

2021

Integrated Waste Management Report

Sustainability | Water and Waste Operations



Towards 70%
SASKATOON'S WASTE DIVERSION TARGET

MAY 2022

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Introduction

What is Integrated Waste Management?

Integrated waste management refers to the strategic approach to managing all sources and all aspects of solid waste, including generation, separation, transfer, sorting, treatment, recovery, and disposal in an integrated manner.¹ The City takes an integrated approach to waste management in an effort to balance human and environmental health, affordability, and convenience with efficient use of resources.

Delivering Integrated Waste Management Services

The City of Saskatoon's (City) integrated waste management services fall within the Environmental Health and Utilities Business Lines. In 2021, the Water & Waste Operations Department (W&WO) and the Sustainability Department (Sustainability) operated programs and carried out projects through the Sustainability Service Line, Waste Handling Service Line, Waste Reduction Service Line, and Waste Services Utility Service Line. The City's integrated waste management services are funded through a combination of property tax revenues, utility fees, program generated revenues, and stewardship funding from Multi-Material Stewardship Western (MMSW) and Product Care.

The City's integrated waste management activities are directed by the City's *2022-2025 Strategic Plan*, which identifies the following outcome under the goal of Environmental Leadership: *Solid waste diversion is maximized, and landfill operations are optimized.*

The Key Action to progress this is to: *Implement actions in the Solid Waste Reduction and Diversion Plan within proposed timeframes to achieve 70% diversion from the Saskatoon Landfill.*

In 2021, the core services that comprised the City's integrated waste management approach included:

Waste Diversion Services

- ▶ Collection of recyclables from single-family residential households (curbside collection);
- ▶ Collection of recyclables from multi-unit residential households;
- ▶ Collection of recyclables from the City's three recycling depots;
- ▶ Collection of recyclables from public space containers (e.g. bottle baskets);
- ▶ Collection of recyclables from civic facilities;
- ▶ Recycling opportunities at the Saskatoon Landfill;
- ▶ Provision of containers and collection of organics for the subscription-based Green Cart program;
- ▶ Management of seasonal Christmas tree drop-off sites;
- ▶ Operation of yard waste depots and compost facility; and

¹ https://sustainabledevelopment.un.org/content/dsd/csd/csd_pdfs/csd-19/learningcentre/presentations/May%20%20am/1%20-%20Memon%20-%20ISWM.pdf

- ▶ Management of the Household Hazardous Waste Collection Program.

Waste Disposal Services

- ▶ Provision of containers and collection of garbage from single-family residential households (curbside collection);
- ▶ Collection of garbage from many multi-unit residential households and some commercial customers; and
- ▶ Landfilling of garbage at the Saskatoon Regional Waste Management Centre and
- ▶ Collection of landfill gas.

Education and Engagement Services

- ▶ Webpage, social outreach, mobile App
- ▶ Saskatoon Waste Wizard, website and online collection calendar and app
- ▶ Recycling communications campaigns during spring and winter
- ▶ Recycling Education Unit and the Let's Roll Recycling Team
- ▶ Newcomer recycling and composting education workshops
- ▶ Home composting education
- ▶ Saskatoon Curbside Swap
- ▶ School education programs at the Loraas Recycle and Cosmopolitan Industries material recovery facilities (MRF)
- ▶ Annual blitz for landfill customers on safe tarping of loads
- ▶ Waste bylaw education and enforcement; and
- ▶ Engagement and surveys to understand attitudes and awareness about current and future programs.

Solid Waste Reduction & Diversion Plan

The *Solid Waste Reduction and Diversion Plan* (SWRDP) was completed in 2020 and received by Council in January 2021. The SWRDP provides 27 actions for program and policy development to optimize service delivery and reach the waste diversion target of 70% from the Saskatoon Landfill. This could be achieved as early as 2030 if the recommended timelines are followed.

The vision for the SWRDP is to produce less waste overall and recycle or compost as much as possible. This includes waste which would have been delivered to the Saskatoon Landfill, as well as other waste operations servicing the Saskatoon area. The plan’s mission is to establish Saskatoon as a leader in waste reduction and diversion in the Prairie region.

The SWRDP is an “evergreen” plan, meaning it is a living document that will respond to new priorities and changing trends.

