

FINAL REPORT

2025

Countywide Waste Characterization Study



December 2025

Prepared by





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1. INTRODUCTION

San Luis Obispo County (County) is located on the coast of central California, roughly four hours by car to either Los Angeles to the south or San Francisco to the north. The County enjoys a more relaxed culture with its fairly isolated distance from California’s major metropolitan areas and its diverse and charming communities located along scenic beaches and in the rolling hills. The County’s mild climate also provides excellent conditions for its celebrated vineyards and outdoor recreation areas.

The County recognized that its unique attributes may drive deviations from more generalized, statewide-aggregated California datasets, specifically regarding the County’s waste profile. CalRecycle, the state agency tasked with overseeing waste management and policy enforcement, conducted its most recent Statewide Waste Characterization Study in 2021, but it did not perform any sampling in San Luis Obispo County. Seeking timelier data with a well-tailored fit, and with evolving policy directives¹ coming into effect, the County accepted a proposal from MidAtlantic Solid Waste Consultants, LLC (MSW Consultants) to conduct a San Luis Obispo County waste characterization study focusing on disposed municipal solid wastes (MSW) generated in the County. The County’s objectives in performing its own two-season study were to:

- Measure the degree to which targeted recyclables are being thrown away and identify the opportunities available through recycling program improvements.
- Measure the prevalence of compostable organic materials in the waste stream and determine how much material may be diverted through food donation programs.
- If statistically possible, compare the County’s results to the 2021 CalRecycle Waste Characterization Study to track progress in the County’s waste reduction goals.

This report details the waste characterization study methodology and the resulting analysis.

2. STUDY DESIGN

2.1 Sampling Targets

For this study, the following four generator sectors were targeted for sampling:

- Single-Family Residential (SFR) – Refuse collected from residential routes, often by side-loader or rear-loader packer trucks, generally comprised of detached single-family residential households, and other dwellings (such as duplexes) that receive carted collection services.
- Multi-Family Residential (MFR) – Refuse collected from multi-family dwellings, which are usually — though not exclusively — collected on mixed commercial routes by front-loader packer trucks. Some communities do run exclusive multi-family routes or collect such material from compactor roll-off dumpsters.
- Institutional, Commercial, Industrial (ICI) – Non-residential waste collected most commonly by front-loader packer trucks on commercial routes from dumpsters, along with open-top and compactor roll-off containers. ICI waste comes from a wide range of businesses, including office buildings, restaurants, grocery stores, plants and factories, warehouses, big-box stores, public buildings (schools, government buildings, etc.), and more.

¹Namely SB-1383, which raises diversion targets for organic waste from “50-percent reduction in the level of the statewide disposal of organic waste from the 2014 level by 2020,” to “A 75-percent reduction in the level of the statewide disposal of organic waste from the 2014 level by 2025.”

- Self-Haul – Waste delivered directly to a landfill or transfer station by residents, contractors, and junk haulers, often made up of waste from spring cleaning, renovations, demo work, cleanouts, and some new construction, often arriving in truck beds, trailers, or small dump trucks. Self-haul waste does not include mixed Construction and Demolition (C&D) loads in open top roll-off boxes originating from residential or commercial builders.

Stratified sampling from each generator sector should provide a representative snapshot of County waste composition. Table 2-1 summarizes the sampling targets which were proposed by MSW Consultants and accepted by the County during the procurement process. As shown, this proposed sample allocation prioritized sampling of SFR and ICI refuse, given that wastes from these two sectors are typically the primary contributors to overall disposed municipal solid waste.

Table 2-1 Sampling Targets

Generator	Samples Targeted	Sample Allocation
Single Family Residential	28	35%
Multi-Family Residential	10	13%
Institutional, Commercial, Industrial	36	45%
Self-Haul	6	8%
Total	80	100%

2.2 Disposed Municipal Solid Waste

In the interest of estimating the composition of aggregate MSW, it is appropriate to use weighted averages of the composition of disposed wastes from each individual generator sector. This information was not readily available prior to field data collection operations, so MSW Consultants requested the County’s assistance to allocate disposed tonnage to each of the targeted generator sectors. Table 2-2 shows the County-provided estimates.

Table 2-2 County-Provided Generator Sector Weighting Factors

Generator Sector	2023 Tons	% of Wasteshed
Single Family Residential (SFR)	74,274	26%
Multi-Family Residential (MFR)	97,128	34%
Commercial (ICI)	34,280	12%
Self-Haul (Including Roll-Off)	79,988	28%
Total	285,670	100%

As shown in this table, the estimated contribution of disposed MSW from each generator sector is meaningfully different than the allocation of samples from the proposed sampling plan shown in Table 2-1. In particular:

- Residential wastes originate primarily in the MFR sector rather than from the SFR sector as expected in the proposed sampling plan.
- The contribution from ICI wastes is much lower than expected in the proposed sampling plan.
- Self-Haul tonnages are reported to include roll-off wastes. Roll-off waste was excluded from this study because these loads typically contain construction and demolition (C&D) materials, which were out of scope for this waste characterization study given budget constraints.

2.3 Compilation of County MSW Composition Estimates

Table 2-3 compares the sampling targets identified in the sampling plan, along with the number of actual samples obtained during the study. As shown, the study met sampling targets for SFR and ICI wastes, but fell short for the MFR and self-haul generators. This outcome was driven by unexpectedly limited hours of operation at the host landfills, combined with one lost workday due to inclement weather in Season 1.

Table 2-3 Sampling Plan Versus Actual Samples Collected

Generator	Targeted	Actual	% of Actual
Single Family Residential	28	27	39.1%
Multi-Family Residential	10	3	4.3%
Institutional, Commercial, Industrial	36	35	50.7%
Self-Haul	6	4	5.8%
Total	80	69	100.0%

Ultimately, the unexpectedly large discrepancies between the County-reported disposal tonnage and sample allocations limit the ability to aggregate the countywide disposed MSW composition. This is shown in Table 2-4. In particular, based on the County-reported MFR and self-haul tonnage, an insufficient number of samples were captured to accurately characterize these streams. Additionally, no roll-off boxes were captured in the self-haul loads sampled during the study, which means that the self-haul samples do not representatively characterize the almost 80,000 tons reported for this generator sector.

Table 2-4 Basis for Presentation of Results

Generator Sector	2023 Tons	% of Wasteshed	% of Actual Samples	Statistical Significance Achieved
Single Family Residential (SFR)	74,274	26%	39.1%	Yes
Multi-Family Residential (MFR)	97,128	34%	4.3%	No
Commercial (ICI)	34,280	12%	50.7%	Yes
Self-Haul (Including Roll-Off)	79,988	28%	5.8%	No
Countywide MSW (Including Roll-Off)	285,670	100%	100.0%	No

As a result of the available data, this report ultimately provides the following results sets, with certain limitations noted:

- Mean SFR and ICI waste composition are provided with a full statistical analysis and compared to the CalRecycle statewide composition for these generator sectors.
- Mean MFR and self-haul waste composition is reported without further statistical analysis, due to the low sample count. These results cannot be compared with other studies due to the high uncertainty inherent in such low sample counts. Readers are cautioned not to rely on these results.
- Because of the high uncertainty of MFR and self-haul waste composition relative to their high contribution to countywide tonnage, and because of definitional differences between the sampled self-haul loads and the reported self-haul tonnages inclusive of roll-off loads, no attempt has been made to aggregate the composition of wastes from each generator sector into a countywide estimate of disposed MSW.

3. METHODOLOGY

3.1 Host Facilities

The work schedule focused on conducting field research at the largest facilities in the County. The County provided 2019 reported facility-level tonnage and annual countywide tonnage through 2023 to assist MSW Consultants with the study design. Table 2-1 summarizes the distribution of disposed waste from the County for 2019, which is the most recent year for which data are available². Reported disposal tonnage for 2019 through 2023 is provided in Appendix A.

Table 3-1 Summary Table of County Tonnage

Facility Name	2019 MSW Tons	% of Wasteshed
Cold Canyon Landfill	147,110	51.0%
Chicago Grade Landfill	90,895	31.5%
City of Paso Robles Landfill	41,006	14.2%
Avenal Regional Landfill	5,550	1.9%
McKittrick Waste Treatment Site	1,312	0.5%
Santa Maria Regional Landfill	1,281	0.4%
Chemical Waste Management, Inc.	774	0.3%
Recology Hay Road	179	0.1%
American Avenue Disposal Site	171	0.1%
All Other Facilities	153	0.1%
Total	288,431	100.0%

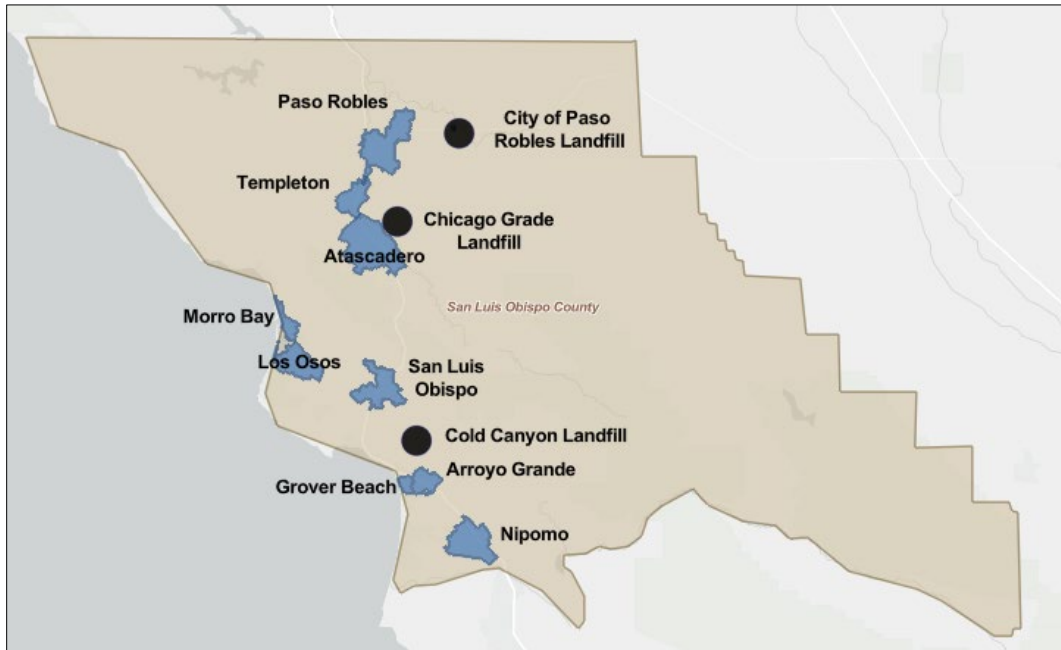
Additional provided total annual tonnages: CY 2021: 302,231 tons. CY 2022: 287,783 tons. CY 2023: 285,670 tons.

Note: While CY 2019 numbers provided the basis for facility scheduling, later analysis used the most recent total tonnages from 2023.

As shown in this table, the total annual disposed County tons were overwhelmingly concentrated at three facilities: Cold Canyon Landfill, Chicago Grade Landfill, and the City of Paso Robles Landfill. MSW confirmed that nearly all refuse from municipalities in the County was disposed at these facilities. Figure 3-1 is a map that includes the locations of these facilities and highlights the nine most populous municipalities within the County.

²While 2019 was the last available year for tonnage broken down by facility, aggregated County tonnages have remained consistent, and the County has no reason to believe tonnage allocations have meaningfully changed between facilities in years since.

