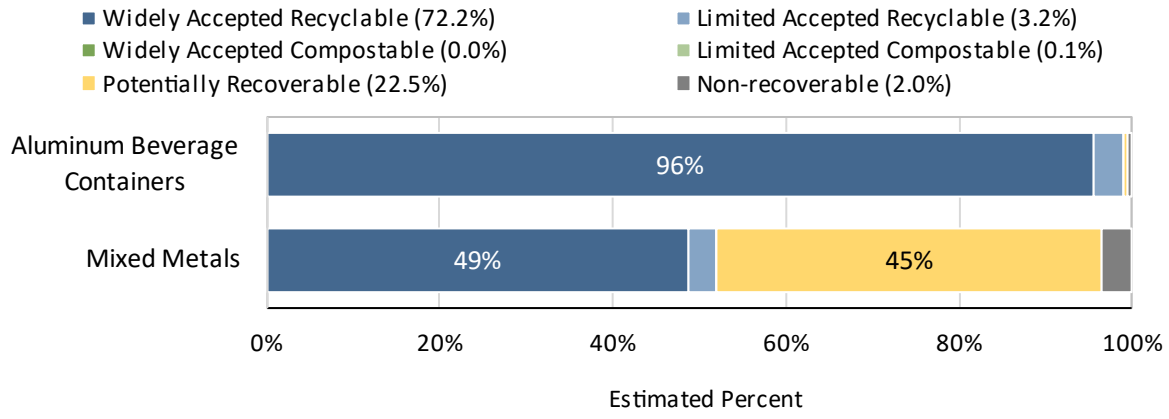
Metals

Metals includes Aluminum Beverage Containers and Mixed Metals commodities.

Overview by Recoverability Group

The Aluminum Beverage Containers commodity is made up of 96 percent Widely Accepted Recyclable materials, while Mixed Metals is composed of 49 percent Widely Accepted Recyclable materials and 45 percent Potentially Recoverable materials (Figure 59).

Figure 59. Supplemental Results: Composition by Recoverability for Outbound Metals



Overview by Material Class

Both metal commodities are primarily composed of Metal materials (Figure 60). Mixed Metals also contain 5 percent Other Materials.

The Aluminum Beverage Cans commodity is 93.7 percent Aluminum Beverage Cans and the Mixed Metals commodity is 48.0 percent Food Cans – Tinned and 42.4 percent Other Metal (Table 57).

Figure 60. Supplemental Results: Composition by Material Class for Outbound Metals