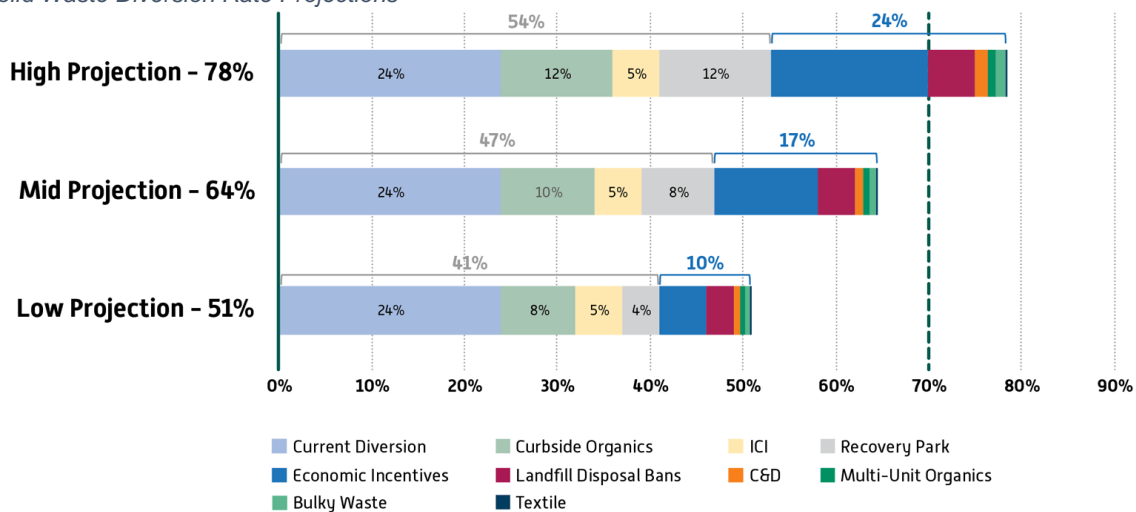
Environmental Performance Targets

The City has set performance targets relating to waste diversion and greenhouse gas (GHG) emissions. The targets are intertwined as successful waste diversion initiatives correspond directly to reductions in GHG emissions. In addition to waste diversion and GHG emission reduction targets, the *Solid Waste Reduction and Diversion Plan* recommended additional performance measures for waste management.

Waste Diversion Target

The City’s waste diversion target is to divert 70% of Saskatoon’s waste from the Saskatoon Landfill. The *Solid Waste Reduction and Diversion Plan* was received by City Council on January 11, 2021, and outlines the actions needed to meet the 70% waste diversion target, which may be feasible as early as 2030.

Solid Waste Diversion Rate Projections



Greenhouse Gas Emission Reduction Target

The GHG emission reduction target for both City (local government) and community emissions is 80% below 2014 levels by 2050. The City's *Low Emissions Community Plan (LEC Plan)* was developed in 2019 and outlines the actions needed for Saskatoon to meet its GHG emission reduction target by 2050. The *LEC Plan* includes two waste actions and milestone targets:

- ▶ Reducing organics by 90%, plastics by 95%, and paper by 90% to reduce emissions by an estimated 1.3 million tonnes CO₂e by 2050; and
- ▶ Expanding the capture and destruction of landfill gas at the Saskatoon Landfill to reduce emissions by an estimated 1.9 million tonnes CO₂e by 2026.

Solid Waste Reduction and Diversion Plan Progress Report

The Solid Waste Reduction and Diversion Plan's actions are organized by when work on the projects or programs is planned to begin, including actions that were in progress when the plan was finalized as well as those that will be initiated in the near term (2021–2023), medium term (2024-2025) or long-term (2026+).

Each action is expected to move through various phases to reach completion or operations, as described in the table below. Based on the specific project or program, the time it takes to move through the phases will vary and to assist in indicating whether the actions are occurring within their planned timelines is indicate through the colours.

Legend

Phase	
○○○○	Not Started No work has occurred on this action yet.
●○○○	Initiation Includes the initial steps to define an initiative's scope, including a preliminary assessment of the City of Saskatoon baseline and review of best practices. The outcome of this phase is often a business case, leading to a budget proposal and resource request.
●●○○	Development Includes feasibility work, research, studies, frameworks, assessments, inventories, engagement, or pilots, and is typically completed using capital funding. The result is often a decision or approval report outlining options, implications, and the Administration's recommendation on how to proceed with the initiative.
●●●○	Implementation Includes completing everything required to put Council's decision into action. The specific requirements will be defined during the development phase and may include preparing or amending a policy, bylaw, or procedure; establishing a level of service; preparing or modifying a program; procuring a service; or constructing a facility. Implementation typically utilizes capital funding with a transition plan to operating funding, which requires budget approval.
●●●●	Complete/ Operational Includes ongoing delivery of a program to meet expected service levels. Once operational, budget adjustments are made to reflect the actual program cost.

Status		
green	On Track	This action is on schedule or has resources identified within the two year budget cycle. Some actions are expected to move through all phases within a single budget cycle while others are expected to take multiple budget cycles.
yellow	Delayed	This action is delayed or likely to be delayed and will occur in a future budget cycle.
grey	Not Proceeding	This action is not expected to progress within the 10-year timelines of the Solid Waste Reduction & Diversion Plan.

In Progress

Action	Phase and Status	Progress
Residential curbside organics	●●●○	A contract with an organics processor has been finalized and cart procurement is in progress. Additional program updates and decisions will come forward in 2022, with the launch planned in Q2 2023.
Requirements for businesses and organizations (ICI) to divert recyclables and organics	●●●○	The Waste Bylaw was updated to include the recycling and organics regulation for the ICI sector and the supporting program's design was completed. Recycling education phase to launch in 2022.
Recovery Park	●●●○	Construction on the site is underway and preparation for procurement of diversion services is in progress. Additional reporting is planned for Q1 2023.
Recycling depots: immediate safety/contamination improvements	●●●○	Meadow Green Depot was closed due to safety concerns in 2021. A pilot for reduced hours for the Lakewood depot and increases to service levels for all three city depots have been approved in 2022.
Provincial household hazardous waste regulation	●●●●	The costs to operate the HHW program is now partially offset by the stewardship group Product Care. Opportunities for further expansion through a permanent HHW depot are being explored through the Recovery Park project.
Requirements for storage and safe collection of waste at multi-unit buildings	●●●●	The requirements have been completed for the current collection programs offered to multi-unit buildings. Additional changes due to new programs, including organics, may be needed in the future.
Landfill Gas Expansion Project	●●●○	City Council approved \$4.02 Million for phase 1 of the Landfill Gas Expansion Project, which includes \$2,742,500 from the Investing in Canada Infrastructure Program.