Figure 3-1 Host Landfills & Selected Municipalities in San Luis Obispo County



3.2 Schedule

Following this assessment, field research targeted the three facilities receiving the majority of County wastes. Table 2-2 summarizes the field data collection schedule.

Table 3-2 Field Data Collection Schedule

	Facility	Date
Season 1	Cold Canyon Landfill	3/18/2025
	Cold Canyon Landfill	3/19/2025
	Chicago Grade Landfill	3/20/2025
	City of Paso Robles Landfill	3/21/2025
Season 2	Cold Canyon Landfill	6/10/2025
	Cold Canyon Landfill	6/11/2025
	Chicago Grade Landfill	6/12/2025
	City of Paso Robles Landfill	6/13/2025

3.3 Material Categories

The Material Category list for this study was constructed to allow for comparisons with the 2021 CalRecycle Characterization Study. In consultation with the County, this research also introduced an alternative method of categorization, known as the “management pathway.” Management pathways were developed for each material category and illustrate how each respective category is best managed in the County. The management pathways are described below:

- **Targeted Single-Stream** - Materials accepted in the municipality's or jurisdiction's curbside or commercial single-stream recycling program and listed as acceptable by the material recovery facility (MRF) operator. Items are recoverable with standard equipment and routinely marketed.
- **Processable Organics** - Compostable or digestible materials that can be processed at permitted organics facilities.
- **Potentially Donatable Food** - Edible food suitable for redistribution for human consumption when time, temperature, and food safety requirements can be met; identified for recovery before becoming waste.
- **3rd Party Recyclable Outlets** - Materials with viable recovery pathways through manufacturer take-back, retail drop-off, scrap dealers, or other non-governmental programs.
- **HHW/E-Waste Program** - Household Hazardous Waste and electronics that require specialized handling due to environmental hazards or regulations.
- **Processable as C&D** - Construction and demolition (C&D) materials that can be recovered at C&D processing facilities when kept reasonably clean and/or segregated.
- **Not Readily Recoverable** - No practical recovery pathway exists within current local programs or markets due to material type, composite construction, lack of outlets, or prohibitive cost. These materials are best managed through disposal.

Table 2-4 shows the complete material categories list used during field data collection operations, along with their respective material groups and management pathways. Detailed definitions of these material categories can be found in Appendix B.

Table 3-3 Material Groups, Categories & Management Pathways

Material Category	Material Category
Paper	Metal
Corrugated Cardboard/Kraft Paper	Tin/Steel Cans
Newspapers/Inserts	Aluminum Cans - CRV
White Office-type Paper and Mail	Aluminum Cans - Non-CRV
Magazines and Catalogs	Major Appliances
Aseptic Containers and Gable-top Cartons	Other Ferrous
Paper/Fiber Food Service Ware	Other Non-Ferrous
Mixed Recyclable Paper	Remainder/Composite Metal
Other Compostable Paper	Consumer Electronics and Equipment
Remainder/Composite Paper	HHW
Plastic	Paint
PETE Beverage Containers - CRV	Used Oil
PETE Bottles and Jars - Non-CRV	Lead-acid (automotive) batteries
HDPE Beverage Containers - CRV	Other batteries
HDPE Bottles and Jars - Non-CRV	Pharmaceuticals
Expanded Polystyrene Packaging	Remainder/Composite Household Haz
Plastic Trash Bags	C&D
Plastic Grocery and Other Merchandise Bags	Clean Dimensional Lumber
Other Plastic Film Bags/Wrappers	Clean Engineered Wood
Commercial/Industrial Packaging Film	Clean Pallets and Crates
Other Plastic Packaging	Treated/Painted/Stained Wood
Rigid Plastic Food Service Ware	Concrete
Durable Plastic Items	Asphalt Roofing
Remainder/Composite Plastic	Gypsum Board
Organics	Carpet
Food - PD - Vegetative (Perishable/Fresh)	Rock, Soil and Fines
Food - PD - Eggs, Dairy, and Dairy Alternatives	Remainder/Composite Inerts and Other
Food - PD - Meat	Other
Food - PD - Cooked/Prepared Perishable Items	Tires
Food - PD - Packaged Non-perishable	Mattresses and Foundations
Food - Not Donatable - Meat	Bulky Items
Food - Not Donatable - Non-meat	Remainder/Composite Special Waste
Food - Inedible	Textiles - Cloth and Clothing
Leaves and Grass	Textiles - Shoes, Purses, Belts
Prunings, Trimmings, and Branches	Diapers & Sanitary Products
Remainder/Composite Organics	Miscellaneous Inorganics
Glass	Mixed Residue
Glass Bottles and Containers - CRV	
Glass Bottles and Containers - Non-CRV	
Remainder/Composite Glass	

Key: Management Pathways

- Targeted Single-Stream
- Potential Donatable Food
- HHW/E-Waste Program
- Not Readily Recoverable
- Processable Organics
- 3rd Party Recyclable Outlets
- Processable as C&D

3.4 Staffing

Field research was completed by the following team:

A Field Supervisor interfaced with the landfill operations staff and scale house staff on sample selection and acquisition, supported material sorting and weighing efforts, provided quality assurance and control (QA/QC), and had overall on-site responsibility.

A Crew Chief supervised the sorting crew, performed quality control, recorded data and weigh-out figures, and led worksite health and safety training.

A team of Sorters composed of a mix of experienced field staff and locally hired personnel worked under the direction of the Crew Chief and performed the sorting and weigh-out work.

3.5 Health & Sanitation

Before sorting work began, the field data collection team met with facility management to discuss the facility layout, examine the provided workspace, and review safety requirements. The team also reviewed PPE usage, safe handling of materials, and potential hazards. All sorters wore hard hats, safety vests, eye protection, puncture and chemical resistant gloves; they were offered optional dust masks, ear protection, and Tyvek coveralls.

3.6 Inbound Material Sampling

At each facility, the Field Supervisor conducted brief interviews of drivers with potentially eligible trucks to determine if the truck load met the necessary eligibility requirements³. If the load was eligible, the Field Supervisor directed the driver to the selected area to tip their load.. Figure 3-2 shows a photo of a tipped load selected for sampling and sorting.

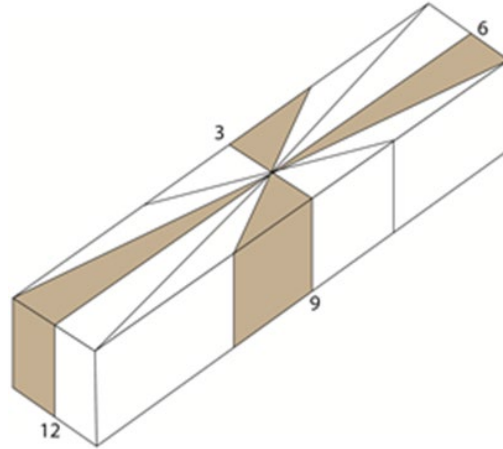
Figure 3-2 Tipped Load Selected for Sampling



³In the case of this study, these requirements were quite simple: ensuring the route was entirely within County boundaries, making sure the load met the sampling plan, and confirming the load was not a mix of several different generator sectors (i.e.: half MFR, half ICI). Loads were turned away if they were not deemed suitable or safe for sorting. Regarding MFR refuse, it is very commonly collected on ICI routes, and as a result, MFR routes (which were defined as routes with at least 80 percent MFR material) were identified by the County for MSW to sample from.

From tipped loads, the field operations team gathered sample material based on randomized scoops from the perimeter of the load. Figure 3-3 shows a simplified illustration of this concept: the tipped load can be viewed from the top as a clock face with 12:00 being the part of the load closest to the front of the truck. The field operations team chose approach angles with the assistance of a random number generator to avoid sampling bias. The first sample, for example, could be taken from the 3 o'clock slice, the second from 2 o'clock, then 10 o'clock, 7 o'clock and so on.

Figure 3-3 Load Sampling Diagram



The field operations team directed a loader operator to “grab” from these selected approach angles with a loader, as shown in the Figure 3-4 photograph, and deliver them to the designated sample staging area. These sample grabs were photographed, assigned a sample identification (ID) number, and loaded into storage containers. The team pre-weighed samples to confirm that a minimum sample weight of 200 pounds was achieved.

Figure 3-4 Loader Delivering Sample Material to the Staging Area



Next, the field operations team staged the samples along the sorting area and labeled them with their sample ID number on a dry-erase placard, along with other identifying information, to await sorting. Figure 3-5 is a photograph of a labeled sample awaiting sorting.

Figure 3-5 Staged Sample Awaiting Sorting



3.7 Manual Sorting

Once each sample was acquired, staged, and labeled, the field operations team loaded it onto the sort table and manually sorted it into the prescribed material categories. The team accumulated sorted materials in plastic 5-gallon buckets, 18-gallon bins, and 35-gallon barrels with sealed bottoms.

Sorters on the field operations team specialized in specific material groups; someone handled the paper categories, another the plastics, another the glass and metals, and so on. In this way, sorters became highly knowledgeable in a short period of time as to the definitions of individual material categories. The Crew Chief routinely monitored the bins as each sample was sorted to re-sort materials that were improperly classified. Figure 3-6 is a photograph of sorters processing a sample.

Figure 3-6 Sorters Processing Sample Material



3.8 Data Recording & Analysis

The weigh-out and data recording process is the most critical process of the sort. The Crew Chief oversaw all weighing and data recording of each sample. Once the field operations team cleared all sample material from the table, they performed the weigh out. The team carried each bin containing sorted materials to the weigh-out station, where the Crew Chief weighed them and recorded weight data. Figure 3-7 is a photograph of this weigh-out process in progress. Finally, the field operations team discarded the processed sample for placement on the landfill face by a loader.

Figure 3-7 Sample Weights Recorded During Weigh-Out Process



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The Crew Chief recorded composition weights with a rugged tablet computer and application that tallied samples in real time so that the field operations team could immediately identify and rectify errors associated with light sample weights. The customized app used for data collection synchronized data to the cloud via the internet, providing excellent data security. Daily, the Field Supervisor cross referenced each sample against their sample sheet (the pre weight) to ensure accurate tracking of the samples. This real-time data entry offers several important advantages:

- The system contains built-in logic and error checking to prevent erroneous entries.
- The system sums sample weights in real time so the Crew Chief can confirm achievement of weight targets for each sample.
- The system seamlessly accommodates weighing of both loose items which do not have an associated tare weight and containerized materials that net out the container tare weight.

Figure 3-8 is a screenshot of the system as viewed after the sample weigh-out process from the study.

Figure 3-8 Screenshot of Data Collection App

San Luis Obispo County Waste
 Enter Sample Weights
 Use this form to enter header information and sample weights by material categories for new samples. You may also update existing header and weight information for previously submitted samples.

