



INTEGRATED
WASTE
MANAGEMENT
Annual Report
2016



Corporate Performance
Environmental & Corporate Initiatives

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INTRODUCTION

What is Integrated Waste Management?

Integrated Waste Management (IWM) is a strategic approach to managing waste by combining waste handling and waste reduction strategies that include reducing, reusing, recycling, composting, and disposal. An effective IWM system considers how to prevent, recycle, and manage waste in ways that protect both human and environmental health while staying affordable, convenient and maximizing resource use efficiency.

City's Integrated Waste Management Services

Integrated Waste Management falls within both the Environmental Health and Utilities Business Lines. Service Lines are jointly managed by Waste and Water Stream Division and Environmental & Corporate Initiatives Division through the Waste Handling Service Line, the Waste Reduction & Resource Recovery Service Line, and Waste Services Utility.

In 2016, the core services that comprised the City of Saskatoon's Integrated Waste Management approach included:

Waste Diversion Services

- Recycling collections for single-family residential households (Curbside Collection)
- Recycling collections for multi-unit residential households
- Recycling depots for residential use
- Public space recycling
- Recycling in civic facilities
- Recycling opportunities at the regional landfill
- Yard & food waste collections (Optional subscription based service) for single-family residential households
- Compost depots
- Household hazardous waste drop-off days
- Christmas tree drop-off sites

Waste Disposal Services

- Saskatoon Regional Waste Management Facility (Landfill)
- Garbage collections for single-family residential households (Curbside Collection)
- Garbage collections for many multi-unit residential households and commercial customers (other buildings and businesses contract to private haulers)

Education and Communications

- Webpage and online engagement
- Annual collection calendar
- Recycling Communications Campaigns
- Rolling Education Unit and the Let's Roll Recycling Team
- Newcomer Workshops
- Home Composting Education
- Saskatoon Curbside Swap
- School Education Program at Loraas Recycle
- Cart Blitzes
- Waste bylaw enforcement

Waste Diversion Target

The City of Saskatoon (the City) has adopted a 10-year target to divert 70% of waste from the Saskatoon landfill by 2023 with a longer term vision of achieving Zero Waste. This ambitious target shows a commitment by the City to establish new options for waste reduction, recycling, reusing, and composting as well as continuously improving our existing programs.

The target is linked to the City's Strategic Plan 2013-2023. Priorities under Environmental Leadership include:

- Eliminate the need for a new landfill by eliminating waste and/or diverting waste for re-use in other projects.
- Promote and facilitate city-wide composting and recycling to reduce the rate and volume of waste sent to the landfill.

National Zero Waste Council

The National Zero Waste Council (NZWC) is a cross-sector leadership group that brings together governments, businesses, and non-government organizations to advance waste prevention in Canada. The aim for the NZWC is to substantially reduce waste and the associated environmental and economic costs of waste management through product design and behaviour change. The City of Saskatoon became a member of NZWC on April 22, 2016, after its application was approved by the NZWC Management Board.

Delivering Integrated Waste Management Services

Waste Handling is provided by the Water and Waste Stream Division with the goal to provide efficient, effective, customer-oriented waste management services. Waste Handling includes:

- Garbage containers and garbage collection services for single-family, multi-family and commercial customers
- Management of the Saskatoon Regional Waste Management Facility (Landfill)
- Operation of compost and recycling depots
- Provision of carts, collections and customer service for Green Cart subscriptions
- Collection of recyclable materials from recycling depots and civic facilities to Cosmopolitan Industries
- Communications related specifically to waste management operations
- Enforcement of the Waste Bylaw

Compactor in operation at the Regional Landfill



The Water and Waste Stream Division has the following resources dedicated solely to waste management: Under the Environmental Operations Manager, there is an Operations Superintendent for Collections & Containers with 43 staff in the summer and 28 in the winter and an Operations Superintendent for Landfill with 28 staff in the summer and 21 in the winter; Under the Senior Project Management Engineer, there is an Operations Engineer, a Depots Supervisor, a Project Engineer for Landfill Gas, and two Environmental Protection Officers.

Waste Reduction and Resource Recovery efforts are led by Environmental & Corporate Initiatives and focus on reducing, reusing, recycling, recapturing resources, and seeking operational efficiencies. Initiatives under this program include:

- Managing recycling contracts with Loraas Recycle for single-family residential and Cosmopolitan Industries Ltd. for multi-unit residential
- Waste diversion programs and initiatives including Curbside Swap, public space recycling, and household hazardous waste drop-off
- Capital projects related to waste diversion, such as Recovery Park
- Energy efficiency initiatives, such as the Efficient Waste System project and natural gas vehicles
- Development and amendments of plans, policies, and regulations in order to meet waste reduction targets
- Monitoring and reporting on waste diversion/reduction, energy use, and greenhouse gas emissions
- Increasing awareness, generating excitement, and educating residents on how and why to reduce and recycle waste

The Environmental & Corporate Initiatives Division has the following resources: a Director, an Education & Environmental Performance Manager with six staff, an Environmental Protection Manager with three staff and one intern student in 2016, and an Energy & Sustainability Manager with three staff and one intern student in 2016. In addition to Waste Reduction & Resource Recovery, the Environmental & Corporate Initiatives Division has responsibilities within the following Service Lines: Environmental Programs, the Waste Services Utility, Water, Wastewater, Storm Water, Facilities Management, River Landing, and Corporate Projects.

The work of both Divisions is directly supported by Business Administration and Communication staff.

Waste Characterization Study

In 2016, the City of Saskatoon completed a Waste Characterization Study. The study sampled and audited waste from single family households, multi-family households, the industrial, commercial and institutional (ICI) sector, construction and demolition (C&D) and self-hauled loads to landfills. It compared the solid waste composition with a similar study completed in 2014 to monitor performance of existing waste diversion programs and identify opportunities for additional programs.

The study focussed only on City programs and, therefore, provides a representative picture of waste behaviours in the community rather than a comprehensive audit of waste generation and handling.

The 2016 Waste Characterization Study was a year-long process that produced a precise estimate of our 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 ICI sector, self-haul loads to the landfill, and Construction and Demolition waste.

An estimate of the total solid waste in Saskatoon (including private waste disposal and recycling) indicated that 66% was being generated by businesses and organizations in the ICI sector and 34% is from residential sources (including self-haul loads).

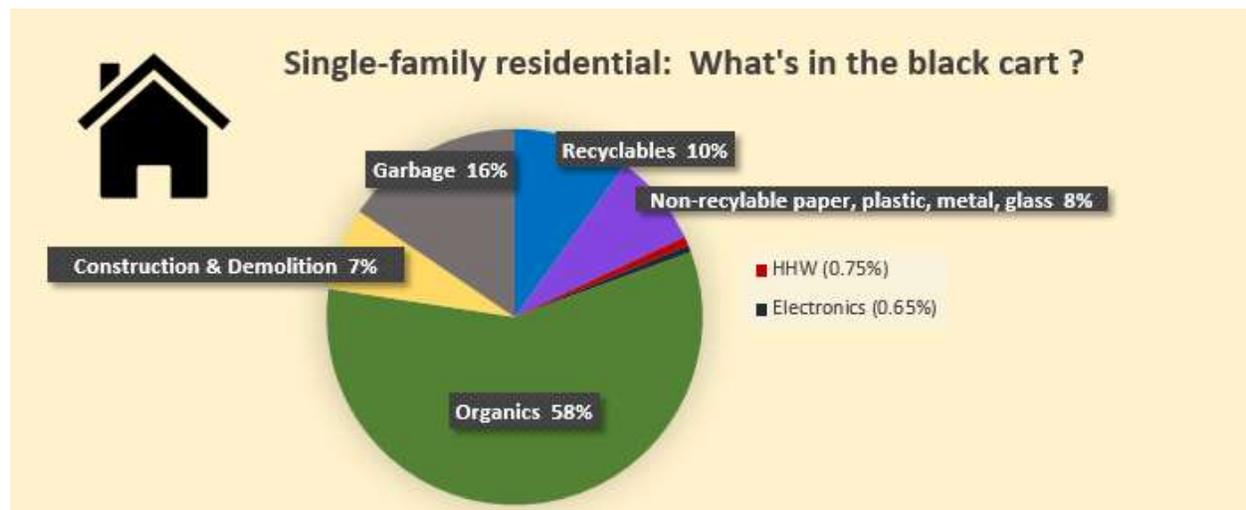
Single-family Residential Households

The results of the characterization showed that of the 51,900 tonnes of waste generated by single family homes in 2016, up to 77% of it could be diverted if programs for composting are expanded and recycling program capture rates are expanded and improved.

Of this, approximately 10% of the material was recyclable (i.e. could have been recycled through the blue cart program). In comparison, the 2014 study found that 13% of the material could have been recycled.

58% of material found in the black cart consisted of compostable organic waste, 27% of which was food waste, the remaining 31% was yard waste; this varied seasonably. A large portion of the food waste is considered avoidable (i.e., edible at one point), suggesting there are opportunities for both food waste prevention as well as waste diversion.

Figure 1. Single-family Residential Household Waste Composition in 2016



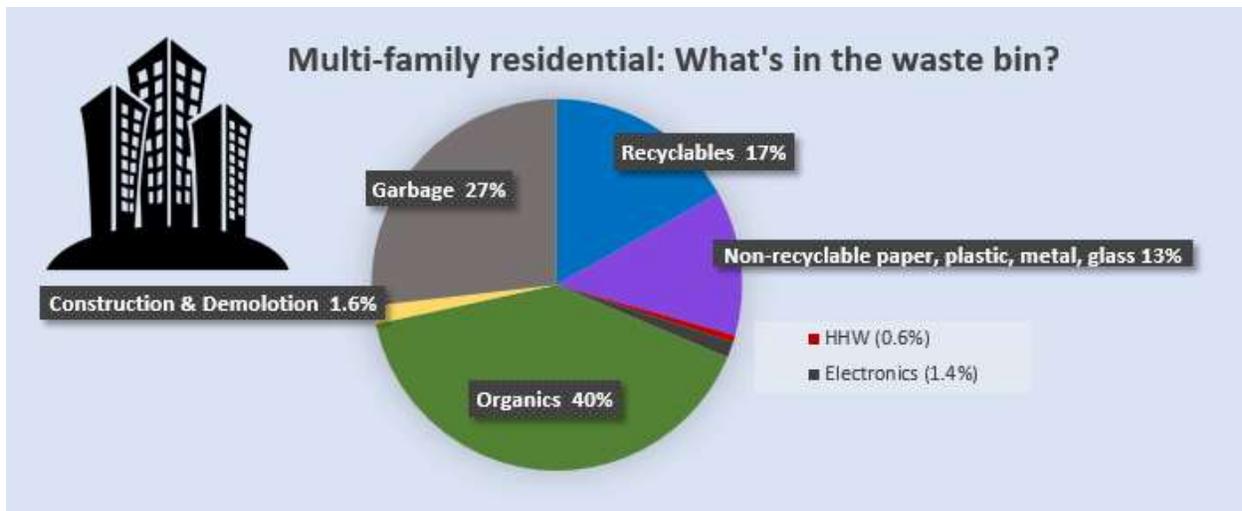
Multi-unit Residential Households

The 2016 results for the multi-unit waste composition audits showed that 9,100 tonnes of waste were generated from multi-unit buildings and up to 17% of the materials could have been recycled through the existing Multi-unit Residential Recycling program. The

2014 study found that 23% of the material could have been recycled, suggesting current education and awareness efforts are having a positive impact.

It is estimated that 61% of total waste could be diverted if programs for composting are expanded and recycling program capture rates are expanded and improved. 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).

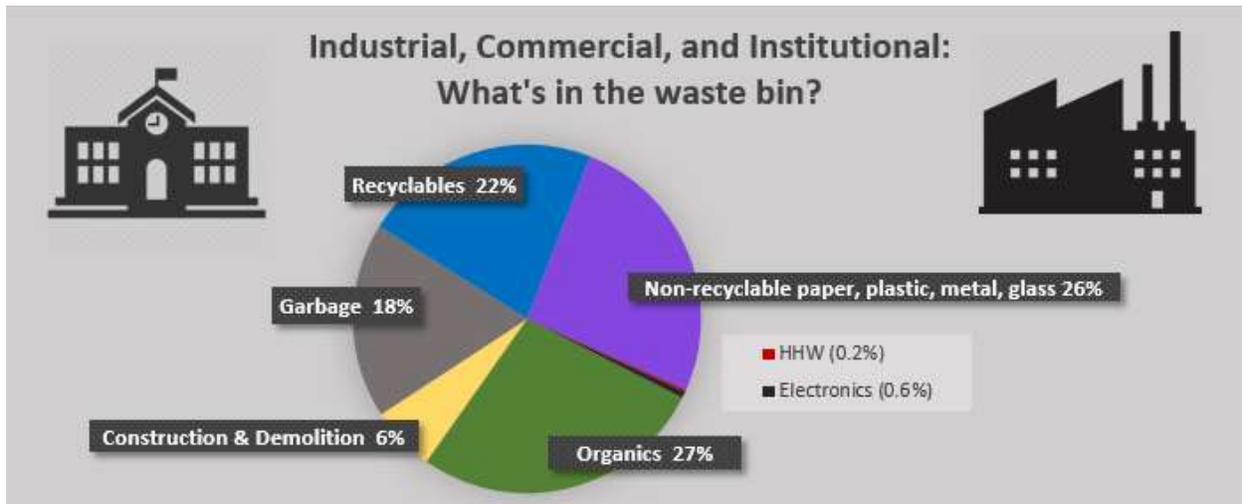
Figure 2. Multi-unit Residential Household Waste Composition in 2016



Business – Industrial, Commercial, and Institutional (ICI)

The 2016 Waste Characterization Study also sampled waste from the Industrial, Commercial and Institutional sector as it entered the Saskatoon Landfill. The results showed a high proportion of materials that could be diverted through recycling or composting programs. 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%).