Short Term (2021–2023)

Action	Phase and Status	Progress
Accessible curbside collections program	●●●○	This action is now called the Assisted Waste Collections Program. In February 2022 Council approved the program's expansion and now Administration is putting the updated program into place. Applications will be accepted started in Q3 2022 and the service will start in early 2023.
Business and organization waste diversion regulation compliance	●●○○	Funding is in place to begin this project in 2022, starting with recycling at City owned buildings. This action has been paired with the development of a Green Teams program that will engage and educate staff on sustainability in the workplace.
Emergency waste management and recycling strategy	●●○○	Funding is in place to initiate this work in 2023 to prepare the City for waste-related service disruptions as well as handling of waste that may be generated through emergencies, such as severe weather.
Compost depot program review	●●○○	Data collection on the baseline use of the compost depots and plans to track changes with the new curbside organics program are being prepared. This review is planned to start following the launch of the curbside organics program.
Mandatory residential multi-unit organics	●●○○	Funding is in place in 2022 and 2023 to develop a multi-unit organics program, including a pilot to address local conditions, such as weather, and anticipated challenges with the introduction of a multi-unit organics program.
Construction and demolition waste diversion: City of Saskatoon options	●●○○	Funding is in place in 2022 and 2023 to assess current C&D disposal practices for City projects and develop a plan to ensure diversion consistent with Recovery Park. This also includes assessing construction specifications and where feasible include recycled content consistent with Recovery Park.
Recycling market development for Recovery Park	●●○○	Funding is in place in 2022 and 2023 to support recycling market development for Recovery Park to help ensure that diversion opportunities are maximized.
Disposal ban at the Saskatoon Landfill	●●○○	To accommodate the adjustments to the ICI waste diversion regulation timeline and work on the curbside waste utilities during this budget cycle this will likely be delayed to 2024.
Recycling depot program review	●●○○	Data collection on the baseline use of the recycling depots and plans to track changes with the immediate changes (above) and Recovery Park opening are being prepared. This review is planned to start following the opening of Recovery Park.
Waste reduction through procurement and specifications	●●○○	This action is being addressed through the Triple Bottom Line project workplan, which includes supporting the development, accountability, and monitoring of sustainable procurement practices to enable the City to

		use its purchasing power to increase sustainability outcomes.
Federal single-use plastic ban and performance standards for plastics	● ○ ○ ○	Draft regulations on the single-use plastics ban were released at the end of 2021. The feedback from the City was reflected and no additional feedback was provided. The City awaits further information on the launch of this ban expected by the end of 2022.
Provincial stewardship program review	● ○ ○ ○	The engagement report for the review of the Multi-Material Recycling Program and The Household Packaging and Paper Stewardship Program Regulations is available and the City's feedback was reflected. The draft regulations were released in May 2022 for review and comment.

Medium Term (2024–2025)

Actions	Phase and Status	Progress
2024 Waste Characterization Study	● ● ● ○	Waste characterization studies for the curbside residential sector are planned and funded for the next four years, starting in 2022. Characterization studies for the multi-unit residential sector and ICI sector are still planned for 2024, however may be brought forward earlier if the need is identified.

Long Term (2026+)

Actions	Phase and Status	Progress
Economic incentive tools to support reduction and diversion	● ● ● ○	Direction was provided to implement a utility for the curbside organics program in 2023 and to design a variable rate garbage utility for 2024. An affordability program is also being developed. Reporting planned throughout 2022 to present options and recommendations on program design.

Additional Action

Actions	Phase and Status	Progress
Proper Disposal of Elm Wood Waste	● ● ○ ○	In December 2021 City Council approved a workplan to encourage proper elm disposal at the Saskatoon landfill. The research phase is underway.

The following actions have not been initiated and business cases will be prepared for future budget deliberations.

Medium-Term Actions (2024–2025)	Long-Term Actions (2026+)
<ul style="list-style-type: none"> ▶ Long-term waste management service and sustainability plan ▶ Special/bulky waste program for collection, recycling and disposal ▶ Construction and demolition waste diversion: community options ▶ Public space and event waste reduction ▶ Food waste reduction program ▶ 2025 Waste Reduction and Diversion Plan Update 	<ul style="list-style-type: none"> ▶ Share, reuse, and repair program ▶ Textile and apparel reduction and recycling program ▶ Landfill closure and replacement plan

Greenhouse Gas Emission Reduction Progress

Waste diversion initiatives result in a net reduction in greenhouse gas emissions compared to landfilling the same waste. This means the emission reductions associated with recycling and composting materials exceed the emissions produced in collection and processing activities. In 2021, the City’s waste diversion programs reduced GHG emissions by an estimated 48,000 tonnes CO₂e, relative to if the same materials were landfilled. This is equivalent to removing 10,400 cars from Saskatoon roadways for the year. GHG emissions savings were estimated using Environment and Climate Change Canada’s Greenhouse Gases Calculator for Waste Management (October 2009). The life-cycle methodology of the calculator is based on the United States Environmental Protection Agency’s Waste Reduction Model (WARM) and compares GHG emissions for baseline and alternative waste management scenarios (e.g., landfilling vs. recycling and composting).

