Appendix 1

City of Greater Sudbury's Sustainable Waste Strategy

October 2024

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Abbreviations

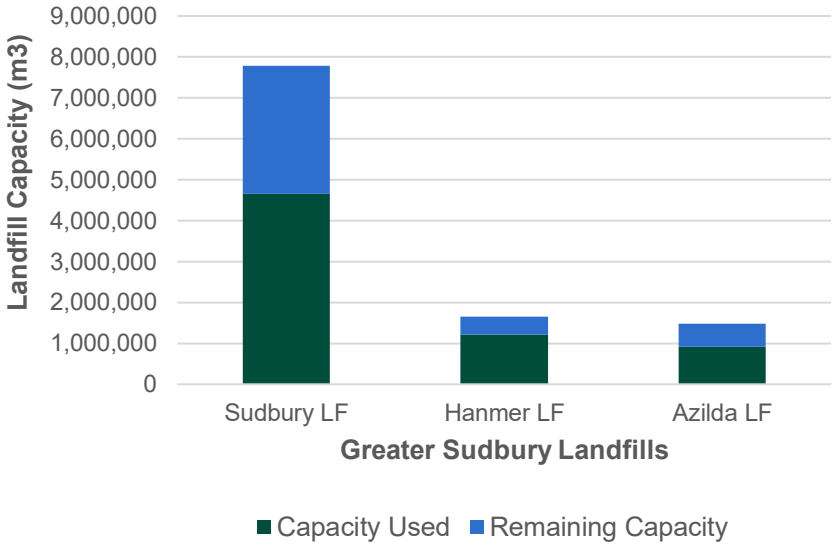
Abbreviation	Definition
CCME	Canadian Council of Ministers of the Environment
CEEP	Community Energy and Emissions Plan
City	City of Greater Sudbury
EAA	Environmental Assessment Act
ECCC	Environment and Climate Change Canada's
EPA	Environmental Protection Agency
GHG	Greenhouse Gas
ha	Hectare
HDR	High density residential
IC&I	Industrial, commercial and institutional
IPR	Individual Producer Responsibility
IWMS	Integrated Waste Management System
LDR	Low density residential
MBNCan	Municipal Benchmarking Network of Canada
MECP	Ministry of Environmental, Conservation and Parks
MF	Municipal Facilities
NR	Non-residential
P&E	Promotion and education
PRO	Producer Responsibility Organization
RPRA	Resource Productivity and Recovery Authority
SWAP	Solid Waste Advisory Panel
SWS	Sustainable Waste Strategy
TAC	Technical Advisory Committee

1.0 Introduction

The City of Greater Sudbury has completed a Sustainable Waste Strategy (SWS) that aims to continue developing a waste management system that **minimizes the quantity of waste requiring handling and disposal by maximizing waste diversion opportunities**. The SWS provides a plan for our community to continue to take progressive actions to responsibly manage our waste and preserve our assets and shared environment for future generations.

It comes at a time when, in many jurisdictions, remaining landfill space is a pressing issue. In May 2023, the Office of the Auditor General of Ontario's reported that there is approximately ten to 13 years more landfill disposal capacity in Ontario, assuming current levels of waste generation, diversion, and export to the United States.[1] As a result, many municipalities are considering alternatives to reduce the amount of waste requiring landfilling, including a range of technology options.

Figure 1-1: Remaining Capacities of City Landfills



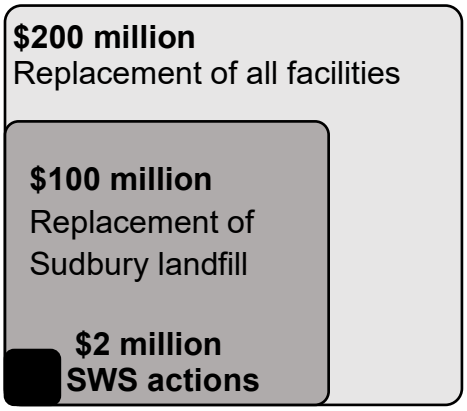
Greater Sudbury will face the same challenges if no action is taken. The City disposes of approximately 90,000 tonnes of garbage per year (2023) amongst the three landfill sites and anticipates that the landfills will be full in approximately 25 years based on current conditions. Long before the remaining landfill capacity is consumed, securing a disposal option will become critically important. This is due to a few factors, for example:

[1] The Office of the Auditor General of Ontario. May 2023; "The State of the Environment in Ontario" Page 57; https://www.auditor.on.ca/en/content/specialreports/specialreports/The_State_Of_The_Environment_EN.pdf

- It can take up to ten years to complete the siting and approvals processes; and
- If a site can be located, and if approvals are granted, costs associated with the process of securing a new disposal option (including selecting, siting, obtaining approvals and designs, etc.) are expected to be significantly higher than current disposal costs.

Delaying the need for a new landfill(s) is a cost-effective approach that was top of mind in developing the SWS. If the landfills' capacity is reached, establishing alternative disposal facilities will increase costs significantly. For example:

- A replacement landfill similar to the Sudbury landfill is estimated to cost $100 million.
- A replacement landfill similar to Hanmer or Azilda is estimated to cost **$50 million** each.



In comparison, planning and implementing the SWS recommendations is estimated to cost $2 million.

The SWS recommends **18** actions that together will reduce waste, extend landfill life and improve the performance of the City's current system over the next ten years.

In the short term, the SWS actions focus on building desired behaviours now in a cost-efficient way. These smaller, lower cost changes will **maximize existing diversion programs and delay the need to implement higher cost actions for new disposal capacity later**.

The SWS was developed following a four-phase process as shown in **Figure 1-2**. The process considered the current state of waste management in the City, set a vision and priorities for the City's future management of waste, and provided options for how to get there. Reports were completed for Phases 1, 2 and 3 and this report documents Phase 4.

Figure 1-2: Sustainable Waste Strategy Development Process

Phase 1	Phase 2	Phase 3	Phase 4
Current State	**Future State**	**Determine How**	**Develop Strategy**
Understand the current system and context in which it operates	Establish guiding principals and vision for the future state	Identify options to achieve goals and evaluate future options	Consolidate and summarize findings into a 10-year plan (2025-2035)
Mid 2022 - Early 2023	**Early 2023 - Mid 2023**	**Mid 2023 - Early 2024**	**Early 2024 - Late 2024**

The options were discussed during extensive internal and external engagement and were evaluated using a triple-bottom line assessment. The 18 recommendations are the result of the research, consultation and evaluation and are presented in the SWS along with a timeline that considers when the City would undertake their planning and implementation of each recommendation and what the cost to the City would be. Long term planning enables the City to improve waste diversion and protect City-owned waste assets. Some of the reasons why long-term planning is important is highlighted in **Figure 1-3.**

In May 2019, City Council declared a Climate Emergency, which included a commitment to net-zero emissions by 2050. The City's Community Energy and Emissions Plan (CEEP) set a target of 90 percent waste diversion by 2050 and identified the potential for organic waste diversion to reduce greenhouse gas emissions. At present, the overall diversion rate, meaning the total amount of waste diverted divided by the total amount of waste managed by the City from both residential and non-residential customers (e.g., businesses, industry, schools and organizations), is approximately 21 percent.

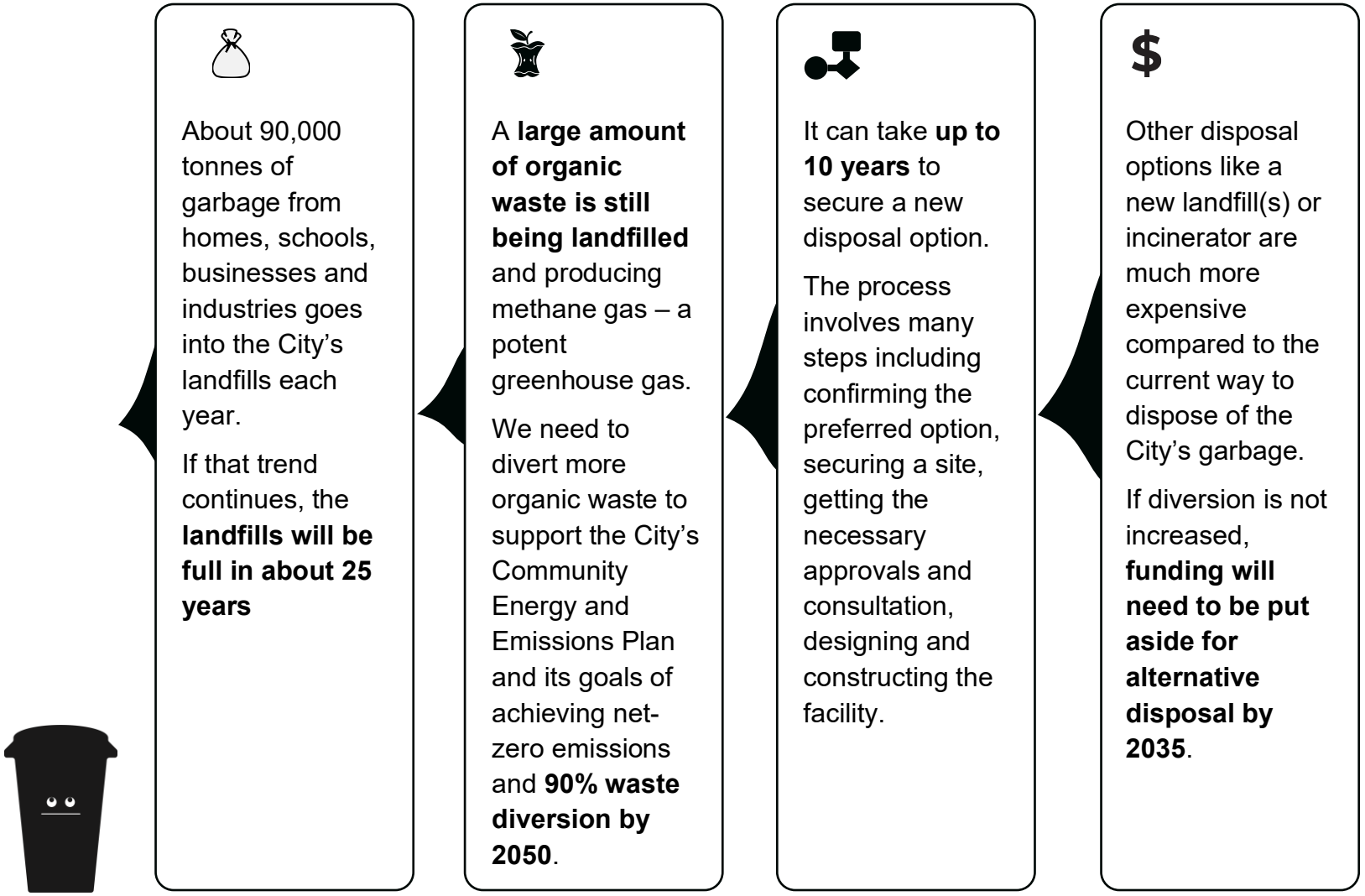
A transition to producer responsibility is a significant change impacting municipalities. Across the province, the Blue Box program is transition to an Individual Producer Responsibility (IPR) model that makes producers operationally and financially responsible for products and packaging entering the market. On April 1, 2025, the City's responsibility to provide a Blue Box program will be transitioned as part of Ontario's IPR program. The SWS recommendations are aligned with this forthcoming changes. IPR, and its implications for the City are described in **Section 1.4.**

Largely because of provincial policy changes, and the termination of municipal diversion reporting requirements, the City has been considering new waste management system performance metrics to introduce during the next ten years. These are described in **Section 2.3**.

Prior to developing options to improve waste management at the City, an analysis of the gaps, challenges and opportunities was developed and is described in **Section 3.0**, along with an evaluation process to consider the future options.

As mentioned, 18 recommended actions are included in the SWS. These are presented in **Section 4.0**, along with the financial impacts, timeline for their planning, implementation and monitoring, and targets that the City will work towards.

Figure 1-3: Importance of Long-Term Planning



1.1 Vision Statement

The vision statement for the SWS (show in **Figure 1-4)** was developed to reflect the City's values and is intended to guide the management of its solid waste over the next 10 years. Creating the vision statement was an iterative process involving both internal and external consultation.

Figure 1-4: Vision Statement Graphic

The statement is, "As a community, we commit to being stewards of the land by taking progressive actions to manage our waste responsibly, extend the life of our landfills and preserve our shared environment for future generations."

The vision statement draws attention to individual and community efforts towards long-term outcomes. It suggests that the community, and individuals, play a role in waste reduction through a variety of actions, and that the effort will work towards long-term outcomes.

1.2 Guiding Principles

Guiding principles provide clarity of the vision. The guiding principles reflect where the City's integrated waste management system (IWMS) sits now, and where the City wants to take it in the future. The guiding principles were used throughout the SWS development process, particularly while choosing and evaluating options for the future.

Guiding Principles were created to help with making decisions about which recommendations to put forward in the SWS. These are:

1. Apply the waste hierarchy.
2. Prolong the life of the City's landfills.
3. Improve and/or augment programs and agreements that benefit the City financially and evaluate their contribution.
4. Promote responsible behaviour through the provision of promotion and education, and by making diversion programs accessible, convenient and appropriate for a northern Ontario community and Greater Sudbury's cultural diversity.
5. Advance Individual Producer Responsibility (IPR) programs and make appropriate decisions that reflect the evolution of IPR programs.
6. Where viable markets or technologies are available, research the potential for diversion to balance environmental and financial priorities.

1.3 Current Waste Management Profile

The communities of the Greater Sudbury area are situated on the Traditional Territory of Atikameksheng Anishnawbek. The lands of Greater Sudbury area are also the Traditional Lands of Wahnapitae First Nation and Sagamok Anishnawbek, as well as being a traditional harvesting area for the Metis. Located on the Canadian Shield in Northern Ontario, it is the largest municipality in Ontario by land area and the second largest in Canada, 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.

The City is responsible for all municipal services and assumes all responsibilities under the Municipal Act, including the provision of waste management services. Municipalities have the authority to pass by-laws and provide waste management services that the municipality considers necessary or desirable to the public.