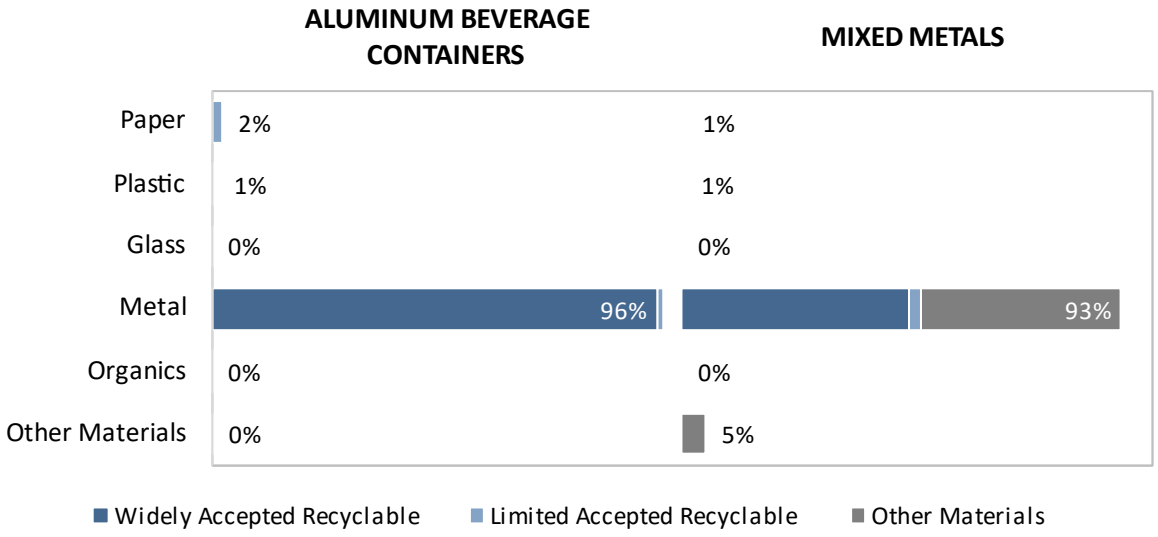


Table 57. Supplemental Results: Detailed Composition Table for Outbound Metals

Material	Aluminum Beverage Containers Est. %	Mixed Metals Est. %
Widely Accepted Recyclable	**95.6%**	**48.8%**
Limited Accepted Recyclable	**3.4%**	**3.1%**
Widely Accepted Compostable	**0.0%**	**0.0%**
Limited Accepted Compostable	**0.1%**	**0.1%**
Potentially Recoverable	**0.4%**	**44.5%**
Non-recoverable	**0.5%**	**3.5%**
Paper	**2.3%**	**1.0%**
Cardboard & Kraft Packaging	0.1%	0.3%
Aseptic & Gable Top Containers	0.2%	0.1%
Mixed Paper	1.9%	0.3%
Compostable Food-soiled Paper Products	0.1%	0.1%
Other Paper	0.1%	0.2%
Plastic	**1.3%**	**0.7%**
#1 PETE & #2 HDPE Packaging	0.7%	0.3%
#4 LDPE	-	-
#5 PP	0.2%	0.1%
#6 PS Packaging	0.1%	0.0%
Bulky Rigid Plastics	-	-
PLA Compostable Plastics	0.0%	-
EPS Expanded Polystyrene	0.1%	0.0%
Plastic Merchandise Bags & Film	0.0%	0.0%
Plastic Garbage Bags	-	0.0%
Other Plastic Film	0.2%	0.1%
Other Plastics	0.2%	0.1%
Metal	**96.2%**	**93.1%**
Aluminum Beverage Cans	93.7%	0.2%
Food Cans-Tinned	1.1%	48.0%
Aluminum Foil/Containers	0.7%	1.3%
Empty Aerosol Cans	0.3%	1.3%
Other Metal	0.3%	42.4%
Glass	**0.0%**	**0.0%**
Glass Containers	0.0%	0.0%
Other Glass	-	-
Organics	**0.0%**	**0.0%**
Yard Debris	0.0%	-
Other Compostables	-	0.0%
Edible Food	-	0.0%
Non-edible Food	0.0%	-
Other Materials	**0.1%**	**5.1%**
Electronics & Small Appliances	0.0%	2.0%
Textiles & Shoes	0.0%	0.1%
Construction Materials	-	-
Tanglers (non-plastic)	0.0%	0.3%
HHW/Special Waste	-	0.2%
Diapers	-	-
Furniture/Bulky	-	0.4%
Other Materials	0.1%	2.1%
Estimated Total	**100%**	**100%**
Sample Count	25	32

Percentages for material types may not total 100% due to rounding.

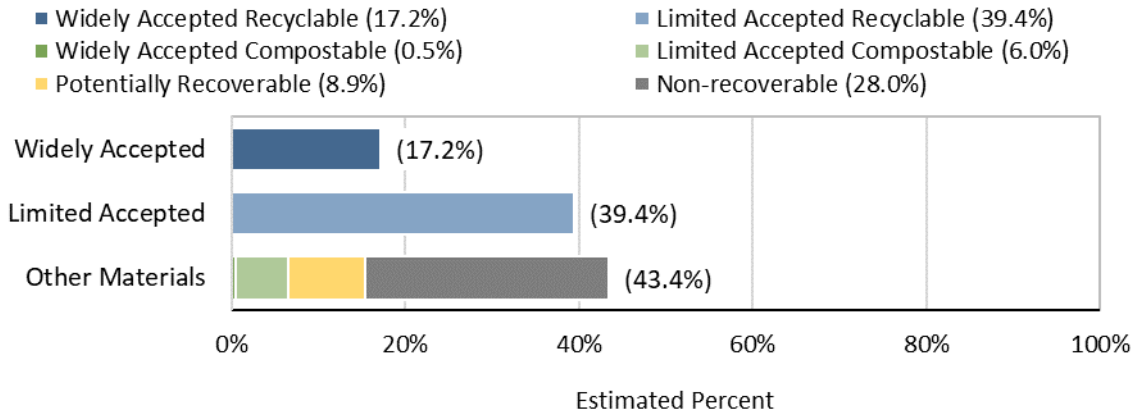
Outbound Residual Materials

This section presents the characterization results of outgoing (post-sort) materials destined for disposal. The composition of the Outbound Residuals is reported in this section as percentages; tons of residual material are not reported consistently to Ecology and are not available for this analysis.

Overview by Recoverability Group

Across studies, an estimated 17.2 percent of materials in the Outbound Residuals substream are Widely Accepted Recyclable in curbside recycling programs (Figure 61). Limited Acceptable materials account for 39.4 percent and Other Materials account for 43.4 percent.