Net emissions from waste landfilled at the Saskatoon Landfill in 2021, were 94,080 tonnes CO₂e in 2021. This value considers overall emissions from buried waste (145,950 tonnes CO₂e) and emission reductions associated with landfill gas enclosed flare destruction and power generation (51,870 tonnes CO₂e). The decrease reflects recent improvements in the capture of landfill gas from the Saskatoon Landfill, including the installation of an additional 12 vertical extraction wells in the fall of 2020, bringing the total number of vertical wells connected to the existing landfill gas collection system to 41.

Trends in Waste

COVID-19 Impacts on Waste Management and Diversion

The COVID-19 global pandemic continued in 2021. While impacts to waste management operations were significantly reduced compared to the previous year, there continued to be observable changes to waste generation. Residential waste disposal continued to be a larger portion of total waste than pre-pandemic in many jurisdictions, including waste from food, packaging, ‘spring cleaning’, and home renovations. Single-use items have surged, with packaging and PPE being more prevalent during the pandemic. Saskatoon has not completed a waste characterization study since pre-pandemic, so the extent of these trends locally is unknown.

As a result of the pandemic, there has also been an increase of disaster waste management planning. Saskatoon will be following this trend with an emergency waste management strategy in the approved capital budget plan for 2023.

Recycling Markets

Global recycling markets continued to struggle throughout 2021 but there was some stability for paper and cardboard. Cardboard prices, in particular, saw an increase as demand increased. The majority of material collected in the City’s residential recycling programs went to mills in North America for recycling, although the movement of this material was often delayed due to pandemic related strains on the transportation industry.

By weight, approximately 87% of the material recovered in the City’s recycling programs was paper and cardboard, while approximately 7% was plastic. The most difficult category of plastic in the program to find markets for was non-deposit Plastic #1. Plastic #1 is most commonly clear plastic clamshells that are used to package items like strawberries, baked goods, and other food goods are packaged in. At the end of the year, a large portion had to be stockpiled due to a lack of demand.

The City is taking the following steps to help adapt to changing market conditions:

- ▶ Working with the provincial stewardship, Multi-Material Stewardship, to help fund recycling and put responsibility on the producers of paper and packaging.
- ▶ Working with residents to decrease aspirational recycling (wish-cycling) to lower contamination.
- ▶ Working with both recycling service providers to process clean material, deliver effective education to residents, and respond to a changing recycling industry.

The new reality for recycling is one of fewer market options for paper and plastic and an overall demand for higher quality material. At the same time, recycling programs in Saskatoon and across Canada are seeing a rise in contamination rates. Contamination rates remain high across North America. On average, 20% of collected materials are non-recyclable items that

have been placed into residential recycling programs.²² The reasons for this are complex and include more hard-to-recycle plastics or multi-material packaging being generated, changes in what materials are accepted by programs, inconsistencies across jurisdictions or sectors which creates confusion, and an increase in wish-cycling (the act of placing an item in a recycling bin in the hopes it will be recycled but not knowing if it is accepted).

Plastics

Plastic waste continues to be a priority at the federal level. On April 23, 2021, the Government of Canada added Plastic Manufactured items to CEPA Schedule 1. This provides the legislative framework to allow the Government of Canada to ban or restrict the sale and distribution of certain single-use plastics under future regulation. Regulations were published for public comment in the Canada Gazette, Part I in December 2021. It is the Government's intent to finalize these Regulations and bring the bans into force as quickly as possible, as early as late 2022. The ban is expected to prohibit the following single use plastic items:

- ▶ checkout bags
- ▶ cutlery
- ▶ food service ware made from or containing problematic plastics
- ▶ ring carriers
- ▶ stir sticks
- ▶ straws

Both Regina and Prince Albert have moved ahead of the federal government by enacting local regulations that restrict the distribution of single-use checkout bags. Prince Albert's regulation took effect October 2021 and Regina's regulation took effect February 2022. Both cities faced delays due to COVID-19. Early feedback from both cities suggested that the ban was relatively easy to implement and not many infractions.

Extended Producer Responsibility

Throughout Canada provinces are starting or expanding Extended Producer Responsibility (EPR) programs to standardize recycling options for their residents and provide financial support to run programs. EPR requires producers of materials to cover the partial or full cost of end-of-life recycling for their products.

In 2021 Saskatchewan saw progress in two areas of EPR. First, it launched the Household Hazardous Waste Product Stewardship Regulation. Call2Recycle is now the stewardship group for consumer batteries and launched collection at all SARCAN locations in January 2021. Product Care is now the stewardship group for all other regulated Household Hazardous Waste materials and the City has entered an agreement to cost-share Household Hazardous Waste collection events.

²² https://www.waste360.com/business/top-10-trends-solid-waste-over-next-10-years?utm_source=Sailthru&utm_medium=email&utm_campaign=Issue:%202020-12-23%20Waste%20Dive%20Newsletter%20%5Bissue:31633%5D&utm_term=Waste%20Dive

In early 2021 the Province of Saskatchewan began engagement on The Household Packaging and Paper Stewardship Program Regulations. The provincial regulations govern the distribution of packaging and printed paper to Saskatchewan households by businesses with the goal of a successful, efficient and sustainable program to handle the recycling of packaging and printed paper. The City prepared a corporate position as a response that supported a move to full extended producer responsibility for residential recycling programs, which would see administrative and financial responsibility for operating recycling programs rest with producers and distributors of materials instead of municipalities. The draft regulations are expected in the coming months and additional reporting will be prepared if needed.

