Phase 1 Report for CGS SWMMP Update Current State

March 6, 2023

Greater Grand Sudbury

Over to You

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Definitions

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Definitions

Action Plan, Ontario's Food and Organic Waste Framework: Action Plan

C&D, Construction and Demolition

CEEP, Community Energy and Emissions Plan

CIF, Continuous Improvement Fund

City, City of Greater Sudbury

Environmental Services, Environmental Services Division

ECA, Environmental Compliance Approval

EPR, Extended Producer Responsibility

GHG, Greenhouse gas

HHW, Household Hazardous Waste

HSP, Hazardous and Special Products

HDR, High Density Residential

IPR, Individual Producer Responsibility

IWMS, Integrated Waste Management System

LDR, Low Density Residential

MBNC, Municipal Benchmarking Network Canada

MECP, Ministry of Environment Conservation and Parks

MRF, Material Recovery Facility

P&E, Promotion and Education

PRO, Producer Responsibility Organization

RPRA, Resource Productivity and Recovery Authority

RPWCO, Regional Public Works Commissioners of Ontario

RRCEA, Resource Recovery and Circular Economy Act

Strategy, Solid Waste Strategy

TAC, Technical Advisory Committee

Transfer Station, Walden Small Vehicle Transfer Station

Vale, Vale Copper Cliff Nickel Refinery

WDTA, Waste Diversion Transition Act

WFOA, Waste Free Ontario Act

1 Introduction

This update to the City of Greater Sudbury's (City) Solid Waste Management Master Plan (SWMMP) intends to support the City in continuing to develop a sustainable waste management system that minimize the quantity of waste requiring handling and disposal by maximizing waste diversion opportunities. The updated SWMMP will guide the City in achieving its waste management planning goals over a 10-year horizon while providing quality services that meet the needs of its citizens and businesses. It is anticipated that the options will provide service delivery enhancements, operational improvements and opportunities for new programs and initiatives.

The City of Greater Sudbury is situated on the Canadian Shield in Northern Ontario and is the largest municipality in Ontario by land area, covering approximately 3,300 square kilometres. A single-tier municipality with a population of approximately 166,000, the City has a notably low population density overall; however, almost 80 percent of the City's population lives within one of the City's central neighbourhoods. Following its amalgamation in 2001, the City's boundaries now include the former Regional Municipality of Sudbury, and the former lower tier municipalities of Capreol, Nickel Centre, Onaping Falls, Rayside-Balfour, Valley East and Walden, as well as several unincorporated townships including Fraleck, Parkin, Aylmer, Mackelcan, Rathbun, Scadding, Dryden, Cleland and Dill.

The City provides waste management services to over 70,000 households. The City's integrated waste management system (IWMS) includes roadside collection and drop-off facilities from both residential and non-residential wastes (e.g., small commercial establishments, contractors) and in total, the City manages approximately 135,000 tonnes of waste including Blue Box recyclables, organics, other divertible items and garbage per year[1].

[1] 2022_Budget.pdf (greatersudbury.ca)

As a first step, this report lays out the current state of the IWMS and highlights key activities performed by the City and its contracted services. It also reflects the City's current goals and key performance indicators, and details how waste is collected, handled, processed as well as the quantity and composition of that waste.

Much is changing in Ontario and Canada when it comes to the management of municipal solid waste. It is important to understand how these changes could impact the City's future IWMS within its current legislative and statutory context. To that end, **Section 2** "Review of Trends" provides an overview of the provincial, national and international developments that impact waste management at the municipal level and provides key legislative and regulatory developments that are important in shaping municipal responsibilities.

Section 3 of this report is organized to be consistent with the City's Environmental Services Division's (Environmental Services) four sub-services which include: Solid Waste and Litter Collection, Processing or Handling Waste, Garbage Disposal and Customer Service, Education and Miscellaneous Services. Having a comprehensive understanding of the activities performed within Environmental Services, including how services are delivered, the quantities of waste managed, and how it is managed, will inform the analysis and decision-making throughout the development of the SWMMP.

Section 4 outlines the key findings of a sub-report provided to the City. The sub-report describes municipal best practices and provides examples of other jurisdictions, including municipalities selected for their similarities to the City, location in Northern Ontario. The best practice examples show how jurisdictions, large and small, have addressed common waste management issues and leveraged emerging opportunities from developments in the industry. Identifying challenges and opportunities impacting the integrated waste management system and understanding how these have been addressed and leveraged elsewhere, will inform the options put forward at later stages of the SWMMP update.

Along with the SWMMP update, the City is undertaking a review of its Waste Management By-law (2006-280) and Schedules. The by-law governs the management of waste in the City and must be consistent with the City's waste management policies.

As the project progresses, practical options that can be implemented over the next 10 years will be drafted and given a priority sequence. The City is working toward becoming a net-zero emissions community by 2050, and one of the goals set out in the Community Energy and Emissions Plan (CEEP) is to achieve 90 percent solid waste diversion by 2050. Identifying what is working well in the City's current programs, and identifying options for future improvements, will be part of developing a comprehensive strategy that considers input from consultation and engagement activities.

1.1 Solid Waste Management Master Plan Update

The aim of this SWMMP update is to understand how existing programs and initiatives collectively contribute to waste diversion and what their costs and benefits are; to envision improvements that can be implemented in the 10-year horizon; to set achievable goals that align with the Strategic Plan and select appropriate options for change (reduction or additions/ enhancements) to the integrated waste management system. This update does not include securing additional residual disposal capacity; it will; however, consider the current state of the landfills including estimated lifespans.

The City's leadership in waste management is demonstrated through its innovative programs including its dedicated construction and demolition (C&D) diversion area at the Sudbury Landfill and Toxic Taxi service for household hazardous waste (HHW) collection. In addition, the City was the first Northern Ontario municipality to implement a Green Cart organics program, which, together with every other week garbage collection, promotes diversion from landfill. While the City has shifted to collection every other week for garbage and leaf and yard trimmings, it has retained programs for weekly collection services for Blue Box recycling and Green Cart organics. On an exceptional basis, the City also provides special programs, such as weekly garbage collection for residential properties with children's disposable diapers and/or non-recyclable medical waste.

To that end, the SWMMP update process will involve public consultation in the form of public surveys, open houses and community workshops, outreach to Indigenous communities, French-speaking and business communities, as well as engagement with environmental groups, non-profit organizations, neighbourhood associations and Community Action Networks.

In addition, the SWMMP update will seek regular feedback from the following stakeholder groups:

- **Technical Advisory Committee** - which includes key City staff representing Environmental Services, Environmental Planning Initiatives, 311 and Communications and Engagement. Together the TAC has comprehensive knowledgeable related to operational matters, programs, projects and policies;
- **Solid Waste Advisory Panel** - which acts as a public liaison committee on current solid waste management issues and includes a minimum of two Council members and six to eight citizens who will be engaged to discuss key SWMMP issues, concerns and solutions;
- **Executive Leadership Team** - which includes the Chief Administrative Officer and key General Managers and Directors from different departments who will review and provide comments and suggestion throughout the SWMMP development; and
- **Operations Committee** - which includes Council members who review information and proposals and make recommendations to Council on matters pertaining to the Growth and Infrastructure Department which includes the Environmental Services Division.

The SWMMP update will be prepared in four phases:

- Phase 1 will document the current state of the IWMS (this report),
- Phase 2 will create a vision and guiding principles for the future state,
- Phase 3 will identify ways to achieve the goals set out in Phase 2 and evaluate future actions, and
- Phase 4 will summarize findings and outline a consolidated strategy for how the SWMMP may be implemented over the next 10 years.

When the final SWMMP is adopted by City Council, it will guide the City's development of policies and decision making over the next ten years. Its recommendations will work towards minimizing the quantity of waste requiring handling and disposal and maximizing waste diversion opportunities. The plan will support the City in finding ways to provide quality services that meet the needs of its citizens and businesses.

1.1.1 Master Plan Background

The City's first Waste Diversion Plan was created in 2005, a few years after the City amalgamated, and at a time that significant change had occurred. The plan was updated over the years and, in 2018 was expanded to describe the current waste diversion system and was used to document historical changes to its systems and components and to indicate which initiatives have been brought before Council. At that time, the 2015-2020 Solid Waste Strategy (Strategy) was included as one of its appendices which is the City's most recent Strategy and was completed in 2021. The Strategy's mission statement is: "To ensure the delivery of an integrated, cost-effective, and environmentally sound solid waste management system while promoting waste reduction, reuse and recycling." It also articulates Environmental Services' values, which are focused on responsiveness and education; environmental responsibility, innovation and continuous improvement; and strategic thinking. These values apply both internally and externally.

The Strategy put forth six strategic goals to enhance waste management and included specific actions to achieve the goals. The implementation of many of these actions has been brought to Council and enacted. **Table 1** provides a non-exclusive summary of the Strategy's six strategic goals, examples of actions associated with the relevant goal and the status of the initiative(s).

Table 1: Strategic Goals and Actions from the Solid Waste Strategy (2015-2020)[2]

Strategic Goal	Associated Actions	Status
Focus on Education	• Develop interactive and hands-on learning tools (including using interactive boards, games) • Develop a 3R curriculum for school-aged children that aligns with the Ontario curriculum • Pilot a community door-to-door 3R educational campaign which was replaced with a permanent home visit program in 2016	• Smart board installed • 3R curriculum developed for grades 3-5 • 3R campaign implemented
Construct a C&D Material Recycling Site	• Request an amendment to the Sudbury Landfill ECA • Construct the site • Expand the program (i.e., inform the public)	• ECA amendment approved • Site constructed • End markets are required for additional materials to be diverted
Increase Policies that Induce Waste Diversion	• Reduce residential garbage bag limit from three to two bags weekly • Reduce residential garbage bag limit from two to one bag weekly • Change garbage collection frequency from weekly to every other week • Eliminate the weekly residential landfill exemption	• Bag limit implemented • Collection frequency change implemented • Elimination of exemption intentionally not advanced
Solid Waste Processing and Disposal Capacity	• Participate in the development of the Regional Public Works Commissioners of Ontario (RPWCO) Landfill Disposal Capacity Value Model and Input Details (to develop a model template for municipalities to calculate and develop specific projections of the value of landfill disposal capacity on a cost per tonne basis); • Update Landfill Life Projections to determine the impact of the diversion of C&D material;	• The City has adequate capacity to process organics from the residential sector but limited capacity for other sectors. A review is on-going to select an alternate processing system and location; • Additional C&D diversion strategies may be

[2] Solid Waste Management Plan December 2020.pdf (Greatersudbury.ca)

Strategic Goal	Associated Actions	Status
	• Review options to increase processing capacity for organics, which included exploring processing at other City locations and the processing capacity of local and further away private facilities	considered through the SWMMP update • Review for additional processing capacity at other facilities was completed and local options are still under review
Expand the Organic Program	• Include high density residential (HDR) properties in a centralized collection system for organic waste, even though they are not mandated to have an organic program • Collect non-residential organic waste, including a fee-based collection program for small non-residential generators that are on a residential collection route and a limited fee-based program for large non-residential generators • Provide a special events organic collection program that would operate in a similar manner to the collection of recycling at special events	• Council has adopted resolutions on organic waste programs to be extended to HDR and non-residential for a fee and special events at no additional cost. However, participation is low.
Divisional Improvements	• Implement an online waste sorting tool (i.e., "Waste Wizard") that can be imbedded in the Division's website • Include a web-based program on the Division's website for residents to find their collection day • Use custom integrated software for AVL/GPS technology systems. This will provide an inventory of collection points, collection point details, a digital route sheet, and a touch screen exception reporting mechanism	• The Waste Wizard has been implemented and is available in the Waste Wise mobile app and the City's website. • The Waste Wise app allows residents to search their home address to receive collection information. This can be performed through the app or through the City's website • Custom integrated software has been installed on City owned and contractor vehicles.

2 Review of Trends

As new waste management policies, goals and objectives are formed to guide the City's actions over the next 10 years, it is important to understand the legislative and statutory context at all levels of government and identify the implications for municipal waste management. A separate sub-report has been prepared which highlights current federal, provincial and local legislative and policy initiatives that could impact the City's waste management services over the term of the SWMMP. The sub-report also identifies emerging global and cross-jurisdictional trends in the waste management industry while discussing their relevance for the City's solid waste management planning and future initiatives. Collectively, this information was used in the development of the recommendations found in the SWMMP update.

2.1 Municipal Level

To understand the alignment between trends at other levels of government and the work of the City in managing solid waste, it is important to understand the policy context at the City. The City's Corporate Strategic Plan, Community Energy and Emissions Plan, Official Plan, and Long-Term Financial Plan set out its priorities, goals and targets, which are important in planning future options for the management of waste. The City's Corporate Strategic Plan and the Community Energy and Emissions Plan, in particular, identify important commitments and goals that need to be considered throughout the SWMMP development as highlighted below.

2.1.1 Corporate Strategic Plan

The Strategic Plan (the Plan) provides a commitment and guidance on how the City will address climate change, manage assets responsibly, meet its service level standards, and strengthen indigenous relations from 2019 to 2027. The Plan also expresses that governments at all levels have a role to play and indicates the City's commitment to engaging in collaborative action. The Plan sets out high level guidance for the provision of all services to the public including identification of key values and important direction for the management and prioritization of effort and resources, including those related to waste management services. The Plan states that its climate change goal "shows the municipality's interest in, and commitment to, providing leadership in the development and promotion of ideas, policies and actions that positively influence global climate conditions, managing its services in ways that demonstrate good stewardship and encouraging action today in the interests of tomorrow."[3]

2.1.2 Community Energy and Emissions Plan

The Community Energy and Emissions Plan (CEEP) is the long-term plan to reduce carbon emissions in the City. The CEEP responds to the City Council's Climate Emergency declaration in May 2019, which included a commitment to achieve net-zero emissions by 2050. To reach this goal, the City will need to reduce greenhouse gas emissions (GHG) and is implementing actions to achieve an overall balance between greenhouse gas emissions produced and greenhouse gas emissions taken out of the atmosphere.

The CEEP identifies the sectors within the city from which emissions arise and forecasts the areas in which they can be reduced. While transportation and industrial sectors produce the greatest amount of emission, it is notable that the waste sector is responsible for a consistently significant portion as well.

The CEEP sets eight goals that are assigned to different sectors. Water, Wastewater and Solid Waste is assigned goal #6, which is to "achieve 90 percent solid waste diversion by 2050." Based on input from City staff, and the community, businesses, and industries, the CEEP provides a scenario for the reduction of emissions by 80 percent and sets an ambitious goal of 90 percent waste diversion.[4] Goal #6 also includes an intention to have an organics and biosolids anaerobic digestion facility operational by 2030.[5]

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[3] 2019_Strategic_Plan_Final.pdf (greatersudbury.ca), 4

[4] Community Energy and Emissions Plan - Greater Sudbury, 36

[5] Community Energy and Emissions Plan - Greater Sudbury, 3

Another CEEP goal that relates less closely to the waste management sector is goal #18, which is to increase the reforestation effort of the City's Regreening Program. Among other initiatives in other City divisions, the Environmental Services currently sends leaf and yard trimmings collected at the Sudbury Landfill to Vale to support tailing rehabilitation and regreening efforts which contribute to carbon sequestration.

2.2 Provincial Level

Provincial level legislative and regulatory developments directly shape the integrated waste management system by defining municipal obligations and setting out how the City is able to conduct its business.

Ontario's Municipal Act, 2001, (S.O. 2001, Ch. 25), confers broad authority onto municipalities to enable them to govern their affairs as they consider appropriate and to enhance their ability to respond to municipal issues. Waste management is one of eleven jurisdictional spheres identified in the Act over which municipal governments have authority. Municipalities have the authority to, amongst other things, pass by-laws and provide waste management services that the municipality considers necessary or desirable for the public, subject to the rules set out in the Act or other applicable legislation. Municipalities may also exercise their powers in another municipality or unorganized territory if one of the purposes for so acting is for its own purposes.

As a single-tier municipality, the City is responsible for all municipal services and assumes all responsibilities set out under the Municipal Act including provision of solid waste management services.[6]

With the introduction of the Waste-Free Ontario Act, 2016, (WFOA) significant changes were initiated in Ontario. The WFOA enacts two other acts including the Resource Recovery and Circular Economy Act (RRCEA) and the Waste Diversion Transition Act (WDTA). The RRCEA introduces a regulatory framework for waste diversion and resource recovery in which brand owners and affiliates, otherwise known as 'producers', are individually accountable and financially responsible for the diversion of designated products and packaging they have supplied or sold into the marketplace. This system is known as Individual Producer Responsibility (IPR). The IPR system introduced under the RRCEA differs from the previous system used in Ontario, known as Extended Producer Responsibility (EPR) in which producers were collectively responsible for contributing to the diversion of designated materials. The terms IPR and EPR are often used interchangeably.

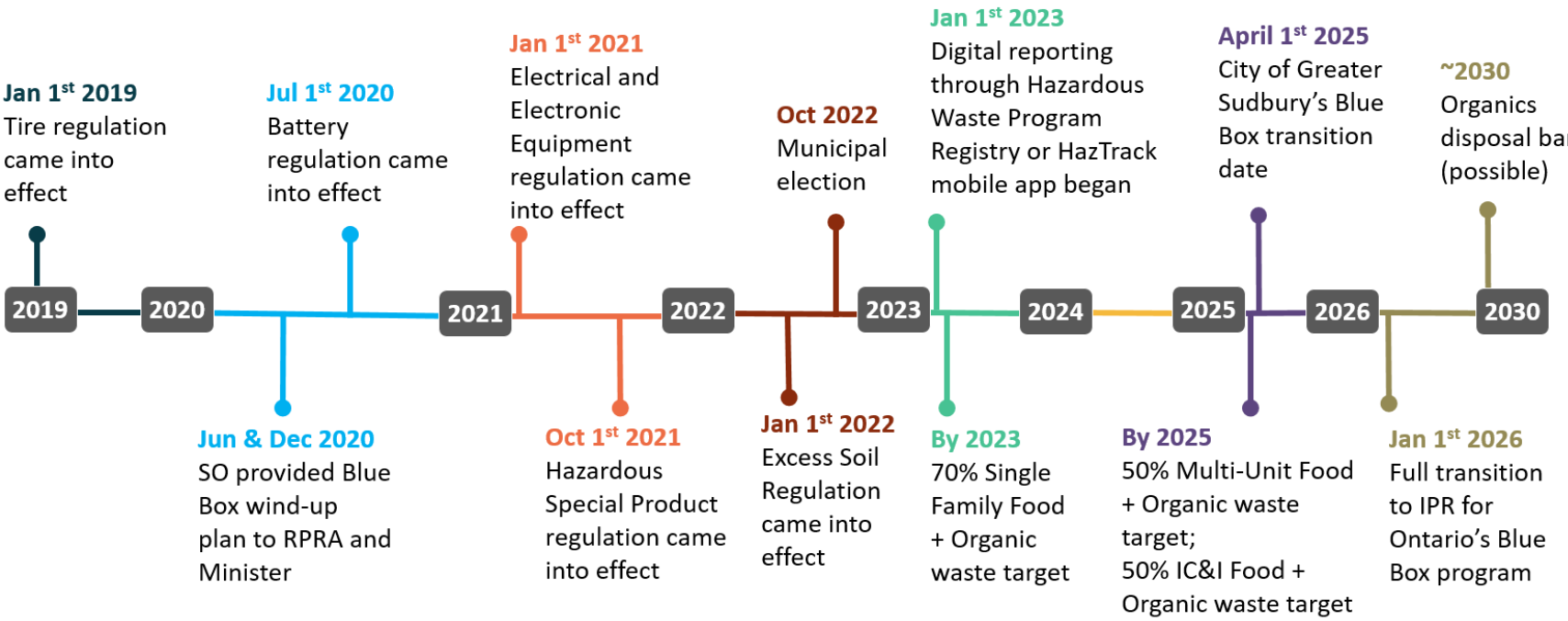
[6] The City of Toronto is an exception; it is not obligated under the Municipal Act, 2001.

