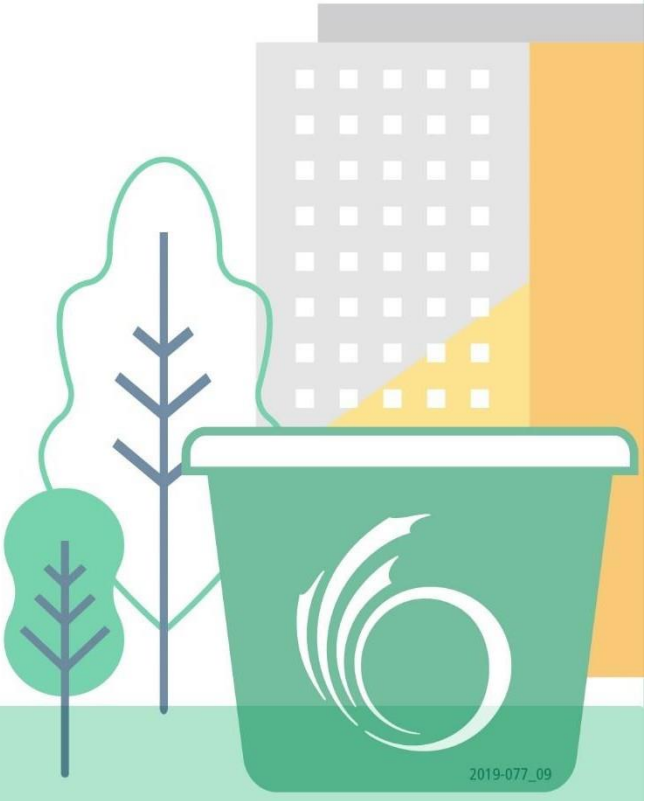
Solid Waste Master Plan | Plan directeur des déchets solides

Current State System Summary

Technical Memorandum #1
January 2020



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Glossary of Terms

Alternating Weekly Collection	Is the collection of any material collected once every two weeks but linked to collection of another material every two weeks, where collection of the second material is offset from the first material by one week.
Biweekly Collection	Is the collection of a specific waste material, one day every two weeks.
Blue Bin Recycling Program	Is the City of Ottawa's two stream recycling program where each recycling material stream is collected separately. One stream is recyclable glass-metal and plastic which includes most plastic containers (excluding polystyrene), polycoated paper containers, metal cans, aluminum cans, and glass jars and bottles. These materials are collected in a blue bin. The second stream is paper products including; newspapers, mixed fine paper, magazines and catalogues, telephone books, unsoiled boxboard, unsoiled corrugated cardboard, and Kraft paper which are collected in a black bin.
Bulky Items	Bulky items include, but are not limited to, bicycles, floor lamps, mattresses, furniture, sinks, toilet bowls, barrels, pool pumps, pool covers and any other discarded materials, normally accumulated at residential dwellings. Bulky items exclude appliances and electronics which are part of the Waste Electrical and Electronic Equipment Program.
City Facility	Is a property entity consisting of a building or structure, owned or rented by the City of Ottawa.

Containerized Collection	Is the service provided to a property where waste material is collected from front end loading containers or 360 L wheeled plastic carts.
Curbside Collection	Is the service provided to a property where waste material is collected in a garbage bag, reusable can, blue bin, black bin or green bin and is collected near or at the curb or at a pad location.
Diversion Rate	Percentage of total material that is diverted from landfill through programs such as the Blue Bin Program and the Green Bin Program.
Garbage	The portion of the waste stream that has no practical or feasible further use. It cannot be recycled or composted. This is the portion sent for disposal.
Green Bin Program	The Green Bin Program contains both household organics and leaf and yard waste and is currently processed using an in-vessel tunnel composting system.
Household Hazardous Waste (HHW)	Materials that are hazardous and cannot be safely collected or disposed of through the City's collection programs. These materials can be disposed of by returning them to accepted retailers, through the Take it Back!" Program and/or through the City's HHW event depot program.
Household Organics	Refers to any biodegradable material including food waste such as meat, dairy products, bread and pasta, kitty litter, cold ash, wood chips, sawdust, tissue paper, paper towels, pizza boxes and pet feces that would normally accumulate in a household.

Leaf and Yard Waste	Refers to organic yard material collected for composting, including leaves, grass clippings, garden waste, branches, brush, wind-fallen fruit and Christmas trees.
Multi-Residential Property	Means a residential building or townhouse complex containing multiple self-contained residential dwelling units which have their own sleeping, cooking, eating and sanitary facilities. They include, but are not limited to, garden homes, town homes, terrace homes, maisonettes, stacked town homes, low rises and high rises.
Roll-Off Container	Refers to an open top container used to contain waste. Typical roll-off container sizes are 20 and 30 yards.
Waste	Refers to all discarded material including garbage, recyclable material and non-collectable waste.
Yellow Bag Program	Is the registration based curbside collection service for garbage, recyclables and organics for small businesses that generate small amounts of garbage.

List of Acronyms

AMO	Association of Municipalities of Ontario
C of A	Certificate of Approval
C&D	Construction and Demolition (waste)
CCME	Canadian Council of Ministers of the Environment
CCMP	Climate Change Master Plan
CIF	Continuous Improvement Fund
EA	Environmental Assessment
EAA	Environmental Assessment Act
ECA	Environmental Compliance Approval
EPA	Environmental Protection Act
EPR	Extended Producer Responsibility
FEL	Front End Loading (containers)
FCM	Federation of Canadian Municipalities
GMP	Glass-Metal-Plastic
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HHW	Household Hazardous Waste
ICI	Industrial Commercial and Institutional
IPR	Individual Producer Responsibility
ISFP	Integrated Street Furniture Program
LYW	Leaf and Yard Waste
MAP	Municipal Applications Partnership

MHSW	Municipal Hazardous or Special Waste
MECP	Ministry of Environment Conservation and Parks
MRCF	Multi-Residential City Facility (collection contract)
MRF	Material Recovery Facility
MWA	Municipal Waste Association
NASM	Non-Agriculture Source Material
NCC	National Capital Commission
NOV	Notice of Violation
OES	Ontario Electronic Stewardship
OLMS	Old Landfill Management Strategy
OMP	Odour Management Plan
OMRI	Ontario Multi-Materials Recycling Inc.
OWMA	Ontario Waste Management Association
POM	Provincial Offence Notice
PSW	Provincially Significant Wetland
PWESD	Public Works and Environmental Services Department
Q&A	Questions and Answers
Q#	Quarter 1, 2, 3 or 4 (year)
RAA	Restricted Advertising Area
RCO	Recycling Council of Ontario
RMOC	Regional Municipality of Ottawa-Carleton
ROPEC	Robert O. Pickard Environmental Centre
RPRA	Resource Productivity and Recovery Authority

RPWCO	Regional Public Works Commissioners of Ontario
RRCEA	Resource Recovery and Circular Economy Act
RUAC	Residential Units Above Commercial
SLF	Small Loads Facility
SO	Stewardship Ontario
SSO	Source Separated Organics
SWA	Solid Waste Application (database)
SWANA	Solid Waste Association of North America
SWMP	Solid Waste Master Plan
SWS	Solid Waste Services
TWF	Trail Waste Facility
UAA	Unrestricted Advertising Area
WDTA	Waste Diversion Transition Act
WCEC	West Carleton Environmental Centre
WEEE	Waste Electrical and Electronic Equipment
YBP	Yellow Bag Program

EXECUTIVE SUMMARY

The City of Ottawa has a complex and integrated solid waste management system that maintains public health and supports environmental sustainably. It includes the long-term strategic planning of programs, providing services and facilities for the collection, diversion and disposal of garbage, household organics, recycling, leaf and yard waste and household hazardous waste and the comprehensive management operation and maintenance of City-owned landfills. In addition, there are a number of waste management programs and practices undertaken internally by City departments to ensure items and materials such as waste oil, furniture, biohazards and electronics are diverted from the landfill and/or disposed of properly and safely.

Recognizing the need for an updated comprehensive long-term waste management plan that would set the foundation for future planning and coordinated decision making, the City of Ottawa initiated a process for the development of a long-term Solid Waste Master Plan in 2019. The Solid Waste Master Plan (the Master Plan) will make recommendations based on the 5R's waste management hierarchy of reduction (avoidance), reuse, recycling, recovery and residual disposal. The Master Plan will anticipate future needs of the City and identify options that meet the needs of City customers. It will take a "triple bottom line" approach and recommend policies and programs that are cost-effective, socially acceptable and environmentally sustainable for the long-term. The project is anticipated to be completed by the end of 2021.

The first step in the master planning process is to document the current state of the City's solid waste management system. This includes not only the City services and programs provided to residents and the Industrial, Commercial and Institutional (ICI) customers, but also how the City as a Corporation manages its own waste. Documenting and understanding the baseline waste management system, programs, policies and Corporate practices will allow for the identification of future alternatives for the integrated waste management system to meet the growing needs of the City.

It is important to note that the information presented in the Current State System Summary is accurate only up to the completion of the technical memorandum. New information is continually being generated (systems change, contracts expire, etc.); as such, the document should be regarded as a snapshot in time, current as of January 2020, reflecting information available at that time. It is also important to note that the document does not include waste generated within the City of Ottawa that is privately managed outside of the City's responsibilities.

Waste Management Legislation and Policy Impacts

In Canada, the responsibility for managing and reducing waste is shared among the federal, provincial and municipal governments.

Broadly speaking, the local governments manage the collection, recycling, composting and disposal of household waste, while the provincial governments establish waste reduction policies and programs, approve and monitor waste management facilities and operations. The federal government complements the role of provinces, territories and municipalities by regulating the international and interprovincial movements of hazardous waste and hazardous recyclable material; identifying best practices that will reduce, as much as possible, the toxic pollution from the management of waste; and providing funding for projects to reduce waste sent to landfills and to improve resource management.

Additional information on legislation and polices relevant to Ottawa's solid waste management system can also be found in the Solid Waste Master Plan's Technical Memorandum #2, Review of Federal and Provincial Solid Waste Policies, Programs and Legislation.

Waste Generation and Diversion

In 2018, a total of 333,000 tonnes of waste was generated through the collection service programs. Garbage (189,000 tonnes), recyclable material (62,000) and household organics and yard waste (82,000).

In 2018, the City's overall diversion rate was 43%. This percentage included waste material collected from customers participating in the curbside and containerized collection service programs. The curbside waste diversion rate for 2018 was 49%, while the overall waste

diversion rate for both multi-residential properties and City facilities in 2018 was 17%. These diversion rates are calculated based on tonnage of material collected.

Financial Overview

The City's waste management programs and services are funded directly through a combination of an annual set user fee rate, general property taxes, revenues and user fees.

The 2020 Solid Waste Services budget indicates that the total gross cost of solid waste services for the City of Ottawa is $83.3 million in operating costs. Specifically, garbage and landfill/disposal services, long term planning and capital replacement/debt, with a total cost of $34.6 million, are funded by a flat rate applied to each residential unit. This individual fee is visibly presented on the tax bill.

Waste diversion services, with total costs of $48.3 million, are funded through the tax base and are based on the value of the property. These services include the collection and processing of recyclables, household organic waste, leaf and yard waste and the Household Hazardous Waste Events. Costs are offset by revenues from recycling markets and from funding received through the Resource Productivity and Recovery Authority.

In 2018, the City's Solid Waste Services Branch had an annual revenue of approximately $51 million, which included approximately $6.5 million in funding from provincially funded entities.

The 2020 Solid Waste Services Capital Budget totals $6.6 million. All of the funding for the capital programs are from the Solid Waste Capital Reserve Fund. However, the fund is in a precarious state and sources of revenue to increase the reserve fund will be explored as part of the Solid Waste Long Range Financial Plan.

Promotion, Education and Outreach

The City offers comprehensive promotion, educational tools and resources to its customers through on-line resources, social media, printed resources, outreach events, educational campaigns and staff resources. In 2018, the City budgeted approximately $197,000 on communication activities related to solid waste promotion and education.

In 2018, City staff commissioned the global public relations and integrated communications agency, Hill and Knowlton Strategies (H+K), to conduct intensive market research that supported the creation of a comprehensive, evidenced-based communications plan. The study identified waste diverter target audiences by segmenting the audience into four distinct segments based on waste diversion behavior: Superstars, Aspirational, Inconsistent, and Disconnected.

Existing Waste Collection Systems and Service Standards

The City of Ottawa collects waste materials from the residential sector, including multi-residential properties, public spaces and City parks, special events and a portion of the Industrial Commercial and Institutional (ICI) sector. Although the City has no statutory role to play in waste collection and waste diversion from the ICI sector, it does provide collection services for some ICI establishments. This includes City facilities, places of worship and small businesses registered under the City's Yellow Bag Program and schools participating in the Green Bins Program.

The City's recycling collection service is a dual material stream program: glass-metal-plastic (GMP) and fibre streams. Each stream has dedicated colored containers, pending the collection service type and the material streams are collected separately.

The collection service is set up in a way that the material from the residential sector and the non-residential sector is collected together to optimize operational efficiencies and cost.

All waste material managed by the City of Ottawa is processed and/or disposed of within City limits.

The City provides uniform collection services, 5 days per week, based on property type and the container used to set out waste material for collection. These services are delivered through the curbside and containerized waste collection service programs.

Curbside Collection Service Program

The curbside collection service program provides collection of garbage, recyclable material, household organic waste and leaf and yard waste, at a location, which is at or near the curb

and/or a shared common area/pad. The curbside collection service collects garbage from garbage bags and/or garbage cans and recyclables are placed in a blue box or black box. Household organics is collected from a green bin and leaf and yard waste is collected from a green bin, paper yard waste bag, reusable container or for branches can be tied and bundled. Bulky items are collected with garbage.

Approximately 294,000 properties are serviced under the curbside collection program, including residential properties, City facilities and small ICI establishments.

Current curbside service levels were established by City Council in April 2011 and include:

- Material is collected five days per week;
- Uniform residential curbside collection service levels provided across the City (urban, suburban and rural);
- Biweekly collection of garbage;
- Biweekly collection program for diapers and incontinence products (Special Consideration Items), alternating with garbage collection;
- Biweekly collection of blue and black bins on alternating weeks;
- Weekly collection of green bins, year-round; and,
- Weekly collection of leaf and yard waste.

The current curbside collection contract began on October 26, 2012 and will terminate on May 31, 2020. A new short-term, three-year collection contract begins on June 1, 2020 and will continue until May 31, 2023. In the Spring of 2019, Council approved staff's recommendation to enter into a short-term three-year contract in order to allow time for the provincial legislative framework related to the shift to full producer responsibility for the Provincial Blue Box Program, be clarified. Furthermore, the short-term contract would allow the community and Council adequate time to establish a vision, objectives and targets for the Solid Waste Master Plan, so that future curbside collection options to be considered in the next collection contract align with the strategic direction of the City's Solid Waste Master Plan and include comprehensive community consultation.

Containerized Collection Service Program

The containerized collection service program provides collection of garbage from a front-end loading container and recyclable material from a front-end loading container or 360 litre recycling cart. Both the containers and carts are collected using a front-end loading truck. Properties serviced under this program have their bulky items, household organics and leaf and yard waste collected under the curbside collection service program.

Approximately 1,940 properties are serviced under the containerized collection program which includes multi-residential properties with 6 units or more (1,700) as well as City facilities (240).

Current containerized collection service levels were established by City Council in April 2011 and include:

- Weekly collection of garbage;
- Once per week collection of recyclable material;
- Biweekly collection of bulky items (serviced under the curbside program);
- Collection of Christmas trees (serviced under the curbside program);
- Weekly curbside collection of yard waste (serviced under the curbside program); and,
- Weekly collection of household organics (serviced under the curbside program).

The current containerized collection contract began on June 1, 2014 and will terminate on May 31, 2020. A new five-year containerized collection contract was developed and awarded. The start date of this contract is June 1, 2020 and the end date is June 1, 2025, with the option to extend the period of contract for two additional one-year terms. This new contract includes the following changes:

- The collection of garbage in 360 litre carts. With the addition of 360 litre garbage carts, properties that were not able to participate in the City's municipal waste collection program due to limited storage space for garbage containers will now be able to.

- The collection of bulky items from multi-residential properties receiving containerized garbage collection was moved from the curbside collection contract and added as a responsibility under the new containerized collection contract. Bulky item tonnages and

real costs will be determined for those multi-residential properties under the containerized collection program.

- The collection of green bins from multi-residential properties receiving containerized collection was moved from the curbside collection contract and was added to the containerized collection contract. The contractor, under the new contract, upon agreement of the property owner, will be required to move green bins from a storage area to the collection location at no cost to the property owner. This enhancement will remove the need for properties to set the green bin to the edge of the property for collection. Under the new collection contract, properties will no longer have to bring the green bin to the edge of the property for collection.

Public Space Collection Services

The City provides waste collection services in public spaces. This gives the general public (residents, visitors and tourists) the opportunity to dispose of waste in the proper way and improve diversion.

The City collects from approximately 750 on-street waste receptacles across the City. The collection is divided into two zones: Restricted Advertising Area (RAA) and Unrestricted Advertising Area (UAA). The RAA is defined as the core area of the City, traditional main streets and the Business Improvement Areas. In the RAA, there is no commercial advertising allowed on the waste receptacles. The UAA is defined as all areas outside the RAA and allows for commercial advertising on the waste receptacles.

The City collects from approximately 5,400 garbage bins in City parks. Solid Waste Services is currently undertaking a one-year City parks organic and recycling pilot project, where green bins are co-located with recycling and garbage receptacles in 10 parks across the City. The pilot will end November 2020, at which time, staff will evaluate the effectiveness of the pilot.

Garbage collection for all special events is the responsibility and the expense of the event organizer. Green bins and clear stream recycling frames are only supplied by the City for smaller events that take place on City property. For larger events such as the Dragon Boat Festival, there is currently no requirement for recycling/diversion as part of the events permit.

However, the use of recycling stations and organics collection is strongly encouraged through the comprehensive event guide that the City's Event Central provides to registries. The event guide also outlines best practices and tips for greening an event and several events already have sustainability programs in place.

Corporate Solid Waste Management Practices

There are approximately 375 City facilities comprised of recreation facilities, community centers, daycares, client service centers, long-term care homes, libraries, works yards, emergency service stations/posts and transit facilities and garages.

While Solid Waste Services is responsible for the collection, processing and disposal of the typical waste streams (garbage, recyclables, household organics and leaf and yard waste) from City facilities, there are additional waste streams that are generated and managed by other City departments under separate waste management programs, contracts and services, These materials include electronic equipment such as computers, waste oil, used filters, antifreeze and used tires from fleet vehicles; surplus office furniture, hazardous materials used by City facilities such as pool chemicals, uniforms as well as medical supplies and equipment.

Waste Diversion Programs

Residents of the City have access to several waste diversion programs to further divert waste from landfill. These include the Household Hazardous Waste Events, Take It Back! Program, Waste Electrical and Electronic Equipment (WEEE) Program, Used Tires Program and Give Away Weekends.

There are approximately eight one-day mobile events held each year and are located at various locations across the City. In 2019, the City of Ottawa hosted nine events. Each event is attended by approximately 2,200 vehicles and costs approximately $1.3 million per year with about $425,000 of funding provided through industry stewards.

The management and funding structure for the Municipal Hazardous Waste Program, the WEEE Program as well as the Blue Box Program are currently under review through the Waste Free Ontario Act and full producer responsibility. The Ministry of Environment, Conservation and Parks (MECP) is currently in the process of drafting new regulations for

these programs. The new regulations will outline producers' responsibilities with regards to ensuring designated materials are collected. Once the regulations are released, the City will have to determine its level of involvement in the collection of these materials. Additional information on legislation related to producer responsibility can be found in the Solid Waste Master Plan's Technical Memorandum #2, Review of Federal and Provincial Solid Waste Policies, Programs and Legislation.

Waste Disposal

The City currently has no contractual relationships or obligations with any of the local private sector landfill facilities or transfer stations.

The City owns the Springhill Landfill and the accompanying Environmental Compliance Approval (ECA) for the site. Tomlinson Waste Management (TWM) operates the Springhill Landfill on behalf of the City. Effective, July 1, 2016, the City stopped tipping municipal curbside garbage at the site and in 2018, the MECP identified significant groundwater and surface water contamination that put the site out of compliance with the ECA. The City amended the ECA to temporarily suspend waste placement activities, effective May 4, 2018 and submitted a long-term Remediation Action Plan to the MECP to remediate the site through a capping solution.

The Trail Waste Facility (TWF) is a key City asset – a state of the art landfill that employs innovative technologies and methods and is operated above industry standards.

The TWF has an approved capacity of 16.9 million cubic meters, with 5.8 million cubic meters remaining. It is permitted to accept solid, non-hazardous waste generated within the boundaries of the City of Ottawa. The Minister approved the Environmental Assessment to expand the Trail Waste Facility in June of 2005 and depending on the extent of diversion from the landfill in the future, the current estimated end of life is 2041.

The TWF has a net operating cost of approximately $6.5 million per year with offsetting revenues of approximately $4.3 million.

Leachate is currently pre-treated at the facility. It is then tested to ensure that it meets the City's Sewer Use By-law and is then trucked to the City's wastewater treatment processing facility (ROPEC) for further treatment. A full scale on-site permanent leachate treatment facility is currently being designed. This facility will treat leachate to a very high quality and then discharge the treated water to the Jock River.

At the TWF, landfill gas is managed to reduce odours and prevent off-site migration in the ground beyond the TWF's property boundary. It is collected through a highly engineered gas collection system. Landfill gas is managed by the Agreement-holder, PowerTrail Inc. PowerTrail Inc. uses the landfill gas collected at the TWF to power six 1 megawatt internal combustion reciprocating engines and produces approximately six megawatts of electricity, which is enough to power 6,000 homes in Ottawa. Through the agreement with PowerTrail Inc., the City earns a royalty based on the sale of electricity generated at the landfill gas utilization facility.

The Trail Waste Facility accepts and beneficially reuses solid non-hazardous waste soil generated within the City of Ottawa. This includes any projects from the private and commercial sector as well as from the City's infrastructure and roads projects.

The Trail Waste Facility is operated and maintained in accordance with Certificates of Approval (C of A) issued by the Ministry of Environment Conservations and Parks. As conditions to these C of A's, the City is subject to ongoing monitoring and compliance programs and conducts an annual environmental monitoring program to document groundwater, surface water and operational conditions on and around the site.

Waste Processing

The City manages the processing of recyclable material, household organics and leaf and yard waste.

Recyclable Material Processing

The City's processing and marketing of recyclables is currently contracted to one service provider, Cascades Recovery+. Cascades Recovery+ processes and sorts the City's

recyclable material into different products and markets the material monthly to the highest bidder. The City retains all revenues from the sale of recyclables.

In 2018, a total of 57,000 tonnes of recyclables was marketed by Cascades Recovery+: 38,000 tonnes of residential Black Box material and 19,000 tonnes of residential Blue Box material by with approximately 5,000 tonnes of contamination.

Recycling markets have fluctuated for decades, with commodity pricing trends being labelled as “volatile” due to the large annual swings. Recently, there have been a combination of forces that are impacting the marketing of recyclables and putting greater than usual pressure on commodity pricing. These include:

- Market forces, such as China’s ban on imported waste material;
- Closure of several North American recycling facilities;
- New types of packaging introduced by producers are increasing the material complexity, which introduces sorting challenges and higher contamination and/or residual rates;
- Problematic materials, such as polystyrene or multi-layered materials, foster confusion as to whether they are recyclable or not in their local program; and,
- The decline of newsprint tonnages.

In 2018, the City received approximately $8.3 million in revenue for marketed recyclable material. The paper-cardboard material marketed by Cascades Recovery+, generated a revenue of $3.5 million and glass-metal-plastic material generated a revenue of $4.8 million from the sale of recyclables; 42% and 58% of the revenue, respectively.

For the City of Ottawa, market demand for fibre material and pricing for fibre has dropped significantly in the past five years and the amount of glass-metal-plastic material collected and marketed has increased by 30% over the same period, despite the abundance of lighter weight materials such as plastic bottles. Part of this is due to the increased availability of plastic packaging and part is due to huge upgrades to the City’s contracted processing facility, leading to an increase in the capture of materials.

Source Separated Organics and Leaf and Yard Waste Processing

The City's household organic waste, leaf and yard waste, as well as Christmas trees are processed and marketed under a contract with Renewi Canada Ltd, formally Orgaworld Canada Ltd., through a twenty-year contract, which ends in 2030. The Renewi facility uses an indoor tunnel composting system for both leaf and yard waste material and source separated organics.

On March 28, 2018, Council approved a contract settlement to resolve legal disputes between the City and Renewi. This resulted in an amended and restated contract that was signed July 5, 2018. As part of the settlement agreement, Council also approved enhancements to the Green Bin program for residents at a better value for taxpayers. These enhancements included:

- Reducing the 'put-or-pay' tonnage from 80,000 tonnes to 75,000 tonnes per year;
- Replacing the 540 tonne daily limit for processing organics with a 2,700 tonne weekly limit, providing the City with more flexibility to manage what it delivers; and,
- Expanding the Green Bin program to permit residents to add plastic bags as an organic bagging option and dog waste to the weekly collection

Currently, the majority of LYW is processed at Renewi's facility to meet the put or pay requirements. However, during peak LYW seasons, when the amount of LYW collected may exceed the processing facilities weekly limit, the excess LYW is taken to the Trail Waste Facility. In 2018, 76,580 tonnes of household organic waste and yard waste was processed at Renewi while 5,000 tonnes of leaf and yard waste was processed at the TWF.

Next Steps

As previously described, this Technical Memorandum #1 was part of Phase 1 of the Solid Waste Master Plan. The purpose of this deliverable is to document the existing reduction, reuse, collection, processing, disposal and financial systems used to manage the waste in the City. This baseline will be used as the foundation upon which to base future programs, policies and facilities.

The next step in the process will be the development of Phase 2, Where We Are Going? which will help to continue building the foundation. This next step will document the needs

assessment and establish the vision and guiding principles that will guide the implementation of the Master Plan in the future.

1.0 INTRODUCTION AND BACKGROUND

Recognizing the need for an updated comprehensive long-term waste management plan that would set the foundation for future planning and coordinated decision making, the City of Ottawa initiated a process for the development of a long-term Solid Waste Master Plan in 2019.

The Solid Waste Master Plan (the Master Plan) will make recommendations based on the 5R's waste management hierarchy of reduction (avoidance), reuse, recycling, recovery and residual disposal. See Figure 1 for a more complete description of the 5R's.

Figure 1: 5R's Waste Management Hierarchy

The Master Plan will anticipate future needs of the City and identify options that meet the needs of City customers. It will take a “triple bottom line” approach and recommend policies and programs that are cost-effective, socially acceptable and environmentally sustainable for the long-term.

The project is anticipated to be completed by the end of 2021.

1.1 Purpose of This Document

The first step in the master planning process is to document the current state of the City of Ottawa’s solid waste management system. This includes not only the City services and programs provided to residents and ICI customers, but also how the City as a Corporation manages its own waste at City facilities. Documenting and understanding the baseline waste management system, programs, policies and Corporate practices will allow for the identification of future alternatives for the integrated waste management system to meet the growing needs of the City.

It is important to note that the information contained herein is accurate only up to the completion of this technical memorandum. New information is continually being generated (systems change, contracts expire, etc.); as such, this document should be regarded as a snapshot in time, current as of December 2019, reflecting information available at that time.

It is also important to note that this document does not include waste generated within the City of Ottawa that is privately managed outside of the City’s responsibilities. This includes all properties in the ICI sector that are not participating in the Yellow Bag Program such as retail shopping establishments, restaurants, hospitals, hotels and motels, office buildings, educational institutions, manufacturing establishments as well as waste managed on federal, provincial and the National Capital Commission (NCC) properties.

1.2 Current Waste Management System Overview

The City of Ottawa has a complex and integrated solid waste management system that maintains public health and supports environmental sustainably. The system is a comprehensive network of programs, services, truck fleet, drop-off locations, processing

facilities and residual management facilities. The system provides services to a wide range of customers through a mix of in-house and contracted service providers and is financially supported through several funding and revenue sources.

The following provides some quick facts on the City's waste management system. These items are described in further detail in their associated section within the document.

Solid Waste Services Branch: 2020 Annual Operating Budget

- Total Net Expenditures: $83,273,000 (includes a contribution to capital of $4,588,000)
- Total Revenues and Funding: $58,080,000 (includes provincial funding of $5,824,000)

As a result of recent collection contract awards, the annual operating budget is expected to increase by another $6 million in 2021.

Solid Waste Services Staff

The Solid Waste Services Branch is comprised of approximately 190 staff persons involved with the collections, processing and disposal of waste as well as the strategic planning, development, implementation, evaluation and enhancement of the City's long-term Solid Waste plans and related policies, programs, services.

Curbside Collection Program

The curbside collection program has uniform residential collection service levels across the City, for urban, suburban and rural areas and includes:

- Weekly green bin (household organics) and leaf and yard waste collection, year round
- Biweekly collection of blue and black bin on alternating weeks
- Biweekly garbage and bulky item collection using the same truck
- Biweekly collection program for diapers and incontinence products, alternating with the week of garbage collection

Containerized Collection Program for Multi-Residential Properties

The containerized collection program has uniform multi-residential collection service levels across the City, for urban, suburban and rural properties and includes:

- Weekly green bin (household organics) and yard waste collection, year-round - serviced under the curbside collection contract
- Weekly collection of both recyclable streams (glass-metal-plastic items and fibre materials)
- Weekly collection of garbage
- Biweekly collection of bulky items – serviced under the curbside collection contract

Trucks and Roadway

- 126 trucks travel across 5,600 kilometers of roadway every week to provide waste collection services to the City's customers

Properties Served (2018)

- Curbside Collection Service: Approximately 294,000 locations
    - Includes residential, City facilities, commercial establishments (serviced through Yellow Bag Program) and schools (serviced through Green Bin Program)
- Containerized Collection Service: Approximately 1,900 properties
    - Includes multi-residential and City facilities

Total Quantities of Waste and Materials Collected (2018)

- 62,100 tonnes of recyclables
    - Over 23,300 tonnes of the glass-metal-plastic (GMP), (blue bin) material stream
    - Over 38,800 tonnes of the fibre (black bin) material stream
- 81,600 tonnes of organic material including household organics, leaf and yard waste and Christmas trees
- 191,000 tonnes of garbage
- 925 tonnes of scrap metal from City facilities
- 623 tonnes of municipal Hazardous or Special Waste

Public Space Collection (2018)

- Collection of approximately 750 street garbage/recycling bins across the City
- Collection of 5,400 garbage bins in City parks
- Collection of litter from public rights-of-way and in parks

City Owned Collection Fleet

- Operation and maintenance of 45 collection vehicles by the In-House Group for two out of five curbside zones: Zones 3 and Zone 5.
- Operation and maintenance of 15 pick-up trucks used by Solid Waste Services operations supervisors and inspectors

Solid Waste Bins: Supply and Inventory

The City of Ottawa contracts the delivery coordination and tracking of approximately 105,000 solid waste containers (blue bins, black bins, green bins, kitchen containers, front end loading garbage and recycling containers and recycling carts) on a yearly basis.