Waste and Climate Change

Canada's waste sector is responsible for 4% of Canada's total emissions, and released 28 Mt of emissions in 2019, according to data from the most recent National Inventory Report (2021). Methane is the primary GHG emitted from the sector, representing about 27% of Canada's methane emissions. Solid waste landfills are the largest source of emissions from the sector (23 Mt in 2019, 83% of total waste emissions, and 23% of total methane emissions). The landfill methane generated today is a result of decades of landfilling of biodegradable waste - food, yard and garden waste, paper, wood, natural fiber textiles and others - which makes up more than 60% of the waste currently landfilled in Canada.

Food waste reduction and diversion as well as landfill gas capture are two of the main GHG emission reduction opportunities identified in the federal government's *2030 Emissions Reduction Plan*. The City of Saskatoon is already progressing these initiatives and could continue to progress them through federal funding opportunities.

Waste-to-Energy

Through the development of the *Solid Waste Reduction and Diversion Plan* the City plans to analyze the viability of alternative waste processing technologies, including waste-to-energy, as a long-term action (2026+) and monitor advancements in technologies and their uptake in Canada in the interim. There have been no substantial changes since reporting on this last year.

In waste-to-energy facilities, solid waste is burned to temperatures that can reach 850°C, breaking down waste into various gaseous outputs comprised mostly of CO₂ and water vapor. The hot gases are then used to heat water and produce pressurized steam which turn turbines that create energy.

Canadian municipalities have been using waste-to-energy options since the 1970s as an alternative to landfilling. There are currently seven waste-to-energy facilities operating in Canada in municipalities with robust diversion programs and where active landfills continue to play a role in waste management. Globally, 11% of waste is treated through energy producing incineration, mostly in Europe and Japan where space for landfills is in shorter supply.

Waste-To-Energy facilities support a sustainable waste management system by reducing large volume and types of waste that can be disposed of in an environmentally friendly matter rather than landfilling which can have risks to the surrounding ecosystem. Technology has made significant advances which have most incineration facilities meeting or exceeding air pollution

standards³. However, there are challenges with WTE initiatives as this method costs roughly twice as much as landfilling due to the sophisticated air pollution control systems required. In addition, the facilities are viewed as locally unwanted land uses similarly to any waste disposal site. Lastly municipalities are concerned incineration will discourage citizens from properly diverting their waste as they view incineration as the solution to disposing of all materials⁴.

Appendix A provides more information on these waste-to-energy facilities, including location, type, capacity, costs, as well as the other waste programs currently implemented in the communities served by waste-to-energy facilities.

³ Dearden, Philip, et al. *Environmental Change & Challenge: A Canadian Perspective*. Oxford University Press, 2020.

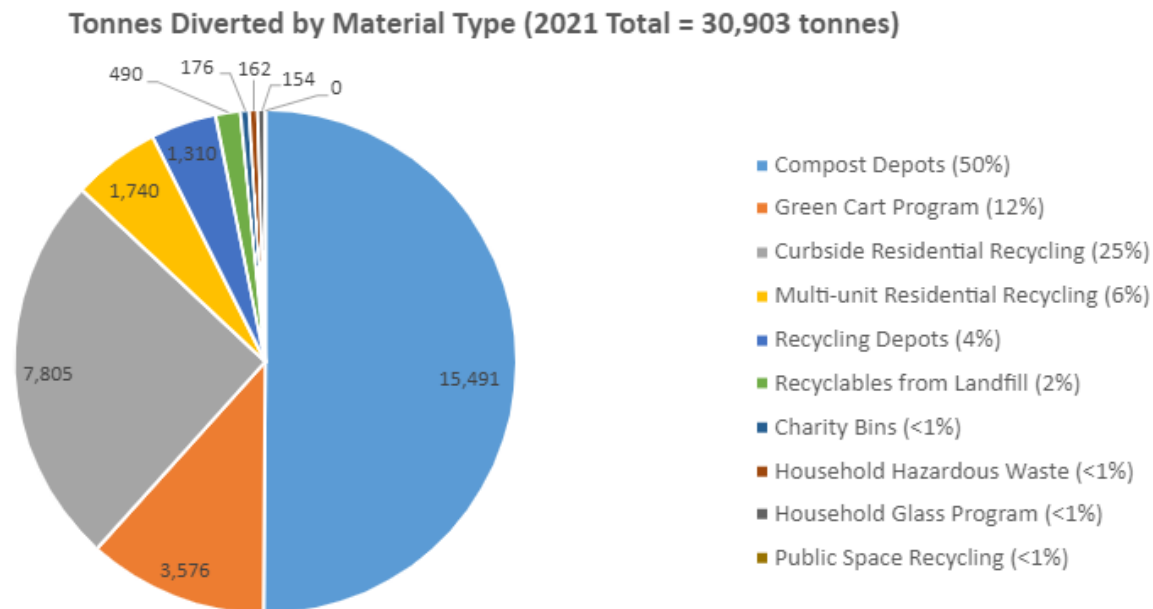
⁴ B. Mitchell, ed., 2015, *Resource and Environmental Management in Canada*, 5th edition, Don Mills, ON: Oxford University Press