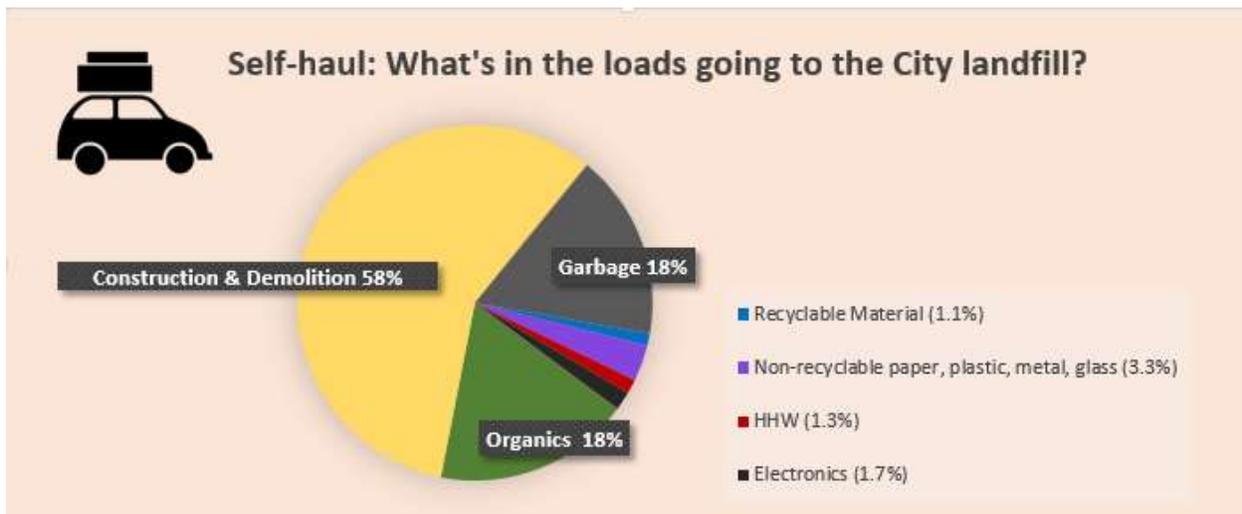
Figure 3. Industrial, Commercial, and Institutional Waste Composition in 2016



Self-haul loads

Additional effort to understand the composition of Self-haul waste from residents and businesses was undertaken by completing visual waste audits of loads received at a private landfill in the Saskatoon region. 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 construction & demolition waste.

Figure 4. Self-haul loads Waste Composition in 2016



Construction and Demolition

To understand the composition of Construction & Demolition waste hauled by businesses, visual waste audits of construction loads received at a private landfill in the Saskatoon region were also completed. These audits will help in the planning phase for Recovery Park.

91% of the waste in sampled loads consisted of construction and demolition materials such as untreated wood, asphalt roofing shingles, asphalt, concrete and bricks, and metals. These materials could be diverted once Recovery Park is operational.

Planning New Initiatives for Waste Diversion

To achieve the Performance Target of 70% waste diversion from the Saskatoon landfill with a long term vision of achieving zero waste, new initiatives are underway in 2017. The purpose of the initiatives listed below is to improve the current waste diversion rate and continue to reduce the amount of waste landfilled.

Waste Diversion Plan

A Waste Diversion Plan was started in 2016 based on the results of the Waste Characterization Study in 2016. The plan will propose a set of actions including policy options, program options, education and awareness. The Plan will look for program feasibility based on existing conditions (current waste diversion programs), forecasted future waste quantities, research on best practices for waste diversion in other municipalities and will include a needs assessment. The next step will identify costs and implementation strategies for the identified programs. Community engagement will be an important component of the Waste Diversion Plan.

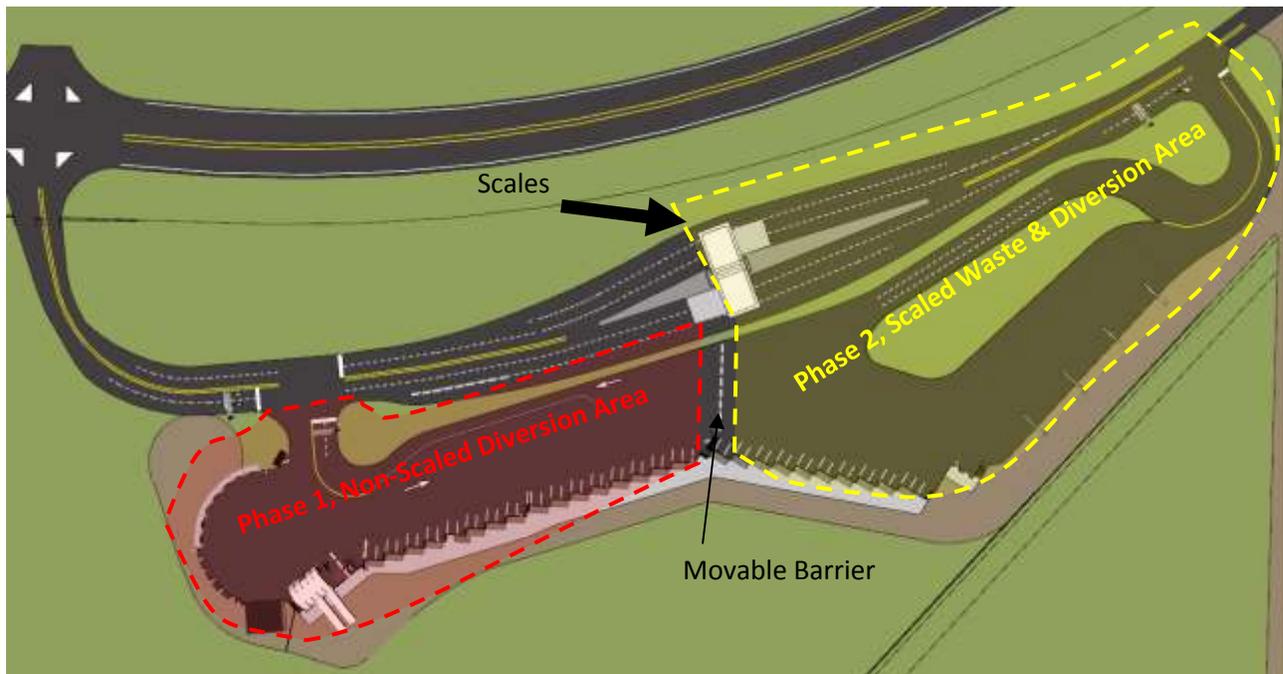
Planning for Expanded Recycling at the Saskatoon Landfill

Planning for expanded recycling, improved material recovery and improved waste management customer service ('Recovery Park') continues, with design and procurement for construction of Phase I and II now underway. The new facility will be located immediately adjacent to the Landfill, and will incorporate existing and new waste management and diversion opportunities for businesses and residents. Including:

- Waste transfer station – The new facility becomes the new customer service area for landfilled garbage. Only City garbage trucks and commercial account holders will continue to access the active face of the landfill.
- HHW Days – The facility will accommodate a permanent Household Hazardous Waste (HHW) drop-off which provides a significant service level increase over the existing eight HHW events each year.
- West Compost Depot drop-off – The Depot at Highway 7 and 11th Street West will continue to operate as a yard waste processing facility, and the new facility may become the drop-off centre like the East Side Compost Transfer site. Eventually organics processing may be located at the new facility.
- Provincial Product Stewardship programs – The Province supports the recycling of electronics (e-waste), used oil and antifreeze, batteries, tires, and paint. These materials can be collected at the new facility.
- Construction & Demolition (C&D) waste – Residents and businesses who separate their C&D materials by type will be able to dispose of these materials for recycling at a lower disposal fee than regular landfill rates.

- Mattress and box spring recycling – It is estimated the landfill receives over 17,000 mattresses and box springs each year, which consume airspace and cause problems for landfill equipment. A location for collecting mattresses and box springs will be created to enable recycling off-site.
- Future material recycling – There is room for growth in the number of materials collected for recycling at the new facility. For example, a waste processor has expressed there is interest in collecting Styrofoam for processing. The Administration is exploring this opportunity and will report separately in the coming months.

Figure 5. Conceptual Layout of the new facility



Disposal ban on Paper and Cardboard

The City is exploring options for mandatory recycling of paper and cardboard by the Industrial, Commercial and Institutional (ICI) sector. According to the 2016 Waste Characterization Study, 22% of recyclable paper and paper packaging found in ICI waste stream could have been diverted.

Multi-Material Recycling Program

The Multi-Material Recycling Program (MMRP) is the waste paper and packaging stewardship program administered by Multi-Material Stewardship Western (MMSW). The program was launched on January 1, 2016 in response to provincial regulations. Municipalities and regional waste authorities are now compensated for some portion of the cost of collection and processing of recyclables (\$11.75/unit). In 2016, the funds received by the City were used toward the Multi-Unit Residential Recycling Program, Recycling Depot operations and the Green Cart program.

WASTE DIVERSION SERVICES

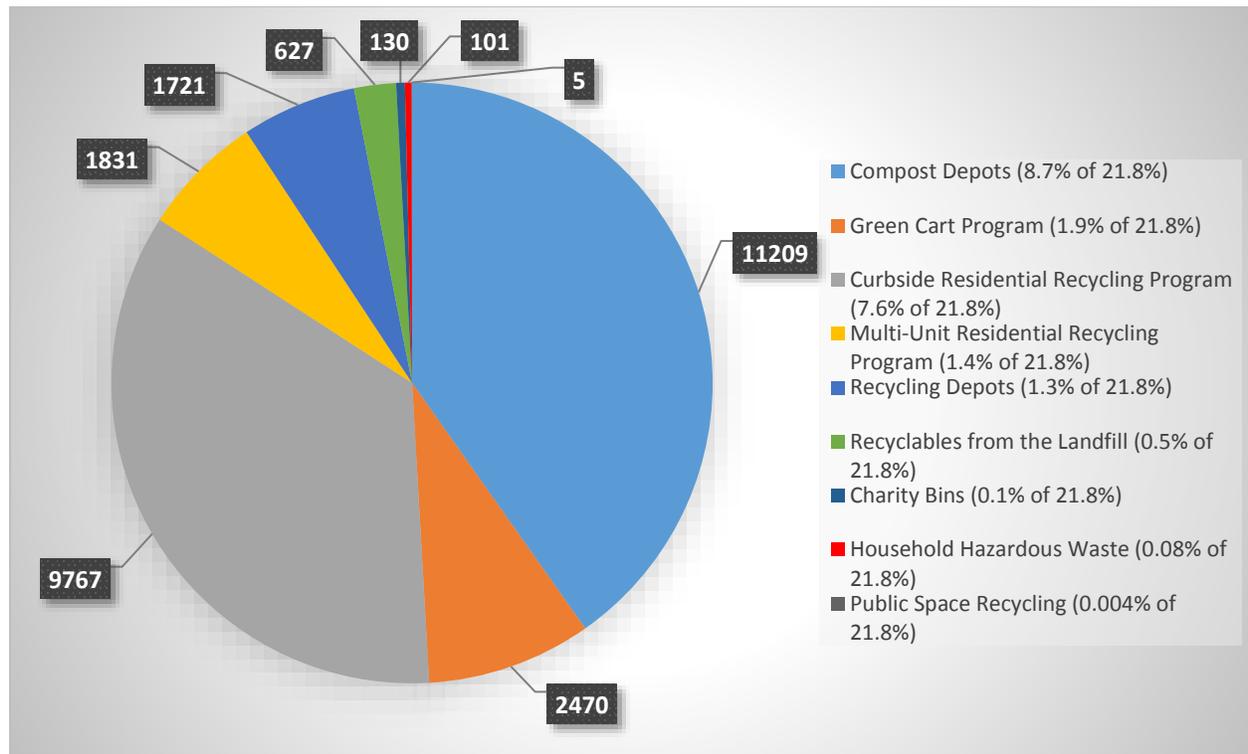
Compost Windrow Turner at West Compost Depot



Waste Diversion in Saskatoon

A variety of programs and initiatives including recycling, composting, hazardous waste collection, and reuse of gently-used items help to divert waste from the Saskatoon landfill. Outreach and education supports these programs and raises awareness about the importance of waste reduction and diversion. Education programs include the Saskatoon Curbside Swap, home composting education, the rolling education unit, and school-based recycling education. The figure below shows the tonnes of recyclable material diverted from each initiative (total of 27,864 tonnes) and how each initiative contributed to the diversion rate of 21.8% in 2016.

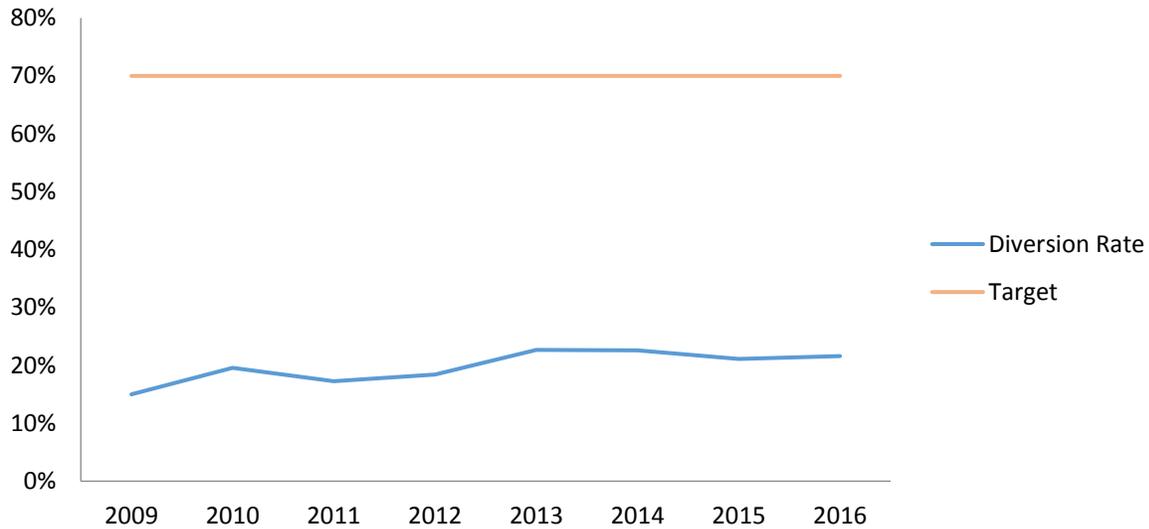
Figure 6. Tonnes of Diverted Materials



Saskatoon's Waste Diversion Rate

The City's Waste Diversion Rate for 2016 was 21.8%, slightly up from 21.0% in 2015. For this reason the progress towards the target of 70% has been identified as needing improvement.