Under the new model, producers are free to develop their own system to fulfill their regulatory obligations for the diversion of their designated materials or they can join a Producer Responsibility Organization (PRO). PRO's are not-for-profit organizations set up to fulfil the regulatory obligations on their members on a fee-for-service basis by establishing and operating collection and management systems for their member's designated materials, as well as provide administrative services such as regulatory compliance reporting.

The WDTA outlines the legislative framework for winding up and transitioning existing waste diversion programs. To date, the existing diversion programs for tires, batteries, electronics and certain hazardous and special products have been transitioned under the WDTA.

Figure 1 provides a summary of provincial level regulatory changes which have occurred or may occur.

Figure 1: Summary Timeline of Provincial Regulations



Under the WDTA, a new authority known as the Resource Productivity and Recovery Authority (RPRA) was created to replace its predecessor, Waste Diversion Ontario (WDO) which was wound down as part of the transition to the new producer responsibility model. RPRA has a responsibility for the wind-up of the existing four industry funding programs under the former EPR model and administrative and oversight responsibility for new waste diversion programs for existing and new designated materials. Some of RPRA's key oversight responsibilities include registering PROs, producers and their service providers for the various new programs and developing oversight mechanisms such as reporting requirements.

2.2.1 Ontario's IPR Program for Tires

Under Ontario's new Tires Regulation (O.Reg. 225/18) the producers that manufacture and/or supply tires to the Ontario marketplace are fully responsible for administration and financing of the required infrastructure for collection and diversion of used tires in Ontario in accordance with the regulation. Municipalities are not obligated to collect used tires but can chose to do so by registering with RPRA to serve as a collection service provider.

2.2.2 Ontario's IPR Program for Electrical and Electronic Equipment

The Province's Electrical and Electronic Equipment (EEE) Regulation designates a broad range of information technology, telecommunications and audio-visual equipment for diversion from landfill. Examples of this equipment include computers, printers, printer cartridges, video gaming devices, phones, display devices, radios, stereo, headphones, speakers, cameras, recorders, audio recording equipment, musical instruments, drones, peripherals and cables, as well as parts of these items. Items that weigh more than 250 kilograms (kg), appliances, power tools, motor vehicles, toys and textiles, clothing, furniture or other items that contain electronic components within stuffing are not included in the program. As with the other waste diversion programs that have transitioned over to the Province's IPR framework, the new WEEE diversion program allows responsible producers to individually, or collectively (through a PRO), set up a program to collect and divert their discarded products.

Beginning January 1, 2023, lighting producers are now individually accountable and financially responsible for collecting and reusing, refurbishing or recycling their products when consumers in Ontario discard them. As with other EEE producers, companies can choose to contract with a PRO to provide collection, management and administrative services to help them meet their regulatory obligations or establish their own system.

2.2.3 Ontario's IPR Program for Hazardous and Special Products

Ontario's Hazardous and Special Products (HSP) Regulation makes producers of designated materials accountable and financially responsible for managing certain hazardous and special materials. Under the regulation "designated materials" include: automotive material (oil filters, oil containers and antifreeze), solvents, paints and coatings, pesticides, fertilizers, mercury-containing devices (barometers, thermometers and thermostats) and pressurized containers (non-refillable pressurized containers, refillable pressurized containers and refillable propane containers).

The program is unique in that producers are responsible for ensuring that the number of HSP collection sites set out in the regulation are available to receive each type of designated materials within each municipality. Since the start-up of the program, October 1, 2021, producers have been responsible for the collection, promotion, education and management of HSP. This includes ensuring that transportation and management of the collected materials meets the requirements of the regulation. In addition, RPRA requires annual performance reports from PROs.

It is worth noting that Ontario has a separate IPR program for designated batteries rather than including it in the HSP regulation. As of July 1, 2020, following the wind up of Stewardship Ontario's battery recycling program on June 30, 2020, battery producers are individually accountable and financially responsible for collecting and reusing, refurbishing or recycling their batteries when consumers discard them. The new program includes the diversion of common single use and rechargeable batteries of less than 5 kg in weight.

2.2.4 IPR for Blue Box Recycling

The most significant program being transitioned to the provincial IPR model is the Blue Box program, due to the quantity of material involved, value of municipal infrastructure investments and contracts and the complexity of removing this program from integrated waste management systems.

Blue Box Regulation 391/21, as amended by Blue Box Regulation 349/22 details how the current provincial Blue Box program will transition under the WDTA. The regulation sets out the timeline and process for transition of individual municipalities existing residential printed paper and packaging recycling programs (i.e., between July 1, 2023, and December 31, 2025) to the new IPR system. The regulation outlines producer's individual and collective obligations for financing and operating the new Blue Box recycling system in transitioned communities. A key component of the new system includes development of a "Common Collection System," which will require establishment of a consistent level of service for residents and other "eligible sources" across the province. The significance of the regulation for municipalities is that, following their program's transition, they will have no regulated responsibility to provide residential Blue Box collection, processing or education services but will have to determine if and how they plan to continue to provide recycling services to "ineligible sources". Ineligible sources, or places from which producers do not need to collect under the regulation include:

- Industrial, commercial and institutional (IC&I) establishments;
- Municipal facilities (e.g. community centres, libraries, and civic centres); and
- Other non-residential locations (e.g. shelters and places of worship).

The City's program is set to transition on April 1, 2025.

In developing the SWMMP update, options will be provided for how the City's waste management system can be operated over the next 10 years in light of these important changes. The City will need to consider how the integrated waste management system is impacted by these regulatory changes, including customers, staff, contracted services, business processes, and assets.

As well, many Ontario municipalities are reconsidering their waste diversion metrics as a result of the transition to IPR. Currently the most significant metric for the performance of a municipal waste management system is the rate at which waste is diverted from landfill. Once the Blue Box program is no longer part of the system, less materials will be handled and consideration will need to be given to how the performance of the waste management system is measured. Such a change would also have implications for how the City tracks its progress towards CEEP goal #6, which, aims to achieve a 90 percent waste diversion by 2050.

In its 2022 and 2023 waste planning activities the City has prioritized actions that are required due to the Blue Box transition. This includes research and analysis that will put forward options to guide key decision making, including informing the City on its potential role in providing collection and processing services to locations that are and are not eligible under the IPR program. City staff has already made plans, to lease out the City Recycling Centre (also known as the Blue Box MRF) after transition. In 2023, key decisions will focus on the collection aspect of the Blue Box system.

2.2.5 Potential Future Producer Responsibility Programs

To accompany the WFOA, the MECP released the Strategy for a Waste-Free Ontario: Building the Circular Economy in February 2017. The Strategy articulates the province's intention to designate additional materials under producer responsibility regulations including mattresses, carpets and furniture. To date, the Province has been focusing its efforts on the transition of existing waste diversion programs and has not indicated that it intends to designate any additional materials in the foreseeable future.

2.2.6 Food and Organic Framework

In 2018, the MECP released the Food and Organic Waste Framework (Framework). The Framework aims to reduce food and organic waste, recover resources from food and organic waste, support resource recovery infrastructure and promote beneficial uses of recovered organic waste. In support of the Province's Climate Change Action Plan targets The Framework contains two components: The Food and Organic Waste Action Plan (Action Plan) and The Food and Organic Waste Policy Statement (Policy Statement).

The Action Plan sets out opportunities for collaboration among partners and other mechanisms to achieve goals, such as the development of food safety guidelines to support the safe donation of surplus food.

The Policy Statement prioritizes food waste reduction and encourages municipalities to create food waste reduction promotion and education programs. It also advocates for the rescue of surplus food waste through partnerships with food redistribution organizations or the use of technology to improve logistics and safety for food redirection. Further, it indicates the types of food and organic wastes that should be diverted and includes a section that recognizes the emergence of compostable products and packaging and indicates the need for industry standards, new recovery technology, and promotion and education. Notably, the Framework

indicates that the Province may implement an organics disposal ban on the disposal of organic waste to landfill. While the Framework had proposed that this action would occur as early as the summer of 2026, MECP staff has signalled that the initiative will likely be delayed at least until 2030.

The Policy Statement places specific obligations and organic waste reduction and resource recovery targets on a broad range of sectors. They include all municipalities and certain retail shopping establishments, retail shopping complexes, office buildings, restaurants, hotels and motels, large manufacturing establishments, multi-residential property owners, as well as large institutions (e.g., hospitals, educational institutions). The targets vary depending on factors such the geographical area, population, population density, size of facility and are intended to be reached between 2023 and 2025.

As a municipality with an existing curbside organics collection program, the City is subject to several requirements of the Policy Statement as follows:

- Section 4.1 which requires municipalities that, as of the effective date of the Policy Statement, provide curbside collection of source separated food and organic waste shall maintain or expand these services to ensure residents have access to convenient and accessible collection services;
- Section 2.1a) requires that municipalities subject to Section 4.1 achieve a target of 70 percent waste reduction and resource recovery of food and organic waste generated by single-family dwellings in urban areas by 2023".[7]

Based on waste composition data from similar municipalities, the quantity of food and organic waste generated was estimated which includes Green Cart materials and leaf and yard trimmings. It is noted that leaf and yard trimming generation is sporadic in nature and may not be fully captured in the waste composition studies and as such, the total food and organic waste generated may be under reported. To estimate the City's current food and organic waste diversion rate, the quantity of food and organic waste collected from City households in 2021 was divided by the estimated food and organic waste generation amount. Based on servicing 62,000 households, it is estimated the City's food and organic waste diversion rate in 2021 was approximately 38 percent. Due to data limitations at this time, this rate is based on residential roadside collection programs and does not consider residential leaf and yard and organic material delivered directly to the waste diversion areas within the landfill sites or generated by the IC&I sector. Further effort will, therefore, be required to meet the applicable Policy Statement target of 70 percent. The Policy Statement is not a regulation and as such does not have penalties for non-compliance directly associated with it. However, because it was issued under the authority of the RRCEA, municipalities and other agencies that are subject to its provisions could incur administrative penalties for non-conformance.

[7] Food and Organic Waste Policy Statement (ontario.ca), Section 2 Targets, see column 2 of the table

As noted, the Policy Statement also creates obligations and provides diversion targets for certain sectors of the City's business community. Recognizing that they may have challenges developing the necessary collection and processing infrastructure to comply with these obligations, the SWMMP update will consider what level of support the City may wish to provide to local businesses, high density residential building property owners and institutions.

2.2.7 Amendment to Environmental Assessment Act, Landfills

A January 2022 amendment to the Environmental Assessment Act affects new landfill siting requirements to make the process more complex. In section 6.0.1 it now requires that a proponent who wishes to establish a waste disposal site must obtain municipal support from each adjacent local municipality.[8]

Based on the remaining site life of the City's landfills, the City is not expected to need to develop new landfill capacity within the planning window of the SWMMP update and is unlikely to be impacted by the new requirement until such time as there is a need for additional landfill capacity. This is quite different from the situation in other municipalities, and according to the Ontario Waste Management Association, if current disposal trends continue and new landfills are not built, most of Ontario's landfill capacity will be exhausted by 2032. [9]

2.3 Federal Level

At the national level, Canada has demonstrated its commitment to plastic pollution reduction through the Ocean's Plastic Charter, Strategy on Zero Plastic Waste, and the Canada-Wide Action Plan on Zero Plastic. Furthermore, the Government of Canada has enacted new regulations to prohibit the manufacture and sale of single-use plastics that are difficult to recycle. These include single-use plastic checkout bags, cutlery, straws (with exceptions/ accessibility accommodations), foodservice ware, ring carriers; and stir sticks. Potentially significant work has also been initiated to regulate the marketing of products and packaging as recyclable or compostable and to advance the principles of EPR through the development of a registry for plastic products. These initiatives are currently under public consultation with the most recent process concluding in October 2022. It is anticipated that the next step will be to move to develop draft regulations and consult on a national strategy to advance remanufacturing, repair and refurbishment (together known as value retention processes), can be expected.

[8] Environmental Assessment Act, R.S.O. 1990, c. E.18 (ontario.ca) Consolidated format Jan 1, 2022
[9] Landfills (owma.org)

Federal regulatory support for single-use plastics reduction, standardized product labelling, development of a registry for plastics, and a national strategy for value retention processes could result in changes at the municipal level including:

- Changes to municipal statutory obligations (i.e., producers bearing responsibility for managing their products rather than municipalities);
- A reduction in single-use plastics entering the waste stream;
- An increase in alternative (non-plastic) single-use items entering the waste stream (e.g., fibre take-out food containers, paper shopping bags) that could potentially increase the amount of organic waste to be managed;
- Consistency in the use of recycling and compostability labels by producers across the country, which could reduce promotion and education costs;
- Consistency across Canada so that EPR programs are more reliable and effective, which could reduce the volume of waste handled by municipalities; and
- An eventual reduction in electronic and bulky waste as a result of a shift in product design towards more durability and more businesses offering remanufacture, repair and refurbishment services.

These impending changes have the potential to significantly affect the City's current waste stream composition and waste diversion efforts including materials that may be diverted through the new producer managed Blue Box program or the City's Green Cart program. The SWMMP update will include recommendations to anticipate and address these changes.

2.4 International Level

The sub-report provides examples of progressive waste legislation in other jurisdictions, and describes the increasing role of nongovernmental organizations (NGOs) in building capacity and developing solutions related to the creation of a circular economy and associated waste management systems. The UN's Sustainable Development Goals (SDGs) are also recognized as an internationally-accepted framework and set of indicators that are being adopted across regions. These emergent trends result in new opportunities for municipal waste managers to learn from different strategies and to collectively advocate for legislation at other levels of government. Increasing cross-jurisdictional collaboration, knowledge-sharing and capacity-building also means that governments can be aligned in their frameworks, priorities and metrics.

Examples of international developments provided in the sub-report include:

- European Union's Right to Repair Regulation (March 2021) to require manufacturers of electrical goods such as fridges and televisions to make their products repairable for at least 10 years after first coming to market;
- USA's Right to Repair Regulation (July 2021) to make third-party product repair easier, including a guarantee to farmers and motorists that they can repair their own vehicles without voiding warranty protections;
- European Commission's Eco-design of Sustainable Products Regulation (March 2022) which sets a framework for ecodesign requirements for specific categories of physical goods and requirements for durability, reusability, upgradability, reparability, and ability to be remanufactured or recycled; and
- European Union (EU) Taxonomy Regulation (December 2022) [10] which supports sustainable investment by making it clearer which economic activities most contribute to meeting the EU's environmental objectives. Under the regulations companies will have to disclose and provide specific information about their environmental impact and alignment with circular economy principles.

2.4.1 Emergence of Waste-Focused Global Initiatives

In the international context, it is important to understand the role of non-governmental organizations (NGOs) as well as legislative changes in other countries. The sub-report provides examples of waste-focused global initiatives that can support local level waste reduction and diversion. These include:

Ellen McArthur Foundation (EMF) is a charitable organization that builds capacity and promotes the idea of a circular economy. Notably, EMF is active through the Canada Plastics Pact in advancing plastic packaging reduction and in seeking ways to transition the textile/ fashion industry to reduce material consumption and waste.

Circular Cities and Regions Initiative (CCRI) brought together cities and regions in Europe to advance the circular economy. Now active in Canada, it provides local governments in Canada with knowledge and tools to accelerate circular economy solutions.

C40 Cities is a global network organization of over 100 city mayors who endorse urgent action on climate change. C40 has a Clean Construction Accelerator program that identifies that the built environment is one of the largest sources of greenhouse gas (GHG) emission. It aims to promote reuse of construction materials, prioritize building retrofits and consider best uses for existing buildings.

[10] Sustainable Finance: Introduction to the EU Taxonomy for a Circular Economy(nabu.de)

ACR+ The Association of Cities and Regions for Sustainable Resource Management (ACR+) is an international network of cities and regions that shares research and knowledge on sustainable resource management, through prevention at source, reuse and recycling, and accelerating the transition towards a circular economy. One of its advocacy initiatives is to ask the EU to deliver a Strategy for a Sustainable Built Environment as part of its implementation of the EU Circular Economy Action Plan. This advocacy acknowledges the impact of the construction industry on raw material use and emissions and seeks to reduce C&D waste.

2.4.2 United Nations

The work of the UNEP is also noted because it provides internationally-focused authoritative research and publications that identify the urgency of the climate crisis and demonstrates the interrelatedness of environmental and social issues. With respect to waste management, the UNEP has been an important voice in discussion around marine litter and ocean plastics, and more recently has published about the challenge of plastics in agriculture.

Municipal governments are increasingly aligning their strategic plans with the indicators provided by the UN's Sustainable Development Goals (SDG). The Sustainable Development Goals Report 2022, which tracks regional progress on the implementation of the 2030 Agenda for Sustainable Development, is raising alarm as "humanity's very own survival" is in "grave danger". Jurisdictions around the world have adopted the 17 SDGs to provide a framework and help shape strategic planning at the local level to address climate change and transition programs and services to more sustainable models. In particular, Goal #11 Sustainable Cities and Communities, and Goal #13 Climate Action can support waste management practices and be used to formulate environmental indicators at the municipal corporate level.

2.5 Conclusion

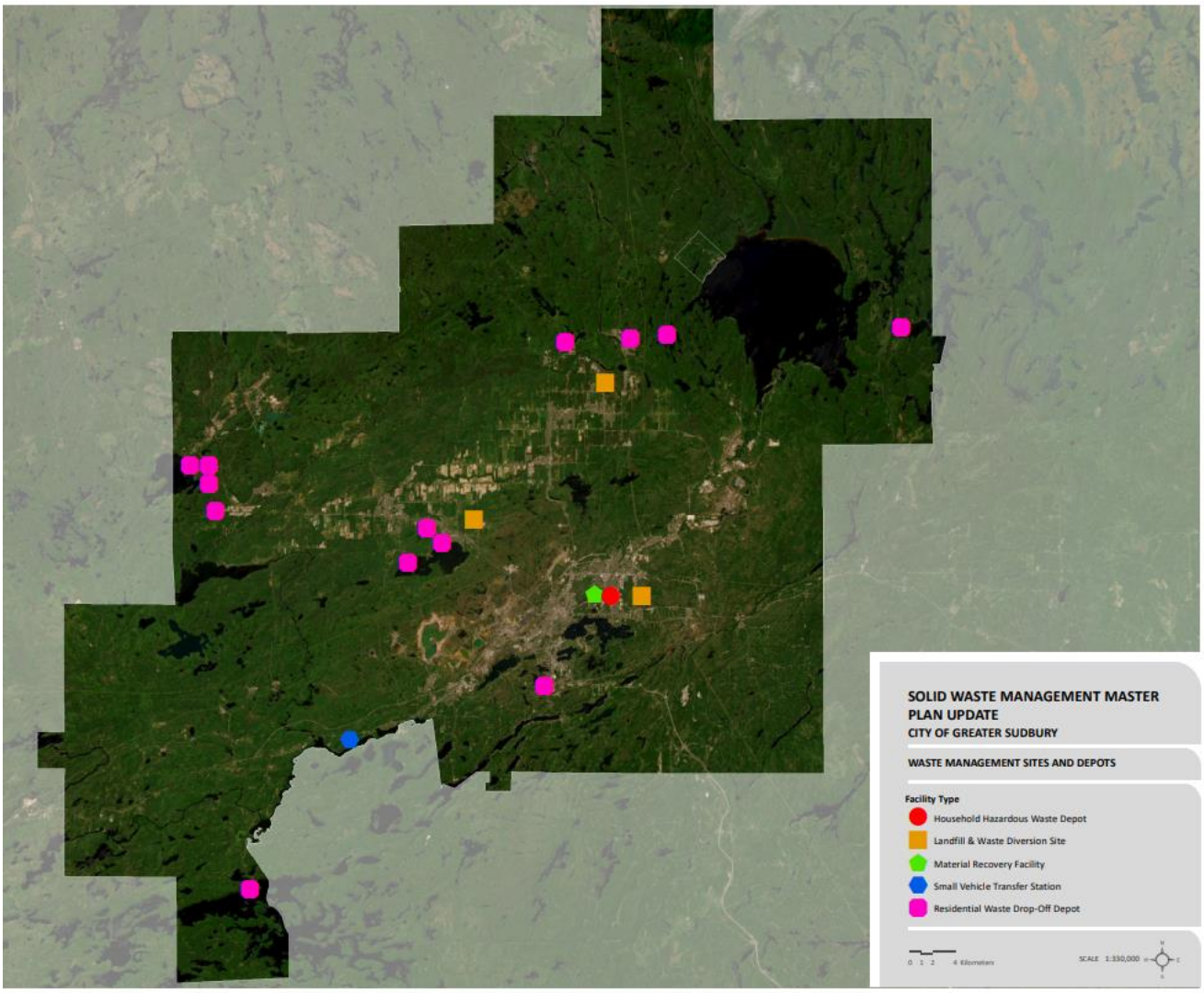
In formulating options on how waste and service delivery will be managed at the City over the next 10 years, consideration can be given to the trends described in the sub-report. The options put forward in the SWMMP will be aligned with the City's waste management and corporate goals and will be informed by the legislative context at all levels of government. In addition, recommendations will be provided on how the City can further consider ways to leverage the global exchange of ideas, to learn from municipal counterparts, explore opportunities to participate as a leader in environmental sustainability and gain insight into new local level solutions.