Waste Diversion Services

Waste Diversion in Saskatoon

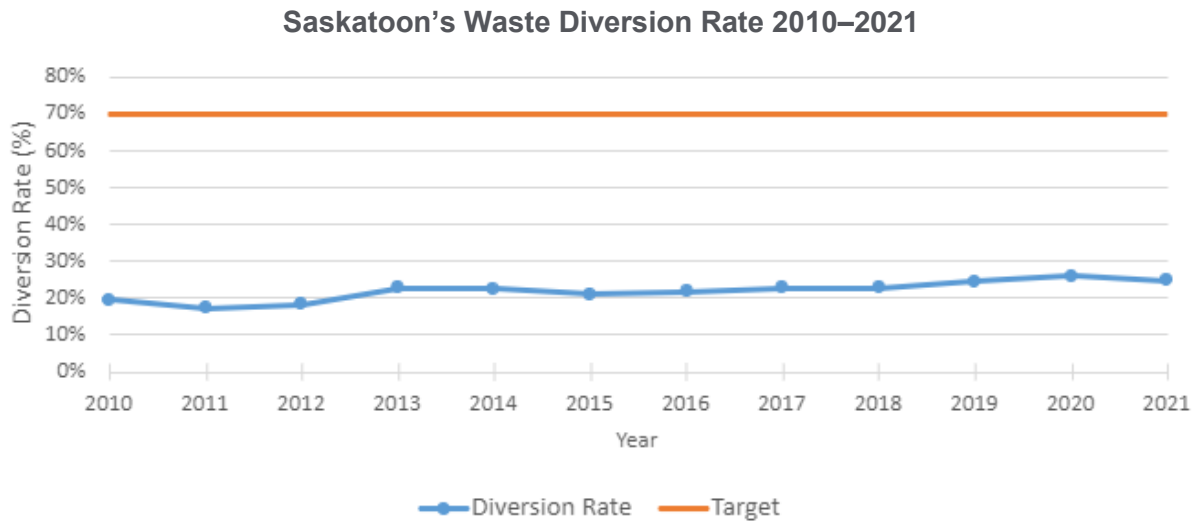
A variety of programs and initiatives including recycling, composting, hazardous waste collection, and reuse of gently-used items, help to divert waste from regional landfills. The figure below shows the tonnes of materials diverted by each of the City’s waste diversion initiatives (total of 30,903 tonnes) and how each initiative contributed to the 2021 diversion rate.

Tonnes Diverted by Material Type in 2021



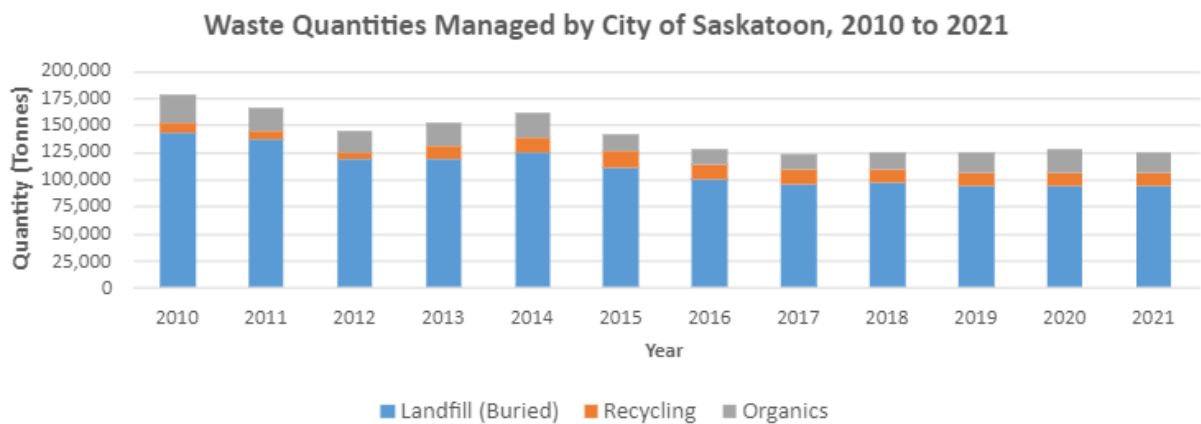
Saskatoon’s Waste Diversion Rate

The City’s Waste Diversion Rate for 2021 was 24.7%, a decrease from 26% in 2020. This performance indicator remains below the target of 70%. The waste diversion rate calculation considers only City-run diversion and disposal programs. It does not include reduction, reuse, recycling, or disposal through non-City programs, e-waste, nearby landfills, or by the private sector. The decrease is within expected annual variation for a stable diversion rate. Annual variations in the weather likely contributed since 2021 was a dry year with very low precipitation. Saskatoon experienced only 180.7 millimeters of precipitation which is just over half of the average rate. This would generate less organic yard waste than wetter years. When there is drier weather, materials such as paper, cardboard and other mixed materials do not weigh as much as when wet leading to a decrease in total tonnage. Some of the decrease could also be due to the easing of pandemic restrictions and returning to workplaces for some citizens who had been working from home earlier in the pandemic. However, without a waste characterization study in 2020 or 2021 it will be difficult to assess the pandemic’s full impact.



