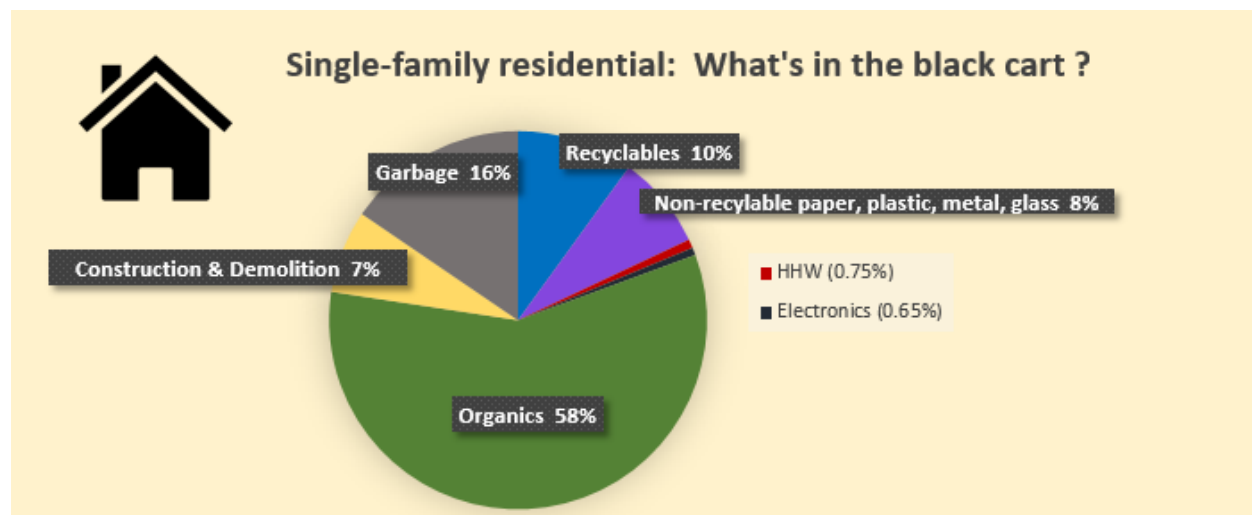


Summary of Key Results

The 2016 Waste Characterization Study involved an extensive year-long process that produced a precise estimate of waste quantity and waste composition. Methods used in previous studies were expanded to gather more detailed information on solid waste, particularly where estimates had been vague such as in the Industrial-Commercial-Institutional (ICI) sector, self-haul loads to the landfill, and Construction and Demolition waste.

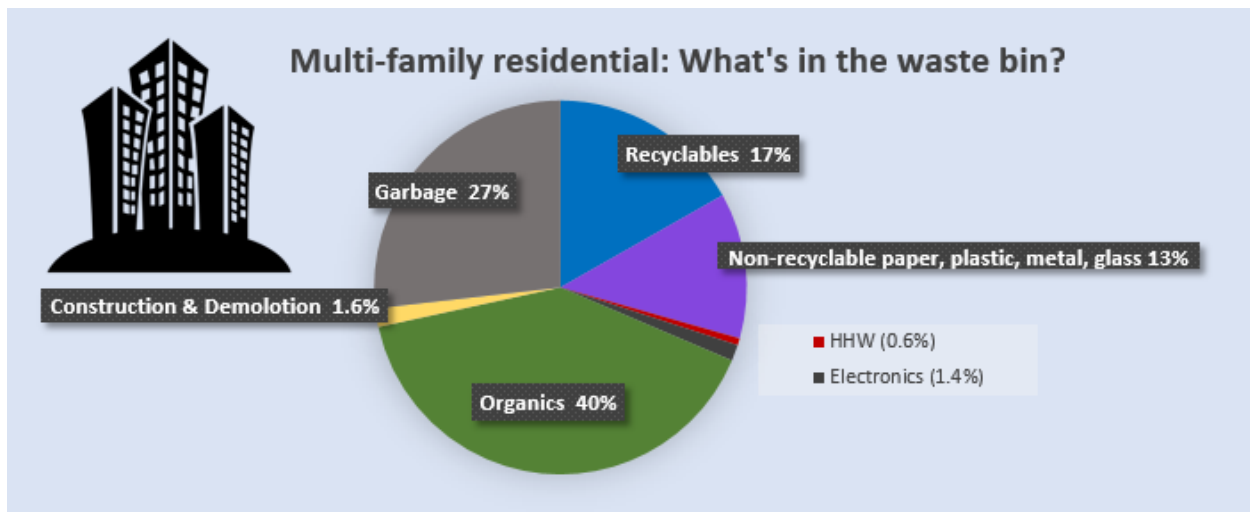
Single-family (Curbside) Residential Households