Back

Sample ID: 0320-CCGL-SF-15
 Sample Notes: #107078 vehicle ID WA078 Atascadero
 Thursday, March 20, 2025 08:33 pm

Update Sample Next PRE-WEIGH (lbs): 214 SORTED (lbs): 214.0

Field ID: S15
 Generator: Single Family
 Facility: Chicago Grade LF
 Stream: Inbound
 Origin: Atascadero
 Hauler: Other (write-in):
 Truck Type: select one
 Truck Number: 107078
 Ticket Number:
 Load Weight (tons):

Barrel Weights		214.0
	45.00 50.00 44.00 62.00 13.00	
1 Corrugated Cardboard/Kraft Paper	5.48	2.93
2 Newspapers/Inserts	2.54	0.98
3 White Office-type Paper and Mail	2.54	7.32
4 Magazines and Catalogs	2.56	9.58
5 Aseptic Containers and Gable-top Cartons	2.56	0.98
6 Paper/Fiber Food Service Ware	2.56	5.14
7 Mixed Recyclable Paper	2.56	10.86
8 Other Compostable Paper	6.48	12.17
9 Remainder/Composite Paper	2.56	6.50
10 PETE Beverage Containers - CRV	2.56	0.86
11 PETE Bottles and Jars - Non-CRV	2.60	0.66

Samples were first normalized by converting the individual sample data from weight to percentage. The following statistical measures were calculated to determine the overall composition of each of the sorted waste streams.

- **Sample Mean:** The sample mean, or average, composition is considered the most likely fraction for each material category in the waste stream.
- **Margin of Error:** Margin of error is a statistical concept that estimates the degree of accuracy of the sample mean. The margin of error has been calculated as a percentage of the sample mean.

Consistent with industry standards, the study team calculated the margin of error at a 90 percent level of confidence. The study team then combined overall results using County-provided weighting factors, allowing composition results to properly account for differences in inbound tonnage across generator sectors.

4. RESULTS

This section details graphical and tabular results collected from field data collection. It is separated into five subsections, one for each of the sorted waste generators (single-family residential, multi-family residential, commercial, and self-haul), and one aggregated waste section.

4.1 SFR Disposed MSW Composition

Figure 4-1 shows the composition of SFR refuse by material group. Organics was the largest single material group identified in this generator sector, accounting for 28.5 percent of sorted material by weight, followed by the other material group at 24.4 percent, and the paper group at 18.4 percent.

Figure 4-1 Single-Family Residential (SFR) Refuse Composition by Material Group

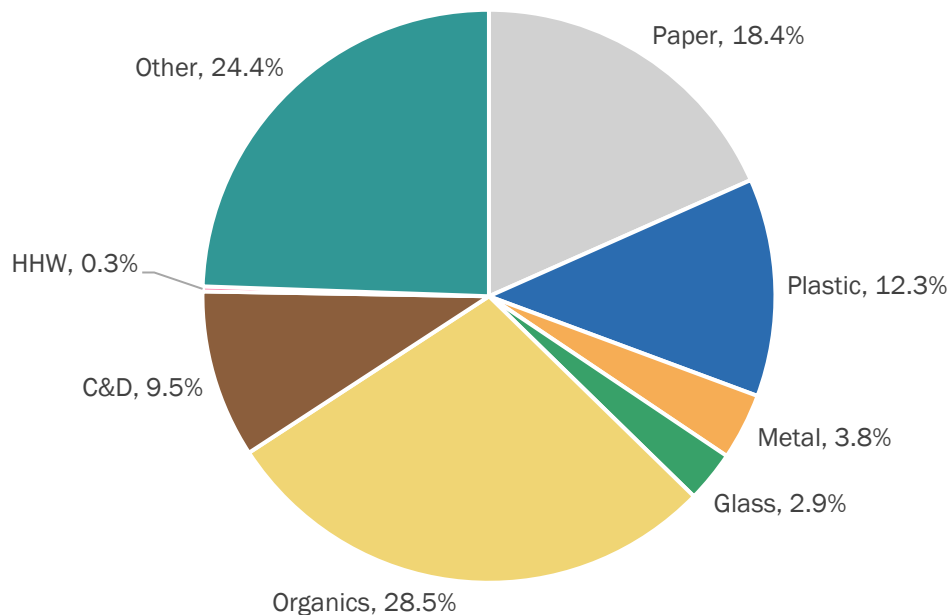


Figure 4-2 shows the same result set grouped by management pathway. Not readily recoverable materials made up the largest contribution of single-family residential refuse at 34.1 percent of sorted weight. Processable organics was the second largest at 33.3 percent, and targeted single-stream was the third largest at 13.5 percent.

Figure 4-2 Single-Family Residential (SFR) Refuse Composition by Management Pathway

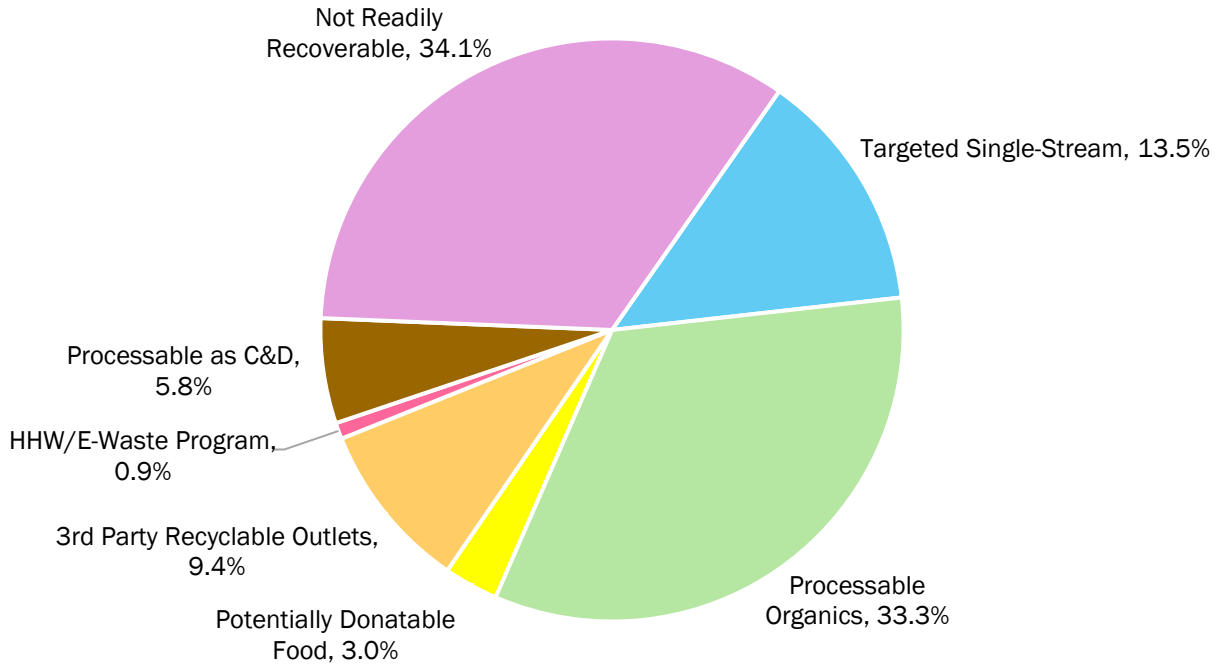


Figure 4-3 shows the ten most prevalent material categories sorted in SFR refuse loads. Processable organics management pathway categories accounted for five of the top ten material categories, including the top spot, which was occupied by food – not donatable – non-meat at ten percent of the SFR waste stream.

Figure 4-3 Top Ten Most Prominent Categories in Single-Family Residential (SFR) Refuse

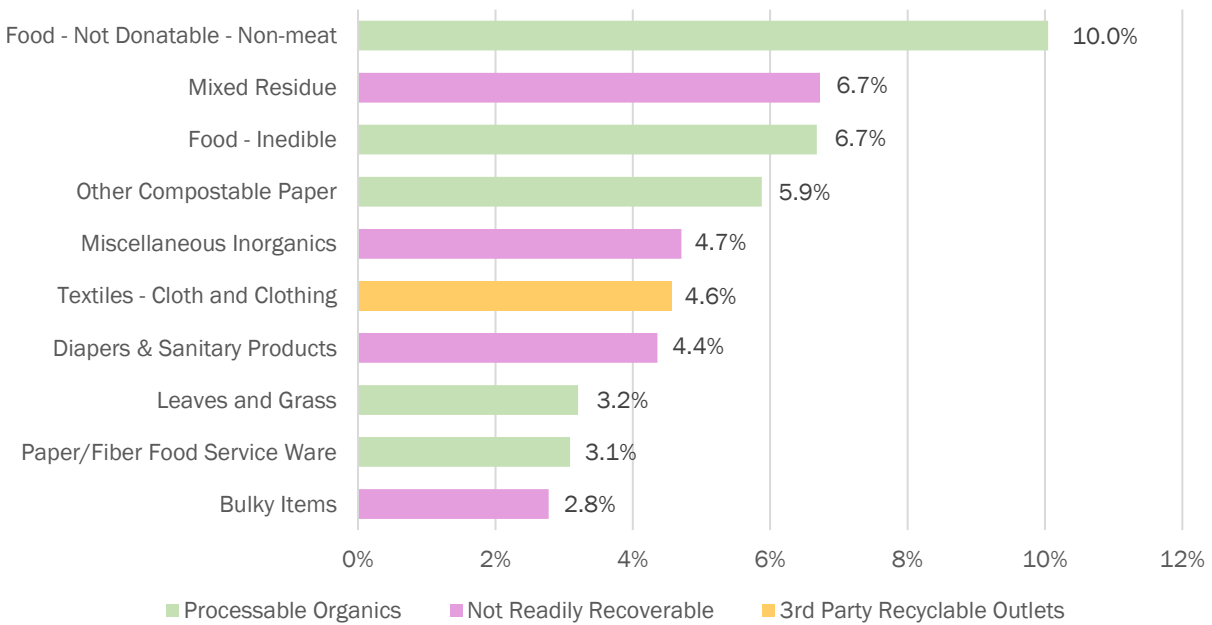


Table 4-1 shows the detailed tabular composition results for SFR refuse.

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Table 4-1 Single-Family Residential (SFR) Refuse Composition