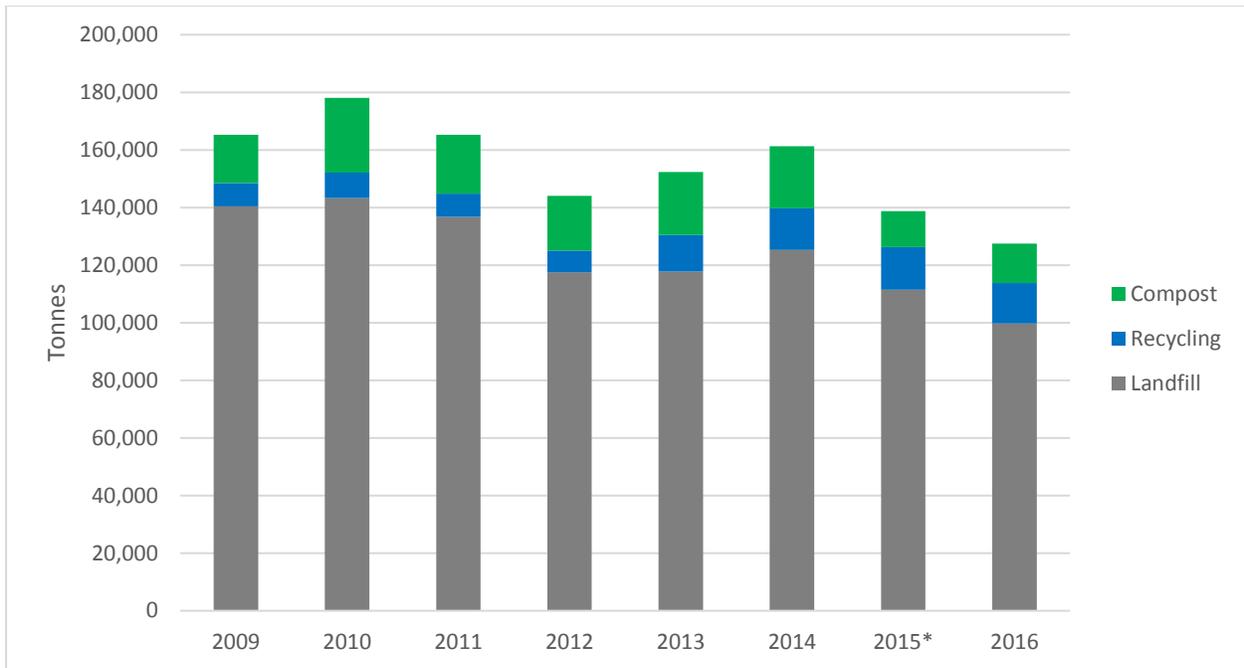
Figure 7. Saskatoon's Waste Diversion Rate 2009-2016



The City calculates the Waste Diversion Rate based on City-run diversion and disposal programs. It does not include reduction, reuse, recycling or disposal through non-City programs, such as beverage containers, e-waste or nearby landfills.

The total amount of waste managed by the City in 2016 was lower than 2015. The annual quantities of recyclables, organics (Yard & Food) and garbage are shown in the figure below. Clean fill is not counted towards diversion as it is used in construction or as cover for the landfill. The decline in the amount of waste managed does not necessarily indicate that Saskatoon residents and businesses are reducing their overall waste as it could be due to increased use of other landfills.

Figure 8. Waste Quantities (Tonnes) Managed by the City (2009-2016)



*2015 Compost data was misreported in the 2015 Integrated Waste Management Report. The actual tonnage was 12,500.

The City’s waste diversion rate is below the national average. In 2014 (Statistics Canada), Canadians diverted 255 kilograms of material per capita resulting in an overall diversion rate of 36.1%. 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.

Table 1. Diversion Rate across Canada

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)

Recycling

The City's residential recycling services are operated by Loraas Recycle and Cosmopolitan Industries who are responsible for collection and processing of recyclables generated by residents.

Recycling Collections for Single-family Residential Households (Curbside Collection)

Loraas Recycle has been providing curbside recycling service to single family households in Saskatoon since 2013. There were 68,591 active carts at the end of 2016, each household (including secondary suites) in Saskatoon is provided with a blue cart that is collected from their curb every second week based on a published collection schedule. Households can now request a second cart for additional recyclables for a fee.

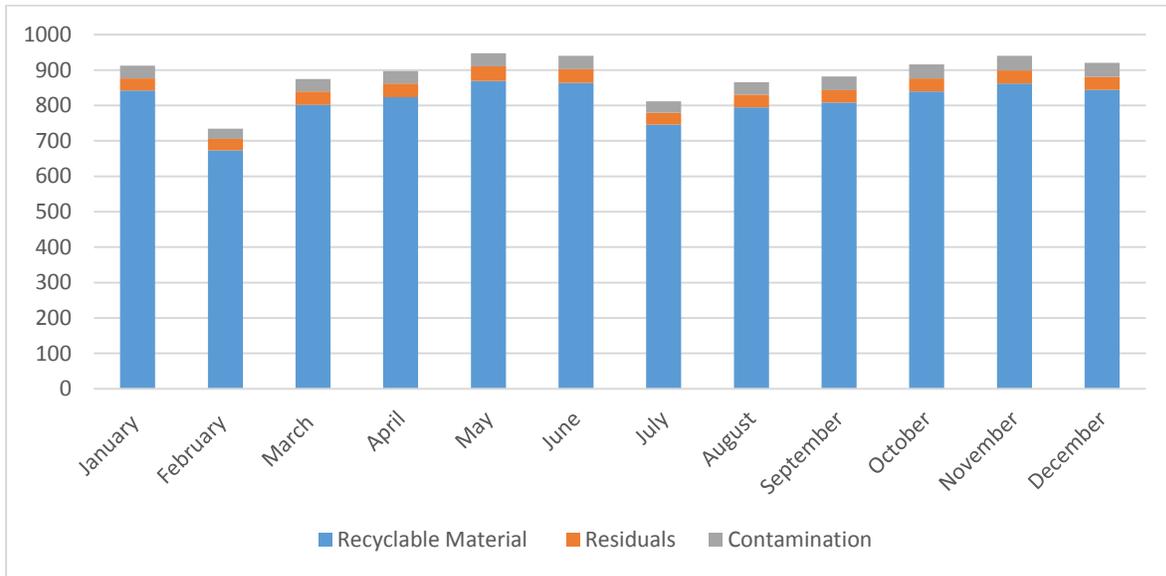
Residential Recycling Curbside Collection.



- A total of 10,641 tonnes of materials were collected in 2016. Of this, 9,767 tonnes were marketed to be recycled into new products, 4% of this was contamination (materials placed in the cart that are not recyclable) and 4% of this was residual (materials that are technically recyclable but could not be recovered usually because of their small size).

- The Single-family residential recycling program contributed 7.6% toward the City’s waste diversion rate of 21.8%. This is down from 2015 when 10,457 tonnes were recycled.

Figure 9. Tonnes of Materials Collected through the Single-family Residential Recycling Program in 2016



Set out rate

The average set-out rate for the program averaged 70.3%, which provides a snapshot of what occurs on each collection day. This does not indicate how many people use their blue carts since many do not necessarily put them out each collection.

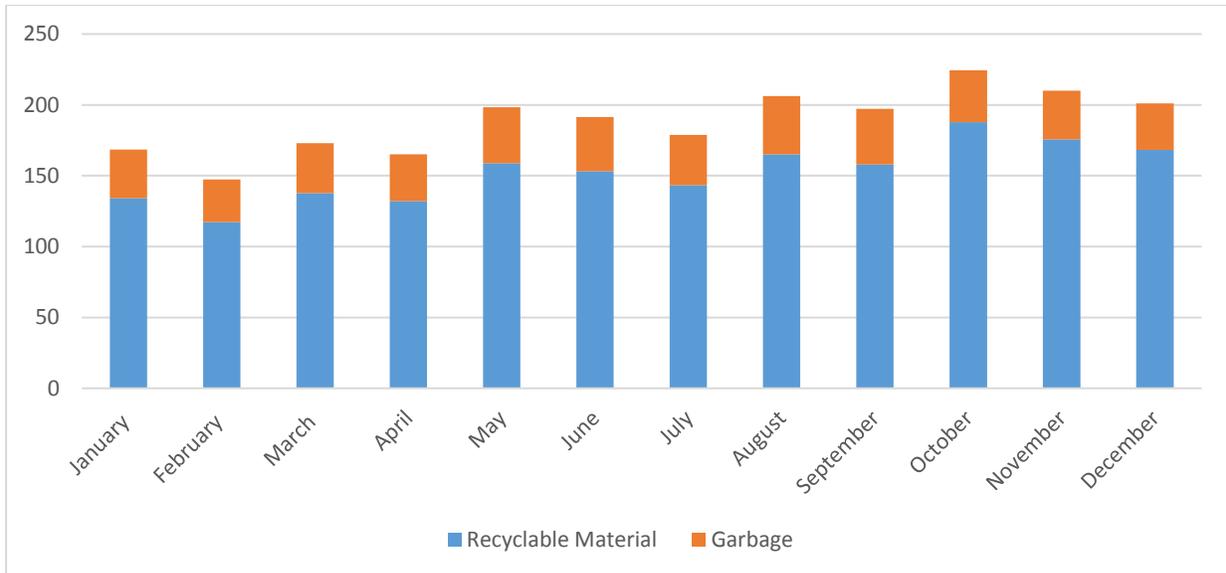
Carts not being collected due to incorrect placement or overfilling continue to occur. In 2016, there were an average of 805 non-compliant carts per month. To put that into context, there were a total of 1,257,708 blue carts tipped in 2016, so approximately 1% were non-compliant. Other ongoing concerns are carts left out in back lanes for more than 24 hours and scavenging of high value materials (beverage containers and milk jugs). Back lane issues are addressed through communications such as the waste and recycling calendar and through warnings and tickets issued by the City’s Environmental Protection Officers (EPOs).

Multi-unit Residential Recycling Collection

The Multi Unit Residential Recycling (MURR) program was launched on October 6, 2014 and was fully operational in 2015. Service is provided by Cosmopolitan Industries. In 2016:

- 1,831 tonnes of recyclable materials were collected and marketed to be recycled into new products, contributing 1.4% toward the City’s waste diversion rate of 21.8%.
- 2,261 tonnes of material were collected; on average, 23% of this was contamination (materials placed in the bins that are not recyclable) or residual (materials that are technically recyclable but could not be recovered usually because of their small size).

Figure 10 Tonnes of Material Collected through the Multi-unit Residential Recycling Program in 2016



Recycling Program Customer Service

Resident inquiries regarding the curbside residential recycling program continues to be low at an average of 241 inquiries per month, which is down from an average of 323 inquiries per month in 2015.

Inquiries for the MURR program have started to decrease. In 2016, Cosmo received and responded to 700 customer service calls and emails, which were on average 58 inquiries per month as compared to approximately 80 calls per month in 2015.

Recycling Depots

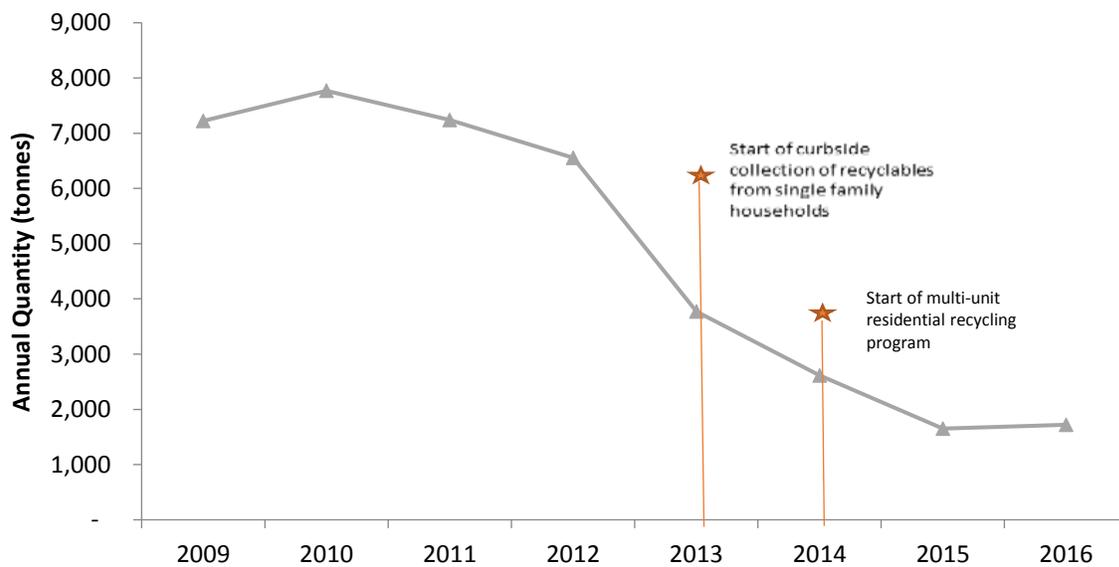
In 2016, 1,721 tonnes of material were collected at the depots contributing 1.3% to the City’s diversion rate of 21.8%, a monthly average of 143 tonnes. The use of the depots has decreased since the City introduced residential recycling programs.

The four City-run depots accept the same materials accepted in the MURR and curbside programs in a single stream with no sorting, as does all recycling at Civic facilities. The bins at the depots remain the property of Cosmopolitan Industries and all

materials are collected by the City and processed at Cosmo's Material Recovery Facility.

City staff use a fork truck to collect recyclables from the depots (stored in metal bins) and rear loader trucks and crews to collect illegally dumped waste. Illegal dumping is often a problem since the depots are unstaffed and as such, City staff spend considerable time cleaning up the sites. Collected recyclables are hauled to Cosmo for processing who receive the revenue for the marketed recyclables. The City is under contract with Cosmo until 2023 (rolled into the MURR collection and processing contract).

Figure 11: Recycling Depot Quantities (2009-2016)



Charity Bins

In 2016, 130 tonnes of material were collected at charity bins located at the City-run recycle depots contributing 0.1% toward the City's total diversion rate of 21.8%. In 2016, the charities were Canadian Diabetes, Community Living, and Salvation Army.

Public Space Recycling

5 tonnes of recyclables were collected through the City's Public Space Recycling programs in 2016. Collection bins installed in pedestrian-oriented commercial areas offer separation of paper and beverage containers (bottles and cans) from the regular garbage.

In 2016, the City's pedestrian-oriented public space recycling initiative had 39 full-service receptacles called MetroBins. These containers are located in the Downtown, Broadway, 8th Street, and Sutherland Business Improvement Districts and are serviced under contract by Creative Outdoor Advertising. Recycling is dropped off at Cosmo

Industries and garbage is brought to the Saskatoon Landfill. These bins will be phased out in 2017.

Various locations (including nine civic parks) throughout the city have also been using bottle baskets to divert beverage containers. Bottle baskets are an informal, “self-serviced” recycling method that are attached to existing garbage containers. Six (6) existing garbage containers were converted to beverage recycling with corporate sponsorship from SARCAN.

Paper (blue) and Bottle (purple) recycling baskets attached to garbage container



In 2016, the City introduced a pilot program for paper recycling in downtown, business improvement districts (BIDs) and at other locations across Saskatoon. Eight (8) paper recycling containers were piloted in the summer of 2016 and serviced by The Partnership’s street ambassadors program.

Forty-nine paper recycling containers will be installed in Broadway, Downtown, Riversdale, and Sutherland in 2017 and around 20 additional bottle and can recycling / paper recycling containers will be installed in 2017 at special use parks, and sporting facilities.

Recycling in Civic Facilities



Recycling has been established in most civic facilities, with single-stream collection in place at 21 facilities in 2016. Recyclable materials from civic facilities are collected with material from the depots, so the exact tonnages are not available. However, a dedicated run of civic materials was done in June 2016 in order to estimate program success. 780 kilograms of recyclables were reported in January 2016 through Civic Facilities which will be used to benchmark program growth.

Organics Programs

The City of Saskatoon's organic programs include Green Carts for Yard and Food Waste, the Compost Depots, and the Christmas Tree Drop-Off.