The City provides waste collection services to approximately:

63,200 low and high density properties on roadside collection program	**10,750** units in high density properties with bin/cart collection	**175** non-residential customers on roadside collection (e.g., small businesses, churches)	**87** municipal facilities (e.g., arenas, libraries)

Waste Category	Residential Roadside	High Density	Non-Residential	Municipal Facilities
Garbage	Yes	Yes	Yes, limited roadside only for a fee	No
Blue Box Recycling	Yes	Yes	Yes, limited roadside only for a fee	Yes
Green Cart Organics	Yes	No	Yes, limited roadside only for a fee	Yes
Leaf and Yard Trimmings	Yes	No	No	No
Furniture, Appliances and Electronics	Yes	No	No	No
Household Hazardous Waste	Yes	Yes	No	No

1.3.1 How Waste Is Managed

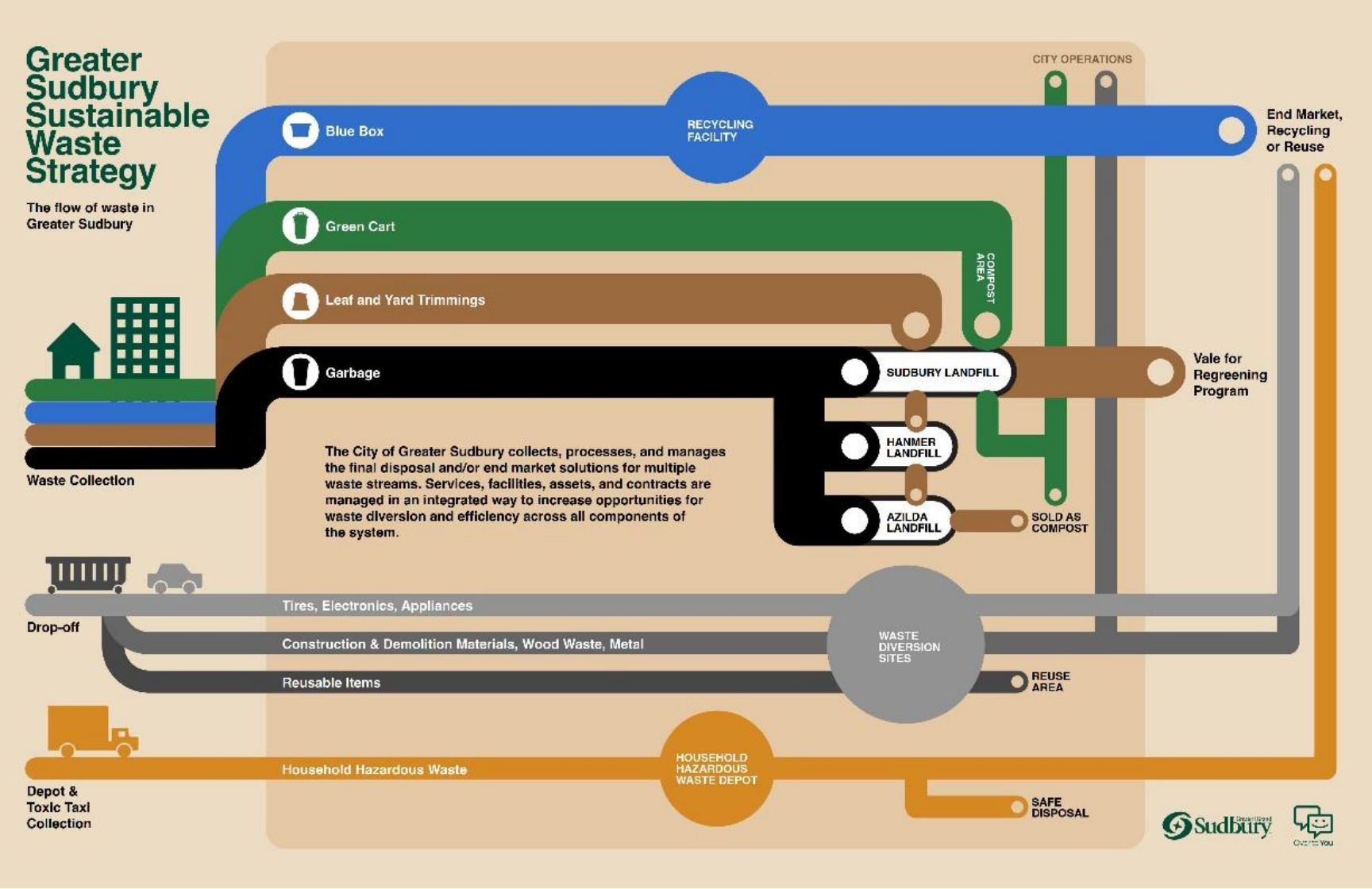
The City manages several waste streams including garbage, recycling, food and organic waste, household hazardous waste, leaf and yard trimmings, other compostable waste (e.g., Christmas trees, brush), construction and demolition waste (C&D; e.g., wood waste and metal) and bulky items (e.g., furniture, appliances).

Greater Sudbury's waste management services include waste collection from customers including roadside residential (i.e., houses), high density residential (i.e., townhouses, apartments, condominium buildings, etc.), and non-residential customers (e.g., municipal facilities, commercial customers). Its waste diversion programs include roadside collection and drop-off programs, as well as the Toxic Taxi program. Roadside litter container collection and litter abatement programs are also in place. Customer service is another key component of the City's IWMS and include educational services, 311 portal, and promotion and education (P&E) efforts (e.g., the Waste Wise App).

Services also include the operation of three active landfills and a small vehicle transfer station which have Waste Diversion Areas where customers can drop off materials to be diverted from landfill. The City's largest landfill, Sudbury Landfill, has a landfill gas collection facility and a re-use store. The City also has a household hazardous waste (HHW) depot, a blue box materials recovery facility and public recycling drop-off depot . It maintains three closed landfills (Onaping, Walden and Nickel Centre Landfill Sites) and two closed hauled sewage sites (Dowling and Dryden Hauled Sewage Sites).

Figure 1-5 illustrates what happens to the waste after it is left at the roadside, drop-off depot and landfill and waste diversion site with each represented by a coloured line. The path that each waste stream follows is shown before it reaches its final destination.

Figure 1-5: How the City Manages Waste



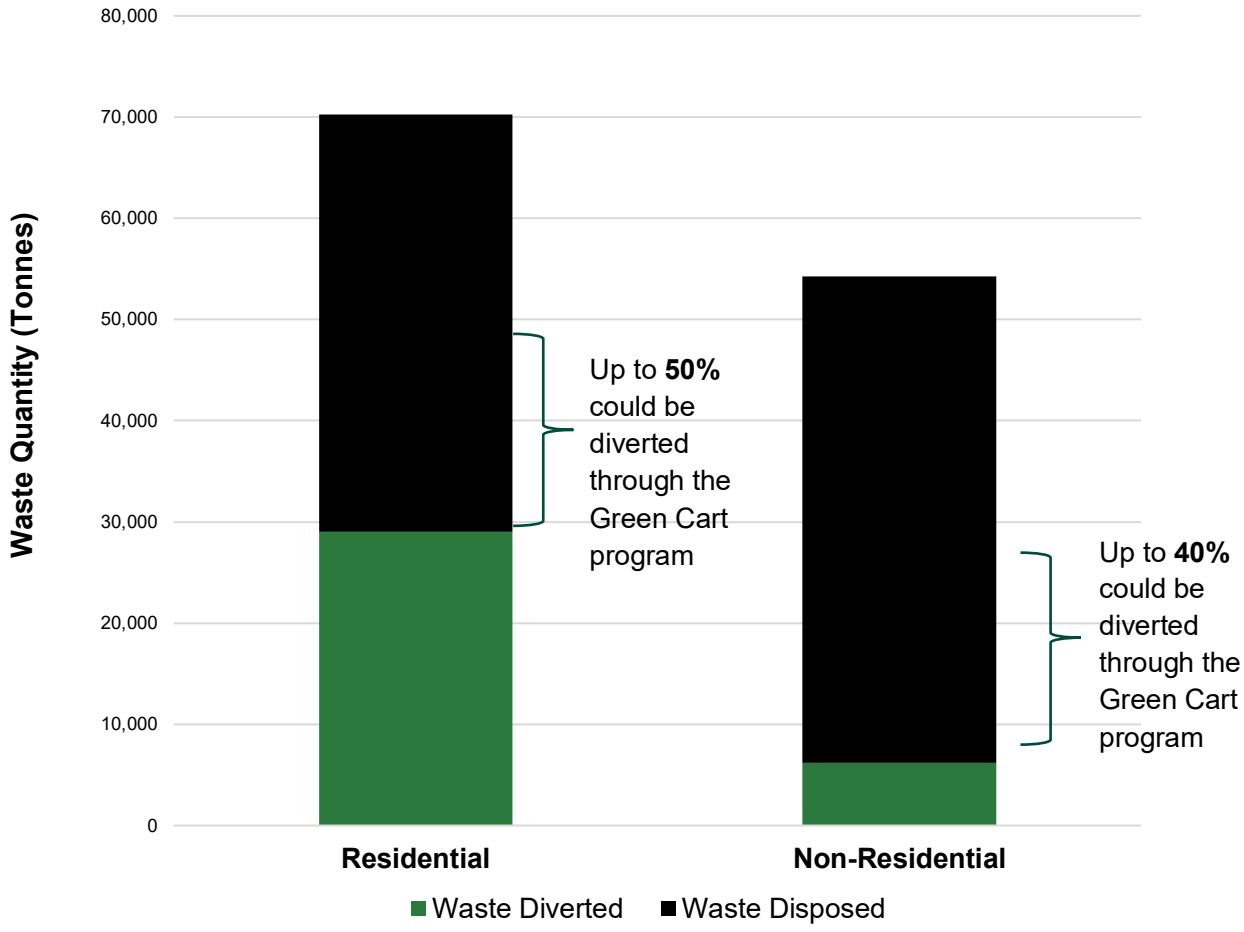
1.3.2 Waste Diversion Rate

The City managed approximately 125,000 tonnes of waste in 2023 through programs like Blue Box, Green Cart, yard trimmings, garbage, etc. The waste comes from the following sources:

- **44%** comes from non-residential sources like small businesses, schools, industries and organizations;
- **66%** is from residential sources, including:
  - **34%** from residential waste collected roadside; and
  - **22%** from residential waste that is brought to the landfill and waste diversion sites.

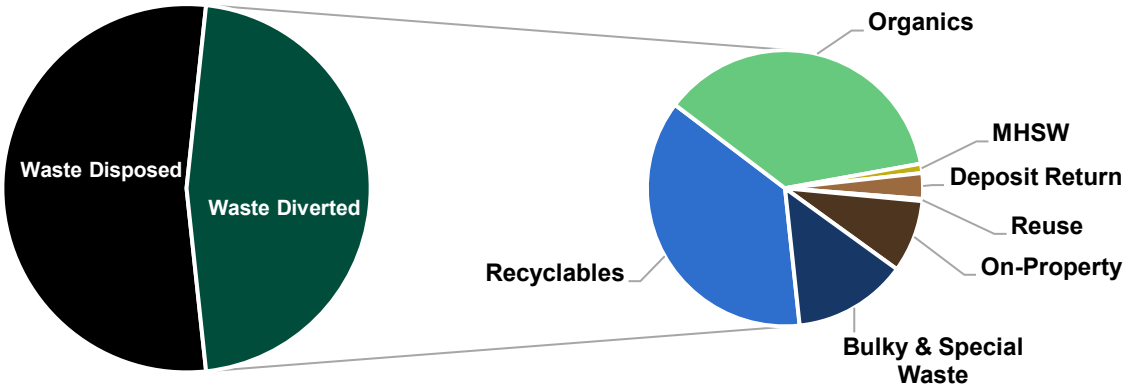
In 2023, the residential sector diverted about 47% of waste from the landfill while the non-residential sector diverted about 20%. From waste composition studies, it is estimated that between 30% and 50% of residential garbage disposed contains organics that could have been diverted through the Green Cart program. The quantity of organics in non-residential garbage stream varies based on the customer type, but studies have estimated between 15% and 40% organics content. **Figure 1-6** shows the 2023 diverted and disposal tonnages and where the opportunity for increased diversion lies if there is better use of the Green Cart program.

Figure 1-6: Diverted and Disposed Waste in 2023



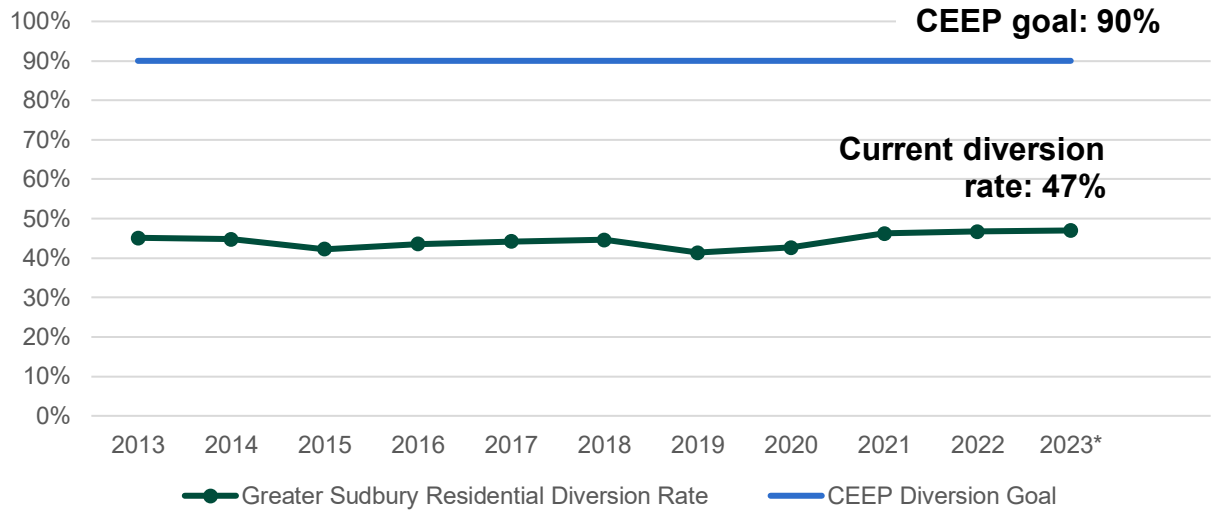
The City reported a residential waste diversion rate of 47 percent in 2023 to the Resource Productivity and Recovery Authority (RPRA) in its recent Datacall submission. RPRA's annual Datacall has been the common reporting framework for Ontario municipalities. In the Datacall reports, diverted waste is categorized into Blue Box materials, organics, reuse, HHW recycled, Deposit Return Program and At-Source Reduction (i.e., waste separated at homes). The information provided has been used to determine Blue Box program funding. With transition of Blue Box program responsibility to producers, the municipal Datacall will be discontinued. As an example, the City's 2023 Residential Waste Diversion Rates are provided shown in **Figure 1-7**.

Figure 1-7: RPRA Datacall 2023 - Residential Waste Diversion Rates



As shown in **Figure 1-8**, over the last 10 years, the amount of residential waste that has been diverted from landfill has been relatively stagnant averaging at 44 percent with the exception of an increase in 2021 which corresponds with the City's adoption of garbage collection every other week. The City's CEEP has set a goal of achieving 90 percent diversion by 2050.