Material Category	Mean	MOE	Tons	Material Category	Mean	MOE	Tons
Paper	18.4%	2.0%	13,630	Metal	3.8%	0.8%	2,791
Corrugated Cardboard/Kraft Paper	2.7%	0.8%	2,000	Tin/Steel Cans	0.6%	0.2%	460
Newspapers/Inserts	0.2%	0.1%	124	Aluminum Cans - CRV	0.3%	0.1%	233
White Office-type Paper and Mail	2.2%	0.8%	1,630	Aluminum Cans - Non-CRV	0.1%	0.0%	45
Magazines and Catalogs	0.6%	0.3%	423	Major Appliances	0.1%	0.2%	98
Aseptic Containers and Gable-top Cartons	0.3%	0.1%	207	Other Ferrous	0.6%	0.3%	447
Paper/Fiber Food Service Ware	3.1%	0.5%	2,294	Other Non-Ferrous	0.5%	0.2%	394
Mixed Recyclable Paper	1.9%	0.4%	1,397	Remainder/Composite Metal	0.9%	0.5%	652
Other Compostable Paper	5.9%	0.9%	4,365	Consumer Electronics & Equipment	0.6%	0.5%	462
Remainder/Composite Paper	1.6%	0.3%	1,190	HHW	0.3%	0.1%	208
Plastic	12.3%	1.1%	9,141	Paint	0.0%	0.0%	27
PETE Beverage Containers - CRV	0.4%	0.1%	299	Used Oil		Not Found	
PETE Bottles and Jars - Non-CRV	0.5%	0.1%	336	Lead-acid (automotive) batteries		Not Found	
HDPE Beverage Containers - CRV	0.0%	0.0%	13	Other batteries	0.1%	0.1%	100
HDPE Bottles and Jars - Non-CRV	0.5%	0.2%	377	Pharmaceuticals	0.0%	0.0%	21
Expanded Polystyrene Packaging	0.2%	0.1%	146	R/C Household Hazardous	0.1%	0.1%	59
Plastic Trash Bags	1.5%	0.2%	1,119	C&D	9.5%	2.7%	7,032
Plastic Grocery and Other Merchandise	0.5%	0.1%	396	Clean Dimensional Lumber	0.4%	0.3%	298
Other Plastic Film Bags/Wrappers	2.5%	0.5%	1,852	Clean Engineered Wood	0.6%	0.6%	436
Commercial/Industrial Packaging Film	0.6%	0.5%	418	Clean Pallets and Crates		Not Found	
Other Plastic Packaging	2.4%	0.6%	1,746	Treated/Painted/Stained Wood	2.2%	1.5%	1,610
Rigid Plastic Food Service Ware	1.1%	0.2%	808	Concrete	1.4%	1.2%	1,010
Durable Plastic Items	1.0%	0.4%	756	Asphalt Roofing	0.0%	0.0%	1
Remainder/Composite Plastic	1.2%	0.3%	875	Gypsum Board	0.7%	0.9%	552
Organics	28.5%	3.2%	21,165	Carpet	1.5%	1.6%	1,091
<i>Food - Combined</i>	<u>22.2%</u>		<u>16,520</u>	Rock, Soil and Fines	2.5%	0.6%	1,876
Food - PD - Vegetative (Perishable/Fresh)	1.5%	0.5%	1,113	R/C Inerts and Other	0.2%	0.2%	158
Food - PD - Eggs & Dairy	0.0%	0.0%	24	Other	24.4%	3.0%	18,159
Food - PD - Meat	0.2%	0.1%	156	Tires	0.2%	0.2%	167
Food - PD - Prepared Foods	0.3%	0.2%	198	Mattresses and Foundations		Not Found	
Food - PD - Packaged Non-perishable	1.0%	0.6%	745	Bulky Items	2.8%	1.7%	2,062
Food - Not Donatable - Meat	2.5%	0.6%	1,859	R/C Special Waste	0.3%	0.4%	257
Food - Not Donatable - Non-meat	10.0%	1.8%	7,463	Textiles - Cloth and Clothing	4.6%	1.8%	3,395
Food - Inedible	6.7%	1.0%	4,961	Textiles - Shoes, Purses, Belts	0.7%	0.3%	548
Leaves and Grass	3.2%	2.8%	2,379	Diapers & Sanitary Products	4.4%	1.2%	3,236
Prunings, Trimmings, and Branches	1.9%	0.9%	1,430	Miscellaneous Inorganics	4.7%	1.5%	3,496
Remainder/Composite Organics	1.1%	0.9%	836	Mixed Residue	6.7%	1.5%	4,997
Glass	2.9%	0.6%	2,149				
Glass Bottles and Containers - CRV	1.5%	0.4%	1,090				
Glass Bottles and Containers - Non-CRV	0.8%	0.2%	584				
Remainder/Composite Glass	0.6%	0.3%	475				
Key: Management Pathways							
Targeted Single-Stream	13.5%	1.8%	10,025	Processable Organics	33.3%	3.2%	24,751
Potentially Donatable Food	3.0%	1.0%	2,237	3rd Party Recyclable Outlets	9.4%	2.3%	6,955
HHW/E-Waste Program	0.9%	0.5%	669	Processable as C&D	5.8%	1.7%	4,330
Not Readily Recoverable	34.1%	3.1%	25,307				
				Total	100%		74,274
				<i>Sample Count</i>	<i>27</i>		

4.2 ICI Disposed MSW Composition

Figure 4-4 shows the composition of ICI refuse broken down by material group. Thirty-five ICI refuse samples were collected for this generator sector. In comparison with SFR refuse, the ICI refuse stream features more paper, more plastic, and more metal; it contains fewer organics and fewer other materials.

Figure 4-4 Commercial (ICI) Refuse Composition by Material Group

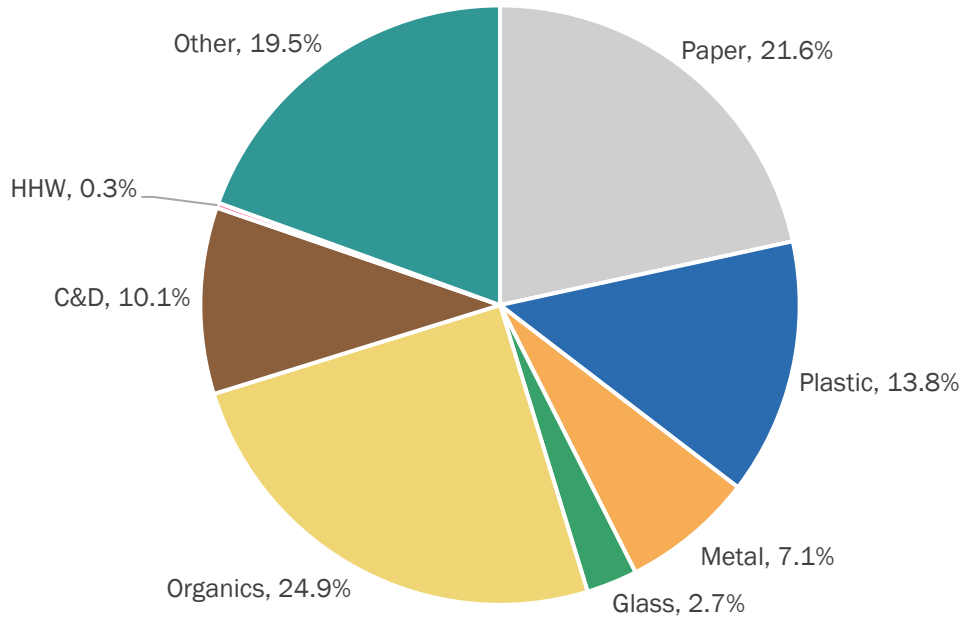


Figure 4-5 shows the ICI refuse composition by management pathway. The composition of the County’s ICI refuse is broadly more capable of landfill diversion with only 28.7 percent of materials not readily recoverable in comparison to SFR’s 34.1 percent. The difference in these is mostly made up by comparatively larger portions in ICI refuse 3rd party recyclable outlets pathway, which accounts for 12.6 percent of the waste stream and targeted single-stream, which accounts for 17.8 percent.

Figure 4-5 Commercial (ICI) Refuse Composition by Management Pathway

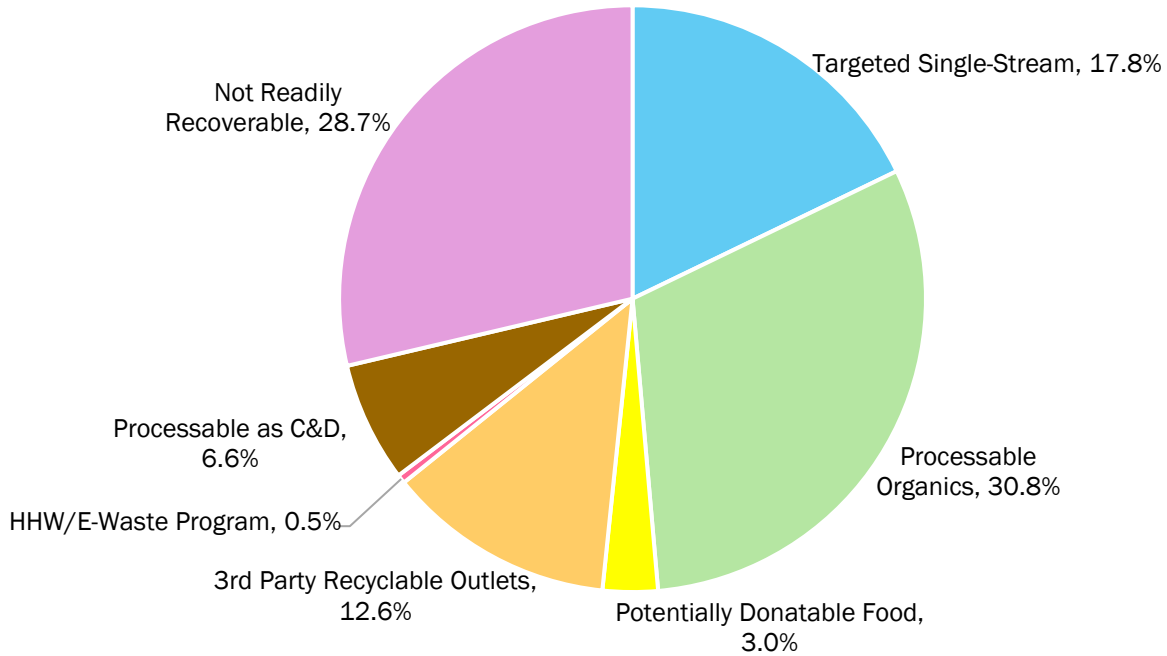


Figure 4-6 shows the ten most common material category constituents in the sorted ICI waste stream.

Figure 4-6 Top Ten Most Prominent Categories in Commercial (ICI) Refuse

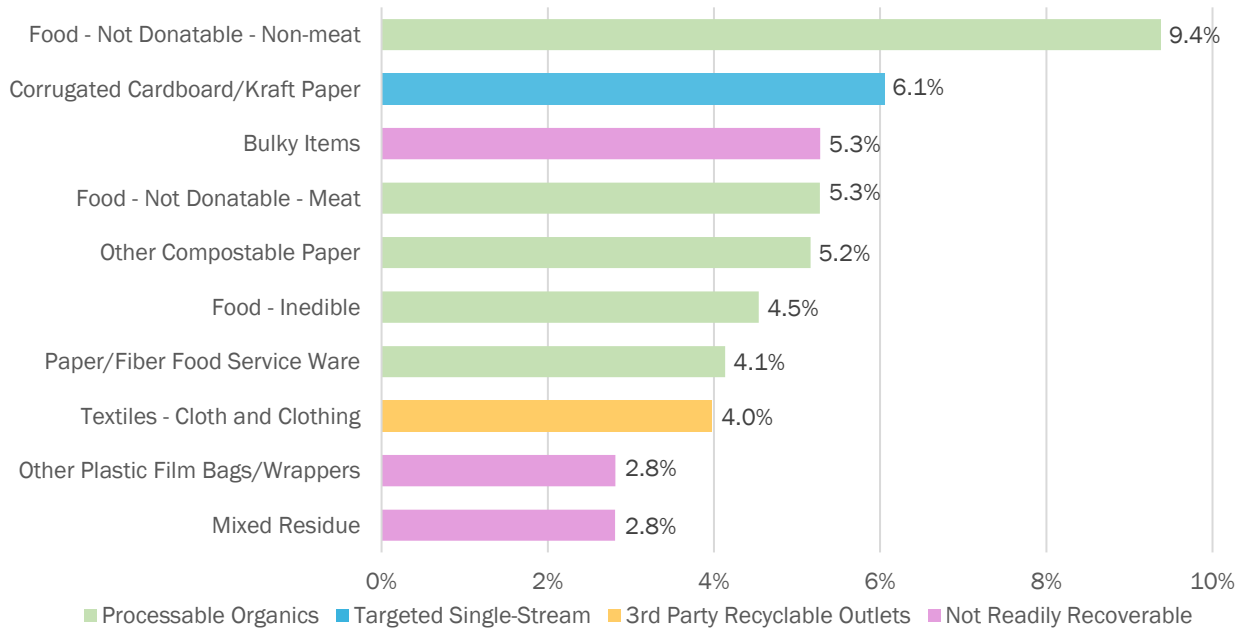


Table 4-2 shows the full tabular composition ICI refuse. The larger portion of 3rd party recyclable outlets is largely driven by scrap metal categories: major appliances other ferrous, and also from tires. Increases in paper, particularly in the cardboard category, are largely responsible for the increase in targeted single-stream materials. Food waste material categories are fairly in line with one another when SFR and ICI wastes, where yard waste categories are expectedly less present in the ICI waste stream.