3 Current Solid Waste Management System

The Environmental Services Division oversees the planning, design, approvals, monitoring and operation of solid waste programs and facilities. Services are provided through a combination of staff operated and contracted services and are structured under four sub-service sections. Environmental Services is responsible for the collection, processing, diversion and/or disposal of waste and for the coordination of other reuse and recycling programs that divert additional materials from landfill. Customer service and education are important aspects of the Division's work and includes the production and distribution of promotional and educational materials such as the Waste Wise software application, website and social media content, printed material and responses to public inquiries.

The City's integrated waste management system (IWMS) consists of the three active landfills (which include Landfill Diversion Areas), a landfill gas facility, a household hazardous waste depot and toxic taxi, a blue box materials recovery facility, 13 residential waste drop-off depots, one public recycling drop-off depot and a small vehicle transfer station. Figure 2 shows the location of facilities and sites used by the Environmental Services for waste collection, processing and disposal.

Figure 2: Locations of Waste Management Facilities and Sites



3.1 Solid Waste and Litter Collection Services

The Solid Waste and Litter Collection sub-service is responsible for the provision of services including:

- Roadside residential collection;
- Residential drop-off depots;
- High density residential (HDR) collection;
- Multi-type residential (i.e., commercial with residential building) collection;
- Non-residential roadside collection (e.g., eligible businesses);
- Municipal facilities;
- Toxic Taxi collection program; and
- Roadside litter container collection and litter abatement.

This line also handles support programs including, diaper and pet waste exemption and rebate programs and the provision of roadside collection containers to residential and some non-residential customers as well as the volunteer litter abatement program and Clean-up Greater Sudbury Program.[11]

The subsections below describe the different customer groups and the current services provided.

3.1.1 Residential

In 2021, the City provided roadside waste collection services to approximately 62,000 households, and the vast majority (approximately 60,400 households) are homes or residential buildings with six units or less, which are referred to as low density residential (LDR). Approximately 1,000 rural households receive collection services by way of drop-off depot in lieu of roadside collection.

[11] 2022_Budget.pdf (greatersudbury.ca), pg 230

3.1.1.1 Roadside Waste Collection

Residential roadside waste services include the co-collection of garbage and leaf and yard trimmings every other week and weekly co-collection of Blue Box recyclables and Green Cart organics. Most of the City's population lives along LDR collection routes.

Garbage

The current roadside waste collection service levels were introduced following a City Council decision in 2016 that set out a phased approach to changes in waste collection policies. To encourage participation in diversion programs, the City introduced gradual changes to the garbage collection.

- In October 2016 two bags were collected per household each week;
- In October 2019 one bag was collected per household each week; and
- In February 2021 two bags were collected per household every other week.

Garbage bags must weigh less than 18 kg each and if residents exceed the allowable number of bags, they can purchase an unlimited number of garbage bag tags. The cost is $10 for five tags and residents can purchase them online, at Citizen Service Centres, libraries and approximately 20 retail stores including grocery, hardware and convenience stores.[12]

In 2022, 67,105 garbage bag tags were sold. A participation study was completed in 2022 on select households and the results showed that 92 percent of LDR households participated in roadside garbage collection with 45 percent setting out one garbage bag on collection day, 28 per cent setting out two garbage bags, 20 percent setting out no garbage and 6 percent setting out three or more garbage bags.

Leaf and Yard Trimmings

The City collects leaf and yard trimmings year-round. Since leaf and yard trimmings are co-collected with garbage, the collection frequency was modified to every other week in 2021 to align with the garbage collection program. Residents can set out unlimited quantities of leaf and yard trimmings which can include: leaves, twigs and branches, grass clippings, house and garden plants, natural Christmas trees, etc. Trimmings can be placed in compostable paper bags, securely tied bundles or labelled reusable containers with each not exceeding 18 kg in weight.

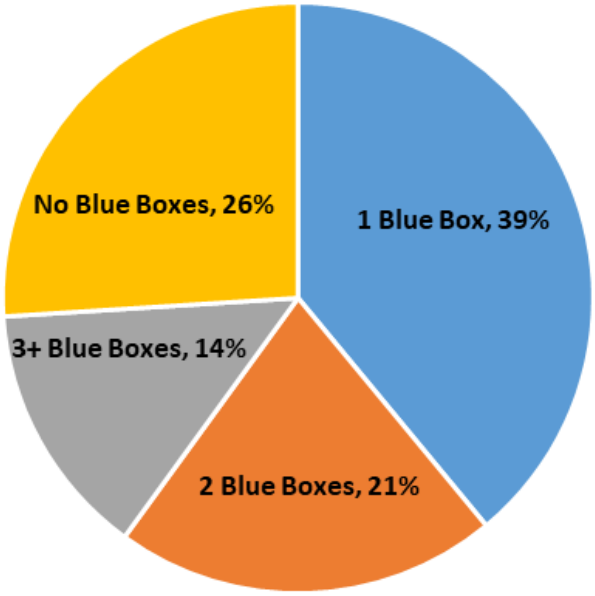
[12] Garbage Bag Tags (greatersudbury.ca)

Blue Box Recycling

Residents can set out unlimited quantities of Blue Box recycling each week. The City collects recyclable materials from Blue Boxes or "Big Blues" (larger blue containers with lids). Only shredded paper and rigid foam packaging are permitted to be placed in separate, clear plastic bags. Residents are provided with Blue Boxes at no charge and can request delivery through the City's Waste Wise App, Waste Wise online tool or by contacting 311. The City provided approximately 27,000 Blue Boxes to roadside residential customers in 2021. Big Blues can be purchased at a subsidized rate of $10 and almost 2,500 Big Blue containers were purchased by roadside residential customers in 2021.

The 2022 Participation Study showed that 93 percent of LDR properties participated in Blue Box recycling (i.e., had one or more Blue Boxes set out at the roadside) with the number of Blue Boxes set out per household shown in **Figure 3**.[13]

Figure 3: Number of Blue Box Containers Set-Out per Household



Green Cart Organics

Residents can set out unlimited quantities of Green Cart organics each week. The Green Cart program is available to all residents eligible to receive roadside collection. The City currently provides new, additional and replacement Green Carts at no additional fee. The provision of Green Cart containers at no additional fee is scheduled to expire December 31, 2026. Residents are required to place organics in a securely tied certified compostable bag or paper food waste

[13] Waste Collection Services – 2022 Participation Study

paper bag prior to placing it in the Green Cart for collection. Residents can request a Green Cart delivery through the City's Waste Wise App, Waste Wise online tool, or by contacting 311. Acceptable organic waste in the Green Cart program includes food scraps (e.g., food waste, meat, bones, cooled grease, fat and cooking oil, coffee grounds/ filters/ tea bags, etc.), non-recyclable paper products (e.g., paper cups, plates, tissues, sugar/flour/potato bags), and other organic material (e.g., house plants and soil, Halloween pumpkins, crab apples, etc.). The program was initiated for LDR homes in 2009 with unlimited collection of Green Cart organics on a weekly basis.[14] In 2021, nearly 12,000 Green Carts were provided to residential roadside customers.

The City conducted a study over a number of years in a designated area (i.e., select neighbourhood) to understand the level of participation in the Green Cart program. In 2018, when two garbage bags were permitted per household per week, 27 percent of study participants participated in the Green Cart program. The participation rate in the same study area increased to 43 percent by 2021, when every other week garbage collection was in place. In 2022 a new study area was used and the overall Green Cart program participation rate was 34 percent, with 39 percent of single family homes participating and 15 percent of multi-unit households participating.

Large Furniture, Appliances and Electronics

LDR households eligible for roadside collection can make unlimited pick-up requests on the Waste Wise app, Waste Wise online tool or by contacting 311 to request the collection of any eligible large furniture, appliance, or electronic item. The eligible items will be collected within three business days after the pick-up request has been made.

3.1.1.2 Residential Drop-Off Depots

Some rural residents who are not able to be serviced via roadside waste collection (e.g., private roads, water access only) instead receive collection services at a residential drop-off depot. At the time of amalgamation, 14 residential waste transfer stations (i.e. waste depots) were in place in outlying communities to service certain residents without roadside waste collection services. After amalgamation, two waste depots were integrated into one site leaving a total of 13 depots in place. Where required, the land for the depots was acquired by the City and each site was licensed under ECAs issued by the Ministry of the Environment, Conservation and Parks (MECP).

[14] Waste Diversion Plan 2018 (greatersudbury.ca), 8

Only two waste depot sites are staffed with regular hours of operation. The remaining 11 waste depot sites are unstaffed and open 24 hours per day, seven days per week. All waste depots are inspected on a regular basis and periodic education and enforcement blitzes are conducted at problematic waste depots to assist in mitigating problematic issues and complying with ECA requirements.

Each site is authorized for use only by specific residential properties that do not receive roadside waste collection services. Authorized residents are permitted to bring up to three bags of garbage per visit as well as unlimited Blue Box recyclables and eligible large furniture, appliances and electronics. Leaf and yard trimmings as well Green Cart organics are not collected at the waste depots, and the disposal of hazardous waste is strictly prohibited by the site ECAs.

At staffed sites with hours of operation, the garbage bag limit, access and type of waste deposited is well controlled. At unstaffed sites without hours of operation, garbage limits, access and, type of waste deposited are uncontrolled. Regularly scheduled collection of the waste containers and large furniture, appliances, and electronics as well as maintenance of the site form part of the waste collection contract.

3.1.2 High Density Residential Waste Collection

Environmental Services provides collection to approximately 350 high-density residential (HDR) properties comprising approximately 12,330 household units (2021). According to the City's Waste Management By-law, the term HDR refers to residential properties that contain more than six residential units that are rented for longer than one month, and are not located in the Central Business District. Examples of HDR buildings include:

- Apartment buildings;
- Condominium complexes;
- Townhouse complexes;
- Row housing;
- Co-operative housing complexes; and,
- Mobile home/trailer parks.

The City collects waste from HDR properties that have a service agreement with the City, which specifies collection terms, such as number of collection containers, type of waste to be collected, collection frequency and fees for services. The City can offer its HRD customers a collection agreement that uses one of two methods:

- **Roadside collection**, in which waste is collected in the same manner as it is for LDR properties. The City offers this service when the property cannot accommodate containers (bins or carts) on site. Garbage, leaf and yard trimmings, Blue Box recycling, and Green Cart

organics is included as part of roadside collection services. HDR customers that are on a roadside collection system have been able to participate in the Green Cart and leaf & yard trimming programs since 2010; [15]

- **Containerized collection**, in which case property owners or superintendents set waste out at a central location on the property in front-end bins or carts. For containerized collection points, an automated truck is used, such as a front-end truck which is a vehicle equipped with a lift fork that raises the bin above the front of the cab to empty it. Garbage and Blue Box recycling collection services are provided to HDR customers that receive containerized collection. Containerized organic waste collection services became available to HDR customers for an additional fee in 2018 but no properties have registered for organics collection to date.

The City provides an initial set of in-unit small blue box recycling containers for residents living in HDR properties and a Waste Management Handbook for superintendents, property managers and/or building owners to explain service terms and support participation and diversion.[16] Property owners are responsible for providing an area to store and remove large furniture, appliances and electronics.

The City's Toxic Taxi service and HHW depot are available to all residents living in HDR buildings.

3.1.3 Multi-Type Residential Waste Collection

Multi-type properties are properties that have a mix of non-residential and residential units. The delivery of collection services to the residential units within multi-type properties is quite similar to how services are provided to HDR properties. Owners/ managers of multi-type properties can enter into similar agreements and the fees apply to buildings with more than six residential units. Like HDR properties, multi-type properties can receive roadside collection or containerized collection. Multi-Type property owners are responsible for providing garbage and recycling services for the non-residential units within the property.

As with residents living in HDR buildings, the City's Toxic Taxi service and HHW depot are available to residents living in multi-type buildings.

In 2021, the City serviced 176 residential units in properties with seven or more residential units, 199 residential units in properties with two to six residential units and 317 residential units in properties with one residential unit.[17]

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[15] Waste Diversion Plan (greatersudbury.ca), 10

[16] Waste Management Handbook for High Density Residences (greatersudbury.ca)

[17] System Component and Status.pdf

3.1.4 Non-Residential Waste Collection

Non-residential waste collection refers to industrial, commercial and institutional (IC&I) customers, such as small businesses, religious institutions, home based businesses etc. Registration is required and there is a fee for all services with the exception of the special event program and the yellow box program for charitable and non-profit organizations. Some non-residential programs are provided as a roadside collection service more suitable for smaller establishments that produce a limited amount of waste while other programs are geared towards larger waste generators who require collection from commercial containers or automated carts. To receive roadside service, non-residential customers must be part of an existing roadside collection route and the amount of waste that can be placed at the roadside is limited.

Yellow Bag Garbage Roadside Collection Program

The Yellow Bag Garbage Program is available for non-residential establishments that produce no more than six bags of garbage every other week. Customers that generate more than six bags of garbage every other week are required to source private sector waste collection providers. To participate in the Yellow Bag Program, non-residential establishments must register with the City, then purchase yellow bags and set out their garbage in those bags at the roadside. Participating customers receive garbage collection every other week. In 2021 there were 45 participants in the program.[18]

Yellow Box Recycling Roadside Collection Program

The Yellow Box Recycling program allows approved non-residential establishments located on a residential collection route to buy up to three yellow recycling boxes, or one big yellow recycling container with a lid for weekly roadside collection, and pay an annual service fee of $106 (2021).[19] This fee covers collection fees but excludes the costs for processing the recyclables, which is covered by the City. Charities and non-profit organizations can register and participate at no charge. In 2021 there were 176 participants in the program.

Yellow Cart Organics Roadside Collection Program

The Yellow Cart program allows approved non-residential establishments located on a residential collection route to buy up to three yellow carts that can be set at the roadside weekly for the collection of organic waste. Registered participants are required to pay an annual service fee of $106 (2021). This fee, which was initiated in 2018, covers collection fees

[18] 2021-statistics.pdf (greatersudbury.ca)
[19] Non-Residential Recycling (greatersudbury.ca)

but excludes the costs for organic waste processing, which is covered by the City.[20] In 2021 there were 11 participants in the program.

IC&I Organics Program

In addition to the Yellow Cart program, the City also has a program for non-residential IC&I establishments that produce more than three yellow carts of organic waste. The IC&I organics program is available by application only. To apply, an IC&I establishment must submit an application to the City and identify a champion from their organization who will be educated on proper participation and engage and educate others within their organization. Approved applicants are responsible for organizing collection services with the City's waste collection contractor and for paying collection costs. The City does not charge program participants organic waste processing fees. At this time, there are eight program participants. The City is holding all applications in a waiting list due to the increased volume of organics received in the residential organics collection program after the change to every other week garbage collection and limited organics processing capacity. In order to continue to expand the organics program, additional processing capacity is required.

School Green Cart Organics Program

Schools, including primary, secondary and post-secondary institutions, can also participate as non-residential customers in the organics program. The program is similar to the IC&I Organics Program, as schools must apply to the program and appoint a champion and team members who will be knowledgeable about proper waste diversion and collection practices. Upon the City's approval for the school to enter the program, the school must organize and pay for collection with the City's waste collection contractor. The City does not apply a processing fee for the organic waste received from schools. Green Carts are available from the City for use in classrooms, school washrooms and teachers' lounges, and the City recovers the cost of the containers from program participants.[21] While green carts are used to collect the organic waste indoors, that organic waste is transferred to a front-end bin or automated carts for collection.

Special Events

Recycling and organics collection programs are available for the organizers of special events. Organizers can apply to the City with a minimum of two weeks prior to their event to request recycling and organic waste collection services. Large carts on wheels are delivered to the event location for the collection of recyclable and organic materials. The applicant is responsible for ensuring that waste is properly sorted and not contaminated and for placing carts at the agreed upon pick up location. The number of special events services has been impacted by the COVID 19 pandemic. Two events requested the service in 2021, and the number of participants was

[20] Composting: Non-Residential Composting Program (greatersudbury.ca)
[21] Organic Composting Program in Schools (greatersudbury.ca)

estimated to be approximately 5,200 people, based on estimations made by event organizers. Prior to 2020, the City provided special event services to an average of 29 events and an estimated 109,000 participants on an annual basis.

3.1.5 Household Hazardous Waste Collection

Collection services for household hazardous wastes (HHW) are delivered through the City's Toxic Taxi and through the Household Hazardous Waste Depot located at 1853 Frobisher Street. Items collected by the City include expired medicines, sharps, vehicle fluids, paints, aerosols, fire extinguishers, fertilizers, propane tanks, etc.

Residents can schedule a Toxic Taxi appointment on the Waste Wise mobile app or online tool or by phone to receive a collection of HHW at no charge. The Toxic Taxi operates from 8:00 a.m. to 8:00 p.m. Monday to Friday.