Figure 61. Supplemental Results: Composition by Recoverability for Outbound Residuals



Overview by Material Class

Materials in the Paper class account for the greatest proportion of Outbound Residuals (44.9%), followed by Plastic (24.8%) and Other Materials (18.0%; Figure 62). Metal and Plastic have the greatest proportions of Widely Accepted Recyclables (58.1% and 30.2%, respectively). The most prevalent material type overall in Outbound Residuals is Mixed Paper (27.8%; Table 58).

Figure 62. Supplemental Results: Composition by Material Class for Outbound Residuals

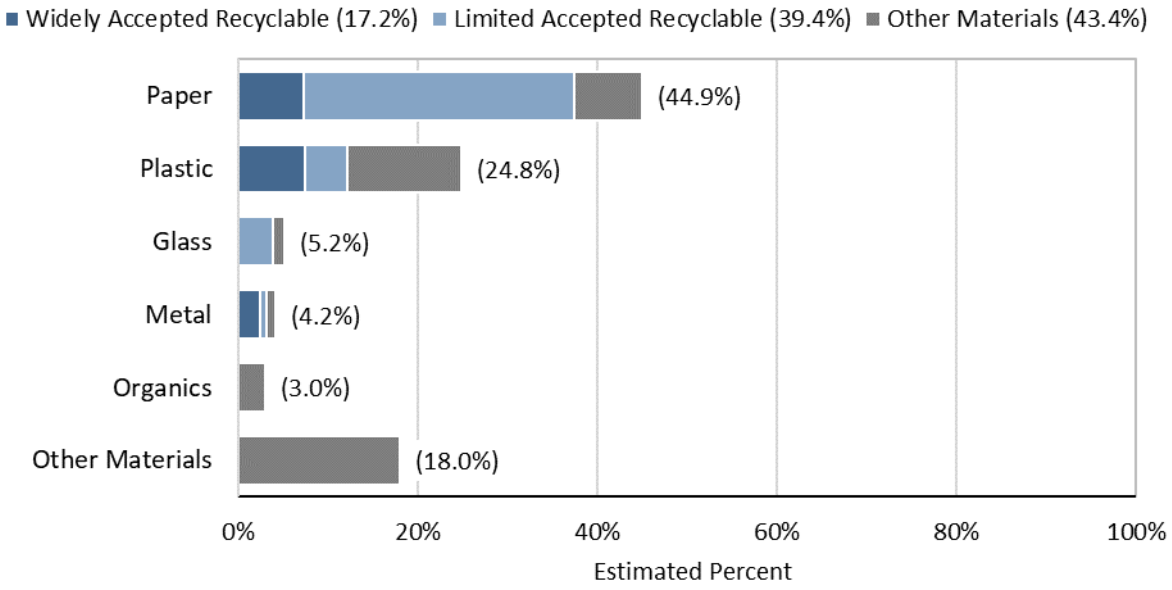


Table 58. Supplemental Results: Detailed Composition Table for Outbound Residuals

Material	Est. %	Material	Est. %
Widely Accepted Recyclable	**17.2%**	**Widely Accepted Compostable**	**0.5%**
Limited Accepted Recyclable	**39.4%**	**Limited Accepted Compostable**	**6.0%**
Potentially Recoverable	**8.9%**	**Non-recoverable**	**28.0%**
Paper	**44.9%**	**Plastic**	**24.8%**
Cardboard & Kraft Packaging	7.3%	#1 PETE & #2 HDPE Packaging	7.5%
Aseptic & Gable Top Containers	2.4%	#4 LDPE	0.0%
Mixed Paper	27.8%	#5 PP	4.1%
Compostable Food-soiled Paper Products	3.4%	#6 PS Packaging	0.4%
Other Paper	4.1%	Bulky Rigid Plastics	0.1%
Metal	**4.2%**	PLA Compostable Plastics	0.2%
Aluminum Beverage Cans	1.6%	EPS Expanded Polystyrene	0.4%
Food Cans-Tinned	0.8%	Plastic Merchandise Bags & Film	2.7%
Aluminum Foil/Containers	0.7%	Plastic Garbage Bags	0.9%
Empty Aerosol Cans	0.0%	Other Plastic Film	1.7%
Other Metal	1.0%	Other Plastics	6.8%
Glass	**5.2%**	**Other Materials**	**18.0%**
Glass Containers	3.9%	Electronics & Small Appliances	0.2%
Other Glass	1.3%	Textiles & Shoes	3.0%
Organics	**3.0%**	Construction Materials	1.6%
Yard Debris	0.2%	Tanglers (non-plastic)	0.0%
Other Compostables	0.4%	HHW/Special Waste	0.1%
Edible Food	2.3%	Diapers	0.9%
Non-edible Food	0.2%	Furniture/Bulky	0.4%
		Other Materials	11.7%
Estimated Total			**100%**
Sample Count			86

Percentages for material types may not total 100% due to rounding.