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Table 4-2 Commercial (ICI) Refuse Composition

Material Category	Mean	MOE	Tons	Material Category	Mean	MOE	Tons
Paper	21.6%	3.0%	12,455	Metal	7.1%	2.8%	4,113
Corrugated Cardboard/Kraft Paper	6.1%	1.2%	3,495	Tin/Steel Cans	0.7%	0.3%	432
Newspapers/Inserts	0.1%	0.1%	69	Aluminum Cans - CRV	0.4%	0.2%	229
White Office-type Paper and Mail	1.2%	0.4%	694	Aluminum Cans - Non-CRV	0.1%	0.0%	37
Magazines and Catalogs	0.5%	0.3%	307	Major Appliances	1.0%	1.5%	570
Aseptic Containers and Gable-top Cartons	0.6%	0.3%	351	Other Ferrous	2.8%	1.9%	1,615
Paper/Fiber Food Service Ware	4.1%	1.3%	2,385	Other Non-Ferrous	0.3%	0.2%	184
Mixed Recyclable Paper	2.1%	1.0%	1,196	R/C Metal	1.6%	1.6%	925
Other Compostable Paper	5.2%	0.9%	2,980	Consumer Electronics & Equipment	0.2%	0.1%	121
R/C Paper	1.7%	0.6%	977	HHW	0.3%	0.2%	159
Plastic	13.8%	1.4%	7,975	Paint	0.1%	0.1%	30
PETE Beverage Containers - CRV	0.6%	0.2%	352	Used Oil			Not Found
PETE Bottles and Jars - Non-CRV	0.2%	0.1%	97	Lead-acid (automotive) batteries			Not Found
HDPE Beverage Containers - CRV	0.0%	0.0%	20	Other batteries	0.1%	0.1%	38
HDPE Bottles and Jars - Non-CRV	0.9%	0.3%	531	Pharmaceuticals	0.0%	0.0%	8
Expanded Polystyrene Packaging	0.1%	0.0%	36	R/C Household Hazardous	0.1%	0.1%	83
Plastic Trash Bags	2.6%	0.4%	1,510	C&D	10.1%	3.2%	5,808
Plastic Grocery & Other Merchandise Bags	0.3%	0.1%	188	Clean Dimensional Lumber	1.3%	1.2%	776
Other Plastic Film Bags/Wrappers	2.8%	0.8%	1,623	Clean Engineered Wood	0.6%	0.4%	341
Commercial/Industrial Packaging Film	1.0%	0.6%	554	Clean Pallets and Crates	2.3%	1.8%	1,356
Other Plastic Packaging	1.6%	0.5%	905	Treated/Painted/Stained Wood	1.8%	1.3%	1,016
Rigid Plastic Food Service Ware	1.8%	0.4%	1,055	Concrete	0.3%	0.3%	188
Durable Plastic Items	1.2%	0.5%	681	Asphalt Roofing	0.2%	0.4%	136
R/C Plastic	0.7%	0.2%	423	Gypsum Board	0.0%	0.0%	5
Organics	24.9%	3.5%	14,384	Carpet	1.7%	1.6%	974
<i>Food - Combined</i>	<u>22.2%</u>		<u>12,827</u>	Rock, Soil and Fines	1.6%	0.4%	928
Food - PD - Vegetative (Perishable/Fresh)	1.0%	0.5%	587	R/C Inerts and Other	0.2%	0.2%	89
Food - PD - Eggs & Dairy	0.3%	0.3%	188	Other	19.5%	4.0%	11,225
Food - PD - Meat	0.2%	0.1%	128	Tires	1.2%	1.3%	668
Food - PD - Prepared Foods	0.3%	0.1%	149	Mattresses and Foundations			Not Found
Food - PD - Packaged Non-perishable	1.2%	0.8%	701	Bulky Items	5.3%	2.7%	3,047
Food - Not Donatable - Meat	5.3%	1.7%	3,044	R/C Special Waste	2.2%	1.6%	1,261
Food - Not Donatable - Non-meat	9.4%	1.6%	5,413	Textiles - Cloth and Clothing	4.0%	2.7%	2,295
Food - Inedible	4.5%	0.9%	2,618	Textiles - Shoes, Purses, Belts	0.4%	0.2%	210
Leaves and Grass	1.2%	1.0%	714	Diapers & Sanitary Products	1.3%	0.8%	727
Prunings, Trimmings, and Branches	1.0%	0.6%	600	Miscellaneous Inorganics	2.4%	1.0%	1,395
Remainder/Composite Organics	0.4%	0.2%	243	Mixed Residue	2.8%	0.9%	1,621
Glass	2.7%	0.7%	1,586				
Glass Bottles and Containers - CRV	1.9%	0.6%	1,113				
Glass Bottles and Containers - Non-CRV	0.5%	0.2%	316				
Remainder/Composite Glass	0.3%	0.1%	157				
Key: Management Pathways							
Targeted Single-Stream	17.8%	2.2%	10,295	Processable Organics	30.8%	3.8%	17,754
Potentially Donatable Food	3.0%	1.2%	1,752	3rd Party Recyclable Outlets	12.6%	4.0%	7,258
HHW/E-Waste Program	0.5%	0.2%	280	Processable as C&D	6.6%	2.3%	3,817
Not Readily Recoverable	28.7%	3.9%	16,549				
				Total	100%		57,705
				Sample Count	35		

4.3 Comparisons

The following comparisons are provided between the SFR and ICI datasets and with results from the 2021 CalRecycle Statewide Waste Composition Study.

4.3.1 SFR Comparisons with ICI

Figure 4-7 provides a side-by-side comparison of the composition of SFR and ICI wastes. While the composition is relatively comparable at a high level, SFR waste contains more organics and other wastes, while ICI waste is higher in paper.

Figure 4-7 County Generator Sector Compositions by Material Group

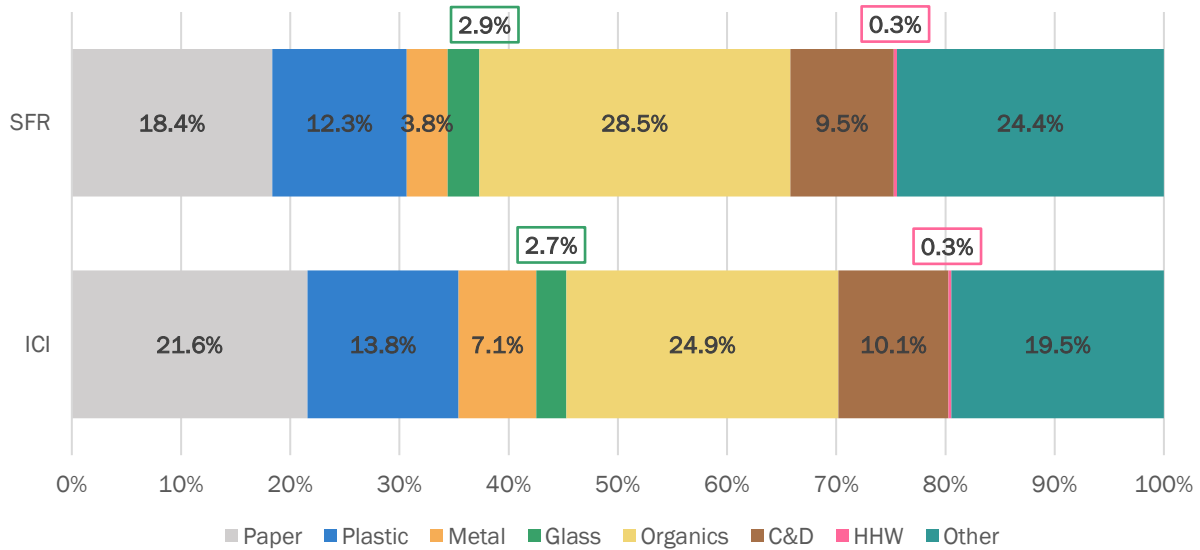
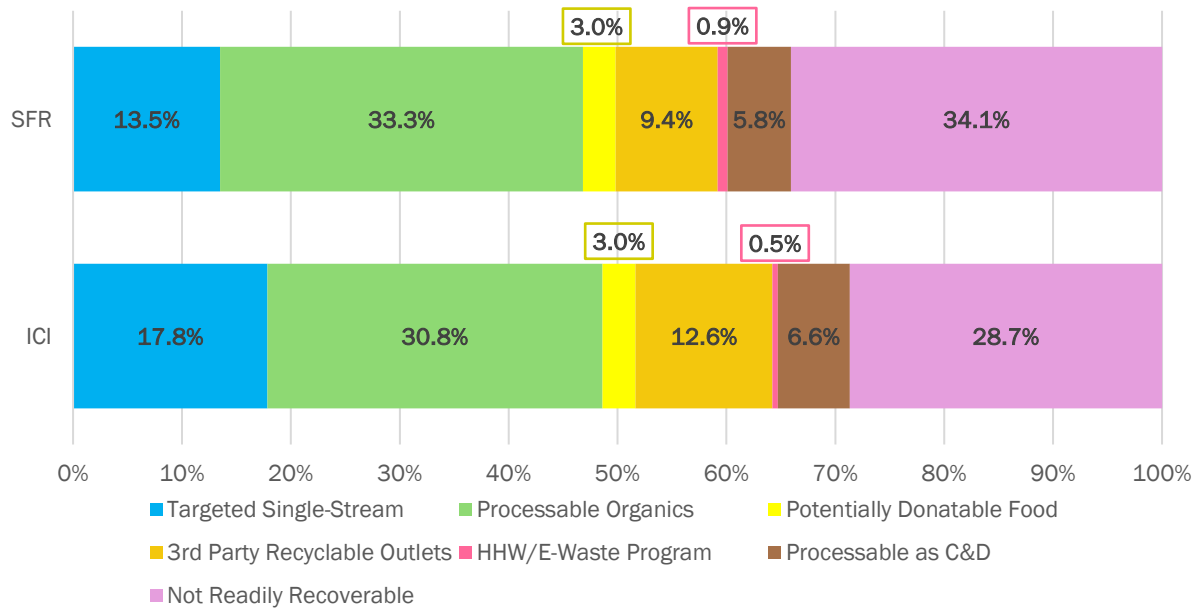


Figure 4-8 compares management pathways for these two generators. SFR waste is notably higher in the not readily recoverable pathway, meaning that ICI material has an overall greater opportunity for diversion than the SFR stream. Much of this difference is made up by the ICI sector’s higher presence of targeted single-stream and 3rd party recyclable outlet materials.