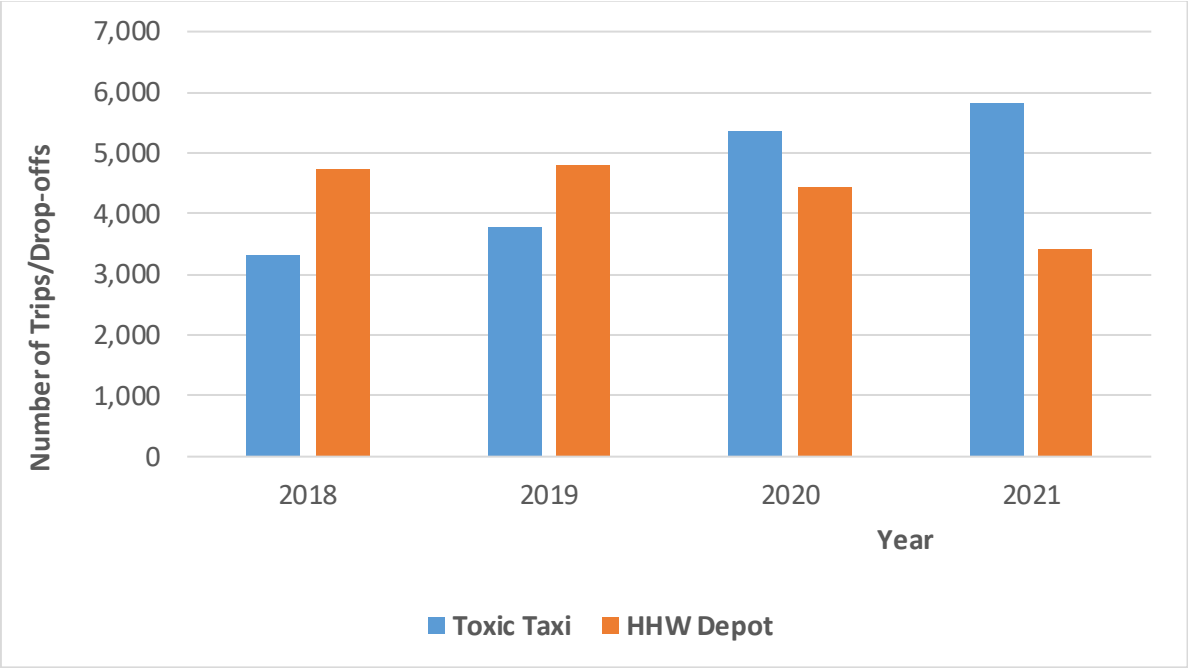
Figure 4 presents the number of trips made by the Toxic Taxi from 2018 to 2021. Since 2018, the number of Toxic Taxi trips have increased each year from approximately 3,000 trips in 2018 to over 5,800 trips in 2021.[22]

Residents can alternatively drop-off their HHW to the HHW Depot which is open on approximately 26 select Saturdays throughout the year.

From 2018 to 2020, the number of drop-offs to the HHW Depot ranged from 4,000 to 5,000 per year as shown in **Figure 4**. In 2021, there were approximately 3,430 drop-offs to the HHW Depot. It should be noted that the HHW Depot was closed from January to June 2021 due to the COVID-19 global pandemic, and that the number of visits peaked in October 2021 to almost 1,200 for the month. Toxic Taxi services continued throughout the pandemic.[23]

[22] 2022_Budget.pdf (greatersudbury.ca)
[23] 2021 Divisional Statistics (greatersudbury.ca): 11

Figure 4: Toxic Taxi Trips and HHW Depot Drop-Offs per Year from 2018 to 2021



3.1.6 Litter Collection

The City manages litter through the provision of roadside litter containers and collection services, and through litter abatement activities. The two sections below describe the services provided by the City for both litter containers and litter abatement as well as volunteer programs that engage the public.

3.1.6.1 Roadside Litter Collection

Litter Containers

There are a total of 318 roadside litter containers installed in downtown areas, at bus stops and shelters. Containers are installed along major and secondary roads that have a high volume of pedestrian traffic. The Environmental Services Division evaluates installation locations using a set of criteria that considers the suitability based on potential to capture the greatest amount of litter without causing a safety hazard for citizen or workers. The criteria also considers:

- Driver sightlines;
- Roadway impediments, including traffic flow, accessibility for wheelchairs and clearance from fire hydrants, gas values or water valves; and
- Sidewalk maintenance.[24]

[24] Litter Container and Litter Collection Policy (escribemeetings.com), 2021

There are three types of litter containers used:

- A two-stream container that has two openings for recycling and one for garbage (**Figure 5**);
- A concrete container that is currently located in the downtown and is being phased out (**Figure 6**); and
- A black metal container that is being installed to replace the concrete type (**Figure 7**).

Figure 5: Two-Stream Container

Figure 6: Concrete Garbage Container

Figure 7: Metal Garbage Container

Collection from litter containers is provided by a combination of in-house and contracted services. Within the downtown Sudbury area, garbage and recycling litter containers are emptied two times weekly (Tuesday and Friday evenings) by the City's contracted service provider.

Litter containers outside of downtown Sudbury are emptied weekly. Litter collection is aligned with the scheduled routes for roadside residential collection so that litter collection is completed at the same time whenever possible. On the weeks with regularly scheduled residential roadside garbage collection, City's forces and the waste collection contractor empty the garbage portion of litter containers. On the weeks without regularly scheduled residential roadside garbage collection, the City's waste collection contractor empties the garbage portion of the container. The recycling portion of the litter containers are collected weekly by the City's waste collection contractor on the same schedule as the roadside residential Blue Box collection.

Graffiti, vandalism, theft and the misuse of public waste containers for the disposal of hazardous waste or illegal disposal are examples of behaviours that the City addresses through its promotion, education, site monitoring and enforcement activities. The disposal of syringe needles and dog feces in public litter containers is a serious health and safety hazard for collection crews. Dealing with hazardous materials and overweight containers requires additional or special handling that strains existing resources. Container locations that are problematic on an on-going basis are relocated to a more suitable location.

Environmental Services is not responsible for non-roadside litter containers located at municipal properties including parks, beaches and trails. Individual City departments are responsible for installing, maintaining and collecting from litter containers that are located within their respective properties.

Litter Abatement

As well as managing roadside litter containers, manual and automated litter collection operations are needed to address litter in the environment. The City provides in-house seasonal services during the time of year that there is no snow on the ground. Litter abatement is conducted seasonally on major arterial roadways owned by the City and secondary roads that have heavy traffic flow. Service requests are also received through 311. The work is completed by internal staff and is complemented by three summer students from May to the end of August.

3.1.6.2 Clean-Up Greater Sudbury Programs

The City coordinates three volunteer initiatives targeted towards litter abatement, including:

1. **One-Time Clean-Up Events:** To take initiative, community groups or residents can sign up to conduct a one-time clean up event. Individuals or groups can register to clean a City owned roadside or property on a date of their choosing without any further future commitments.
2. **Adoption Programs:** The City has three programs that aim to increase litter awareness in the City while partnering with organizations, businesses and other groups. Participants register with the City and are recognized on the City's website, signage and public service announcements.
    2.1. **Adopt-a-bin:** This program allows a group or individual to adopt a roadside litter container. The group then becomes responsible for picking up litter around the bin and notifying the City if it is overflowing.
    2.2. **Adopt-a-road:** This program allows a group or individual to adopt a 2 kilometer length of City owned roadway. The group is then responsible for picking up roadside litter along that stretch of road twice a year.
    2.3. **Adopt-a-spot:** This program allows a group or individual to adopt a public spot. The group is then responsible for picking up litter at that spot twice a year.
3. **A Clean Up Blitz:** An annual program where residents pick up roadside litter for a 2-hour period. The 2022 event was held from 9 to 11 AM on Saturday, May 7th, 2022. Residents must pre-register for this event. Participants are provided with necessary safety equipment and supplies, and must sign a waiver.[25]

The City provides volunteers with garbage bags, safety equipment and collection for all Clean-up Programs. Registered participants in the adoption programs also benefit from advertising on the City website and a sign posted at their adopted area.

[25] Litter Clean Up Programs (greatersudbury.ca)

3.1.7 Solid Waste Support Programs

The City has a variety of solid waste support programs, which are described below. Some programs are designed to support residents with temporary circumstances that cause them to produce non-recyclable waste over the allowable garbage bag limit while other support programs are aimed at reduction and reuse efforts. Program details are provided on the City's website, as well as eligibility requirements and application forms. Statistics and program history are documented by Environmental Services.[26]

1. Cloth diaper rebate: The City provides up to $100/child under 4 years of age to offset the cost of cloth diapers.[27] This is a temporary program that is scheduled to end December 31, 2026.
2. Garbage bag limit exemption for diaper waste: Families with children under 4 years of age may be eligible for an exemption on their garbage bag limit or an increase in their collection frequency. The exemption allows approved families to set out two clear bags of diapers per child under 4 years of age every other week, or weekly collection of one clear bag of diapers per child under 4 years of age. Residents wishing to participate must reapply annually.[28]
3. Yellow diaper bag collection for licensed home daycare providers: Licensed home childcare providers that are located on residential collection routes and that do not produce more than two bags of diaper waste every week can apply to receive an exemption to allow them to set out two yellow bags of diaper waste every week.[29]
4. Garbage bag limit exemption for medical waste: Residents that require an increased garbage bag limit due to medical circumstances may be eligible to receive up to 104 bag tags per year to be used as required every other week. Registered participants may also apply for a weekly collection of tagged bags.

[26] 2021 Divisional Statistics (greatersudbury.ca)
[27] Rebate for Cloth Diaper Program (greatersudbury.ca)
[28] Garbage Container Limit Exemption for Diaper Waste (greatersudbury.ca)
[29] Yellow Bag Program for Licensed Home Child Care Providers (greatersudbury.ca)

5. Garbage bag limit exemption for pet waste: The City provides a garbage bag exemption for residents that require an increased garbage bag limit due to pet waste. The exemption allows approved residents to set out one additional clear bag of waste at the roadside every other week. Residents wishing to participate must reapply annually.[30] This is a temporary program that is scheduled to end December 31, 2026.
6. Pet digester rebate: To reduce pet waste going to landfill, residents who purchase a dog waste digester to manage their pet feces may be eligible for a one-time rebate of up to $50. This is a temporary program that is scheduled to end December 31, 2026.
7. Animal resistant waste storage container: Property owners can choose to have their waste collected from animal resistant containers through a rent-to-own and/or subsidy program. Subsidies are provided to property owners with an annual family income below $47,000 per year while the rent-to-own program has no income limitations. This is a temporary program that is scheduled to end in December 31, 2025.
8. Home visits: Residents can request a home visit from a solid waste expert to learn about the programs and waste diversion options the City offers. The expert can also sort through residents' garbage, Blue Box, and Green Cart to improve understanding on how to effectively participate in collection programs.

In order to continue to encourage waste diversion, residents approved to participate in exemption or rebate programs are required to participate in the Blue Box recycling, Green Cart organics and leaf & yard trimmings diversion programs.

It should be noted that the City incurs expenses as a result of waste diversion support rebates provided to residents. The City provides rebates to help residents purchase cloth diapers and pet waste digesters because it encourages reuse, and reduces the quantity of waste managed by the City. In 2021, approximately $43,500 was provided in rebates to residents.

3.1.8 Processing or Handling Waste

Activities related to the processing or handling of waste include:

- Sorting and sale of Blue Box recyclables,
- Composting of leaf and yard trimmings and Green Cart organics,
- Grinding and reuse of wood waste, concrete and brick,
- Handling tires, electronic waste, scrap metal, appliances and textiles for reuse or recycling,

[30] Pet Waste Exemption Form (greatersudbury.ca)

- Recycling, reuse and disposal of household hazardous waste, and
- Waste transfer at Walden Small Vehicles Transfer Site.[31]

The City provides Blue Box recycling, leaf and yard trimmings and Green Cart organics collection services to residential households and registered businesses along residential collection routes and at the diversion areas within the landfills and transfer station. The City operates three landfill diversion areas that are located within the City's three landfill sites (Azilda, Hanmer, Sudbury) where customers can drop off a variety of divertible materials.

3.1.9 Blue Box Recyclables

The City owns a Material Recovery Facility (MRF), where recycling is sorted and prepared for end markets. This process involves separating materials into the type of product that it can be sold as, including corrugated cardboard, paper (e.g., shredded paper and other mixed paper), boxboard, polycoat containers (e.g., milk cartons, etc.) and aseptic containers (e.g. drinking boxes etc.), various types of plastics (e.g., water bottles, tubs and lids, plastic bags, rigid foam packaging and containers, harder plastics such as laundry detergent containers, etc.), steel, aluminum, and glass. Separated categories of materials are prepared as bales that can be sold or provided within the recycling market. The MRF is located at the Recycling Centre at 1825 Frobisher Street and operated under contract to Waste Connections of Canada until February 4, 2023 after which the facility will be leased and operated by HGC Management in preparation for the transition to full producer responsibility. Further information about the quantity of recycling and the revenue from the sale of recycling is provided in **Section 3.4.1** and **Table 5** respectively.

3.1.10 Organics

The City collects and processes two main types of organic waste, which are part of roadside collection services and can be delivered directly to the waste and diversion sites within the landfills and transfer station:

- Household organic waste collected through the Green Cart and Yellow Cart Programs;
- Organic waste from schools and the limited IC&I programs; and
- Leaf and yard trimmings.

At the Landfills, the City also receives other organic materials including sod and clean wood. The quantities of each of these types of compostables is provided in **Section 3.4.1**.

[31] New C&D Materials Area at Sudbury Landfill (greatersudbury.ca)

Green Cart Organic Waste

All collected organic waste is taken to the temporary organic composting area at the Sudbury Landfill. Within this site, the City is permitted and licensed to use the aerobic windrow method to process the material. When collection vehicles have completed their routes, they offload the material at the processing area, where it is inspected, documented and pre-processed (i.e., turned and monitored for moisture content) for approximately one month. Then it is moved to the curing pad, located close to the processing area, where it will compost over approximately six to eight months. Finished compost is sold to the public or used within City operations in lieu of purchasing virgin materials.

The organic composting area within the Sudbury Landfill was recently moved from where it had originally been constructed in 2009. The new pad was installed because the City required the space for landfill operations and to remain in compliance with the sequential waste filling plan approved in the design and operation report of the landfill.

In 2018, Greater Sudbury Utilities (GSU) undertook a pre-feasibility study for an anaerobic digestion system. The model assumed importing approximately 75 percent of the feedstock from outside the Greater Sudbury area (within a 350 km radius). Under the suggested anaerobic digestion model, GSU would own the facility and contract the operation to a service provider. The City and other users would be required to pay a tip fee for organic material delivered to the site.

Several systems were reviewed and the costs ranged from $26.85 to $27.80 million and an estimated operating cost of $120 to $125 per tonne. Both systems involved energy production and the energy revenues were integrated in the estimates.

At the time, the conditions did not support moving forward with an anaerobic digestion system. However, GSU did indicate that they would continue to monitor market conditions in anticipation that the project may one day be viable.

The City also explored the possibility of transferring organic waste to a processing facility outside Greater Sudbury at a cost of approximately $150 per tonne (2020).

Greater Sudbury is currently conducting a pre-feasibility study to explore the potential of an anaerobic digester and biosolids processing facility that would assist in achieving CEEPs goal #6 to have an organics and biosolids anaerobic digestion facility operational by 2030. This solution was explored due to the need for additional organic waste processing capacity.[32] The study is expected to be completed in 2024.

[32] Community Energy and Emissions Plan.pdf (greatersudbury.ca), 72

In order to expand the City's organic diversion programs, a preferred long-term processing system that will increase the capacity of organic waste that could be accepted and processed will need to be selected and implemented.

3.1.11 Leaf and Yard Trimmings

Leaf and yard trimmings include leaves, garden trimmings, house and garden plants, hedge and tree trimmings, twigs and branches, grass clippings, brush and other plant material and natural Christmas trees.

The handling and processing of leaf and yard trimmings is permitted through the City's ECAs at the Landfill and Waste Diversion Sites. Leaf and yard trimmings received at the Walden small transfer station is delivered to and managed at the Sudbury Landfill Site. Leaf and yard trimmings collected by the City or delivered directly to the sites are mixed with clean wood and sod. At the Azilda and Hanmer Landfills, leaf and yard trimmings are composted on site and finished compost is sold to the public or used within City operations in lieu of purchasing virgin materials.

Through a partnership with Vale, leaf and yard trimmings from the Sudbury Landfill site are used to reclaim tailing areas. The partnership supports the CEEP goal #18 which aims to "increase the reforestation efforts of the regreening program."[33]

3.1.12 Other Compostables

Within designated areas at the three landfills residents can also drop off wood waste in two streams:

- Clean non-treated wood waste - including lumber, roots, stumps free from soil and rock; and
- Other wood waste - including doors, cabinets, bookshelves, painted lumber cupboards.[34]

Clean non-treated wood waste is managed alongside leaf and yard trimmings, chipped and provided to Vale.

Other wood waste is stockpiled and ground. Since it is not suitable for compost, this material is used within the landfill operations as an alternative daily cover or applied on temporary internal access roads during inclement weather.[35]

[33] eSCRIBE Agenda Package (escribemeetings.com), 112
[34] Landfill and Transfer Stations (greatersudbury.ca)
[35] filestream.ashx (escribemeetings.com), appendix B

3.1.13 Construction and Demolition Material Recycling

The Sudbury Landfill also includes a Construction & Demolition (C&D) Material Recycling Area which fully opened in 2021.

Initial C&D recycling activities began once the City received an ECA amendment that allowed for the receipt and processing of C&D waste at the Sudbury Landfill in 2014. The materials collected are processed in a variety of ways, for example, scrap metal is sent to end market recyclers. Concrete and brick is stockpiled within the site, ground once per year and used for internal roads and processing pads. The ECA also permits the City to use the following as daily landfill cover: contaminated or chipped wood, crushed or uncrushed drywall, crushed or uncrushed non-recyclable glass, inert fill (i.e., concrete or brick), shredded non-wooden flooring, geotextiles (i.e., permeable fabrics), among other materials.[36] In 2019, staff informed Council that initial diversion activities from C&D waste diversion had helped reduce the annual landfill fill rate and had the potential to extend the landfill life by three years.[37]

3.1.14 Used Tires

The City currently accepts used passenger tires and light truck tires, as well as medium commercial truck tires and off-road tires at the three Landfill Diversion Areas and the Walden small vehicle transfer station provided they are less than 700 kg. As a registered collector of tires under the producer managed tire program (described in **Section 2.2.1**), the City does not charge fees to residents or local businesses to drop off used tires, with or without rims. Tires collected by the City are picked up by one of the registered tire haulers participating in the program and hauled to a registered recycler for diversion from landfill at no cost to the City.

Section 3.4.1 provides the tonnage of used tires collected annually.

3.1.15 Electronic Waste

The City also participates as a collector in the province's IPR program for electrical and electronic waste.

The City accepts these items at its three Landfill Diversion Areas and transfer station free of charge. The program PROs arrange for the removal and management of the collected materials at no cost to the City pursuant to the regulation.

After January 1, 2023, an IPR program for lighting is expected to be introduced, and the City may be able to consider collecting and diverting used light fixtures through the program.

Table 3 provides the tonnage of electronic waste collected annually.

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[36] New Construction and Demolition Materials Area at Sudbury Landfill (greatersudbury.ca)

[37] Greater Sudbury Operations Committee Update on the Construction and Demolition Material Recycling Area, 2

3.1.16 Household Hazardous Waste

The City receives a broad spectrum of HHW through its Toxic Taxi service and at its HHW Depot. Once received, HHW is categorized by whether, or not, the materials are designated for management under the Province's related IPR program (as detailed in **Section 2.2.3**). HHW that is part of the Province's IPR program are prepared for shipment by the City. The associated PRO then arranges for a registered hauler to ship the material to a licenced receiving facility for reuse, recycling or disposal as required. The City receives a nominal fee from the PRO for the operation of its collection services and preparation of designated HHW for shipment. It does not pay for disposal of this material. By comparison, the City pays the full cost of collecting and disposing of any HHW it receives that does not fall within the list of materials designated under the HSP Regulation.

Residents can schedule an appointment via the Waste Wise mobile app or online tool or, by phone with the Toxic Taxi service to receive a collection of HHW at no charge. Hours of operation for the Toxic Taxi are 8 a.m. to 8 p.m. Monday to Friday, excluding statutory holidays. The HHW Depot operates from 8:30 a.m. to 3:30 p.m. on approximately 26 select Saturdays throughout the year. In addition, residents can drop-off batteries at all libraries and at Citizen Service Centres.