Waste Management Related Facilities

The City of Ottawa owns, operates and maintains:

- The Trail Waste Facility landfill, which includes an administrative building and garage
- The Springhill Landfill (operated by a third-party contractor)
- The Barnsdale Road Facility, leaf and yard waste composting pad
- One yard used for the office, parking and maintenance of the City's collection vehicle fleet
- 1,300 City parks and roughly 4,300 hectares of parkland where garbage and litter are managed
- 17 operations yards responsible for equipment maintenance, roads clean up and on-street waste collection

Closed Landfills Monitoring

- Nepean Landfill (closed 1980)
- Provision of perpetual care for 81 other closed landfill sites

Appendix 1 is a map, illustrating City owned active and monitored waste facilities and external facilities under contract with the City.

Waste Management System Summary of Agreements and Contracts

The Solid Waste Services Branch is responsible for the operational planning, development, management, and environmentally sound operation of the solid waste management system for the City. In order to do this, it requires both in-house staff as well as privately contracted service providers.

Table 1 summarizes the contracts associated with the City's solid waste management system managed by the Solid Waste Services Branch.

Table 1: Contracts Managed by the Solid Waste Services Branch

Waste Material/Service	Current Contractor	Contract Expiry Date	Contract Extension Period	Contract Value (Annual) 2020
Curbside Collection	Waste Management, Miller Waste Systems & In-House Group (City)	May 2023	None	$39 Million
Delivery of Blue and Black Bins, 47L and 80L Green Bins and Kitchen Containers to customers	Waste Management	June 2019	2 additional 1-year periods *Currently operating under the 1st one-year extension period.*	$1.1 Million
Containerized Collection (Current Contract)	Waste Connections of Canada	May 2020	None	$3 Million
Containerized Collection ***(Next Contract)***	Waste Connections of Canada	May 2025	2 additional 1-year periods	$8 Million

Waste Material/Service	Current Contractor	Contract Expiry Date	Contract Extension Period	Contract Value (Annual) 2020
On-Street Waste Basket Collection Service (Restricted Advertising Area)	Waste Management Canada	May 2021	4 additional 1-year periods	Based on services performed. Not a fixed cost.
On-Street Waste Basket Collection & Advertising Service within the Unrestricted Advertising Area	Creative Outdoor Advertising	December 2024	1 additional 5-year period	Revenue generating agreement of $250,000
Processing of Recyclables (Materials Recovery Facility)	Cascades Recovery+	May 2020	3 additional 1-year periods *1st one-year extension period approved*	$6.6 Million
Processing of Household Organics/Leaf & Yard Waste	Renewi Canada Ltd.	March 2030	2 additional 1-year periods	$10 Million
Leaf and Yard Waste - Grinding (Trail Waste Facility – Barnsdale Road Facility)	Killaloe Wood Products	April 2020	None	$ 30,000
Leaf and Yard Waste - Screening	Greely Sand & Gavel	April 2020	2 additional	$110,000

Waste Material/Service	Current Contractor	Contract Expiry Date	Contract Extension Period	Contract Value (Annual) 2020
(Trail Waste Facility – Barnsdale Road Facility)			1-year periods	
Household Hazardous Waste Depots	Drain-All Ltd.	December 31, 2020	1 additional 1-year period	$1.4 Million
Landfill Gas Utilization Agreement ---------- 2018 Upgrade & Annual Costs	Power Trail Inc	January 2027	2 additional 5-year periods	$2.24 Million (2018 Upgrade) ---------- (Annual costs: $500,000 year)
Landfill Operating & Monitoring Program	Dillon Consulting Limited	May 2020	2 additional 17-month periods	$262,000
Raptor (Bird Control) Program	Predator Bird Services Inc.	2020	None	$100,000
Trail Waste Facility - GPS Program	Sitech	September 2019	2 additional 1-year periods	$80,000
Leachate Hauling Services	Tomlinson	November 2019	3 additional 1-year periods	$1.2 Million
Leachate Systems Cleaning	Drain-All	November 2019	Currently out for tender	$36,000
Management Agreement				

Waste Material/Service	Current Contractor	Contract Expiry Date	Contract Extension Period	Contract Value (Annual) 2020
Springhill Landfill	Tomlinson Waste Management (TWM)	Landfill operations suspended May 2018	Agreement is in place until the landfill capacity of the site has been exhausted	City receives 40% of net profit if there is one. TWM responsible for all costs associated to landfill as long as they continue to manage it

2.0 HISTORICAL OVERVIEW OF WASTE MANAGEMENT IN OTTAWA

Until the mid-1980s, municipal solid waste management services consisted of the curbside collection of garbage and landfill disposal from the residential sector. In the mid 1980's, following the success of the first Blue Box Program in Kitchener, Ontario, the City of Ottawa and area municipalities implemented the Blue Box system with funding from the Ontario Multi-Materials Recycling Inc. (OMRI) and the soft drink industry. The City's earlier Blue Bin Program generally collected newspaper, cans and bottles.

In 1995, area municipalities amalgamated their solid waste programs under the Regional Municipality of Ottawa-Carleton. This was done to establish consistent solid waste management programs and collection systems. On January 1, 2001, all eleven municipalities and the Regional Municipality of Ottawa-Carleton amalgamated to create a one-tier government for Ottawa.

Table 2 provides a summary of some of the significant key milestones in the evolution of the City of Ottawa's waste management system.

Table 2: Key Milestones in the History of Ottawa's Waste Management System

Year	Description
1980	• Trail Waste Facility (TWF) opens (formally known as the Trail Road Landfill Site)
1980's	• Blue Bin Programs implemented by all 11 municipalities - individually
1992	• Household Hazardous Waste (HHW) Depot opens at the Trail Waste Facility. Run by the Regional Municipality of Ottawa-Carleton (RMOC)
1993	• Nepean landfill is capped and closed
1995	• RMOC amalgamates Solid Waste programs with 10 out of 11 municipalities (remaining municipality joined 2001) • 4 mobile 1-day HHW events added
1996	• Additional recyclable items added to the Blue Bin Program
1997	• Take It Back! Program commences

Year	Description
1999	• First successful bid for In-House team. Collection zone awarded to In-House team under managed competition process • Black Bin collection introduced
2001	• New City of Ottawa created by the amalgamation of 11 former municipalities and the RMOC (Solid Waste Services incorporated under the new Ottawa) • Start of Compost Plus Pilot Project (5,300 households)
2003	• Ottawa City Council approves the City's first Integrated Waste Management Master Plan
2004	• Due to Universal Program Review (UPR), Ottawa City Council reduced the garbage and recycling services by $2.3 million by eliminating: ○ Problematic Blue Bin items (e.g. polystyrene and film plastic) ○ Leaf and yard waste collections in the summer months (reinstated 2005) ○ The pick up of garbage and recycling from all commercial businesses
2005	• Ottawa City Council approves Source Separated Organics (SSO) collection (Green Bin Program) • Ministry of Environment approves the Trail Waste Facility landfill expansion. • City enters into partnership agreement with Plasco which operated a pilot scale gasification and plasma refining system • Permanent HHW depot closes at the TWF and 10 mobile HHW events added
2006	• New collection contracts for curbside and multi-residential sectors • Yellow Bag Program for small businesses commences
2007	• Ontario Deposit Return Program begins. Under the program, all beverage containers purchased in Ontario can be returned to the Beer Store for a full deposit refund • The first Give Away Day/Weekend
2008	• City signs 30-year contract with Renewi (formally Orgaworld) for organics processing
2009	• Ontario's Electrical Waste and Equipment Program begins. • Green Bin Champions Program commences
2010	• Green Bin Program implemented for curbside residents and schools. • Supply of green bins and recycling bins (and collection) for special events commences

Year	Description
2011	• Green Bin Program implemented for the multi-residential sector. • Expansion of Blue Bin material to include plastics #3 to #7 • Distribution of blue bins, black bins and green bins through the Canadian Tire coupon program begins • Plasco applied to the Ministry to re-permit the demo project to a permanent commercial demonstration and development facility
2012	• New curbside collection contract commences with the introduction of an in-house group non-competitive Zone 3 (End date: May 2020) • Start of biweekly garbage collection, year-round weekly green bin collection and biweekly Special Items (diapers & incontinence products) collection. • Green bin collection in the rural areas commences
2013	• Plasco application was approved for a permanent commercial demonstration and development facility for a maximum processing capacity of 85 tonnes per day. However, a commercial scale facility was not approved.
2014	• New multi-residential contact commences and includes the collection of waste from City facilities. (End date: May 2020)
2015	• City terminates agreement with Plasco
2018	• City terminates agreement with Canadian Tire to supply blue bins, black bins and green bins to the public. Program moved to private service provider
2019	• Expansion of green bin materials to include plastic bags and dog waste as part of the contract settlement with Renewi • Ottawa City Council approves 3-year sole source curbside collection contract. (End date: May 2023)
2020	• New 3-year short term curbside collection contracts commence. • New 5-year multi-residential/City facility collection contract commences. This contract includes the collection of bulky items and green bin collection from private property.

3.0 GEOGRAPHIC AND DEMOGRAPHIC OVERVIEW

The City of Ottawa is the capital of Canada and reached a population of one million people in 2019.

The City is geographically a large city, which is rapidly growing through intensification development within the existing urban areas, but also developing outward into the rural areas.

The sheer size, distribution of homes and housing development pattern within the City affects the collection system and the efficiency of collection operations, since the City's residents live in such a variety of settings and residence types.

No matter the location, all residential household types can utilize and participate in either the curbside collection service program or the containerized collection service program (or a combination of both) as well as other waste diversion services such as Household Hazardous Waste depot events.

3.1 Geographic Overview

The City of Ottawa, the Nation's capital, is the second largest municipality, population wise, within the province of Ontario and is the sixth largest city in Canada after Toronto, Montreal, Vancouver, Calgary and Edmonton.

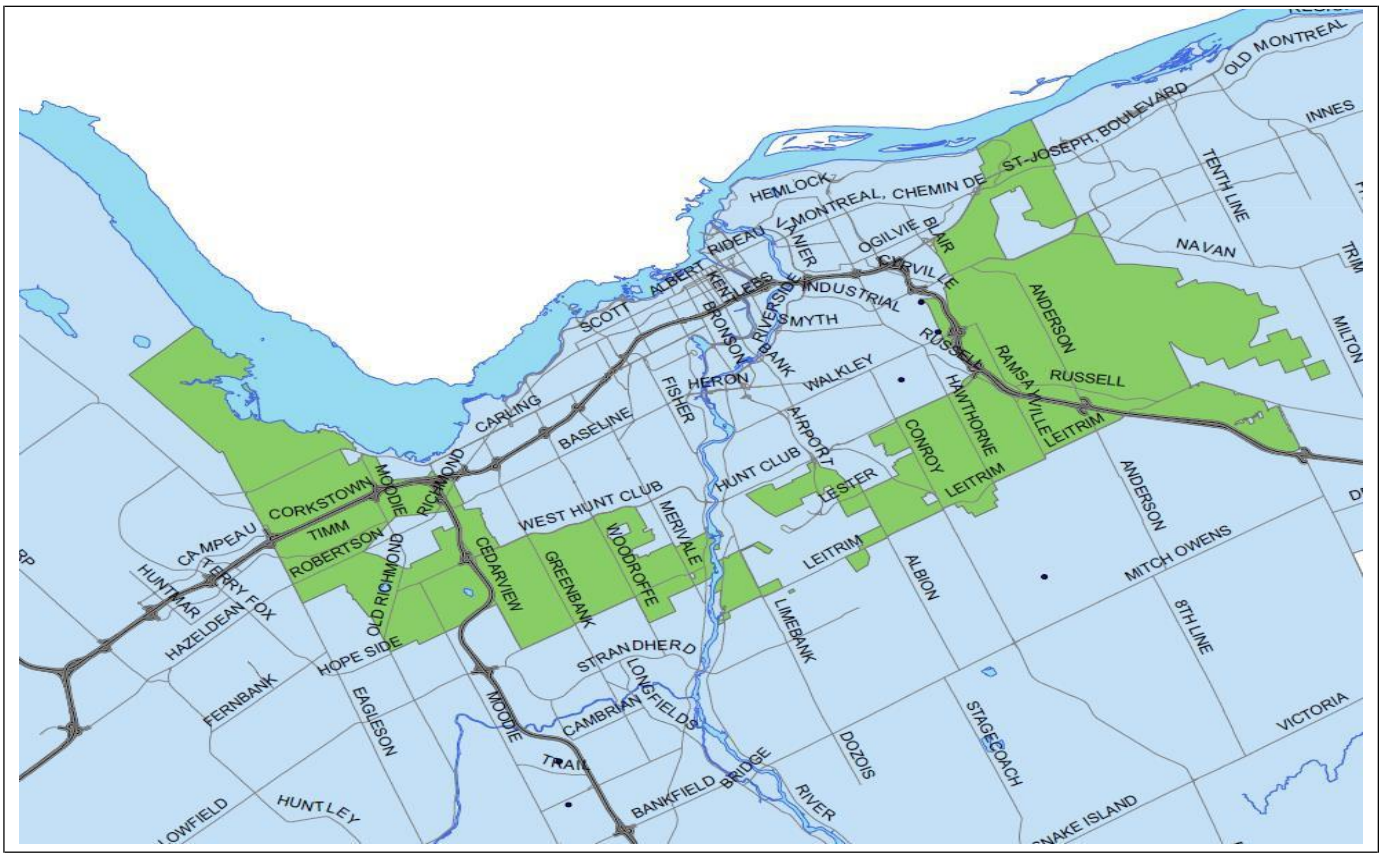
It is made up 11 former municipalities and has an area of almost 2,800 square km with 5,600 kilometers of roadways. The City is located in the Ottawa Valley in the eastern portion of southern Ontario lying on the southern shore of the Ottawa River, a major waterway forming the boundary between the provinces of Ontario and Quebec.

It is bordered by the Ottawa River to the north, Stormont, Dundas and United Counties to the south, Lanark County and Renfrew County to the west and Prescott-Russell United Counties to the east.

The City of Ottawa has a main downtown urban core but there is a mix of other urban, suburban and rural areas within the City's limits. The main suburban areas extend a considerable distance to the east, west and south of the City centre.

The greenbelt conservation area, which is 20,000 hectares of protected green space, including forests, farms and wetlands, encircles the City of Ottawa and generally separates the suburban and rural lands as illustrated in Figure 2.

Figure 2: Greenbelt Conservation Area



The National Capital Commission not only owns and manages most of the greenbelt land, but it also manages the large areas of greenspace within the City's urban area such as parkways and parks like the Sir John A Parkway, Queen Elizabeth Drive, Major's Hill Park and Commissioners Park.

The rural area, which lies beyond the greenbelt, includes both rural village communities, which are properties located in pockets of housing developments that are separated from urban

areas of the City (e.g. village, hamlet or rural subdivision) and rural non-village areas, which are country residences and farms with significant distances between neighboring households.

At the end of 2018, the rural area comprised of 222,300 hectares, which is almost 80% of the total land area of the City of Ottawa (Rural Residential Land Survey, 2017-2018 Update).

3.2 Demographic Overview

3.2.1 Population

The City of Ottawa's population reached one million people in 2019.

In 2016, the most recent Canadian Census reported that the population density for the City of Ottawa was approximately 334.8 people per square kilometers. The City's population is approximately distributed in the following manner: 55% of Ottawa's population is urban, 35% is suburban and 10% is rural.

The population growth is expected to continue. The City's Official Plan predicts growth of 40% over the next 28 years (2018-2046), totaling almost 1,410,000 residents by 2046.

Source: https://ottawa.ca/en/city-hall/get-know-your-city/statistics-and-economic-profile/statistics/ottawas-population

3.2.2 Economy and Living

In 2016, there were 566,000 jobs reported and a 6.3% annual unemployment rate. The City of Ottawa has the largest tech park and federal employment node in Canada. As an employer, the City of Ottawa employs about 17,000 staff in about 110 lines of businesses.

In 2016, the City of Ottawa had the second highest family income among major Canadian cities at $102,000 (median family income) and the City's average housing costs were at $394,000.

Source: https://ottawa.ca/en/city-hall/get-know-your-city/statistics-and-economic-profile/statistics

3.2.3 Household and Dwelling Characteristics

Household and dwelling characteristics are defined by Statistics Canada as the structural characteristics and/or dwelling configuration, which refer to whether the dwelling is a single-detached house, an apartment in a high-rise building, a row house, a mobile home, etc.

Table 3 breaks down the percentages of occupied dwellings by housing types in the City of Ottawa, as per the 2016 Census data.

Table 3: Percentage Occupied Private Dwellings by Structural Type of Dwelling

Structural Type of Dwelling	Percentage Breakdown
Single-detached house	42.33 %
Apartment in a building that has five or more stories	18.37 %
Other attached dwellings (Semi-detached, row house, apartment in a building that has few than five stories)	39.09 %
Mobile dwelling	0.21 %

The average household size in the City of Ottawa is 2.5 persons per household.

3.2.4 Age Characteristics

The 2016 Census determined that the average age of the City of Ottawa's population is 40 years. Table 4 shows the distribution (%) of the City's population by broad age groups.

Table 4: Distribution (%) of the City of Ottawa's Population by Age Groups

Age Group	Distribution %
0 - 14 years	16 %
15 – 64 years	67 %
65 years and over	15 %
85 years and over	2 %

3.2.5 Language and Education

There are four universities and two colleges located in Ottawa.

As reported in 2016, Ottawa's workforce is a young, entrepreneurial workforce with a bilingual rate of 44%, and more engineers, scientists, and PhDs per capita than any other city in Canada.

Source: https://ottawa.ca/en/city-hall/get-know-your-city/statistics-and-economic-profile/statistics

3.2.6 Ethnicity and Trends

Ottawa is a significant point of entry into Canada for immigrants from around the world. Immigrants who settle in Ottawa are attracted by high-paying professional jobs or post-secondary studies. They are typically more educated, earn higher wages, and have higher levels of employment than immigrants who settle in other cities.

Between 2011 and 2016, Ottawa welcomed 30,075 new arrivals from around the world. The top countries of origin for those immigrating between 2011 to 2016 is Philippines, China, India, Syria and Haiti.

According to 2016 census data, 216,505 people born outside of Canada reside in Ottawa. They make up over 23% of the population at the time of the census. Although Toronto and Montreal received the most immigrants among the nation's biggest cities between 2011 – 2016, Ottawa immigration population had the third highest growth rate at 7%, ahead of Vancouver at 2%, but trailing Edmonton (34%) and Calgary (28%).

Source: https://www12.statcan.gc.ca/census-recensement/2016/as-sa/fogs-spg/Facts-cd-eng.cfm?LANG=Eng&GK=CD&GC=3506&TOPIC=7

4.0 SOLID WASTE LEGISLATION AND POLICY FRAMEWORK

In Canada, the responsibility for managing and reducing waste is shared among the federal, provincial and municipal governments.

Broadly speaking, the local governments manage the collection, recycling, composting and disposal of household waste, while the provincial governments establish waste reduction policies and programs, approve and monitor waste management facilities and operations. The federal government complements the role of provinces, territories and municipalities by regulating the international and interprovincial movements of hazardous waste and hazardous recyclable material; identifying best practices that will reduce, as much as possible, the toxic pollution from the management of waste; and providing funding for projects to reduce waste sent to landfills and to improve resource management.

The City of Ottawa collects, transports, processes and disposes of waste for the residential sector, which includes the collection of garbage (including bulky items), blue and black bin recyclables, green bin household organic waste, leaf and yard waste and Christmas trees as well as the drop off events for household hazardous waste.

Although the City has no statutory role to play in waste collection and waste diversion from the ICI sector, it does provide collection services for some specific parts of the ICI sector. This includes the collection, transportation, processing and disposal of waste materials at multi-residential buildings and properties, City-owned facilities, places of worship and small businesses through the City's Yellow Bag Program. The City also provides schools with green bin collection through the City's Green Bins in Schools Program.

The following sections provides an overview of the major legislation and policies of governmental organizations (federal, provincial and municipal) as well as other key initiatives, stakeholders and organizations influencing the City's solid waste management activities.

Additional information on legislation, polices and organizations relevant to Ottawa's solid waste management can be found in Appendix 2 as well the Solid Waste Master Plan's Technical

Memorandum #2, Review of Federal and Provincial Solid Waste Policies, Programs and Legislation.

4.1 Relevant Federal Legislation, Policies, Strategies and Plans

The following lists relevant federal policies that impact how solid waste is managed by the City of Ottawa.

- The Canadian *Environmental Assessment Act*;
- The Canadian *Environmental Protection Act*;
- The *Transportation of Dangerous Goods Act*;
- Canadian Council of Ministers of the Environment:
    - Canada-Wide Action Plan on Zero Plastic Waste, Phase1, 2019;
    - Strategy on Zero Plastic Waste, 2018;
    - Composability Standard and Certification Protocol, 2010;
    - Canada-wide Action Plan for Extended Producer Responsibility, 2009;
    - Canada-wide Strategy for Sustainable Packaging, 2009;
- National Pollution Release Inventory;
- Federal Climate Change Policy; and,
- Canadian Food Inspection Agency.

4.2 Relevant Provincial Legislation, Policies, Action Plans and Programs

The following lists relevant provincial policies that impact how solid waste is managed by the City of Ottawa.

- Ontario *Environmental Assessment Act*;
- Ontario *Environmental Protection Act*;
    - Regulation 101/07: Waste Management Projects
    - Regulation 101/94: Recycling and Composting of Municipal Waste
    - Regulation 102/94: Waste Audits and Waste Reduction Work Plans
    - Regulation 103/94: Industrial, Commercial and Institutional Source Separation Programs

  - Regulation 104/94: Packaging Audits and Packaging Reduction Work Plans
  - Regulation 217/08: Landfill Gas Collection
  - Regulation 232: Landfilling Sites
  - Regulation 298/12: Collection of Pharmaceuticals and Sharps
  - Regulation 347: General - Waste Management
    - Ontario Compost Quality Standards (under Reg. 347) and Guidelines for the Production of Compost
- *Waste-Free Ontario Act*, *2016* (Bill 151)
  - *Waste Diversion Transition Act, 2016;*
  - *Resource Recovery and Circular Economy Act, 2016*;
- *Ontario Green Energy Repeal Act, 2018;*
- *Ontario Municipal Act;*
- *Ontario Water Resources Act;*
- *Safe Drinking Water Act;*
- *Pesticides Act;*
- *Ontario Building Code Act;*
- *Ontario Planning Act;*
- *Fire Protection and Prevention Act;*
- *The Development Charges Act;*
- *Ontario Provincial Offences Act;*
- *Ontario Highway Traffic Act;*
- *Nutrient Management Act, 2002*;
- Food and Organic Waste Policy Statement, 2018;
- Ontario Compost Quality Standards;
- Preserving and Protecting our Environment for Future Generations: A Made-In-Ontario Environmental Plan, 2018
  - Discussion Paper: Reducing Litter and Waste in Our Communities

4.3 Relevant Municipal Plans, Policies, Strategies, Studies, Guidelines and By-Laws to Solid Waste Management

In addition to policy and legislation at the federal and provincial levels, the City has also developed policy frameworks and plans to support and guide the provision of waste management services, as per the following list.

Plans

- The City of Ottawa Official Plan (currently under review)
- 2003 Integrated Waste Management Master Plan
- Infrastructure Master Plan (currently under review)
- Climate Change Master Plan (CCMP), 2020
- Long Range Solid Waste Financial Plan (proposed 2021)
- Green Fleet Plan
- Transportation Master Plan (currently under review)

Policies

- Green Building Policy for the Construction of Corporate Buildings;
    - LEED Policy
- Green Procurement Policy
- Asset Management Policy
- Accessibility Policy
- Public Private Partnership Policy

Strategies

- Energy Evolution: Ottawa Community Energy Transition Strategy, 2019

Studies

- Biogas Optimization Study

Guidelines

- Site Plan Control: Solid Waste Collection Guidelines for Multi-Unit Residential Development

Municipal By-Laws

Municipal by-laws are public regulatory laws. Section 10 of the *Municipal Act, 2001* provides a single-tier municipality, such as the City of Ottawa, with the power to provide any service or thing that the municipality considers necessary or desirable for the public. Subsection (2) of that provision specifically authorizes a single-tier municipality to pass by-laws respecting economic, social and environmental well-being of the municipality, including climate change.

The Ontario *Municipal Act, 2001* gives municipalities broad powers to pass bylaws and govern within their jurisdiction, so long as these amendments or regulations are authorized under the *Municipal Act, 2001*, and are consistent with the policies and regulations established by the Province.

Below is a list of the City's municipal by-laws related to solid waste management. Further details are described in Appendix 2.

- Solid Waste Management By-law
- Building By-law
- Licensing By-law
- Noise By-law
- Parks and Facilities By-law
- Procurement By-law
- Property Maintenance and Property Standards By-law
- Site Plan Control By-law
- Special Events By-law
- Use and Care of Roads By-law
- Zoning By-law

4.4 Other Policy Influencers

The following key organizations help shape waste management systems at all levels of government and/or provide funding related to solid waste management policies and programs.

- Association of Municipalities of Ontario (AMO);

- Municipal Waste Association (MWA);
- Recycling Council of Ontario (RCO);
- Solid Waste Association of North America (SWANA);
- Ontario Waste Management Association (OWMA);
- Regional Public Works Commissioners of Ontario (RPWCO);
- Compost Council of Canada;
- Municipal Resource Recovery and Research Collaborative (Municipal 3R's Collaborative);
- Resource Productivity and Recovery Authority (RPRA) (formally Waste Diversion Ontario);
- Continuous Improvement Fund (CIF);
- Stewardship Ontario (SO); and,
- Federation of Municipalities (FCM).

5.0 ORGANIZATION STAFFING STRUCTURE

The City's integrated waste management systems are managed and operated by Solid Waste Services (SWS).

Figure 3: Trail Waste Facility Administration Building

SWS is one of six services that make up the City of Ottawa's Public Works and Environment Services Department (PWESD). SWS is supported by other service areas, primarily including Business and Technical Support Services, Public Outreach and Communications Branch, Fleet Services, Technical Innovation Engineering Support Services and Planning Infrastructure and Economic Development Department.

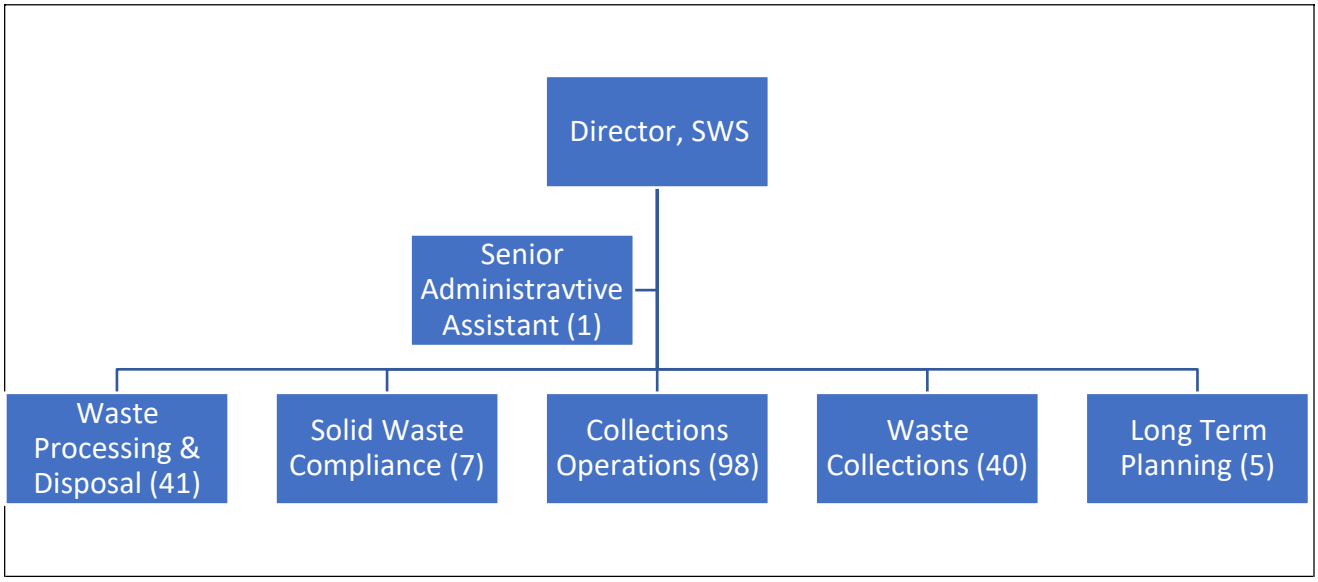
5.1 Solid Waste Services

Solid Waste Services is responsible for the collection, processing and disposal of waste materials.

As illustrated in Figure 4, responsibilities are broken down by each of the five branches within Solid Waste Services, each headed by a Manager/Program Manager who report directly to the Director of SWS. The Director of SWS reports to the General Manager of PWESD who then reports to the City Manager.

Solid Waste Services comprises of approximately 190 staff persons and except for the Collections Operations branch, all Solid Waste Services staff are located at the Trail Waste Facility which is shown in Figure 3.

Figure 4: Solid Waste Services Organizational Structure



The **Waste Processing and Disposal Branch** is responsible for receiving and disposing waste, operating the Trail Waste Facility (TWF) landfill and for diverting the household organic, recycling, leaf and yard waste, household hazardous and biosolids waste streams.

The **Solid Waste Compliance Branch** is responsible for monitoring and ensuring that the Trail Waste Facility meets all standards set forth by the Ministry of the Environment, Conservation and Parks and any other governing bodies. This branch is also responsible for technical support for all SWS, such as data, reporting and mapping.

The **Collections Operations Branch** is made up of the City's In-House Collections group. Staff within this branch comprise of two field supervisors, two operations clerks and collection operators. This group is responsible for the collection of garbage, bulky items, recyclables, household organic material and leaf and yard waste material in Zones 3 and Zone 5 under the curbside collection contract.

The positions under the Collections Operations Branch are considered unbudgeted because the work was awarded under a competitive contract bidding process and while these employees are entitled to the same rights, benefits and working conditions of a City employee,

there are modifications which are separately noted in the collective agreement under Article 36.

The **Waste Collection Branch** is responsible for managing the following collection contracts: curbside, containerized (multi-residential/City facility) and public spaces. This branch handles the customer service solid waste calls, coordinates the delivery of blue bins, black bins and green bins and administers the Solid Waste By-Law. This branch also includes a graffiti unit that is responsible for the clean-up of graffiti on City property.

The **Solid Waste Long Term Planning Branch** is responsible for overseeing the strategic planning, development, implementation, evaluation and enhancement of the City's long-term Solid Waste plans and related policies, programs, services and projects that guide the management of waste materials throughout the City of Ottawa.

5.1.1 Databases and Tools

For an effective and efficient waste management system, Solid Waste Services staff rely on several databases and tools.

The **Municipal Applications Partnership (MAP)** is a customer service database used to register and track complaints and requests for most City departments.

In 2018, MAP registered 56,000 service requests for Solid Waste Services and over 30,000 container (blue bin, black bin and green gin) requests. It included complaints and requests made by residents and customers from both the curbside and containerized collection services as well, the Waste Management Inspectors use MAP as a reporting tool for their investigations.

The following complaints, requests and/or information themes under the curbside collection service include: house not collected, street not collected, waste out too early, too late or wrong week, driver complaint, incorrectly packaged, appliance at road, large item pick up, empty containers still at curb, wrong set out location, container exchange/delivery, unacceptable material and calendar mail out requests.

The containerized collection service complaint and information themes are similar to the curbside collection service, but there are additional themes such as container repair or exchange requests, additional container request, extra collection required and roll-off collection request.