Inbound Organics

This section provides the characterization results for hauler-collected organic materials destined for composting or other organics recovery programs.

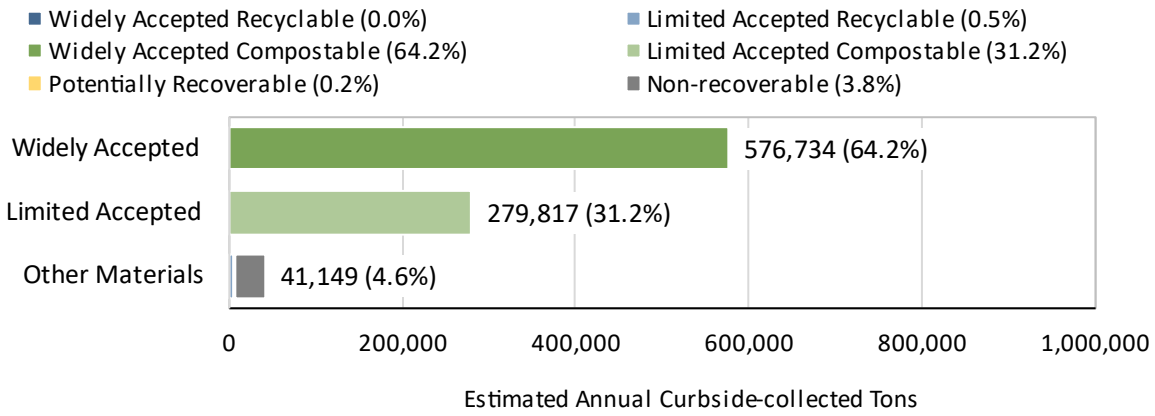
Inbound Organics

This section includes an overview of the materials present in the hauler-collected Inbound Organics stream (Residential and Commercial generators combined). The overview includes a breakdown of materials based on their recoverability group and material class. The annual tonnage of hauler-collected Inbound Organics statewide is an estimated 897,700 tons.

Overview by Recoverability Group

In the hauler-collected Inbound Organics stream analyzed across studies, an estimated 64.2 percent (576,734 tons) of material is Widely Accepted Compostable in curbside organics programs (Figure 63). Limited Accepted Compostable materials, including food waste, account for 31.2 percent (279,817 tons) of the stream and Other Materials account for the remaining 4.6 percent (41,149 tons).

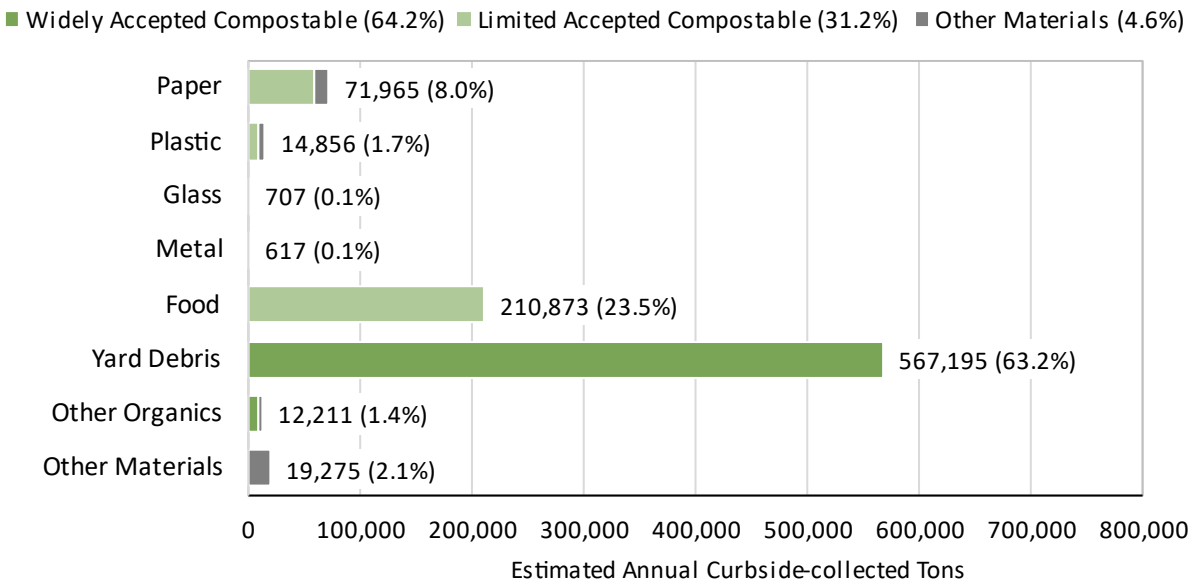
Figure 63. Supplemental Results: Tons by Recoverability for Overall Hauler-collected Inbound Organics



Overview by Material Class

Organic materials are split into three material classes (Food, Yard Debris, and Other Organics) for the figure below. Materials combined in the three organics material classes account for the majority (88.1%) of the statewide hauler-collected Inbound Organics stream, based on the supplemental analysis (Figure 64). Yard Debris specifically is the most prevalent material class, accounting for 63.2 percent of the stream.