Green Carts for Yard and Food Waste

Green Carts for yard and food waste is an optional fee for service program for residential yard and food waste, available for households with curbside cart collection. The City owns and maintains the green roll-out carts provided to program subscribers. In 2016, the number of subscribers to the Green Cart program reached an all-time high of 6,300 which equates to 9% of eligible households. In addition, approximately 20 community gardens subscribe to the program. The subscription rate is \$55 per season and collections are provided on a bi-weekly basis from the first week of May to the first week of November. In total, 14 collections are provided which equates to an approximate cost to the resident of \$4.79 per collection. The total amount of material diverted through the Green Cart program in 2016 was 2,470 tonnes, contributing 1.9% toward the City's waste diversion rate of 21.8%.

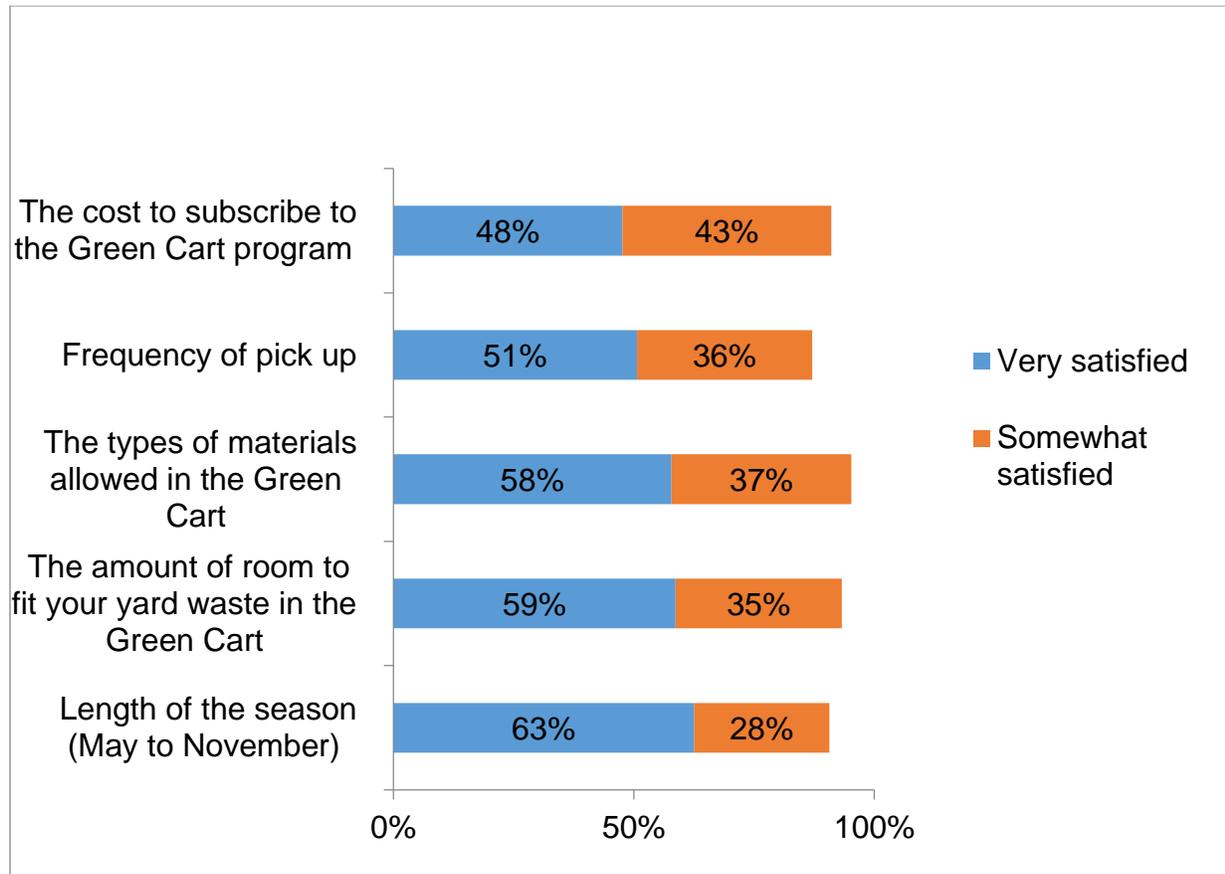


In 2016, food waste was added as an acceptable material. All collected materials are taken to the west side (Highway 7) compost depot for processing. The program is not available for multi-unit residential complexes or commercial customers.

In 2015, the City contracted Inshtrix Research Inc. to conduct a quantitative study to understand attitudes, usage, and satisfaction with the City's Green Cart program among subscribers. A total of 958 subscribers participated in the survey between June and July.

Satisfaction with the Green Cart program among current subscribers is high. A large majority are pleased with the season length, cart size, types of materials allowed in the cart, frequency of service and cost.

Figure 12. Satisfaction with Green Cart Program Attributes



Compost Depots

In 2016, the City operated two compost locations for drop off of leaves, grass, non-elm tree and shrub branches, as well as garden waste that would otherwise end up in the landfill. The composting sites, located on Highway 7 (West depot) and on Highway 5 (East transfer station) are available to residents at no charge and to commercial haulers by permit (\$200 for the season). In 2016, 11,200 tonnes of material were diverted through the compost sites, contributing 8.7% toward the City’s diversion rate of 21.8%.

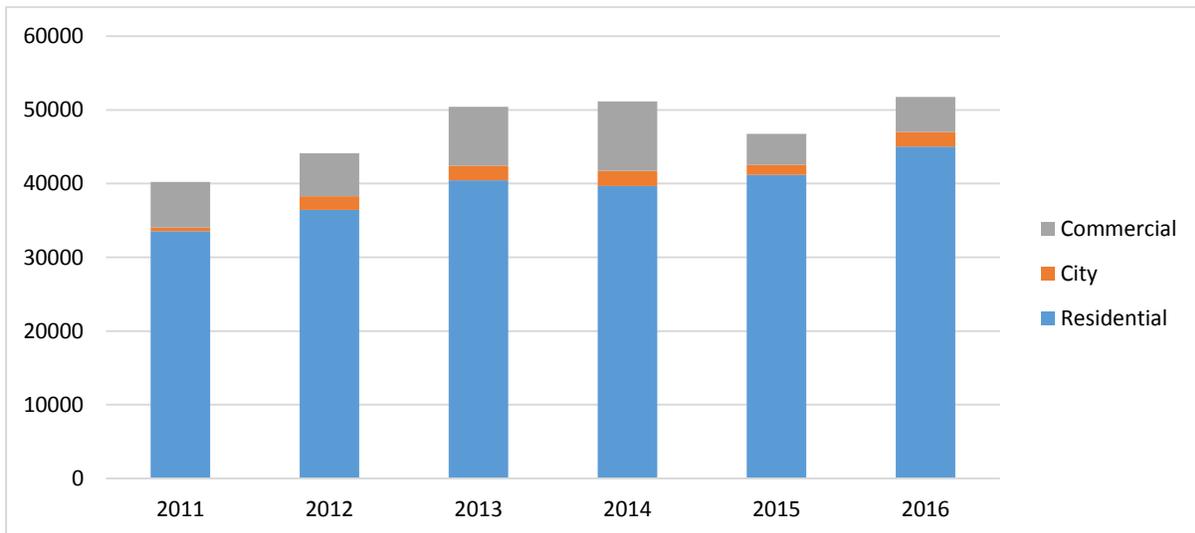
The Highway 5 compost site serves as a transfer station and all materials are processed at the Highway 7 depot. At the end of the 2014 season the depot on McOrmond Drive closed permanently for development of Brighton neighbourhood in the area.

The two depots operate every season from mid-April to early November. In 2016, the West Depot was open 7 days a week and the East Depot was open 5 days a week (Thursday to Monday). Both depots were open on statutory holidays.



In 2016, more than 51,800 vehicle visits were made to the compost depots. Out of 51,800 vehicle visits, around 87% (45,000) were residential vehicle visits, 9% (4,700) were commercial vehicle visits, and 4% (2,100) were City vehicle visits. The graph below shows the number of visits made to the compost depots by the residential and commercial sectors as well as City operations for the past 6 years.

Figure 13. Compost Depot Vehicle Visits



For a nominal annual fee, businesses can also access the two depots. In 2016, around 187 commercial permits were issued to 85 companies at the cost of \$200 which provided unlimited access to the composting sites for the season. Commercial haulers brought in approximately 27% of the materials delivered to the depots.

Christmas Tree Drop-Off

Every winter season temporary drop-off sites are set-up to collect natural trees from December 26 to January 31. Trees dropped off at these locations are chipped and either taken to the City compost depot or used as mulch. On average, 5000 to 6000 trees are dropped off every year. In 2016, an estimated 56 tonnes of material were collected through this program.

Household Hazardous Waste (HHW) Collection

Corrosive, flammable or poisonous materials like aerosols, cleaning products, pesticides, fertilizers and other chemical materials should not be put in the garbage, recycling, sent to the landfill or poured down the drain. The City hosts regular Household Hazardous Waste Drop-Off Days from April to November at the SaskTel Centre parking lot.

In 2016, eight Household Hazardous Waste Collection Days collected 101 tonnes of hazardous materials from 2,891 participants. The overall cost of the program continued to rise in 2016. In 2016, the budget to run the eight events was \$150,000 but the actual cost was \$235,000.

Figure 14. Participation and Cost of HHW Days

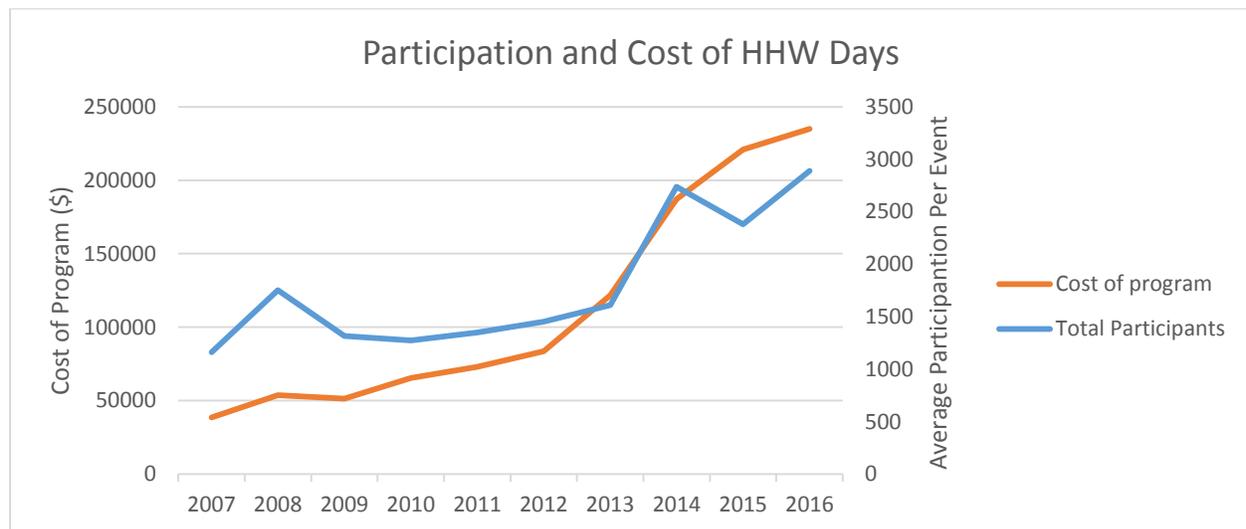
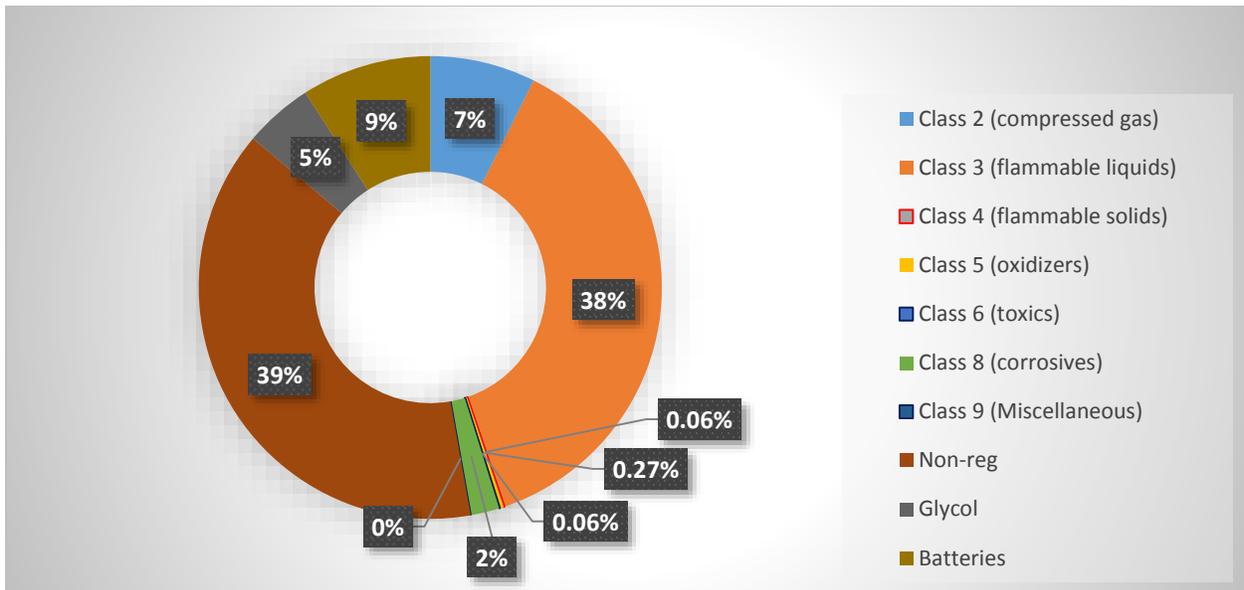


Figure 15. Hazardous Materials Collected through HHW Days in 2016



Class 2 (compressed gas): aerosols, propane tanks, inhalers, fire extinguishers

Class 3 (flammable liquids): flammable liquids, paint and paint-related materials, adhesives, printing ink

Class 4 (flammable solids): flammable solids

Class 5 (oxidizers): oxidizing solids and liquids, organic peroxide

Class 6 (toxics): toxic liquids, pesticides, pharmaceuticals

Class 8 (corrosives): corrosive liquids and solids, mercury, ammonia solution

Batteries: alkaline, lead-acid, lithium

Non-regulated: oil, oil filters, oil containers, antifreeze, fertilizers, liquid cleaners, non-PCB light ballasts, fluorescent tubes, CFL bulbs, ink cartridges, lighters, treated railway ties

Other/miscellaneous: PCB light ballasts, sharps, smoke detectors, e-waste, test samples (unknowns)

The Let's Roll Team (contracted recycling educators) assisted Envirotec (now Green For Life) with four HHW Collection Days that were held between May and August. The Let's Roll Team also researched alternative drop-off options for HHW such as battery take-back programs at local return-to-retailer locations. The Let's Roll Team visited all 28 participating Call2Recycle collection sites in the city, and offered them promotional materials about the program (posters and brochures).