In addition to forming agreements with PROs for the handling of HHW materials, the City manages materials that are not designated under the HSP and Batteries Regulations. Where possible, the City finds recycling and reuse options for HHW. Some examples include:

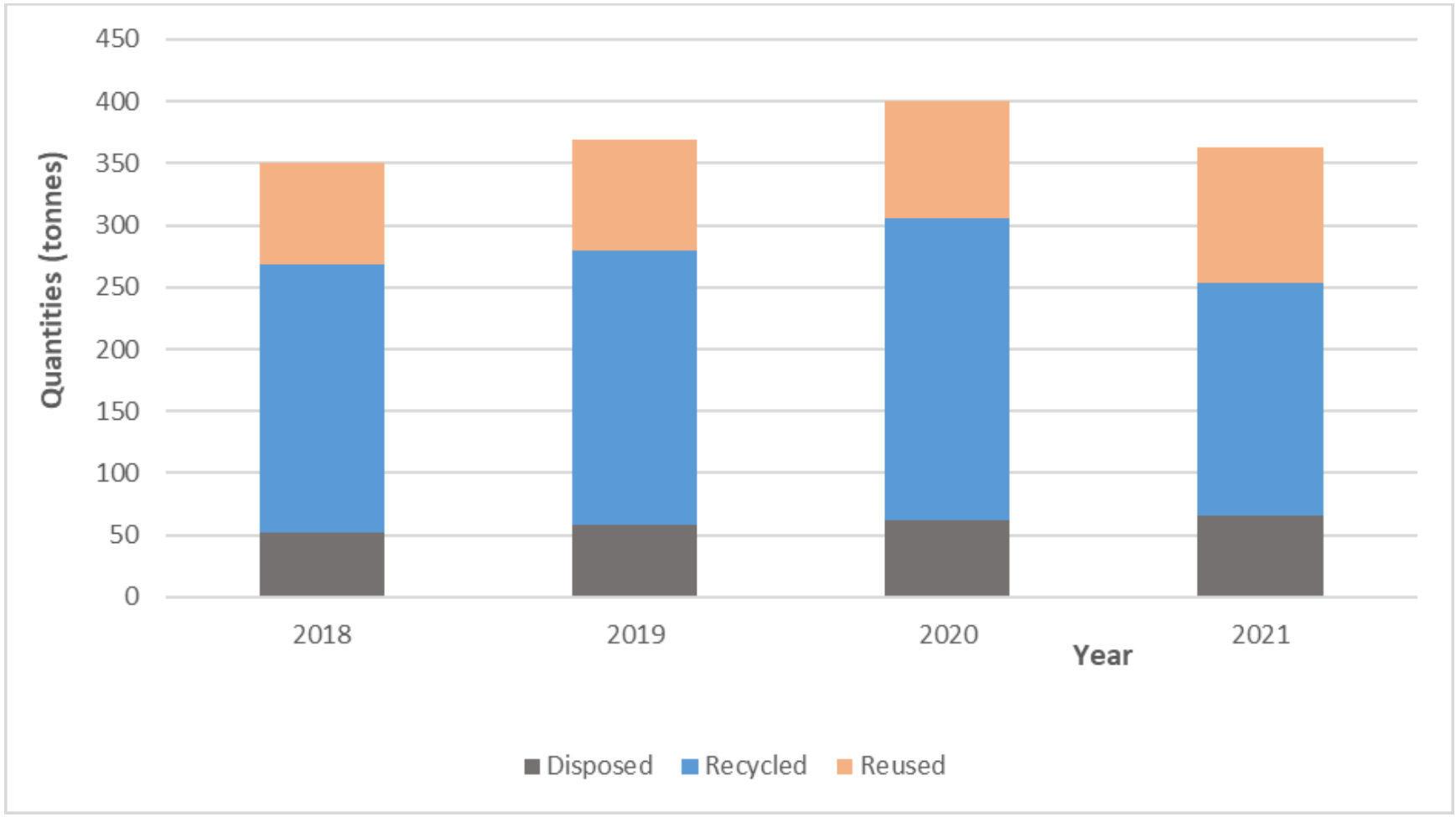
- Paint is inspected and good quality, reusable paints are hand sorted by colour for processing into recycled content paint;
- Motor oil is shipped to facilities where it is processed and refined into new motor oil. Oil filters are drained of oil and crushed and created into dense, steel bricks. The steel and oil are sold to scrap yards and refineries;
- Antifreeze is shipped to a processing facility where contaminants are removed and additives are added to restore the properties of the antifreeze; and
- Gasoline, kerosene, diesel, fuel and aerosols are shipped to a facility, processed and blended to produce a waste fuel that powers cement kilns.[38]

[38] Household Hazardous Waste (greatersudbury.ca)

As a municipality, the City is not obligated under Ontario's IPR Battery Regulation to collect or facilitate the collection of used batteries. However, the City does collect batteries, and provides them to a registered PRO, without being registered or reporting to RPRA to ensure their effective diversion from landfill through the provision of convenient service to residents. Single-use, rechargeable, car, phone, hearing aid, boat and lithium batteries are collected through the Toxic Taxi program and HHW depot, and single-use, rechargeable, and phone batteries can also be dropped off at City libraries and Citizen Service Centres. Batteries must be dropped off in a separate container or bag.

Figure 8 presents a summary of the quantities of HHW managed (reused, recycled, safely disposed) by the City between 2018 and 2021.

Figure 8: HHW Tonnages Managed by the City (2018-2021)



3.1.17 Handling Other Materials

Scrap Metal and Appliances

The City accepts appliances including those that containing chlorofluorocarbons (CFCs) such as refrigerators, freezers, air conditioners, and dehumidifiers at the City's Landfill and Waste Diversion Sites. Appliances received at the site are either collected at the roadside by waste collection crews or delivered directly by citizens. Licensed technicians remove CFCs from the appliances, and the scrap metal is provided to recycling companies.[39] The provision of a service to remove CFCs reduces the need for the public to hire service providers on their own and reduces the risk that ozone depleting chemicals will be released into the atmosphere.

Furniture

The City encourages residents to donate or sell used furniture in good condition. Furniture that is collected as part of roadside collection or delivered directly to Landfill and Waste Diversion Sites is managed as landfill waste.

Mattresses and Box Springs

Mattresses and box springs are a challenge for landfill management because they are bulky, resistant to compression, slow to decompose and impact leachate flow. Several municipalities have attempted to address mattress disposal challenges, yet recycling markets are not widely available. The City has piloted mattress recycling through two projects that sought end markets and assessed transportation and processing costs, as well as the potential to save landfill space and improve the City's diversion rate.

In 2017, the City explored shipping mattresses to "Ontario Mattress Recycling" in Barrie, Ontario. However, the business closed and the pilot project was no longer viable. A second pilot project was conducted in 2021/2022 and mattresses were shipped to Recyc-Mattress which has facilities in Woodbridge, Ontario and in Quebec. A total of 1,973 mattresses and box springs were diverted under both pilot projects, with the cost ranging from approximately $33 per unit to $37 per unit. To evaluate the pilot, staff calculated the amount of space saved in the landfill, which was 1,746 cubic meters. Staff then applied a tipping fee rate of $90 per tonne to value the landfill space saved in dollars and concluded that the pilot project generated an estimated net savings of more than $50,000 in landfill space that can be used for wastes that cannot otherwise be diverted.[40]

The challenge for the City, as well as its municipal counterparts, is a shortage of recyclers for mattresses and box springs. In addition, as a northern municipality, the distance to Recyc-

[39] Furniture and Appliances (greatersudbury.ca)
[40] Mattress and Box Spring Diversion Program (escribemeetings.com), 4

Mattress increases the cost of transportation to divert these items. For these reasons, municipalities look forward to the Province's advancement of the delayed producer responsibility legislation for mattresses and box springs. In the absence of this producer responsibility for mattresses, staff estimate that a permanent mattress and box bring diversion program would cost approximately $425,000 per year but would generate a net savings of approximately $279,000 in landfill space and add three years of additional usage to the existing landfill assets. In addition, the implementation of a mattress diversion program would advance Council CEEP goals and environmental sustainability objectives.

Reusable Materials

Designated areas at the landfills allow residents to drop off materials for reuse. Materials are set aside by staff, and residents are able to purchase used materials such as children's bikes, tables, chairs and lawn equipment etc. at a low cost. Items collected through the City's C&D Area that are fit for reuse can also be provided to the reuse area.

Cloth

Cloth materials in reusable condition (e.g., bedding, linens, clothing, footwear, purses) can be donated to reuse organizations or establishments or dropped off at a Landfill Diversion Area in the Red Clothing Donation Bins.

3.2 Garbage Disposal

The Garbage Disposal sub-service includes final disposal of garbage at the City's three landfills. It also includes site planning, regulatory compliance requirements, monitoring, operation and maintenance of landfill gas, groundwater and surface water systems at the three active landfill, one small vehicle transfer site on a closed landfill site, two closed landfill sites and two non-operating hauled sewage sites.

3.2.1 Active Disposal Sites

The City owns three active landfill sites, Sudbury, Hanmer and Azilda, which are operated via a private contractor.[41] Their locations are included in **Figure 2** (Section 2).

The Sudbury Landfill consists of a 27.2 hectare (ha) landfilling area within a total site area of almost 320 ha that is approved to receive solid non-hazardous residential and IC&I waste. The site is permitted to accept waste generated within the boundaries of the City of Greater Sudbury. In 2021, the ECA was amended to include the acceptance of waste from Atikameksheng Anishnawbek First Nation and Wahnapitae First Nation. The Sudbury Landfill has an approved volumetric capacity of approximately 7.8 million cubic metres (including waste and daily, intermediate and final covers) and based on the 2021 Annual Monitoring Report

[41] Solid Waste Management Plan 2020 (greatersudbury.ca), Pg. 21

data, the Sudbury Landfill has an estimated 37 years of life or 3.2 million cubic metres of capacity remaining.[42]

The Sudbury Landfill disposes of approximately 70 percent of the garbage managed by the City. Due to its size, a gas collection system is a requirement for the site. The captured gas is used by Greater Sudbury Utilities, and since 2007 enough electricity has been generated to power nearly 900 homes each year.[43]

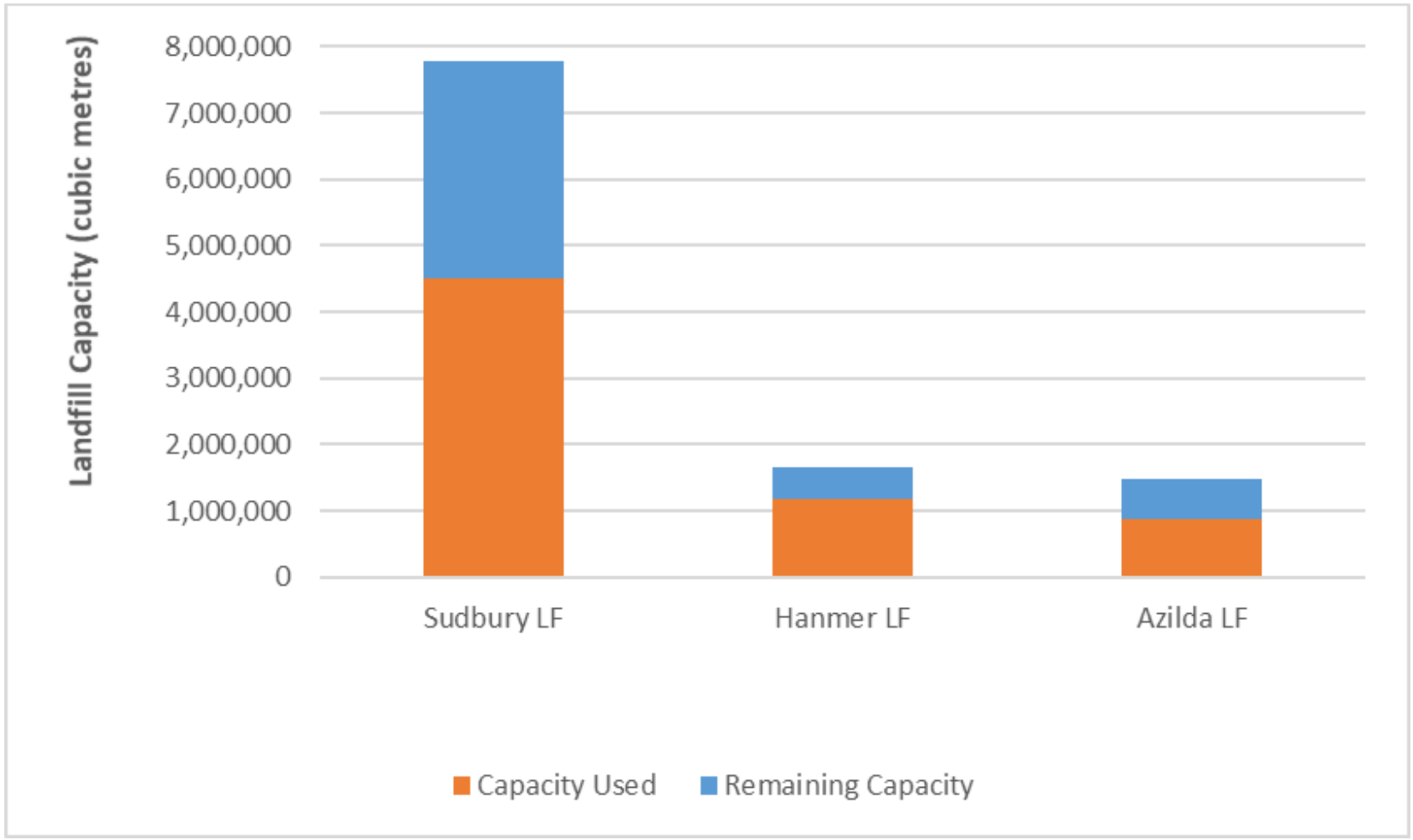
The Hanmer Landfill includes 13 ha of landfilling area within the 194 ha total site area. The site is permitted to receive solid, non-hazardous residential and IC&I waste generated within the City of Greater Sudbury. The approved capacity of the site, including waste, daily cover and intermediate cover (excludes final cover) is 1.65 million cubic metres. As per the 2021 Annual Monitoring Report data, the Hanmer Landfill has an estimated 21 years of site life remaining or 487,258 cubic metres of capacity remaining. This site disposes of approximately 15 percent of the garbage managed by the City.

The Azilda Landfill has a 10.6 ha of landfill area within a total site area of approximately 244 ha. The total approved landfilling volume, including daily and intermediate cover but excluding final cover, is about 1.48 million cubic metres. The 2021 Annual Monitoring Report data indicate that the remaining capacity of the Azilda landfill is estimated at 608,577 cubic metres or 24 years of site life remaining. This site disposes of approximately 15 percent of the garbage managed by the City.

Figure 9 provides a summary of the capacity used and the capacity remaining for each of the City's three active landfill sites.[44] It is noted that each landfill site achieves a minimum waste compaction density of 593 tonnes/m^3.

[42] Consolidated Financial Statements of City of Greater Sudbury 2021 (greatersudbury.ca), Pg. 25
[43] ConverGen – GSU | Greater Sudbury Utilities (gsuinc.ca) Assumes that the homes consume about 700 KwH/month
[44] 2022 Divisional Stats spreadsheet provided by Environmental Services.

Figure 9: Landfill Capacity Used and Remaining



The current landfill capacity estimates are based on the current amount of waste received at each individual site. These estimates do not account for the closure of the Hanmer and Azilda sites prior to the closure of the Sudbury Landfill Site. When the Hanmer and Azilda Landfill Sites reach capacity and close, the waste currently disposed at these sites will be redirected to the Sudbury Landfill. Adding this additional waste amounts to the current waste disposed at the Sudbury Landfill will greatly reduce the estimated life of the Sudbury Landfill. For this reason, it is estimated that overall the City has approximately 25 years of landfill capacity remaining.

It is important to note that landfill capacity estimates can change over time depending on various factors such as changes to waste management regulations or by-laws that prohibit disposal of specific materials being landfilled, policies that increase waste reduction, reuse and recycling efforts and changes to material packaging. All three landfills are open six days a week and are closed on Sundays with longer hours from May through September. Upon entering the landfill, residents must stop at the weigh scale to record the inbound weight and upon existing the landfill, residents pay based on the change in weight and in accordance with applicable tipping fees for their waste. Depending on the type of waste and frequency of trips to the landfill, tipping fees will vary.[45] There are certain types of materials that are not accepted at the City sites such as hazardous, pathological or toxic waste and liquid waste. Certain items such as animal carcasses and asbestos are permitted under prescribed conditions and must be pre-approved for receipt.

The City allows for those living in a low-density residential property to bring a maximum of 50 kg of waste to the landfill per week at no charge. Two weeks per year, the City provides residents with a "Residential Tipping Fee Holiday." During these weeks, tipping fees are waived for unlimited amounts waste delivered by residents in a private motor vehicle or approved rental trailer/vehicle. The Tipping Fee Holiday occurs once in the spring (May) and once in the fall (September) each year. **Table 2** summarizes the number of trips, quantities of waste and, number of tires delivered to the sites during the two Residential Tipping Fee Holiday weeks in 2021.

Table 2: Residential Tipping Fee Holiday Weeks in 2021

	Spring 2021	Fall 2021
# of trips	7,834	6,489
Tonnes delivered	1,598	1,107
Tires delivered	1,543	1,205

[45] Landfill and Transfer Stations (greatersudbury.ca)

The City owns one active transfer station site, the Walden Small Vehicle Transfer Site, which is also operated under contract. The transfer station is open six days a week, from noon to 5 p.m. or noon to 7 p.m. (depending on the time of year) Monday through Friday and 8 a.m. to 5 p.m. on Saturdays. Although the hours of operation on weekdays are less than those of the City's other three landfills, its hours of operation match the landfill sites hours of operation during the two annual Residential Tipping Fee Holiday Weeks.

3.2.1.1 Landfill Diversion Areas

Each of the active landfill sites has a Waste Diversion Area where residents can bring the following materials to be reused or recycled:

- Appliances
- Blue Box recyclables
- Concrete and brick
- Electronics
- Leaf and yard trimmings
- Organic material
- Scrap metal
- Sod
- Wood waste
- Reusable cloth items
- Tires

Some of the materials are accepted at no charge including Blue Box recyclables, compostables (food waste, leaf and yard trimmings, and sod), scrap metal, electronics, appliances, tires and reusable cloth items. Concrete and brick as well as wood waste are accepted at reduced tipping fees.

The City provides publicly available compiled waste related statistics each year. Highlights from the 2021 document are provided below.

Table 3: Materials Received at City Landfill Diversion Areas in 2021

Material Type	Sudbury Landfill (tonnes)	Hanmer (Valley East) Landfill (tonnes)	Azilda (Rayside-Balfour) Landfill (tonnes)
Compostables	10,227	2,217	1,449
Cloth Diverted	5	3	4
Diverted at Reuse Store	16	18	12
Electronic Waste	176	45	47
Concrete and brick	519	238	156
Other wood waste	1,976	550	491
Scrap metal and white goods	579	332	380
Tires	134	79	73

3.2.2 Site Planning, Monitoring, Operation and Maintenance of Sites

The three landfill sites are planned, monitored, operated and maintained according to the conditions of their respective ECAs and reports are provided annually to the MECP. Each of the three sites have groundwater wells, surface water monitoring locations and/or landfill gas probes that are sampled at specified frequencies and reported to the MECP through the annual monitoring reports. These annual reports also document the site operations for the calendar year.

Once the landfill sites are filled to capacity and closed or non-operational, the City continues to be responsible for their monitoring and maintenance for approximately 25 years post-closure. The post-closure costs are estimated regularly for continued groundwater and surface water monitoring, maintenance of drainage structures, monitoring leachate and landfill gas and maintenance of the landfill cover.[46]

3.2.3 Closed Sites

The City is currently responsible for post-closure care of two closed landfill sites and two closed hauled swage sites which includes: Onaping and Nickel Centre Landfill Sites; and the Dowling and Dryden Hauled Sewage Sites.