The **Solid Waste Application (SWA)** is a database used under the containerized waste collection service program. It is an internal database that stores related data such as building and property owner/manager information; contact information; collection types/schedules and route numbers; handling services details; container/cart information; inspections and missed collections.

The **Geoware** system is used for tracking and invoicing all transactions in and out of the Trail Waste Facility.

The **Cognos Reporting Tool** is a web-based database used for accessing data and reporting out on data such as collected tonnages, marketed recyclable material tonnages and the Trail Waste Facility's inbound and outbound material tonnages. The data goes back to the year 2000 and can be broken down by material type, zone or contractor and can be reported on a daily, weekly, monthly or yearly basis.

5.2 Internal and External Departmental Support System

As shown in Table 5, Solid Waste Services is supported by internal and external departmental services to provide an effective and efficient waste management system.

Table 5: Departmental Support System for Solid Waste Services

Department	Services	Support Provided
Public Works & Environmental Services Department	Business & Technical Support Services	• Staff Training & Development • Health & Safety • Mayor/Council Memos and Reports • Program Support • By-law Coordination • Outreach, Education and Communication • Policy Advising • Project Management
	Technology, Innovation Engineering Support Services	• Engineering Services • Technical Support • Technical Project Management
Innovative Client Services Department	Fleet Services	• Fleet Maintenance, Purchasing & Training • Strategic Sourcing
	Information Technology Services	• Technology Security, Modernization, Solutions & Support
	Corporate Real Estate Office	• Realty Services, Accommodations & Development • Environmental Remediation
	Supply Services	• Procurement- Supply & Policy
Finance Services Department	Corporate Finance Service	• Payroll, Pensions & Benefits • Financial Planning, Budgeting and Financial Services

Department	Services	Support Provided
		• Customer Accounting Management, Billing and Collections
	Revenue Service	• Tax Policy
Planning Infrastructure & Economic Development Department (PIED)	Infrastructure Services	• Design & Construction Project Management
	Economic Development Services	• Economic Policy • Data Provision • Rural Voice
	Planning Services	• Building Code Management • Planning/Operations • Land Management • Development Policy's & Review
Service Innovation & Performance Department	Human Resources Services	• Staffing, WSIB Claims & Disability Management
	Public Information & Media Relations Service (PIMR)	• Corporate Communications • Media Relations
	Service Ottawa	• Call Centre and Web Services

6.0 RESIDENTIAL PROGRAM PERFORMANCE

The following section provides information on the amount of residential waste generated, the composition of the waste, program participation, how much of the City's residential waste is diverted from landfill, program costs and marketing trends for recyclables.

6.1 Waste Generation

In 2018, approximately 333,000 tonnes of residential garbage, bulky items, recyclable material, household organics and leaf and yard waste was collected by the City of Ottawa.

The tonnages include waste generated from homes, multi-residential properties, City facilities, as well as from those commercial establishments participating in the Yellow Bag Program and schools participating in the Green Bin Program. The tonnages do not include the garbage, recyclables and leaf and yard waste collected from City facilities in roll-off containers. Table 6 shows the 2018 waste tonnages generated by material stream through both the curbside and containerized collection programs.

Table 6: Waste Material Tonnage Summary

Waste Stream	Tonnes
Garbage	189,000
Recyclable Material	62,000
Household Organics and Yard Waste	82,000
Total	**333,000**

The residential waste generation rate for 2018 was approximately 333 kg/capita and includes waste generated through the curbside and containerized collection programs.

Figures 5 and 6 show the waste generated by City of Ottawa customers in 2018, based on the weight of material collected in each stream. Figure 5 shows the proportion of waste collected in each material stream, as a percentage of the total waste collected from curbside customers under the curbside collection contract. Figure 6 shows the proportion of waste collected in each material stream, as a percentage of the total waste collected from multi-residential and City facility customers under the containerized collection contract. The collection of green bins and leaf and yard waste for all properties is currently provided under the curbside collection contract, which is why there is no green bin and leaf and yard waste tonnages under the

containerized collection contract.

It is important to note that while Figures 5 and 6 show what bin or container the waste was set out in for collection, it does not reflect the actual composition of the waste generated. Waste composition is measured through waste audit studies and is detailed in Section 6.2.

Figure 5: 2018 Waste Collected - Curbside Collection Program (by weight, as a percentage of total waste collected)

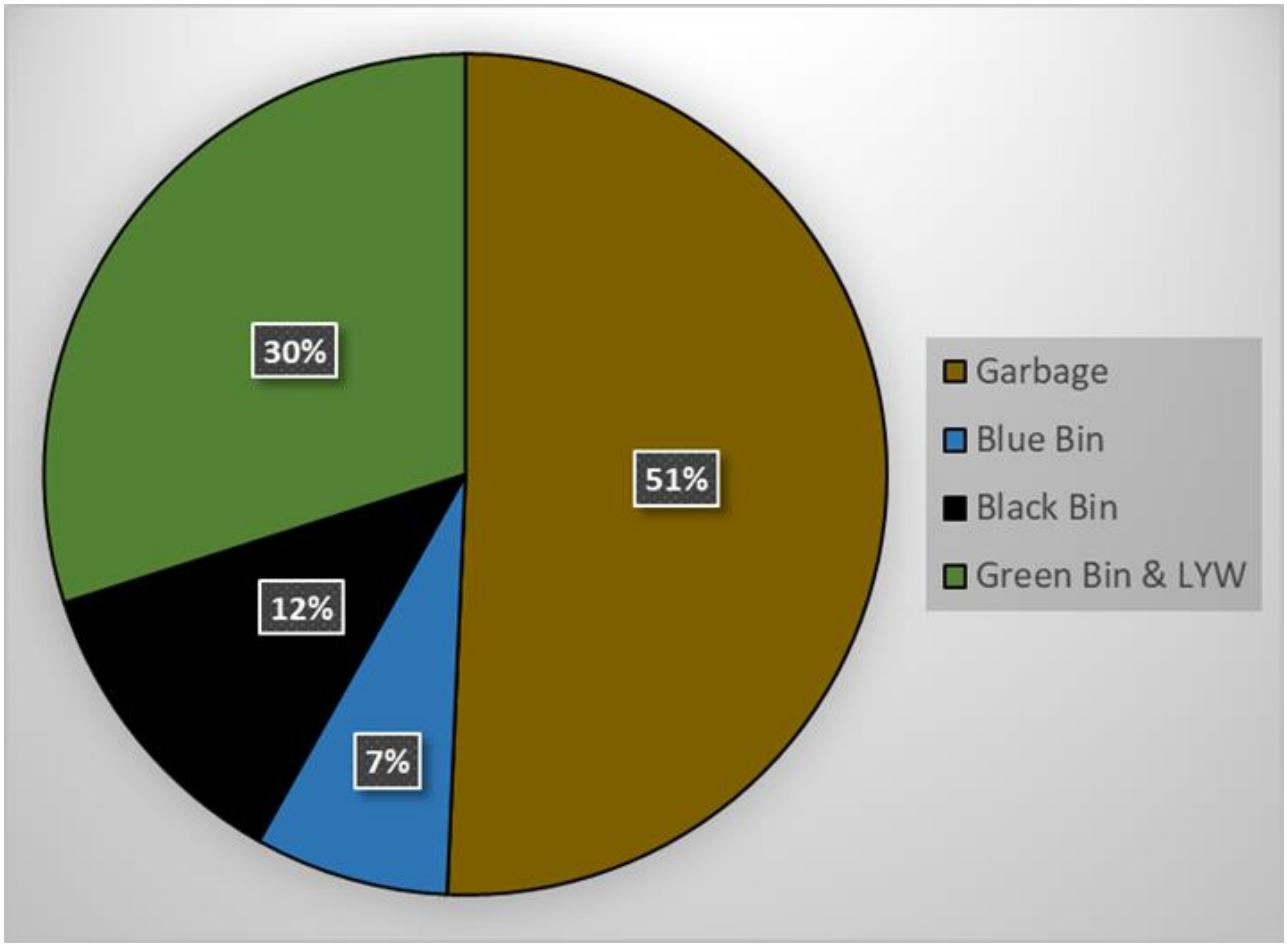
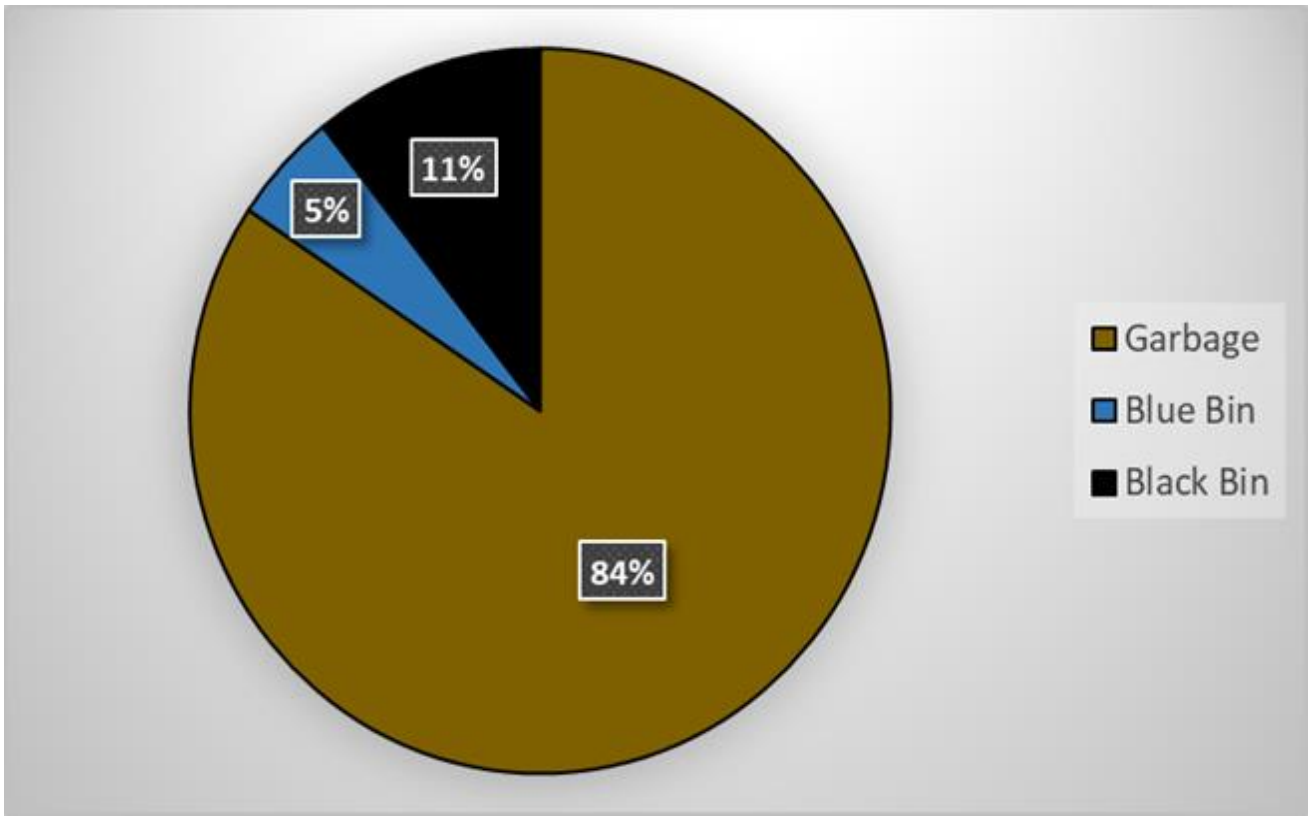


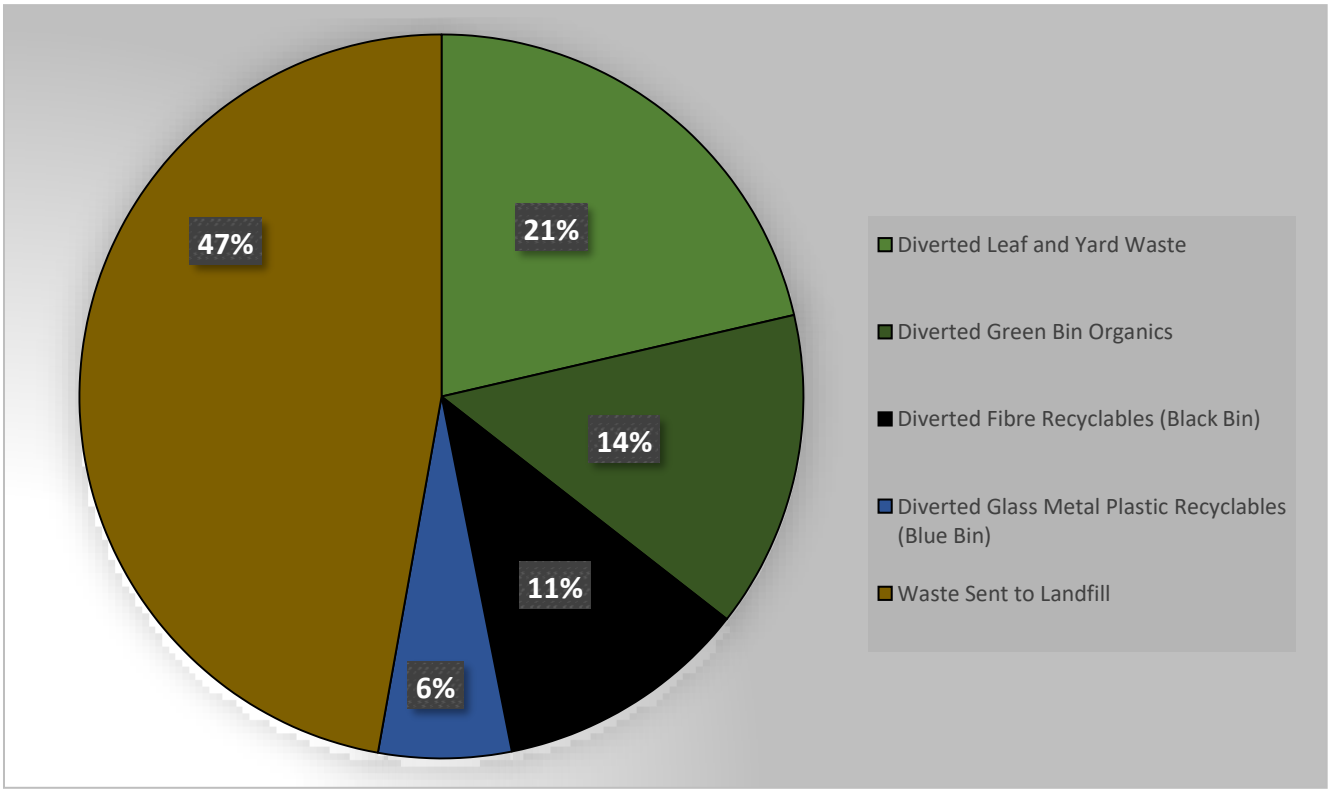
Figure 6: 2018 Waste Collected – Containerized Collection Program (by weight, as a percentage of total waste collected)



6.2 Waste Composition

Figure 9 illustrates the composition of the overall curbside waste stream, by material stream, and is based on data collected over four seasonal curbside audits undertaken during the 2018-2019 Curbside Waste Audit Study.

Figure 9: Curbside Waste Composition

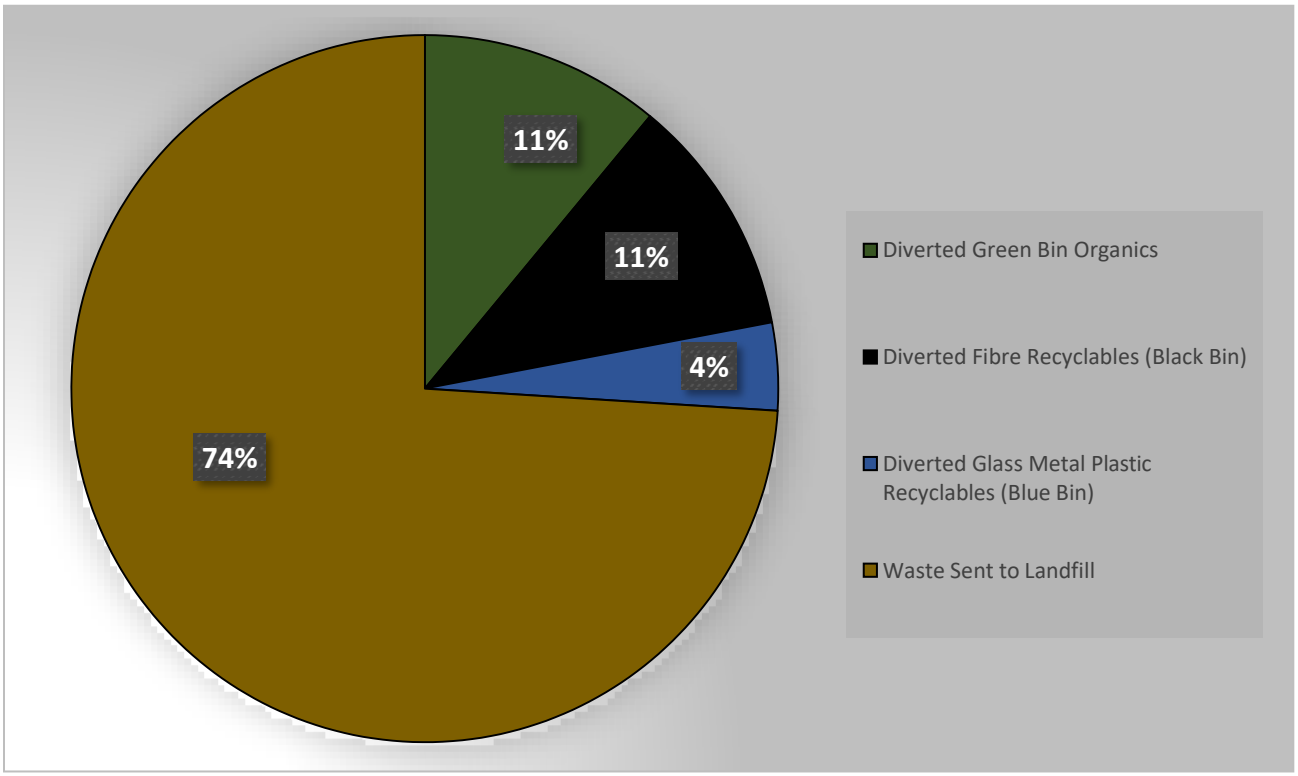


Almost half of the waste that was audited (47%) was sent to landfill.Of this, only 42% was actual garbage, meaning that 58% could have been diverted through the City's curbside diversion programs. Of the waste that was sent to landfill, green bin organic material (largely food waste, kitty litter and tissue/towelling) represented 45% of the material sent to landfill, while 8% consisted of black bin material (largely boxboard, mixed fine paper, newsprint and corrugated cardboard) and 5% consisted of blue bin material (largely of glass bottles, steel cans, aluminum cans and foil, #1 PET bottles and #5 PP containers).

Waste sent to landfill from curbside households also included material that could be diverted through drop-off diversion programs in the community. Textiles represented 5% of the total waste sent to landfill, while less than 1% of the total waste sent to landfill consisted of waste electronics and electrical equipment and less than 1% consisted of household hazardous waste.

Figure 10 illustrates the composition of the overall multi-residential waste stream, by material stream, from the single season multi-residential audit which took place November 2019.

Figure 10: Multi-Residential Waste Composition



Almost three-quarters of the waste that was audited (74%) was sent to landfill.

Of this, like the results from the curbside waste audit study ,only 42% was actual garbage, meaning that 58% could have been diverted through the City's multi-residential diversion programs. Of the waste that was sent to landfill, green bin organic material represented 39% of the material sent to landfill, while 7% consisted of black bin material and 12% consisted of blue bin material.

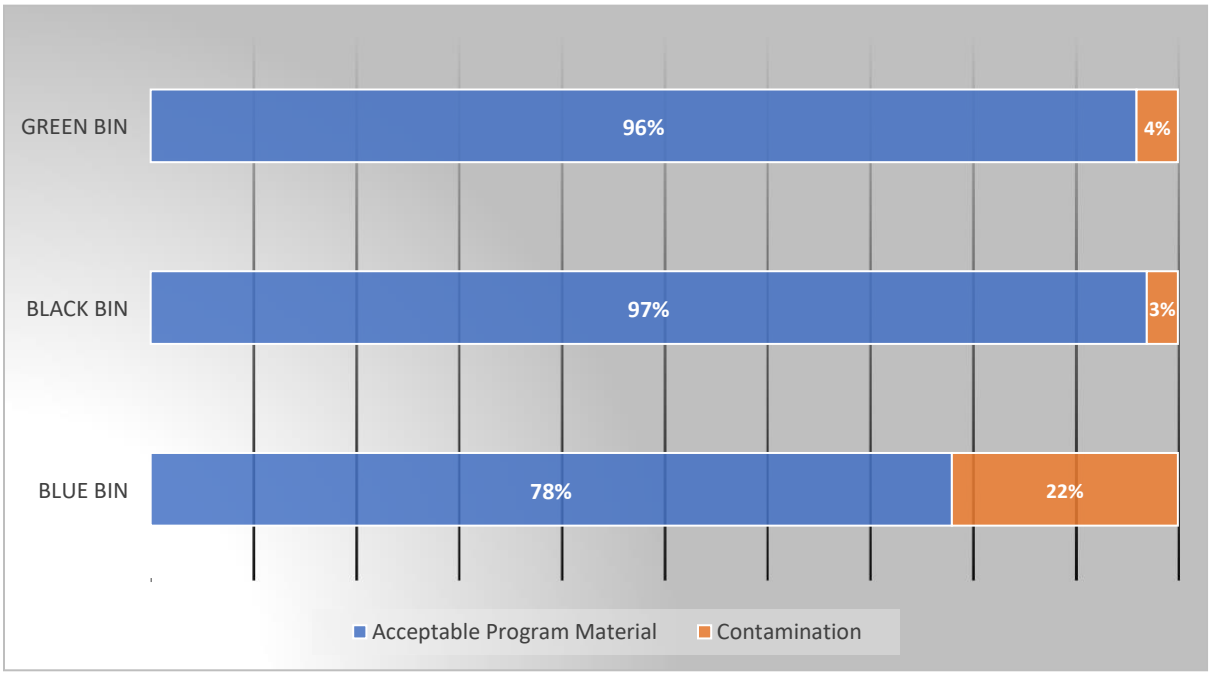
Waste sent to landfill from multi-residential properties also included material that could be diverted through drop-off diversion programs in the community. Textiles represented 5% of the total waste sent to landfill, while 2% of the total waste sent to landfill consisted of waste

electronics and electrical equipment and 1% consisted of household hazardous waste.

Contamination: Curbside Program

As per Figure 11, the 2018/2109 Curbside Waste Audit Study found that 22% of the material disposed of in the blue bin was considered contamination, while 3% of the material in the black bin was contamination and 4% of the material in the green bin was considered contamination. Contamination is material found in a specific waste stream that does not belong in that stream.

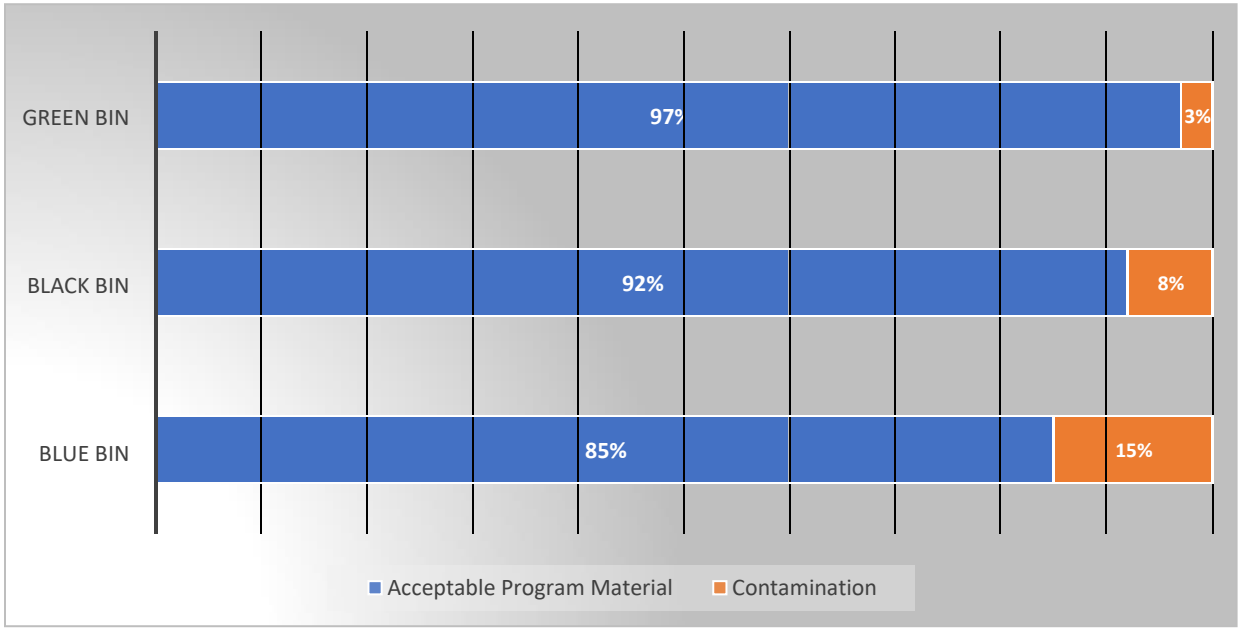
Figure 11: Contamination Percentages Per Diversion Stream: Curbside Program



Contamination: Multi-Residential Properties

As per Figure 12, the 2019 Multi-Residential Waste Audit Study found that 15% of the waste that was put in the blue bin was considered contamination, while 8% of the material in the black bin was contamination and 3% of the material in the green bin was considered contamination.

Figure 12: Contamination Percentages Per Diversion Stream: Multi-Residential Properties



While contamination was higher in the Blue Bin Program for curbside households than multi-residential properties, it is important to note that the composition of waste is different for the two dwelling types. Contamination in the blue bin for curbside households included durable plastics such as rubber hoses and pool toys; items that are not as widely found in the multi-residential waste stream. These durable plastics cannot be recycled in the City of Ottawa's waste program and are considered garbage if they cannot be reused or donated.

6.3 Program Participation

Table 7 provides the curbside participation rates from the 2018-2019 City of Ottawa Curbside Waste Audit Study. Participation rates depict the percentage of residents who set out material

in a given stream at least once over a two-week collection period. The number of unique households' incudes all houses included in the sample size regardless of them setting out material or not.

Table 7: Curbside Participation Rates (2018-2019)

Waste Stream	Summer 2018	Fall 2018	Winter 2019	Spring 2019	4-Season Average
Garbage	75%	86%	79%	86%	81.5%
Blue Bin Recycling	66%	75%	72%	80%	73.3%
Black Bin Recycling	70%	73%	62%	72%	69.3%
Green Bin Organics	46%	50%	46%	51%	48.3%
Leaf and Yard Waste	45%	26%	1%	38%	27.5%
Bulky Items	14%	8%	2%	19%	10.8%

During the study, households set-out an average of 1.79 items per week of garbage, 1.07 items per week of blue bin recycling, 1.09 items per week of black bin recycling and 0.40 items per week of green bin organics.

Participation rates for the multi-residential sector and for City facilities are not available due to the anonymity factor. The City tracks properties and buildings participating in the Blue Bin Program and the Green Bin Program, but it is not reflective of the number of people actually using the programs.

6.4 Waste Diversion Rates

In 2018, the City's overall diversion rate was 43%. This percentage included waste material

collected from customers participating in the curbside and containerized collection service programs.

The curbside waste diversion rate for 2018 was 49%, while the waste diversion rate for both multi-residential properties and City facilities in 2018 was 17%. These diversion rates are calculated based on tonnage of material collected.

Appendix 3 provides the historical annual waste diversion rates over a ten-year period based on collected tonnages.

6.5 Program Costs

The 2018 gross costs to collect, process and dispose of the different curbside and containerized waste streams managed by the City are provided in Table 8 and 9 respectively.

The tables reflect gross costs and do not include revenue from the sale of recyclables or any related program funding.

Table 8: 2018 Curbside Cost Per Tonne to Manage Waste by Stream

Waste Stream	Tonnes	Cost	Cost per Tonne
Garbage (includes Bulky Items)	138,239	$19,337,093	$139.88
Blue Bin (Glass Metal Plastic)	20,360	$8,483,929	$416.70
Black Bin (Paper & Cardboard)	32,467	$8,100,640	$249.50
Green Bin (Household Organics & Leaf & Yard Waste)	81,630	$21,229,926	$260.08

Table 9: 2018 Containerized (Multi-Residential/City Facilities) Cost Per Tonne to Manage Waste by Stream

Waste Stream	Tonnes	Cost	Cost per Tonne
Garbage (does not include Bulky Items nor garbage tonnages from City Facility roll-offs)	50,373	$3,854,389	$76.52
Front End Loading & Recycling Cart (Glass-Metal Plastic)	2,988	$1,303,907	$436.38
Front End Loading & Recycling Cart (Paper & Cardboard)	6,358	$1,711,504	$269.19

Based on the Resource Productivity & Recovery Authority Municipal Funding Allocations, the City of Ottawa had the 3rd most efficient recycling program in Ontario (out of 244 programs) in

both 2016 and 2017, providing funding for the 2018 and 2019 years respectively. Ottawa also ranked first in efficiency for all municipalities with populations greater than 100,000.

6.6 Marketing Trends for Recyclables

As noted by the Continuous Improvement Fund (CIF), recycling markets have fluctuated for decades, with commodity pricing trends being labelled as “volatile” due to the large annual swings.

Recently, there have been a combination of forces that are impacting the marketing of recyclables and putting greater than usual pressure on commodity pricing. These include:

- Market forces, such as China’s ban on imported waste material;
- Closure of several North American recycling facilities;
- New types of packaging introduced by producers are increasing the material complexity, which introduces sorting challenges and higher contamination and/or residual rates;
- Problematic materials, such as polystyrene or multi-layered materials, foster confusion as to whether they are recyclable or not in their local program; and,
- The decline of newsprint tonnages.