- The average household set out 15.6 kg of garbage each week in 2016.
- Of this, approximately 10% of the material could have been recycled through the blue cart program. In comparison, the 2014 study found that 13% of the material could have been recycled, suggesting current education and awareness efforts are having a positive impact.
- 58% of material found in the black cart consisted of compostable organic waste, 47% of which was food waste, the remaining 9% was yard waste.
- A large portion of the food waste is considered avoidable (i.e., edible at one point), suggesting there are opportunities for both waste reduction and waste diversion efforts.
- Less waste was generated during winter months and the heaviest season for waste-generation was Spring. This seasonal variance is mostly attributed to the presence of yard waste.
- Of the waste sampled, it is estimated that 77% could be diverted if programs for composting are expanded and recycling program capture rates are expanded and improved.



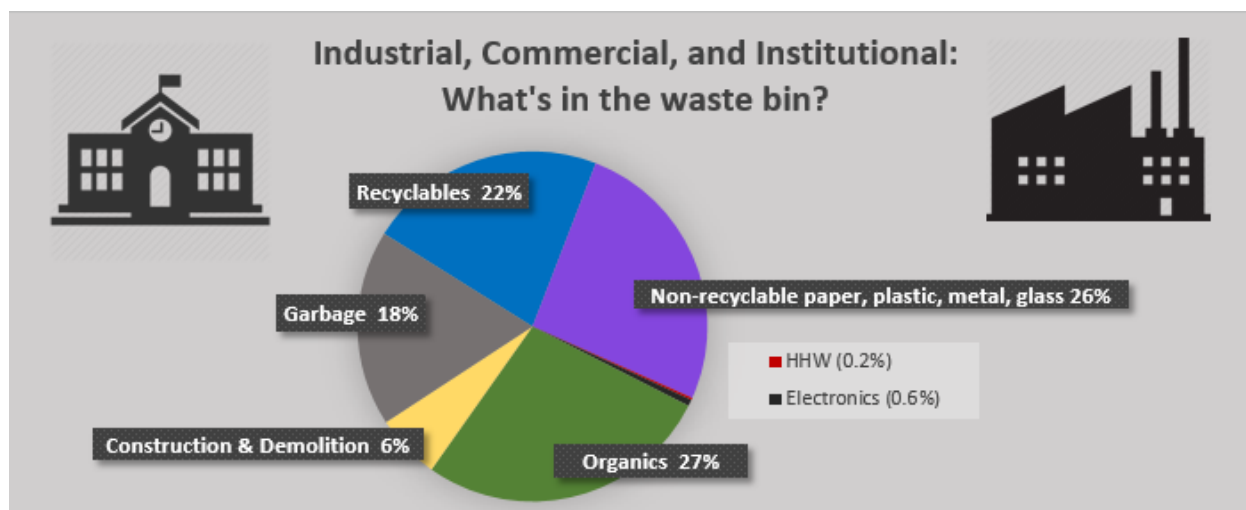
Multi-unit Residential Households

- The average multi-unit household set out 7.2 kg of garbage each week. This is less than half the amount of single-family households. Average household size for multi-unit residences is also smaller (at 1.91 persons per unit) than single-family households (2.78 persons per unit). The average multi-unit set out 9kg of garbage in a snap-shot study conducted in 2014. This reduction may highlight the impact of introducing the Multi-Unit Residential Recycling (MURR) program.
- Of the garbage placed in communal metal containers, approximately 17% of the material could have been recycled through the existing MURR program. The 2014 study found that 23% of the material could have been recycled.
- 40% of the waste was compostable organics, with 88% of the organic waste consisting of food scraps. Of the food waste, 53% was avoidable (i.e., edible at one point).
- An estimated 61% of total waste sampled could be diverted if programs for composting are expanded and recycling program capture rates are improved.