Figure 64. Supplemental Results: Tons by Material Class for Overall Hauler-collected Inbound Organics



The most prevalent Widely Accepted Compostable material is Yard Debris (63.2% or 567,195 tons; Table 59). Along with Yard Debris, the most prevalent composted material types overall in the statewide hauler-collected Inbound Organics stream are Fruits & Vegetables, Non-edible (7.2% or 64,432 tons) and Fruits & Vegetables, Edible (5.9% or 52,664 tons).

Table 59. Supplemental Results: Detailed Composition Table for Overall Hauler-collected Inbound Organics

Material	Est. %	Est. Tons	Material	Est. %	Est. Tons
Widely Accepted Compostable	**64.2%**	**576,734**	**Widely Accepted Recyclable**	**0.0%**	**449**
Limited Accepted Compostable	**31.2%**	**279,817**	**Limited Accepted Recyclable**	**0.5%**	**4,204**
Potentially Recoverable	**0.2%**	**2,127**	**Non-recoverable**	**3.8%**	**34,370**
Organics	**88.0%**	**790,279**	**Metal**	**0.1%**	**617**
Yard Debris	63.2%	567,195	Aluminum Beverage Cans	0.0%	273
Other Compostable Organics	1.1%	9,539	Food Cans-Tinned	0.0%	176
Fruits & Vegetables, Edible	5.9%	52,664	Aluminum Foil/Containers	0.0%	144
Fruits & Vegetables, Non-edible	7.2%	64,423	Other Aluminum	0.0%	5
Other Food Waste, Edible	4.8%	42,763	Empty Aerosol Cans	0.0%	12
Other Food Waste, Non-edible	5.7%	51,023	Other Metal	0.0%	8
Animal Feces	0.1%	1,328	**Glass**	**0.1%**	**707**
Other Organics	0.1%	1,344	Clear Glass Containers	0.0%	286
Paper	**8.0%**	**71,965**	Green Glass Containers	0.0%	61
Single-use Food Service Compostable Paper	2.1%	18,919	Other Colored Glass Containers	0.0%	342
Other Compostable Paper	4.5%	40,642	Non-glass Ceramics	0.0%	12
Other Paper	1.4%	12,404	Other Glass	0.0%	6
Plastic	**1.7%**	**14,856**	**Other Materials**	**2.1%**	**19,275**
Compostable Rigid Plastic	0.3%	3,005	Other Materials	2.1%	19,275
Compostable Film Plastic	0.7%	6,378			
Non-compostable Rigid Plastic	0.4%	3,354			
Non-compostable Film Plastic	0.2%	2,119			
Estimated Total				**100%**	**897,700**
Sample Count				769	

Percentages for material types may not total 100% due to rounding.

Commercial Organics

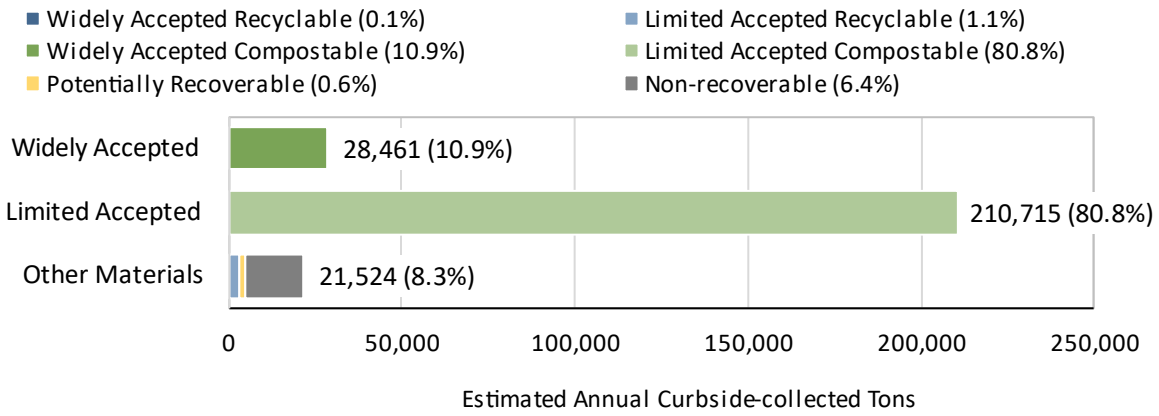
This section includes an overview of the materials present in the hauler-collected Commercial Inbound Organics stream. The overview includes a breakdown of materials based on their recoverability group and material class. The annual tonnage of hauler-collected Commercial Inbound Organics statewide is an estimated 260,700 tons.