The total amount of waste managed by the City in 2021 was slightly lower than in 2020. Tonnages of recyclables and organics decreased by approximately 6% and 8%, respectively, while the tonnage of waste buried increased by less than 1%. The annual quantities of garbage, recyclables, and organics (yard and food waste) are shown in the figure below.

Waste Quantities Managed by City of Saskatoon, 2010-2021



The City's waste diversion rate of 24.7% continues to place Saskatoon below many other Canadian municipalities, as indicated in the following table. The median diversion rate among cities and regions participating in Municipal Benchmarking Network Canada is 45%.

Recycling

The City's residential recycling services are contracted to Loraas Recycle and Cosmopolitan Industries (Cosmo), who are responsible for collection, processing, and marketing of recyclables generated by residents.

Single-family Residential Households (Curbside Collection)



Residential Recycling Curbside Collection

Loraas Recycle has been providing curbside recycling service to single-family households in Saskatoon since 2013. Each household (including secondary suites) in Saskatoon is provided with a blue cart that is collected from their curb every second week based on a published collection schedule. Households can also request a second cart for additional recyclables for a fee. In 2021, there were approximately 72,300 active carts in the single-family residential recycling program. Residents paid an annual per household utility fee of \$89.64 for this program.

In 2021, a total of 9,784 tonnes of material were collected through the curbside collection program; 13% of this was contamination (materials placed in the cart that are not recyclable). This is an increase from 12% in 2020, 10% in 2019 and 2018, 8% in 2017, 6% in 2016, and 4% in 2015. The remaining 7,805 tonnes of recyclable materials were marketed to be recycled into new products. Recyclables captured through the curbside collection program contributed 6.2% toward the City's waste diversion rate of 24.7%.

The average set-out rate for the curbside recycling collection program was 67%, which provides a snapshot of what occurs on each collection day. This does not indicate how many people use their blue carts since many do not necessarily put them out each collection. The 2021 Waste & Recycling Survey found that 75% of households with individual blue carts claim to recycle all or most of their recyclable items. This proportion has not changed since 2019.

Carts not being collected due to incorrect placement or overfilling continue to occur. In 2021, there were an average of 658 non-compliant carts per month, representing 0.9% of all carts. This is an increase from 2020, which saw an average of 588 non-compliant carts per month or a

non-compliance rate of approximately 0.7%. Other concerns continue to be carts left out in back lanes for more than 24 hours and scavenging of high value recyclables (beverage containers and milk jugs). Back lane issues are addressed through communications such as the Saskatoon Waste Wizard-and through education letters, warnings, and tickets issued by the City's Environmental Protection Officers.

Material Capture Rate

The *Solid Waste Reduction and Diversion Plan* recommended reporting on the material capture rate to provide a more detailed assessment of recycling program performance. Capture rate is determined by calculating the amount of material captured in a recycling program compared to the overall amount of material generated. A high capture rate means residents are using the program correctly; for instance, putting recyclables in the recycling cart instead of the garbage cart. A downside to measuring the capture rate, and the reason it is not used regularly, is that it can only be calculated through a comprehensive waste audit, which needs to be conducted regularly.

In 2019, the overall capture rate in the curbside program for recyclables was 66%, meaning that of all the recyclable material generated, 66% by weight was placed correctly in the blue cart and the other 34% was thrown in the garbage. When we look at capture rates for specific material types, we can infer that Saskatoon residents properly recycle newspaper (95% capture rate) but there is room to improve steel food can recycling (56% capture rate).

Moving forward this performance measure will be reported annually for the next four years, since curbside waste characterization studies are planned to understand the impacts of upcoming program changes.

Multi-Unit Residential Recycling Collection

The Multi-Unit Residential Recycling (MURR) program was launched on October 6, 2014 and was fully operational in 2015. Service is provided by Cosmopolitan Industries (Cosmo). In 2021, residents paid an annual per household utility fee of \$46.32 for this service.

In 2021, a total of 2,118 tonnes of materials were collected through the MURR program; 18% of this was contamination (materials placed in the bins that are not recyclable). This is a minor decrease from 19% in 2020. The remaining 1,740 tonnes of recyclable materials were marketed to be recycled into new products. Recyclables captured through the multi-unit collection program contributed 1% toward the City's waste diversion rate of 24.7%.

In 2019, the overall capture rate in the Multi-Unit program for recyclables was 43%, meaning that of all the recyclable material generated, 43% by weight was placed correctly in the blue cart and the other 57% was thrown in the garbage.

Recycling Program Customer Service

Resident inquiries regarding the curbside collection program increased slightly in 2021, with Customer Service receiving 2,517 phone inquiries and 168 email inquiries for a total of 2,685 inquiries (or an average of 236 inquiries per month). This number is an increase from 221 inquiries per month in 2020.

Inquiries for the MURR program decreased in 2021, with Cosmo receiving and responding to 212 phone inquiries and 88 email inquiries throughout the year (or an average of 25 inquiries per month). This is a substantial decrease from 2020 in which there were an average of 41 inquiries per month.

Recycling Depots

In April of 2021, City Council resolved that the City proceed with the permanent closure of the Meadowgreen Recycling Depot. This decision was made based on the inability to address the continuous public safety concerns sustainably and effectively from illegal dumping, scavenging, nuisance, and criminal behavior.