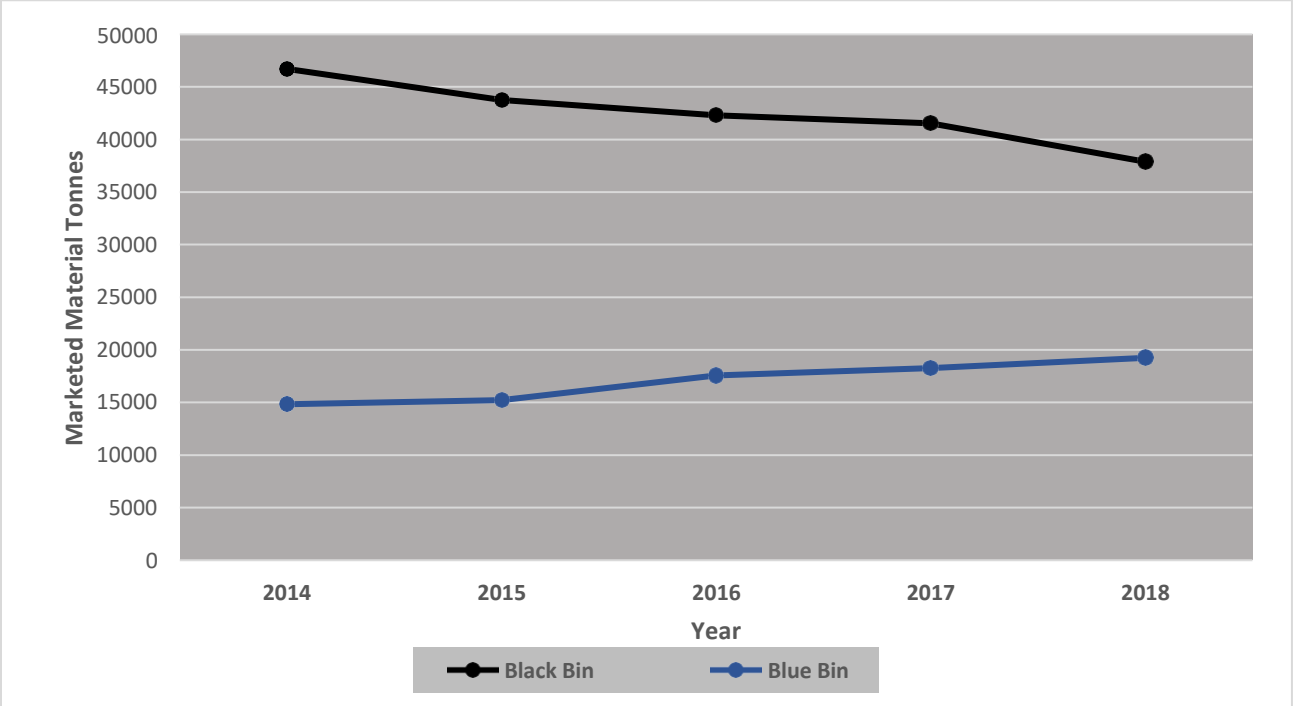
For the City of Ottawa, market demand and pricing for fibre material has dropped significantly in the past five years and the amount of glass-metal-plastic material collected and marketed has increased by 30% over the same period, despite the abundance of lighter weight materials such as plastic bottles. Part of this is due to the increased availability of plastic packaging and part is due to huge upgrades to the City’s contracted processing facility, leading to an increase in the capture of materials.

Table 10 shows the tonnes of recycling marketed over a five-year period and Figure 13 illustrates the five-year trend.

Table 10: Tonnes of Recycling Marketed

Recycling Tonnes Marketed			
Year	**Glass Metal Plastic Material (Blue Bin)**	**Paper-Cardboard Material (Black Bin)**	**Total**
2014	14,827	46,706	61,533
2015	15,216	43,752	58,968
2016	17,570	42,296	59,866
2017	18,256	41,537	59,792
2018	19,238	37,889	57,127

Figure 13: Trend on Recyclable Materials Marketed



7.0 PROMOTION, EDUCATION, OUTREACH AND ENFORCEMENT

The purpose of outreach, education and enforcement is to effectively communicate how residents can participate in the City's waste management programs and encourage reduction, reuse and recycling of residential waste managed by the City.

7.1 Promotion, Education and Outreach

The City offers comprehensive promotion, educational tools and resources to its customers through on-line resources, social media, printed resources and staff. This is achieved through regular, seasonal and individual program campaigns.

Figure 14: Staff promoting the Green Bin Program

As of October 2019, there are two dedicated staff resources as well as hired summer students for the promotion, education and outreach of waste management programs for Solid Waste Services.

The staff resources work for Public Works and Environmental Services Department, Business and Technical Support Services.

Solid Waste Services also receives support from the City's Public Information and Media Relations Branch.

Figures 14 and 16 show City staff promoting waste management programs at outreach events.

In 2018, the City budgeted approximately $197,000 on communication activities related to solid waste promotion and education, with approximately $78,000 spent on promotion and

education material, which included the City's waste diversion programs. This amount includes the printing and distribution of the annual waste collection calendar. Also, more than $1,800 was spent on social media messaging specifically related to Green Bin Program messages on YouTube, Twitter and Facebook.

7.1.1 Online Resources

As part of its ongoing promotion and education efforts, the City maintains comprehensive waste services resources hosted on the City's website, which contains a variety of information on garbage, recycling, household organics, leaf and yard waste, household hazardous waste and special items, apartment and multi-residential programs, solid waste data and reports, collection details, the Trail Waste Facility and other landfills, waste reduction and education.

In 2018, the City's garbage and recycling English language web page had 1.4 million views, while the French language garbage and recycling web page had just over 34,000 views.

To access the City's solid waste management section on-line visit:
https://ottawa.ca/en/garbage-and-recycling

On-line Service Request Tool

The website provides an on-line service request tool that customers can use to submit service requests related to ordering collection calendars, reporting waste collection issues and ordering bins.

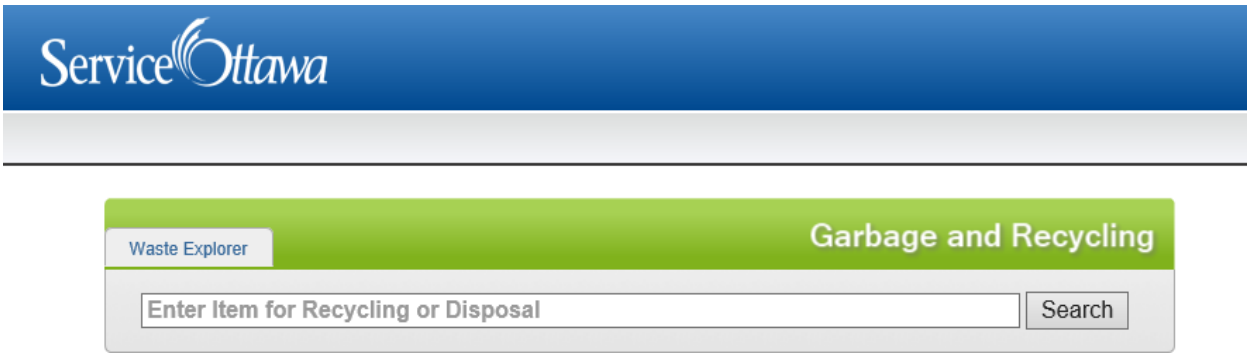
The on-line form enables a customer to provide details of the problem or issue by selecting from a list of options. Customers can also submit a photo. Registrants must complete specific location information, contact information including name, phone number and email address in the request, prior to submission.

Waste Explorer

Waste Explorer is an on-line word search tool that allows customers to find out where and how to properly dispose of household items. The Waste Explorer tool is often referred to as a "Google search" for waste and recycling. Its database lists more than 900 items and indicates what bin an item goes into or it lists options on how to dispose of it if it is not accepted in one of the City's programs.

Waste Explorer received approximately 170,000 requests/hits on a monthly basis in 2019. Figure 15 illustrates a screen shot of Waste Explorer on the City's website.

Figure 15: Waste Explorer Screen Shot on City's Website



ReCollect Reminder Tool

The City has an agreement with ReCollect Systems Inc. Recollect System Inc. provides collection day reminders and other related information and/or notifications via email, phone apps or Twitter. Customers can download the Ottawa Collection mobile app for Apple and/or Android devices to confirm collection days. They can also upload their collection schedule to their personal calendar in iCal, Microsoft Outlook or Google Calendar. More than 107,000 customers subscribe to receive a weekly reminder.

Social Media

The City of Ottawa is present on Twitter, Facebook, YouTube, Instagram and LinkedIn. City staff perform social media monitoring and flag posts relating to departmental programs and services. In 2018, the total number of followers on social media were: Twitter: 189,000; Facebook: 35,000; Instragram: 8,000, and Linkedin: 30,000.

Social Media allows public engagement to promote solid waste activities and gives useful insights on public sentiments that help the City in the development of future communication initiatives.

The City's YouTube site features video campaigns that educate customers on driver safety and promotes recycling and Green Bin Programs.

The City is also leveraging new outreach channels including:

- Artificial Intelligence Technology, such as SIRI, Google Home and Alexa
- Web-based chatbot for Garbage and Recycling Q&A; and,
- Group discussion forums on the Engage Ottawa platform, that allows customers to ask questions about their service.

7.1.2 Printed Resources

The City designs and provides printed resources, available both in English and French. These can be part of a targeted campaign/advertisements or part of ongoing promotion and education efforts. Below is a list of printed materials, educational tools and resources offered by the City.

Waste Collection Calendars

Waste collection calendars are prepared for properties that receive curbside collection of garbage, blue/black bin, green bin and leaf and yard waste. This includes; single family residences, multi-residential properties, Yellow Bag Participants and City facilities.

In order to ensure a consistent and regular supply of waste material to the processing facilities, minimize truck lineups and maximize truck efficiencies, the City is divided into two collection schedules: Calendar A and Calendar B. The collection schedules are set up so that the biweekly garbage collection schedule is off-set and collected on different weeks. Blue bin is always collected at the same time as garbage, across the City.

The calendars outline the collection week for garbage, blue/black bin, green bin and leaf and yard waste, Household Hazardous Waste Events and Giveaway Weekend dates. It also states the correct set out times and what material goes in which bin.

Properties receive a full 12-month waste collection schedule calendar which is delivered via Canada Post in the month of May. Calendars are also individually mailed out upon request throughout the year. The waste collection calendar can also be viewed on-line and in 2018 there were 1.5 million scheduled views and 14,750 waste collection calendars were downloaded.

According to Market Research undertaken by Hill and Knowlton Strategies on behalf of the City in 2019, the curbside collection calendar is the most popular tool used by residents to receive information about the City of Ottawa's Blue Bin and Green Bin Programs.

Appendix 4.1 illustrates three sections of Calendar A.

Curbside Courtesy Tag

To assist customers in following the City waste set-outs and guidelines and ensuring proper waste management is promoted, the City created a curbside courtesy tag. The tag is handed out by waste collection operators in instances where customers have not adhered to the correct set-out requirements for their waste material.

Appendix 4.2 illustrates the curbside courtesy tag.

Brochures

The City offers a couple of informative brochures promoting "what material goes where" for both the curbside and the containerized collection programs.

The Yellow Bag Program brochure outlines the waste collection program for the City's ICI sector and includes a registration form.

Appendix 4.3 illustrates the brochures created on how to sort material in the curbside and containerized collection program.

Handbooks/Manuals

The Recycling and Waste Handbook for Multi-Residential Property Owners/Managers outlines the City's multi-residential containerized waste collection program and the services. It also provides information on how to reduce waste.

Labels/Posters

The City has created colorful container adhesive labels for green bins, recycling and garbage bins (front end loading and carts) that adhere to the appropriate container to ensure that multi-residential residents, City staff and the public visiting a City facility and/or park are placing the

correct material type in the correct bin. These labels are sometimes used as posters as well. These labels are printed in different sizes depending on the size of container.

There is also an actual multi-residential poster which illustrates the multi-residential recycling containers and what materials go into which bin. These are posted in laundry rooms, garbage rooms, pubic information boards and common areas of multi-residential property. Some examples of these are shown in Appendices 4.4.

Truck Panels

Collection vehicles from both the curbside and containerized collection programs are equipped with mounting systems suitable for a panel size of 700 mm by 1700 mm. Panels are installed on both sides of the trucks and make for a great moving advertising billboard that is used to promote City programs and/or target specific issues.

They have been utilized for campaigns such as driver safety and are used to promote better waste diversion by encouraging customers not to forget that cartons go in the blue bin or that dirty aluminum foil is acceptable in the blue bin. The truck panels also provided the opportunity to promote the recent changes to the Green Bin Program.

Appendix 4.5 illustrates examples of truck panel signage used to target specific issues.

Green Bin Program Changes - Counter Display

Counter displays were placed in veterinary clinics and pet stores to notify pet owners that dog waste is an acceptable material in the Green Bin Program

Household Hazardous Waste Bookmark

The bookmark is produced annually and indicates the Household Hazardous Waste Event dates.

Take It Back! Poster and Retail Decals

Posted in Take It Back! Program participating members' establishments to inform customers that they can return certain household items and that the item will be safely disposed or recycled properly.

Needle and Syringe Safety Campaign
Counter display card and posters at local pharmacies that are currently members of the Take It Back! Program.

Elevator Signage for Recycling in the Multi-Residential Sector
Signs posted in elevators promoting the in-unit blue bag which is used to carry recyclables to the recycling containers in the multi-residential sector

School Curriculum on Solid Waste
Available to teachers for Junior Kindergarten to Grade 8. The curriculum is currently being updated to include changes to the Green Bin Program.

Some of the Solid Waste communication material is available at Client Service Centres and other City facilities, such as libraries and recreational centres.

Printed communication material can be part of a larger mail-out campaign or individually mailed out on a as requested basis. Printed communication resources are also made available at on-site meetings with City staff, speaking engagements or outreach events and online for download.

7.1.3 Staff Resources
The City of Ottawa has qualified staff that are available by phone, via email or in person to assist customers with all solid waste enquiries. These include 3-1-1 staff, Solid Waste Customer Service, Waste Management Inspectors, Client Services and public outreach and communication staff.

311
Calling 3-1-1 provides access to non-emergency City services and information. This includes the ability to log service requests related to waste collection and order printed resources for solid waste programs and services.

This is a centralized City service that is not managed by Solid Waste Services staff but is coordinated in conjunction with Public Works and Environmental Services' Public Outreach

and Communications Branch who provide updates to the 3-1-1's Knowledge Based Articles (KBAs) to assist 3-1-1 staff requests related to Solid Waste Services programs and services.

Solid Waste Customer Service
Solid Waste Services employs a team of Solid Waste Dispatch Officers that handle over 56,000 solid waste calls annually and more than 30,000 container (blue bin, black bin and green bin) requests per year. The provision of curbside waste containers is included in the Waste Collection Section.

Waste Management Inspectors
Eleven Waste Management Inspectors are on the road to assist customers with collection issues, general waste collection enquires and provide customer service. The Inspectors are divided between the three collection programs: curbside, multi-residential and public spaces. The inspectors communicate with customers via telephone, email or in person and often hand out or send out via email printed resources related to solid waste.

Client Services: There are eight Client Service Centres throughout the City that can assist customers in person with any solid waste related enquiry.

Outreach Events
City staff attend a variety of events throughout the year to speak to residents about solid waste services.

Outreach events can be in the form of a speaking engagement at councillor events, community associations, educational presentation at a school (as shown in Figure 16), community centre or group, or a booth set up in a lobby.

Public events include;

Figure 16: Summer Students Promoting Waste Diversion at a School Presentation

OC Transpo transit stations, sporting events, staff lunch and learn, malls, grocery stores, summer camps, environmental fairs and farmers markets.

Events can range in size from larger ones such as the Ottawa Home and Garden Show and the Touch A Truck event, to smaller venues such as condo board meetings.

Table 11 summarizes the number of solid waste outreach events for the last 4 years and the number of resident's staff engaged with. The notable decrease in number of residents spoken to between 2016 and 2017 was as a result of staff not participating in the Home and Garden Show in 2017, 2018 and 2019 as well as the Touch a Truck event in 2018 due to a combination of budget restraints and a reduction in staff resources.

Table 11: Outreach Event Summary

Year	Number of Solid Waste Outreach Events	Number of Residents Spoken To
2016	59	12,118
2017	39	5,535
2018	42	3,804
2019	83	4,423

7.1.4 Educational Campaigns

Brief descriptions of some promotional and educational campaigns that the City of Ottawa has been involved in recently are provided below.

Blue Bag Campaign – 2016

As part of the 2014-2020 Multi-Residential City Facility collection contract, the collection contractor was responsible for a one-time delivery of in-unit blue recycling bags to all multi-residential properties that received containerized recycling collection service from the City.

The intent of this initiative was to provide residents living in the multi-residential sector with a similar tool to the curbside customers to manage their recyclables. A reusable, collapsible bag was preferred over rigid plastic boxes due to space limitations in apartments. In a study done on behalf of the City by Nanos Research in 2010, some focus group participants that lived in apartments indicated that not having apartment-friendly storage containers was a barrier to participating in the recycling program.

Deliveries were conducted over a 4-month period in 2015. In addition to a letter, which was delivered to all property owners informing them of the availability of an in-unit recycling bag, there was a media launch hosted by the Mayor. The letter indicated to property owners the process in which they could contact the City's collections contractor to arrange delivery of the in-unit recycling bag to their properties. Once the calls decreased, the contractor started contacting property owners to set up delivery appointments.

Included in the blue bag was additional communication material developed by the City of Ottawa geared towards increasing the participation in both the recycling and organics collection program. The "What Bin to Put It In" brochure, as well as a new customized educational waste diversion flyer, "Refill … Don't Landfill" was part of the blue bag package.

In 2016, the City developed an elevator advertisement to support the Blue Bag Program. This ad was posted in elevators in buildings that had not signed up for the program to receive the blue bags from the collection contractor. This ad had a positive affect. 75% of the buildings signed up for blue bag deliveries after the elevator messaging was posted.

Appendix 4.6 illustrates the ad posted in multi-residential buildings to encourage residents to contact their property manager to have the blue bags delivered.

Under the new Multi-Residential City Facility collection contract that commences in June 2020, another one-time delivery of in-unit blue recycling bags will take place within the period of the contract.

Enhanced Source Separated Organics (SSO) Program Campaign - 2018

In 2018, staff committed to preparing a comprehensive, evidence-based communications and outreach campaign – informed by best practices and market research – to support the launch of the Green Bin Program's service enhancements: the addition of plastic bags and pet feces to the green bin.

Staff commissioned the global public relations and integrated communications agency, Hill and Knowlton Strategies (H+K), to conduct intensive market research that would support the creation of a comprehensive, evidenced-based communications plan. Over 2,000 telephone surveys were completed between December 2018 and January 2019 to assess behaviours and attitudes of Ottawa residents as it relates to waste diversion. Key findings from the study include:

- The main barrier to increasing participation in the Green Bin Program is the "yuck" factor for curbside residents, and "convenience" factor for multi-residential residents.
- 63% of respondents indicated they were more likely to use the green bin once plastic bags were permitted.
- 61% of respondents who self-identified as dog owners said they would increase their use/begin using the green bin once dog waste was included for weekly collection.

The study also identified waste diverter target audiences by segmenting the audience into four distinct segments based on waste diversion behaviour: Superstars, Aspirational, Inconsistent, and Disconnected.

Superstars – Represent 29% of all residents

Prevailing view: Ottawa should strive to be a "zero-waste" city.

- More than 9 in 10 rate their level of knowledge of recycling and Green Bin Programs as high (93%)
- Very high satisfaction (94%) with information received about City's waste diversion programs
- Among those with curbside collection, a mere 3% do not use a green bin
- Among "curbsiders", main reason for not using green bin is forgetting and mistakenly throwing items in garbage (not "icky" features")

- Mostly “curbside” residents
    - 8 in 10 have curbside waste removal
    - Only 1 in 5 lives in a multi-residential building
- More likely to be married with children at home
- Higher education level
- Higher household income
- Almost 8 in 10 are home owners (77%)
- Less than 1 in 10 are members of a visible minority group
- 6 in 10 have lived in the city for more than 25 years

Inconsistent – Represent 28% of all residents

Prevailing view: Should be ready access to recycling city-wide but banning items and striving for “zero-waste” is not practical.

- Most rate knowledge of recycling and the Green Bin Programs as moderate (66% rate it a 5 or 6 on a 7-point scale)
- Satisfaction with information received about City’s waste diversion programs moderate (70% put 5-6 on the scale)
- Near universal users of blue and black bin, but 1 in 5 don’t use the green bin (and an equal number “hate using the green bin); 21% and 22% respectively
- Main barrier green bin use: “icky” features, grossness/messiness
- Like Superstars, mostly “curbside” residents
    - 8 in 10 have curbside waste removal
    - Only 1 in 5 lives in a multi-residential building
- More likely to be married with older children at home
- More likely to have undergrad level university
- Higher household income
- Almost 3/4 are home owners (75%)
- Only about 1 in 10 are members of a visible minority group

Aspirational – Represent 19% of all residents

Prevailing view: Attitudes-deeds gap: mostly positive attitudes to recycling but limited follow through in terms of behaviour.

- 41% rate 7 out of 7 on the knowledge of the recycling and the Green Bin Programs
- Almost 6 in 10 rate 7 out 7 on satisfaction with information received about City's waste diversion programs
- Most agree the collection system is reliable (79%) but more than 1 in 4 don't think the recycling and the Green Bin Programs do much to help the environment (26%).
- 45% of "curbsiders" don't use the green bin. And, 27% hate using it.
- 50 / 50 split on curbside waste removal and residents in multi-residential buildings.
- More than a 4 in 10 are over 54 years old (44%)
- Almost a third live alone
- More than 1 in 10 are allophones (13%)
- Almost half rent their home (48%)
- Lower income
- 1 in 5 are members of a visible minority (21%)

Disconnected – Represent 24% of all residents

Prevailing view: Don't divert much waste, don't know much about the programs, moderately satisfied with the info that is available.

- Multi-residential building residents:
  - Recycle plastic/cans/glass? No (35%)
  - Recycle paper/cardboard? No (33%)
  - Compost green? No 69%
- Curbside:
  - Recycle plastic/cans/glass? No (7%)
  - Recycle per/cardboard? No (14%)
  - Compost green? No 51%
- Half have moderate-low knowledge of diversion programs (49%). Only 4 in 10 satisfied with info they have (44%)

- 6 in 10 live in multi-residential buildings
- Almost half are under 45 years old (49%)
- 4 in 10 either live alone or with roommates (41%)
- 1 in 5 have only completed high school or less (22%)
- 1 in 10 are allophones (11%)
- Half rent their home (51%)
- Lower income
- 1 in 5 are members of a visible minority (19%)
- 29% born outside of Canada, among them half have been in Canada for 10 years or less

Building on the comprehensive market research, audience segmentation and the department's operational, qualitative data and experience, a phased in communications and outreach campaign was developed to promote the enhanced Green Bin Program and help increase waste diversion. While messaging throughout the campaign would reach all four audience groups, tactics and messaging were crafted to specifically target the Aspirational and Inconsistent groups. These two groups present the largest opportunity for increased participation in the Green Bin Program as these are the groups in which the quickest update in participation is to be had.

The campaign, which launched on July 2, 2019 when the new enhanced services went into effect, will run for approximately 12 months and was divided into 3 parts:

Increase Awareness with direct mailouts, public service announcements, media interviews, social media, digital billboards, website updates and a toolkit for Councillors. While there was a push to inform customers that they can use plastic bags to dispose of household organic waste, customers were reminded that plastic bags are just one of many options which include paper bags, newspaper linings, and the use of cereal boxes and milk cartons to contain food waste. The City also encouraged customers to reuse plastic bags that may otherwise be thrown out, such as milk and bread bags, and similar packaging.

Targeted Monthly Campaigns will focus on the following issues: Smelly, messy and gross; Inconvenience; What belongs in the green bin; Don't have a green bin; Forget/put things in the garbage by mistake; and, Attracts bugs/vermin/other animals. Communication tactics and messaging for this part will be similar to the tools used in the Increase Awareness phase.

Outreach Activities through face to face interaction at public events such as Councillor events, fairs and community events and online outreach channels such as the ReCollect app and Artificial Intelligence Technology, such as SIRI, Google Home and Alexa.

The Public Works and Environmental Services department also hired 10 part-time students in the summer of 2019 to serve as ambassadors of the Green Bin Program, as photographed in Figure 17.

The "Green Bin Brigade" completed door-to-door visits in targeted communities based on audience segmentation data and participation rates to ensure customers were aware of the enhanced program and encouraged participation.

Figure 17: 2019 Green Bin Brigade Team

The Green Bin Brigrade team visited a total of 30,437 homes over an 8-week period in July and August. The team interacted with 7,792 residents with a potential reach of 90,000 to 120,00 individuals, based on 3-4 people per household.

At the writing of this report, regular performance monitoring of the Green Bin Program enhancements is ongoing: staff are measuring the success of communication and outreach tactics, Green Bin participation rates, service calls as well as changes to green bin tonnages collected. The communications and outreach plan was designed to be both scalable and adaptable, with the intention of being adjusted as required based on program performance.

Formal evaluation of the performance of the SSO communication and outreach plan in increasing resident participation in the Green Bin Program will take place one year after the Green Bin Program enhancements take effect. Furthermore, the City will assess waste composition and diversion rates through a four-season audit, which is set to be completed in 2023.

7.2 Enforcement

There are 11 municipal law enforcement officers (known as Waste Management Inspectors) that directly oversee the Solid Waste By-law in situations where outreach, education and engagement initiatives have not been successful.

Ottawa City Council enacted **Solid Waste By-law 2012-370.** It is the most recent Solid Waste by-law and it provides staff with the tools necessary to deal with non-compliance issues for solid waste management.

Solid Waste By-law 2012-370 establishes the following:

- Service Levels
    - Defines the collection schedule for each waste stream by property type:
        - Residential properties of 5 less units per building (i.e. curbside/single family);
        - Residential properties of 6 or more units per building (i.e. containerized/multi-residential);
        - Yellow Bag properties;
        - City Facilities; and,
        - Schools.

- Approved Containers
    - Defines which containers are acceptable to be set-out under the municipal collection program. It gives a very detailed description for reusable garbage or yard waste containers, plastic garbage bags, front end loading containers, curbside recycling bins, recycling carts, yard waste compostable paper bags and green bins.

- Acceptable material
    - Lists the materials that are accepted in the Blue Bin, Black Bin, Green Bin and Leaf and Yard waste collection programs.

- Waste limits
    - Defines the number of approved containers that can be set-out on collection day for curbside properties, Yellow Bag Program properties, school properties and multi-residential properties under the containerized collection program. Waste material bag and container limits are summarized in Appendix 5.

- Preparation of Waste
    - Outlines the obligations a home owner or building owner have when placing out waste for collection. It covers which waste materials need to be separated from each other and how to prepare and package the waste material before it is set-out for collection.

- Prohibited Materials
    - Lists the items and materials that are prohibited in the City's waste collection program such as discarded needles, household hazardous waste, tires, liquids and soil.

- Solid Waste related fees and charges
    - There are fees that are amended through the budget process on a yearly basis and are covered under the Solid Waste By-law, including: Solid Waste tax structure fee; Yellow Bag purchase price; purchase price for blue bins, black bins; green bins and kitchen containers; and, tipping fees at the Trail Waste Facility.

- Operation of the Trail Waste Facility
    - Covers the operations of the Trail Waste Facility such as speed limit, hours of operation, prohibited materials, asbestos preparation and refusal rights.

The Waste Management Inspectors often use a progressive enforcement approach with customers when enforcing the Solid Waste by-law using the following:

Notice of Personal Visit. This notice is left in the mailbox or on the door when a customer is not available to speak directly with a Waste Management Inspector regarding an initial call for a non-emergency solid waste issue.

Notice of Violation (NOV). A NOV is issued to a customer when a violation of the Solid Waste by-law is observed by the Waste Management Inspector such as garbage set out on the wrong week. The purpose of the NOV is to initiate corrective action from the customer within a certain time frame. Failure to comply with the NOV will result in the City causing the work to be done and the cost of the work will be at the expense of the owner or building owner and charged back on their tax bill.

Provincial Offence Notice (PON). The *Provincial Offences Act* is a provincial statute that sets out procedures for the prosecution of offenses under municipal by-laws. Waste Management Inspectors issue PON's automatically, for more serious offences such as those non-compliance issues related to the health and safety of staff (e.g. placing discarded needles or pool chemicals in the garbage).

Under the *Provincial Offences Act* there are three different "Parts" included under a PON, which can be issued by a municipal by-law enforcer, however the City's Waste Management Inspectors, use two out of the three Parts, Part 1 and Part 3:

> **Part 1**: Certificate of Offence. This is a ticket accompanied with a set fine. These can be settled out of court by payment of the amount written on the offence notice (ticket) or an appearance before the court to either plea guilty and request a lower fine or more time to pay or to appear in court to enter a plea of not guilty.
>
> **Part 2**: Parking infraction (not used under the Solid Waste By-law)
>
> **Part 3**: Notice of Summons. This is a summons to attend court with no option to pay the ticket.

It is under the provisions of the *Provincial Offences Act* and the rules for the Ontario Court of Justice, that the schedule of offences in the Solid Waste By-Law is created and the set fine for each of the offences is established.

In the City's Solid Waste by-law there are 107 offences listed in the schedule and the set fines range from $205 to $300, depending on the offence.

In 2018, a combination of approximately 185 NOV's and PON's were issued by the Waste Management Inspectors.

By-Law Services enforces the Property Standards by-law and the Parks and Roads by-laws. The Property Standards By-law establishes where waste can be stored on private property, while the Parks and Roads by-law establishes waste regulations for City parks and roads.

8.0 WASTE COLLECTION

From a health and safety perspective, garbage and recycling collectors, as shown in Figure 18, have the sixth most dangerous job in Canada (The Globe and Mail, May 2018).

Figure 18: Waste Collection Operator

Current collection activities lend themselves to a dangerous work environment for operators such as; handling of needles and hazardous material, repetitive lifting, use of heavy equipment, working in traffic and road accidents.

A description of the waste streams managed by the City, customers serviced, materials collected, method of collection and quantities are provided in this section.

8.1 Waste Collection Services and Standards

The City of Ottawa collects a wide variety of waste materials from the residential sector and a portion of the non-residential sector.

The collection service is set up in way that the material from the residential sector and the non-residential sector is collected together to optimize operational efficiencies and cost.

All waste material managed by the City of Ottawa is processed and/or disposed of within City limits.

Waste material is collected between the hours of 7:00 AM and 6:00 PM and is collected five days per week, Monday to Friday, except for the weeks that contain a statutory holiday. Following a statutory holiday, collection of waste material is delayed by one day for the remaining of the week.

The City provides two different collection services based on property type and the container used to set out waste material for collection. They are curbside and containerized waste collection services.

Curbside collection service program provides collection of garbage, bulky items, recyclable material, household organic waste and leaf and yard waste, at a location, which is at or near the curb and/or a shared common area/pad, as shown in Figure 19.

Figure 19: Curbside Waste Collection

The curbside collection service collects garbage from garbage bags and/or garbage cans and recyclables are placed in a blue bin or black bin.

Household organics and leaf and yard waste are collected from a green bin. Leaf and yard waste is also collected in paper yard waste bags and reusable containers. Branches are collected when tied and bundled.

Bulky items are collected with garbage.

Figure 20: Containerized Waste Collection

Containerized collection service program provides collection of garbage from front-end loading containers and recyclable material from a front-end loading container or 360 litre recycling carts, as shown in Figure 20.

Both the containers and carts are collected using a front-end loading truck.

Properties serviced under this program have their bulky items, household organics and leaf and yard waste collected under the curbside collection service program.
There are exceptions, but most property types receive collection service as per Table 12.

Table 12: Collection Services by Property Type

Property Type	Collection Service
Residential Properties of 5 or Less Units Per Building	Curbside Collection
Residential Properties of 6 or More Units Per Building	Containerized Collection
Places of Worship	Curbside Collection
(ICI)Yellow Bag Properties	Curbside Collection
City Facilities	Curbside Collection & Containerized Collection
Primary and Secondary Schools (Household organics/leaf and yard waste only)	Curbside Collection

8.1.1 Service Standards

Service Standards - Curbside Collection Service Program

Curbside collection services for the City of Ottawa are contracted out in accordance with the service standards established by Council which, in turn, are guided by provincial legislation.

Current curbside service levels were established by City Council in April 2011 and include:

- Material is collected five days per week;
- Uniform residential curbside collection service levels provided across the City (urban, suburban and rural);
- Biweekly collection of garbage;
- Biweekly collection program for diapers and incontinence products (Special Consideration Item Program), alternating with garbage collection;
- Biweekly collection of blue and black bin on alternating weeks;
- Weekly collection of green bins, year-round; and,
- Weekly collection of leaf and yard waste and Christmas trees.