Recycling opportunities at the Landfill - Eco-Centre

The Saskatchewan Association for Resource Recovery Corporation (SARRC) manages the industry-led stewardship program at the Landfill's Eco-Centre (one of 34 collection networks across Saskatchewan) for used engine oil, oil filters, oil containers and antifreeze. The City's Eco-Centre accepts these materials (up to 500 litres) at no charge to residents (costs are covered under landfill operation costs). In 2016, the total weight of materials collected at the Eco-Centre was 65 tonnes.



Environmental and GHG Implications

Waste diversion results in a net reduction in greenhouse gas emissions compared to landfilling the same waste. This means the emission reductions associated with recycling materials exceed the emissions produced in collection and processing activities.

Diversion programs including recycling and composting reduced the greenhouse gas (GHG) emissions from the landfill by 43,650 tonnes of Carbon Dioxide (CO_{2e}). This is equivalent to removing approximately 9,200 cars from Saskatoon roadways.

WASTE DISPOSAL SERVICES

Garbage disposal truck at the Landfill



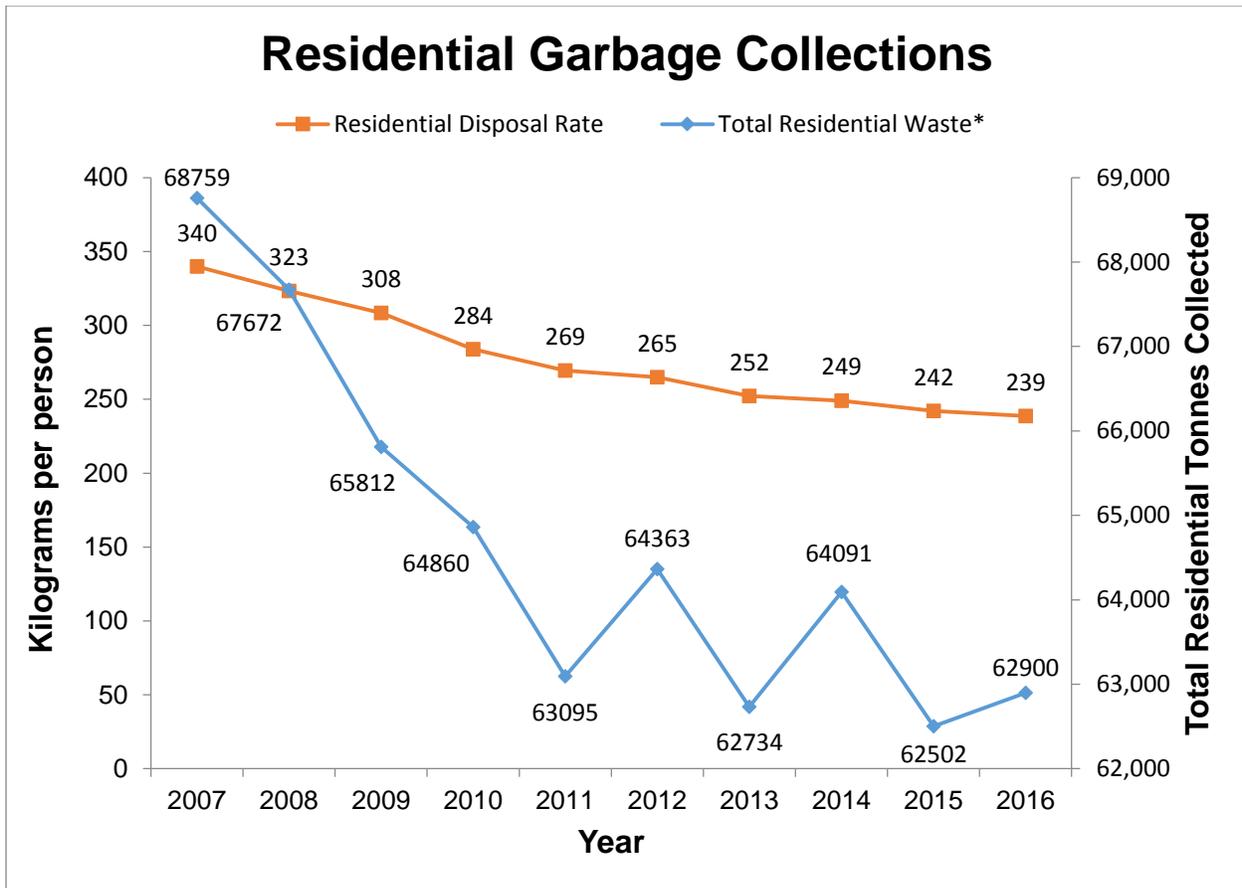
Saskatoon's Waste Disposal

The amount of garbage that is collected and disposed of is decreasing every year, however, the residential waste rate in Saskatoon is high compared to other urban centres in Canada. In 2016:

- 155,230 tonnes of materials, including clean fill were collected at the landfill
- 99,800 tonnes of garbage was disposed of at the landfill from all sources, once recyclable materials and clean fill were removed
- Residential and commercial collections by the City accounted for 62,900 tonnes (63% of all waste received at the landfill)
- 239 kg of residential garbage was disposed of per person (this is an estimate as not all multi-units are collected via the City collection crews, and some commercial tonnes are included).

As shown in the figure below, 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.

Figure 16. Residential Garbage Collections.



*Includes Garbage collected for Mult-units and Commercial properties that use City garbage collections

Saskatoon’s total disposal rate, which includes waste received from all sources, 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	2014	125,238	484	64,091	249
Saskatoon	2016	99,800	379	62,900	239
Saskatchewan ¹	2014	940,595	839	-	-
Canada ¹	2014	25,103,034	706	-	-

¹Source: 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.

Containers

Black Carts

The City of Saskatoon owns and maintains the black roll-out carts provided to street-oriented residential properties. In 2016:

- 68,000 black carts were managed in the field
- 1,160 new carts were delivered to new homes
- 820 carts were repaired and 4,600 were replaced

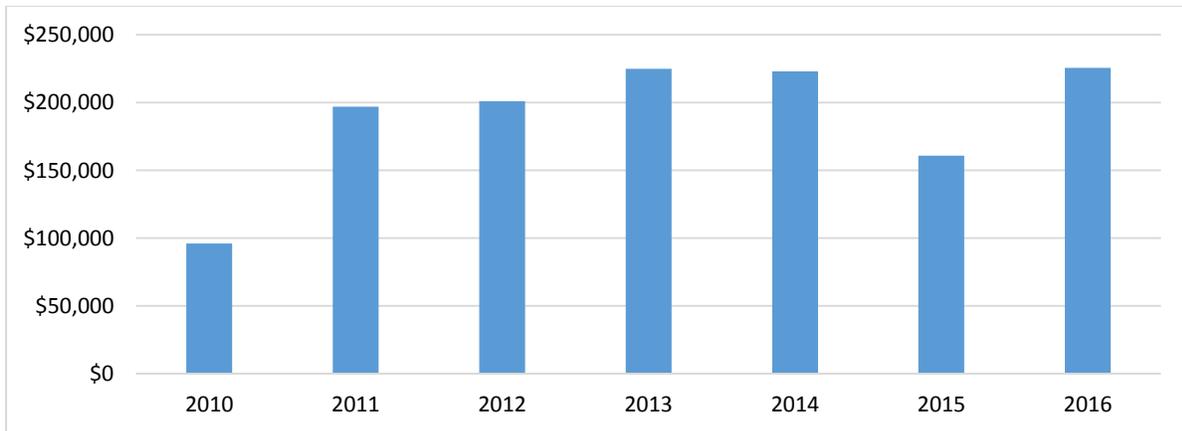
Carts are replaced because they reach the end of their useful life.

Multi-Unit Residential Containers

The City of Saskatoon does not provide garbage containers for multi-unit dwellings and instead offers a multi-unit dwelling waste bin grant to offset the costs borne by condominium associations and property managers for the purchase and maintenance of metal waste bins.

The grant provides \$8 per year per residential unit. In 2016, 81% of eligible properties (28,000 units out of 34,700) submitted an application and received the grant payment.

Figure 17. Multi-unit Dwelling Container Grant Payments



Garbage Collections

Garbage Collections for Single-family Residential Households (Curbside Collection)

Residential Garbage Collection



In 2016, Garbage collection services were provided to approximately 68,000 single-family households. 51,500 tonnes of garbage was collected from single-family households and there were 2.6 million individual back cart lifts ('tips').

Scheduled garbage collection occurs from Monday to Friday, including Stat holidays, except Christmas Day and New Year's Day. In 2016, weekly collections were provided from May to September, with the remainder of the year on a bi-weekly collection schedule. A post-Christmas collection was provided for all homes the week following Christmas.

Efficient Waste System

New routes and collection days came into effect on January 4, 2016. The garbage routes are more efficient by being as short and direct as possible, which improves

reliability and efficiency of City services, reduces fuel use and reduces the greenhouse gas emissions from our garbage trucks.

Garbage Collection for Multi-unit Residential Households

The City of Saskatoon provides one collection per week for each multi-unit residential property as part of regular service supported by property taxes. Additional levels of service may be contracted with the City or through a private waste management company. Multi-residential properties may also choose to contract their entire waste collection requirements through a private service provider.

Commercial Garbage Collection

Garbage collection is provided to external commercial customers and internal City of Saskatoon customers. In 2016, there were approximately 450 external commercial customers.

Saskatoon Regional Waste Management Facility

The Saskatoon Regional Waste Management Facility (landfill) has been in operation since 1955. It is an engineered facility that is designed and operated to maximize available air space and ensure solid waste is managed in a safe and environmentally sound manner. The Saskatchewan Ministry of Environment regulates the operations of the Facility under a Permit to Operate a Waste Disposal Ground.

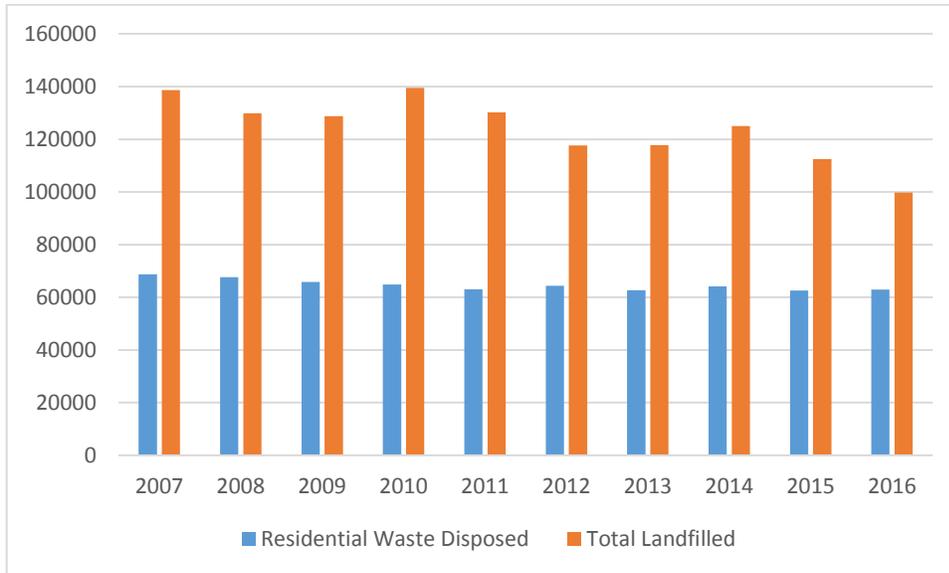
Saskatoon Regional Waste Management Facility



In 2016, approximately 155,230 tonnes of material was accepted at the landfill, 99,800 tonnes of garbage requiring burial and 54,700 tonnes of clean earth fill used for

construction purposes or landfill cover. As shown in the figure below, 62,900 tonnes of this was residential and commercial waste collected by City trucks.

Figure 18. Tonnes of Garbage Disposed at the Landfill



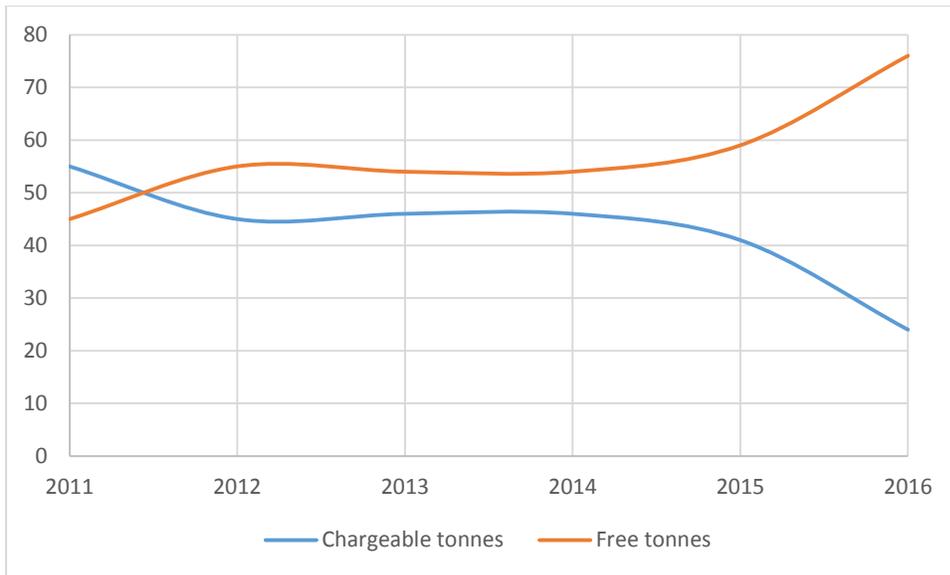
The landfill is open to the public every day of the year except for Christmas Day and New Year’s Day. Six transfer bins are located on site for public waste disposal. In addition, several public drop-off areas are provided for metals, white goods, batteries, propane tanks, used oil, oil containers, filters, and used antifreeze.

Landfill Customers

Out of 91,400 visitors, only 74,700 were paying customers. The number of loads made by City garbage trucks was 9,400 and no-charge clean fill deliveries accounted for the remaining.