In the main statewide study, an estimated composition for this substream is not included due to the low number of samples. The sampling results could not provide an accurate estimate of the statewide composition for the Commercial sector.

Overview by Recoverability Group

In the hauler-collected Commercial Inbound Organics stream analyzed across studies, an estimated 10.9 percent (28,461 tons) of material is Widely Accepted Compostable in curbside organics programs (Figure 65). Limited Accepted Compostable materials, including food waste, account for 80.8 percent (210,715 tons) of the stream and Other Materials account for the remaining 8.3 percent (21,524 tons).

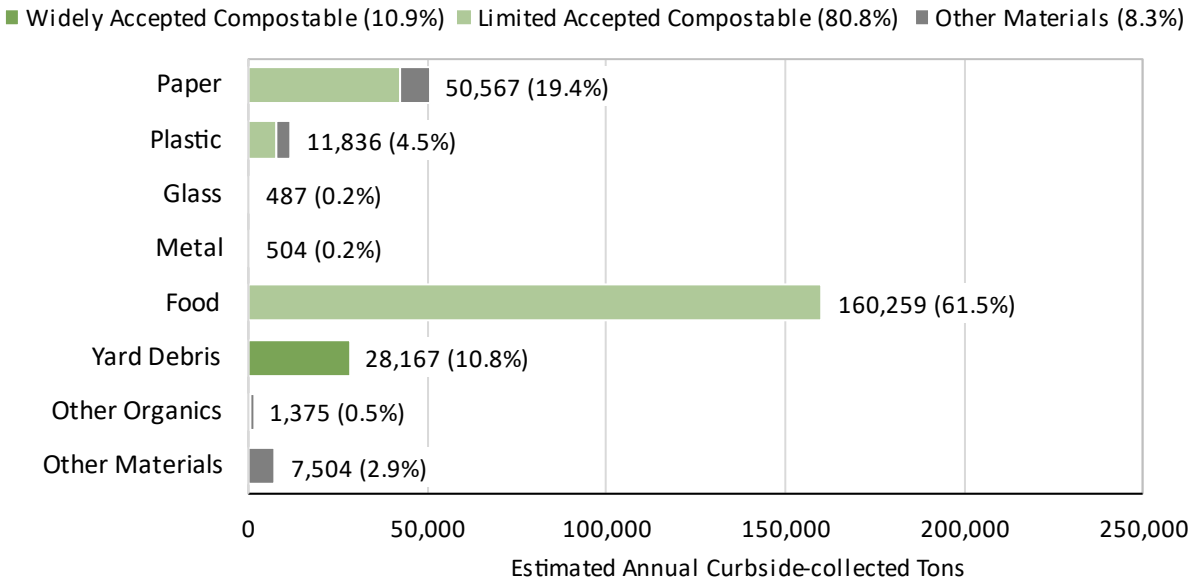
Figure 65. Supplemental Results: Tons by Recoverability for Commercial Inbound Organics



Overview by Material Class

Organic materials are split into three material classes (Food, Yard Debris, and Other Organics) for this figure. Materials combined in the three organics material classes account for the majority (72.8%) of the hauler-collected Commercial Inbound Organics stream, based on the supplemental analysis (Figure 66). Food specifically is the most prevalent material class, accounting for 61.5 percent of the stream.

Figure 66. Supplemental Results: Tons by Material Class for Commercial Inbound Organics



Six material types are similarly prevalent in the hauler-collected Commercial Inbound Organics stream: Other Food Waste, Non-edible (16.5%); Fruits & Vegetables, Edible (15.9%); Fruits & Vegetables, Non-edible (15.8%); Other Food Waste, Edible (13.2%); Other Compostable Paper (11.3%); and Yard Debris (10.8%; Table 60). Yard Debris is the most prevalent Widely Accepted Compostable material.