Service Standards - Containerized Collection Service Program

The City's containerized collection services for multi-residential properties and City facilities are contracted out in accordance with the service standards established by Council. Current containerized collection service levels were established by City Council in April 2011 and include:

- Weekly collection of garbage;
- Weekly collection of recyclable material;
- Biweekly collection of bulky items (serviced under the curbside collection program);
- Collection of Christmas trees (serviced under the curbside collection program);
- Weekly collection of yard waste (serviced under the curbside collection program); and,
- Weekly collection of household organics (serviced under the curbside collection program).

Table 13 summarizes waste collection frequency by the collection program and customer type.

Table 13: Waste Collection Frequency by Collection Program and Customer Type

Waste Material	Curbside Collection Program					Containerized Collection Program		
	Residential		Non-Residential			Residential	Non-Residential	
	Single Family	Multi-Residential	City Facilities	YBP	Schools	Multi-Residential	City Facilities	YBP, Schools
Garbage	Biweekly	Biweekly	Biweekly	Biweekly	n/a	Weekly	1 to 5 times per week	n/a
Bulky Item	Biweekly	Biweekly	Biweekly	n/a	n/a	Biweekly	Biweekly	n/a
Special Consideration Items	Biweekly *(alternate week to Garbage)*	Biweekly *(alternate week to Garbage*	n/a	n/a	n/a	n/a	n/a	n/a
Glass-Metal-Plastic (GMP)	Biweekly *(alternate week to Black)*	Biweekly *(alternate week to Black)*	Biweekly *(alternate week to Black)*	Biweekly *(alternate week to Black)*	n/a	Weekly	1 to 5 times per week	n/a
Paper-Cardboard (Fibre)	Biweekly *(alternate week to Blue)*	Biweekly *(alternate week to Blue)*	Biweekly *(alternate week to Blue)*	Biweekly *(alternate week to Blue)*	n/a	Weekly	1 to 5 times per week	n/a
Household Organics (Green Bin)	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	n/a
Leaf & Yard Waste	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	n/a

8.1.2 Provision of Curbside Waste Containers to City Customers

City of Ottawa customers are responsible for purchasing their own garbage can, garbage bag and/or yard waste container (reusable can or paper yard waste bag) and they must ensure that the garbage and/or yard waste container/bag set out for collection conforms with size and weight regulations as per the Solid Waste By-law.

Recycling bins and green bins (47L and 80L) are supplied and distributed, free of charge to customers for the following reasons:

- Brand new home;
- New commercial business to Yellow Bag Program:
- Moved into a home and there were no recycling bins and/or green bins;
- Recycling bin and/or green bin was stolen or went missing;
- Recycling bin and/or green bin was damaged by the collection contractor; and,
- Additional recycling bins and/or green bins are required.

The City also provides a smaller container, usually located in the kitchen, to store household organic waste in before the material is placed in the green bin, known as a kitchen container.

240 L green bins are used only at multi-residential properties, City facilities, Yellow Bag Program participants and/or schools.

Residents order recycling bins, green bins and kitchen containers on-line through Service Ottawa or call the City's 3-1-1 customer service centre. Once the request has been set up, the recycling bins, green bins or kitchen containers are delivered directly to their home by either City staff or a private service provider within five days of receiving the request.

It should be noted that as per the collection contract, if a recycling bin, green bin or garbage can is damaged as a result of the collection contractor, the collection contractor is responsible for replacing the damaged container. Therefore, each collection contractor has their own inventory of blue bins, black bins, green bins (47L & 80L) stored at their yards which they manage. All containers are purchased by the individual collection contractors and they must meet the City specifications for each container. Damaged containers can be replaced

immediately by the route supervisor or through a service request when the customer contacts the City.

8.2 Customer Overview

The City provides solid waste management services to the residential sector and some properties in the non-residential sector as outlined in Table 14.

It is important to note that the entire residential sector is eligible for City services, however, some properties have opted out of receiving municipal service and elected to retain a private contractor. Therefore, there is a small portion of residential waste which is currently being managed by the private sector that the City does not track, nor does it currently have control over.

Table 14: Customer Overview (2018)

Curbside Collection Service Program		
Property Type	**Number of Service Locations**	**Description/Examples**
Single Family	291,000	Single family, semi-detached, duplex.
Residential Units Above Commercial (RUAC) (Rental & Condominiums)		Residences (apartments) located above commercial establishments.
Multi-Residential Low Rise (Rental & Condominiums)		Townhouses, rowhouses, stacked town homes, garden homes, masionettes, apartment building less than five floors.
Places of Worship		Temples, churches, mosques and synagogues
Multi-Residential	2,000	Multi-residential properties that receive bulky item collection (1700) plus those multi-

Curbside Collection Service Program		
Property Type	**Number of Service Locations**	**Description/Examples**
		residential properties receiving curbside garbage collection
City Facilities	135	Property, building or structure, owned or rented by the City.
Commercial Businesses	485	Small commercial establishments registered in the City's Yellow Bag Program
Schools (not including post-secondary) *(Collection of Green Bin Program Only)*	240	Ottawa-Carleton District School Board, French Language Public School Board, Ottawa Catholic School Board, French Language Catholic School Board and private schools
Total	**293,860**	

Containerized Collection Service Program		
Property Type	**Property Quantity**	**Description/Examples**
Multi-Residential Low Rise (Rental & Condominiums)	1,700 (115,000 units)	Townhouses, rowhouses, stacked town homes, garden homes, masionettes, apartment building less than five floors.
Multi-Residential High Rise (Rental & Condominiums)		Apartment building with five or more floors.
Residential Units Above Commercial (RUAC) (Rental & Condominiums)		Residences (apartments) located above commercial establishments.
City Facilities	240	Property, building or structure, owned or rented by the City.
Total	**1,940**	

8.2.1 Curbside Collection Service Program Customers

Under the curbside collection service program, customers include not only single-family properties but also multi-residential properties, City facilities, places of worship, schools and the Yellow Bag Program participants. Described below is a description of each of the curbside collection service program customers types.

Special Consideration Program Curbside Customers

The Special Consideration Program was created for residents requiring the collection of diapers and incontinence products on the weeks without scheduled garbage collection. Once registered through the City, participating households can place one bag of diapers and/or incontinence products at the curb on the alternating week from garbage collection. Waste material from this program is combined with the regular garbage and tonnages are not tracked separately.

Currently, there are approximately 7,500 customers participating in the Special Consideration Program and registration renewal is completed annually.

Multi-Residential Curbside Customers

Multi-residential curbside customers comprise of low-rise and high-rise properties as well as buildings with residential units above commercial establishments.

Low-rise properties such as townhomes often place waste material on a common pad or at the end of a driveway if one exists.

Many of the properties with residential units above commercial businesses participate in the curbside collection program. These properties have a designated set-out location for waste material. Larger buildings with residential units above commercial establishments participate under the multi-residential collection contract or are on private service, provided through the property manager or the commercial businesses below the units.

The City provides curbside garbage and/or recycling collection to several multi-residential high-rise properties in the downtown core because of limited space to store front end loading containers or 360 litre carts. These properties follow the regular curbside collection schedule; however, garbage bag limits do not apply.

All multi-residential properties that participate under the containerized collection contract have their bulky items collected under the curbside collection contract.

City Facility Curbside Customers

The City provides curbside collection service to those City facilities that do not exceed the residential garbage limit of 6 items of garbage every 14 days.

These properties include recreational facilities, libraries, community centers and fire stations.

City facilities that exceed the residential garbage limit are serviced through the containerized collection service.

Places of Worship Curbside Customers

The City provides curbside collection service to places of worship when the property does not exceed the residential garbage limit of 6 items of garbage every 14 days. Any place of worship that exceeds the garbage limit must register for service under the Yellow Bag Program, providing the place of worship is able to meet the requirements for the Yellow Bag Program, or seek private waste collection.

Schools

The Green Bin in Schools Program offers curbside collection service for green bins and leaf and yard waste for those schools participating in the program. It provides an excellent opportunity to educate students on how to use the green bin and to promote the benefits of waste diversion.

The City provides, free of charge: curbside green bins, classroom -sized containers, program signage and weekly collection services. The Green Bin in Schools Program continues to grow every year with approximately 240 Ottawa public and private elementary and secondary schools registered.

Yellow Bag Program Customers

The City provides curbside collection service to small commercial business through the Yellow Bag Program (YBP).

Participating business must register with the City and purchase specific yellow bags (as shown in Figure 21) for garbage from participating Home Hardware retailers or the City of Ottawa Client Service Centers. Yellow bags are sold in packages of four for $15.60 ($3.90 per bag) (2019 rate).

The collection of recyclables, household organic material and leaf and yard waste is provided at no additional cost.

To qualify for the Yellow Bag Program, businesses must:

1. Generate 16 bags or less of garbage every two weeks. Businesses located in a building with multiple business tenants must all participate in the Yellow Bag Program and all the businesses together cannot generate more than 16 bags of garbage every two weeks.
2. Generate 15 regular sized recycle bins (45 litres to 60 litre capacity) or less of recyclables every two weeks.
3. Generate a maximum of 3 green bins of organic material every week.
4. Adhere to the Solid Waste By-law (e.g. set out times, bag weights).

Figure 21: Designated Yellow Bag

Garbage under the Yellow Bag Program is collected with the residential curbside garbage; therefore, waste material tonnages are not tracked separately under the Yellow Bag Program.

8.2.2 Containerized Collection Service Program Customers

Multi-Residential Properties

Multi-residential properties included under the containerized waste collection service are properties that have 6 or more units. They are a mix of property types: townhouse communities, low rise apartments, units above commercial properties and high-rise buildings.

Figure 22 illustrates a high rise and low-rise apartment building.

The properties are a mix of rentals, co-ops, and condominiums. Economically, these properties can range from mid to high income properties to social housing properties, such as Ottawa Community Housing.

There are a number of multi-residential properties that do not receive municipal waste collection because they do not meet site plan requirements, do not meet operational collection requirements or they have a collection method preference and/or perceived cost savings by using private sector services.

The City does not currently track the number of multi-residential properties that have opted out of City collection services.

Figure 22: High-Rise and Low-Rise City of Ottawa Apartment Buildings

City Facility Customers

In 2011, the City undertook an aggressive interdepartmental initiative by aligning waste collection services and waste diversion programs for City facilities with those provided under Solid Waste Services, with the goal of increasing operational efficiency and achieving improved waste diversion, as well as providing harmonized service to all City facilities.

Figure 23: Mlacak Recreation Centre

City facility properties are made up of a variety of different uses, including administrative buildings, police services, works yards and long-term care facilities, to name a few.

Appendix 6.1 contains a complete list of the types of City facilities that receive collection services provided by Solid Waste Services, such as the John G. Mlacak Recreational Centre, as shown in Figure 23.

8.3 Collection Contracts

Currently, there are two residential collection contracts overseen by the City, which are based on the collection service program:

1. Solid Waste Curbside Collection and Services; and,
2. Solid Waste Collection, Multi-Unit Residential and City Facilities.

8.3.1 Solid Waste Curbside Collection and Services Contract

The City provides uniform curbside collection service levels across the entire City, 5 days per week. This means that 126 trucks travel across 5,600 kilometers of roadway every week to provide curbside waste collection services, including garbage, bulky item, blue and black bin recycling, green bin organics, and leaf and yard waste to single family homes and some multi-residential properties, City facilities, commercial businesses and schools.

In 2018, approximately 272,690 tonnes of waste was collected from properties under the curbside collection contract.

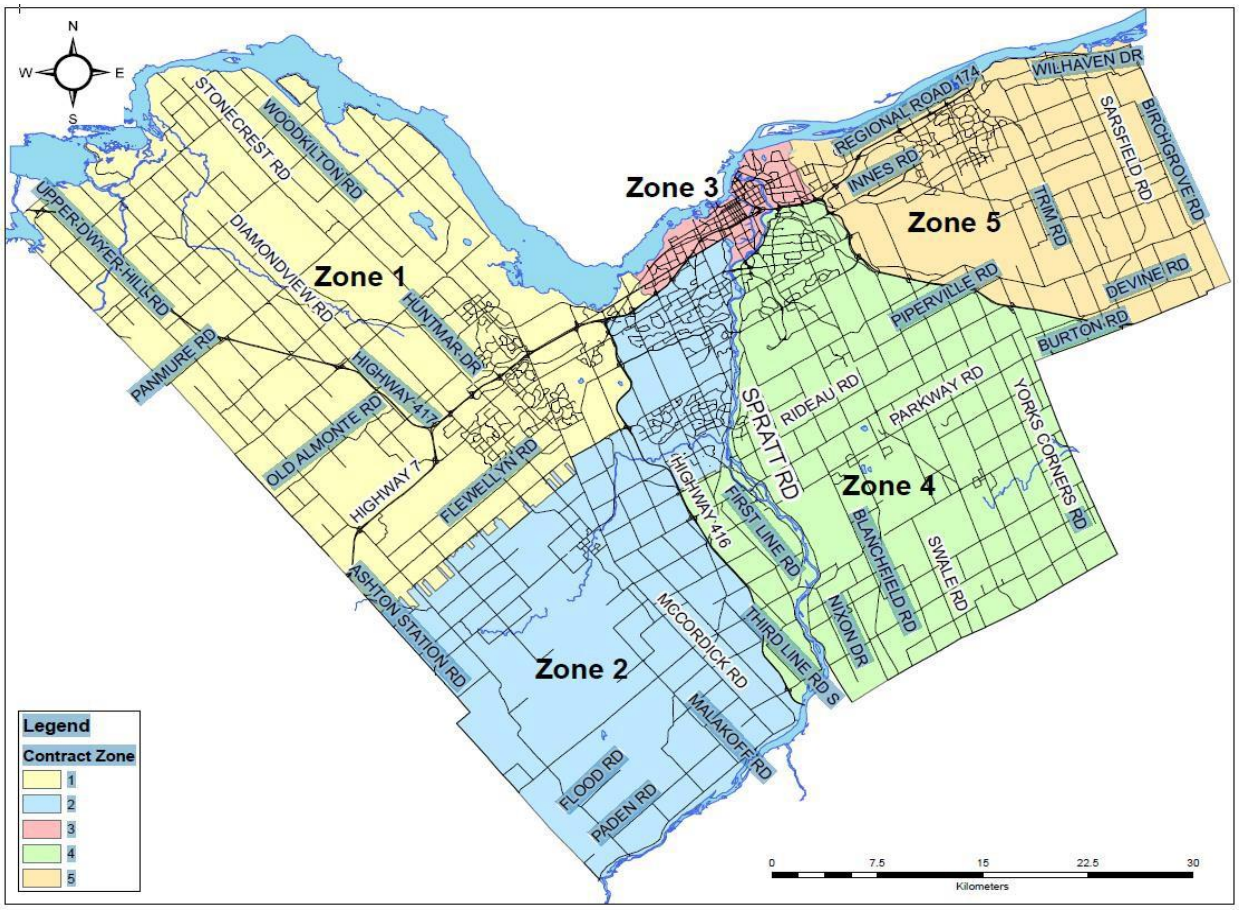
The current curbside collection contract began on October 26, 2012 and will terminate on May 31, 2020. A new short-term, three-year collection contract begins on June 1, 2020 and will continue until May 31, 2023. In the Spring of 2019, Council approved staff's recommendation to enter into a short-term three-year contract in order to allow time for the provincial legislative framework related to the shift to full producer responsibility for the Provincial Blue Box Program, be clarified. Furthermore, the short-term contract would allow the community and Council adequate time to establish a vision, objectives and targets for the Solid Waste Master Plan, so that future curbside collection options to be considered in the next collection contract align with the strategic direction of the City's Solid Waste Master Plan and include comprehensive community consultation.

Curbside Collection Service Areas

The City is divided into five curbside collection zones and service is provided through a mix of contracted and in-house services. Private contractors are currently responsible for the collection of waste material from Zone 1 (Waste Management), Zone 2 and Zone 4 (Miller Waste Systems) while the City's own staff are responsible for collection in Zone 3 and Zone 5.

A map of the 2012-2023 curbside collection zones is provided in Figure 24.

Figure 24: 2012-2023 Curbside Collection Zones



Each collection zone services a total of approximately 60,000 locations, which is approximately 12,000 collection locations per day per zone. There are approximately 23 collection vehicles per collection zone.

In each collection zone, the Contractor or in-house group is responsible for:

- The collection of garbage (including bulky items), recyclable material, household organic material, leaf and yard waste and Christmas trees from residential properties, places of worship, City facilities and some ICI establishments participating in the Yellow Bag Program;

- The collection of diapers and special considerations products (incontinence items) on the non-scheduled garbage collection week for residential customers;
- The collection of bulky items from multi-residential properties receiving containerized garbage collection;
- The collection of household organic material and yard waste from schools; and,
- The supply, delivery and replacement of new blue bins, black bins and green bins for damaged containers for all customers.

Collection Costs

Payment under the curbside collection contract is an annual service cost based on the waste stream and the number of locations being serviced per zone, divided by twelve months. A cost adjustment factor is calculated at the beginning of each contract year, to address both the change in the Consumer Price Index (CPI) and the number of locations charged the Solid Waste Curbside User Fee for the collection of garbage from curbside or pad locations.

The current total annual cost of the curbside collection contract is approximately $34 million per year but is increasing to $42.5 million under the new contracts that start June 2020. The increase is due to the 3-year short term contract the City negotiated with Miller Waste Systems for Zones 1, 2 and 4 and with the In-House Group for Zones 3 and 5. This will enable the City to adjust service levels to incorporate the new full producer responsibility strategies.

Table 15 summarizes the 2019 contract cost broken down by waste stream for each collection zone.

Table 15: Year 8 (June 1, 2019 to May 31, 2020)

Curbside Collection Costs by Waste Stream per Zone				
Zone Number	**Garbage**	**Recycling**	**Organics/LYW**	**Total**
Zone 1	$2,175,185	$2,422,390	$2,982,727	**$7,580,302**
Zone 2	$2,689,630	$2,008,799	$2,529,610	**$7,228,039**
Zone 3	$2,136,748	$1,769,188	$1,886,285	**$5,792,221**

Curbside Collection Costs by Waste Stream per Zone				
Zone Number	**Garbage**	**Recycling**	**Organics/LYW**	**Total**
Zone 4	$2,577,275	$1,772,718	$2,250,978	**$6,600,971**
Zone 5	$2,495,282	$2,124,387	$2,224,787	**$6,844,456**
Total	**$12,074,120**	**$10,097,482**	**$11,874,387**	**$34,045,989**

8.3.2 Solid Waste Containerized Collection and Services Contract

The City of Ottawa provides containerized collection of garbage and recycling to multi-residential properties and City facilities under one contract: Multi-Unit Residential and City Facilities (MRCF) Solid Waste Collection Contract.

Approximately, 20 trucks per day provide containerized waste collection services to multi-residential properties and City facilities.

Waste from multi-residential properties and City facilities is routed and collected together by waste stream to optimize operational efficiencies and for City cost savings.

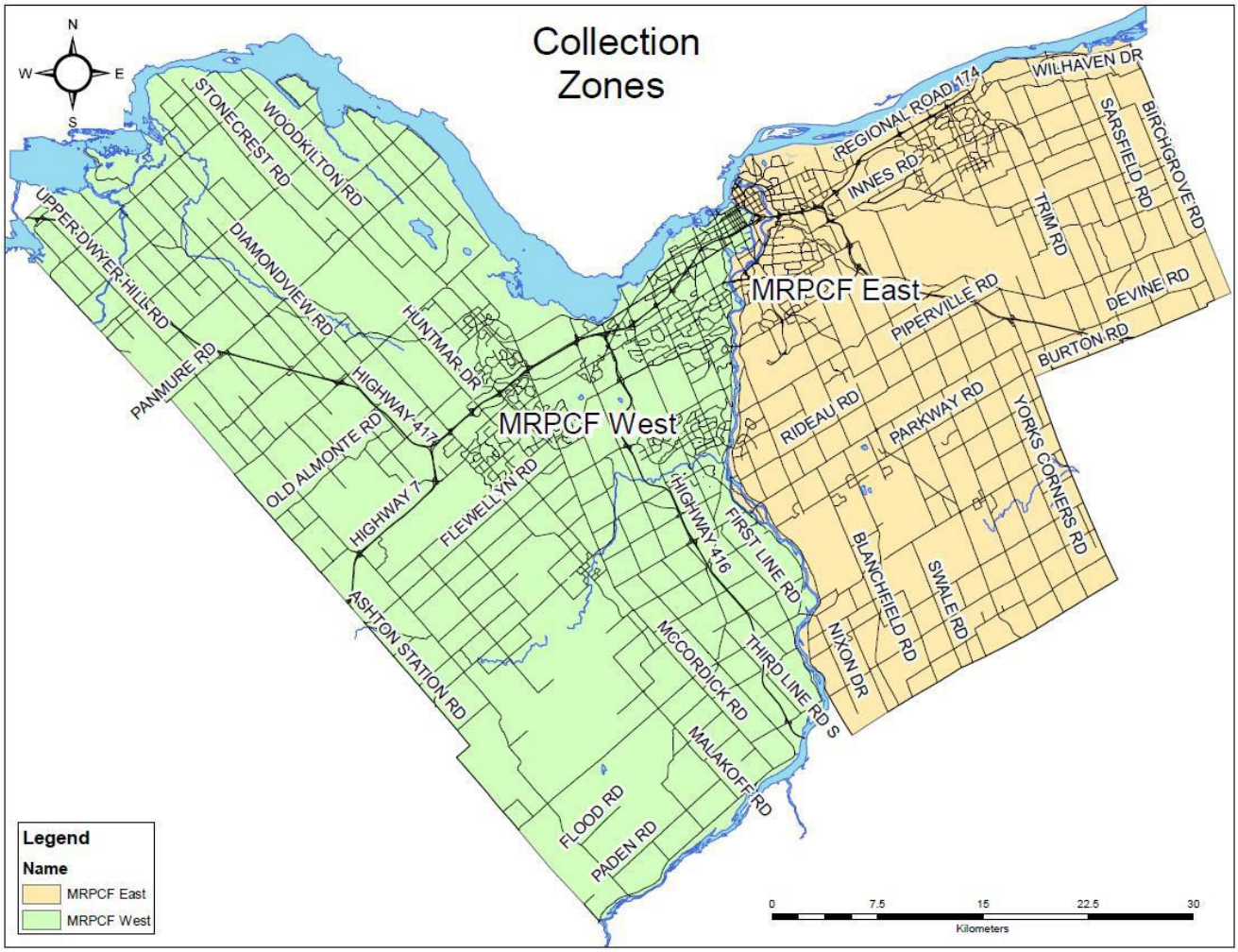
Depending on the property, multi-residential properties and City facilities may not have garbage and recycling collected under the same collection service program. For example, a multi-residential property could receive containerized garbage collection and curbside recycling collection – or vice versa. This is dependent on the building size, property size, storage space, preferences and amount of material generated.

The current MRCF collection contract began on June 1, 2014 and will terminate on May 31, 2020. It provides for 2 geographic collection zones, east and west, with approximately the same number of properties in each zone and one zone for city-wide collection of roll-off containers for City facilities. The Rideau River/Canal was used as the east/west main boundary dividing the two zones.

Collection for all three zones has been carried out by one City contracted service provider since 2014 and will continue to be the same contractor until the contract expires in 2025.

A map of the containerized collection zones is provided in Figure 25.

Figure 25: 2012-2023 Containerized Collection Zones



In each east and west collection zone, the Contractor is responsible for:

- The collection of garbage in front end loading containers from multi-residential properties and City facilities.
- The collection of recyclable material in front end loading containers or 360L carts from multi-residential properties and City facilities.

- The one-time supply and delivery of an in-unit recycling bag to all multi-residential properties.

Under the third collection zone, City-wide roll-off collection, the Contractor is responsible for the collection of garbage, scrap metal and leaf and yard waste material in roll-off containers from City facilities. Multi-residential properties are not eligible to receive roll-off collection for any material.

Currently, for multi-residential properties and City facilities that receive the containerized collection service for garbage and recyclables, bulky items, household organics and leaf and yard waste, are collected under the curbside collection contract.

Considering the upcoming provincial changes to the Blue Box Program and the development of the Solid Waste Master Plan, a new five-year MRCF collection contract was developed in 2018 and awarded March 2019. Language was built into the existing contract to allow for contract negotiations to occur once the provincial changes to the Blue Box Program become clear. The start date of this contract is June 1, 2020 and the end date is June 1, 2025, with the option to extend the period of contract for two additional one-year terms, which would take the contract to May 2027.

2020-2025 Multi-Residential City Facility Collection Contract Changes

The major changes to the new MRCF contract are described below. These changes will take effect June 1, 2020.

1. The collection of garbage in 360 litre carts. This service will be provided to both multi-residential properties as well as City facilities. Many smaller multi-residential properties do not qualify for the containerized collection program because they lack the space for the storage of a front-end loading container. Often these properties are forced to hire a private hauler to service their property. With the addition of 360 litre garbage carts, these properties will now be able to participate in the City's municipal waste collection program.
2. The collection of bulky items from multi-residential properties receiving containerized garbage collection was moved from the curbside collection contract and added as a

responsibility under the new MRCF collection contract. Bulky item tonnages and costs will be determined for those multi-residential properties under the containerized collection program.

3. City facilities are no longer eligible to receive curbside collection of bulky items. City facilities must make their own arrangements to dispose of their large items by either dropping them off at a City yard with a garbage roll-off container or bring the material directly to the Trail Waste Facility.

4. The collection of green bins from multi-residential properties receiving containerized collection was moved from the curbside collection contract and was added to the MRCF collection contract. This will provide an upgrade in service level since green bins can be set-out and collected on private property, as well as at the curb. The contractor, under the new contract, upon agreement of the property owner, will be required to move green bins from a storage area to the collection location at no cost to the property owner. City facilities will continue to have green bin and leaf and yard waste material collected under the curbside collection contract.

The MRCF contract end date of 2025 aligns with the Resource Productivity and Recovery Authority's timeline to introduce Individual Producer Responsibility (IPR) to Ontario municipalities between January 1, 2023 and December 31, 2025. Under Section 4 of the General Terms and Conditions, wording is included to allow for contract negotiations to occur, once the provincial changes and timeline for the Blue Box Program become clear.

Collection Costs

The total annual cost of the current MRCF collection contract is approximately $3.3 million dollars (2018). That will increase to $7.4 million under the new collection contract, which commences June 1, 2020.

Basis of payment under the current contract is a separate per tonne rate for the collection of garbage, glass-metal-plastic stream and the fibre stream.

Table 16 summarizes the per tonne rate per waste stream of the last year (Year 6) of the 2014 MRCF contract.

Table 16: Year 6 (June 1, 2019 to May 31, 2020)

Multi-Residential Properties/City Facilities (MRCF): Collection Contract Rates				
Container Type & Waste Stream	**FEL Garbage**	**FEL & Cart Fibre**	**FEL & Cart GMP**	**Roll-Off (Garbage, Scrap Metal & Leaf & Yard Waste)**
Unit Rate	***Per Tonne***	***Per Tonne***	***Per Tonne***	***Per Lift***
Price	$28.98	$152.09	$347.53	$211.91

8.4 Garbage Collection

Residential waste management services are mandated by the provincial government, but are carried out by local municipalities, such as the City of Ottawa.

8.4.1 Curbside Garbage Collection Service

Garbage is collected biweekly with either a rear packer or side load vehicle and all garbage is brought to the Trail Waste Facility, which is in the City's southwest end.

In order to ensure a consistent and regular supply of waste material to the processing and disposal facilities, minimize truck lineups and maximize truck efficiencies, the City is divided into two collection schedules: Calendar A and Calendar B. The collection schedules are set up so that the biweekly garbage collection schedule is off-set and collected on different weeks. Blue bin is always collected with garbage, across the City.

The service is considered a manual garbage collection service because the operator must leave the truck, pick up and place the garbage into the truck by hand – no automated collection is involved.

For properties receiving curbside collection, the garbage limit is up to six items that can be a combination of garbage bags, garbage cans and bulky items. If there is a death or change of occupancy at the residential dwelling, additional garbage can be placed at the curb beyond the six-item limit.

The item limit for curbside garbage collection is not enforced by the Waste Management Inspectors. The City's direction to staff is to educate rather than enforce, so customers currently can place as much garbage at the curb for collection as they want, and it will be collected. However, the 2018-2019 waste audits show that households are setting out 4.18 garbage items every two weeks. This includes both regular garbage and bulky items.

Figure 26 illustrates the approved garbage containers accepted in the City of Ottawa's curbside collection program:

Figure 26: Acceptable Curbside Garbage Containers

Bulky items such as bicycles, furniture, pool covers and other discarded larger materials, normally accumulated at a residential dwelling, can be put out for collection on the regular garbage collection day.

Under the curbside collection program, garbage generated as a result of construction, demolition or renovation operations is not accepted in the regular garbage. However, small quantities of renovation waste are accepted if the material is properly packaged and does not exceed the six-item limit.

8.4.2 Containerized Garbage Collection Service

Multi-Residential Properties

All multi-residential properties with six units or more are eligible to receive once per week collection of garbage from front end loading (FEL) containers and biweekly bulky item collection, if the building/property is actively participating in the City's recycling program. Bulky items are placed out at the curb or a designated area on private property.

The City sets FEL garbage container limits based on the number of residential units in the building or on the property. If the amount of garbage generated exceeds the number of FEL garbage containers allocated by the City, the property owner must cover any additional garbage collection costs. There is no limit for bulky item collection.

Additional collections are divided into two different types: Scheduled and On-Call. Scheduled additional collections are those collections performed on a regular basis beyond the once per week collection, while the on-call additional collections are those collections performed when the service is required such as a move out at the end of the month. Collection fees for scheduled and on-call additional collections are both based on the FEL container size, the bid price per garbage tonne and the tipping fee at the Trail Waste Facility but are different in the way the formula is calculated so that the on-call additional collections are more expensive than the scheduled additional collections.

The property owner is responsible for setting out all garbage containers by 7:00 am and to ensure they are accessible to the collection vehicle on the scheduled garbage collection day. Accessible set-out locations include outside the building (e.g. parking lot or an enclosure or pad beside the building).

If a property owner cannot bring the garbage containers to the set-out location, arrangements can be made through the City's contracted hauler (at the property owners' expense) to unlock doors, enter a building, enter a garbage room, unchain, winch or maneuver the garbage containers for the required distance in order to facilitate collection. This is a fixed rate per meter outlined in the collection contract. There is no charge to the Property Owner for the first three (3) meters of the handling distance of a FEL garbage container. The contractor will not charge for the return of the FEL garbage container(s) to the original locations.

FEL garbage containers can be rented through the contracted hauler or be privately owned by the property owner. In-ground garbage containers are privately owned and purchased by the property owner but are serviced under this collection service, as long as the in-ground container can be collected using a front-end loading collection vehicle.

The rental fee of a FEL garbage container is based on the size of the container and is paid directly to the contractor monthly. The City's contractor is responsible for the maintenance and repair of rented garbage containers. The City is responsible for the purchase of FEL garbage containers and receives a portion of the rental fee which is used to fund future FEL container purchases. The City invoices the contractor on a monthly basis for its portion.

Table 17 summarizes the garbage collection containers used under the containerized garbage collection service.