Figure 1-8: Residential Waste Diversion Rate, 2013 to 2023

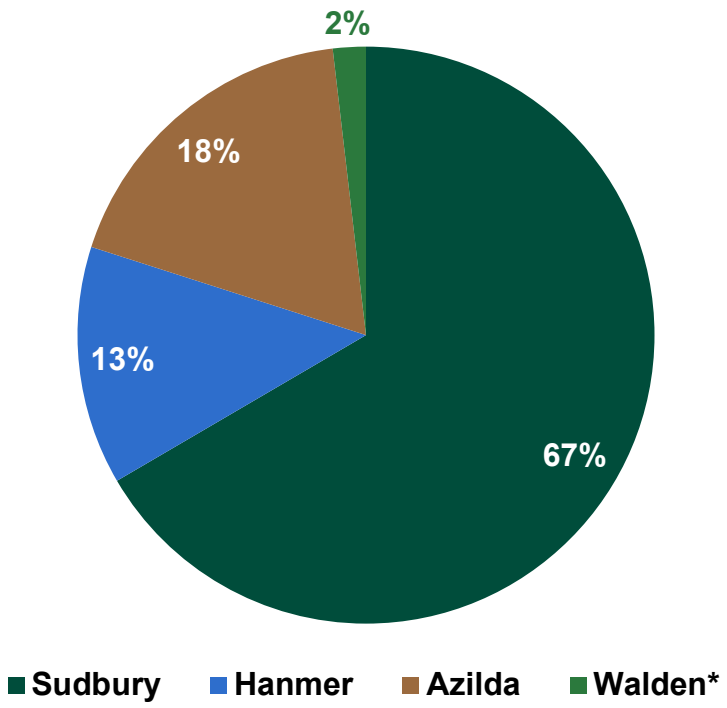


*2023 results are being verified.

1.3.3 Greater Sudbury's Active Landfills

The City owns three active landfill sites, Sudbury, Hanmer and Azilda, which are operated by a private contractor. The City owns one active transfer station, the Walden Small Vehicle Transfer Site, which is also operated under contract. The Sudbury Landfill disposes the majority of garbage managed by the City and due to its size, a landfill gas collection system is a requirement for the site. The captured gas is used by Greater Sudbury Utilities and since 2007, it has created enough electricity to power nearly 900 homes each year[2]. **Figure 1-9** shows the proportion of the City's waste that each site disposes of each year.

Figure 1-9: Proportion of Waste received at City Sites



*Waste from the Walden site is disposed at the Sudbury Landfill site

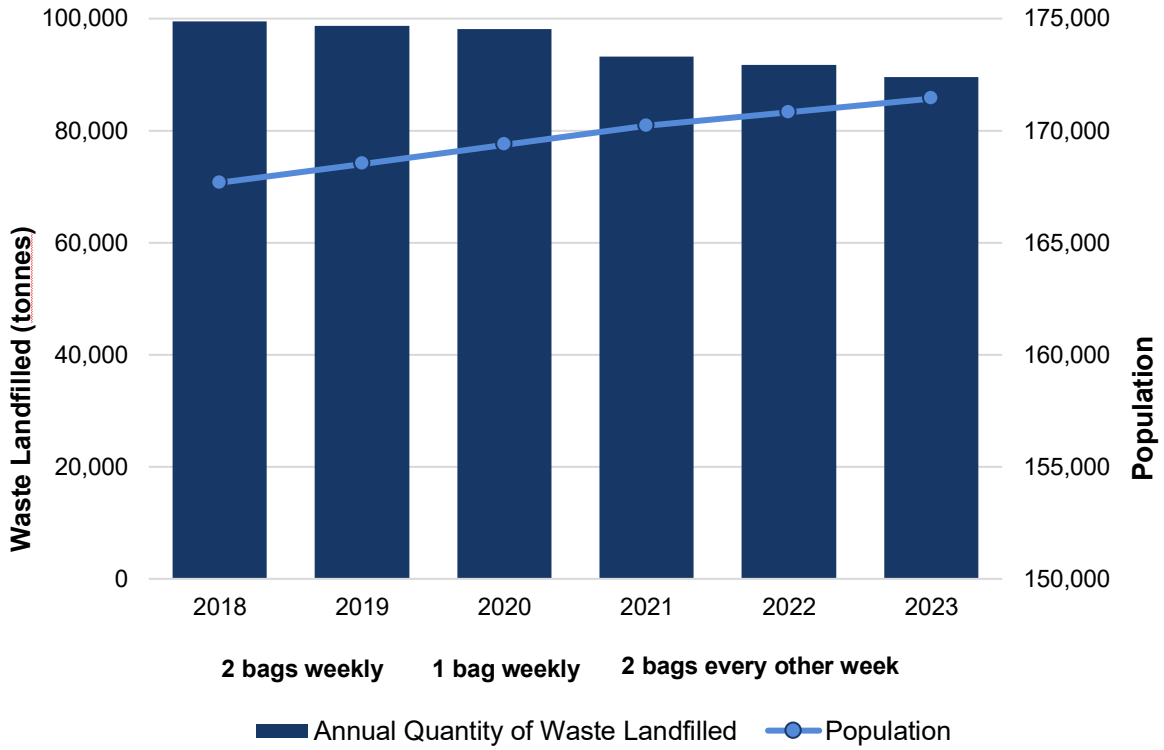
Figure 1-10 represents the total quantity of waste landfilled annually from 2018 to 2023 including both residential and non-residential garbage received. Over these last six

[2] https://gsuinc.ca/convergen/ Assumes that the homes consume about 700 KwH/month

years, the City has landfilled an average of approximately 94,000 tonnes of garbage per year across its three active landfills.

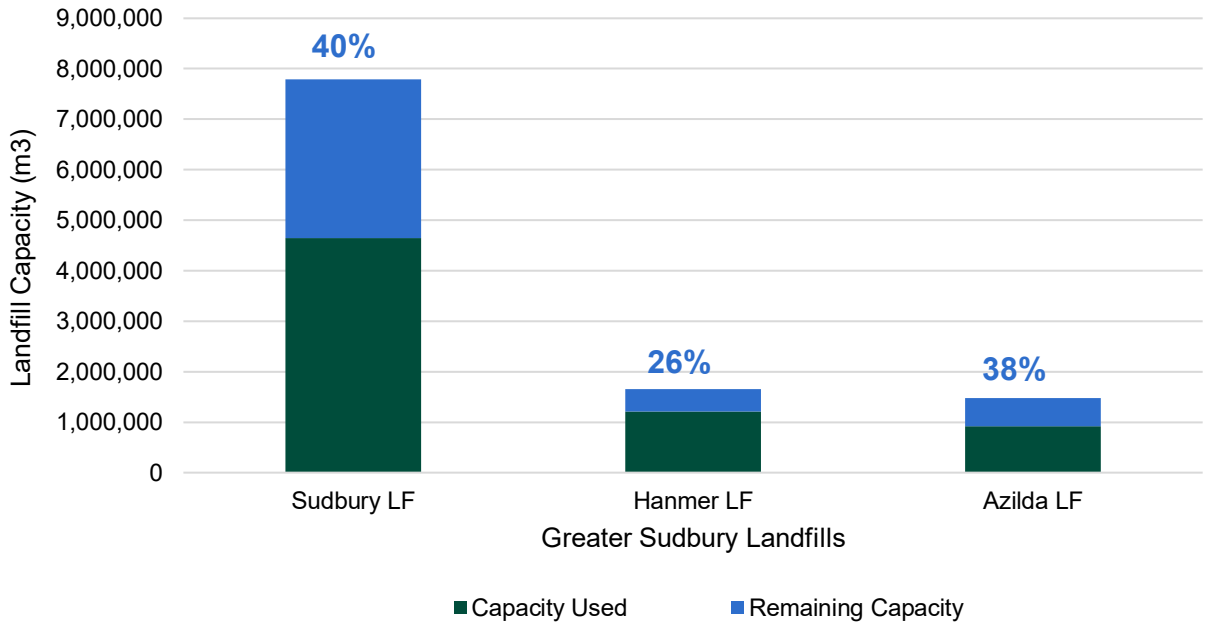
Although the City's population has increased, there has been a slight reduction in the amount of garbage landfilled since 2021 which is attributed to changes in waste collection policies including reducing the garbage bag limit to once a week and switching to every other week collection of two garbage bags.

Figure 1-10: Residential and Non-Residential Waste Landfilled, 2018-2023



In Ontario, there is a shortage of landfill capacity. While the City is comparatively well positioned in terms of its own landfill capacity, it is critical that landfills are well maintained and efficiently utilized, sine the availability of capacity elsewhere in Ontario is extremely limited. **Figure 1-11** represents the current landfill capacity and the remaining capacity of each landfill. It is estimated that combined, the City has about 25 years of landfill capacity remaining.

Figure 1-11: Landfill Capacity Used and Remaining



1.4 Regulatory Context

Understanding the regulatory context is an important aspect of municipal waste management planning, particularly as there have been considerable changes in federal and provincial policy frameworks. The responsibility for managing and reducing waste is shared among federal, provincial, territorial, and municipal governments.

Federal Initiatives

The Federal government plays the lead role in controlling the international and interprovincial movement of hazardous waste and hazardous recyclable materials, and identifying approaches and best practices that will reduce pollutant and greenhouse gas emissions from the management of waste (which it does, for example, by establishing priorities through the Canada Council of Ministers of the Environment). The Government of Canada has committed to plastics reduction, as is articulated in several key strategies and policies, such as a plastics products registry, labelling rules for plastics, single-use plastics regulations and recycled content requirements.

Provincial Initiatives

Canadian provinces are responsible for policies, regulations and guidelines for resource recovery and waste reduction programs; as well as issuing approvals and monitoring of waste management facilities within the province. Individual Producer Responsibility programs and the Food and Organics Framework are two key legislative initiatives that impact the management of waste at the municipal level.

1.4.1 Individual Producer Responsibility

IPR is a significant and relatively recent regulatory shift. In 2016, Resource Recovery and Circular Economy Act (RRCEA) and Waste Diversion Transition Act (WDTA) introduced 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.

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). PROs 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 provides 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. Greater Sudbury will transition to IPR for the Blue Box program on April 1, 2025, and will no longer have a statutory requirement to provide Blue Box services.

1.4.2 Food and Organic Framework

On April 30, 2018, under the RRCEA, the MECP released the Food and Organic Waste Framework (Framework) which sets as its vision, "A circular economy that moves towards zero food and organic waste and zero greenhouse gas (GHG) emissions from the waste sector." With the aim to prevent, reduce and rescue food waste to reach provincial Climate Change Action Plan targets, 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. The Framework contains two components: The Food and Organic Waste Action Plan and The Food and Organic Waste Policy Statement (Policy Statement).

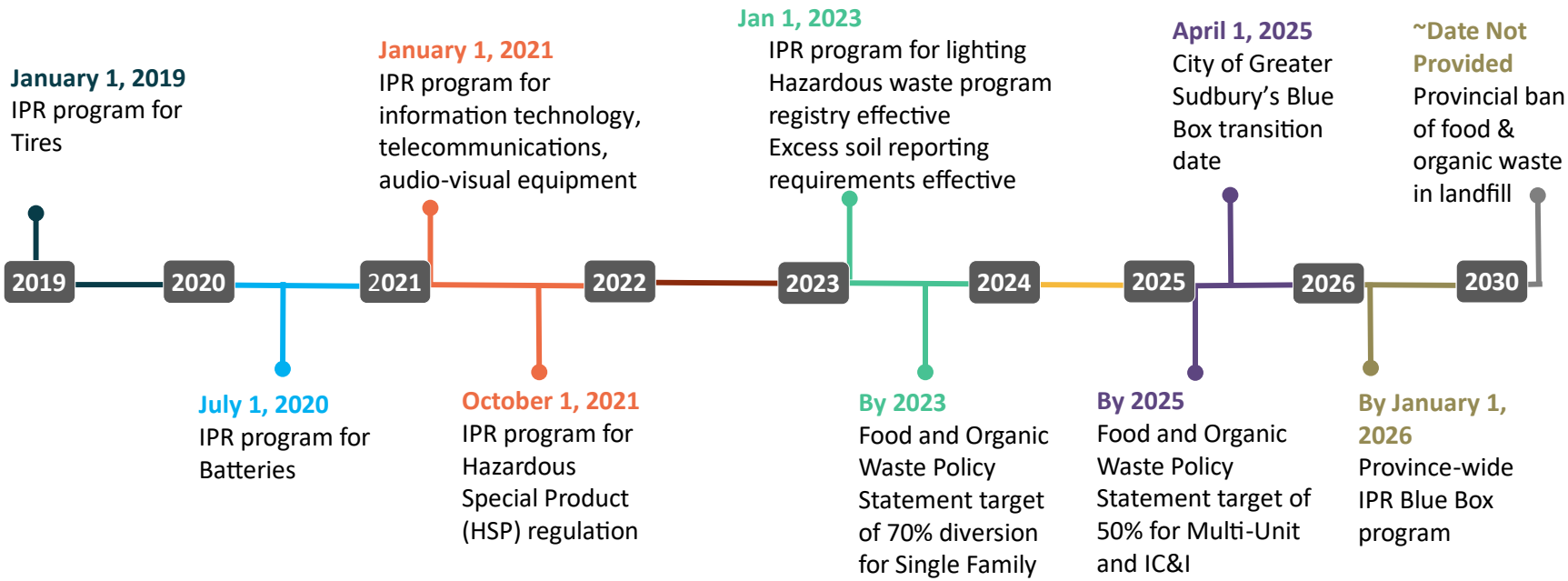
The Food and Organic Waste Action Plan sets out opportunities for collaboration among partners and other mechanisms to achieve goals, such as the development of food safety guidelines to support the safe donation of surplus food.

The Policy Statement advises various levels of government, institutions (including hospitals, schools, retailers) and commercial entities (including producers), that the province has an interest in organic waste reduction and recovery. It also sets organic waste reduction and diversion targets for several sectors and communities. The targets vary depending on the region, population, and population density. The City is a

community to which the following targets applied – 70% food and organic waste diversion from low-density residential households to be achieved by 2023. Similarly, a target of 50% food and organic waste diversion by 2025 is included in the Policy Statement for high density residential and IC&I sectors that meet certain requirements. Obtaining data to verify where the City lies within these targets is a gap in the current system. Notably, the Framework suggested that an organics disposal ban would have come into effect in 2022; however, no province-wide organics disposal bans has been officially implemented in Ontario.

Figure 1-12 identifies the date upon which producers became responsible for eligible materials according to IPR regulations, key program effective dates, and target dates under Ontario's Food and Organic Waste Framework.

Figure 1-12: Summary Timeline of Provincial Regulations



2.0 Greater Sudbury's Sustainable Waste Strategy

The SWS was developed over four chronological phases as shown in **Figure 2-1**.