3.3 Customer Service, Education and Miscellaneous Services

The activities of the Customer Service, Education and Miscellaneous Services sub-service includes providing customer service support; educational services (e.g., Waste Wise app, social media, website, mailouts, etc.); waste audits/ participation studies, field and home visits; facility tours, presentations and events; educational centre activities for school groups; school diversion programs, processing of fees and revenues (e.g., garbage bag tags, tipping fees); and stewardship/ EPR funding programs.

3.3.1 Customer Service

The City's "Waste Wise" app is an important customer service communication tool that informs residents on:

- Their garbage, recycling, leaf and yard trimmings and green cart collection schedule;
- How to properly sort specific items;
- Large furniture or appliance collection requests;
- Landfill, HHW Depot and Recycling Centre locations and hours;
- Booking Toxic Taxi appointments; and
- Available outlets to purchase bag tags.[47]

[46] Consolidated Financial Statements of City of Greater Sudbury 2021 (greatersudbury.ca)
[47] Waste Wise (greatersudbury.ca)

As of 2021, there were 31,600 waste wise app subscribers, including 19,748 new subscribers that year. A total of 524,727 searches to identify the appropriate waste stream were completed through the Waste Wise App in 2021. The top five materials searched were:

1. Garbage;
2. Pet waste;
3. Paper towels;
4. Clothes; and
5. Plastic bags.

In 2021, a total of 14,244 enquiries/requests were made through 311 to Environmental Services. The top three categories of citizen inquiries/requests in the division were:

1. Missed collection, for example:
    1.1. Garbage, recycling and organic waste not collected at roadside;
2. Other Environmental Services enquiries, for example:
    2.1. Complaints about waste out early/ at the wrong times;
    2.2. Requests for information such as a calendar or information package;
    2.3. Requests to reinstate service / new building applications;
    2.4. Inquiries on how to dispose of odd items not listed in the Waste Wise app; and
    2.5. Damage to property done by trucks / collection crews, etc.
3. Container requests, for example:
    3.1. Blue Box requests
    3.2. Green Cart requests[48]

[48] 2021 Statistics (greatersudbury.ca)

3.3.2 Educational Services

To provide residents with the necessary information to properly participate in its programs and receive services, the City offers a variety of promotion and education programs including:

- Direct mail letters, flyers or newsletters to residents (e.g., in December 2020 direct mail was used to inform residents of the transition to garbage and leaf and yard trimmings collection occurring every other week);[49]
- Oops Stickers attached to waste left at the roadside;
- Information sheets, flyers and posters at Citizen Service Centres;
- Public service announcements and use of media outlets such as newspaper ads (conventional and electronic), articles, local radio spots;
- City website;
- Social media posts, including Facebook, Instagram and Twitter;
- Outdoor signage;
- 311 services;
- Earth Care Minute Videos;
- Media releases and communications; and
- A printed waste collection day calendar is made available for residents without access to a computer or mobile device by request through 311.

In addition to communications tactics, the City provides educational programs that offer the opportunity for interested residents to learn more. These include:

Waste Wise App:

The Waste Wise App mentioned previously and web tools are an important way in which the City provides information to residents. The app is available on Google Play and the App Store, and its tools can also be used online. The "Garbage and Recycling Webpage" provides information on how to properly handle and dispose of waste items. The Waste Wizard feature allows users to type in a waste item and the program generates specific handling and disposal instructions. The tool is also useful internally, as employees, particularly 311 operators, are able to use it while responding to customer service inquiries.[50] An instructional video is provided to explain how to download and use the app.

[49] Greater Sudbury Operations Committee Meeting Monday September 14, 2020, 25
[50] Educational Resources (greater sudbury.ca)

Sudbury Landfill Livestream:

An innovative solution was put in place when longer-than-usual line ups to access the Sudbury Landfill were experienced during the pandemic. In order to inform residents of how busy the site entrance is, before they set out to visit the facility, the City installed a live camera stream at the Sudbury Landfill. This unique way of interacting with residents improves the customer experience by helping people avoid line ups and eliminates emissions from vehicles waiting in line. The tool has proven to enhance customer satisfaction and has drawn significant attention from the public.

Home Visits:

Residents can request an at-home visit from a solid waste expert to learn about the programs and waste diversion options the City offers. Through this service, residents can receive specific information to help them properly sort their waste and set it out correctly.

Field Visits:

When a specific issue occurs, such as excessive garbage observed on a property, a Field Officer visits the individual(s) responsible and provides education and/or enforcement measures to resolve the issue.

Presentations:

City staff support in-person learning through presentations and displays at various functions and locations. Green Cart and Blue Box mascots (**Figure 10**) are used to draw the public's attention and to create a fun atmosphere.

Figure 10: Mascots Visit the City's Education Centre

Education Centre:

An education center with an interactive board is included at the administration office located at 1805 Frobisher Street. This center is used to educate school aged children on recycling and waste diversion programs. Programming is coordinated through schools and mascot characters (**Figure 10**) are used to raise interest.

The City provides specific activity plans for teachers that are aligned with the Ontario school curriculum and hands-on and interactive board learning tools have been developed for school aged children in grades three to five. Recommended school activities support teachers in providing accurate waste management information as part of science and technology educational requirements. The recommendations equip students to participate in school and residential diversion programs which reinforces their learnings and allows children to convey messages to their families and the community at large.[51]

School Programs:

Tours, activities and presentation sessions are available for any grade that requests it. The City provides outreach and education to teachers, schools and educational institutions to support waste diversion. School-based programs are also designed to on-board the public to organics waste diversion. Schools are able to join the Organic Composting in Schools Program through an on-line form.[52]

Figure 11: Mascots Visit Elementary School

[51] Solid Waste Management Plan (greatersudbury.ca)
[52] Educational Resources (greatersudbury.ca)

The number of events, presentations and outreach activities was significantly reduced due to the COVID 19 pandemic. Activities have resumed and steadily increased through 2022 as public health restrictions have been reduced.

3.3.3 Cost Recovery and User Fees

Revenue to support the integrated waste management system is incorporated in the City's operating budget. The most significant revenues are from landfill tipping fees, funding from IPR programs, user fees for services provided to HDR buildings and, the sale of landfill gas. Other less significant cost recoveries are generated from non-residential programming, sale of bag tags and equipment as well as enforcement activities.

Landfill tipping fees provide the largest revenue to the City and amounted to approximately $5.6 million in 2021. City customers who pay tipping fees include residents and commercial customers. Revenues derived from landfill sites also include revenue that the City receives for the sale of landfill gas and items diverted from the landfill, specifically, revenue from the sale of wood chips and compost sold to residents.

Garbage collection and disposal fees charged to owners of HDR buildings that have registered for municipal waste collection agreements contributes approximately $1 million in cost recovery to the operating budget. User fees for roadside recycling and organics at small non-residential establishments generated approximately $15,000.

The City applies tipping fees when residents and commercial customers drop off garbage. Residents receive a weekly 50 kg tipping fee exemption. After the first 50 kg, a flat rate of $3.50 is applied for residential loads weighing 100 kg or less, and then a rate of $100 per tonne is applied. If garbage loads contain significant amounts of Blue Box recyclables, scrap metal or electronics, if the load is odorous, or if asbestos is delivered, additional rates apply.[53]

The City also recovers its costs through the following:

- Garbage bag tags, which are available for residential customers at a cost of $10 for five garbage bag tags. In 2021, 77,470 garbage bag tags were sold, for a total of $154,940;
- Landfill gas, which varies from year to year. In 2021, the sales generated in revenue of approximately $293,000 to the City's budget;
- The sale of Big Blue recycling containers which are sold at a subsidized cost of $10 per container and contributed approximately $21,000 of cost recovery in 2021;
- The sale of composters and kitchen containers (approximately $4,000); and
- Non-residential roadside garbage collection programs.

[53] Landfill Fees (greatersudbury.ca)

3.3.3.1 Processing Revenues

Blue Box Processing

The City owns the MRF and currently contracts the operations to Waste Connections of Canada. The lease and operation of the MRF was recently tendered and will transition to HGC Management Ltd on February 5, 2023. Recyclables are sorted, baled and sold to various recycling end-markets. The City's operating contract prior to transition to full producer responsibility in April 2025 includes a revenue-sharing arrangements whereby the net revenue from the sale of recyclable material is split equally between the contractor and the City. Recyclable materials are a commodity that are subject to market fluctuations and volatility.

The City's portion of revenue from the sale of recyclable from 2018 to 2021 is detailed in **Table 4**.

Table 4: Revenue from Sale of Recyclables

Year	Revenue
2018	$461,657
2019	$376,853
2020	$127,583
2021	$705,848

After transition to full producer responsibility, revenue sharing arrangements will cease to exist.

Leaf and Yard Trimmings

Leaf and yard trimmings collected at the Sudury Landfill Site are provided to Vale which avoids some processing costs that the City would otherwise incur.

Leaf & yard trimmings received at the Hanmer and Azilda Landfill Sites are composted and sold to the public or used for internal processes in lieu of importing virgin materials.

Approximately 42 tonnes of wood chips were collected and marketed at $13 per tonne in 2021.

3.3.3.2 Steward/EPR Program

On April 1, 2025, the City will no longer be responsible for the provision of Blue Box recycling, as responsibility will transition to an IPR program that makes producers fully responsible for the cost to recycle their products and packaging. Until that time, the City receives funding for approximately 50 percent of the cost to manage the residential blue box recyclables it collects and processes. With the wind up of Waste Diversion Ontario, RPRA funds producer responsibility programs including not only the Blue Box program, but also its other diversion programs.

Funding allocations from the provincially mandated partial producer funding program for Blue Box vary from year to year. **Table 5** below provides the residential Blue Box funding received by the City for 2017 to 2022.

Table 5: Residential Blue Box Funding Received by the City for 2017 to 2022

Year Funding was Received	Amount of Funding Received (nearly 50% of costs for eligible sources)
2022 (for 2020)	$3,612,539 (estimated)
2021 (for 2019)	$2,556,618
2020 (for 2018)	$2,513,148
2019 (for 2017)	$2,622,938
2018 (for 2016)	$2,403,328
2017 (for 2015)	$2,026,790

The City provided recycling processing services to other Ontario municipalities and First Nation communities by agreement. Full costs for this service are recovered and resulted in a cost recovery of approximately $26,000 in 2021.

In addition to Blue Box funding, the City receives approximately $247,000 for other diversion programs overseen by RPRA, including used tires, electronics, HSP and battery programs.

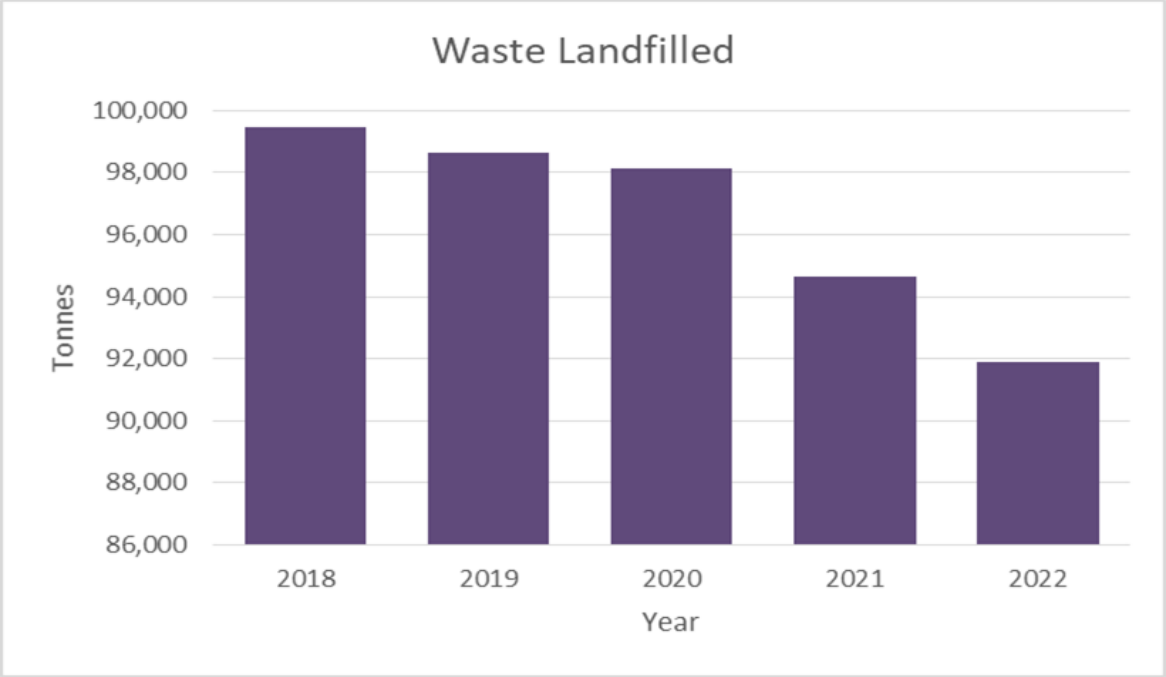
3.4 Current Metrics

The City collects data on the quantity and composition of waste that it manages and has several key performance indicators which are discussed in this section. This data is used to measure performance and to report to various agencies for the purpose of receiving funding or meeting compliance obligations.

3.4.1 Waste Quantities

Over the last five years, the City has landfilled an average of approximately 97,000 tonnes of garbage per year. Landfilled waste is distributed within the City's three landfills. **Figure 12** presents the total quantity of waste landfilled annually from 2018 to 2022, including both residential and non-residential waste received. It should be noted that there was a reduction in waste disposed beginning in 2021 and continuing in 2022. This reduction can be attributed to the changes in waste collection policies that reduced the bag limit and changed the garbage collection frequency from weekly to every other week.

Figure 12: Waste Landfilled



The City reports residential waste generation, disposal and diversion data to RPRA through the Datacall program (a common reporting framework for Canadian municipalities). In addition to recycling information, data is collected for other diversion programs and a residential waste diversion rate has been estimated based on 2021 data reported to RPRA. This is presented in **Figure 13** based on the method used by RPRA.

The RPRA Datacall estimates the City's residential waste diversion rate is 46 percent in 2021. Diverted waste is categorized into Blue Box materials, organics, reuse, HHW recycled, Deposit Return Program (materials diverted through the Ontario Deposit Return Program) and At-Source Reduction. At-Source Reduction involves waste reduction on residential properties.

Figure 13: RPRA Datacall - 2021 Residential Waste Diversion and Disposal Rates

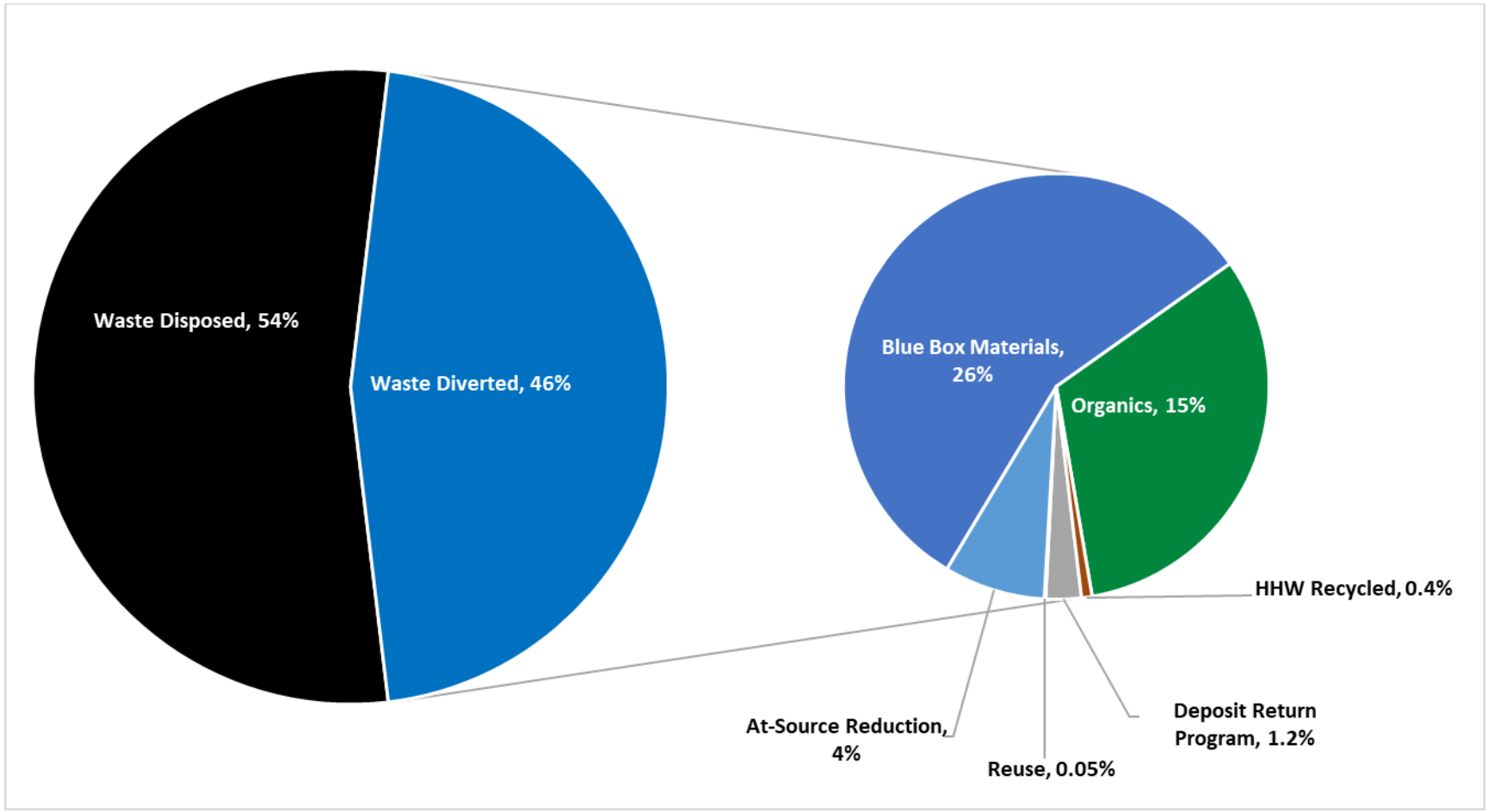


Figure 14 presents the average distribution of compostables between 2018 and 2021. On average, the City manages 13,250 tonnes of compostable materials each year. The majority of this waste stream is comprised of leaf and yard trimmings followed by the Green Cart organics roadside collection program.