Table 17: Containerized Garbage Container Summary

Waste Stream	Collection Containers	Size	Color
Garbage	Front End Loading	2, 3, 4 6 and 8 cubic yards	Dark Blue
Garbage	In-Ground	6.5 yards	Brown
Garbage	Roll- Off Container	20 yards	Dark Blue

The City has established prices for additional collections, handling services and rental fees as part of the contract with the contracted hauler, thereby providing property owners with protection against price fluctuations over the life of the contract.

City Facilities

City facilities own their front-end loading garbage containers and some facilities, such as dog parks, use in-ground garbage containers. City facilities do not rent garbage containers from the hauler.

City facilities have unlimited FEL garbage container allocations and collection frequencies which are dependent on property type, season and the business conducted within the facility or on the property.

Furthermore, City facilities are not charged the handling services fees for front-end loading garbage containers that the contractor must move to effect collection. This service cost is provided at no cost to the City facility.

Bulky items are placed out at the curb or a designated area on private property.

Out of the 240 City's facilities, 50 sites have scheduled and on-call collections of garbage roll-offs. These roll-offs are in the works yards/garages, beach/park areas, snow dumps, fire fighter training centers and community centers. They are used for general clean ups on roads, beaches and parks, renovations/construction projects and special events. The contractor does not charge a rental fee to City facilities for the use of roll-off containers.

8.4.3 Garbage Tonnes

Table 18 presents the tonnes of garbage collected from each collection service program from 2016 to 2018.

Table 18: Tonnes of Garbage Collected (2016 - 2018) by Collection Service Program

Collection Service Program	2016	2017	2018
	Garbage Collected in Metric Tonnes		
Curbside Collection (Single Family, RUAC, Multi-Residential Low Rise & High Rise, Special Consideration, Yellow Bag, Places of Worship, City Facilities). *Includes Bulky Item Collection*	131,773	140,261	138,239
Regular Containerized Garbage Collection (Multi-Residential-Low Rise & High Rise, City Facilities)	43,209	44,999	44,868

Collection Service Program	2016	2017	2018
	Garbage Collected in Metric Tonnes		
Extra Containerized Garbage Collection – Extra Collections (Multi-Residential-Low Rise & High Rise, City Facilities)	4,779	5,310	5,505
Garbage Roll-Off (City Facilities)	2,329	2,756	2,515
Total	**182,090**	**193,326**	**191,127**

8.5 Recycling Collection

Recycling collection is a mandated program with statutory requirements under the Environmental Protection Act and like all municipalities in Ontario, is regulated by the MECP.

The City's recycling collection service is a dual material stream program, where each stream has dedicated colored containers, pending the collection service type and the material streams are collected separately:

1. Glass metal and plastic (GMP) stream – collected in a blue bin, blue 360 litre recycling cart or grey front-end loading container; and,
2. Paper and cardboard (Fibre) stream – collected in a black bin, black 360 litre recycling cart or yellow front end loading container.

The total amount of recyclables collected through Ottawa's curbside and containerized collection programs in 2018 was approximately 62,000 tonnes. Approximately 38% of the recyclables collected were part of the GMP stream and 62% was the fibre stream.

Acceptable recyclable materials are listed in Appendix 6.2.

Blue Box Program Plan Transition Update

On August 15, 2019, the Minister of the Environment, Conservation and Parks issued a direction to Resource Productivity and Recovery Authority (RPRA) and Stewardship Ontario (SO) to begin to transition the management of Ontario's Blue Box Program to product and packaging producers, an approach commonly known as Individual Producer Responsibility (IPR).

Under the *Waste Diversion Transition Act, 2016*, the Authority is responsible for overseeing the orderly wind up of current waste diversion programs and the industry funding organizations responsible for managing those programs.

A regulation is currently being drafted under the *Resource Recovery and Circular Economy Act, 2016.* The transition to the new producer responsibility framework is scheduled to start January 2023 and be fully implemented by the end 2025. This will be done in one-third implementation increments each year.

Once the City of Ottawa transitions into the new program, the City will no longer be eligible to receive funding under the SO Program.

8.5.1 Curbside Recycling Collection Service

Recyclable material is collected weekly with blue bin and black bin collected on alternating weeks and there is no limit to the amount of recycling that can be placed at the curb for collection.

The service is considered a manual collection service because the operator must leave the truck, pick up and empty the recycling bins into the truck, by hand – no automated collection is involved.

Recycling bins are provided by the City, and they are also available for purchase at retail outlets. Under the curbside collection program, recycling bins must be plastic, blue or black in colour and can range in size from 45 litres to 60 litres, as shown in Figure 27. Cardboard boxes and some other plastic containers are acceptable, depending on the size. When placed out for collection, the recycling bins must be free of any ropes, nets or bungees cords and any lids must be separate from the recycling bin and the recycling bin cannot weigh more than 15 kilograms when full. Plastic bags used to set-out recyclables are collected in the City's program, but not recommended or advertised. They are considered residual at the recycling processing facility and are less efficient than loose material, since bags must be ripped open to obtain the recyclables.

Figure 27: Blue and Black Curbside Recycling Bins

Recyclable material is currently co-collected with household organic waste/leaf and yard waste in the same collection vehicle, and collection vehicles have two separately sealed compartments to ensure no cross contamination between the recyclable material and household organic waste and leaf and yard waste.

All recyclable material is brought to a Materials Recovery Facility (MRF), while all the organic material is brought to the organics processing facility. The processing of recyclables is contracted to one service provider but is carried out in two separate recycling facilities: a fibre plant for paper and cardboard (Black Bin material) and a container plant for glass, metal and plastic (Blue Bin material).

The MRF facilities are located minutes apart from each other and the organics processing facility is located about 15 kilometers away from the MRF's, in the southeast end of the City.

8.5.2 Containerized Recycling Collection Service

Recycling is mandatory for all multi-residential properties receiving City waste collection services. If a multi-residential property wants containerized garbage collection provided by the City, then that property must also participate in the containerized recycling service. All efforts must be made by the property owner to make recycling containers available and accessible to residents.

The collection of containerized recyclables from multi-residential properties and City facilities is collected together under the same collection routes for efficiency and cost savings purposes.

Multi-residential properties and City facilities are provided a once-per-week collection of recyclable materials from front end loading (FEL) containers or recycling carts.

The following services/items are provided to multi-residential property owners and City facilities for no associated fees:

- Supply of City-owned FEL recycling containers or recycling carts;
- Supply of locks for FEL recycling containers to reduce contamination and discourage scavenging;
- Additional collections - whether scheduled weekly or on-calls during peak periods;
- Additional recycling FEL containers/carts, when required;
- Container/cart repairs or replacements;
- Handling services - there is no charge for the FEL recycling containers/carts to be moved by the contractor to facilitate collection: and,
- There are no rental fees associated with FEL recycling containers or recycling carts.

The recycling program is a dual material stream collection program like the curbside except glass, metal and plastic items are placed in grey FEL containers or blue 360 recycling carts and paper and cardboard items are placed in a yellow FEL container or black recycling cart. Unfortunately, at the implementation stage of the containerized collection service, the selection of colors for front end loading containers was limited due to what other private contractors were using at the time, hence the different colors, and with full producer responsibility on the horizon, no changes will be made until the new program is fully understood.

The front-end loading collection vehicle is capable to collect recycling material from both FEL containers and recycling carts on the same route using a cart tipper on the front forks. This allows for collection route efficiencies.

Table 19 summarizes the recyclable containers used under the containerized recycling collection service. In-ground recycling containers are privately owned and purchased by the property owner but are serviced under the City's collection program.

Table 19: Recycling Containers Used in the Containerized Recycling Collection Service

Waste Stream	Collection Containers	Size	Color
Recycling: GMP	Front End Loading	2, 3, 4 and 6 cubic yards	Grey
Recycling: Fibre	Front End Loading	2, 3, 4 and 6 cubic yards	Yellow
Recycling	In-Ground	6.5 yards	Brown
Recycling: GMP	Cart	360 L	Light Blue
Recycling: Fibre	Cart	360 L	Black
Scrap Metal	Roll-off Container	20 yards	Dark Blue

8.5.3 Recyclable Material Tonnages

Table 20 presents the tonnes of recyclable material collected from each collection service program from 2016 to 2018.

Table 20: Tonnes of Recycling Collected (2016 - 2018) by Collection Service Program

Collection Service Program	2016		2017		2018	
	GMP	Fibre	GMP	Fibre	GMP	Fibre
Curbside Collection (Single Family, RUAC, Multi-	19,031	35,969	19,946	35,684	20,360	32,467

Collection Service Program	2016		2017		2018	
	GMP	Fibre	GMP	Fibre	GMP	Fibre
Residential Low Rise & High Rise, Places of Worship, Yellow Bag, City Facilities)						
Containerized Collection (FEL & Cart) (Multi-Residential Properties and City Facilities)	2,667	6,483	2,850	6,702	2,988	6,358
Totals	21,698	42,452	27,796	42,386	23,348	38,825
	64,150		**70,182**		**62,173**	

8.6 Household Organics and Leaf and Yard Waste Collection

Leaf and yard waste collection is a mandated program with statutory requirements under the Environmental Protection Act and like all municipalities in Ontario, is regulated by the MECP. The collection of household organics does not have statutory legislative requirements; however, it does fall under the province's Food and Organic Waste Framework which sets policy direction for municipalities.

The City manages the collection service contract for household organic waste (i.e. green bin), leaf and yard waste, brush and Christmas trees for all residential households, including both single family and multi-unit, City facilities, places of worship, schools and a small portion of the non-residential sector under the Yellow Bag Program.

Household organic waste, leaf and yard waste and brush are collected weekly and are collected together, except during dedicated peak spring and fall periods. This material is co-collected with recyclable material in one collection vehicle, with individual sealed compartments to prevent contamination.

All household organic material in green bins and leaf and yard waste is brought to an outsourced contracted organics processing facility, except during spring and fall peak leaf and yard waste seasons.

During the Spring and Fall peak leaf and yard waste seasons, leaf and yard waste that is set out separately from the green bin, is collected separately for a total of ten (10) weeks per year. A portion of the separated leaf and yard waste material is brought to the Barnsdale Road Facility site for outdoor windrow composting.

Christmas trees are added to the regular collection and brought to either the organics processing facility or the Trail Waste Facility.

Household organic waste such food waste and scraps are collected in green bins, using a semi-automated mechanical lifting mechanism. Leaf and yard waste material is an acceptable material in the green bin. The volume capacity of the green bins varies in sizes depending on the type of property and usage. There are 47 litres (L), 80 L and 240 L green bins.

Leaf and yard waste material can be included in green bins with the household organic waste, but it is also collected in reusable containers such as in garbage cans, cardboard boxes and paper leaf and yard waste bags. Branches and brush material must be neatly bundled and piled. The City does not accept leaf and yard waste in plastic bags. Figure 28 illustrates the 80 L green bin and leaf and yard waste properly packaged and set out at the curb.

Figure 28: 80 L Green Bin and Leaf and Yard Waste Properly Packaged

Effective July 2, 2019, plastic bags, as a bagging option, were introduced to encourage customers to use the green bin in order to increase household organic waste diversion. At the same time, dog feces were also included as an acceptable green bin material.

Allowing customers to put their food and household organic waste in plastic bags before putting it into the green bin assists in reducing odour and pest concerns (the “yuck” factor), that were identified as a barrier to participating in the program. Allowing dog waste in the green bin encourages Green Bin participation and reduces odours in the regular biweekly garbage collection stream.

Council’s decision to expand the Green Bin Program to include these materials was made in the context of current and pending provincial legislation, including the Food and Organic Waste Policy Statement that proposes a phased-in ban on organics sent to landfills beginning in as early as 2022 and established waste reduction targets of 70 per cent for single-family dwellings by 2023 and 50 per cent for multi-residential dwellings by 2025.

Acceptable household organics materials and leaf and yard waste are listed in Appendix 6.3.

Tonnes of Household Organic Waste and LYW Material Collected

Table 21 shows the tonnages of household organic waste and leaf and yard waste material collected from 2016 to 2018 and brought to either Renewi or the Trail Waste Facility.

*Table 21: Tonnes of Household Organic Waste and Leaf and Yard Waste Material Collected (2016 - 2018) **

Property Type (Curbside Collection Program)	2016		2017		2018	
	Organics Processing Facility	TWF – LYW Only	Organics Processing Facility	TWF – LYW Only	Organics Processing Facility	TWF – LYW Only
Single Family, RUAC, Multi-Residential Low Rise & High Rise, Places of Worship, Schools, Yellow Bag, City Facilities, Special Events	70,932	5,162	77,506	4,186	76,576	5,054
Total	**76,094**		**81,692**		**81,630**	

**Note: Currently, all household organics and leaf and yard is collected under the curbside collection service contract, but this will change June 1, 2020, when the new containerized collection service contract is in place, thus allowing the City to track Green Bin organic waste and leaf and yard waste generated from curbside households as well as from Multi-residential facilities.*

8.7 Public Space Collection Services

The City of Ottawa provides several collection services for the collection of garbage, recycling and household organic material in public spaces and parks, on-street and at special events. The costs for these services are applied across the entire tax base and provides the general public (residents, visitor and tourists) with the opportunity to dispose of waste in the proper way and improve diversion.

8.7.1 On-Street Waste Basket Collection Service

The City is responsible for the collection of waste from approximately 750 on-street waste containers.

The City has divided the collection service for On-Street Waste Baskets for garbage and recyclables into two zones: Restricted Advertising Area (RAA) and Unrestricted Advertising Area (UAA). The RAA is defined as the central or core area of the City, traditional main streets and the Business Improvements Areas (BIA) on Bank Street, Westboro, Glebe, Wellington West and Downtown Rideau. In the RAA, there is no commercial advertising allowed on the waste receptacles. However, labels are adhered to the receptacles, indicating what material goes in which section. The UAA is defined as all areas outside the RAA and allows for commercial advertising on the waste receptacles.

City staff are in the process of creating an electronic master list for UAA and RAA bins for inventory purposes. This is scheduled to be completed by the end of 2019.

Effective 2019, Solid Waste Services is responsible for the contract for the collection of garbage and recycling from waste receptacles in the RAA. There are approximately 650 on-street City owned waste baskets and consist of two different types:

- an individual stand-alone waste basket for garbage only (quantity 570); and,
- waste baskets with three separate compartments to collect garbage, glass-metal-plastic (GMP) and paper/cardboard (quantity 80) which aligns with the residential recycling program.

The waste receptacles in the RAA are City owned and are part of the City's Integrated Street Furniture Program (ISFP). ISFP provides the City with an opportunity to enhance the quality of public spaces through the design, installation and placement of a cohesive network of street furniture, including waste receptacles. The waste receptacles in the RAA are designed to have a consistent look and feel for the specific area, improving the visual appearance of the streetscape.

In January 2018, a performance evaluation was conducted by the ISF group on four waste receptacles for a period of one year in the Core Roads area. Once the evaluation was completed, the ISFP group recommended one waste receptacle unit. The model chosen was the Canaan CRC778 and it currently costs $1,581 per waste receptacle. This waste receptacle

will eventually replace the existing ones, where possible. Figure 29 demonstrates one of the two approved waste receptacles in the RAA.

Figure 29: Approved Public Space Waste Receptacle in RAA

The collection of the on-street waste baskets in the RAA is contracted with the current provider, Waste Management Canada (WMC), until May 2021, with the option to extend for four additional one-year periods. Material is collected on a summer and winter schedule.

Payment is a unit rate based on the number of collections of each container type. Table 22 summarizes the unit rate per waste receptacle per collection in the RAA.

Table 22: Unit Rate per Waste Receptacle per Collection in the RAA

Waste Receptacle Container Type	Unit Rate per Collection
Garbage Only	$1.72 per collection
Garbage, GMP and Fibre (3 compartments)	$2.50 per collection

Collections are made twenty-four hours per day with daytime and overnight scheduled collections taking place. Customer service calls for overflowing containers are also dealt with as they come in. Collections are made all year round, but the frequency varies depending on the season and could involve up to several collections per day depending on the location of the bins.

Prior to May 2019, Roads and Parking Services was responsible for the collection of the waste baskets in the RAA. Material from the on-street waste baskets was mixed in with other road projects and therefore tonnages were not tracked separately. Since the shift of responsibility to Solid Waste Services in May 2019, tonnages are tracked but the data is not yet available and should be by the end of 2019.

The waste receptacles in the Unrestricted Advertising Area (UAA) are also part of the City's Integrated Street Furniture Program (ISFP), however they are not City owned, rather, owned and serviced by the private service provider.

The waste receptacles in the UAA are designed to have a consistent look and feel and to improve the visual appearance of the streetscape but are different to the waste receptacles in the RAA because the waste receptacles in the UAA are affixed with commercial advertising such as real estate agencies and agents.

Figure 30 shows a waste receptacle in the UAA.

Figure 30: UAA Waste Receptacles (On Woodroffe at Fallowfield)

Collection of waste receptacles in the UAA, is coordinated by the Project Management Office Branch of the PWESD. There are approximately 93 containers which are set up to accept both garbage and recyclables.

The collection of on-street waste baskets in the UAA is carried out by a City contracted service provider, Creative Outdoor Advertising (COA) under a revenue generating agreement. The contract includes the provision of street furniture (approved by the City), the supply, delivery, installation, maintenance and collection of the waste receptacles and the development, implementation and management of an advertising sales program.

The contract will be in place effective January 2020 and goes until December 2024.

The containers are collected all year round with varying pick up schedules depending on the location and use of the garbage and recycling containers. Collected tonnages are not tracked. It is the responsibility of COA to ensure that the garbage is properly disposed of and that recyclables are recycled at provincially approved locations.

Presently, some of the older street furniture which is owned by the City is being removed and replaced with newer and more consistent themed furniture by COA. Used furniture that is in good condition will be resold through “GovDeals” a government surplus on-line auction marketplace.

An on-street waste receptacle waste audit was completed during the fall of 2019. The results showed significant contamination levels in both the glass-metal-plastic and paper-cardboard (fibre) recycling streams. Table 23 summarizes the results.

Table 23: Fall 2019 On-Street Waste Receptacle Audit Results

Source: Street Side Garbage Receptacle	
Sample Weight (kg)	313.29
Category	**Weight (kg)**
Dog waste	71.32
All other acceptable organics material	147.07
Aluminum pop cans	1.44
#1 PET	4.39
Glass	1.65
All other acceptable GMP materials	18.43
Garbage / contamination	68.99

Source: Street Side Paper-Cardboard (Fibre) Receptacle	
Sample Weight (kg)	162.18
Category	**Weight (kg)**
Dog waste	0.00
All other acceptable organics material	24.24
Newspaper	13.06
Cardboard	8.86
Boxboard	7.12
All other acceptable Fibre materials	13.03
All other acceptable GMP materials	13.55
Garbage / contamination	82.32
Percentage of Fibre Material	**26%**
Percentage of Contamination	**74%**

Source: Street Side Glass-Metal-Plastic (GMP) Receptacle	
Sample Weight (kg)	172.65
Category	**Weight (kg)**
Dog waste	2.40
All other acceptable organics material	61.75
Aluminum pop cans	8.27
#1 PET	13.66
Glass	27.28
All other acceptable GMP materials	29.68
Garbage / contamination	29.61
Percentage of GMP Material	**46%**
Percentage of Contamination	**54%**

8.7.2 Parks Collection Service

The City operates and maintains roughly 4,300 hectares of parkland at more than 1,300 sites. There are approximately 900 City parks that have garbage receptacles, with an average of six

garbage receptacles per park. This works out to approximately 5,400 garbage receptacles that require collection on a seasonal basis, typically from May to November.

Recycling receptacles in City parks are not documented and are sporadic in type and locations. The garbage receptacles are owned by the City's Recreational Cultural and Facility Services Department, with the collection performed by staff within the Public Works Environmental Services Department (Parks, Forestry and Stormwater Services).

Frequency of garbage collection in City parks is dependent on the season and based on park use. Collections are completed on a daily, biweekly or weekly basis and can be seven days per week. City staff use approximately eight mini-packers as well as pick-up trucks to complete the collection. In a 2017 Service Brief, Parks Services indicated $2.4 million (based on a 3-year average) for expenditures (labour, material, equipment and external services) included under the Parks clean up and litter maintenance program.

Material from City parks garbage receptacles is mixed with waste from other Parks Services clean up projects and therefore tonnages are not tracked separately. Table 24 summarizes the Parks garbage that was registered at the Trail Waste Facility.

Table 24: City Parks Garbage Tonnages at the Trail Waste Facility

Parks Program	2016	2017	2018
Parks Garbage (Tonnes)	1,205	644	450
Number of Loads	745	705	851

City Parks: Green Bin and Recycling Pilot Project

Solid Waste Services is currently undertaking a one-year City parks Green Bin and Recycling pilot project, where green bins are placed in 10 parks across the City. The pilot began in the summer of 2019 and will continue until the end of November 2020.

Figure 31: Parks Collection Pilot Depot Set-Up

The launch of the pilot aligned with the launch of the expanded green bin service to include plastic bags and dog waste in the Green Bin program.

In each park, the greens bins were co-located with recycling (glass- metal-plastic stream only) and garbage receptacles, with clear labelling and overhead signs, as shown in Figure 31. Each bin is a 360-litre cart.

The pilot will end in November 2020, at which time, staff will evaluate the effectiveness of the pilot, including how the bins were used in each season, assess operational requirements, and identify operational challenges throughout the various seasons.

Depending on the type of park and its usage during the winter season, the number of green bins will be reduced and/or strategically relocated to allow for ease of collection and use, as is common with both recycling and garbage receptacles during the winter months.

8.7.3 Special Events

Garbage collection for all special events is the responsibility and the expense of the event organizer.

For special events under 500 participants, such as community BBQs, Council sponsored events, Solid Waste Services supplies and delivers green bins, as well as collects the organic material once the event has concluded. There are no charges for bin rentals nor is there a collection service fee. These events are not specifically tracked and recorded, however Solid Waste Services collects greens bins from approximately 30 events per year. The organic material from the green bins is collected with the regular curbside collection program and

therefore tonnages are not tracked separately, nor can quality of material be determined for these events.

Centralized Allocations (Recreational, Cultural and Facility Services Department) is responsible for the facilitation of the Public Works and Environmental Service Department's Loaned Inventory Program which includes recycling containers (clearstream recycling frames). The recycling frames are provided, on a request basis, at special events which take place at City municipal parks. Event organizers are responsible for picking up the recycling frames at the Conroy yard as well as purchasing clear plastic bags that are folded over the recycling frames to contain the recyclables. After the event, organizers dispose of the recyclables either through a 3rd party contractor or they can bring the material back home to be put out on their recycling collection day. As such, recycling tonnages for these events are not tracked.

For larger special events, such as Ribfest, Bluesfest, Hope Beach Volleyball and Dragon Boat Festival, currently there is no requirement for recycling/diversion as part of receiving a permit for a special event. However, the use of recycling stations and organics collection is strongly encouraged through the comprehensive event guide that the City's Event Central provides to registries. The event guide outlines best practices and tips for greening an event and several events have sustainability programs in place at their event/festival.

Waste material tonnages for large special events are not recorded by the City.

In June 2018, Ottawa City Council directed the following motions to staff:

1. Emergency and Protective Services include the Special Events on Public and Private Property By-law (2013-202) for consideration, as soon as possible, as part of the next Term of Council's By-law Review Work Plan; and
2. Staff include recycling and organic waste collection in the scope of the review for the Special Events on Public and Private Property By-law (2013-202); and
3. Event Central, in partnership with Public Works and Environmental Services and Recreation, Cultural and Facility Services departments, continue to engage with special event organizers to determine what resources may be available to support special events

with waste collection, with the aim of having recycling and organic waste collection in place in all large special events during the 2020 festival season; and

4. City staff continue to work with special event organizers, including but not limited to the Ottawa Festivals Network, the Ottawa Music Industry Coalition, Ottawa Tourism and their respective members to raise awareness, educate and encourage the adoption of waste management best practices throughout the special events community.

Council approved the By-Law Review Workplan in September 2019 and the revisions are scheduled for 2020.

8.8 Emergency Response and Recovery Efforts

The City of Ottawa's Emergency Management Plan is designed to "provide an enhanced and co-ordinated level of planning and readiness to better respond to the needs of the community during a major emergency, while still ensuring the delivery of City services to the other areas of the City".

In emergencies, such as the flooding in 2017 and 2019 and the tornados in 2018, the City's Office of Emergency Management worked with all City departments in support of emergency response and recovery efforts. In these situations, Solid Waste Services was responsible for:

- Collection and transportation of sandbags to designated locations.
- Supplying staff and equipment to the affected areas.
- Coordinating the supply and collection of roll-off containers for cleanup efforts in the emergency zone locations.
- Ensuring waste material is being source separated as much as possible and disposed of properly.
- Ensuring household hazardous waste is being handled and disposed of safely.
- Coordinating with the contracted curbside collection contractors for extra collections beyond what is included in the contract.

A summary of material tonnage data is not available for the 2017 and 2019 floods nor the 2018 tornado emergencies for the following reasons:

- Material tonnages related to emergency response and recovery efforts were folded in with other municipal collection programs.
- Material collected by privately hired contractors was not tracked.
- Material brought to disposal facilities by homeowners was not tracked.
- Material was not only brought to the Trail Waste Facility but was also taken to private landfills and a private transfer station.

8.9 Corporate Solid Waste Management Practices

There are approximately 375 City facilities comprised of recreation facilities, community centers, daycares, client service centers, long-term care homes, libraries, works yards, emergency service stations/posts and transit facilities and garages.

While Solid Waste Services is responsible for the collection, processing and disposal of the typical waste streams (garbage, recyclables, household organics and leaf and yard waste) from City facilities, there are additional waste streams that are generated and managed by other City departments under separate waste management programs, contracts and services, These materials include electronic equipment such as computers, waste oil, used filters, antifreeze and used tires from fleet vehicles; surplus office furniture, hazardous materials used by City facilities such as pool chemicals, uniforms as well as medical supplies and equipment.

It should be recognized that City facilities are required to comply with the same provincial legislation and policy's as other establishments in the ICI sector.

Appendix 6.4 provides an overview of the additional waste management programs, practices and services that other City departments and areas are undertaking. It should be noted that Appendix 6.4 gives a general explanation and description of the programs and services. It does not provide a lot of statistical data since volumes, tonnages and quantities are not always tracked and are therefore not available. This appendix also provides high-level quantitative data on waste diversion at City facilities from the City Facility Waste Audit that was completed in 2019.

9.0 WASTE DROP-OFF AND OTHER DIVERSION INITIATIVES

Residents of the City have access to several waste diversion programs in the form of waste drop-offs to further divert waste from landfill. These are a combination of outsourced contracted City managed programs and individually privately-run operations as shown in Figure 32.

Figure 32: Waste Drop Off

9.1 Household Hazardous Waste Events

Household Hazardous Waste (HHW) is the discarded, unused or leftover portion of household products, which contain toxic chemicals or require special handling. These wastes cannot be placed in the regular garbage or recycling program because of the environmental and/or safety concerns associated with their collection and disposal.

The Ministry of the Environment, Conservation and Parks (MECP) has legislation related to the management of hazardous waste for business and industry (*Environmental Protection Act*, Ontario Regulation 347), however there is no legislative requirement for Ontario municipalities to collect Household Hazardous Waste. As there are no safe disposal alternatives available to the public, for most of the different HHW materials, to keep HHW material out of the landfill and local waterways and ensure public health and safety, the City coordinates the collection of these materials through mobile depot events.

Up until 2004, the City of Ottawa operated a permanent HHW depot at the Trail Waste Facility. The depot was opened specific days and times where residents could drop off their household hazardous waste.

In 2005, the City closed the permanent HHW Depot and offered one-day mobile HHW events, which operate through a City contracted service provider, currently Drain-All. The City event model was a way to provide residents with convenient HHW disposal options while operating the collection of HHW.

There are approximately eight one-day mobile events held each year and are located at various locations across the City. These take place between the months of April and October. In 2019, the City of Ottawa hosted nine events. Each event is attended by approximately 2,200 vehicles and costs approximately $1.3 million per year with about $425,000 of funding provided through industry stewards.

Municipal funding for HHW events is determined and overseen by Stewardship Ontario through the province's Municipal Hazardous or Special Waste (MHSW) Program; under this program Ottawa receives a flat rate of $1100 per tonne collected at HHW events, irrespective

of the actual costs to deliver the service. Although Stewardship Ontario oversees the program, funding is provided through three Stewardship Organizations: Product Care (paints/stains & coatings, fertilizer, pesticides, aerosols, solvents), Automotive Materials Stewardship (oil-filters, anti-freeze, used oil and anti-freeze containers), and Stewardship Ontario (re-salable propane cylinders, single use propane cylinders, and single-use batteries). This funding model will change when the provincial MHSW Program transitions to IPR July 1, 2021.

There are 21 different material types accepted at the events. Accepted materials include aerosol containers, single-use and re-usable propane cylinders, batteries, disinfectants, fluorescent bulbs/tubes, fire extinguishers, fertilizers/pesticides, mercury switches/thermometers, needles and syringes, pharmaceuticals, paints and coatings, pool chemicals cleaners, anti-freeze, oil and gasoline.

The HHW events are for residential household hazardous waste only. Liquid or hazardous waste from industrial, commercial and institutional sources are not accepted. This includes HHW from City facilities and HHW from common areas such as hallways or garbage rooms in multi-residential buildings (e.g. fluorescent bulbs, paint, cleaners, fire extinguishers). An individual owner or renter from a multi-unit residence can bring HHW to an event if the HHW was for personal use.

Collected Tonnes, Costs and Funding

In 2018, 8 events were hosted, and approximately 690 tonnes of household hazardous waste was collected.

Figure 33 shows the tonnage breakdown of HHW items collected in 2019.

Figure 33: HHW Material Tonnages, Info Tag

The City currently contracts all work related to the HHW events. However, at each event, City staff are present to monitor and oversee the work of the service provider.

Costs consist of fixed mobilization costs such as staffing and equipment as well as variable costs for the processing of the collected materials. Material processing costs are primarily based on the volume of material collected. Volume is measured in lab pack disposal containers for such material as acids, bases, aerosols or 205 litre drums for gas, anti-freeze and oil and cubic meters for paint. Some materials, such as batteries, pharmaceuticals and sharps are charged by weight, while fluorescent bulbs and tubes are charged by the unit.

While the cost of the HHW events are based on volume of material received, funding is based on tonnages. Funding is currently provided by Product Care, Stewardship Ontario and the Automotive Materials Stewardship. Factors are adjusted each year for pesticides, fertilizers and flammables resulting in funding changes year over year.

In 2018, only 34% of the City's HHW Program cost was funded through agreements with Product Care, Stewardship Ontario, and Automotive Materials Stewardship. Funding is based on the weight of the material shipped, paid at $1100 per tonne; but does not come close to covering the costs incurred to collect, ship, and recycle/dispose of the materials collected. The funding gap is further widened because, the City also receives no compensation for mobilization (set-up) costs; which make up 22% of program costs.

A number of materials collected are not covered by any funding programs. These include most flammables, acids, bases, oxidizers, fluorescent bulbs and tubes, car batteries, oil, gas, fire extinguishers, sharps and pharmaceuticals. There are other industry programs available for the return of pharmaceuticals and sharps; as well as many Take it back options for car batteries and motor oil.

Among the funded materials, a lab pack factor is applied to: flammables (funded at 10%), pesticides (funded at 8%), fertilizers (funded at 20%), and aerosols (funded at 47%). Paints, batteries and propane cylinders are paid at $1100 per tonne collected.