Figure 2-1: Project Phases

In the earlier phases, an understanding of the current waste management system was developed as were priorities and metrics to measure future performance of the system. In each phase, consultation and engagement activities occurred to guide the development of the SWS. The following sections provide summaries these areas.

2.1 Engaging and Consulting

Engagement and consultation were a core element of the SWS development as waste management starts in the community, with individual actions making a direct impact on the waste management system. Consultation included sharing information with City staff, internal senior leaders, City Councillors, the general public and other interested parties.

Engagement goals included informing audiences on the project status and seeking feedback to inform each project phase. The overall aim of the engagement was to involve the public, including City customers and interested parties in Greater Sudbury to have their say on the future of waste management.

In the first phase, staff were consulted on the IWMS' current state, its strengths and weaknesses, and potential opportunities and/or anticipated changes that could impact the system. External interested parties were initially engaged to launch the project, build

awareness and generate interest. An online survey was used to gather feedback on the current waste management system in terms of what's working well and what could be improved and to understand priorities for the future.

During Phase 2, an online survey was used to solicit feedback on the SWS draft vision statement, guiding principles and evaluation criteria to be applied to the options.

During Phase 3, engagement was more extensive as the purpose was to inform and seek feedback on the draft list of SWS options for the future. Activities included in-person workshops and community drop-in events as well as an online survey.

Phase 4 concluded the SWS engagement and took the form of a final survey focused on seeking feedback to support the City's implementation of the SWS options.

2.1.1 How We Listened – Overall Engagement Process

Engagement activities included both advisory groups and public engagement, including targeted community organizations and other interested parties.

2.1.1.1 Advisory Groups

During each phase, presentations were regularly made to the following three groups, to provide them with status updates on the project, confirm technical details, and seek direction.

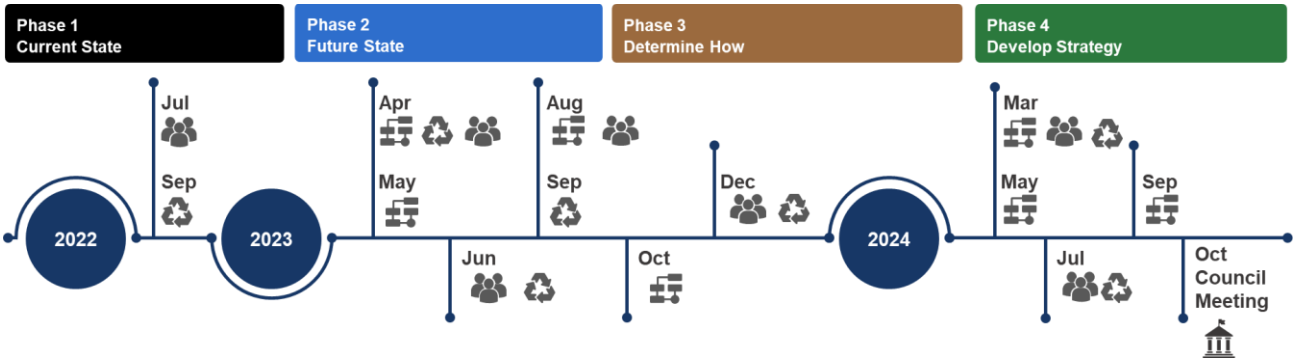
Technical Advisory Committee (TAC) - which includes key City staff representing Environmental Services, Environmental Planning Initiatives, 311 and Communications and Engagement. Together the TAC has comprehensive knowledgeable related to operational maters, programs, projects and policies;

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 were engaged to discuss key SWS issues, concerns and solutions; 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.

Figure 2-2 provides a summary of the meetings held with these groups throughout the SWS development. In addition, the Executive Leadership Team, which includes the Chief Administrative Officer and key General Managers and Directors from different departments were met with twice: once in Phase 1 and once in Phase 4. The SWS will be presented to City Council in October 2024 for adoption.

Figure 2-2: Internal Consultation Activities



On September 9, 2024, the Operations Committee passed the following resolution:

"THEREFORE IT BE RESOLVED that staff are directed to provide additional information in the presentation of the Master Plan to Council on October 22, 2024 regarding means to enforce additional diversion throughout the City of Greater Sudbury to address the lack of adequate and effective diversion within the sectors other than low density, including its own facilities.

AND IT BE FURTHER RESOLVED that the report includes enforcement recommendations on how non-residents of the City of Greater Sudbury can be prevented from using City landfills."

There are 18 recommended actions in the SWS that affect different sectors. **Table 4-2** shows which sectors are anticipated to be directly or indirectly affected by the recommended actions. The breakdown is as follows:

- 15 actions for the high density residential sector,
- 12 actions for the non-residential sector,
- 5 actions for municipal facility, and
- 14 actions for the low-density residential sector.

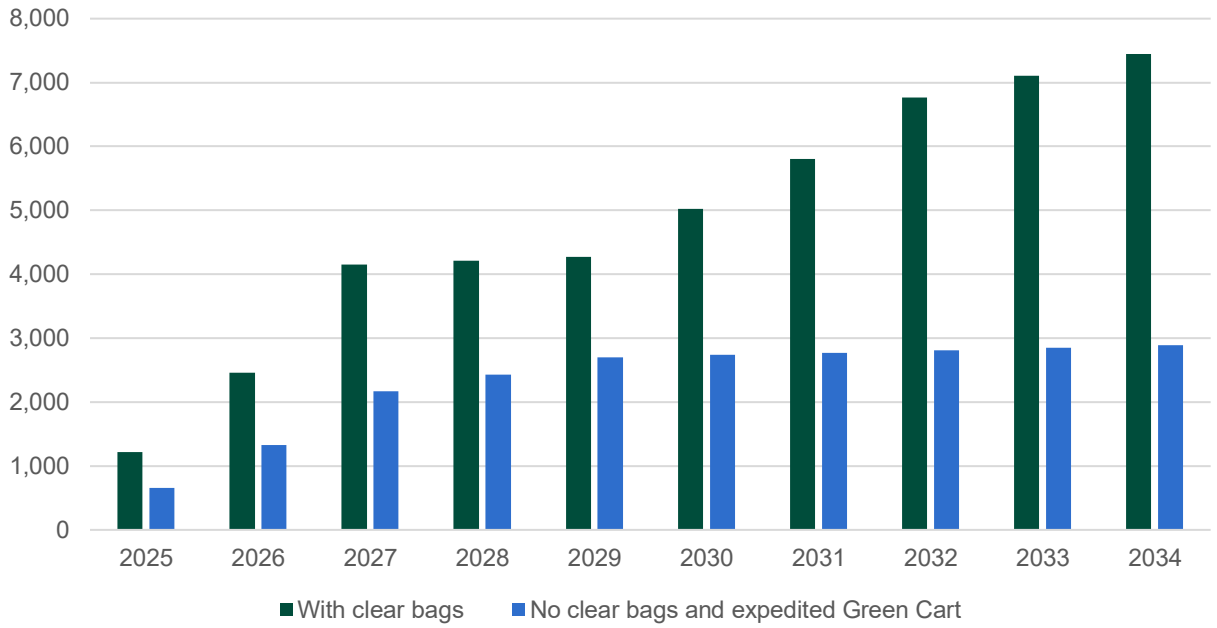
The proposed implementation plan for the recommended actions is shown on **Table 4-3** and was developed to maximize the potential benefits of the SWS actions. As an example, the clear garbage bag action is recommended to begin in 2025 as this action has the potential to generate the highest impact of the 18 recommended actions. It supports the behavioural change needed to increase participation in the Green Cart program which will then reduce the amount of garbage sent to landfill and the associated GHG emissions and preserve landfill space. This option also aims to teach

residents at their homes on how to effectively participate in waste diversion programs which will help improve behaviours when away from home. City Council has the authority to modify the proposed plans, timelines and targeted sectors however, modifications may result in reduced anticipated benefits.

Council could consider expanding the Green Cart program to more high-density residential buildings and to the non-residential sector sooner than proposed in the SWS and prior to acquiring additional organic processing capacity. The processing capacity that is currently reserved for the existing residential program could be reassigned to the high density and non-residential sectors. There is some risk involved in the potential to reach organic processing capacity in which case the City would need to make additional investments in processing capacity. To maximize participation, it is recommended that the City provide organics collection to all high-density properties with a waste collection agreement. The estimated annual costs to collect from the high-density residential sector is $300,000 annually and approximately $180,000 will be required for a one-time expenditure to implement the program over 12 to 18 months (e.g., staffing, promotion and education). Unless Council reached a decision to increase the service level to pay for non-residential collection of organics from the tax levy, collection of non-residential organics would remain with the private sector and participation would be voluntary given that there is no municipal by-law or enforcement mandating non-residential participation in organic diversion.

If Council chooses to move forward with the expansion of organics to the HDR sector and non-residential sector in 2025 and in place of implementing a clear bag program, the decrease in garbage generated per resident would change from 16% to 7% (refer to **Section 4.2**) and the decrease in total waste landfilled each year would change from 22% to 11%. **Figure 2-3** illustrates the comparison of the difference in organic waste captured with the implementation of the clear bag program to expediting the Green Cart program to HDR and non-residential customers and no clear bag program. The cumulative amount of organics estimated to be diverted over the 10-year planning period with the clear bag program is 48,500 tonnes compared to 23,300 tonnes with expediting the Green Cart program to the HDR and non-residential sectors and not proceeding with the clear bag program. These quantities are in addition to the current amounts of organics being diverted through existing programs and policies.

Figure 2-3: Comparison of Additional Organic Waste Diverted (with clear bags vs no clear bags and expedited Green Cart program to HDR and non-residential)



The City's Landfill Sites do not permit access to non-residents of the City of Greater Sudbury. The City currently tracks site access by asking customers to state their address prior to allowing access to the site. The Disposal SWS action (described in Appendix A) related to Landfill Operations Enhancements has been modified to incorporate other methods in which to improve landfill access requirements which may include modernized scale software and other potential solutions to reduce or eliminate the possibility for non-City customers to accessing its waste sites (e.g., providing and checking valid identification). One of the main goals of this action is to improve traffic flow and reduce wait times and idling and as such, the potential solution to reduce or eliminate the potential access by non-City customers from accessing the City waste sites will need to strike the appropriate balance to avoid increased wait times and idling. The extra effort to eliminate the possibility of non-resident access is not anticipated to further reduce the SWS's waste generation impacts or GHG emissions.

City Council could choose to expedite stricter access requirements at City landfills and waste transfer sites. This could be done by requesting evidence of property ownership, rental, residence or work at a property within Greater Sudbury boundaries prior to granting access to the sites. Customers not able to provide the required evidence would not be granted access. The manual verification process would be time consuming and may result in longer wait times to access the sites.

2.1.1.2 External Engagement

A round of external engagement was completed during each project phase. To do so effectively, City staff made efforts to promote engagement events using social media platforms, a public service announcement, website updates and print posters and postcards. In addition, an incentive was provided for residents to respond to the surveys. Names of respondents were entered into a random prize draw with winners selected during Phases 2, 3 and 4.

During Phase 3, the phase in which the options were developed, City staff were especially active in promoting the upcoming engagement activities. This included putting up posters and giving out postcards at more than two dozen locations, including libraries, community centres, arenas, waste management facilities and landfills in communities across the City. Furthermore, staff attended a Wolves game, the Sudbury market, a library event, a craft show, and a community walk event to reach a range of residents.

2.1.2 What We Heard – Overall Engagement Process

Considerable feedback was received from the public and interested parties over the course of the SWS. **Figure 2-4** reflects the level of participation during engagement events in each of the four phases and the timing of the external engagement activities.

Figure 2-4: Level of Participation in External Engagement

During Phase 1, the top priorities identified for the future waste management system were:

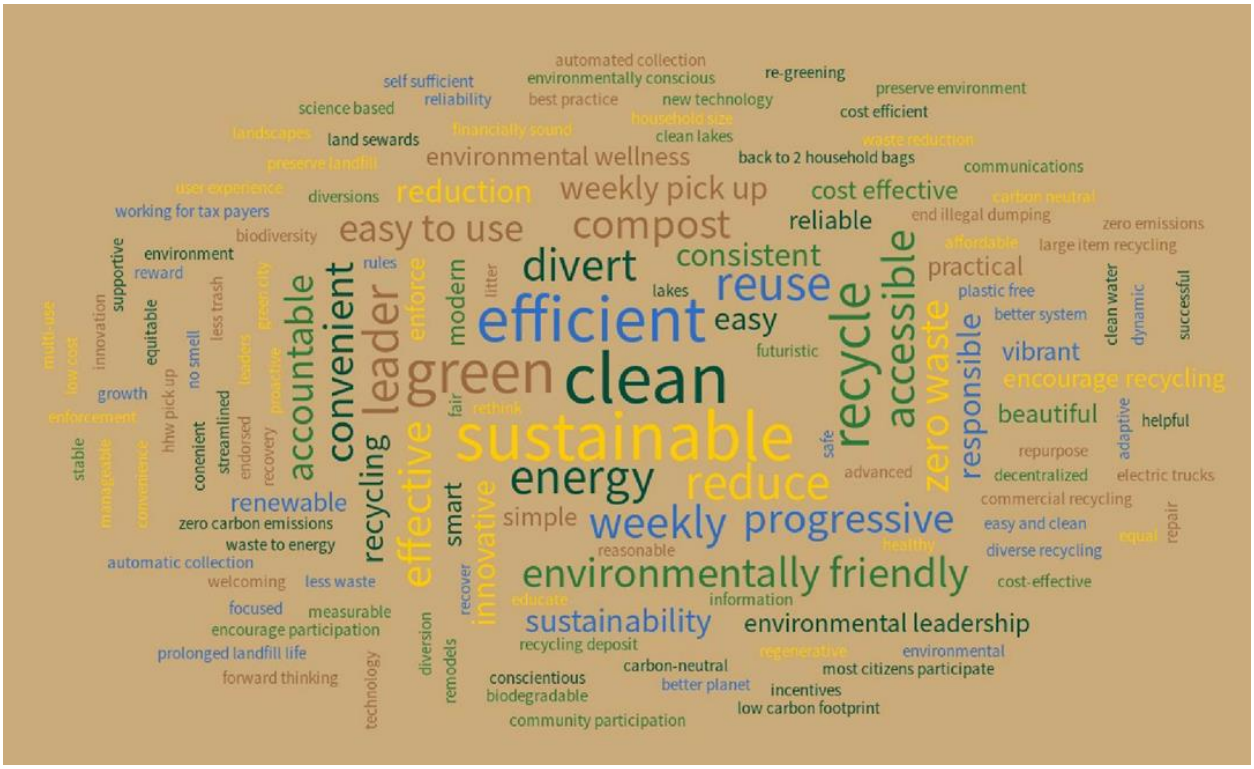
- Environmental sustainability;

- Convenience of disposal services;
- Progressive waste management programs that divert more;
- Meet CEEP goals; and
- Cost to taxpayers and efficiency of service.