Business - Industrial, Commercial, and Institutional (ICI)

- The study found that most ICI waste is managed by the private sector and disposed of at private landfills in the Saskatoon region.
- It is estimated that approximately 56% of the ICI waste stream could be diverted if composting and recycling programs that handle materials similar to existing residential programs were introduced.
- The key waste streams that could be diverted include food waste (27%), recyclable paper/paper packaging (22%), and construction and demolition (C&D) waste (6%).



The Construction and Demolition (C&D) Waste Stream

To assist with plans for Recovery Park, additional effort to understand the composition of C&D waste was undertaken by completing visual waste audits of construction loads received at a private landfill in the Saskatoon region.

- 91% of the waste in sampled loads fell into the category of C&D waste.
- The average size of a sampled load was 2,428 kg.
- Untreated wood, asphalt roofing shingles, asphalt, concrete and bricks, and metals are a number of key C&D waste streams that could be diverted once diversion programs are available at Recovery Park.
- Up to 94% of C&D waste could be diverted (although it is noted that some C&D waste, such as treated wood, is not easily recycled).

Self-haul loads to the City landfill

- Residents and businesses can self-haul waste to the City landfill for disposal.
- The average load sampled was approximately 145 kg.
- A small portion (1%), consisted of recyclable waste which could have been captured in the City's recycling programs.
- Approximately 18% consisted of organic waste, with 98% of organic waste consisting of yard waste.
- A large portion (58%) consisted of C&D waste.
- It is estimated that 80% of the self-hauled waste could be diverted through Recovery Park, expanded composting programs and improved capture rates by existing recycling programs.