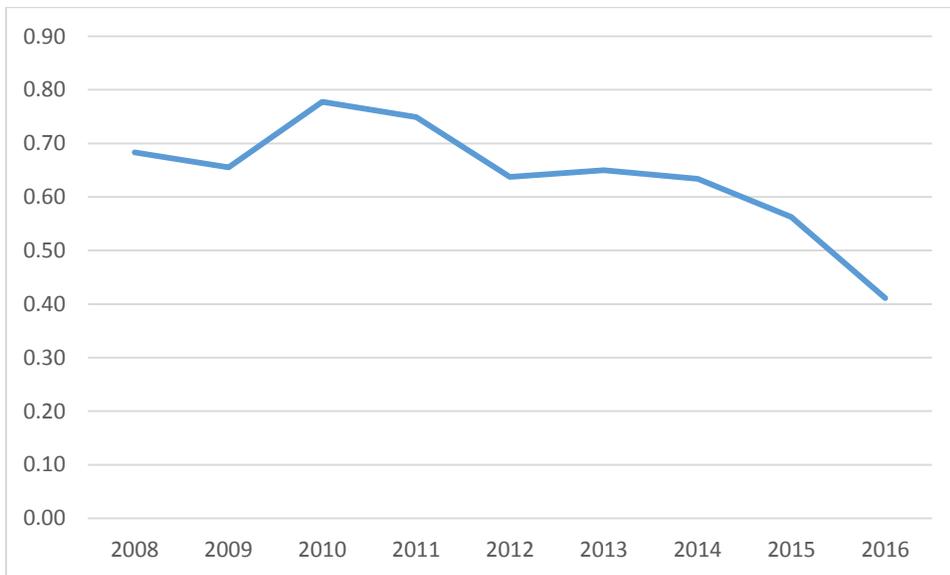
The tonnes of garbage that are hauled to the landfill as a result of municipal garbage collections are tracked, but the costs of disposal are not incurred by the operating budget for collections. This is atypical compared to other municipalities. The amount of chargeable tonnes as a percentage of the total tonnes has been declining since 2011. This is a significant financial risk to the sustainability of landfill operations. Of the total 155,230 tonnes that were brought to the landfill in 2016, only 37,600 (24%) were chargeable tonnes. The non-chargeable or “free” tonnes include 54,700 tonnes of clean fill and 62,900 tonnes from residential garbage collection by City collection vehicles.

Figure 19. Chargeable vs Free tonnes accepted at the Landfill



Saskatoon has one of the highest rates of residential garbage self-hauled to the Landfill in Canada. The average size of chargeable loads delivered to the Facility has been shrinking and was approximately 0.4 tonnes in 2016 (meaning the costs of service per tonne are increasing).

Figure 20. Average Tonnes per Paying Vehicle

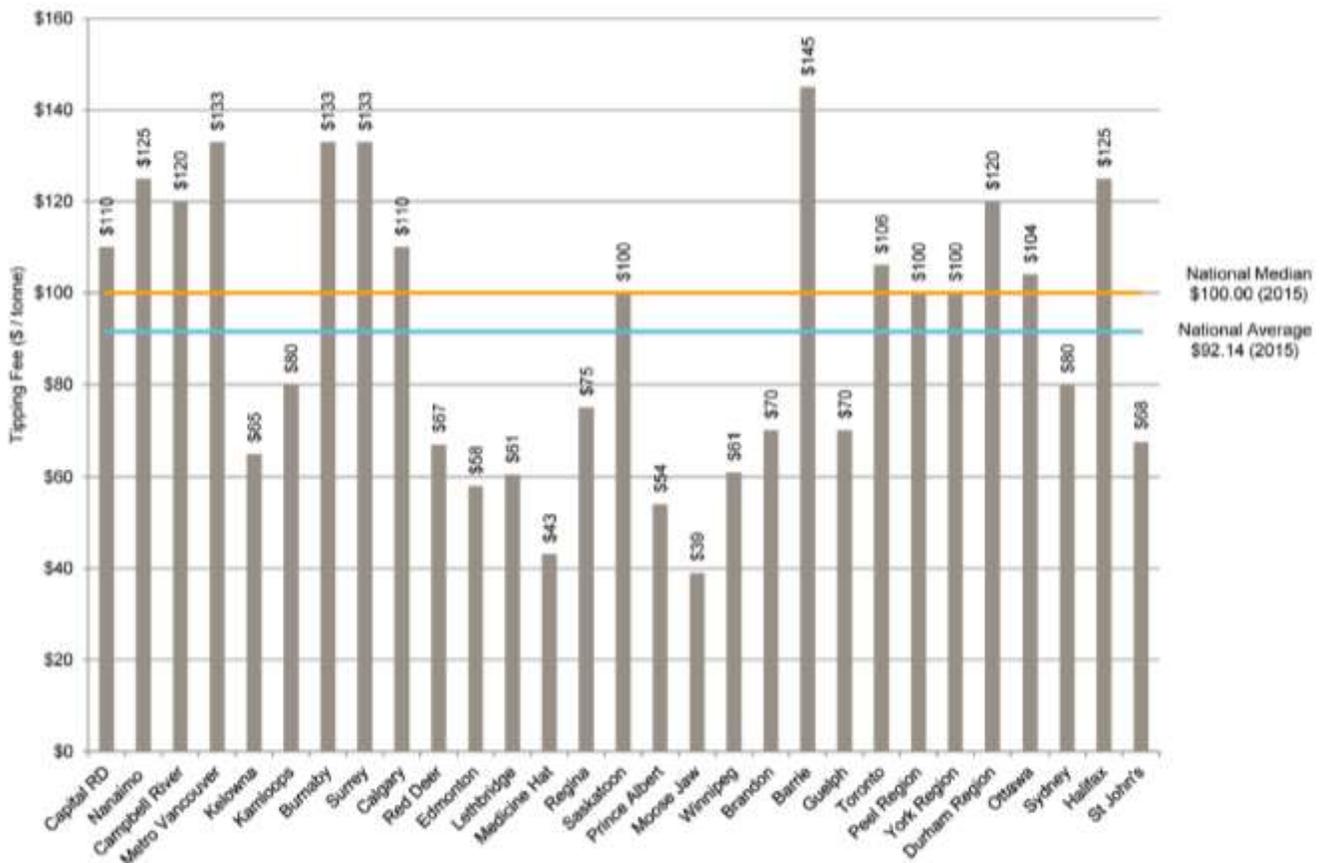


A review of rates and subsidies in 2012 led to changes to the schedule of fees. As of January 1, 2013, all subsidies previously available to customers at the Landfill were removed with the exception of a 75% subsidy which is applied to small loads weighing less than 250 kilograms. The rationale for this subsidy is to offer options to residents in

the absence of a curbside service for the handling of bulky items that may not fit in City-provided roll-out garbage carts. This subsidy, however, is contributing to the shrinking sizes of average loads at the landfill. This, in turn, increases demands for traffic management and can increase wait-times for customers. Some of the decline in commercial visitors may be a result of competition from the Northern Landfill operated by Loraas Disposal and more recently, competition from Green Prairie Environmental, the new owner and operator of the former South Corman Park Landfill.

According to nation-wide benchmarking for 2015, the range of fees for tipping waste among 31 municipal landfills across Canada is \$36.15 to \$140 per tonne. Saskatoon's fees at \$105 per tonne in 2016 fall in the middle of this range.

Figure 22. 2015 Mixed Solid Waste Tipping Fees at the Scale Across Canada (west to east) from the 2015 National Solid Waste Benchmarking Initiative (AECOM)



Environmental and Greenhouse Gas Implications

A number of environmental protection measures are part of the regular operations of the landfill.

Surface water management addresses storm water runoff at the landfill. Storm water management infrastructure also helps minimize the creation of leachate ('garbage juice') and protects roadways and other customer-serving assets of the site.

Improvements to storm water infrastructure are integrated into the capital improvement plan for the site.

The Ground water monitoring program includes groundwater sampling and analysis from more than 40 monitoring locations. Results are reviewed by an independent party and infrastructure is in place to mitigate potential impacts.

Fire prevention and suppression is critical. Materials within the mound have the potential to burn for prolonged periods and to release toxins into the atmosphere. Landfill staff are trained in fire prevention and suppression and operate a water truck on-site to respond to incidents in a timely manner. A strong relationship with Saskatoon Fire and Protective Services has also been developed as landfill fires pose a unique challenge.

Landfill gas management began in 2012 with the completion of the clay cap on the north mound of the site. Since then, 29 vertical gas collection wells have been drilled into the waste, the Landfill Gas Collection and Power Generation Facilities were completed and the system was fully commissioned in late 2013. The volume of landfill gas captured in 2016 was 6,035,300 standard cubic metres resulting in an estimated emissions reduction of 55,800 tonnes CO_{2e} (Carbon Dioxide Equivalent) Or the equivalent of taking 11,800 vehicles off Saskatoon roads.



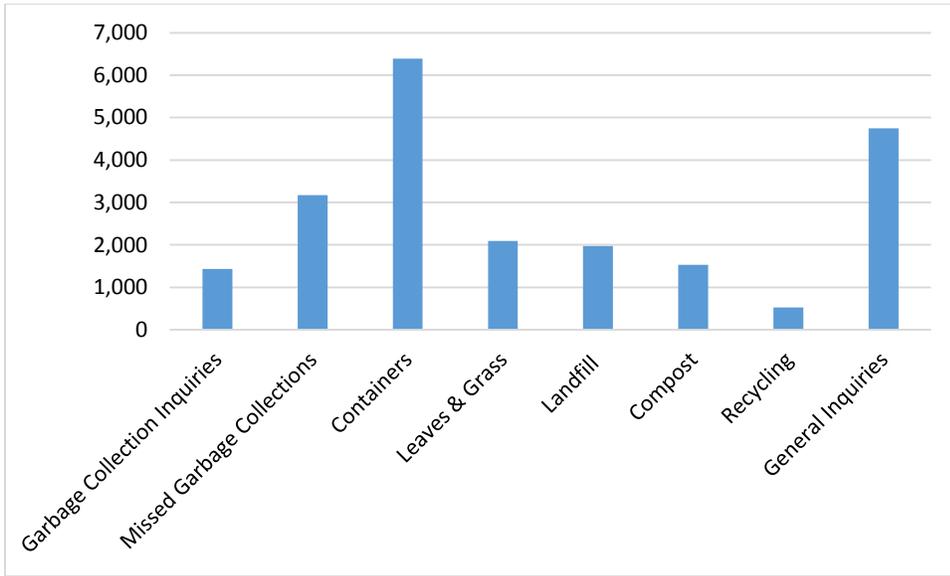
Greenhouse gas emissions reduction efforts occur at two levels at the landfill. The production of landfill gases, or methane (which is a greenhouse gas 25 times more potent than carbon dioxide), is addressed through landfill gas management. And as equipment is replaced, Tier IV emissions-compliant equipment is being selected to significantly reduce the impacts of fuel used for on-site transportation.

Customer Service

In 2016, more than 22,000 waste-related calls and 2,000 emails were handled by the Customer Service Reps.

A breakdown of the categories are shown below. Requests for new or replacement garbage containers generated the highest number of calls, followed by general inquiries, and garbage collection-related calls.

Figure 21. Waste Stream Customer Service Calls in 2016



EDUCATION AND ENGAGEMENT SERVICES

Rolling Education Unit

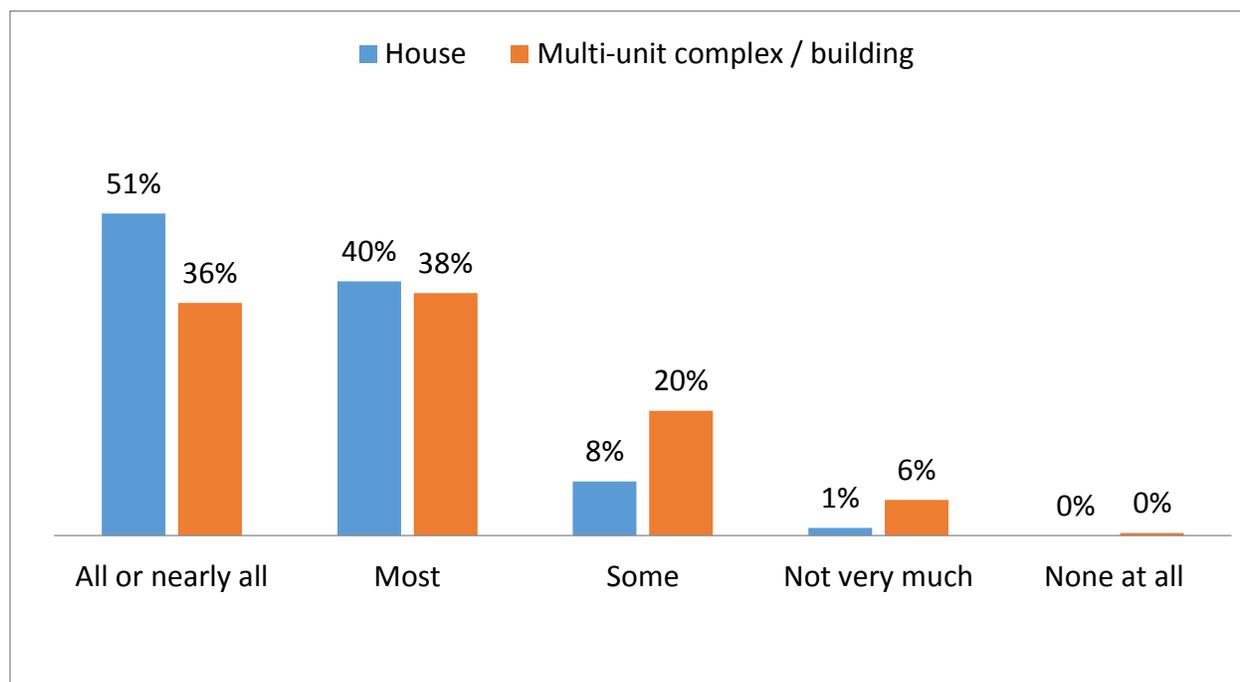


City-Wide Recycling Survey

In 2015, the City conducted a quantitative study about recycling among Saskatoon residents to measure recycling knowledge and program satisfaction, identify where residents go for information about recycling, and to look at ways to enhance the programs. The survey was conducted between October 21 and November 20, 2015, asking a mix of 1000 single-family and multi-unit residents by Insightrix Research Inc.

Overall, program participation was reported as being fairly high with most Saskatoon residents claiming that they recycle all or most of their household's recyclable items.