This feedback was used to develop the draft vision statement and guiding principles.

The Phase 2 survey asked about residents' vision for the future of waste management. The responses were used to generate a word cloud to depict the overall sentiment (**Figure 2-5**).

Figure 2-5: What do you want the City to be known for 10 years from now?



In addition, the Phase 2 survey served to seek feedback on the draft SWS vision statement, guiding principles and evaluation criteria that would later be used to consider options for the future waste management system.

During Phase 3, a variety of events were held throughout Greater Sudbury to gather feedback including four community workshops for interested parties; five community drop-in events for the public, and an online public survey that ran from October 18 to November 7, 2023. The proposed SWS options for improvement were presented to interested parties and to the public. To facilitate the conversations, the options were grouped into the reduce/reuse/ repair, recycle, recover, and disposal categories, and the Phase 3 report provides a detailed summary under these categories on what we

heard during the community events, workshops, and gathered through the survey. The level of public support for each option was also assessed.

It should be noted that the number of people who completed the Phase 3 survey (i.e., 1,537 respondents) was a significant increase from Phase 1 and Phase 2, which gathered responses from 187 and 280 people, respectively.

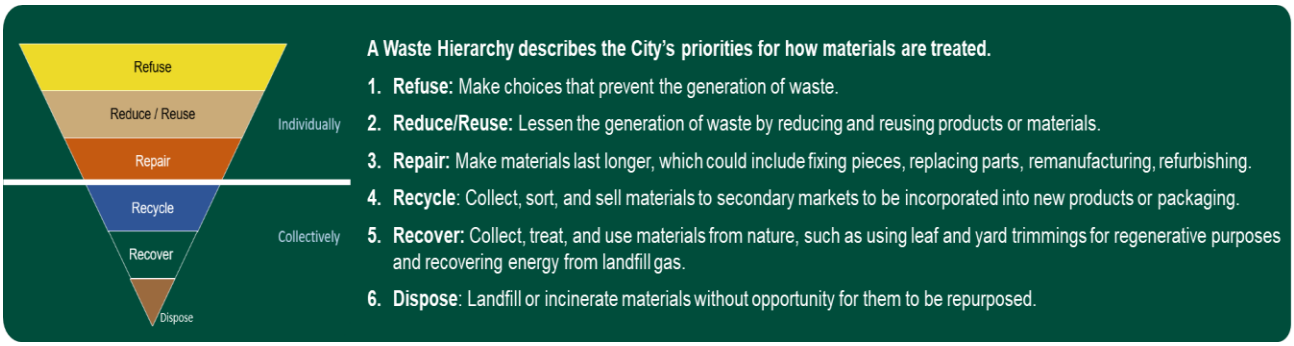
A final survey was launched on May 27 and closed on June 14, 2024, and a total of 369 survey responses were received. There were 12 survey questions, with the ten soliciting suggestions for the City's to consider when implementing ten of the SWS actions. The results of the survey have been used to develop strategies for a successful implementation of the SWS and are described in **Section 4.5.**

2.2 Setting Priorities

The waste hierarchy is a conceptual framework that can be applied to waste management practices to assess the extent to which efforts work towards the concept of zero waste.

The SWS adopted a six-tier waste hierarchy (provided in **Figure 2-6)** A solid white line divides the waste hierarchy into two distinct segments: the top segment are actions people can do individually (e.g., refusing, reducing, reusing, and repairing materials) and the bottom segment are actions that are done collectively, as they rely on the City's waste management systems (e.g., set out and collect waste for recycling, recovery and disposal).

Figure 2-6: City of Greater Sudbury Waste Hierarchy



2.3 Measuring Progress

Metrics are an essential aspect of a waste management strategy as they are used to quantitatively assess the performance of the IWMS. The SWS' metrics are intended to track performance over time and to compare performance against other similar jurisdictions.

Historically, a residential waste diversion rate was important to provide a high-level assessment of the overall performance of a jurisdiction's IWMS and determine Blue Box program funding. Due to Ontario's introduction of IPR programs, municipal Datacall reporting will no longer be required. As a result, many Ontario municipalities are now considering new metrics that can be used to indicate the overall system performance from year to year or from jurisdiction to jurisdiction.

The SWS recommends the following new metrics to track its system-wide overall performance:

2.3.1 Residential Garbage Disposal Rate

A per household or per capita garbage disposal rate provides the City with an indication of the overall quantity of garbage generated from the single-family residential sector and how effectively waste diversion programs are working. The metric involves a calculation of the total residential waste disposed divided by the number of households.

In 2023, the quantity of garbage received from residents from all sources (e.g., roadside and drop-off at City sites) was just over 41,000 tonnes. Based on the number of households and units serviced in 2023, it is estimated that there was approximately **556 kilograms of garbage generated per household** in 2023. Alternatively, the metric can be expressed as **240 kilograms of garbage generated per person** in 2023.

2.3.2 Total Garbage Disposed Annually

The total garbage disposed annually is intended to complement the residential garbage disposal rate metric and provide an all-inclusive measure of the total amount of garbage managed by the City. The total garbage disposed annually reflects the quantity of garbage produced by low- and high density residential customers, as well as the non-

residential sector including commercial and institutional customers, that use City services and facilities.

In 2023, **the total garbage disposed in all three landfills was 89,288 tonnes**.

2.3.3 Greenhouse Gas Emissions

The City has established a working group called the Climate Action Resource Team (CART) whose mandate is to advance the alignment of municipal operations and capital projects with the City's climate emergency declaration. CART's initiatives involve integrating the CEEP into the City's various business units, and it is developing mechanisms to measure its achievement.

In 2023, the City handled about 5,120 tonnes of organic waste through the Green Cart program. In 2023, the City managed about 124,500 tonnes of waste and it is assumed that approximately 31,900 tonnes was organic material generated from the residential and ICI sector. Approximately 84% of the total organic material (26,800 tonnes) could have been diverted away from the landfill.

The model was used to determine a baseline quantity of carbon dioxide equivalent (CO_2 eq.) that was emitted in 2023. The CO2 eq. unit of measurement refers to the metric tonnes of carbon dioxide emissions that have the equivalent global warming potential as one metric tonne of another greenhouse gas.

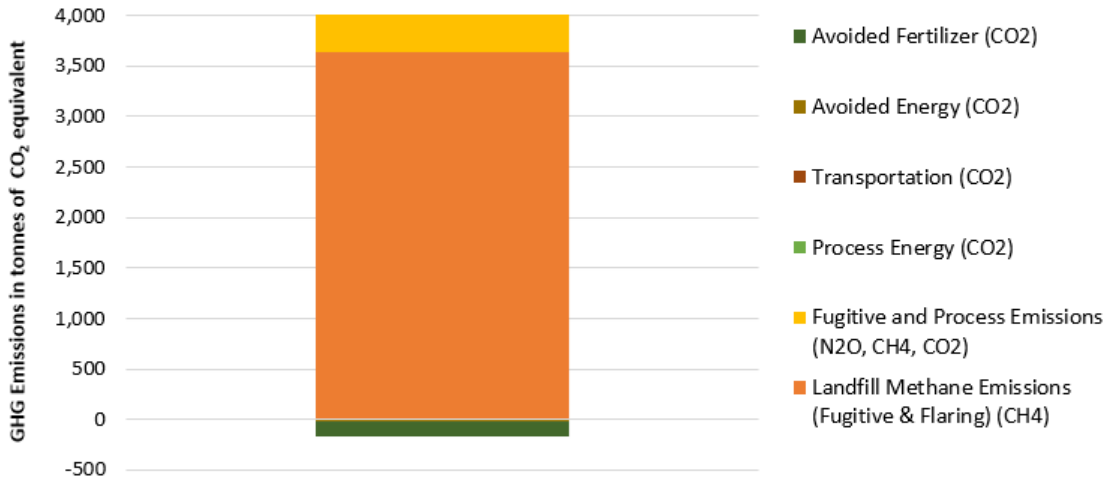
The 5,120 tonnes of organic waste that was composted, plus the 26,800 tonnes of organic material from the residential and ICI sector that were estimated to be in the garbage stream, were used as baseline data. Using the model, the current management of organic waste, results in a total of 4,250 tonnes of CO_2 eq.

Figure 2-7 illustrates the 2023 baseline GHG emissions in metric tonnes of CO_2 equivalent, where the avoided GHG emissions are subtracted from the direct GHG emissions. They are categorized into the following:

- Avoided Fertilizer – the reduction of CO_2 emissions through the use of compost instead of a synthetic fertilizer;
- Avoided Energy – the CO_2 emissions avoided through the replacement of energy generated from fossil fuels with other energy sources (i.e., landfill gas capture, biogas from anaerobic digestion)
- Transportation – the CO_2 emissions associated with transportation of waste from a collection facility to end of life.
- Process Energy – the CO_2 emissions associated with processing waste for disposal or alternative end-use (i.e., collecting and processing landfill gas, use of operating equipment to aerate compost piles, etc.)

- Fugitive and Process Emissions – the nitrous oxide (N_2O), methane (CH_4), and CO_2 emissions associated with the composting process. The calculator converts these emissions to CO_2 equivalent.
- Landfill Methane Emissions – the CH_4 emissions associated with degradation of waste through the landfill cover and through combustion of landfill gas in a flare. The calculator converts these emissions to CO_2 equivalent.

Figure 2-7: 2023 Baseline GHG Emissions by Source (in tonnes of CO_2 eq.)



Nearly 89% of the emissions generated from the City's waste management operations can be attributed to landfill emissions, as the majority of organics produced in the City are disposed of in the landfill (excluding transportation emissions). If the City were to maintain status quo until 2034, the City could potentially generate approximately 3,600 tonnes of CO_2 equivalent from landfill emissions alone. Increased participation in the Green Cart program, as well as changes to processing operations and choice of infrastructure could potentially reduce the quantity of emissions generated from the disposal of organics at the landfill. Implementation of the recommended options could potentially result in a 12% reduction in landfill emissions.

2.3.4 Service Delivery Excellence

The satisfaction and service excellence experience of customers is critical to the success of the IWMS. A count of the number of calls received by the City provides an indication of its achievement with respect to customer satisfaction and service excellence. In the first half of 2024, the City received **approximately 13,106 waste-related calls**. Staff separate the calls into two categories: "first call resolution" calls, which are inquiry based / do not require in-depth investigation; and those that require

additional efforts to resolve. First call resolution calls are immediately resolved by the 311 Call Centre whereas those requiring additional effort are assigned to Environmental Services (e.g., a missed collection that requires investigation to determine why it happened and/or action to resolve).

Expressed as the number of calls per working day, the City received approximately 102 waste-related calls per working day in the first half of 2024. Notably, the 311 Call Center manages an average of approximately 70 inquiry-based calls per day and Environmental Service manages an average of approximately 32 calls per day that required investigation or action. Calls for missed collection and collector/contractor complaints are subdivided into "verified" service failures on the City's part (which includes situations where the cause cannot be determined) and "unverified" where the customer required further information to understand the requirements or resolve the issue. Approximately 4.5 calls per day are verified service failures as a result of missed collection or collector/contractor complaints.

To establish a baseline from which the City can monitor its service delivery performance over time, regardless of population expansion, the number of calls per year can be expressed as a ratio of the number of calls per thousand households. A baseline can be established for each call type so that changes to call volumes can be compared year over year. For example, as there are currently approximately 74,000 households/units in Greater Sudbury, the City is currently receiving a total of **approximately 355 calls per thousand households annually**; with approximately one call per thousand cases being assigned to Environmental Services. Additional baseline measures can be developed for other categories of calls, such as verified calls for missed collections or complaints about collection operators.

Section 4.2 further describes how the City's service delivery performance can be reviewed annually against targets.

3.0 Considering the Future

3.1 Greater Sudbury's Future Needs

The SWS recommendations are actions that the City can implement over the next decade to prolong the life of its landfills and work toward achieving CEEP goals and the other guiding principles. Identifying key challenges, such as landfill and organic waste processing capacity limits was a preliminary step in developing SWS options for the future of waste management.

3.1.1 Gaps, Challenges and Opportunities

As the SWS vision statement and Greater Sudbury waste hierarchy recognizes, a well-functioning waste management system requires both individual (e.g., residents) and collective (e.g., City staff) actions to address gaps and challenges. The SWS provided an analysis of gaps and challenges, as well as opportunities for improvement. Consideration was given to trends in resident behaviour, feedback from consultation, changes in the waste management industry, changes in waste quantities and composition, solid waste related infrastructure and other developments impacting the City's waste management system. Some of the gaps, challenges and/or opportunities identified are presented below with more details provided in the Phase 3 Report: How to Achieve Goals.

Extending Landfill Lifespan

As previously mentioned, there is extremely limited landfill capacity across Ontario. The City's active landfills are valuable assets and extending their lifespan will defer the cost associated with securing future residual waste disposal options (e.g., new landfill, expanded landfill, alternative technologies). The City has approximately 25 years of landfill life remaining overall among the three existing landfill sites, if current disposal quantities are continued. Potential opportunities to extend the landfill lifespans include:

- Updates to programs and policies to reduce the quantity of garbage and enhance waste diversion (e.g., adoption of fee mechanisms, changes to set-out policies);
- Identifying industry and partnership opportunities that could divert more waste from landfill (e.g., for organic waste processing); and
- Enhancing operations to optimize collection and landfill management.

Population Density

It is important to recognize that the City has one of the largest land areas of municipalities in Canada (3,627 square kilometres) and, as an amalgamated City, is comprised of several different communities, including Sudbury, Capreol, Nickel Centre, Onaping Falls, Rayside-Baldour, Valley East, Walden, and other communities where the population density is relatively thin. The discrepancy in population densities within different urban, sub-urban and rural communities within Greater Sudbury presents a challenge for achieving efficiency in waste collection, and service reviews have the potential to identify further cost-savings and emission reduction improvements.

Waste Collection

Increasingly, the waste industry is adopting automated collection, whereby residents place waste into carts, wheel it to the roadside and automated devices on the collection vehicle lift the cart and tip into the compartment. This shift helps the waste industry with employee retention and hiring as it reduces physical strain and repetitive motions on collection operators. As the City collects waste from approximately 63,000 single-family households, healthy ergonomics and efficiency are critical for operational and financial reasons. Based on the experience of other jurisdictions, cart collection can be completed more quickly, which reduces emissions and operating costs.

Resident Behaviour

Source separation is a critical element of an effective waste management system. Source separation requires individuals to identify the type of waste they have and to place it into the correct waste container. Contamination causes a host of problems, such as increased methane in the landfill, downgrading of recycling, loss of potential revenue, plastic/ microplastic pollution, and increased health and safety risks. Mitigations efforts include providing promotion and education, enforcement (which includes collection operators leaving behind contaminated waste) and establishing policies that enable effective enforcement mechanisms.