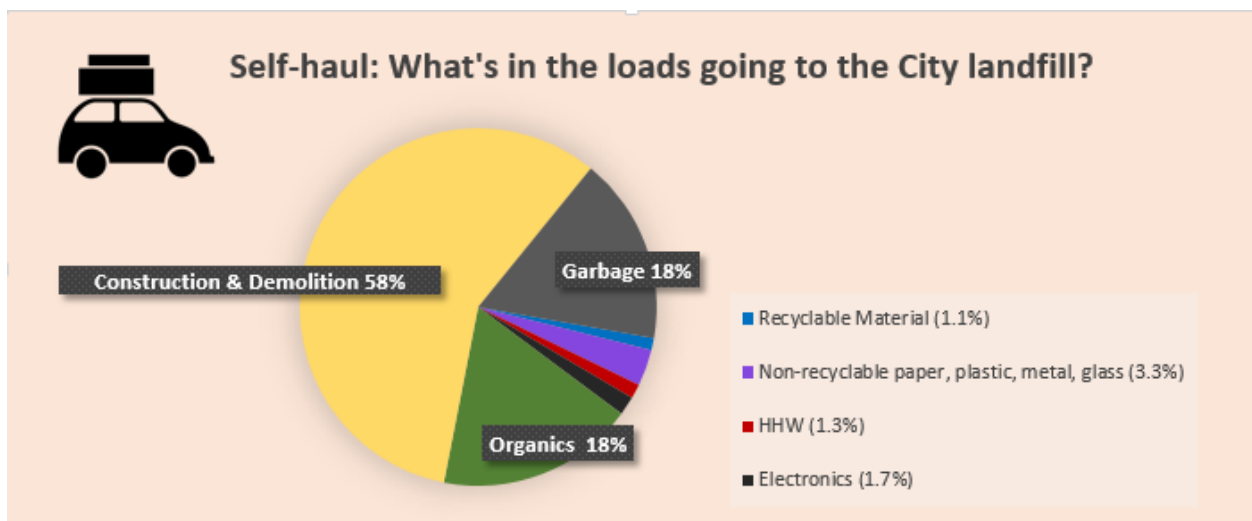


Table 1: Estimated Composition of Municipal Solid Waste Disposal Streams

	Single-family Residential	Multi-family Residential	IC&I	Self-haul	C&D
WASTE STREAM	%				
Recyclable:					
Paper	1.9	3.1	4.8	0.2	0.3
Paper Packaging	2.7	5.7	12.7	0.6	1.4
Plastics	3.2	5.1	3.3	0.2	0.1
Metals	1.3	1.4	1.0	0.1	0.0
Glass	0.9	1.5	0.2	0.0	0.0
Non-Recyclable:					
Paper	3.5	5.4	12.6	0.0	0.0
Plastics	3.1	6.1	12.2	0.8	1.2
Metals	1.0	0.9	0.8	1.9	0.0
Glass	0.5	0.2	0.2	0.6	0.9
Organics:					
Food Waste	26.9	35.4	26.8	0.3	0.3
Yard Waste	30.7	4.8	0.5	17.6	0.4
Toxic Materials:					
Waste Electronics	0.7	1.4	0.6	1.7	0.2
Household Hazardous Waste	0.8	0.6	0.2	1.3	0.1
Other:					
Construction & Demolition	7.2	1.6	6.0	57.8	91.3
Garbage (Other Materials)	15.5	26.8	18.0	16.8	4.0
Total (%)	100	100	100	100	100

Saskatoon's Solid Waste Disposal

Table 2: City of Saskatoon Landfill Solid Waste

	2014	2015	2016
	tonnes/year		
Single Family	52,800	51,500	51,500
Multi Residential	9,500	8,800	9,100
Industrial, Commercial and Institutional (IC&I)	45,800	34,700	23,900
City Landfill Self-Haul	18,100	17,400	15,900
Total Waste	126,200	112,400	100,400
Clean Fill	43,400	44,700	54,700
Total Waste & Clean Fill	169,600	157,100	155,100

*C&D waste tonnages are included in the above table

The rate of garbage disposal per person has been declining over time. The total tonnes of residential garbage collections has also generally shown a trend of decline, with some fluctuation over the past four years.

Other communities and comparison to national averages

Saskatoon's disposal rate was compared to the national and provincial averages as shown in the table below.

Region	Year	Total Waste Disposed (tonnes)	Total Waste Rate (kg/capita)	Residential Component (tonnes)	Residential Rate (kg/capita)
Saskatoon	2012	117,660	486	64,363	265
Saskatoon	2015	112,418	436	62,502	242
Saskatchewan	2012	957,669	881	315,987	290
Canada	2012	25,013,204	720	9,586,511	276

Source: Statistics Canada

Saskatoon's Residential Waste Disposal Rate was also compared to other cities in Canada using data from the National Solid Waste Benchmarking Initiative. The tonnes of residential garbage collected per household was higher than the median for reporting municipalities.

2016 Waste Characterization Study

The City's waste diversion rate is below the national average. In 2012 (Statistics Canada), Canadians diverted 240 tonnes of waste per capita resulting in an overall diversion rate of 25.2%.

Saskatoon's 2015 diversion rate was benchmarked against other Canadian cities, as shown in the table below. Saskatoon's diversion rate is second lowest amongst comparable cities.

City	Diversion Rate
Surrey	68%**
Halifax	61%***
Toronto	53%*
Edmonton	51%**
Ottawa	45%*
Winnipeg	34%*
Calgary	28%*
Saskatoon	21%
Regina	19%***

* Source: 2014 Partnering for Service Excellence Performance Measures Report, Ontario Municipal CA's Benchmarking Initiative

** Source: 2015 rate from webpage of the City

*** Source: 2014 rate as previously reported in the 2014 IWM annual report (the 2015 diversion rate not yet available)

DEFINITIONS

Construction and Demolition waste: primarily made up of wood (untreated/treated), gypsum wallboard, asphalt roofing shingles, industrial use metals, asphalt, concrete, bricks, and ceramics.

Recyclable Material: those materials currently accepted in the City of Saskatoon residential recycling programs.

Garbage (Other Material): includes diapers and sanitary products, pet waste, textiles, rubber items, bulky wastes, and other waste that is difficult to classify.

Organics: food and yard waste

Food Waste: Edible food waste consists primarily of the following categories; bakery, meat and fish, dried food, fruit and vegetables, and dairy. Inedible food includes items such as peelings, bones, and oil.

Yard Waste: includes grass (thatch and sod), leaves, other yard and garden debris, brush, and branches.