Figure 14: Average Compostables Distribution (2018-2021)

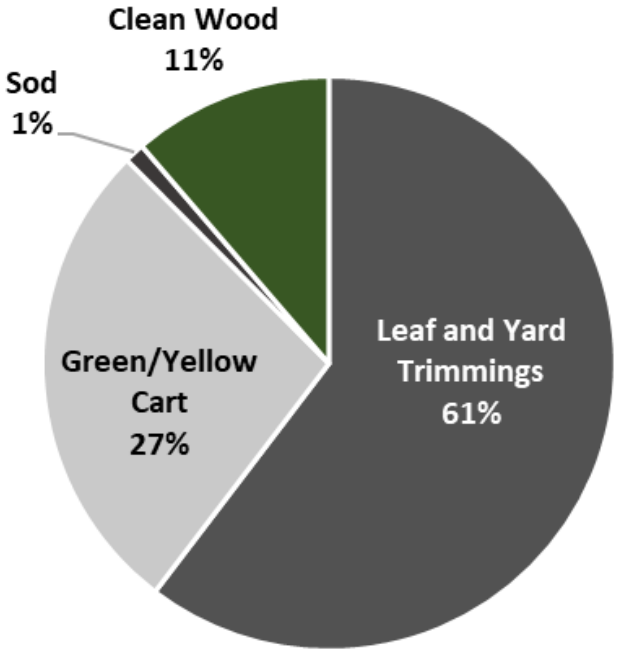
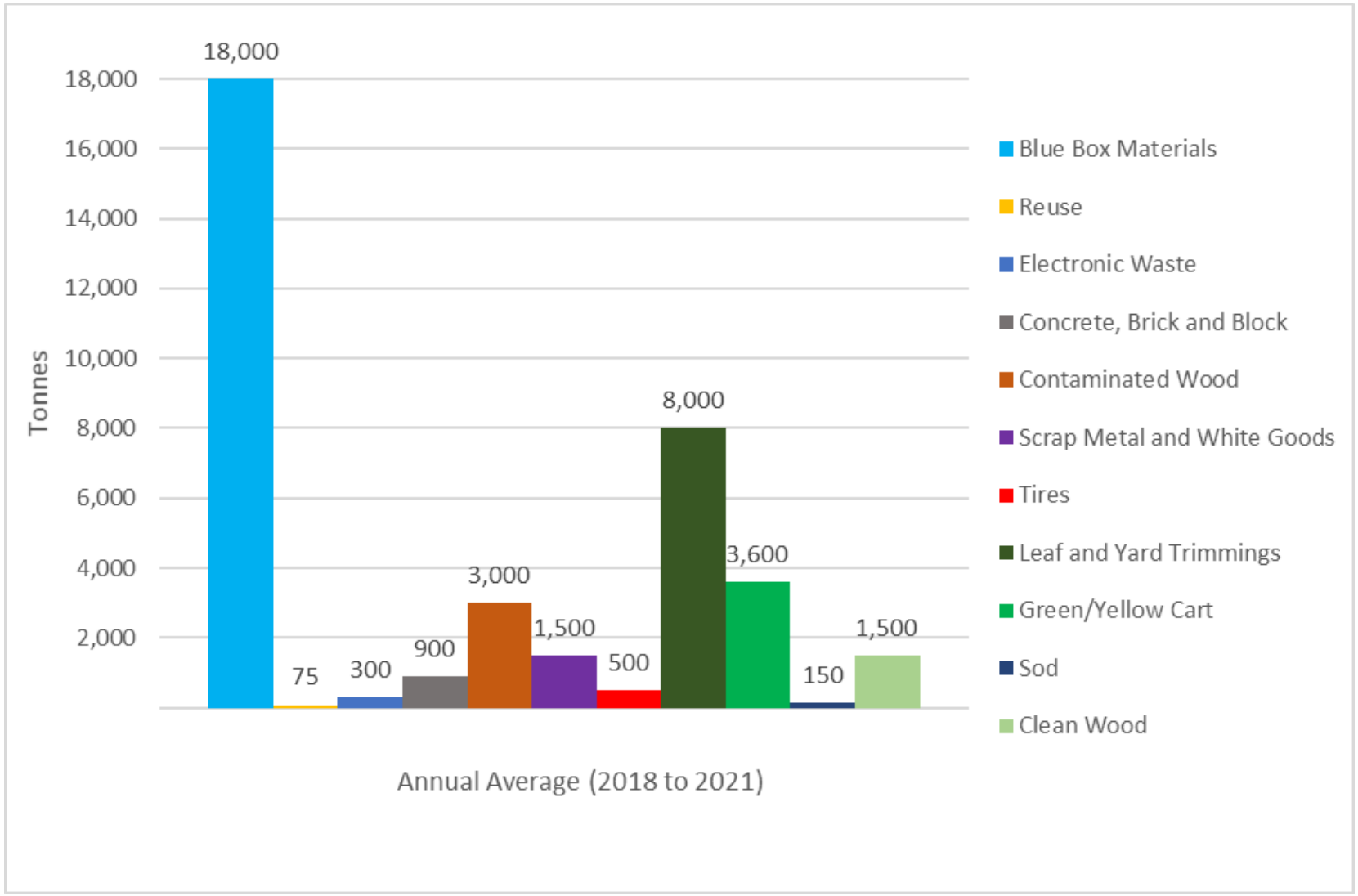


Figure 15 presents the average quantities of waste diverted per year through the City's integrated waste management system between 2018 and 2021.[54]

[54] City of Greater Sudbury. Internal Document. 2022 WPD Divisional Stats

Figure 15: Average Quantities of Waste Diverted (2018-2021)

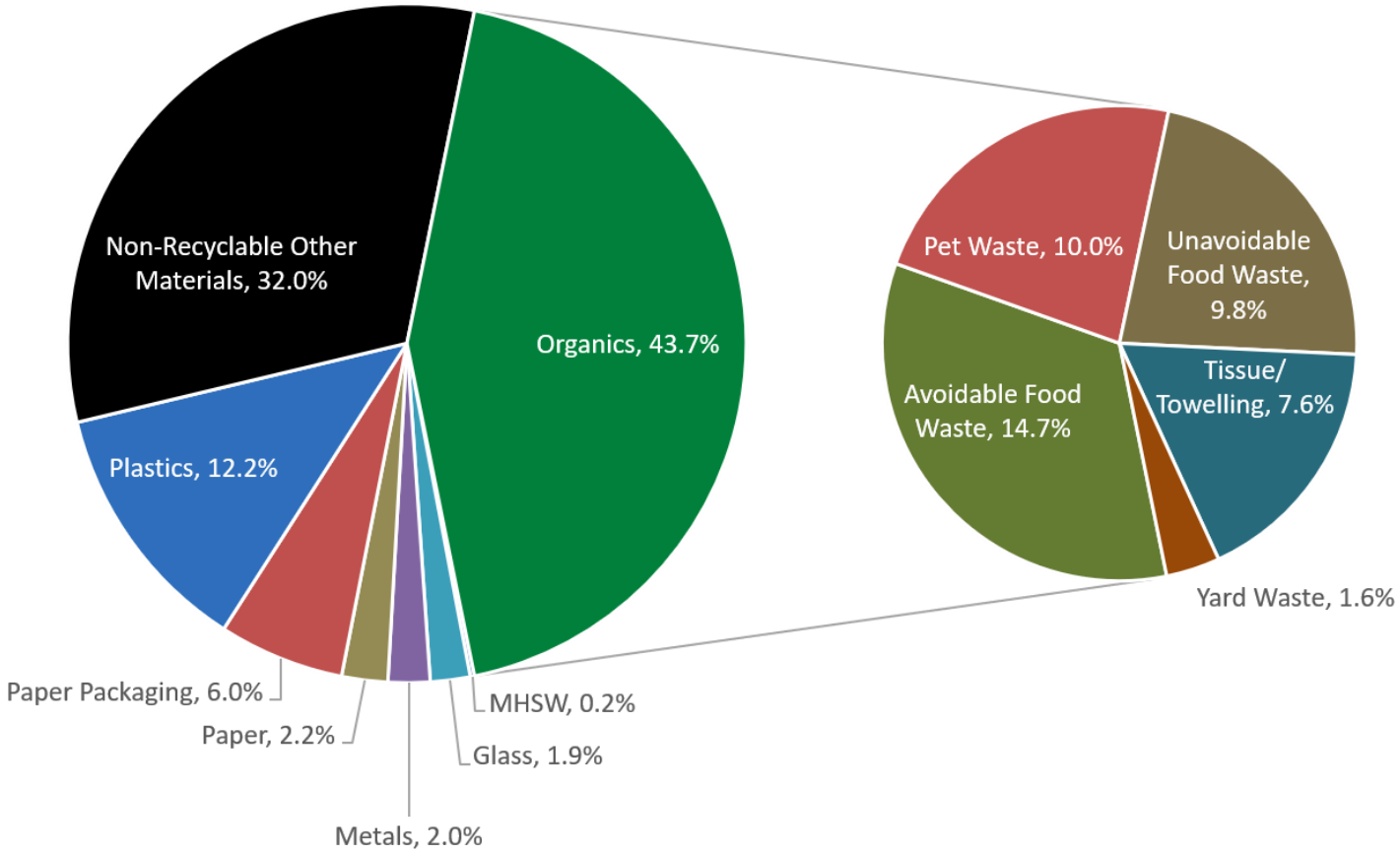


3.4.2 Waste Composition

The types, quantities and composition of the products and packaging discarded by residents and local businesses changes over time as new products enter the marketplace. Municipalities and other agencies periodically undertake studies of the residential waste stream to understand these changes and aid with their long-term waste management planning and program performance assessment efforts.

The Continuous Improvement Fund (CIF) is a partnership initiative between Ontario municipalities and producers that undertakes annual four-season waste composition studies in selected municipalities across Ontario. The CIF recently published its 2020/2021 single-family residential curbside waste composition studies. The data is categorized into eight groupings of similar municipalities. Using data from the CIF's urban regional dataset (which is most aligned with the type of collection services offered to single-family households by the City), the composition of the City's residential waste stream can be extrapolated. Based on waste composition results from this group, 44 percent of landfilled waste consists of divertible organics consisting of avoidable and unavoidable food waste, pet waste, soiled paper products and yard waste. Avoidable food waste refers to food that could have been eaten but thrown away (e.g., stale bread, rotten vegetables) and unavoidable food waste refers to items such as egg shells and bones. The City's Green Cart program does not currently accept pet waste given the current organics processing approach. **Figure 16** illustrates a breakdown of the residential garbage composition for the CIF's Urban Regional municipal group, including the composition of organics within the garbage stream.

Figure 16: Garbage Composition of Urban Regional Municipal Group, CIF Report 2020/2021



3.4.3 Key Performance Indicators

Waste Diversion Rate

As discussed earlier, the residential waste diversion rate is the metric used in most Ontario municipalities because data required to generate it is reported through RPRA annually. When compared against other municipalities and when traced over time, the City's waste diversion metric provides an indication of how well programs and services are performing in terms of their success in keeping materials out of the landfill.

The tonnage of materials collected through the Blue Box and Green Cart programs, garbage collection, and other quantities required for the Datacall GAP summary (e.g., leaf and yard trimmings and grass clippings that are left on lawns) is gathered on an annual basis and is used to determine the City's residential diversion rate and to determine the kilograms of residential waste diverted per household.

According to RPRA, some municipalities out-perform others when it comes to diversion rates and in 2020, only 27 of 99 programs that reported through RPRA's Long-Form Datacall had diversion rates above 45 percent.[55] Based on the Datacall, the City's residential diversion rate was 43 percent in 2020 and 46% in 2021.[56]

The City's Waste Optimization Study, conducted in 2005, aimed to identify ways to increase the overall municipal waste diversion rate to 65 percent overall, as well as reducing greenhouse gas emissions associated with the delivery of waste management programs.[57] At the time, the City's overall waste diversion rate (as opposed to the GAP residential waste diversion rate) was just 17 percent and the residential diversion rate was 28 percent.[58] Improvements since 2016 have been attributed to a number of factors. For example, policy changes approved by Council have limited the number of garbage bags from three to two in 2016, two to one in 2019 and changed the garbage collection frequency from weekly to every other week in 2021. In addition, the Green Cart Program was launched in 2009.

[55] Datacall_Report_2020_Web_FINAL-updated.pdf (rpra.ca), 4
[56] 2022_Budget.pdf (greatersudbury.ca), 232. RPRA's 2020 Datacall Report indicates an overall diversion rate of 49.5% across Ontario; Datacall_Report_2020_Web_FINAL-updated.pdf (rpra.ca)
[57] Final Report Waste Optimization Study, 2
[58] Final Report Waste Optimization Study, 1

Participation Studies

The City conducts Participation Studies that gather data on the number of households participating in waste diversion programs and the amount set out for roadside collection.

The studies collect data on waste set out over four consecutive weeks within select geographical areas within the City. In 2022, 2400 householders of the City's 62,000 households, were included in the study, making the findings are statistically significant (i.e., a 95% confidence rate and 2% margin of error).

The City uses the results of the Participation Studies to identify the impacts of changes to policies and programs. The results support the City in developing best practices for the future management of waste.

Participation Studies are available on the City's webpage.[59]

Other Measures

Customer service, education miscellaneous services tracks annual statistics that gauge the level of interest and involvement of residents and effectiveness of promotion and education tactics. This includes tracking:

- Usage of the City's Waste Wise app;
- Calls received through 311;
- Presentations, events, and tours;
- Garbage bag tags sold;
- Field visits;
- New customers, such as new schools participating in the Green Cart organics program, which can be used both for assessing the appeal of the program and for forecasting operational needs such as processing capacity;
- Participation rates in roadside collection programs; and
- Number of customers accessing the landfills to understand trends, and expected future service provision/ capacity needs.

[59] Reports and Publications (greatersudbury.ca)

Waste Processing and Handling and Garbage Disposal sub-services perform important monitoring functions so that the performance of the system can be evaluated. This includes tracking tonnages received for:

- All waste streams;
- Toxic Taxi and other household hazardous waste collection;
- Material processing, quantities of waste disposed and diverted;
- Number of customers at landfills; and
- Drop-offs during regular operations and during the spring and fall Tipping Fee Holiday weeks Holidays".

In addition, operational performance indicators are tracked to ensure that the landfills are well maintained. This includes waste density monitoring and annual reporting on the number of landfill gas probes, groundwater wells, and surface water sampling points.

The number of kilometres driven per month, as well as the hours driven is gathered for garbage and leaf and yard co-collection and recycling and organics co-collection. Monthly fuel consumption is also documented for use in tracking performance.

To assess its performance against compliance requirements, service standards and the City's own goals, Environmental Services is responsible for gathering and documenting statistics on an annual or monthly basis. This includes gathering information from various sources, as the integrated waste management system relies on efforts across all sub-service sections.

Mainly through Solid Waste and Litter Collection, performance-related tracking involves monitoring of the number of:

- Litter containers and quantities collected;
- Adoption groups;
- Clean-up Blitz events that are adoption groups;
- Yellow Boxes, Bags, Carts;
- Diaper exemptions;
- Cloth diaper rebates;
- Medical exemptions;
- Pet digester rebates;
- Approved Animal Resistant Container (Rent-to-Own & Subsidy);
- Number of customers, including HDR and LDR (number of collection agreements for HDR's and multi-type);
- Bag tags;

- Blue Boxes provided;
- Big Blues sold;
- Green Carts provided; and
- Home composters sold.

3.4.3.1 Consideration of New Metrics

Prompted by a growing trend in the packaging industry to produce light-weight packages, and as a result of Ontario's Blue Box Regulation 391/21, which transitions responsibility for the Blue Box program from municipalities to producers, municipalities are considering new metrics to assess the performance of their integrated waste management systems and diversion programs. This section describes various metrics, used or under consideration, by municipal waste managers and will be further explored in future phases of the SWMMP update.

Diversion Rate

The current metric used by municipalities to measure their overall performance is known as the residential diversion rate, or overall diversion rate which includes non-residential sources. A diversion rate is a measure of the percent of materials that are diverted from landfill (i.e., not sent to landfill) because they are managed in other waste streams (i.e., organic waste, recycling, etc.).

The residential diversion rate is expressed as a percentage and calculated as:

$$\frac{\text{Weight of materials diverted from landfill from residential customers (tonnes)}}{\text{Weight of total materials managed from residential customers (tonnes)}}$$

One reason why diversion rates are used by municipalities is because of legislative requirements to report to the former Waste Diversion Ontario's Datacall. Since municipalities provide the total tonnage of materials managed through waste diversion programs to RPRA, diversion rates are readily available and calculated consistently across municipalities.

As divertible materials move out of municipal jurisdiction to the private sector, so does the data used to calculate the diversion rate to measure municipal waste diversion performance. New performance measures are being introduced to waste management systems as a result of the Resource Recovery and Circular Economy Act, and its introduction of individual producer responsibility. With the phase-out of programs under the former Waste Diversion Ontario, municipalities will no longer be required to report to RPRA's Datacall program.

Program Participation

In addition to diversion rates, the City of Greater Sudbury currently collects data on participation rates for its diversion programs. Participation rates can be an important indicator of the success of promotion and education programs as well as the accessibility and appropriateness of diversion programs. This metric is also useful in that it does not rely on a tonnage measurement, which is impacted by changes to products and packaging.

Service Standards

Performance can also be measured based on how well the City meets its service standards in 2021, the City met its service level expectations on the basis of waste tonnages collected, number of Toxic Taxi pick-ups performed and ability to respond to inquiries.[60]

Disposal Rate

An example of another metric to measure a municipality's overall success in reducing the amount of waste sent to landfill, could be the total tonnage of waste disposed per person or per household. This can be estimated by taking the total weight of waste disposed and dividing it by the total population or number of households.

This metric is relatively simple, as it only involves gathering data on waste disposed in landfill and population. However, like the diversion rate, tonnes of waste to landfill per person would still be a weight-based metric, and would therefore be impacted by the types of materials disposed (e.g., a mattress is a bulky item that takes up more landfill space as compared to a similar mass made up of household products and packaging, or a very dense material such as rubble). However, this metric would take into account source reduction initiatives such as purchasing products with less packaging, reuse, repair, etc. that is not considered in waste diversion calculations.

[60] 2022_Budget.pdf (greatersudbury.ca), 232

4 Municipal Best Practices Review

A sub-report was provided to the City to provide examples of best practices in other municipalities and in the waste management industry. To support continuous improvement, this sub-report looks to other jurisdictions and presents research on solutions that can inform how the City could enhance its integrated waste management system (IWMS) in the coming years. A range of municipalities were selected for best practices research including large and small municipalities mostly located in Ontario. Leading municipalities comparable to the City were selected for research so that the findings are relevant and effective in achieving waste reduction.

Following consultation with City staff, research was conducted to support the City in exploring its options related to the following:

- Partnerships and end market opportunities to increase diversion;
- Mechanisms to increase diversion from apartments, condos and townhomes;
- Policies and compliance mechanisms to increase diversion;
- Landfill techniques and technologies to prolong landfill life and maximize their value;
- Aerobic organic waste processing technologies and funding; and
- Automated Collection Systems.

The following sub-sections provide descriptions of these areas of focus and potential solutions or ideas.

4.1 Partnership and End Market Opportunities to Increase Diversion

To expand on current diversion efforts, the City requires agreements with end markets and processors that can accept and process materials that are collected by the City. As a Northern community, high transportation costs and transportation-related emissions are an additional consideration to finding sustainable end markets for items that can be recycled.

The research presented in the sub-report is intended to support the City in exploring potential partnerships to find and develop opportunities so that more waste can be diverted into secondary markets or reuse programs. Collectively, the research describes an approach that involves working together with other jurisdictions, organizations or private enterprises to advance recycling markets.

Possible solutions include:

4.1.1 End Use Market Development Collaboratives

This solution involves municipalities collaborating with others (e.g., businesses, institutions) to spark change through research and innovation that promotes the development of end markets for hard to recycle materials, preferably at the local level.

4.1.2 Building Support for End Markets through Procurement

Municipalities can drive market change through procurement processes. In asking for goods and services to be provided in a way that aligns with circular economy principles and climate change goals, cities can communicate their ambitions, goals and targets, and indicate that such innovation is valued. This research focuses on how municipalities are collaborating to build stronger green procurement policies and purchasing power.

4.1.3 Private Sector Development of End Markets

This research demonstrates how private sector initiatives support the growth of end markets for materials such as organic and agricultural wastes, including how privately owned facilities can accept feedstock from public and private sector clients to enhance diversion of food waste.

4.2 Mechanisms to Increase Diversion from Apartments, Condos and Townhomes

The City currently has service agreements for waste collection with property owners/ managers of HDR buildings. In other jurisdictions, waste diversion programs in apartments, townhomes and condos are typically characterized with low capture rates, low participation levels and high contamination rates.

Potential approaches to address this issue include implementing policies, providing guidelines, and developing by-law requirements. For example, targeted P&E programs, campaigns and policies relating to system design can help to reduce contamination in waste streams by educating occupants and making diversion more convenient.