Organic Waste Processing

There is currently a gap between the quantity of organic waste that the City is **able to collect,** and the quantity of organic waste that it is **able to process**. The gap is a result of insufficient processing capacity and limited available footprint at the City's composting facility located at the Sudbury landfill. Through research studies, the City has worked towards closing this gap by assessing the feasibility of having an organics and biosolids anaerobic digestion facility. It is also considering aerobic technologies that could be implemented likely at a lower capital cost and still achieve the CEEP goal of diverting 90% of solid waste by 2050, which will largely be achieved through increased

diversion of organic waste, or finding partnerships or other facilities to which it could transport the organic waste.

When the City secures additional processing capacity, it anticipates expanding organics collection services to additional customers, (i.e., high density residential customers that are not on roadside collection, and larger industrial, commercial, and institutional (IC&I) participants such as restaurants, grocery retailers and seniors' residences).

Health and Safety

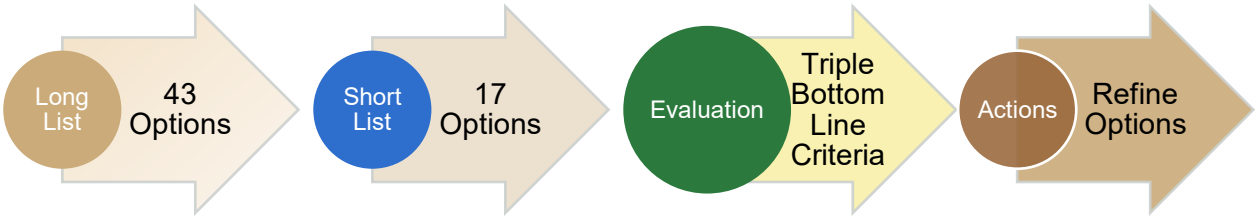
Another common health and safety concern for waste collectors manually handling waste is the risk of injury due to hazardous waste, including sharps (syringes, needles, and lancets) that may be in the garbage. To mitigate this risk, the City currently uses promotion and education tactics. While promotion and education are currently used to mitigate the risk, changes to the set-out policies can also be explored (e.g., carts, clear bags).

3.1.1 Preliminary List of Options

To work toward the SWS vision and guiding principles, and to condense the analysis of gaps, challenges and opportunities, an initial list of potential options was developed.

Figure 3-1 summarizes the options development process that was applied during Phase 3. The initial long list had 43 options, which were prioritized and refined to create a short list of 17 options. The long list of options can be found in the Phase 3 Report: How to Achieve Goals.

Figure 3-1: Options Development Process



As described in **Section 2.1** the project team held extensive internal and external engagement on the proposed options. Feedback from these committees was integrated to refine the options prior to conducting engagement activities with the general public and other interested parties.

3.2 Options Evaluation

During Phase 2, draft evaluation criteria were developed to assess each of the short-listed options. The evaluation was based on a triple-bottom line approach that considered two indicators each for environmental, economic, and social categories. The criteria were applied to the draft options and feedback was received from the public and interested parties in the Phase 3 consultation events.

3.2.1 Triple Bottom Line Evaluation

The following six evaluation questions were developed that considered potential impacts to the environment, economy and socially: The six questions included:

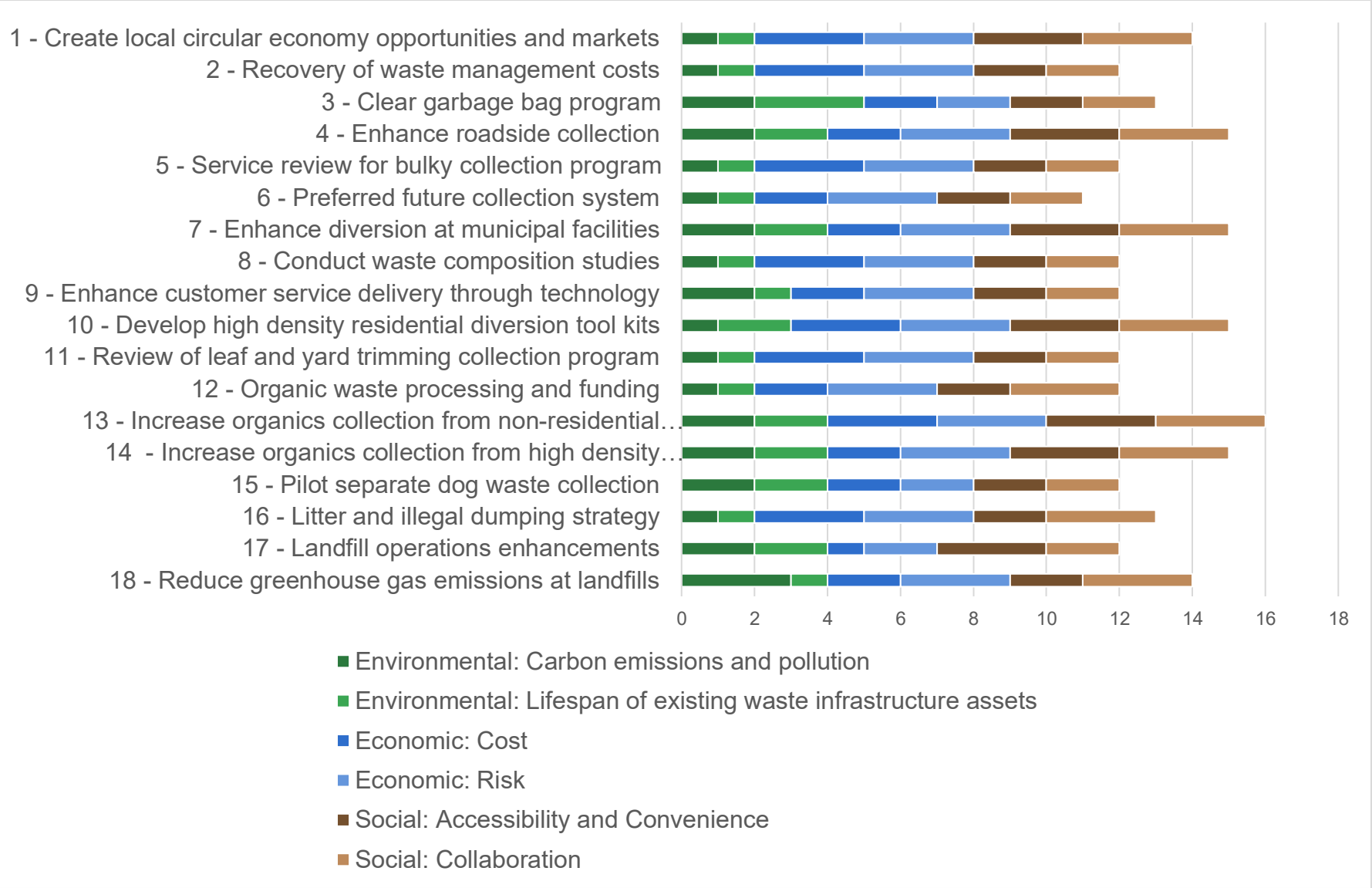
- Does the option reduce carbon emissions and pollution in the City and beyond and work towards achieving net zero emissions by 2050?
- Does the option extend the life of the landfills and prioritize policies and programs that maximize reduction and diversion?
- What does the option cost the City in terms of capital and annual operating costs?
- What are the potential risks with this option?
- Does the option make diversion programs accessible, safe, and convenient?
- Does the option support collaboration with other municipalities, local businesses, First Nation communities, environmental organizations, etc.?

3.2.2 Outcome of Evaluation

The evaluation criteria were applied to the options which helped determine the options' potential to improve the waste management system over the next 10 years from environmental, economic and social lenses. **Figure 3-2** provides an illustrative summary of the evaluation results. The maximum total score for any option is 18. The longer the bar, the more favourable the option scored in the evaluation. All the recommended options received reasonable scores and were deemed reasonable to carry forward.

It should be noted that some options are studies or work that involves detailed planning prior to implementation. As a result of the option not providing immediate results, these options scored low on the criteria (e.g., environmental benefits).

Figure 3-2: Evaluation Results



3.2.3 What We Heard

As described in **Section 2.1.1** considerable engagement and consultation was undertaken to gather public feedback on the draft options. Residents were asked to indicate their level of support for the options through an online survey and additional feedback was received through open ended questions and through in-person community engagement activities. In terms of level of support, most options had over 70% support from survey respondents and the option with the lowest level of support was the Clear Garbage Bag Program which received 50% or a neutral overall response.

A lower level of support doesn't mean that the City should not move forward; however, it signals that there may be more effort required to make the option successful. Through promotion and education, and well-planned implementation the City can mitigate the concerns that we learned about. Information/feedback received from the public consultation process is especially valuable in these cases.

As a result of the feedback received, the 17 short-listed options were refined and a new option was added: “Diversion tool kits for high density residential and IC&I sectors”. Results of the Phase 3 engagement is documented in the Phase 3 Report: How to Achieve Goals.

4.0 Recommendations

The final list of options has been developed into 18 recommendations, which are to:

1. Create local circular economy opportunities and markets;
2. Recover waste management costs;
3. Implement a clear garbage bag program;
4. Enhance roadside collection;
5. Review the bulky waste collection program;
6. Develop the preferred future collection system;
7. Enhance existing diversion program at municipal facilities;
8. Conduct waste composition studies;
9. Enhance customer service delivery through technology;
10. Develop diversion tool kits for the high density residential and ICI sectors;
11. Review the leaf and yard trimming collection program;
12. Secure organic waste processing and funding;
13. Increase organics collection from non-residential sector;
14. Increase organics collection from apartment buildings;
15. Pilot separate dog waste collection;
16. Develop a litter and illegal dumping strategy;
17. Enhance landfill operations; and
18. Reduce greenhouse gas emissions at landfills

Upon Council adoption, these recommendations will be provided as detailed reports/ business cases seeking Council approval for implementation to advance the City's waste management goals, including minimizing the quantity of waste requiring handling and disposal, maximizing waste diversion opportunities, and providing quality services in a cost-efficient manner. As well, the recommendations support the City in fulfilling its commitment to addressing the climate emergency and supporting achievement of its CEEP goals.

The recommendations are clustered into categories under headings from the waste hierarchy and the anticipated impacts are discussed below. Descriptions of the 18 recommended options are provided in **Appendix A**.

4.1 Anticipated Impact of the Recommended Actions

The SWS recommended 18 actions are aligned with the waste hierarchy and are anticipated to have the following outcomes:

Reduce / Reuse / Repair

The reduce/ reuse/ repair category has one option (i.e., option #1) that centers around not creating waste in the first place. It supports the City in forming and facilitating partnerships that keep materials in circulation, which can help avoid raw resource extraction for new products. Importantly, if reduction, reuse, and repair options are effective, the City would not handle, process, or dispose of as much material. Furthermore, local opportunities for reuse and repair have the added benefit of reducing carbon footprints by reducing long distance transportation of waste.

The anticipated outcomes are:

- Minimize the total quantity of waste to City handles;
- Researches the viability of local opportunities for reuse and repair; and
- Move towards achieving the City's climate change goal by reducing and reusing.

Recycle

The recycle category has nine options (i.e., options #2 through 10) which focus on increasing diversion through improved participation in existing diversion programs and implementation of new programs for both residential and non-residential customers. Using technology and program enhancements, the recycle options help the City extend the life of the landfills and delays the need for new landfill capacity, while working towards CEEP goals. Some of these options include opportunities to increase diversion through low-cost policy changes and making the collection system more efficient and convenient.

The anticipated outcomes are:

- Reduce the quantity of garbage disposed in the landfill;
- Delay the need for new disposal capacity;
- Increase customer service satisfaction; and
- Move towards achieving the City's climate change goals.

Recover

The recover category has four options (i.e., options #11 through 14) which center around improving and enhancing both Green Cart organics and leaf and yard trimming programs. These options aim to achieve significant emissions reductions by keeping organic waste out of landfill, as methane is a potent greenhouse gas that comes from decaying food waste.

The anticipated outcomes are:

- Reduce food waste in landfills;
- Delay the need for new disposal capacity;
- Create compost; and
- Move towards achieving the City's climate change goals by increasing diversion and reducing emissions.

Dispose

The dispose category has four options (i.e., options #15 through 18) which provide opportunities to improve public space waste management, increase landfill efficiencies and reductions in GHG emissions.

The anticipated outcomes are:

- Increase efficiencies;
- Reduce litter and illegal dumping of waste;
- Conserve landfill space;
- Increase customer service satisfaction; and
- Move towards achieving the City's climate change goals by reducing emissions.

4.2 SWS 10-Year Targets

In **Section 2.3**, four metrics were selected that will serve to understand performance of the City's waste management system. Based on the anticipated impacts of the 18 recommendations, the anticipated targets for each metric have been estimated.

Residential garbage disposal rate: By implementing the SWS actions could result in each individual resident reducing the amount of garbage they create by **16**%.

Total garbage disposed annually: Collectively, the total amount of resident and non-residential waste landfill is estimated to be reduced by **22%**.

GHG emissions generated and reduced: Increasing participation in the Green Cart program through the SWS actions will support the City's CEEP goals and reduce the quantity of organics landfilled. This is estimated to reduce greenhouse gas emissions at the landfill by **12%**.

Service Delivery Excellence: Over the course of the SWS implementation, continuous improvement in customer services will be targeted and will be measured as a percentage reduction based on the number of verified customer calls. If the City achieves one to 9 percent, it will be considered a fair level of improvement; 10 to 25 percent will be considered good; and 26 to 50 percent will be considered excellent.

Some of the options are studies and pilot projects that upon completion, will provide better information to the City to advance decision-making. It is anticipated that additional benefits (e.g., more information about the waste system, waste quantities and composition; information on opportunities including potential funding mechanisms) and associated impacts to the four metrics noted above (i.e., reduced waste to be managed, decrease in GHG emissions) will be achieved through the implementation of the following study and pilot recommended actions:

- Recovery of waste management costs;
- Bulky collection program service review;
- Preferred future collection system;
- Conduct waste quantity and composition studies;
- Review leaf and yard trimming collection program;
- Organic waste processing and funding;

- Pilot separate dog waste collection;
- Litter and illegal dumping strategy; and
- Pilot biosystem at the landfill to reduce greenhouse gas emissions.