Figure 4-8 County Generator Sector Compositions by Management Pathway



4.3.2 County Results Compared with 2021 Statewide Results

This section shows comparisons between County results from this study against the 2021 CalRecycle Statewide Waste Composition Study results. Table 4-3 compares SFR results from both studies alongside one another. Material category lists are not perfectly identical, but this study’s categories were designed with this comparison in mind, and a straightforward mapping process is employed to consolidate some of the 2021 CalRecycle study’s more numerous material categories to match up with this study. Paper group materials line up very closely between studies, but plastics appear more prominently in the statewide results, largely driven by an increase in remainder/composite plastics. The County’s organics materials are more prominent here, 17.4 percent statewide SFR versus 22.2 percent in County SFR waste. Interestingly, when viewed through the management pathway lens, this increase in organics in County SFR material is driven almost entirely by processable organics categories and potentially donatable food categories are less common in County waste than statewide waste. Mixed residue materials are also notably more prominent in 2021 results.

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Table 4-3 SFR Refuse Composition Comparison between State and County Studies

Material Category	Statewide (2021)	SLO County (2025)	Material Category	Statewide (2021)	SLO County (2025)
Paper	18.4%	18.4%	Metal	4.6%	3.8%
Corrugated Cardboard/Kraft Paper	2.4%	2.7%	Tin/Steel Cans	0.8%	0.6%
Newspapers/Inserts	0.4%	0.2%	Aluminum Cans - CRV	0.3%	0.3%
White Office-type Paper and Mail	0.8%	2.2%	Aluminum Cans - Non-CRV	0.2%	0.1%
Magazines and Catalogs	0.5%	0.6%	Major Appliances	0.0%	0.1%
Aseptic Containers/Gable-top Cartons	0.3%	0.3%	Other Ferrous	1.0%	0.6%
Paper/Fiber Food Service Ware	3.5%	3.1%	Other Non-Ferrous	0.6%	0.5%
Mixed Recyclable Paper	3.2%	1.9%	R/C Metal	1.0%	0.9%
Other Compostable Paper	6.1%	5.9%	Consumer Electronics & Equipment	0.7%	0.6%
R/C Paper	1.2%	1.6%	HHW	0.4%	0.3%
Plastic	15.4%	12.3%	Paint	0.1%	0.0%
PETE Beverage Containers - CRV	0.7%	0.4%	Used Oil	0.0%	NF
PETE Bottles and Jars - Non-CRV	0.4%	0.5%	Lead-acid (automotive) batteries	0.1%	NF
HDPE Beverage Containers - CRV	0.1%	0.0%	Other batteries	0.0%	0.1%
HDPE Bottles and Jars - Non-CRV	0.6%	0.5%	Pharmaceuticals	0.1%	0.0%
Expanded Polystyrene Packaging	0.3%	0.2%	R/C Household Hazardous	0.1%	0.1%
Plastic Trash Bags	1.9%	1.5%	C&D	5.1%	9.5%
Plastic Grocery & Other Merchandise Bags	1.1%	0.5%	Clean Dimensional Lumber	0.4%	0.4%
Other Plastic Film Bags/Wrappers	0.8%	2.5%	Clean Engineered Wood	0.7%	0.6%
Commercial/Industrial Packaging Film	0.3%	0.6%	Clean Pallets and Crates	0.0%	NF
Other Plastic Packaging	0.1%	2.4%	Treated/Painted/Stained Wood	1.3%	2.2%
Rigid Plastic Food Service Ware	1.9%	1.1%	Concrete	0.5%	1.4%
Durable Plastic Items	1.2%	1.0%	Asphalt Roofing	0.1%	0.0%
R/C Plastic	6.2%	1.2%	Gypsum Board	0.1%	0.7%
Organics	24.5%	28.5%	Carpet	0.6%	1.5%
<i>Food - Combined Subtotal</i>	<i>17.4%</i>	<i>22.2%</i>	Rock, Soil and Fines	0.7%	2.5%
Food - PD - Vegetative (Perishable/Fresh)	2.0%	1.5%	R/C Inerts and Other	0.6%	0.2%
Food - PD - Eggs & Dairy	0.3%	0.0%	Other	28.8%	24.4%
Food - PD - Meat	0.3%	0.2%	Tires	0.0%	0.2%
Food - PD - Prepared Foods	0.5%	0.3%	Mattresses & Foundations	0.3%	NF
Food - PD - Packaged Nonperishable	2.1%	1.0%	Bulky Items	0.6%	2.8%
Food - Not Donatable - Meat	1.4%	2.5%	R/C Special Waste	0.4%	0.3%
Food - Not Donatable - Non-meat	6.7%	10.0%	Textiles - Cloth and Clothing	3.3%	4.6%
Food - Inedible	4.1%	6.7%	Textiles - Shoes, Purses, Belts	0.6%	0.7%
Leaves and Grass	2.3%	3.2%	Diapers & Sanitary Products	5.4%	4.4%
Prunings, Trimmings, and Branches	2.6%	1.9%	Miscellaneous Inorganics	1.3%	4.7%
R/C Organics	2.2%	1.1%	Mixed Residue	16.8%	6.7%
Glass	2.7%	2.9%			
Glass Bottles - CRV	0.9%	1.5%			
Glass Bottles - Non-CRV	1.4%	0.8%			
R/C Glass	0.3%	0.6%			
Key: Management Pathways					
Targeted Single-Stream	14.8%	13.5%	Processable Organics	26.7%	33.3%
Potentially Donatable Food	5.1%	3.0%	3rd Party Recyclable Outlets	7.9%	9.4%
HHW/E-Waste Program	1.1%	0.9%	Processable as C&D	3.3%	5.8%
Not Readily Recoverable	41.0%	34.1%			
			Total	100%	100%
			<i>Sample Count</i>	133	27

ICI refuse in the County again follows this same trend of featuring less potentially donatable food than the statewide study, despite featuring significantly more processable organics (County food – not donatable non-meat is nearly double that of the statewide study and food – not donatable meat is nearly five times more than the statewide study) and more total food waste material overall. Mixed residue material composition differences are not as dramatic in ICI material by absolute percentage, but statewide mixed residue is still more than three times higher than the County. Mixed residue includes a wide range of otherwise uncategorized materials including cat litter and pet waste, full or partially full containers of non-food consumer products, dryer lint, and materials smaller than two inches that cannot be further sorted. This under two- inch material can include anything, but often it includes soaked and mashed paper, dirt, unidentifiable food materials, small format plastics and metals, broken glass, etc. Both protocols allow for allocation of small materials to specific material categories when able to differentiate, so the best explanation for this difference is an increased willingness to further sort down or apportion these small materials in the County study rather than suggesting that the County has significantly less pet waste or partially-full lotion bottles than the statewide mean.

4.4 Other Results

This section provides results for the remaining generator sectors that were sampled and sorted for the County study: MFR waste and self-haul waste. As discussed previously, these generator sectors were not sampled in sufficient quantities to gather an accurate, statistically reliable picture of their waste composition. These results are provided with the caution that these mean compositions sit at the center of wide margins of error and are not to be utilized as the basis for decision-making activities. Table 4-5 shows composition results for the three MFR samples and four self-haul samples that were sorted as part of this study.

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Table 4-5 Other Generator Sector Composition

Material Category	MFR	Self-Haul	Material Category	MFR	Self-Haul
Paper	21.7%	7.5%	Metal	4.8%	11.7%
Corrugated Cardboard/Kraft Paper	6.2%	5.3%	Tin/Steel Cans	0.6%	0.2%
Newspapers/Inserts	0.1%	0.1%	Aluminum Cans - CRV	0.4%	0.1%
White Office-type Paper and Mail	0.6%	0.2%	Aluminum Cans - Non-CRV	0.0%	NF
Magazines and Catalogs	1.3%	0.1%	Major Appliances	NF	1.3%
Aseptic Containers and Gable-top Cartons	0.4%	0.1%	Other Ferrous	0.6%	9.6%
Paper/Fiber Food Service Ware	2.7%	0.2%	Other Non-Ferrous	0.3%	0.0%
Mixed Recyclable Paper	1.2%	0.8%	R/C Metal	2.0%	0.4%
Other Compostable Paper	6.6%	0.6%	Consumer Electronics and Equipment	0.8%	NF
R/C Paper	2.6%	0.2%	HHW	0.1%	0.1%
Plastic	15.9%	8.2%	Paint	NF	NF
PETE Beverage Containers - CRV	0.7%	0.1%	Used Oil	NF	NF
PETE Bottles and Jars - Non-CRV	0.4%	0.0%	Lead-acid (automotive) batteries	NF	NF
HDPE Beverage Containers - CRV	0.1%	NF	Other batteries	0.0%	0.0%
HDPE Bottles and Jars - Non-CRV	0.8%	0.2%	Pharmaceuticals	0.0%	0.0%
Expanded Polystyrene Packaging	0.1%	0.5%	R/C Household Hazardous	0.1%	0.0%
Plastic Trash Bags	2.5%	0.3%	C&D	11.3%	11.6%
Plastic Grocery and Other Merchandise Bags	0.6%	0.1%	Clean Dimensional Lumber	0.8%	0.1%
Other Plastic Film Bags/Wrappers	2.7%	0.4%	Clean Engineered Wood	1.1%	0.0%
Commercial/Industrial Packaging Film	0.0%	NF	Clean Pallets and Crates	NF	NF
Other Plastic Packaging	3.6%	0.7%	Treated/Painted/Stained Wood	1.8%	4.8%
Rigid Plastic Food Service Ware	2.5%	0.2%	Concrete	1.1%	NF
Durable Plastic Items	1.3%	0.7%	Asphalt Roofing	NF	0.9%
R/C Plastic	0.6%	5.0%	Gypsum Board	NF	NF
Organics	25.3%	18.4%	Carpet	NF	NF
<i>Food - Combined</i>	<u>20.5%</u>	<u>10.1%</u>	Rock, Soil and Fines	6.5%	0.1%
Food - PD - Vegetative (Perishable/Fresh)	0.3%	0.2%	R/C Inerts and Other	NF	5.8%
Food - PD - Eggs & Dairy	0.2%	0.1%	Other	18.7%	42.1%
Food - PD - Meat	0.7%	0.5%	Tires	NF	NF
Food - PD - Prepared Foods	0.7%	0.7%	Mattresses and Foundations	NF	NF
Food - PD - Packaged Non-perishable	0.2%	1.6%	Bulky Items	NF	40.2%
Food - Not Donatable - Meat	4.6%	0.2%	R/C Special Waste	NF	0.0%
Food - Not Donatable - Non-meat	9.2%	6.6%	Textiles - Cloth and Clothing	2.7%	0.2%
Food - Inedible	4.6%	0.2%	Textiles - Shoes, Purses, Belts	0.2%	0.0%
Leaves and Grass	0.9%	3.7%	Diapers & Sanitary Products	4.3%	NF
Prunings, Trimmings, and Branches	2.1%	3.9%	Miscellaneous Inorganics	2.6%	0.0%
Remainder/Composite Organics	1.8%	0.7%	Mixed Residue	8.9%	1.6%
Glass	2.3%	0.5%			
Glass Bottles and Containers - CRV	0.7%	0.2%			
Glass Bottles and Containers - Non-CRV	0.4%	0.3%			
Remainder/Composite Glass	1.2%	NF			
Key: Management Pathways					
Targeted Single-Stream	16.6%	7.8%	Processable Organics	30.6%	15.3%
Potentially Donatable Food	2.1%	3.1%	3rd Party Recyclable Outlets	4.5%	11.4%
HHW/E-Waste Program	0.9%	0.1%	Processable as C&D	9.4%	6.8%
Not Readily Recoverable	35.9%	55.4%			
			Total	100%	100%
			Sample Count	3	4

5. CONCLUSIONS

This dedicated waste characterization effort represents the largest and most detailed effort the County has undertaken to better understand the contents of its unique waste stream. MSW Consultants is satisfied with the field data collection and quality of the resulting SFR and ICI data that it was able to gather within the available research budget. This study establishes a strong baseline for a significant portion of County’s waste stream to be utilized to inform future County diversion initiatives within these sectors.