4.3 Policies and Compliance Mechanisms

Updating policies and by-law provisions has the potential to solicit more participation in, and compliance with, waste diversion programs. Mechanisms could include a switch to clear bags, limiting the number bag tags allowed, and roadside enforcement approaches.

4.3.1 Clear Bag Programs

A clear garbage bag program requires households to use transparent bags for roadside garbage collection. This approach encourages residents to participate in waste diversion programs as the clear bag allows collection crews and enforcement staff to see if residents put divertible material in their garbage. Based on the established contamination threshold, the collection crew may leave the bag of garbage behind if its contents exceed the permitted amount of divertible materials. Furthermore, a clear bag program can increase worker health and safety since staff are able to see potentially toxic and dangerous materials in the garbage (e.g., sharps, household hazardous waste).

4.3.2 Regulating Donation Collection Bins

This research demonstrates that municipalities can regulate the collection of donation materials by requiring licenses for organizations to collect materials through collection bins approved by the municipality. If an unlicensed company installs a bin, the municipality can remove it. Regulation of donation collection bins helps residents trust that their donated materials are used appropriately, creating more participation in donation programs.

4.3.3 User Fees/User Pay Systems

In general, most solid waste systems in Ontario are funded primarily through property taxes and costs recovered from the sale of recyclables, public drop-off fees, and other general user fees. Some municipalities have funded their solid waste systems through a combination of user fees, grants and subsidies, property taxes and sales from recyclable materials.

Several Ontario municipalities are reviewing funding approaches such as full user pay, partial user pay options (meaning a rate based charge is applied to collection services) or a variable user pay system (fees vary based on the quantity of garbage disposed).

4.3.4 Enforcement and Incentive Based Programs

Municipalities have implemented enforcement and incentive based programs to improve residential waste diversion. In terms of enforcement, staff record the addresses of residents with poor diversion and within a few hours of collection, trained canvassers visit targeted households, providing immediate feedback on the problem(s) encountered. During the visit, canvassers develop a waste reduction approach that helps residents to reduce their waste and participate in the municipality's waste diversion services effectively.

Additionally, some municipalities have launched an incentive program to reward and recognize residents who reach or exceed waste diversion goals. Residents are encouraged to complete an on-line registration form and municipal staff can draw the name of one resident and perform a visual audit on their household waste. Residents who achieve the audit goals receive a reward and recognition.

4.4 Landfill Techniques and Technologies

In Ontario, there is a shortage of landfill capacity. While the City is comparatively well position in terms of its landfill capacity, it is critical that landfills are well maintained and efficiently utilized, since the availability of capacity elsewhere in Ontario is extremely limited. Employing techniques and technologies to extend landfill life, as well as the collection of landfill gas, ensure that the City's landfills remain valuable assets.

Best practices research has been conducted to review landfill techniques and technologies to extend the life of landfills, while also exploring options for Hanmer and Azilda landfills to collect landfill gas for use in generating electricity or renewable natural gas (similar to how the Sudbury landfill has a landfill gas system that processes the gas to produce energy).

4.4.1 Landfill Space Optimization

Municipalities have explored options to extend the life of landfills by optimizing landfill space such as:

- Adopting new technology to optimize compaction rates;
- Shredding/baling system to reduce waste volumes prior to landfilling;
- Leachate recirculation to increase settlement;
- Diverting mattresses and box springs; and
- Landfill mining.

4.4.2 Landfill Gas (LFG) Collection

Several municipalities have been reviewed for their approaches to managing LFG. Examples included implementing passive systems at closed site and landfill cells as they are a cost-effective and low-maintenance solution as well as active systems that involve partnerships with industry and/or utility companies.

4.5 Opportunities for Organic Waste Processing

Green/Yellow Cart organic waste is taken to the Sudbury Landfill and processed through aerobic composting, using a window system. Because the City has limited capacity for processing the quantity of organic waste that could be received, other options for organic waste processing are being explored.

The sub-report provides examples of municipalities that have implemented or evaluated several options for processing organic waste including co-digestion, anaerobic digestion (AD) and cover system technology (a type of aerobic organic waste processing).

4.6 Automated Collection Systems

Implementing automated collection systems requires changes to both collection vehicles and the way in which residents set out their waste, as wheeled carts are needed. Some of the examples researched indicate municipalities have identified the use of a fully and semi-automated collection system as an opportunity to:

- Reduce litter;
- Increase the quantity of waste set out per collection and improve collection efficiency (i.e., pick up more at a time);
- Decrease the risk of injuries associated with waste collection duties (such as heavy/ dangerous loads and repetitive motions);
- Reduce the frequency of container replacement (e.g., produce wheeled carts under warranty); and/or
- Provide convenience to residents (e.g., by providing a wheeled container).

5 Engagement and Consultation

Engagement is an important part of the Greater Sudbury Sustainable Waste Management Strategy, as waste management starts in the community, with individual actions making a direct impact on the waste management system. Phase 1 engagement and communications for the Sustainable Waste Management Strategy focused on launching the project and building awareness, generating interest and excitement, gathering feedback on the current waste management system, understanding priorities for the future of waste management, and understanding what's working well and what can be improved. To achieve this, outreach and engagement activities focused on gathering feedback from diverse participants from across Greater Sudbury. This included launching an online survey and the project engagement page on the City's Over to You web page and engaging with community groups, organizations, businesses, and waste management staff through a series of workshops.

5.1 Purpose of Engagement

Throughout the project process, community input and feedback will inform the technical work for the Strategy. Gathering ideas and understanding needs and priorities is important in determining what programs and initiatives the City should consider for the future of waste management. The purpose and overall goals of the engagement program are to ensure that the Strategy update incorporates input from the public, to clearly communicate technical information, be transparent about the implications of the decisions being made, provide an understanding of what happens after our garbage, recycling, and compost leaves the roadside, and to create personal accountability and responsibility to save landfill space and reduce environmental impacts. In order to achieve the goals and purpose, the engagement program includes four phases of work:

- Phase 1: Assess the Current State. Phase 1 will consider:
  - What does the City's existing waste management system look like?
  - What are its strengths and pressing issues?
  - What are the priorities for waste management in the future?
- Phase 2: Envision Future State. Phase 2 will consider:
  - How will the City manage and divert waste in the future?
  - What vision and guiding principles will be adopted?
  - What programs and initiatives should the City implement to divert waste?

- Phase 3: Determine How to Achieve Goals. Phase 3 will consider:
  - What gaps, challenges and opportunities lie ahead?
  - Are there options for the future state of the waste management system that are aligned with the guiding principles developed in Phase 2?
- Phase 4: Develop the Sustainable Waste Management Strategy. Phase 4 will consider:
  - What options will be carried forward as recommendations to Council?
  - When could the options be implemented?

5.2 Engagement Activities

Engagement activities were designed to reach a broad and diverse audience using both online tools and virtual meeting platforms. The following sections outline the key engagement activities completed during Phase 1 and what was heard.

5.2.1 Technical Advisory Committee

On June 21, 2022, the Technical Advisory Committee (TAC) participated in an activity that identifies strengths, weaknesses, opportunities and threats (SWOT) within the current waste management system.

The themes that emerged from the exercise have provided insight into staff's perspectives on what is working well currently and where there is opportunity for changes. City staff are proud of their comprehensive waste management system. This is substantiated by the following comments received from City staff:

- The unrestricted quantity of recycling, organics and leaf and yard waste allowed from residents;
- Most divertible materials are received and processed at no cost to businesses, institutions and residents when received at the Recycling Centre, landfill sites and transfer station;
- Provision of unlimited Blue Box and Green Cart collection containers for residents;
- The collection day being the same for multiple waste streams;
- Depots available in rural communities;
- Toxic Taxi service for household hazardous waste collection;
- Diversion program available for electronic waste;
- Support programs, including additional collection and rebates to encourage reuse, that serve residents with diapers, medical waste and pet waste; and
- A reuse store located at the landfill site.

In addition to highlighting the strength of diversion services and service delivery, City staff noted that communication with residents is an important element that makes the current integrated waste management system operate effectively. Collaboration with 311 (which has online live chat capabilities), the Waste Wise app, and web content allow the City to effectively communicate with the public about its programs. Staff also put forth the idea of providing more outreach to residents, particularly those at high density residential (HDR) properties to increase participation in diversion programs.

The City's leadership in waste diversion was highlighted too and staff are enthusiastic about potential opportunities to reach environmental goals, particularly those related to the CEEP, and in developing partnerships to engage in new opportunities. In summary, staff noted:

- Research and development initiatives could be undertaken in partnership with educational institutions;
- Partnerships with local businesses and industry organizations (such as Vale and Glencore) could be further explored, and could result in a solution for the City's need for more organic waste processing capacity; and
- Investments to support CEEP goals could include a transition to electric fleet vehicles and anaerobic digestion technology.

The TAC also put forth policy ideas that would support the public in being more attentive to the quantity of waste they dispose of in the garbage. Given this feedback, the SWMMP update could explore options that would involve:

- Financial structure based on fees that are determined by disposal rates rather than tax-base. For example, this could include fees charged at the gate at the landfill sites, or a move to a partial or full rate-based system;
- By-law requiring the use of clear bags for garbage limiting the amount of recyclables and organics that could be placed in the garbage;
- Curbside/roadside limits on garbage, which could be administered through a restriction on the number of bag tags;
- Promotion and education campaign centered on processing and disposal costs;
- Identifying efficiencies in the collection of large furniture, appliance and electronics and the delivery of HHW services; and
- Approaches to reduce the volume of garbage and increase diversion from HDR;
- Policies and infrastructure changes that would increase organic waste processing capacity and increase diversion from IC&I;
- Expanding diversion of C&D materials.

From an operational perspective, the key challenges to the waste management system can be addressed by increasing organic waste processing capacity, automating waste collection and advancing promotion and education. A mix of comments also highlighted the importance of extending the lifespan of the City's landfill assets. Staff were interested in exploring additional methods to improve the landfill's design and engineered features (e.g., leachate collection system).

While circumstances and events that are less controllable, including inflation, climate change impacts and relative isolation of the area, put some limitations on the City's ability to implement changes, the SWOT activity highlighted the wealth of knowledge, ideas and enthusiasm for updating the SWMMP and implementing actions that strengthen the waste management system in Greater Sudbury.

5.2.2 Survey #1 Findings

To engage with the public online, a survey was launched to gather input on the current state of waste management in Greater Sudbury, and understand priorities for the future of waste management, what's working well, what's not working, and what people like and dislike about the current waste management system.

The survey launched on February 3, 2023 and closed on February 24, 2023. Overall, 187 survey responses were received with the majority of respondents living in Sudbury (150) and others owning a rental property, own or representing a business and a post-secondary student. The majority of respondents live in single detached homes (131). There was a good mix in age demographics among the respondents with seniors (55 years old and older) representing almost 70 of the respondents and 82 responses from those between 25 and 54 years old.

Key themes and input received from survey participants are summarized below.

The first question asked participants to rank select priorities in terms of what was most important with an option to add other priorities. Top priorities identified by participants for the future of waste management include:

- Environmental sustainability;
- Convenience of disposal services;
- Progressive waste management programs that divert more; and,
- Cost to taxpayers and efficiency of service.

Other priorities for the future of waste management include:

- Reducing litter;
- Promoting ways to reduce animal interference in waste placed at roadside;
- Meeting Community Energy and Emissions Plan goals; and,
- Promoting a circular economy.

Respondents were asked if they have used or were aware of a list of current waste management programs. The programs most used by participants include:

- Tipping fee "holidays";
- Waste Wise Website and Mobile App;
- Toxic Taxi; and,
- Furniture, appliance, and electronic collection program.

Overall, participants noted a lack of awareness of the following programs:

- Cloth diaper rebate;
- Animal resistant waste storage container (subsidy or rent-to-own);
- Home visit program; and,
- 3Rs Curriculum for grades 3-5.

Respondents were asked where they heard of the programs they were aware of. Information sources identified by participants included:

- Website search;
- Word of mouth (not City staff);
- News media (e.g. newspaper, TV);
- Waste Wise App; and,
- Social media.

Respondents were asked to identify how often they used waste facilities in the past 12 months. Most participants identified that they use drop-off for garbage at landfill sites and/or Small Vehicle Transfer Station more than once in the past year. Most participants identified that they never used the following sites in the past 12 months:

- Drop-off for diversion at waste diversion sites within landfills or small vehicle transfer station;
- Drop-off of hazardous waste at the Household Hazardous Waste Depot; and,

- Recycling Center Drop-off Depot.

A listing of current programs and services were provided and respondents were asked to select which ones were working well. The following programs were identified by participants on what's working well in waste management:

- Diversion programs (Blue Box, Green Cart, and Leaf and Yard Collection);
- Toxic Taxi;
- Every other week garbage collection;
- Landfill holidays;
- Waste diversion sites and services at landfills;
- Waste Wise app; and,
- 311 service.

Participants identified that the City could do more of the following:

- Improve multi-residential sorting and collection;
- Expand Green Cart program;
- Education and promotion including if the City is meeting targets;
- Improve the drop-off locations (wait times, tipping fees); and,
- Divert more food waste (including from restaurants and businesses).

When asked to select the top five of a long list of programs participants would be willing to try to reduce waste, the top five responses were:

- Increased service level for diversion within my community to make it easier to drop off items for reuse / recycling;
- More programs to reduce litter / illegal dumping;
- Reuse programs (e.g. sharing events, repair cafes);
- City collection of more items from my home (e.g. used clothing and other textiles); and,
- Reuse programs for large items (e.g. couches) such as re-sell if in good condition, or educational programs on repair.

Participants were asked what other ideas they have for waste reduction, reuse and/or recycling that the City could provide. The most commonly mentioned programs by participants include:

- Larger green bins;
- Increase items collected (e.g. textiles);
- Incentives for change;
- Demonstrate what happens with waste after it gets collected;
- Circular economy initiatives;
- Partnerships with community groups / non-profits;
- Reduce the amount of waste produced;
- Programs for pet waste;
- Reuse programs;
- More education; and,
- Improved diversion in multi-residential buildings.

When asked about paying more for additional programs and/or services that help Greater Sudbury meet their climate change goals, reduce waste to be managed and extend the life of City landfill sites, 13% said they would pay more for additional programs / services, 18% of participants noted they would pay for additional programs if the costs are low or flexible, 39% said they were unsure as it would depend on costs and programs and 30% of participants noted they would not be willing to pay more.

5.2.3 Community Workshops

Three Community Workshops were held to engage with community members from key groups and organizations from across Greater Sudbury. The workshops were held over Zoom on February 13th from 7pm to 8pm, February 14th from 2pm to 3pm and February 21st from 2pm to 3pm. Overall, 10 people attended the workshops.

The workshops provided stakeholders with an opportunity to learn about the project, and share input on what's working well, what can be improved, and what can be added to the waste management system in Greater Sudbury. A MURAL board was used to capture feedback from participants during the meeting.

The key themes heard at the meetings are summarized below.

What's working well:

- Waste Wise app and website
- Clear communications
- Community clean ups
- Live stream video of waste sites
- Reuse Store at Sudbury sites

What the City can be doing more of:

- Education and promotions
- Leaf collection in the fall
- Promotion of Clean-Up Greater Sudbury programs
- Community partnerships
- Making the system easier to understand
- Battery and electronics waste disposal
- Dog waste bins in public spaces
- Support for elderly residents on collection day

Programs or initiatives that the City should consider adding:

- Circular economy initiatives
- Procurement and social enterprise initiatives
- Approaches to used needle disposal
- Reuse and repair centres in accessible location
- Pet waste management
- Textile diversion
- Reducing food waste
- Develop a clear path to waste management and what materials go where
- Multi-residential composting
- Partner with community groups for reuse / repair and to divert more materials from the landfill
- Involve other departments such as planning and economic development
- Work toward reduced GHG emissions and bring a climate change lens into decision making in waste management

- Communicate successes
- Promote home composting
- Communicate where waste goes once it leaves the curb

Workshop participants were asked to identify their top two priorities for the future of waste management. Options included:

- Environmental sustainability
- Convenience of disposal services
- Progressive waste management programs that divert more
- Programs that get the community involved
- Cost to taxpayers and efficiency of service

Participants identified the following priorities for the future of waste management:

- Progressive waste management programs that divert more
- Environmental sustainability
- Programs that get the community involved

Other ideas for priorities include circular economy and community engagement.

5.3 Collection Operators Meeting

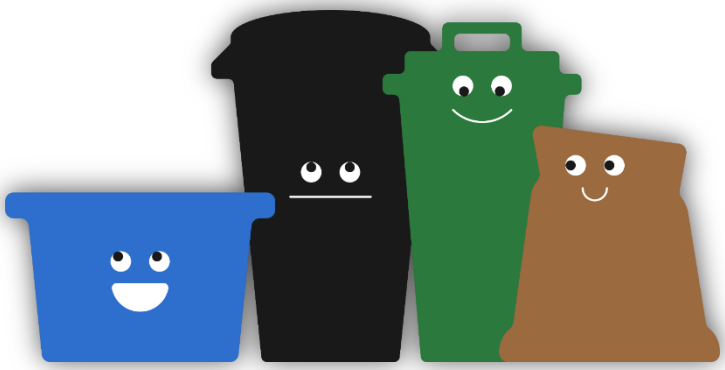
On November 4, 2023 Dillon staff met with City waste collection operators to gather input from them about what's working well and areas for improvement. Waste collections staff have a unique perspective from which to provide input on the system as they witness effective operations on a daily basis and are often the first to know when issues arise. Feedback was solicited using a platform called Menti, which has polling and survey functionality.

Waste collections operators stressed the importance of 311 and identified it as one of the waste management system's strengths because of its customer service effectiveness. The participants also mentioned the following City programs as strengths: Toxic Taxi, Green Cart, and white goods collection. Other strengths were that residents have bulky items (e.g., furniture) waste removed from the roadside promptly and the four-day collection week (i.e., that collection can be completed on four days).When asked what has gotten better since they started working here, common responses were that there are far less injuries and better vehicles. They also expressed relief due to no longer being responsible for the heavy lifting associated with picking up furniture.

The group recommended more educational materials to support the public in diverting properly, and suggested that something that reminds residents of which day to set out their waste would be helpful. Education could also support proper and timely set out. Waste collectors commented that more enforcement measures and stricter application of existing enforcement measures would support their work. Collection operators noted the large amounts of leaf and yard trimmings requiring handling and collection as well as the lack of commercial access at the landfill making their wait times long.

6 Next Steps

The Phase 1 report is a first step in the development of an update to the City's SWMMP. When complete the updated SWMMP will set out options and recommendations to advance a sustainable waste management system that minimizes the quantity of waste requiring handling and disposal and maximizes waste diversion opportunities, while providing quality services that meet the needs of its citizens and businesses. It is intended that these recommendations will align with and support the CEEP and Council's environmental sustainability, climate change, asset management and customer service goals.



Understanding the current state of the City's waste management system is a foundational task that will enable the team to complete the next steps with a high level of awareness. This Phase 1 report has described the current solid waste management system, including its regulatory context, best practices in other jurisdictions and initial engagement and consultation activities, all of which informs the team of the current system's strengths and weaknesses, as well as areas where change is at play and where new opportunities may emerge.

The next step in developing the SWMMP update will be to develop a vision statement and guiding principles. In Phase 2 the team will identify achievable goals and targets that align with the City's Strategic Plan, prioritize waste avoidance, meet triple bottom line evaluation criteria and are appropriate given trends that the industry is encountering. Community engagement and communications activities will continue throughout this and subsequent phases.

In Phase 3 will the team will select appropriate options for change to the integrated waste management system, including those that are aimed at increasing diversion, maintaining the existing landfill assets, enhancing service delivery, operations, and other opportunities for new programs and initiatives during the next 10 years. The SWMMP will be consolidated and finalized in phase 4.