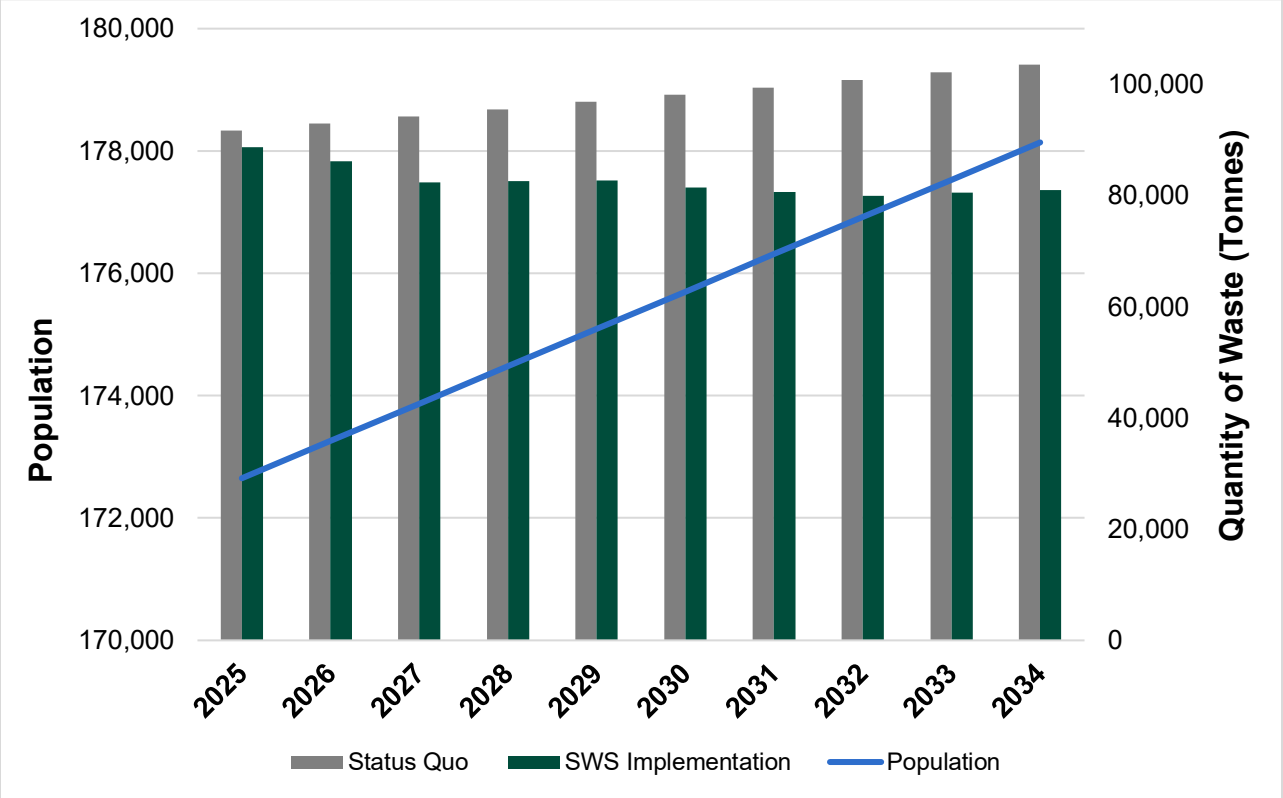
4.2.1 Impact of Not Implementing Recommended Actions

Figure 4-1 illustrates the difference in per person residential waste disposal rate if the City continues with status quo or implements the 18 recommended SWS options. Implementation of SWS options results in a 16% reduction in waste disposed per capita compared to the status quo.

Figure 4-1: Comparison of Residential Waste Disposal Rates (Status Quo vs. SWS Implementation)

Figure 4-2 provides an overview of the population growth up to 2034 and the total waste disposed annually from both the residential and non-residential customers for two scenarios: with and without the SWS actions implemented. Significant reductions in waste disposed can be observed from year 2027 and onwards with the implementation of SWS options even with an increasing population. By the end of the planning period it is estimated that, compared to status quo, implementation of SWS options would result in approximately 22,500 more tonnes of waste being diverted from the landfill each year.

Figure 4-2: Comparison of Total Residential and Non-Residential Garbage Landfilled (Status Quo vs. SWS Implementation)



4.3 Potential Impacts

The potential impacts of the 18 recommended actions to waste diversion and GHG emission reductions were estimated and ranked as low, medium and high. The clear garbage bag program (for residential and non-residential customers) and the implementation and expansion of the Green Cart program (to apartment and condominium buildings and to the non-residential sector) are expected to achieve the highest impacts.

The City of Greater Sudbury already provides waste diversion programs like Green Cart and Blue Box which create the biggest impact to metrics like reducing GHG emissions and the amount of waste disposed in landfills. New programs targeting specific waste streams (e.g., batteries, clothing) or enhancements to existing programs will create incremental improvements to those already achieved by the City.

Cost estimates were also estimated as low, medium or high when considering the combined capital and annual operating estimated costs to plan and implement the option. Overall, the SWS actions are estimated to cost $2 million over the 10-year planning period and the cost to implement Year 1 SWS actions, as detailed in the

recommended implementation timeline, is estimated at $505,000 of which, approximately a one-time cost of $70,000 (or 14%) is for the clear bag program (e.g., staff time, promotion and education).The SWS recommends continuing to bring in low-cost policy changes and best practices that modestly increase the waste diversion rate and reduce the amount of garbage created and handled by the City, support progress to meet CEEP goals and enable the City to continue to use its current landfill assets to the extent possible.

For context, to replace a landfill similar to the Sudbury Landfill, the estimated cost is $100 million and to replace a landfill similar to the Hanmer or Azilda sites, the cost is estimated at $50 million each. Delaying the need for new landfill capacity is a cost-effective approach and was top of mind throughout the SWS development. In addition, delaying the need for alternative technologies to reduce the quantity of garbage landfilled was also top of mind. Technologies like incineration have been considered by other municipalities such as the City of Ottawa who estimates the cost of a new facility to be within $450 and $500 million.

The ranges used to categorize the potential impacts to costs, diversion and GHG emissions are provided in **Table 4-1**. A summary of the potential for each option is provided in **Table 4-2.** The recommended actions impact different customer types including low-density residential (LDR), high-density residential buildings like apartments and condos (HDR), non-residential (NR) and/or municipal facilities (MF).

As noted above, there are several actions that involve undertaking studies or pilot projects. The results are pending on these studies, including the costs/opportunities for cost savings and the potential for increased waste diversion.

Table 4-1: Legend for Potential Impacts

Potential Impact	Cost Range	Diversion Impact	GHG Impact (as landfill emissions in CO_2e)
Low	$50,000 or less	1% or less	Little to no reductions
Medium	$50,000 to $300,000	2% to 4%	Some reductions
High	More than $300,000	More than 4%	Large reductions
Not applicable	Little to no impact or difficult to measure		
TBD	These recommendations are studies and pilot projects. The potential impacts will be determined following the completion of the studies and pilot projects.		

Table 4-2: Potential Impacts from Recommendations

Table Legend

LDR - low density residential, **HDR** - high-density residential, **NR** - non-residential, **MF** - municipal facilities

SWS Actions	Targeted Sector	Cost Range	Diversion Impact	GHG Reduction Impact
Reduce				
Create local circular economy opportunities	LDR, HDR, NR	Low	Low	Low
Recycle				
Recovery of waste management costs	LDR, HDR, NR	Low	TBD	TBD
Clear garbage bag program	**LDR, HDR, NR**	**Medium**	**High**	**High**
Enhance roadside collection	LDR, HDR	Medium	Low	Low
Bulky waste collection program review	LDR, HDR	Low	TBD	TBD
Preferred future collection system	LDR, HDR, NR	Medium	TBD	TBD
Enhance existing diversion program at municipal facilities	MF	High	Low	Low
Conduct waste composition studies	LDR, HDR, NR, MF	Low	Not applicable	Not applicable
Enhance customer service delivery through technology	LDR, HDR, NR	Medium	Low	Low
Create diversion tool kits for apartments, condos and the non-residential sector	HDR, NR	Low	Low	Low
Recover				
Review leaf and yard trimming collection program	LDR	Low	TBD	TBD
Organic waste processing and funding	LDR, HDR, NR, MF	Medium	Not applicable	Not applicable
Increase organics collection from non-residential sector	**NR**	**Low**	**Medium**	**Medium**
Increase organics collection from apartment buildings	**HDR**	**High**	**Medium**	**Medium**
Dispose				
Pilot separate dog waste collection	LDR, HDR	Medium	Not applicable	Low
Litter and illegal dumping strategy	LDR, HDR, NR	Medium	Not applicable	Low
Landfill operations enhancements	LDR, HDR, NR, MF	Medium	Not applicable	TBD
Pilot biosystem at landfill to reduce greenhouse gas emissions	LDR, HDR, NR, MF	Medium	Not applicable	TBD

4.4 Implementation Timeline

The SWS timeline identifies how the recommended actions can be put in place over the next ten years and contemplates the City's planning, implementation, and monitoring-related needs. The timeline extends to 2034 with monitoring and maintenance activities in place for all the recommended actions from 2031 through to 2034.

The implementation plan was developed in consultation with City staff who supported the process by identifying important milestones, such as the timeline of regulatory changes (e.g., the Blue Box transition date); and the end date of existing contracts (e.g., the collection contract).

The recommended action to implement a **Clear Garbage Bag Program** is timed to begin in 2025 as this option has the biggest impact on diversion and GHG emission reductions over the life of the SWS. The timing is strategic, as the clear garbage bag program addresses a health and safety concern to collection operators, and creates the necessary behavioural change (i.e., prompts resident to sort their waste appropriately), to support the implementation of other recommended options. In particular, planning of the **Preferred Future Collection System** will need to be in place prior to the end of the current roadside collection contract (which expires in 2028 or 2029 if extended for one year), and seeing improvement to how waste is sorted at home in advance of the implementation of changes to the collection system (e.g., transition to the use of carts) helps the City mitigate possible future contamination concerns. Furthermore, the action drives behavioural change, and habituates residents to diverting waste.

Similarly, the recommended action to **Enhance Existing Diversion Programs at Municipal Facilities** can be planned and implemented relatively early in the timeline. Through this action, municipal facilities can lead by example and educate residents on proper diversion, while diverting more waste and reducing contamination. Currently municipal facilities use a range of waste containers and offer varying levels of service (e.g., some have both Blue Box and Green Cart, some just have Blue Box, etc.). The planning and implementation of this action will consider how new standardized containers, and promotion and education initiatives, can be purchased and phased in over several years, to spread out container replacement costs.

As identified in **Section 1.4**, due to Ontario's transition of responsibility for the Blue Box program to producers, as of April 1, 2025, the City will no longer be responsible for providing roadside collection of Blue Box materials to residents. The recommended options to **increase organic collection** from the non-residential sector and from high density residential customers will be planned and implemented after the Blue Box transition and represents increases to the service level and to the quantity of organic waste diverted from landfill. Planning for these options is an initial and critical first step

and additional processing organic waste capacity is required prior to implementing this option. Based on municipal best practices, the City's current organic waste processing capacity should be reserved to meet the needs of the existing roadside residential program and cannot be exceeded due to ECA limitations. Expanding the program should only occur once additional processing capacity is secured by the City. This is scheduled to begin in 2028 however it is noted that this timing could occur earlier should processing capacity be secured earlier.

With respect to the recommended action of enhancing landfill operations, there are three sequential elements: compaction equipment, scale software and traffic flow. Maximizing the airspace available at the landfill through investments in compaction equipment is the first in this sequence due to its potential to prolong the life of the landfills.

Table 4-3 provides an overview of the SWS actions and the proposed implementation timeline.

Table 4-3: Anticipated Implementation Timeline

Implementation Timeline of SWS Actions	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Reduce											
Create local circular economy opportunities		P	I	M							
Recycle											
Recovery of waste management costs	P&I	M			I	M					
Clear garbage bag program	P&I	M									
Enhance roadside collection		P	I	M							
Bulky waste collection program review	P	I	M								
Preferred future collection system	P	I	M								
Enhance diversion at municipal facilities		P&I	M								
Conduct waste composition studies	P&I	M									
Enhance customer service delivery through technology			P	I	M						
Create diversion tool kits for apartments, condos and the non-residential sector		P&I	M								
Recover											
Review leaf and yard trimming collection program	P	I	M								
Organic waste processing and funding	P		I	M							
Increase organics collection from non-residential sector				P		I	M				
Increase organics collection from apartment buildings				P		I	M				
Dispose											
Pilot separate dog waste collection				P	I	M					
Litter and illegal dumping strategy			P&I	M							
Landfill operations enhancements:											
Compaction equipment	P	I	M								
Scale software		P	I	M							
Traffic flow			P&I	I	M						
Pilot biosystem at landfill to reduce GHG emissions				P		I	M				

4.5 Strategies for a Successful Implementation

Once City Council adopts the SWS, staff will be preparing detailed reports/ businesses cases seeking Council approval for implementation. This will involve elaborating and clarifying operational, policy and planning details, and developing communications and monitoring plans. The following key strategies are anticipated to improve the outcome of the recommended actions as they are implemented:

- **Planning:** Based on the timeline above, staff will plan how to implement the action including consideration of the feedback received during the Phase 4 engagement (see below). For some actions, this would involve creating a scope of work that would refine and clarify processes and methodologies involved in research studies.
- **Internal communication:** Another initial success factor is to engage internal staff who can collaborate on implementing the action. This may take several different forms, including conversations with operationally focused staff, or those responsible for municipal facilities, to identify considerations such as availability of space and ongoing activities on sites that would be involved in the action.
- **Public and customized communication plans:** Many of the actions will require a communications plan that will identify information that the public or that specific audiences will need concerning one or more actions. A communication plan will provide specific ideas on target audiences, key messages, and the timing of the messages to enable the City to prepare the public (or key audiences) for changes. The intended outcome of a communications plan is to provide residents, community groups, businesses, or other audiences with information on why changes are coming, what the changes will be, and to provide appropriate information in advance of the change so that any concerns that would be raised can be resolved.
- **Monitoring:** Identifying problems early allows staff to develop solutions and resolve issues more immediately. As the actions are developed for implementation, staff can build in monitoring mechanisms, including feedback loops, for both the implementation itself, and for the 10-year SWS planning horizon.

In the final phase of the SWS development, a final public survey was issued which gathered suggestions on what the City should consider when implementing recommendations. Participants provided specific ideas to support the implementation of ten actions that impact residents included in the survey. For example, survey respondents made suggestions, such as:

- Partner with schools to create reuse workshops and repair programs to educate the next generation on recycling and repurposing;

- Involve non-profit organizations that currently provide services (e.g., Scouts and Guides);
- Allow clear bags to be stored in a can/container to allow for privacy and avoid animals breaking into garbage;
- Create a black bag collection program that allows residents to trade in unused black bags for clear bags;
- Consider an annual bulk pickup day to reduce illegal dumping;
- Create incentives to boost participation in apartments, condos and the non-residential sector who currently do not separate waste; and
- Consider different ways to enforce participation in diversion programs.