Table 60. Supplemental Results: Detailed Composition Table for Commercial Inbound Organics

Material	Est. %	Est. Tons	Material	Est. %	Est. Tons
Widely Accepted Compostable	**10.9%**	**28,461**	**Widely Accepted Recyclable**	**0.1%**	**375**
Limited Accepted Compostable	**80.8%**	**210,715**	**Limited Accepted Recyclable**	**1.1%**	**2,938**
Potentially Recoverable	**0.6%**	**1,655**	**Non-recoverable**	**6.4%**	**16,556**
Organics	**72.8%**	**189,802**	**Metal**	**0.2%**	**504**
Yard Debris	10.8%	28,167	Aluminum Beverage Cans	0.1%	225
Other Compostable Organics	0.1%	294	Food Cans-Tinned	0.1%	150
Fruits & Vegetables, Edible	15.9%	41,341	Aluminum Foil/Containers	0.0%	111
Fruits & Vegetables, Non-edible	15.8%	41,314	Other Aluminum	0.0%	3
Other Food Waste, Edible	13.2%	34,529	Empty Aerosol Cans	0.0%	12
Other Food Waste, Non-edible	16.5%	43,075	Other Metal	0.0%	4
Animal Feces	0.0%	43	**Glass**	**0.2%**	**487**
Other Organics	0.4%	1,038	Clear Glass Containers	0.1%	156
Paper	**19.4%**	**50,567**	Green Glass Containers	0.0%	15
Single-use Food Service Compostable Paper	5.0%	13,122	Other Colored Glass Containers	0.1%	316
Other Compostable Paper	11.3%	29,475	Non-glass Ceramics	-	-
Other Paper	3.1%	7,971	Other Glass	-	-
Plastic	**4.5%**	**11,836**	**Other Materials**	**2.9%**	**7,504**
Compostable Rigid Plastic	1.0%	2,579	Other Materials	2.9%	7,504
Compostable Film Plastic	2.0%	5,281			
Non-compostable Rigid Plastic	0.9%	2,325			
Non-compostable Film Plastic	0.6%	1,651			
Estimated Total				**100%**	**260,700**
Sample Count				313	

Percentages for material types may not total 100% due to rounding.

Residential Organics

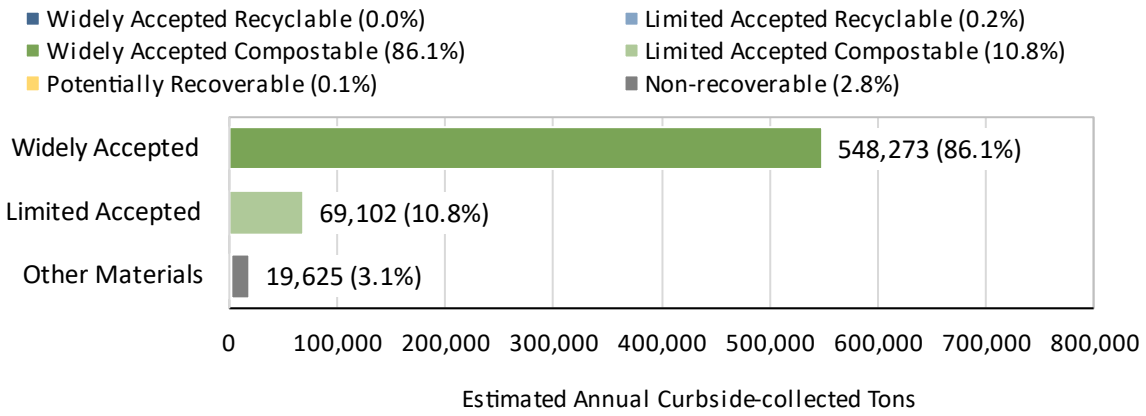
This section includes an overview of the materials present in the hauler-collected Residential Inbound Organics stream. The overview includes a breakdown of materials based on their recoverability group and material class. The annual tonnage of hauler-collected Residential Inbound Organics statewide is an estimated 637,000 tons.

Generally, results from the supplemental analysis are similar to those from the statewide study. Yard Debris accounts for a slightly smaller proportion and Food and Other Materials account for slightly greater proportions of the Residential Inbound Organics stream in the supplemental analysis.

Overview by Recoverability Group

In the hauler-collected Residential Inbound Organics stream analyzed across studies, an estimated 86.1 percent (548,273 tons) of material is Widely Accepted Compostable in curbside organics programs (Figure 67). Limited Accepted Compostable materials, including food waste, account for 10.8 percent (69,102 tons) of the stream and Other Materials account for the remaining 3.1 percent (19,625 tons).