Appendix 7.1 summarize the Household Hazardous Waste events for 2016, 2017 and 2018. The tables break down each HHW material by tonnage, cost and funding information.

Household Hazardous Waste Processing

HHW dropped off at the City events is processed by contracted service providers. Drain-All, the contractor that currently operates the HHW events is responsible for ensuring that the HHW is processed properly and coordinating where the HHW is sent.

Appendix 7.2 summarizes the waste stream and how the material is being processed and/or managed in 2019.

New HHW Program Management, Ontario Wide: 2021

The management and funding structure of HHW material is currently under review through the *Waste Free Ontario Act* and full producer responsibility.

Municipal Hazardous or Special Waste Program Transition Update

On July 2, 2019, the Minister of the Environment, Conservation and Parks directed Stewardship Ontario to wind up the Municipal Hazardous or Special Waste (MHSW) Program to enable the transition of hazardous or special waste to individual producer responsibility under the *Resource Recovery and Circular Economy Act, 2016*.

The Minister direction letter to Stewardship Ontario extended the operation of the MHSW Program for all designated materials, except single-use batteries, to June 30, 2021.

The program to manage single-use batteries will cease operation on June 30, 2020.

Under the *Waste Diversion Transition Act, 2016* (WDTA), the Authority is responsible for overseeing the orderly wind up of current waste diversion programs and the industry funding organizations (IFOs) responsible for managing those programs.

The MECP will draft a new regulation to govern the material previously included in the municipal HHW Programs. This will outline producers' responsibilities with regards to ensuring their designated materials are collected. Once this is released, the City will have to determine its level of involvement in the collection of HHW materials, and how to collect the materials not

included under the new program. This could include a continued mobile event-based system, permanent depot(s) or a combination of the two or some other option(s).

9.2 Take it Back! Program

The City's Take It Back! Program encourages local businesses to "take back" many of the household materials that they sell in a convenient and safe way for residents.

The program provides residents with a directory of close to 600 active participating retailers and charities that accept more than 100 different household items and materials for reuse, recycling or disposal.

Each year, the Take it Back! Program diverts material from the landfill including automotive products, garden supplies, electronics, clothing and textiles, health related items such as medication, medical supplies and household items such as books, paint, sports equipment and furniture.

Material tonnages taken back to retailers are not tracked.

9.3 Waste Electrical and Electronic Equipment (WEEE) Program

Electrical and electronic waste, which are included under Phase 1 of the Ontario Electronic Stewardship (OES) Program, such as laptops and desk top computers, keyboards, monitors, printers, fax machines and televisions are not accepted in the City's regular garbage collection program.

Phase 2 items such as audio-visual equipment (e.g. speakers, receivers, tuners and turntables) are still collected under the City's garbage collection program. Phase 2 electrical and electronic equipment will be included as prohibited material in the next Solid Waste By-law revision, which is expected to take place in 2023 to coincide with full producer responsibility, new collection contracts and service level updates.

Residents can take WEEE back through a Take it Back! partner or an Ontario Electronics Stewardship registered depot, such as the Trail Waste Facility and HHW Events.

Table 25 shows the tonnages collected at the TWF, as well as the HHW Events over the last three years. The City does not track WEEE tonnages from any other sources such as the Take it Back! partners or privately-run drop-off depots.

Table 25: WEEE Tonnages from HHW Events and the TWF (Tonnes)

Location/Year	2016 Tonnages	2017 Tonnages	2018 Tonnages
HHW Events	79	94	65
TWF	65	60	63
Total	**144 tonnes**	**154 tonnes**	**128 tonnes**

WEEE Program Transition Update

In February 2018, the Minister of the Environment and Climate Change directed OES to wind down the WEEE Program on December 31, 2020.

This will enable the transition of electronic waste to individual producer responsibility under the *Resource Recovery and Circular Economy Act, 2016.* Until the transition to full producer responsibility, Ontario Electronic Stewardship will continue to operate the WEEE Program.

9.4 Used Tires Program: Resource Productivity and Recovery Authority

Tires are prohibited in the City's regular garbage collection program.

The Used Tire Program operated by Ontario Tire Stewardship ended December 31, 2018. The Used Tires Program was the first waste diversion program to be wound up under the *Waste Diversion Transition Act, 2016*.

On January 1, 2019, under Ontario's new individual producer responsibility requirements, tire producers are directly responsible and accountable for meeting mandatory and enforceable targets for collecting and recycling used tires. Tire producers, producer

responsibility organizations (PROs), and service providers (collectors, haulers, retreaders and processors) are now regulated by the Resource Productivity and Recovery Authority.

Residents can take tires back through a Take It Back! partner or a registered drop-off location through the Resource Productivity and Recovery Authority (RPRA). The Trail Waste Facility is a registered drop-off location.

Table 26 summarizes the tonnages of outbound tires registered at the TWF during 2016-2018.

Table 26: Trail Waste Facility Outbound Registered Tire Tonnages

Year	2016	2017	2018
Tire Tonnages	66	89	111

9.5 Other Waste Diversion Programs and Initiatives

Give Away Weekend

The City organizes Give Away Weekends, which are a great opportunity to help others while keeping household goods out of the landfill. There are two Give Away Weekends held each year: one in the spring and one in the fall.

Residents are asked to be place items at the curb with a “FREE” sticker or sign on them and residents are encouraged to tour the neighborhood looking for a treasure. Any uncollected items must be brought back to the house at the end of the day.

The City advertises this initiative through the collection calendar, the City’s website and through social media. However, there is no measure of success for this program, since participation nor tonnage statistics are tracked.

Backyard Composting and Grass-cycling

Even though grass, leaves, garden plants are accepted in the yard waste collection program, backyard composting, and grass-cycling are actively promoted by the City as additional means to divert organic material. Backyard composting and grass-cycling is a simple method of

managing cut grass and other organic waste such as fruit and vegetable scraps, tea bags, egg shells, coffee grinds and paper filters and plant trimming at home.

The City of Ottawa encourages backyard composting and grass-cycling through its website and the brochure 'Backyard Composting Is Easy … Spread it Around!" The City does not sell backyard composters; however, they are sold at most hardware stores and stores that handle environmental products. Residents can also build their own composter and plans are found at public libraries, stores selling environmental products and on-line.

There is no measure of success for this program since participation nor tonnages statistics are tracked.

Water Bottle Filling Fountains - City Facilities

Most City facilities are equipped with water bottle filling stations which are used both by staff and visitors. Water bottle filling stations serve as an alternative to plastic water bottles. Many stations also have built in water bottle counters that track the number of plastic water bottles the station has saved from use, acting as tangible proof of the station's impact.

6.8 million plastic water bottles were saved in 2018 by staff and visitors using the water bottle filling stations to refill an exiting bottle instead of purchasing a single-use bottle.

Ontario Deposit Return Program

The Ontario Deposit Return Program was launched in February 2007 by the province of Ontario, in partnership with the Liquor Control Board of Ontario (LCBO) and The Beer Store.

Under the program, almost all alcoholic beverage containers purchased in Ontario can be returned to The Beer Store for a full deposit return. This includes glass bottles, bag-in-box, Tetra Pak containers, plastic bottles, and aluminum and steel containers on which deposits have been charged.

The Beer Store produces an annual Stewardship Report and listed below are some of the performance highlights from 2018:

- Over 1.88 billion beverage alcohol containers were collected from Ontario consumers (1.4 billion beer containers and over 395 million wine, spirit and cooler containers)

- Recovery rate of 87% for beer containers
- 96% of all refillable beer bottles sold in Ontario were returned – these bottles were reused an average of 15 times before being recycled into glass bottles
- 81% of wine, spirit and cooler were recovered

Source: https://www.thebeerstore.ca/tbs-environmental-report/

The Ontario Deposit Return Program has been successful in diverting alcoholic beverage containers from the waste stream managed by the City. The 2018/2019 curbside waste audit found households in Ottawa dispose 0.13 kg of alcoholic beverage containers in the curbside waste collection program each week.

Orange Drop Program

The Orange Drop Program is the outward facing portion of the Municipal Hazardous or Special Waste Program materials for which Stewardship Ontario and Automotive Material Stewardship are responsible. It provides Ontario residents with a free, safe and easy way to dispose of household products that require special handling. Partially funded by industry, this network of convenient drop-off sites accepts five materials: antifreeze, batteries, empty oil containers, oil filters and pressurized cylinders, like propane tanks. The objective of the Orange Drop Program is to recover and recycle, or safely dispose of, these materials to ensure they don't end up in landfills or poured down sewers and drains.

Through the Orange Drop Program, residents can return any of the program's five designated materials to a municipal Household Hazardous Waste events, to many retailers, to automotive locations and, in the case of non-refillable pressurized containers, to many Ontario Parks.

Clothing Donation Boxes

Residents of the City of Ottawa can place their used clothing in clothing donation boxes which are located across the City in convenient and accessible locations. These donation boxes are provided by non-profit organizations as well as for-profit businesses and are not part of any City service or program.

The City has a Clothing Donation Box By-law, 2013-98. It dictates requirements the owner of the donation box must follow regarding box maintenance and signage. By-law Services staff are responsible for the enforcement of this by-law.

There is no measure of success for this program since no participation or tonnages statistics are tracked by the City.

The 2018-2019 residential waste audits found textiles to make up 2% of the curbside overall waste stream and 4% of the overall containerized (multi-residential) waste stream.

White Goods/Large Appliances/Scrap Metal Recycling at the TWF

The City does not pick up white goods/large appliances such as refrigerators, freezers, stoves, dishwashers, dryers, washers, air conditioners, hot water tanks, oil tanks and furnaces in the regular garbage.

Residents are responsible for making their own arrangements for the proper disposal of all white goods. This can be done by either calling a private service provider to collect and remove them, dropping them off at a Take It Back! member, bringing them to the Trail Waste facility or planning with the supplier of the new appliance to take the old one away.

All refrigerators, freezers, air conditioning units and dehumidifiers must have the cooling chemicals removed and be tagged by a certified technician prior to being brought to the Trail Waste Facility. Any items that are not tagged are refused entry.

All scrap metal material brought to the TWF by residential and commercial customers, including white goods and scrap metal from City facilities is placed in a general scrap metal area and tonnages are not tracked separately for each scrap metal material type.

In 2018, a total of 1,047 loads of scrap metal came into the Trail Waste Facility with a tonnage of 1,064 tonnes and created $250,598.47 in revenue. This includes all scrap metal.

Scrap Metal Recycling and Leaf and Yard Waste – City Facilities

City facilities are provided with scheduled and on-call collections of scrap metal and leaf and yard waste roll-offs. These roll-offs are located typically in the works yards/garages and City stores. Solid Waste Services is responsible for tracking the collections, tonnages and revenue.

All revenue generated by scrap metal recycling is provided back to the City facility it originated from. In 2018, approximately $179,000 was generated by City facilities in scrap metal revenue.

Table 27 presents the tonnes of scrap metal and leaf and yard waste collected in the roll-off containers only from City facilities from 2016 to 2018.

Table 27: Tonnes of Scrap Metal and LYW Collected Under the City Facility Roll-Off Collection Service Program (2016-2018)

Collection Service Program	2016	2017	2018
Scrap Metal Roll-Off Collection	764	836	925
Leaf and Yard Waste Roll-Off Collection	225	294	358

10.0 WASTE DISPOSAL

The City currently has no contractual relationships or obligations with any of the local private sector landfill facilities or transfer stations, as the City owns and operates the Trail Waste Facility, which currently has adequate capacity and an estimated end of life of 2041.

A listing of all current waste disposal facilities operated privately can be found in Appendix 8.1.

This section provides a description of current and historical waste disposal facilities owned and operated by the City.

Figure 34: Trail Waste Facility Photos

10.1 Trail Waste Facility

The Trail Waste Facility (TWF) is a key City asset – a state of the art landfill that employs innovative technologies and methods and is operated above industry standards. The TWF is designed to protect the environment from the disposal of solid waste by using composite liners, impermeable caps, and leachate and gas collection systems to mitigate impacts on the environment.

Landfill management is a mandated program with many statutory requirements and like all landfills in Ontario, TWF is regulated by the MECP and is subject to ongoing monitoring and compliance programs.

The TWF has an approved capacity of 16.9 million cubic meters, with 5.8 million cubic meters currently remaining. It is permitted to accept solid, non-hazardous waste generated within the boundaries of the City of Ottawa.

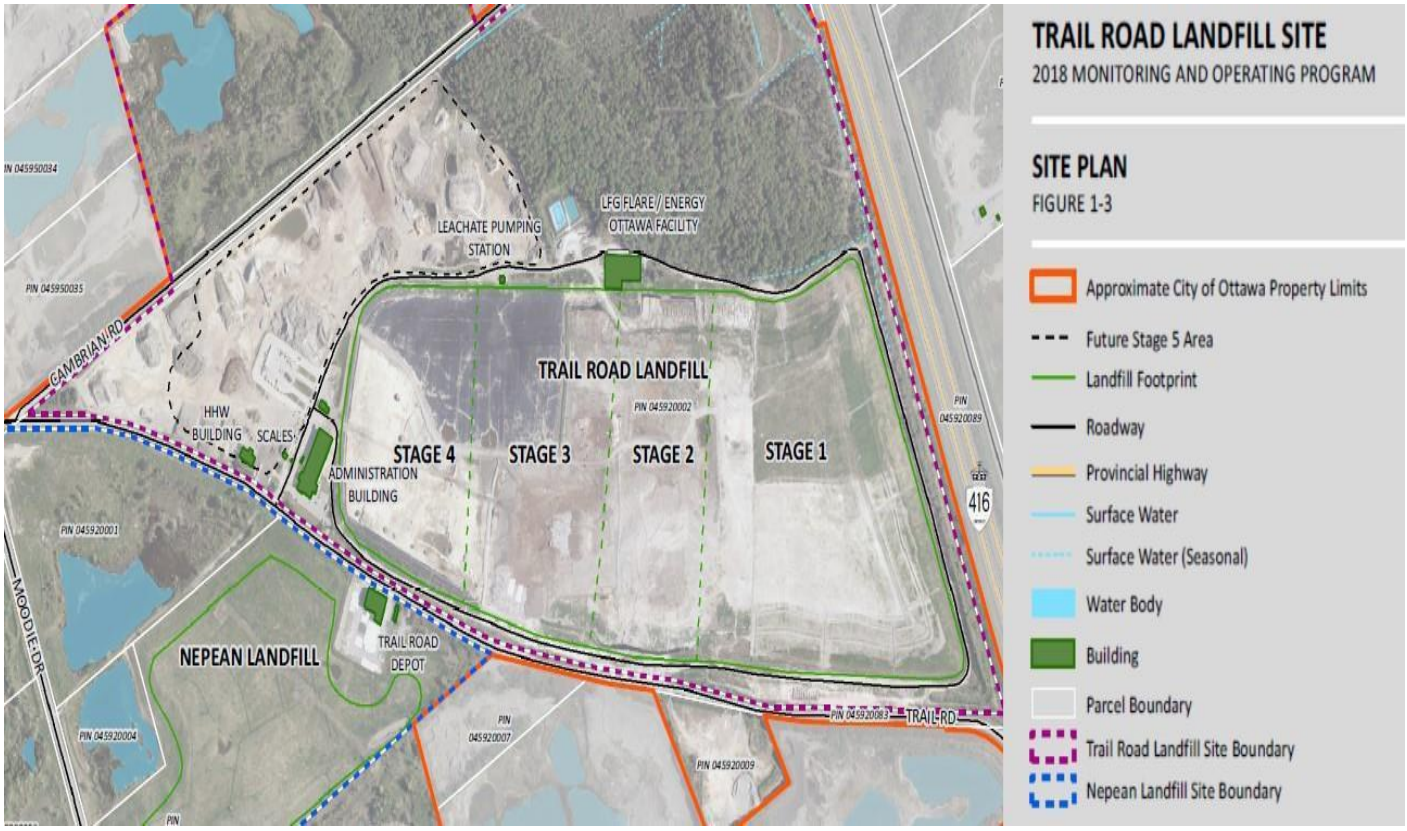
The TWF has a total site area of 153 hectares. 85 hectares of which is approved for landfilling and the remaining 68 hectares is considered buffer land, which is designed to attenuate landfill impacts on the surrounding area and local communities. The City also owns a 60-hectare property, nearby, on Barnsdale Road facility that is licensed for the processing of leaf and yard waste.

The Trail Waste Facility property consists of many different components: administrative building, garage, storage buildings, scale house, waste cells (commonly known as Stages), yard waste composting, small loads area, leachate collection system, gas collection system, gas to energy facility and a soils management area. Figure 35 shows a map of the Trail Waste Facility.

The Trail Waste Facility operates from 7:00 AM to 6:00 PM, Monday to Friday, 8:00 AM to 4:00 PM on Saturday and is closed on Sundays. The facility receives an average of 330 loads per day.

Currently, the TWF has a net operating cost of approximately $6.5 million per year with offsetting revenues of approximately $4.3 million per year.

Figure 35: Map of the Trail Waste Facility (2018) (Dillon Consulting Limited 2019)



The City's current ability to manage residual waste is the result of direction to staff to proceed with the Trail Road Optimization and Asset Management Study and Environmental Assessment (EA) in 1999. At the time it was estimated that the Trail Waste Facility had a remaining site life of approximately 8 years. Given the limited capacity and the City's desire to secure a long-term solution for their waste disposal needs, an environmental assessment process was undertaken to provide long-term environmentally safe solid waste disposal capacity at the Trail Waste Facility to serve the City of Ottawa.

On April 10, 2002, Council approved a report entitled Trail Waste Facility Landfill Optimization/Expansion - *Environmental Assessment and Environmental Protection Act*, which

sought Council approval to submit the Final EA/EPA Report to the Ministry of the Environment for approval of the expansion of the Trail Landfill. The EA/EPA Report was submitted to the Ministry on May 31, 2002, which was followed by an extensive review process.

The Minister approved the Environmental Assessment to expand the Trail Waste Facility in June of 2005. The additional site life of the expansion is 10 to 40 years past 2008, depending on the extent of diversion from the landfill in the future. The third alternative presented to the Ministry was selected through this process, which involves a vertical expansion with a maximum height increase of approximately 11 meters (36 feet) over the existing peak. In addition to the vertical expansion, the footprint of the landfill was increased by 20 hectares (50 acres).

Table 28 provides a summary of some of the significant key milestones in the evolution of the Trail Waste Facility.

Table 28: Key Milestones in the History of the Trail Waste Facility

Year	Description
1980	• Trail Waste Facility (TWF) starts receiving waste (formally known as the Trail Road Landfill Site)
1992	• TWF installs a flare to manage landfill gas – one of the first landfill flares in Canada • Stage 1 and 2 at the TWF are capped and closed
1993	• Stage 3 of Trail is lined to collect leachate • Nepean landfill is capped and closed
1998	• Stage 4 of the TWF landfill is lined to collect leachate
2002	• May 31, 2002: Complete TWF Optimization EA submitted to province ○ Proposed vertical expansion of Stages 1-4 of the existing landfill and the addition of a new Stage 5
2005	• June 1, 2005: Council approves Class EA for leachate management (condition of EA approval)
2006	• Nepean Landfill Groundwater Treatment System commissioned • TWF's air injection system is installed to reduce landfill gas migration along Trail Road

Year	Description
	• TWF landfill buffer established and approved in the Official Plan 500 meters for sensitive land use, 1,000 meters notice on title. • TWF fill sequence reversed to accommodate changes to development east of Highway 416 to ensure enhanced buffer between developing community and the landfill.
2007	• Waste filling in Stage 1 of the expanded landfill commences • New small load facility constructed at the TWF to improve safety and recycling opportunities for residents • Electricity generation from landfill gas commences at the TWF – 5 engines installed
2008	• GPS system installed on compaction equipment at the TWF to track air space utilization and plan • TWF installs a 32-ha exposed geomembrane barrier cap over Stages 3 & 4 to reduce leachate generation – a first in Canada
2012	• Stage 2 active landfilling commenced • Leachate pre-treatment system installed at the TWF
2014	• Stage 3 active landfilling commenced
2015	• Capping of Stage 1 commenced and is completed the following year
2016	• TWF's soil management project commences – screening of waste soils into beneficial reuse soils
2018	• Stage 2 capping commences • Trail landfill gas perimeter collection system installed
2020	• Capping of Stage 2 is to be completed

10.1.1 Landfill Operations

The day to day operations of the Trail Waste Facility is managed by approximately 35 staff persons. Landfill staff are comprised of site compliance coordinators, engineers, technologists, scale attendants, heavy equipment operators and labourers.

The landfill's fleet inventory is comprised of the following: Two 60 tonne compactors, two bulldozers, three front end loaders, backhoe, articulating hauling trucks, excavators, roll-off trucks, fork lift and pick-up trucks. Most fleet maintenance is contracted out as part of service

contracts with purchased equipment, but there is an on-site garage and one mechanic that does repairs and maintenance on the equipment. This garage is also equipped with a wash bay to ensure equipment is cleaned daily.

The two compactors and the grading dozer have a Global Navigation Satellite System (GNSS) system for the purpose of determining real time machine location, grade control, compaction and mapping capability, in centimeter accuracy for the XYZ coordinates and relating this data to system final surfaces or alternate surfaces in use by the compactor vehicles. The system also helps reduce fuel consumption and enables staff to construct specific landfill cells to promote gas collection and reduce odors. A handheld rover is used for surveying to check grade, elevations and marking points of interest. Additionally, a rover is mounted on the supervisor's vehicle to help plan landfill operations and map settlement and or fill operations.

To minimize the volume of air consumed by the cover placed over the garbage each night, alternative waste materials such as contaminated soils and auto fluff are used.

The City also uses retractable tarps or special spray foam cover, which do not consume valuable airspace.

Furthermore, materials and soils such as street sweepings, sand bags, concrete, road grindings and non-hazardous contaminated soil are beneficially reused for on-site roads, drainage activities and cover soils.

The landfill is divided into five operating stages. Currently Stage 1 is completed and capped. Stage 2 is in the process of being capped and should be completed in 2020. Stage 3 and Stage 4 are in use and this is where garbage is currently being landfilled. Excavation in Stage 5 is estimated to start in 2024 or earlier.

There are a number of on-going projects at the Trail Waste Facility. Table 29 summarizes the TWF current projects, with the estimated dates of completion.

Table 29: Current Projects Taking Place at the Trail Waste Facility

Project Name	Estimated Date of Completion
Full-scale onsite Leachate Treatment Facility	On hold
Landfill Stage 2 Capping	2020
Landfill Stage 3 Capping	To be determined
TWF Gas Collection System Expansion	Ongoing
TWF Stormwater Ponds and Ditches	2021
Barnsdale Base Preparation	2020
Leachate Recirculation	To be determined
Landfill Stage 5 Development	2024
TWF - Expansion & Development (GPS Upgrades and Odour/Dispersion Assessment)	2019/2020
Groundwater Management	2021
TWF Scale House Rehabilitation	2019/2020
TWF Cap Repair	2020

Small Loads Area

The facility has a Small Loads Facility (SLF), which offers a safe, clean area for residents, businesses and private haulers to drop off materials, away from the traffic and heavy equipment associated with the main site.

The SLF is designed to make it convenient for customers to divert materials from the landfill by offering a range of options in one location.

For a disposal fee, customers at Trail can drop off garbage, cardboard, leaf and yard waste, soil, clean fill material (asphalt, masonry, concrete), and wood chips. There is no fee for Blue Bin material (glass, metal and plastic), tires, scrap metal and E-waste.

Asbestos

Asbestos is accepted at the TWF. The material must be transported to the TWF by a driver trained in the management of asbestos waste. It is only accepted by appointment, which must be booked twenty-four hours in advance prior to the delivery to allow for preparation of the location.

The asbestos must be packaged and contained in a rigid, impermeable, sealed container of enough strength to accommodate the weight and nature of the material.

The unloading of the asbestos is done in the presence of a landfill facility operator to ensure that no loose asbestos or broken containers are unloaded and that no airborne particulate is generated.

Bird Control Program

Gulls and crows are an operational nuisance at the Trail Waste Facility.

The original Bird Hazard Study was conducted by LGL Limited during 2000/2001 in support of the application to expand the landfill site as part of the EA process in 2002. Initially the issue was in response to the health and safety concern of elevated phosphorus levels in stormwater generated onsite.

In 2010, a Bird Control Program was initiated to discourage the presence of gulls and crows at the TWF and has been very effective.

The Bird Control Program uses birds of prey such as a hawk or falcon, supplemented by a noise pistol, to discourage birds from coming to or staying at the landfill. Prior to the Bird Control Program, the landfill was visited by over 12,000 seagulls each day. This program has been so successful at reducing the number of seagulls that now a couple of hundred gulls, or less, visit the landfill each morning, but once the birds of prey are on site, the number of gulls is reduced to virtually zero.

More recently, potential bird hazards to aircraft safety at the MacDonald-Cartier International Airport have been identified and the Bird Control Program is now considered mandatory at the landfill in the early winter months only. The Bird Control Program is also implemented under unusual environmental conditions such as the disruption in regular roosting areas for Great Black-backed gulls.

Bird monitoring and assessment is conducted every two to three years at the TWF.

10.1.2 Landfill Rates

The 2019 landfill rates are listed in Appendix 8.2. All landfill fees are exempt from HST.

Landfill rates are reviewed annually through the budgeting process and approved by Council through the amendment of the Solid Waste by-law each year.

The Trail Waste Facility, for the last fifteen years, has accepted waste from three non-profit organizations: Salvation Army, Ottawa Neighborhood Services and St. Vincent de Paul at no charge. In 2018, the amount of charity garbage landfilled at the TWF was approximately 1,725 tonnes.

10.1.3 Tonnages Received at the Trail Waste Facility

All materials collected through the City's curbside and containerized contracts that are not processed as part of the Blue Bin and Black Bin, Green Bin and Leaf and Yard Waste Programs are sent to the Trail Waste Facility (TWF) for landfill disposal. In 2018, this represented 50 per cent of the tonnes collected under the curbside contract and approximately 85 percent of the tonnes collected under the multi-residential/City facility contract.

In 2018, approximately 424,000 tonnes of material crossed the inbound scales at the TWF. 224,000 tonnes of the waste material was landfilled and the remaining tonnes of waste material was either diverted or was used for cover material and/or for the construction of roads at the TWF.

Appendix 8.3 provides the waste tonnages received at the Trail Waste Facility by waste type.

Approximately 185,000 tonnes (83%) of this waste was residential waste associated with the curbside and containerized collection contracts, but the TWF also accepts residential garbage

from the general public. The balance of tonnage (17%) comes from the Industrial Commercial and Institutional (ICI) sector as well as the Construction and Demolition (C&D) sector.

10.1.4 Leaf and Yard Waste Composting Program

Leaf and yard waste (LYW) is mainly processed at the organics processing facility. However, LYW material is also processed at two different City owned properties; the Trail Waste Facility and the Barnsdale Road Facility.

The Trail Waste Facility accepts LYW material from residents as well as commercial companies such as landscapers and tree trimmers. There is a segregated area at the Trail Waste Facility for LYW material drop off point. This material is grinded and often used beneficially as landfill cover.

During peak LYW seasons in the Spring and Fall, when the amount of LYW collected at the curb exceeds the processing facilities daily capacity to accept organic material, the excess LYW is taken to the Barnsdale Road outdoor windrow composting facility. The Barnsdale Road Facility is only used by the curbside collection vehicles and is not open to the public.

The TWF processes leaf and yard waste using an outdoor windrow composting system as per Ontario Regulation 101/94. In general, material is dumped on an outdoor composting pad and then shredded using a large commercial grinder to help the material compost easier. The grinding is contracted and executed by Killaloe Wood Products.

After grinding, the material is then pushed into piles called windrows. Windrows are turned often by City staff to help keep the air circulating. Aerating the piles helps the micro organisms break down the waste and prevents internal temperatures from rising too high. The piles are monitored for temperature and moisture on a regular basis by City staff. Figure 36 illustrates the Barnsdale Road Facility, outdoor windrow composting.

Figure 36: Barnsdale Road Facility: Outdoor Windrow Composting

After about six months, the material is screened to remove non organic material and branch pieces. The screening of the compost is contracted and executed by Greely Sand and Gravel. Once the material has been screened, the City is responsible for any after use.

The material generated at the TWF is a general quality potting soil. In 2019, approximately 5,000 cubic meters of this end material was generated and will be available in 2020 for community gardens or general residential use.

10.1.5 Soils Management Program

The Trail Waste Facility accepts and beneficially reuses solid non-hazardous waste soil generated within the city of Ottawa's limits. This includes any projects from the private and commercial sector as well as from the City's infrastructure and roads projects.

The facility operates two screening plants on site to process the materials daily on a seasonal basis.

Once the material is screened, as shown in Figure 37, it is used for daily and final cover for the landfill. Large stones and concrete are screened out and used as road or drainage material. This soil and material is not landfilled.

Information about the incoming waste soil and the project must be received and approved, before any soil can be accepted at the TWF. The incoming waste soil must be in accordance with Ontario Regulation 558/00 Schedule 4. Approval letters are sent to the generators once all information is received and the soil waste material is deemed acceptable for receipt.

Figure 37: Soil Management Screening

Tipping fees for incoming waste soil change annually and are approved by Council.

In 2019, projects that are managed and funded by the City of Ottawa qualify for the reduced tip fee of $16.00/tonne and Light Rail Transit projects bringing waste soil to the TWF were charged $10.00/tonne. Incoming waste soil from privately managed projects were charged $27.50 per tonne.

Soil Management Program in 2018 reported $722,637.70 in tipping fee revenue for the private and commercial sector and $2,059,146.00 in tipping fee revenue from soil brought to the TWF from the City's Infrastructure Services and Roads projects.

10.1.6 Leachate Treatment

Leachate is generated by the percolation of rain and snow through the waste mound and by the release of liquid during the biological degradation of the waste itself. To protect the environment from adverse effects of operating a landfill, leachate is collected and treated in a portion of the landfill.

Leachate is collected on top of an impermeable liner at the bottom of the TWF through the leachate collection system for Stages 3 and 4. The impermeable liner is constructed of clay and a specially made plastic liner that is designed to stop leachate from infiltrating the ground

beneath the landfill. Stages 1 and 2 are natural attenuation waste cells and therefore, do not have liners.

Impermeable caps are installed after a waste cell is closed in order to reduce the volume of leachate generated by preventing precipitation from entering the landfill. The placement of a plastic cap also increases the collection efficiency of the landfill gas collection system, by preventing air from being drawn into the system. At the TWF, not all stages require a plastic impermeable landfill cap. Stage 5 was approved in the EA for a permeable landfill cap once the cell reaches its final capacity.

The leachate collection system is a series of corrugated pipes set within a drainage layer on top of the impermeable liner. The bottom of the landfill is sloped to direct the leachate contained in the impermeable liner towards the leachate collection system. The leachate is then moved by pump into the leachate pre-treatment facility.

Leachate is currently pre-treated at the facility by blowing air through leachate stored in a lagoon for approximately 12 hours. It is then tested to ensure that it meets the Agreement requirements set forth in the City's Sewer Use By-law and is then trucked to the City's wastewater treatment processing facility, Robert O. Pickard Environmental Centre (ROPEC) for further treatment. A full scale on-site permanent leachate treatment facility is currently being designed. This facility will treat leachate to a very high quality and then discharge the treated water to the Jock River.

Under the provisions in the approved Environmental Assessment, the TWF is required to recirculate leachate in lined Stages 3, 4, and 5 for up to five years, respectively, after each cell is closed.

In 2018, 138,000 cubic meters of leachate was trucked to ROPEC for treatment.