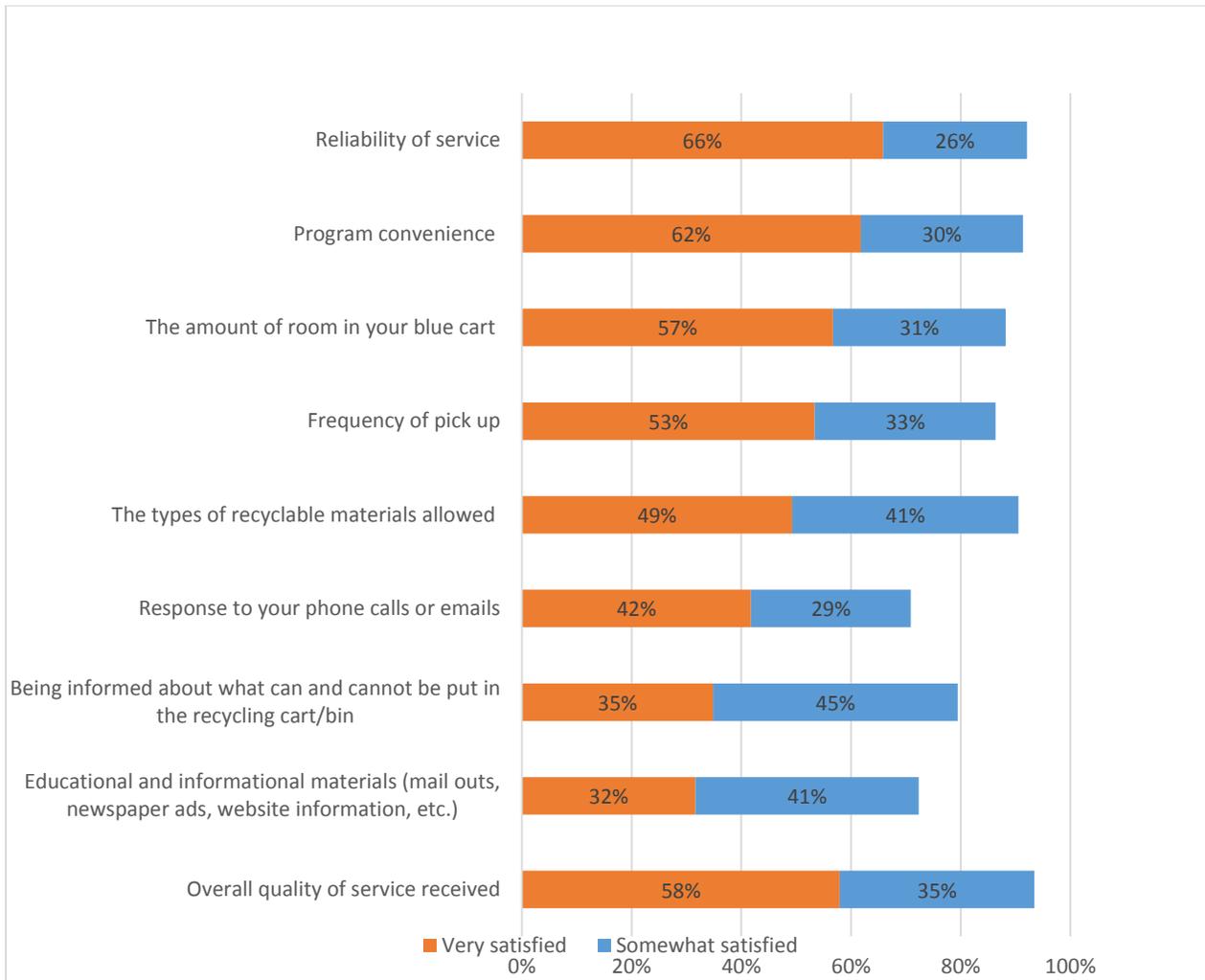
Figure 22. Proportion of Recyclable Items Recycled by Type of Household in 2015



More than eight in ten Saskatoon residents correctly identified that most items can or cannot be recycled in curbside carts / multi-unit bins. Areas of weaker knowledge included recycling of hard plastics, plastic grocery bags, Styrofoam, plastic toys, foil paper, and foil containers.

Broad-level satisfaction exists with most aspects of the recycling program. However, many are only somewhat satisfied; particularly with communications elements and responding to inquiries.

Figure 23. Satisfaction with Recycling Program in 2015.

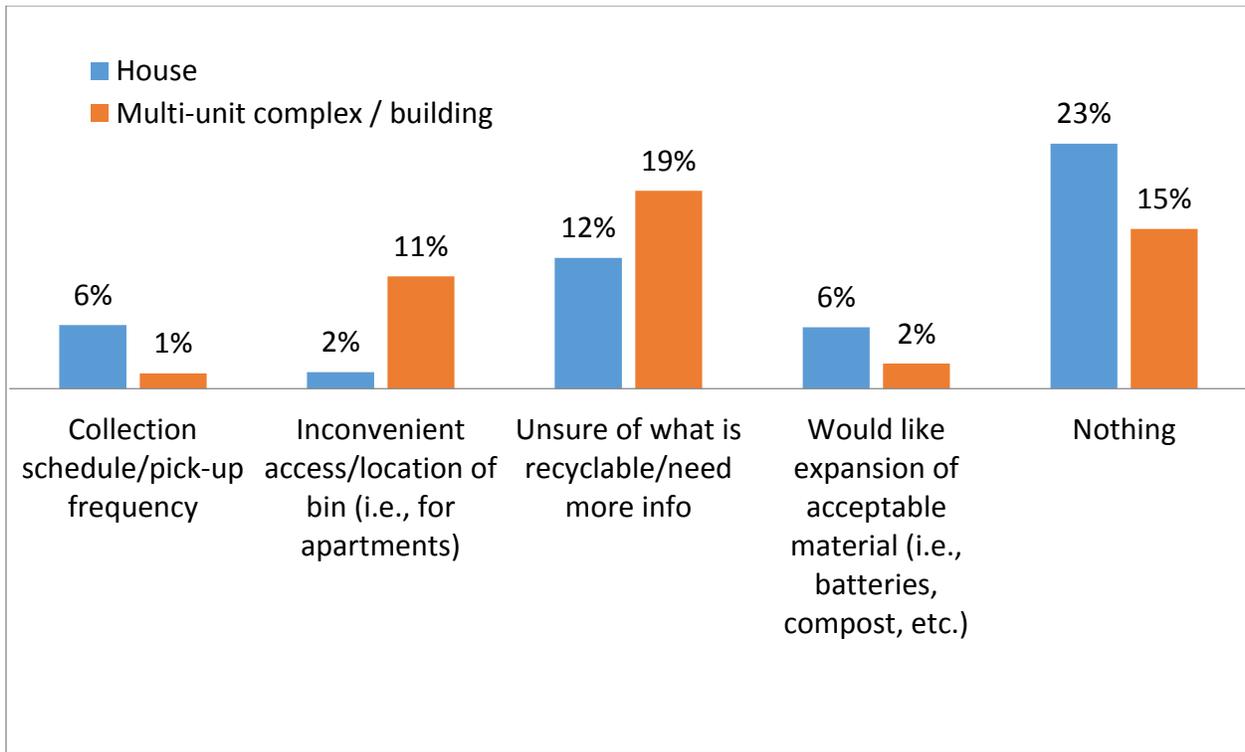


Residents who live in a house are more likely to feel constrained by collection schedules and types of acceptable items when it comes to household recycling. Those who live in a multi-unit building are more likely to cite inconvenience and lack of knowledge as barriers to recycling household items.

Those with curbside pick-up tend to be more satisfied with the City’s recycling service compared to those who live in multi-unit buildings, particularly in the areas of communications, responses to inquiries, and satisfaction with items allowed in the program.

Key self-reported barriers to household recycling include situation (e.g. capacity issues, pick-up frequency), knowledge, and behaviour (e.g. cleaning items, laziness).

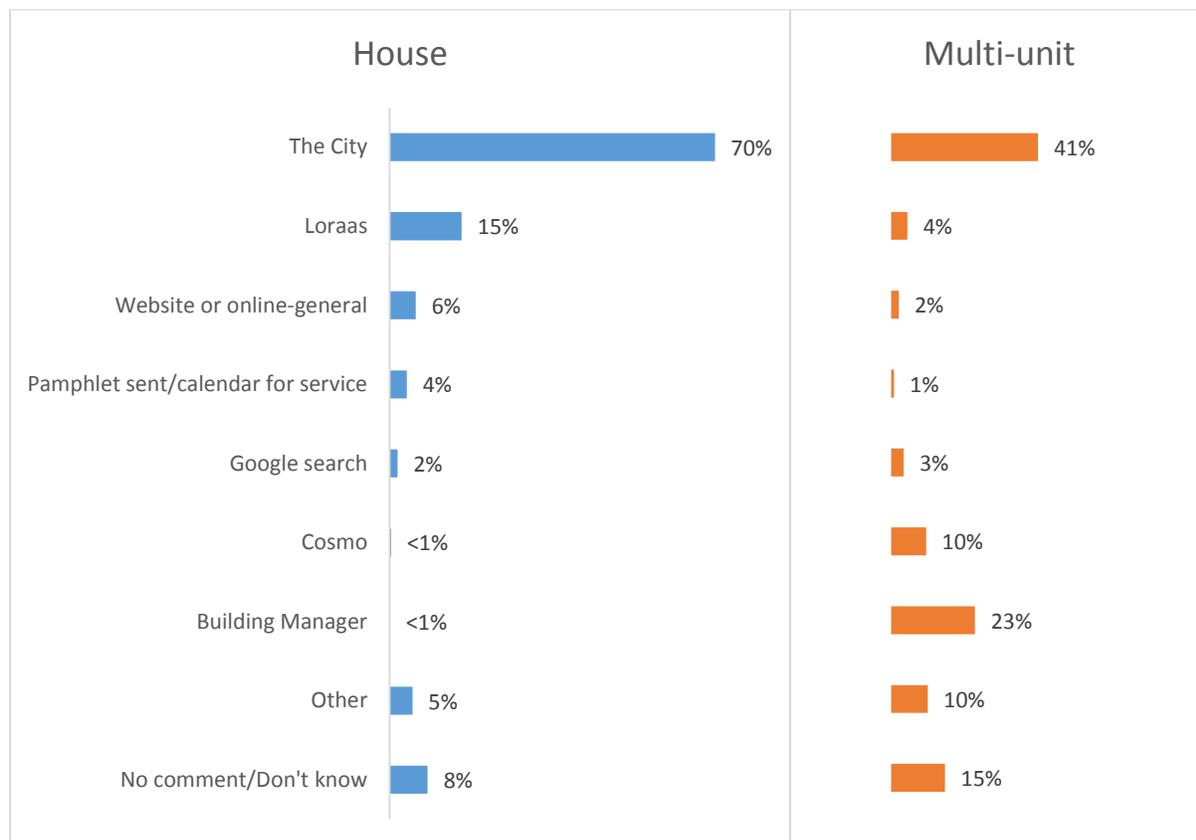
Figure 24. Barriers to Recycling by Type of Household (open-ended question) in 2015.



More than three quarters of Saskatoon residents claim to recall receiving a printed copy of the Waste & Recycling Collection Calendar, most of whom say they have it available at home for easy reference. Roughly one half are aware that the Waste & Recycling Collections Calendar is available on the City’s website yet few are aware that they can sign up for collection reminders.

Recycling Information Sources by Type of Household

Figure 25. Recycling Information Sources by Type of Household in 2015.



Older citizens are more likely to turn to traditional means for recycling information, such as the printed collection calendar, newspaper, and news reports. Younger generations are more inclined to obtain information using digital means (such as the internet and social media) and through family and friends.

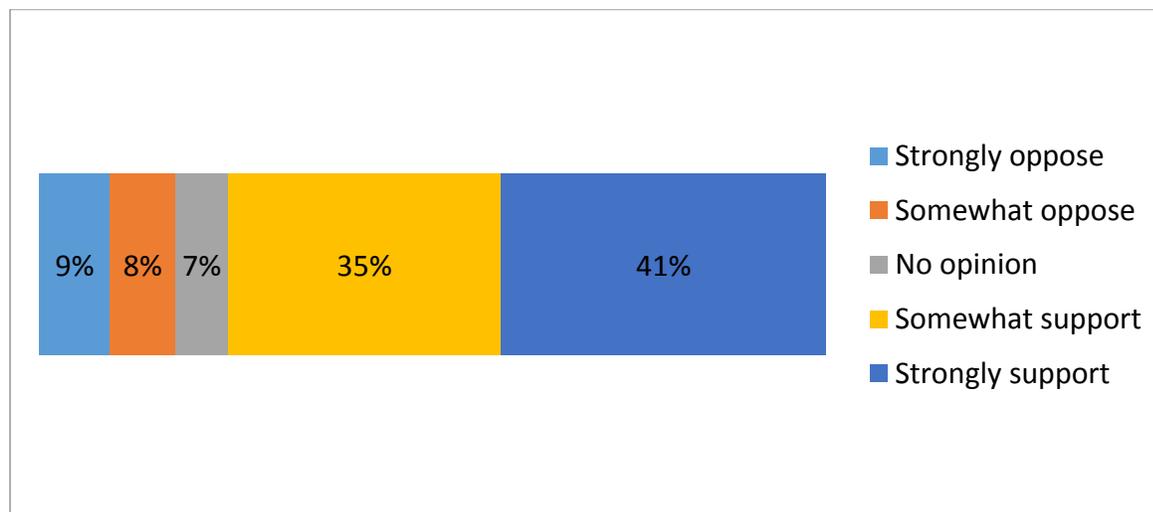
Few claim to place items such as used appliances, clothing, furniture, hazardous waste or electronics in the garbage. Most commonly, unwanted clothing and furniture are given to local charities and household waste and electronics are taken to SARCAN.

Six in ten citizens drop off items at a City of Saskatoon Household Hazardous Waste Day, most commonly once a year. While most place kitchen scraps in the garbage, residents who live in a house are more likely to compost such items. Findings are generally consistent with the Green Cart study conducted in the spring. Yard waste is commonly placed in the garbage, composted at home or taken to compost depots.

Three quarters of residents support a city-wide food and yard waste collection program for all households. These findings are generally consistent with the Green Cart Subscriber study conducted this spring.

Support for City-wide Food and Yard Waste Collection Program

Figure 26. Support for City-wide Food and Yard Waste Collection Program in 2015.



The perceived importance of most environmental challenges presented to respondents is high. Energy efficiency, waste treatment, air quality, conserving natural areas, and water conservation top the list, based on importance. Initiatives for adapting to climate change and better transit, biking, and walking options are deemed to be comparatively less important.

Webpage and Online Engagement

Information about the City's waste, recycling, compost, and other waste diversion programs are available online through the City's website (Saskatoon.ca), Facebook, and Twitter.

Visitors to the City's website (Saskatoon.ca) access up-to-date information on anything they need to know to manage their waste including:

- collection schedules;
- cart collections;
- how to use their blue, black, and green carts;
- search dates for the monthly household hazardous waste days and the annual Saskatoon curbside swap event;
- landfill rates and hours; and
- other tips on reducing or diverting waste.

In 2016, there were 308,310 visits to the Waste & Recycling webpages. The Collection Calendar was the most visited waste-related webpage with 127,867 hits. In 2016, the City introduced a new tool called the Waste Wizard to help residents figure out how to properly dispose of or recycling all their waste materials. Residents simply type in any item and the tool tells them how to best manage it through a City or non-City program.

23,300 materials were searched on the Waste Wizard with Styrofoam, plastic bags and batteries being the top three searched materials.