To monitor progress of the 18 recommended actions, it is suggested to review the status of the SWS halfway through the planning period (i.e., year 5). At this point in time, the City can assess if the intended outcomes are being achieved and if any updates or changes are required to stay on the path. In addition, monitoring the regulatory regime and developments in the waste management industry may provide an opportunity to implement new programs (e.g., markets become available for materials that are currently disposed). This five-year review will provide the opportunity to adapt to the current conditions of the waste management system.

5.0 Closing

At this point in time, the City is managing its waste at its transfer station and three landfills and waste diversion sites and has achieved a relatively consistent residential diversion rate (averaging 44 percent) over the last 10 years. However, assuming the City continues its flat line trajectory, landfill capacity will decrease steadily. Due to the planning time horizon and capital investments required to secure alternative disposal options (i.e., a new landfill or incinerator), the City will need to start the process, and requesting funds, for alternative disposal options at lease a decade before its disposal capacity reaches a critical point. The planning and approval process can be expected to take approximately 10 years and, given the experience in other Ontario jurisdiction, siting and approval processes come with a high degree of uncertainty.

Prolonging the life of its landfills delays the need for new disposal capacity. The SWS' recommended actions support the City in continuing in its effort to maintain its landfills as assets: 25 years ago, the City estimated its landfill life to be 25 years. Currently, the City still estimates that its landfills have 25 years of remaining capacity. As factors such as increased population growth will reduce the remaining years of capacity, it is imperative that the City consider ways to decrease the amount of garbage it handles.

Through its 18 recommended actions the SWS provides a roadmap for the City to delay the need for new disposal solutions. The SWS recommendations are based on best practice research, quantitative analysis, cost estimates and forecasts, and consideration of the resources available within the waste industry and within Greater Sudbury.

While this is a time of considerable changes impacting the management of waste, residents' behaviour may be improved. As individuals take responsibility for their waste, the City can work towards achieving Council's CEEP and net zero emissions goals. The SWS provides a plan for the Greater Sudbury community to continue to take progressive actions to responsibly manage waste and preserve assets and the shared environment for future generations.

APPENDIX A

Description of the Recommended Actions

The following provides descriptions of each of the recommended actions. Their estimated impacts on waste diversion and GHG emission reductions as well as the financial impacts is provided in **Section 4.3**.

Reduce / Reuse / Repair

1. **Create local circular economy opportunities:** The City will hold a series of workshops for City staff and local institutions, businesses, and organizations to find ways to reduce, reuse, repair, refurbish and/or remanufacture materials that would otherwise be landfilled. The aim will be that materials currently wasted will be used over again by local businesses/ organizations thus creating a made-in-Greater Sudbury solution.

Recycle

2. **Recovery of waste management costs:** A study will be undertaken to determine ways to recover costs, increase diversion and save valuable landfill space. The analysis will consider a full or partial user pay system for roadside collection of some waste streams (i.e., garbage, bulky waste), whether the Residential Tipping Fee Holiday should be reduced or eliminated, and consideration of fees for non-residential recycling processing and future organics collection and processing for non-residential locations as well as apartments, townhouses, and condominiums.

3. **Implement a clear garbage bag program:** To reduce health and safety concerns and increase participation in the Blue Box and Green Cart programs, clear bags will be used for garbage collection by both residential (e.g., houses, apartments, condos, and townhouses) and non-residential customers (e.g., businesses, organizations, schools and industries). A regular plastic shopping-bag sized opaque bag will be permitted within each clear bag. As the policy's implementation is planned, consideration will be given to the benefits (e.g., additional privacy) and drawbacks (e.g., collectors' time and physical effort) of permitted clear bags to placed within a container on collection day for privacy purposes noting that provision of containers can add to collection operator physical strain to heave out bags from the containers. Given that clear garbage bag programs are common in Ontario municipalities, staff will work with local retailers to see that clear bags will be stocked in retail locations that sell garbage bags. Advanced notice will be provided to residents on the planned start date for the program. A list of municipalities that currently have a clear bag program is provided in **Appendix B**.

4. **Enhance roadside collection:** The City will explore partnership opportunities with organizations that collect batteries and textiles (e.g., clothing) with the intention of providing a roadside collection program. The City may be able to benefit from IPR

funding for the provision of a roadside battery collection program, which provides a higher level of convenience for residents by using a small bag for storage and set out, as well as to reduce the number of batteries ending up in the garbage, Blue Box and Green Cart, which poses environmental, health, and safety concerns. A textile collection program provides a convenient way for residents to separate and recycle their textiles in their own homes, as well as supports and promotes local organizations that manage used textiles.

5. **Bulky waste collection program review:** The City will conduct a review of its bulky waste collection program. The review will include an assessment of the current service level including an assessment of the cost to the City. Options to review include consideration of user fees, adjusting the collection approach to be within specific days and/or times of the year, and promoting specific days for gently used bulky items to be set at the roadside for reuse.

6. **Preferred future collection system:** The City will review how it will provide collection services in time for the new collection contract and how to finance the future collection system under a partial or full user pay model. The review will consider the upcoming transition of the Blue Box program from the City to producers and the desire to shift to automated collection with a fleet that has reduced emissions based on latest industry trends.

7. **Enhance existing diversion program at municipal facilities:** The City will develop guidelines and purchase standardized waste containers to have a consistent design and appearance both indoors and outdoors at locations such as parks, libraries, community centres and arenas. This option aims to help the City lead by example, inform residents on how to separate waste properly and encourage residents to properly divert waste in their own homes.

8. **Conduct waste composition studies:** The City will conduct waste audits to measure the performance of programs before and after its Blue Box transition date (April 1, 2025). Data will be collected for different customer types (i.e., houses, apartments, commercial and industrial) where possible. The audit studies will inform the City of its waste composition pre- and post-transition to the producer responsibility Blue Box collection system and will support the City in understanding if there is an increase in Green Cart contamination, recycling in garbage, or other quantity/composition issues post-transition. Better understanding the City's performance both before and after the

transition will help it to address issues, focus efforts and apply continuous improvement best practices.

9. **Enhance customer service delivery through technology**: The City currently uses an outdated collection routing and vehicle locating system that has limited applications that are compatible with newer collection and routing technology. The update will enhance customer service delivery as it is expected to support timely, efficient, and reliable resolution of customer service inquiries; improvements to collection routing; access to improved data for monitoring and reporting purposes; and increased safety.

10. **Create diversion tool kits for apartments, condos and non-residential sector:** The City will develop guidelines and promotional and education materials for reducing contamination and increasing diversion from apartments, townhouses, condominiums, and businesses. Promotion and education will specifically target the unique challenges of living in an apartment, townhouse and/or condominium in comparison to a single-family home.

Recover

11. **Review leaf and yard trimming collection program:** The City will remove grass clippings as an acceptable item in the leaf and yard trimmings program. Most municipalities do not allow grass in their leaf and yard waste programs as high nitrogen levels result in a sub-optimal material mixture. Residents can “grass cycle” or leave grass clippings on their lawns which helps moisture and nitrogen return to the soil.

The City may also consider adjusting the number of leaf and yard collections on an annual basis when considering the preferred future collection system. This would contribute to operational and economical efficiencies and environmental benefits such as using less fuel and reduced greenhouse gas emissions associated with collection.

12. **Organic waste processing and funding:** Organic waste is currently taken to the Organic Composting Area at the Sudbury Landfill and Waste Diversion Site, where the City is permitted and licensed to compost using an aerobic windrow method. For the City to be able to process more organic waste, a study will be undertaken to review estimates of potential organic waste quantities, aerobic composting technologies, and potential partnerships and contracts. Increasing the quantity of organic waste composted will help the City move towards its Community Energy and Emissions Plan goals.

13. **Increase organics collection from non-residential sector:** Once the City has secured increased organics processing capacity for Green Cart materials, the organic collection program will be expanded to the non-residential sector like businesses and restaurants.

14. **Increase organics collection from apartment buildings:** Once the City has secured increased organics processing capacity for Green Cart materials, the organics collection program will be expanded to apartment and condominium buildings and townhouses with more than six residential units.

Dispose

15. **Pilot separate dog waste collection:** The City will pilot an in-ground dog waste collection program at up to five locations where a separate receptacle for dog waste will be set up near roadside litter containers. If successful, the City could consider expanding the program and diverting the waste to a specialized processing facility.

16. **Litter and illegal dumping strategy:** The City will develop a strategy to address litter and illegal dumping that is anticipated to review the current state of litter and dumping, identify the City's current management approach, consult with necessary interested parties on opportunities for improvement and provide recommendations. As well, consideration will be given to how actions can be planned and implemented to coincide with other changes to other waste programs, including the other Sustainable Waste Strategy recommendations.

17. **Landfill operations enhancements:** The City will finalize the design for traffic flow at the three sites. The focus will be to review existing traffic control measures and confirm the preferred approach for improving traffic flow, reducing wait times and idling and increasing the overall efficiency at its landfill and waste diversion sites. Another component of this option will be the purchase of equipment to measure and monitor waste compaction at the landfills to support maximizing landfill capacity. Lastly, this option will also consider the use of modernized scale software that could be used to improve landfill access requirements (e.g., to ensure non-City of Greater Sudbury residents are not accessing the sites). Modernizing the scale software is intended to provide efficiencies, support effective contract management and enhance customers' experience.

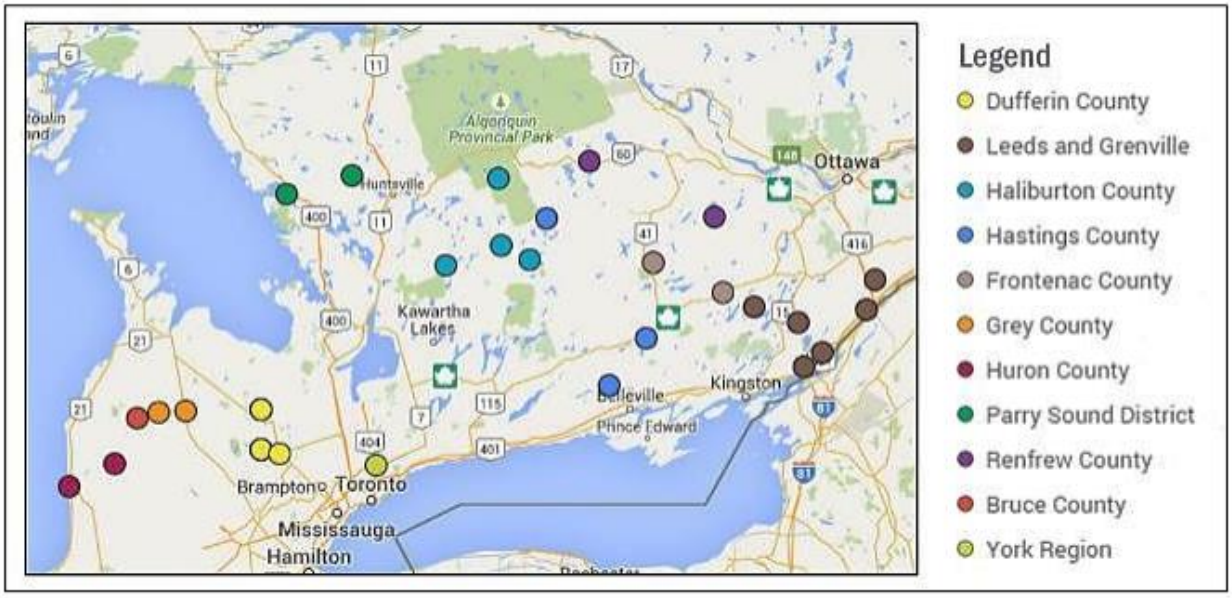
18. **Reduce greenhouse gas emissions at landfills:** The Sudbury Landfill has an active landfill gas collection system, as is required given its size. However, due their

smaller size, the Hanmer and Azilda Landfills are active landfills that do not have gas collection systems (as they fall below the provincial legislative requirements and are too small to provide a return on investment for a gas-to-energy project). To better understand opportunities for emissions reduction at smaller sites, this pilot project will test the effectiveness of a passive biosystem at a closed landfill site or landfill cell within an active site and assess the potential to reduce landfill methane emissions and contribute to CEEP goals. The results could inform the City of the potential for improving the management of three closed landfill sites (which continue to emit methane gas or greenhouse gases) and the potential to reduce emissions at the Hanmer and Azilda landfill sites.

APPENDIX B

Clear Bag Programs Implemented in Other Jurisdictions

Many municipalities have introduced programs for the use of Clear Bags for garbage collection. In 2015, the Continuous Improvement Fund's "Clear Bag Garbage Program Implementation Toolkit" estimated that more than half a million households were involved in clear bag garbage collection programs across Canada and that approximately 40 Ontario municipalities have programs.[3] In this same toolkit, the following map was prepared to illustrate the number of municipalities with clear garbage bag collection at the time of publication (2015).



A number of the Ontario based programs including Dufferin County, Markham and West Grey have been highlighted within this toolkit along with examples of resource materials created to support the design, communication and successful rollout of their individual clear bag garbage programs.

Updated List of Municipalities with Clear Bag Programs

Ontario

1. City of Cornwall (beginning April 2025)
2. City of Goderich
3. City of Guelph
4. City of Kawartha Lakes
5. City of Markham
6. City of Peterborough
7. City of Ottawa – not yet implemented

[3] https://thecif.ca/projects/documents/748-Clear-Bag-Toolkit.pdf

8. Dufferin County
    - Township of Amaranth
    - Township of East Garafraxa
    - Town of Grand Valley
    - Township of Melancthon
    - Town of Mono
    - Township of Mulmur
    - Town of Orangeville
    - Town of Shelburne
9. District of Muskoka (beginning in 2025)
    - Town of Huntsville
    - Town of Bracebridge
    - Town of Gravenhurst
    - Township of Muskoka Lakes
    - Township of Lake of Bays
    - Township of Georgian Bay
10. Municipality of Central Manitoulin
11. Municipality of Gordon/Barrie Island
12. Municipality of West Grey
13. Municipality of Whitestone
14. Township of Northeastern Manitoulin & the islands
15. Township of the Archipelago
16. Town of Aurora
17. Town of Orillia
18. Township of Algonquin Highlands
19. Township of Carling
20. Township of Dysart et al
21. Township of Greater Madawaska Valley
22. Township of McMurrich/ Monteith
23. Township of Minden Hills
24. Township of South Algonquin
25. Municipality of Trent Lakes
26. Selwyn Township
27. Township of Asphodel-Norwood
28. Township of Cavan Monaghan
29. Township of Douro-Dummer
30. Township of Havelock-Belmont-Methuen
31. Township of North Kawartha
32. Township of Otonabee-South Monaghan
33. Rideau Lakes Township