10.1.7 Landfill Gas Collection and Production

Landfill gas is a combination of methane, carbon dioxide and some trace chemicals produced by the decomposition of garbage in the absence of air.

At the TWF, landfill gas is managed to reduce odours and prevent off-site migration. The TWF's regulatory directive is to mitigate landfill gas migration at the property boundary as well as alleviate offsite odour impacts

Landfill gas is collected at the TWF through a highly engineered gas collection system, as shown in Figure 38. It is collected through a total of 90 landfill gas collection wells installed within the waste mound and 42 perimeter gas collection wells. Twenty additional gas collection wells are to be installed in the Fall of 2019. The landfill gas collection wells are connected by more than thirteen kilometers of pipe buried within and around the landfill. This system of wells and pipes allows gas to be gathered and brought to the landfill gas utilization facility.

Figure 38: TWF's Gas Collection System

The landfill gas collection system requires expansion as landfilling continues. Following the completion of a landfill section, additional landfill gas collection wells are installed, and the gas collection system is expanded to control odour and allow landfill gas to be collected.

The TWF is currently observing a 93% gas collection efficiency. The high collection efficiency is due primarily to the extensive permanent collection infrastructure in Stages 1 and 2 with a final impermeable cover (Stage 2 will be completed in 2020). Stages 1 and 2 also have most of the waste in place generating the landfill gas. A capped cell realizes the benefits of exceptional landfill gas collection efficiency due to the vacuum exerted in a covered portion of the waste mound. The progression of Stages 3, 4 and future Stage 5, will incrementally remain open, as described above, to receive precipitation and leachate recirculation until the landfill closes in 2042 (Dillon Consulting Limited., 2019) as per the conditions of the approved EA. By design,

the accelerated waste decomposition rate will generate more GHG's than the site has ever observed (HDR, 2012) and the site will therefore, not likely realize the same high gas collection efficiency observed in 2019 for the remainder of the site life.

A co-benefit of the landfill gas collection system has historically been reduced Corporate Green House Gas Emissions, which support the City's Climate Change Master Plan. In 2018, the Trail Road Waste Facility constructed a Landfill Gas Perimeter Collection System and installed temporary collection wells in active waste cells in order to further capture additional landfill gas being generated as waste degrades. This has resulted in the most significant emission reductions within the corporation as can be seen in the 2018 corporate GHG inventory results.

To date, the TWF has maximized its' landfill gas collection system based on the current approved operations for the site, including the installation of a perimeter collection system in 2018. Any excess landfill gas not utilized by the power plant is flared. The purpose of flaring is to dispose of the flammable constituents, particularly methane, safely and to control odour nuisance, health risks and adverse environmental impacts such as air pollution. A permanent perimeter flare will be installed in 2020, which will again improve the gas collection efficiency at TWF after it comes online.

PowerTrail Inc. Agreement

In 2005, City Council approved the Landfill Gas Utilization Agreement. In January 2007, PowerTrail Inc. (Energy Ottawa, Comcor Environmental and IGRS) commissioned the Trail Road Landfill gas to energy facility. The Landfill Gas Utilization Agreement with PowerTrail expires in January 2027, with the possibility of two 5-year extensions, subject to Council approval.

It should be noted that landfill gas is managed by the Agreement-holder. The City does not own rights to the gas.

PowerTrail Inc. uses the landfill gas collected at the TWF to power six 1 megawatt internal combustion reciprocating engines and produces approximately six megawatts of electricity, which is enough to power 6,000 homes in Ottawa.

Though the agreement with PowerTrail Inc., the City earns a royalty based on the sale of electricity generated at the landfill gas utilization facility. The City receives a royalty and currently, the partnership generates approximately $200,000 in annual revenue for the City.

10.1.8 Environmental Site Monitoring Program

The Trail Waste Facility is operated and maintained in accordance with Certificates of Approval (C of As) issued by the MECP. TWF's C of A is A461303.

As conditions to these C of A's, the City conducts an annual Environmental Monitoring Program to document groundwater, surface water, stormwater and operational conditions on and around the site. As a result, the TWF is a highly monitored site with 60 groundwater monitoring wells, 15 surface water monitoring stations and 30 landfill gas monitoring wells, which all meet the requirements outlined in the C of As on an annual basis.

10.2 Springhill Landfill

The City owns the Springhill Landfill and the accompanying ECA A461402, for the site.

The landfill site has an approved capacity of 1,800,000 cubic meters. Landfill development has occurred in phases. Phases 1 to 4 are complete. Waste placement has not yet occurred in Phase 5; the eastern most portion of the landfill. Phase 5 is the last area with unused air space and is subject to the MECP approving the remediation plan to address ongoing groundwater and surface water impacts at the site.

The site operates as a natural attenuation landfill (i.e. leachate is not contained within the waste footprint) and is located adjacent to a Provincially Significant Wetland (PSW).

The site is operated under a P3 agreement that was approved by the former township of Osgoode and continued once the township amalgamated with the City of Ottawa in 2001. Tomilson Waste Management (TWM) operates the Springhill Landfill on behalf of the City, pursuant to the Management Agreement (dated December 23, 1996 and updated November 13, 2000).

Effective, July 1, 2016, the City stopped tipping municipal curbside garbage at the site as part of an approved Council budget direction.

TWM operated a Construction & Demolition (C&D) Facility at the site under a Lease Agreement (dated January 23, 1998) and a separate ECA. The lease agreement expired October 6, 2018 and the facility was decommissioned. C&D was the primary source of waste for the landfill. Tomlinson retained their ECA for a waste transfer facility with the MECP.

In 2018, the MECP identified significant groundwater and surface water contamination that put the site out of compliance with the ECA. The City amended the ECA to temporarily suspend waste placement activities, effective May 4, 2018 and submitted a long-term Remediation Action Plan to the MECP to remediate the site through a capping solution.

Until the efficacy of the capping solution can be determined, further regulatory direction from the MECP is obtained and contractual factors are fully contemplated, the future of the Springhill Landfill is uncertain at this point

10.3 Closed Landfills

Today's landfills must meet stringent environmental regulations and guidelines. However, landfills of the past were generally dumpsites that operated under different environmental regulations and had fewer controls, if any imposed upon them. Historically, waste was deposited on lands that were remote, inaccessible or with low monetary value. By isolating waste from populated areas, landfills were intended to reduce public health risks. As communities grew, development began to encroach and engulf some of these old waste sites, some of which could form potential risk to public health and the environment.

In 2004, the City identified 123 former and now closed landfills in the City of Ottawa's Old Landfill Management Strategy (OLMS). Forty-one of the landfill sites had no historic municipal involvement and these privately-owned sites were not further assessed by field investigations, given the City had no jurisdiction to investigate private property. Eighty-two closed landfill sites have historic municipal involvement, either being owned or jointly owned by the City and were included in the OLMS.

At the time investigations included surface water and surface soil sampling, test pitting, groundwater sampling and landfill gas probe installation and monitoring on all City-owned and

jointly owned sites. It was determined that there were no risks to public health, or the environment from any of these sites, based on the current land use at the time.

Figure 39 illustrates the location of the closed landfill sites across the City.

Appendix 8.4 lists the City-owned former landfill sites and the former landfill sites jointly owned by the City and another party.

Figure 39: Closed Landfills Within the City of Ottawa

With the exception of the Nepean Landfill, the Environmental Remediation Unit of the City of Ottawa's Corporate Real Estate Office, in the Planning, Infrastructure and Economic Development Department, is currently responsible for the management of the City's closed landfills. There is no routine monitoring of these sites and any complaints are dealt with on a site by site basis. While closed landfills pose an on-going liability, the City's current Official Plan is exploring transitioning these closed facilities into public spaces. However, as part of the

current planning approval process, any future development of these sites requires further assessment to demonstrate their suitable alternate use.

10.3.1 Nepean Landfill

The Nepean Landfill site is located adjacent to the active Trail Waste Facility landfill, east of Moodie Drive and south of Trail Road in the City of Ottawa. The Nepean Landfill Site began receiving waste in the early 1960's and has not received municipal solid waste since 1980. The site was regraded in 1991 to promote surface water runoff and in 1993, the Nepean Landfill received final cover, incorporating an engineered geomembrane hydraulic low-permeability barrier cap and active gas collection system. The final landscaping was completed in 1994.

The Environmental Monitoring Program for the closed Nepean Landfill site is completed in conjunction with the active Trail Waste Facility landfill but is reported separately due to differing approval and compliance requirements.

The Nepean Landfill is operated/maintained by Solid Waste Services, in accordance with the C of A: A461301, which was issued by the MECP.

The closed Nepean Landfill is subject to Regulation 347-General-Waste Management, and as conditions of the ECA, the City is required to conduct an annual Environmental Monitoring Program to document groundwater, surface water and operational conditions on and around the site. The City is then required to produce and submit an annual monitoring report to the MECP. Results of these programs are used to identify areas or issues of potential environmental concern and make recommendations for the following years monitoring program.

The Nepean Landfill is monitored closely under the operations and monitoring contract the City has with Dillon Consulting Limited.

11.0 WASTE PROCESSING

This section summarizes the processing facilities for recyclables, household organics and leaf and yard waste. See Figure 40.

Figure 40: Waste Processing Facilities

11.1 Recyclable Material

The City's processing and marketing of curbside and containerized recyclables is currently contracted to one service provider, Cascades Recovery+. In 2016, the City entered into a four-year contract (with three one-year extensions) with Cascades Recovery+.

It is carried out in two separate recycling facilities: a fibre plant (paper and cardboard – black bin material); and a container plant (glass, metal, plastic – blue bin material).

Both facilities are located in the east end of Ottawa, at 2811 Sheffield Road and 2475 Sheffield Road, respectively, near the intersection of Walkley Road and Highway 417.

The MRF contract ends in 2020, with the option for three one-year extensions. The City has executed one of the three one-year extensions, which will take the MRF contract to June 2021.

The City pays Cascades Recovery+ based on the marketed tonnages per material stream and if material does not get marketed, the processor does not get paid. Payments are processed on a monthly basis. Currently the price for the glass-metal-plastic stream is $209.18/tonne marketed and the price for the paper-cardboard stream is $67.32/tonne marketed. Non contract materials such as scrap metal and bulky plastics are $136.92/tonne marketed. The discrepancy between the two different recycling streams is due to the complexity of the glass-metal-plastic stream, which requires more equipment and labour to sort the different materials within this stream.

11.1.1 Marketing

Cascades Recovery+ processes and sorts the City's recyclable material into different products and markets the material on a monthly basis to the highest bidder. When the markets are volatile, longer term contracts are accepted. The City retains all revenues from the sale of recyclables.

Recycling commodities fluctuate in value, depending on the material being marketed, consumer trends, pricing for virgin materials (such as oil for plastics) and world events.

While Cascades+ continues to look for new market opportunities for mixed glass which is collected in the blue bin, this material is currently hauled to the Trail Waste Facility and is used as aggregate for road building and as part of the leachate recirculation system.

On January 1st, 2018, China enacted a ban on the import of 4 classes of recycled materials, including plastics and unsorted paper and began to enforce a stricter quality standard on other recycled materials imported from around the world.

The City of Ottawa does not sell any of the banned materials collected through the Blue Bin Program. The products the City sells to international end markets have been limited to newsprint and gable-top products, such as juice and milk cartons, while the City's remaining recycled material is sold to domestic end markets. The North American end markets used by the City are stable, although all end markets are susceptible to price fluctuation and market instability derived from China's import barriers. As the supply to alternative markets has quickly filled, demand has lessened creating lower revenues for all marketed materials.

In the past, the City's two stream Blue Bin Program has reduced impacts on revenues. In the two-stream recycling program, fibre is collected separately from glass, metals and plastics rather than being mixed together. Separately collected recyclable streams have lower contamination levels (e.g. food and glass does not soil fibre materials), which yields a higher quality and cleaner product that is reputable, and thus holds a higher revenue value. More municipalities are returning or contemplating returning to this model, resulting in increased competition for markets.

In addition, the City's recycled material processing contractor is well-positioned with company-owned end market assets and long-term relationships with other end markets and brokers across many jurisdictions. The contractor's regular practice of obtaining three or more quotes on marketed materials also helps to ensure that the highest market value is received. These factors combined, result in the City receiving above average revenues on many recycled materials and reduces vulnerability to market instability.

Solid Waste staff have directed the processing and marketing contractor to explore all viable and sustainable end markets to ensure material is recycled and revenue is realized. The City

has entered some longer-term agreements with North American firms for mixed paper and gable-top containers; to ensure these products continue to move.

While these marketing strategies help mitigate the impacts of changing markets; lower revenues are expected to continue. The City continues to work with its recycled material processing and marketing contractor to monitor market fluctuation and evaluate new market opportunities.

Tonnages

In 2018, a total of 57,000 tonnes of residential recyclables was marketed by Cascades Recovery+: 38,000 tonnes of paper and cardboard material (black bin) and 19,000 tonnes of glass-metal plastic material (blue bin). In 2018, approximately 5,000 tonnes of contaminated materials were processed at the MRF and disposed of.

Scrap metal and bulky plastics are not officially part of the City's Blue Bin Program, but these materials are processed, marketed and tracked.

Appendix 9.1 summarizes the tonnes of recycling marketed by Cascades Recovery+ by material type.

11.2 Source Separated Organics

The City's household organic waste, leaf and yard waste, as well as Christmas trees are processed and the outgoing material is marketed under a contract with Renewi Canada Ltd, formally Orgaworld Canada Ltd., through a twenty-year contract, which ends March 31, 2030.The facility is located in the southeast end of Ottawa at 5123 Hawthorne Road.

The Renewi facility uses an in vessel accelerated aerobic tunnel composting system for both leaf and yard waste material and source separated organics. The technology requires oxygen and naturally occurring bacteria to decompose material into compost.

The contract has a tipping/processing fee which is indexed annually to the Consumer Price Index. Prior to the contract being amended, the tipping fee was $112.45.

11.2.1 Amended and Restated Contract

On March 28, 2018, Council approved a settlement agreement to resolve legal disputes between the City and Renewi. As part of the settlement agreement, Renewi and the City renegotiated certain parts of the Source Separated Organics contract that came to be known as the Amended and Restated SSO Agreement. The amended and restated contract was signed July 5, 2018, and the enhanced program rolled out to the public on July 2, 2019.

The Council approved enhancements to the Green Bin Program came at a better value for taxpayers than what was available in the original contract. These enhancements included:

- Reducing the 'put-or-pay' tonnage from 80,000 tonnes to 75,000 tonnes per year, saving the City approximately $2.7 million in unnecessary processing capacity costs until 2022.
- Replacing the 540-tonne daily limit for processing organics with a 2,700-tonne weekly limit, providing the City with more flexibility to manage what it delivers to Renewi, particularly during the peak leaf and yard seasons in the spring and fall; and
- Expanding the Green Bin Program to permit customers to add plastic bags as an organic bagging option and dog waste to the weekly collection at a reduced rate of $124/tonne, down from $151.22/tonne in the original contract.

Overall, the Council-approved service enhancements came at a cost increase of $626,000 in year one, or 15 cents in taxes per month per average Ottawa household.

Renewi in 2018-2019, invested approximately $9.4 million in facility upgrades, $3.9 million of which is for infrastructure upgrades at Renewi's Ottawa plant. The upgrades included improved odour control duct work, an upgraded shredder to break apart the plastic bags, the installation of new ammonia scrubbers for air treatment, and a new screening line to capture and remove plastic bags from the process.

11.2.2 Leaf and Yard Waste and Christmas Trees

Currently, the majority of LYW is processed at Renewi's facility to meet the put or pay requirements. However, during peak LYW seasons, when the amount of LYW collected may

exceed the processing facilities weekly limit, the excess LYW is taken to the Trail Waste Facility.

There is a dedicated collection period during the two-week period following the New Year's holiday when Christmas trees are collected separately from the household organic material in green bins and brought to either the Renewi facility or another City dedicated location such as the Trail Waste Facility. Christmas trees placed out for collection after the dedicated period are collected with the Green Bin Program materials and processed at the Renewi facility.

11.2.3 Collected and Processed Tonnages

Table 30 shows the tonnages of green bin organic material, which includes household organic waste and leaf and yard waste collected and then processed in 2016 to 2018 at the Renewi facility for the curbside collection service program.

Table 30: Tonnes of Household Organic Waste and Leaf and Yard Waste Material Collected and Processed at Renewi (2016 - 2018)

Collection Service Program	2016	2017	2018
Curbside Collection (Single Family, RUAC, Multi-Residential Low Rise & High Rise, Places of Worship, Schools, Yellow Bag, City Facilities, Special Events)	70,932	77,506	76,576

Outbound processed material at Renewi is categorized as animal bedding, Non-Agriculture Source Material (NASM), mid-fraction waste and residual.

Table 31 shows the tonnages related to each of the outgoing materials process at Renewi in 2018 and the percentage composition.

Table 31: 2018 Outbound Processed Material Tonnages at Renewi

Material	Bedding Material	Mid Fraction Waste	NASM	Residual	Total Tonnage
Tonnes	11,710	10,353	10,862	26,308	**59,233**
% Composition	20%	18%	18%	44%	

11.2.4 Odour Management Plan

As part of the settlement agreement and, subsequently, the amended contract, Renewi was required to retain an odour consultant to develop an Odour Management Plan (OMP) that identified the equipment and processes in place to control potential increase in odours from the new feedstock. The plan was also to highlight the necessary steps to be followed in the event of an odour release or complaint.

The City subsequently retained a third-party independent consultant, Stantec Inc., to review the Odour Management Plan and provide a summary of their findings.

The following key activities were completed by Stantec to complete the summary:

- Review of the odour dispersion model, provided by Renewi, that is used to quantify potential offsite odour impacts;
- Review of the Odour Management Plan for consistency with the MECP guidelines;
- Research of best practices for odour control; and,
- Site visit to Renewi Canada Ltd. in February 2019 to review the facility for information provided in the OMP.

Overall, Stantec concluded that Renewi's Odour Management Plan was well developed and outlined sufficient control measures to manage, monitor, reduce, and prevent potential odour emissions from the facility upon acceptance of plastic bags and dog waste. Stantec identified minor recommendations that would be helpful in increasing the robustness of Renewi's OMP. Staff have shared the final report and recommendations with Renewi for their consideration and continual improvement.

MECP is the regulatory authority responsible for working with Renewi to address any operational issues, including odour complaints. The MECP outlines specific requirements Renewi must have in place to mitigate odour spills to the environment, as set out in the ECA's.

Renewi has received one odour complaint since Stantec's review of the Odour Management Plan. The complaint was received July 2nd, 2019. After investigation, it was deemed that fugitive odour emissions were released through a temporary wall opening during infrastructure upgrades. The wall opening was permanently closed later that day. Renewi filed a report, including actions taken to investigate the issue and prevent a reoccurrence, with the MECP.

11.2.5 End-Use Product

Renewi is responsible to perform testing on the end-use products to meet MECP regulatory requirements.

With the expanded service that included the addition of plastic bags and dog waste, the amended contract changed the finished material from unrestricted use compost to beneficial use products, such as compost and non-agricultural source material (NASM).

In response to questioning from Councillor Menard at the June 2019 Committee meeting concerning the quality of the end-use product before and after the expanded service (starting in July 2019), staff requested and received Certificates of Analysis for the product both prior to the expanded service (March 2019) and after the expanded service (October 2019). The analysis includes, among other items, a parameter that examines "total plastics greater than 2.8mm", with a requirement for plastics in the end-product to be less than 0.5 per cent, as required by the Ontario Compost Quality Standards. The certificates confirm that the total plastics greater than 2.8mm in the March 2019 sample were less than 0.01 per cent, while the October 2019 sample was reported at 0.1 per cent – both well-below the acceptance level prescribed under the quality standards. As indicated at Committee, Renewi is responsible for meeting all Ministry and regulatory standards as part of its mandatory sampling program, and any incidents of regulatory non-compliance will be address by the Ministry directly with the service provider.

Additionally, Renewi is required to provide the City with 2,000 tonnes of AA compost annually at no cost beginning the spring/summer of 2021 that will be used in City parks.

The updated amended contract also contains a provision to allow the plastic bags taken out of the process, and otherwise sent to landfill, to be used as fuel for kilns when the regulatory and technical circumstances make this possible.

12.0 FINANCIAL OVERVIEW

The City of Ottawa's Solid Waste Services Branch provides a wide range of solid waste management services to approximately one million residents and a number of additional non-residential customers.

As per the 2018 Public Works and Environmental Services Department Budget Briefing Note, the Solid Waste Services Branch is responsible for the operation planning, development, management, and environmental sound operation of the residential solid waste management system for the City. This includes:

- Operational planning for future requirements including system growth and development provision of collection, disposal and processing facilities, and ensuring there is a long-term capacity for residential waste;
- Collection and disposal of residential waste;
- Provision of systems and facilities for residential recycling and household hazardous waste management;
- Provision of systems and facilities for residential organics collection and processing;
- Planning, developing and implementing residential waste diversion programs;
- Environmental sound management, operation and maintenance of City owned landfills and collection programs;
- Environmental sound management of the handling of biosolids; and,
- Provision of graffiti removal from City property in accordance with the Council-approved Graffiti Management Strategy.

The programs and services are funded directly through a combination of an annual set user fee rate, general property taxes, revenues and user fees.

Currently Solid Waste Services does not have a long-range financial plan. However, a long-range financial plan will be developed for Solid Waste Services in concert with development of Solid Waste Master Plan.

This section provides a current overview of the expenditures and revenues for the City's solid waste management services managed by the Solid Waste Services Branch.

12.1 Tax Structure and User Fee Model

In July 2005, Council approved the implementation of an alternative method to fund solid waste management services to achieve transparency of costs and fairness in the funding of the program and to increase the incentive to divert materials from landfill.

The new funding model enacted two different and distinct methods of funding City solid waste management services: waste diversion/recycling costs continued to be funded by all City of Ottawa tax classes from the assessment based tax bill; and costs for residual garbage collection and landfill disposal fees would be funded only by residential and multi-residential properties through the implementation of a uniform flat fee (the Solid Waste User fee). The principles behind this new funding methodology were:

- In support of environmental stewardship and sustainable landfill, waste diversion costs are shared by all tax classes;
- Residual garbage collection costs are imposed on benefiting users only, as identical charges for identical services;
- Transparency of cost to the user; and
- Potential incentive for increased diversion.

Waste diversion program costs (Blue/Black/Green bin) are funded by taxes so that the program costs can be assessed back to all property owners, including the industrial, commercial and institutional sector since they generate/produce the recyclable materials. Consequently, the costs are spread across the entire community and are not just assigned to residential property owners.

Solid Waste User Fee

The 2020 budget provides that the total gross cost of solid waste services for the City of Ottawa is approximately $83 million in operating costs. Specifically, garbage and landfill/disposal services, long term planning and capital replacement/debt, with a total cost of $34.6 million, are funded by a flat rate applied to each residential unit pending on the collection service provided by the City. This individual fee is visibly presented on the tax bill.

Table 32 shows the 2017 to 2019 Solid Waste User Fees.

Table 32: Solid Waste User Fees (2017-2020)

Property Type	2017	2018	2019	2020
Garbage Collected Curbside	$84.00 per property	$86.00 per property	$88.00 per property	$96.00 per property
Garbage Collected Containerized	$41.00 per multi-res unit	$42.00 per multi-res unit	$43.00 per multi-res unit	$56.50 per multi-res unit

Waste diversion services, with total costs of $48.3 million, are funded through the tax base and are based on the value of the property. These services include the collection and processing of recyclables, household organic waste, leaf and yard waste and the Household Hazardous Waste Events. Costs are offset by revenues from recycling markets and from funding received through the Resource Productivity and Recovery Authority.

Currently, the average homeowner pays $38.00 for waste diversion services.

12.2 Operating Expenditures

In 2020, the City's Solid Waste Services Branch has an annual net operating expenditure budget of $83.3 million.

Material collection, material processing and diversion activities combined represented 77% of the City's annual operation expenditures for Solid Waste Services with the landfill operations/disposal making up almost 12% of the annual operation expenditures.

A general breakdown of the budget by program and by expenditure type is presented in Tables 33 and 34.

Table 33: Solid Waste Services Branch: Expenditures by Program (2020)

Program	Budget Allocation In 000's	Percentage* of Budget
Diversion/Recycling	$48,379	58.1%
Garbage Collection	$20,925	25.1%
Landfill Operations/Disposal	$8,373	10.1%
Solid Waste Non-Departmental	$5,747	6.9%
Graffiti Management	$843	1.0%
Soil Management	$650	.8%
Directors Office	$495	.6%
Long Term Planning	$483	.6%
Other	$136	.2%
Recoveries from Other Departments	($2,757)	(3.3%)
Gross Expenditures	**$83,274**	**100%**

**Rounded to first decimal place*

Table 34: Solid Waste Services Branch: Expenditures by Type (2020)

Expenditure Type	Budget Allocation In 000's	Percentage* of Budget
Material & Services	$55,781	67.0%
Salaries, Wages & Benefits	$14,119	17.0%
Fleet Costs	$8,633	10.3%
Transfers/Grants/Financial Charges	$5,326	6.4%
Other Internal Costs	$1,510	1.8%

Expenditure Type	Budget Allocation In 000's	Percentage* of Budget
Overtime	$662	.8%
Recoveries from Other Departments	($2,757)	(3.3%)
Gross Expenditures	**$83,274**	**100%**

**Rounded to first decimal place*

12.3 Revenue and Funding

User fees and services represent the predominant portion of revenue required to support the City's solid waste management services. In 2018, the City's Solid Waste Services Branch had an annual revenue of approximately $51 million, which included approximately $6.5 million in funding from provincial entities.

A general breakdown of the type of revenue and funding budgeted in 2020 is presented in Table 35.

Table 35: Solid Waste Services Branch: Budgeted Revenue and Funding by Type (2020)

Revenue Type	Budget Allocation in 000's
Provincial	$5,824
Per Household Fees	$35,359
Recycling Markets	$9,035
Tipping Fees/Other	$7,862
Total Revenue	**$58,080**

Table 36 represents the breakdown of the actual revenues of $50,951,000 and funding by program or type.

Table 36: Solid Waste Services Branch: Actual Revenue and Funding Broken Down by Program or Type of Revenue (2018)

Funding	
Program	**Amount**
Tornado Funding	$295,002
Household Hazardous Waste Program	$428,064
Blue & Black Bin Program	$5,730,821
Used Tire Program Funding	$14,959
Waste Electrical & Electronics Program	$9,820
CIF Project	$18,606
Total Funded Amount	**$6,497,272**

Revenue	
Program	**Amount**
Scrap Metal	$144,062
PowerTrail	$205,909
Marketed Recycling Material	$8,304,072
Solid Waste User Fee	$29,942,279
TWF Landfill Tipping Fees (includes soil tipping fees)	$5,047,503
Host Community	$269,733
Yellow Bags Purchases	$27,875
Springhill Royalty	$81,691
Springhill Recovery	$76,692

Revenue	
Program	**Amount**
Apartment Leased Garbage Container Portion	$241,750
Miscellaneous	$2,289
Liquidated Damages	$65,250
Residual Disposal	$30,651
Notice of Violation	$14,485
Total Revenue	**$44,454,241**
Total Funding and Revenue	**$50,951,513**

12.3.1 Program Funding

Blue Box Program

The City receives funding for the recycling program through the Resource Productivity and Recovery Authority (RPRA). The amount of funding received depends on program performance, best practices and net costs. The funding received from this program is typically between $4.5M and $5.5M each year. The revenues and funding received help to offset program costs.

The Resource Productivity and Recovery Authority sets the Blue Box Steward Funding Obligation each year, the total amount that stewards must pay to municipalities for the Blue Box Program.

To determine the funding obligation attributed to each municipal recycling program, the Authority considers information obtained from its annual municipal Datacall, which surveys municipalities on program costs and amount of materials collected through the Blue Box Program. The following factors are also considered:

- Municipal cost containment to reflect best practices in operating municipal waste diversion programs;
- Steward cost containment to represent cost increases stewards have had on the system due to their packaging and product choices;
- InKind linage to reflect the share of promotion and education through newspapers using InKind linage attributable to the Blue Box Program;
- Non-obligated materials to reflect a portion of the costs to collect materials through the Blue Box Program that are not mandated; and,
- Three-year rolling average revenue to reflect volatile commodity prices.

Household Hazardous Waste Program

Funding for the Household Hazardous Waste (HHW) Program is provided by Product Care, Stewardship Ontario and the Automotive Materials Stewardship. In 2018, the City received approximately $420,000 for the HHW Program.

Appendix 7.1 summarizes the Household Hazardous Waste events for 2016, 2017 and 2018, including funding information.

Used Tires Program

Funding for the Used Tires Program was provided by Ontario Tire Stewardship in 2018. Since the Trail Waste Facility is a registered drop-off location for this program, the City received close to $15,000 in funding for this program; the bulk of this funding was retroactive payments from previous years collections.

Waste Electrical and Electronic Equipment Program

The Trail Waste Facility is a registered drop-off location for the Waste Electrical and Electronic Equipment Program. The City received close to $10,000 in funding for this program from the stewards.

Projects Funded Through Continuous Improvement Fund

The Continuous Improvement Fund is an organization that provides funding to Ontario municipalities for projects that support municipal recycling programs. In 2018, the City

received almost $19,000 in funding from the CIF for a joint front-end loading recycling bin wrap pilot project.

It should be noted that once the transition to Individual Producer Responsibility is completed, the CIF will cease to exist.

12.3.2 Program Revenues

Marketed Recycling Material

The City received approximately $8.3 million in revenue for marketed recyclable material in 2018. The paper-cardboard material marketed by Cascades Recovery+, generated a revenue of $3.5 million and glass-metal-plastic material generated a revenue of $4.8 million from the sale of recyclables; 42% and 58% of the revenue, respectively.

In 2018, the revenue per marketed tonne for glass-metal-plastic material was $249.32, while the marketed revenue per tonne for the paper-cardboard material was $92.34.

Appendix 9.2 summarizes the revenues by material stream from 2016 to 2018.

Yellow Bag Program

Under the Yellow Bag Program, the yellow garbage bags sell (2018 rate) in packages of four for $15.00, $3.75 per bag.

In 2018, $27,875 was billed to Home Hardware Stores and Client Service Centers for the supply of specific yellow garbage bags to businesses participating in the Yellow Bag Program.

Landfill Gas Utilization Agreement

Through the agreement with PowerTrail Inc., the City earns a royalty based on the sale of electricity generated at the landfill gas utilization facility. The City receives a 5.5% royalty and currently, the partnership generates approximately $200,000 in annual revenue for the City.

12.4 Capital Program Budget

The 2020 Solid Waste Services Capital Budget totals $6.6 million and can be broken down as shown in Table 37.

Table 37: 2020 Capital Program Budget

Capital Program Item	2020 Budget (In $000's)
TWF Cap Repair	$1,000
Nepean Landfill Cap Repair	$450
TWF Stage 2 Capping	$3,300
Leachate Recirculation	$250
Solid Waste Fleet Growth	$100
TWF Gas Collection System Expansion	$1,000
TWF Stormwater Ponds and Ditches	$300
Groundwater Management	$100
TWF Scale House Rehabilitation	$100
Total 2020 Capital Program Budget	**$6,600**

All of the funding for the Capital Program is from the Solid Waste Capital Reserve Fund. However, the fund is in a precarious state and sources of revenue to increase the reserve fund will be explored as part of the Solid Waste Long Range Financial Plan.