The screenshot shows the 'Waste Wizard' interface. At the top, there is a green header with 'Waste Wizard' on the left and a 'Need help?' link on the right. Below the header, a breadcrumb trail reads 'Home / Search Results / Light bulbs'. The main content area is titled 'Light bulbs'. Underneath, there is a car icon and the text 'There is no curbside collection for this item.' Below that is a section for 'Household Hazardous Waste Days' with a calendar icon and text stating that users can drop off items at one of the City of Saskatoon's events, with a link to visit the website for more information. A 'Special Instructions' section follows, featuring an information icon and text that refers to the Saskatchewan Waste Reduction Council's recycling database, providing a URL: <http://www.saskwastereduction.ca/recycle/db?location=Saskatoon&materials=Light+Bulbs&keywords=>. At the bottom left of the content area is a 'Back' button.

[List of Materials](#)

Powered by **ReCollect**

The public can also find out about other local recycling opportunities through the Saskatchewan Waste Reduction Council's province-wide online database of information on where to recycle a variety of materials. The City of Saskatoon partners with the Council in promoting this online tool: <http://www.saskwastereduction.ca/>

2016 Collection Calendar

Each household receives a personalized print calendar with the garbage, recycling, green cart, and household hazardous waste schedules. The calendar also includes information on what items are accepted by each program, information on how to use carts to ensure successful collections, and customer service contact information. In 2016, 70,240 calendars were distributed by mail.

The screenshot shows the 'Collection Schedules and Reminders' section of the website. It features a green header with the title on the left and a 'Need help?' link on the right. Below the header, there is a text prompt 'Please type your home address:' followed by a large text input field. To the right of the input field is a 'Search' button. Below the input field, there is an example address: 'Example: 222 - 3rd Avenue North, Saskatoon'.

Powered by **ReCollect**

Residents can also:

- view their calendar online;
- download a PDF calendar from the website;
- sign up for collection reminders by e-mail, phone, or twitter; or
- add their schedule to their own online calendar.

The use of online calendars and reminders has increased in 2016. In 2016, there were 127,867 webpage visits. Personalized online collection calendars were viewed by 48,510 unique households in 2016, up from 37,345 in 2015. In 2016, there were 11,171 calendar PDF downloads compared to 9,504 in 2015. In 2016, there were 14,638 collection reminders compared to 8,996 collection reminders provided in 2015.

Curbside Recycling Program Education

The education program that targets residential single-family homes is a partnership between the City of Saskatoon and Loraas. The program aims to increase recycling by raising awareness through mass marketing on what and how to recycle, change behaviours, and establish recycling as a social norm.

Programs and tactics in 2016 included marketing campaigns like ‘Blue Approved’, promoted through social media, web-site, and media relations; as well as in-person education such as neighbourhood cart blitzes, workshops for newcomers, a school program, and the Rolling Education Unit.



The impact of the communications program in 2016 included:

- 33,798,899 Billboard impressions from 40 Billboards.
- 35,290 views of recycling web pages
- Over 10,900 interactions with residents at community events
- 4,203 Trash Talk Flyers, Tattoos and T-shirts distributed
- 84% of survey respondents indicated they were satisfied with information on what can and can't be recycled
- 76% of survey respondents indicated they were satisfied with educational and informational materials

Loraas Education Room

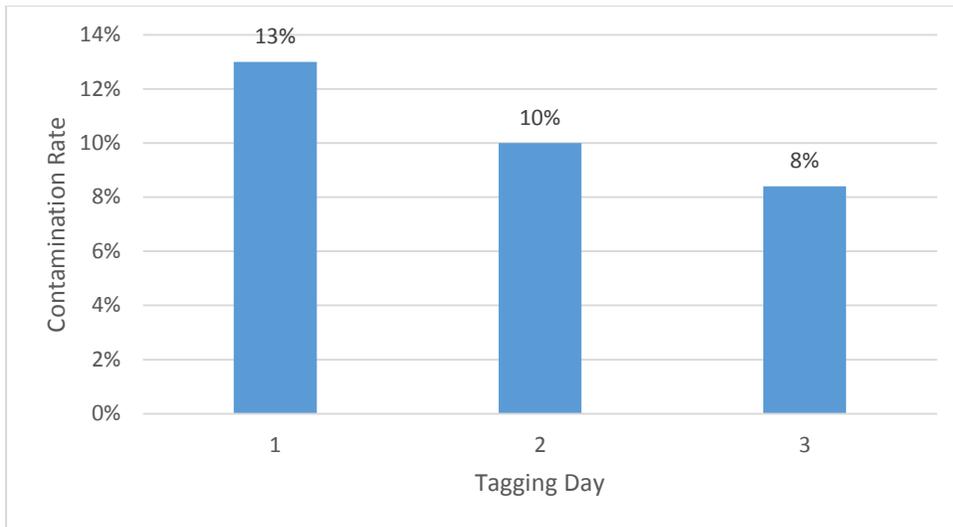
In 2016, 3,247 elementary students visited the Education room at the Loraas facility to learn how material is processed at the material recovery facility (MRF), to increase awareness on how and why to recycle, and emphasize the importance of waste diversion and environmental stewardship.

Neighbourhood Cart Blitz

The Neighbourhood Cart Blitz program is delivered by Loraas Recycle. They use a team of summer students to look in carts in selected neighbourhoods on three consecutive collection days to identify whether or not the resident is using the recycling program properly (i.e. types of materials and cart placement behaviour). Carts that have the right materials and are placed correctly get a green "You Rock!" tag; non-compliant carts get an orange "Oops!" tag with information on how to correct behaviour. In either case the cart is collected (unless hazardous material is found). A material audit is was performed before and after the cart inspection to measure changes in contamination.

In 2016 five new neighbourhoods were selected. Neighbourhood inspections, although resource intensive, appear to produce favourable results by showing an average decline in contamination, shown below.

Figure 27. 2016 Contamination rates over 5 Neighbourhood Cart Blitzes



Newcomer Workshops

Using recycling awareness as the subject for English as a Second Language training, new Canadians were provided both language training and information about their recycling program during two workshops with 400 students. This program will be expanded in 2017.

Multi-Unit Residential Recycling (MURR) Program Awareness

The City of Saskatoon and Cosmopolitan Industries worked together on an education program to inform building owners and managers on how the program works and encouraging them to work with their tenants and condo residents.

To respond to challenges such as identifying who the appropriate site contact is, posters and brochures not being distributed by building managers, and a high proportion of residents not speaking English as their first language meant that not all residents received the information they required to properly recycle; a door hanger was distributed to every unit by Cosmo.

Figure 28. Door hanger distributed to all multi-units in 2016



The impact of the education program in 2016 included:

- 30,818 door hangers placed in buildings

- 67 building managers and 420 residents participated in presentations
- 63% of survey respondents indicated they were satisfied with information on what can and can't be recycled
- 59% of survey respondents indicated they were satisfied with educational and informational materials

Rolling Education Unit and the Let's Roll Recycling Team

In 2016, the Saskatchewan Waste Reduction Council (SWRC) coordinated with the City of Saskatoon to provide Waste and Recycling education to Saskatoon through the City's mobile education trailer, the Rolling Education Unit (REU). Four students were hired for 16 weeks to be the Let's Roll Team.

Rolling Education Unit at an event in 2016



The Let's Roll Recycling Team attended 37 events in 2016, where they encouraged children and adults to learn about waste management through interactive activities. Citizens were engaged at events using the "Spin and Sort" and "Yep, Nope" sorting game. The team kept track of interactions with the public. They estimate that they made contact with a total of 10,905 people over the summer. The top events by attendance included: The Children's Festival, the Saskatoon Ex, The Fringe Festival, Canada Day, and Rib Fest.

Home Composting Education

The City provides composting education through a partnership with the Saskatchewan Waste Reduction Council (SWRC). The SWRC has been running composting education programs since 1993 and in partnership with the City since 1995. In partnership with SWRC, the City offers a number of composting programs and services.

- \$20 rebates on compost bins
- Free home visits for residents seeking one-on-one composting support
- *What's your Composting Style?* quiz
- Educational materials
- Composting workshop and presentations

New Master Composters are trained each year (there is now over 200) and in turn engage the community through volunteer work such as outreach and education at events, presentations, workshops, and home visits. Compost education, research, and incentives provided in 2016 in partnership with the SWRC included:

- 16 new volunteers were trained and 33 different Compost coaches volunteered, attended 10 community events and held 19 workshops.
- 64 compost bin rebates of \$20
- 55 home visits and answered 72 compost inquiries.

In 2016, the City of Saskatoon worked with SWRC to launch an education campaign (shown below) to encourage residents to start composting at their home and provided information on how composting program works.

Angry Banana Flyer



Saskatoon Curbside Swap

The purpose of the Saskatoon Curbside Swap is to encourage residents to pass on reusable household items, to raise awareness on the importance of reuse, build a sense of community, and reduce the number of items ending up in the landfill. The City provides information and guidelines on its website to help plan a Curbside Swap, and provides customizable materials such as a poster or postcard to help promote an event.

In 2016, the City-wide Curbside Swap was held on September 10, 2016. There were 6,177 webpage visits for the Saskatoon Curbside Swap webpage on the City's website. Participation of the City-wide event was evident by:

- Roughly 60 homes visited by the City of Saskatoon
- 1,500 interested in the event on Facebook
- 727 attended the event on Facebook
- 532 shares on Facebook
- 106 addresses posted
- Media coverage: EcoFriendly Sask, CBC, StarPhoenix, Cruz FM
- 11 city neighbourhoods mentioned the September 10th swap on Facebook or their webpage

Customizable Postcard for Curbside Swap

**Want free stuff?
Got stuff to give away?
SWAP IT!**

What is a Curbside Swap?
At a Curbside Swap, participating households mark items as "FREE" and set them on their property for others to collect. This keeps reusable items out of our landfill and reduces our community's environmental footprint!

What could I find or give away at a Curbside Swap?

- appliances
- yard equipment
- bicycles
- electronics
- books
- and more!

Where can I find more info?
saskatoon.ca/curbsideswap | 306-975-2487
We encourage individuals and neighbourhoods to organize their own Curbside Swap.

When and where are Curbside Swaps?
Plan your own Swap or join in the city-wide Curbside Swap on:
September 10, 2016.
Tour around and see what you can find. Watch for the signs!

**SASKATOON
CURBSIDE
SWAP**

**City of
Saskatoon**

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Waste Bylaw Enforcement

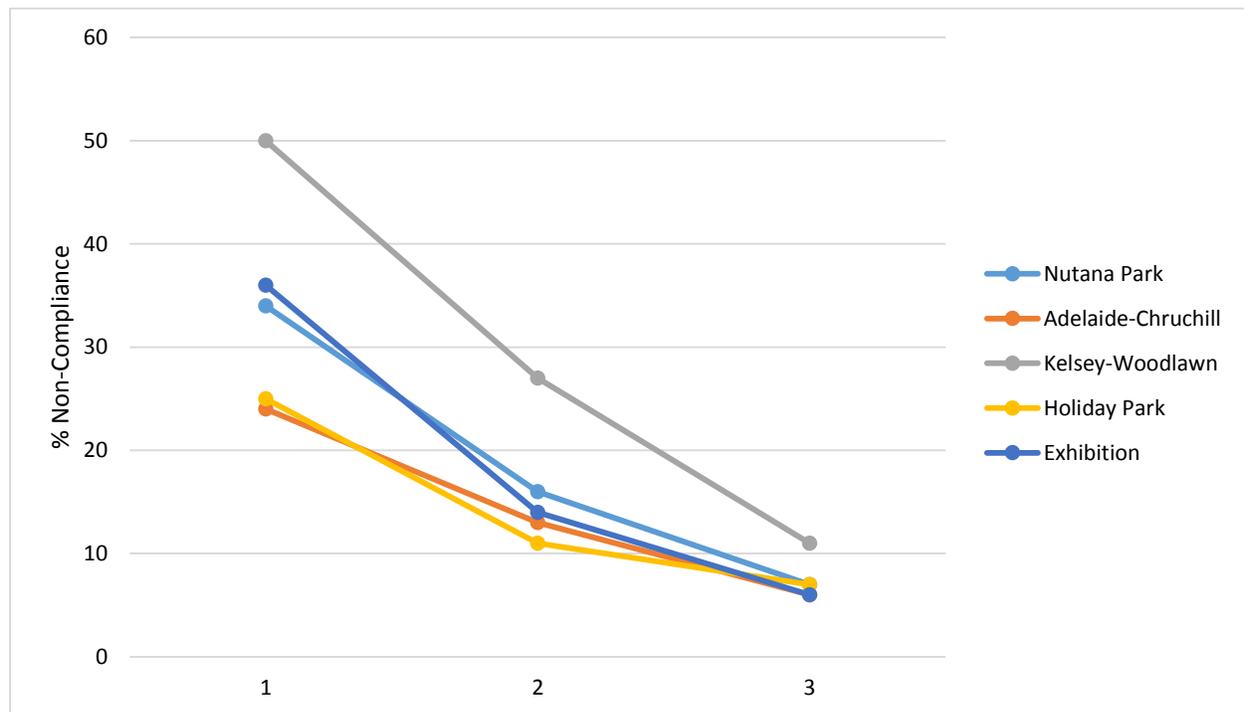
The role of waste bylaw enforcement is to provide education and enforcement to ensure garbage and recycling are managed by the community in a way that is safe for people and the environment.

The City's Environmental Protection Officers (EPOs) focus on issues in the community related to the Waste Bylaw. In addition to enforcing the Waste Bylaw, EPOs are also responsible for responding to hydraulic spills, illegal dumping and waste & recycling cart complaints, as well as conducting bylaw related education initiatives for the general public.

The Waste Bylaw (No. 8310) specifies that carts must be removed from the Public Right-of-Way within 24 hours of Collection. In 2016, EPOs conducted neighbourhood cart blitzes to educate on and enforce this requirement.

Neighbourhood cart blitzes consist of three phases including initial inspections and an education letter to non compliant homeowners; a follow up inspection and warning letter; and ultimately a final inspection with a Notice of Violation including a \$100 ticket. Neighbourhood inspections, although resource intensive, show a significant decline in the number of carts that remain in the public right-of-way. The results of the five neighbourhood inspections conducted in 2016 are shown below.

Figure 29. Number of carts left out over three phases of cart blitzes done by EPO's in 2016.



Green Cart Program Education and Marketing

In 2016, the number of Green Cart subscribers reached an all-time high of 6,300. Promotional efforts focus on encouraging additional subscribers each year using on-line and social media. The Green Cart program is included in a number of other education efforts (e.g. Rolling Education Unit, 'Healthy Yards').

The impact of the education and marketing program in 2016 included:

- 70,240 households through the Waste and Recycling Collection calendar
- 30,246 webpage visits for both green cart and compost depots
- 3 PSAs (collection start, collection end, calendar)
- 1 print ad x 2 newspapers
- 3 Renewal mailings to 2015 subscribers (5000 email/1000 mail)
- 500 Green Cart promo handouts at Gardenscapes
- ReCollect - 3 ads for all ReCollect subscribers
- Letter with tips to reduce odours with composting to green cart subscribers (5000 email/1000 mail)