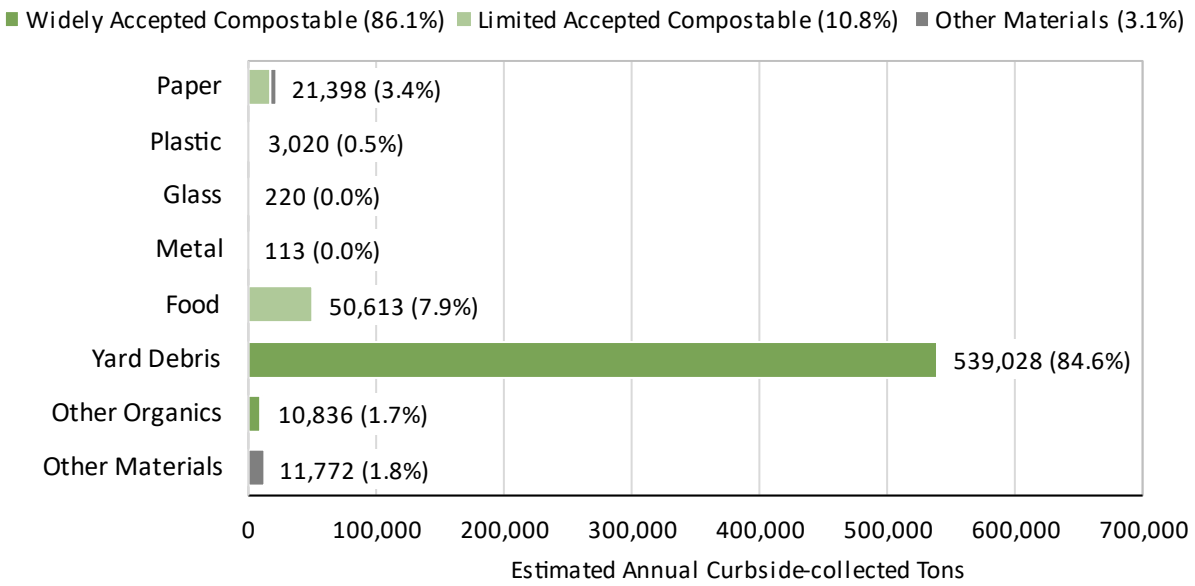
Figure 67. Supplemental Results: Tons by Recoverability for Residential Inbound Organics



Overview by Material Class

Organic materials are split into three material classes (Food, Yard Debris, and Other Organics) for the figure below. Materials combined in the three organic material classes account for the majority (94.2%) of the hauler-collected Residential Inbound Organics stream, based on the supplemental analysis (Figure 68). Yard Debris specifically is the most prevalent material class, accounting for 84.6 percent of the stream.

Figure 68. Supplemental Results: Tons by Material Class for Residential Inbound Organics



The most prevalent Widely Accepted Compostable material is Yard Debris (84.6% or 539,028 tons; Table 61). Along with Yard Debris, the most prevalent composted material types overall in the hauler-collected Residential Inbound Organics stream are Fruits & Vegetables, Non-edible (3.6% or 23,109 tons) and Fruits & Vegetables, Edible (1.8% or 11,323 tons).

Table 61. Supplemental Results: Detailed Composition Table for Residential Inbound Organics

Material	Est. %	Est. Tons	Material	Est. %	Est. Tons
Widely Accepted Compostable	**86.1%**	**548,273**	**Widely Accepted Recyclable**	**0.0%**	**74**
Limited Accepted Compostable	**10.8%**	**69,102**	**Limited Accepted Recyclable**	**0.2%**	**1,266**
Potentially Recoverable	**0.1%**	**472**	**Non-recoverable**	**2.8%**	**17,814**
Organics	**94.3%**	**600,477**	**Metal**	**0.0%**	**113**
Yard Debris	84.6%	539,028	Aluminum Beverage Cans	0.0%	49
Other Compostable Organics	1.5%	9,245	Food Cans-Tinned	0.0%	25
Fruits & Vegetables, Edible	1.8%	11,323	Aluminum Foil/Containers	0.0%	33
Fruits & Vegetables, Non-edible	3.6%	23,109	Other Aluminum	0.0%	2
Other Food Waste, Edible	1.3%	8,234	Empty Aerosol Cans	-	-
Other Food Waste, Non-edible	1.2%	7,948	Other Metal	0.0%	4
Animal Feces	0.2%	1,285	**Glass**	**0.0%**	**220**
Other Organics	0.0%	306	Clear Glass Containers	0.0%	131
Paper	**3.4%**	**21,398**	Green Glass Containers	0.0%	46
Single-use Food Service Compostable Paper	0.9%	5,797	Other Colored Glass Containers	0.0%	26
Other Compostable Paper	1.8%	11,168	Non-glass Ceramics	0.0%	12
Other Paper	0.7%	4,433	Other Glass	0.0%	6
Plastic	**0.5%**	**3,020**	**Other Materials**	**1.8%**	**11,772**
Compostable Rigid Plastic	0.1%	427	Other Materials	1.8%	11,772
Compostable Film Plastic	0.2%	1,097			
Non-compostable Rigid Plastic	0.2%	1,029			
Non-compostable Film Plastic	0.1%	467			
Estimated Total				**100%**	**637,000**
Sample Count				456	

Percentages for material types may not total 100% due to rounding.