In support of the above findings, MSW Consultants offers the following conclusions:

Recyclables: Aggregated countywide waste stream results suggest that about 13.5 percent of County SFR waste and 17.8 percent of County ICI waste is material that is targeted for curbside single-stream recycling, combined amounting to over 20,000 tons per year. For reference, CalRecycle’s 2021 Study results estimate about 14.8 percent of SFR waste and 19.5 percent of ICI waste was comprised of targeted recyclables. Of County waste categorized in the targeted single-stream management pathway, about one fifth of SFR waste and over one third of ICI waste was made up of corrugated cardboard/kraft paper, where it made up 6.1 percent of the refuse stream. Efforts to improve capture of this cardboard, particularly in the ICI sector, could result in continued incremental improvements to recyclables diversion.

Organic Waste: As of 2025, the diversion target of organic waste from SB-1383 is “a 75 percent reduction of statewide disposal of organic waste from the 2014 level.” Organic waste is defined as “food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste.”⁴ For the purposes of this study, this refers to the potentially donatable food management pathway, the processable organics management pathway and a portion of the processable as C&D management pathway. This study found:

- **Potentially donatable food** accounts for three percent of the SFR and ICI waste streams, or about a combined 4,000 tons disposed of in County landfills from these generator sectors each year.
- **Processable organics** account for nearly one third of SFR and ICI waste streams, or about 42,505 tons disposed of in County landfills from these generator sectors each year.
 - **Paper products in the processable organics management pathway** account for 9.0 percent of SFR waste and 9.3 percent of the ICI waste stream, each year accounting for 6,659 tons and 5,359 tons disposed in the landfill respectively.
 - **Non-donatable food waste in the processable organics management pathway** accounts for about nineteen percent of both generator sector waste streams. This accounts for 14,283 tons of SFR material and 11,075 tons of ICI material each year, and a combined 25,358 tons annually.
 - **Green waste in the processable organics management pathway** accounts for around five percent of SFR and 2.2 percent of ICI material, or 3,809 tons and 1,314 tons respectively, disposed of in County landfills each year.
 - **Processable as C&D materials subject to SB-1383 (nonhazardous wood waste)** account for one percent of SFR and 4.2 percent of ICI waste streams.

About one-third of the County’s landfilled SFR and ICI waste is targeted for diversion by SB-1383. This amounts to roughly 50,000 tons of organic waste per year within these generator sectors alone. For comparison with the 2021 CalRecycle Study, about 29.0 percent of 2021 statewide landfilled waste tonnage was targeted for diversion by SB-1383.

⁴Public Resources Code, Division 30, Part 3, Chapter 12.9. 42649.8

Comparison between the 2025 County Study with the 2021 statewide study: The difference in reporting times between the 2021 CalRecycle Statewide Study and this 2025 study do obscure direct comparison with their respective result sets. At the time of the 2021 study data collection, the nation was just beginning to “round the corner” on the COVID-19 pandemic, which greatly impacted resident and business behaviors, including their waste streams. While some of these behaviors have largely continued in years since (cardboard generation has consistently been up in years since, due to increased online shopping, for example), this broader context should be considered while comparing these results. Additionally, statewide programs for 3rd-party diversion of niche recyclables, such as mattress recycling and carpet recycling have also seen growth between 2021 and 2025, which may partially account for the reduced incidence of these materials in the County waste stream. It is also recognized, however, that these materials are infrequently encountered, which presents a challenge in acquiring accurate results on such materials without extensive sampling efforts.

Overall, only 34.1 percent of SFR and 28.7 percent of ICI refuse is optimally disposed in a landfill within the County. Further improvements to food donation, food waste and organics diversion, recycling, and C&D processing programs, as well as championing third-party diversion and reuse programs, may yield significant changes in County waste composition.

As stated previously, this study provides a firm foundation that can be built upon with future County waste characterization studies, allowing the County to track its own waste diversion, to set actionable targets for future improvements, and to explore additional research opportunities to further optimize the County’s waste streams. Before updating this study, the County should:

- **Further evaluate the MFR estimates:** Based on cursory review of the SFR and MFR housing split in census data, the MFR may be overstated. If this is the case, smaller-scale options, such as a focused pilot study, may be recommended for further MFR waste composition research.
- **Segregate C&D debris in the reported self-haul tonnages:** Effectively characterizing C&D and bulky waste materials relies on different approaches than manual sampling and sorting. Segregation of C&D from self-haul waste would clarify tonnages of these waste streams and inform diversion strategies.

As this study was focused on the County refuse stream, it was not within the scope to determine the state of the County’s current recycling or organics streams. As the County continues to implement strategies to reduce its targeted recyclables and organic waste that are landfilled, it may prove valuable to conduct composition analyses of these streams to track their respective evolving compositions and contamination rates.

APPENDIX A

Tonnage by Facility

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Appendix A: County Reported Tonnage by Facility

Facility Name	2019 MSW Tons	% of Wasteshed	*2021	*2022	*2023
Cold Canyon Landfill, Inc.	147,110	51.0%			
Chicago Grade Landfill	90,895	31.5%			
City of Paso Robles Landfill	41,006	14.2%			
Avenal Regional Landfill	5,550	1.9%			
McKittrick Waste Treatment Site	1,312	0.5%			
Santa Maria Regional Landfill	1,281	0.4%			
Chemical Waste Management, Inc. Unit B- Recology Hay Road	774	0.3%			
American Avenue Disposal Site	179	0.1%			
Clean Harbors Buttonwillow LLC	95	0.0%			
Potrero Hills Landfill	30	0.0%			
Kettleman Hills - B18 Nonhaz Codisposal	16	0.0%			
Azusa Land Reclamation Co. Landfill	11	0.0%			
Simi Valley Landfill & Recycling Center	1	0.0%			
Covanta Stanislaus, Inc.	-	0.0%			
Newby Island Sanitary Landfill	-	0.0%			
Shafter-Wasco Recycling & Sanitary Land	-	0.0%			
Vasco Road Sanitary Landfill	-	0.0%			
Total	288,431	100.0%	302,231	287,783	285,670

* Facility-level data was not available for these years.

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APPENDIX B

Material Categories & Definitions

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#	Material Category Name	Management Pathway	Material Category Definition
Paper			
1	Corrugated Cardboard/Kraft Paper	Targeted Single-Stream	means a paper laminate usually composed of three layers. The center wavy layer is sandwiched between the two outer layers. It can be uncoated or have a (glossy) coating on the inside or outside. This type does not include paperboard boxes such as cereal and tissue boxes. Also includes brown Kraft paper. Excludes waxed cardboard.
2	Newspapers/Inserts	Targeted Single-Stream	means paper used in newspapers and all items made from newsprint.
3	White Office-type Paper and Mail	Targeted Single-Stream	means white paper used in offices and mail. Does not include envelopes lined with plastic or bubble wrap.
4	Magazines and Catalogs	Targeted Single-Stream	means multi-page bound items (glued or stapled) made of glossy coated paper. This paper is usually slick, smooth to the touch, and reflects light.
5	Aseptic Containers and Gable-top Cartons	Targeted Single-Stream	means bleached polycoated paperboard containers or paper containers with a foil liner of various sizes and shapes that contain shelf-stable food products (i.e. aseptic containers) and paper-based cartons with a triangular top used for refrigerated and non-refrigerated items (i.e. gable-top cartons). Containers may include a plastic pour spout as part of the container.
6	Paper/Fiber Food Service Ware	Processable Organics	means items made mostly of paper that are used to consume, contain, or transport prepared food items intended for immediate consumption. Includes paper and molded fiber, including compostable and non-compostable items. May be contaminated with food and/or moisture. Excludes packaging (i.e. original packaging from a food manufacturer or producer).
7	Mixed Recyclable Paper	Targeted Single-Stream	Paperboard boxes, other than corrugated, which fold and are primarily made of paper with few other materials (e.g. boxes with plastic windows are excluded) These cartons and packaging are typically used as the primary packaging for various products such as breakfast cereals, frozen foods, candy/cookies, jewelry, tobacco, pharmaceuticals and cosmetics. This also includes non-box paperboard such as paper tubes for toilet paper. Also other items made of paper that do not fit into any of the other paper types, but that are generally recyclable or not generally composted. Paper may be combined with minor amounts of other materials such as wax or glues.
8	Other Compostable Paper	Processable Organics	means items that do not fit any other category, are made of paper, can be composted and are generally not recycled. May be contaminated with food, moisture, or wax.
9	Remainder/Composite Paper	Not Readily Recoverable	means items made mostly of paper but combined with large amounts of other materials. These are items that do not fit into any other categories and are not generally compostable or recyclable. Excludes packaging and food service ware.
Plastic			
10	PETE Beverage Containers - CRV	Targeted Single-Stream	means containers for beverages that are marked with PET (1) and have the CRV symbol.
11	PETE Bottles and Jars - Non-CRV	Targeted Single-Stream	means screw top bottles without the CRV symbol and jars that are marked with PET (1).
12	HDPE Beverage Containers - CRV	Targeted Single-Stream	means containers for beverages that are marked with HDPE (2) and have the CRV symbol.
13	HDPE Bottles and Jars - Non-CRV	Targeted Single-Stream	means screw top bottles without the CRV symbol and jars that are marked HDPE (2).
14	Expanded Polystyrene Packaging	Not Readily Recoverable	means packaging items made of expanded polystyrene. Does not include non-packaging items such as insulation boards.
15	Plastic Trash Bags	Not Readily Recoverable	means plastic bags sold for use as trash bags, for both residential and commercial use. This type does not include other plastic bags, like shopping bags, that might have been used to contain trash.
16	Plastic Grocery and Other Merchandise Bags	3rd Party Recyclable Outlets	means plastic shopping bags used to contain merchandise to transport from the place of purchase, given out by the store with the purchase. Does not include produce bags.
17	Other Plastic Film Bags/Wrappers	Not Readily Recoverable	means all other plastic film, in bag form, that does not fit into any other type, excluding flexible plastic pouches. Includes single and multi-layered mailing pouches Excludes packaging and mailing pouches with a paper component. Material is thicker than potato chip bags and frozen vegetable bags. May have a flat bottom so that package would stand up on its own, but not always. May have plastic screw tops. means plastic film used for purposes other than packaging, including agricultural use. Excludes personal protective equipment (PPE).
18	Commercial/Industrial Packaging Film	3rd Party Recyclable Outlets	Film plastic used for large-scale packaging or transport packaging. means plastic pouches made of thicker, multi-layer flexible material.
19	Other Plastic Packaging	Not Readily Recoverable	means jars, containers (including lids), and other packaging that are made of plastic, including film plastics. Only includes bottles and containers not included in any other category. Only includes film plastics not included in other categories. They may bear the triangular recycling symbol or may bear no recycling symbol. Excludes foodservice ware, including clamshells, takeout containers, cups, bowls, plates, and trays.
20	Rigid Plastic Food Service Ware	Targeted Single-Stream	means items made partially or entirely of plastic that are used to consume, contain, or transport prepared food items. Includes all plastic types including compostable plastics and expanded polystyrene. Excludes packaging.
21	Durable Plastic Items	Not Readily Recoverable	means plastic items that are made to last for more than one use. These items may bear the numbers 1 through 7 in the triangular recycling symbol.
22	Remainder/Composite Plastic	Not Readily Recoverable	means plastic that cannot be put in any other type. This type includes items made mostly of plastic but combined with other materials.
Organics			

#	Material Category Name	Management Pathway	Material Category Definition
23	Food - Potentially Donatable – Vegetative (Perishable/Fresh)	Potentially Donatable Food	means uncooked or cooked fresh vegetables, fruits, and fungi that are in a whole state (i.e., not partially consumed) and are unmixed with non-vegetative food types. Items in their whole state are either in original, unopened packaging or unpackaged items from commercial sector that have clearly not been consumed (e.g. a whole apple or entire head of lettuce). Items that are excluded from this category include condiments, non-perishable packaged fruits and vegetables such as: packaged dried fruits and vegetables, canned fruits and vegetables, and nuts. Any unpackaged vegetables, fruits, and fungi found in a whole state in residential loads are excluded from this category and should be sorted as “not donatable – non-meat”. However, unpackaged vegetables fruits, and fungi found in a whole state in commercial loads are included in this category.
24	Food - Potentially Donatable - Eggs, Dairy, and Dairy Alternatives	Potentially Donatable Food	means egg or dairy products and dairy alternatives that are in a whole state, unmixed with other food types, and in the original unopened package. Items may be refrigerated or shelf stable.
25	Food - Potentially Donatable – Meat	Potentially Donatable Food	means any uncooked or cooked meat (beef, poultry, pork, lamb) or fish product that is in a whole state, is unmixed with other food types, and is in the original unopened package. This includes meat alternatives.
26	Food - Potentially Donatable - Cooked/Baked/Prepared Perishable Items	Potentially Donatable Food	means items that are in a whole state but could have multiple food types mixed together as a part of cooking or preparation and are still in their original unopened package.
27	Food - Potentially Donatable - Packaged Non-perishable	Potentially Donatable Food	means shelf-stable foods that are in a whole state and are in the original unopened package. Includes foods contained in aseptic or retort packages and other products that do not require refrigeration until after opening. Also includes non-perishable beverages such as sodas. Excluded from this category are shelf-stable meats, shelf-stable dairy products, and shelf-stable dairy alternatives.
28	Food - Not Donatable – Meat	Processable Organics	means any food that is predominantly meat or fish, but the product is not in a whole state (i.e., partially consumed), or the product’s packaging has been opened, or the product was not contained in any packaging at all.
29	Food - Not Donatable – Non-meat	Processable Organics	means any food that is not predominantly meat or fish, not in a whole state, or not in its original unopened package. Includes any non-meat partially consumed foods, any non-meat foods in a package that has been opened – as best as can be determined, any non-meat foods that are not in their original packaging. Item may contain small amounts of meat or fish. This category also includes fruit and vegetable peels, skins, trimmings, and or any parts of fruits and vegetables not included in the inedible category. In addition, this category also includes any indistinguishable food.
30	Food - Inedible	Processable Organics	means items typically not consumed by people in the United States. Categories of inedible parts include bones, pits, shells, banana peels, coffee grounds and tea leaves, rinds, woody stems/tops and vines, and corn cobs/husks. Note that small amounts of edible material associated with the inedible material are permitted to be included as “inedible.” Excludes other fruit and vegetable peels, skins, trimmings, cores, and ends not included in the previous categories (e.g. potato peels, carrot tops, apple cores, broccoli stalks, cucumber ends).
31	Leaves and Grass	Processable Organics	means plant material, except woody material, from any public or private landscape. This type does not include woody material or material from agricultural sources.
32	Prunings, Trimmings, and Branches	Processable Organics	means woody plant material up to from any public or private landscape. This type does not include stumps, tree trunks, or material from agricultural sources.
33	Remainder/Composite Organics	Not Readily Recoverable	means organic material that cannot be put in any other type.
Glass			
34	Glass Bottles and Containers – CRV	Targeted Single-Stream	means glass containers that display the CRV notification. Includes whole and broken bottles.
35	Glass Bottles and Containers - Non-CRV	Targeted Single-Stream	means glass containers that do not display the CRV notification. Includes whole and broken containers.
36	Remainder/Composite Glass	Not Readily Recoverable	means glass that cannot be put in any other type. It includes flat and curved glass and items made mostly of glass but combined with other materials. Includes whole or broken items.
Metal			
37	Tin/Steel Cans	Targeted Single-Stream	means rigid containers made mainly of steel, both CRV and non-CRV containers. These items will stick to a magnet and may be tin-coated. This subtype is used to store food, beverages, paint, and a variety of other household and consumer products.
38	Aluminum Cans - CRV	Targeted Single-Stream	means any food or beverage container that is made mainly of aluminum and that displays the CRV notification. This subtype does not include bimetal containers with steel sides and aluminum ends.
39	Aluminum Cans - Non-CRV	Targeted Single-Stream	means any food or beverage container that is made mainly of aluminum and that does not display the CRV notification.
40	Major Appliances	3rd Party Recyclable Outlets	means discarded major appliances encased in metal, of any color. These items are often enamel-coated. This type does not include electronics, such as televisions and stereos.
41	Other Ferrous	3rd Party Recyclable Outlets	means any iron or steel that is magnetic or any stainless-steel item. This type does not include tin/steel cans.
42	Other Non-Ferrous	3rd Party Recyclable Outlets	means any metal item, other than aluminum cans, that is not stainless steel and that is not magnetic. These items may be made of aluminum, copper, brass, bronze, lead, zinc, or other metals.

#	Material Category Name	Management Pathway	Material Category Definition
43	Remainder/Composite Metal	Not Readily Recoverable	means metal that cannot be put in any other type. This type includes items made mostly of metal but combined with other materials and items made of both ferrous metal and non-ferrous metals combined. Includes products whose weight is derived significantly from the metal portion of its construction.
44	Consumer Electronics and Equipment	HHW/E-Waste Program	means small IT and telecommunication equipment, and other small items that usually need electric currents or electromagnetic fields to operate. Includes means video display devices with a screen greater than four inches, measured diagonally. A video display device may use, but is not limited to, a cathode ray tube (CRT), liquid crystal display (LCD), gas plasma, digital light processing or other image projection technology
HHW			
45	Paint	HHW/E-Waste Program	means containers with paint in them. This type does not include dried paint, empty paint cans, or empty aerosol containers.
46	Used Oil	HHW/E-Waste Program	means the same as defined in Health and Safety Code section 25250.1(a).
47	Lead-acid (automotive) batteries	HHW/E-Waste Program	means batteries consisting of lead-acid cells.
48	Other batteries	HHW/E-Waste Program	means any type of battery other than lead-acid (automotive) batteries. Examples include household batteries such as AA, AAA, D, button cell, 9 volt, and rechargeable batteries used for flashlights, small appliances, watches, and hearing aids.
49	Pharmaceuticals	HHW/E-Waste Program	means both prescription and over-the-counter medications and supplements in all forms, including pills, liquid medications, creams, and ointments. Does not include containers for these items, except for tubes for creams and ointments and other containers that cannot be easily separated from the product they contain.
50	Remainder/Composite Household Hazardous	HHW/E-Waste Program	means household hazardous material that cannot be put in any other type. Examples include household hazardous waste that, if improperly put in the solid waste stream, may present handling problems or other hazards. Also includes vehicle and equipment fluids other than used oil.
C&D			
51	Clean Dimensional Lumber	Processable as C&D	means unpainted new or demolition dimensional lumber. May contain nails or other trace contaminants.
52	Clean Engineered Wood	Processable as C&D	means unpainted new or demolition scrap from sheeted goods. May contain nails or other trace contaminants.
53	Clean Pallets and Crates	Processable as C&D	means unpainted wood pallets, crates, and packaging made of lumber/engineered wood. May contain nails or other trace contaminants.
54	Treated/Painted/Stained Wood	Not Readily Recoverable	means wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood; and wood that has had an external coating such as paint, varnish, or other finish applied.
55	Concrete	Processable as C&D	means a hard material made from sand, aggregate, gravel, cement mix, and water. This category includes concrete with a steel internal structure composed of reinforcing bars (re-bar) or metal mesh.
56	Asphalt Roofing	Processable as C&D	means composite shingles and other roofing material made with asphalt.
57	Gypsum Board	Processable as C&D	means interior wall covering made of a sheet of gypsum sandwiched between paper layers. Includes used and unused broken or whole sheets. Includes painted gypsum board.
58	Carpet	3rd Party Recyclable Outlets	means flooring applications consisting of various natural or synthetic fibers bonded to some type of backing material. This type does not include carpet padding or woven rugs with no backing.
59	Rock, Soil and Fines	Processable as C&D	means rock pieces of any size and soil, dirt, and other matter. This type also includes nonhazardous contaminated soil.
60	Remainder/Composite Inerts and Other	Processable as C&D	means inerts and other material that cannot be put in any other type. This type may include items from different types combined, which would be very hard to separate. This type may also include demolition debris that is a mixture of items such as plate glass, wood, tiles, gypsum board, synthetic counter tops, fiber or composite acoustic ceiling tiles, and aluminum scrap.
Other			
61	Tires	3rd Party Recyclable Outlets	means vehicle tires. Tires may be pneumatic or solid.
62	Mattresses and Foundations	3rd Party Recyclable Outlets	means a resilient material or combination of materials that is enclosed by a ticking and is intended for or promoted for sleeping upon. Includes foundations, which means a ticking-covered structure used to support a mattress or sleep surface. The structure may include one or more of the following components: constructed frames, foam, box springs, or other materials. Excludes any unattached mattress pad or unattached mattress topper intended to be used with or on top of a mattress; sleeping bags and pillows; a car bed, crib, or bassinet mattress; juvenile products, including a carriage a product containing liquid- or gaseous-filled ticking, including a water bed or air mattress that does not contain upholstery material between the ticking and the mattress core; upholstered furniture that does not otherwise contain a detachable mattress or that is a fold out sofa bed or futon
63	Bulky Items	Not Readily Recoverable	means large, hard-to-handle items that are not defined elsewhere in the material types list, including furniture and other large items.

#	Material Category Name	Management Pathway	Material Category Definition
64	Remainder/Composite Special Waste	Not Readily Recoverable	means special waste that cannot be put in any other type. Includes treated medical waste (medical waste that has been processed in order to change its physical, chemical, or biological character or composition, or to remove or reduce its harmful properties or characteristics, as defined in Section 25123.5 of the Health and Safety Code). Excludes Personal Protective Equipment (PPE).
65	Textiles – Cloth and Clothing	3rd Party Recyclable Outlets	means cloth, clothing, sheets and towels, rope, and other textile items made of organic, synthetic, unknown, and mixed fibers. Textiles with zippers and buttons are included. Excludes Personal Protective Equipment (PPE).
66	Textiles - Shoes, Purses, Belts	3rd Party Recyclable Outlets	means all shoes and boots, purses, and belts whether made of leather, rubber, other materials, or a combination thereof.
67	Diapers & Sanitary Products	Not Readily Recoverable	means single-use items that are made from a combination of natural and/or synthetic fibers.
68	Miscellaneous Inorganics	Not Readily Recoverable	means inorganic items that cannot be put in any other type.
69	Mixed Residue	Not Readily Recoverable	means material (including 2-inch-minus materials) that cannot be put in any other type or category. This category includes mixed residue and materials smaller than two inches that cannot be further sorted.





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