Three City-operated depots and recycling programs at civic facilities accept the same materials as the curbside collection and multi-unit recycling programs in a single-stream with no sorting. The bins at the depots remain the property of Cosmo. All materials are collected by the City and are processed at Cosmo's Material Recovery Facility. City staff use front loader trucks to collect recyclables from the depots (stored in metal bins) and rear loader trucks to collect illegally dumped waste. Illegal dumping is often a problem since the depots are unstaffed, and as such employees from W&WO spend a considerable amount of time servicing the sites.

In 2021, 1,310 tonnes of material were collected at the depots. Recyclables captured through the recycling depots contributed 1% to the City's diversion rate of 24.7%. It is estimated that 18% of this material was contamination. In addition, a total of 16 bins from the recycling depots were characterized as 'contaminated' in 2021, with the contents of the bins transported to the Saskatoon Landfill for proper disposal. In 2020 a total of 84 bins were characterized as 'contaminated' and were subsequently landfilled. This substantial decrease is likely due to the closure of the Meadowgreen depot, which accounted for 52% (44 bins) of the total contaminated bins in 2020 (note: these loads were separate from the collections used to calculate the contamination rate from recyclables collected at the depots).

SARCAN Glass Recycling Partnership

The Glass Recycling Partnership between SARCAN Recycling and the City of Saskatoon started in 2019 as an expanded recycling option, allowing residents to bring household glass to Saskatoon SARCAN depots for recycling. In 2021, 154 tonnes of household glass were captured through the program. This exceeded estimates for the year and shows that the program has been well-received by residents. Approximately 133 tonnes of clear glass was recycled as reflective glass beads (used in road paint) and approximately 20 tonnes of coloured glass used to manufacture fiberglass insulation. In 2020, 107 tonnes of glass were recycled (note: SARCAN depots were closed for almost 3 months due to COVID-19). In the first year of the program (2019), 112 tonnes of glass were recycled.

Public Space Recycling

The City maintains a contract with Creative Outdoor Advertising of Canada for the collection of recycling at 230 transit stops across the city. After removing contaminated items from the total weight of materials collected at the transit stops, only 24 kilograms of recyclables were captured through the program in 2021.

Recyclables – beverage containers and paper – are also collected through 'self-servicing' baskets located in pedestrian-oriented commercial areas including Downtown, Broadway

Avenue, Central Avenue, and 22nd Street West. These materials are collected by the City, recycled by Cosmo, and included within the total reported for the City's recycling depots.



Bottle "Basket" (purple), Paper Recycling Container (blue), and Garbage Bin (black)

The self-servicing model for beverage container and paper recycling continues to be successful and allows the City to expand recycling beyond the City's core areas into areas such as parks. To date, 132 bottle and can baskets and 33 paper recycling baskets have been installed in business improvement districts (BIDs), and 94 bottle and can baskets have been installed in civic parks since 2013.

The City continues to explore opportunities to expand recycling in public spaces. Collaboration between Departments ensures that recycling amenities are given appropriate consideration during early stages of streetscape or public space design projects.

Multi-Material Recycling Program

The Waste Packaging and Paper Stewardship Plan (often referred to as the Multi-Material Recycling Program) is the waste packaging and paper stewardship program administered by Multi-Material Stewardship Western. The program was launched on January 1, 2016 in response to provincial regulations. Municipalities and regional waste authorities are compensated for some portion of the cost of collection and processing of recyclables. In 2021, the City received \$31.75 per unit, up from \$25.75 per unit in 2020 for a total of \$3,452,114. Funding was applied to operating programs that promote waste reduction and diversion including the Multi-Unit Residential Recycling Program. Funding was also applied to capital projects for research and development of environmental initiatives including development of additional waste diversion programs.

Organics

Green Carts for Yard and Food Waste

The Green Cart program for yard and food waste is an optional fee-for-service program available to households with curbside cart collection (not available for multi-unit buildings or commercial customers). In 2021, the number of subscribers to the Green Cart program reached

an all-time high of over 11,916 which equates to approximately 14% of eligible households. In addition, there were 29 community gardens and nine civic facilities subscribed to the program. The total amount of material diverted through the Green Cart program in 2021 was approximately 3,576 tonnes. Organic materials captured through the Green Cart program contributed 2.9% toward the City's waste diversion rate of 24.7%.

The City owns and maintains the green roll-out carts provided to program subscribers, provides collection service, and processes the material at the Highway 7 (West) compost depot. During the 2021 Green Cart season, the City of Saskatoon delivered 1,503 new green roll-out carts to program subscribers and over 839 were removed from service.

The program fee was \$65 per year prior to May 1, and \$85 per year after May 1st. Bi-weekly collections (14 total) were provided from May through early November. The cost to the resident if they registered prior to May 1 was approximately \$4 per collection.

2022 will be the last year of the program with the introduction of a city-wide curbside program in Spring of 2023. Subscribers that have a green cart in 2022 will keep their cart and automatically be transitioned to the new program.



Green Cart (Yard and Food Waste) Collection

Compost Depots

In 2021, the City operated two compost depot locations for drop off of leaves, grass, non-elm tree and shrub branches, as well as food and garden waste that would otherwise end up in a landfill. The composting sites, located at the West (Highway 7) depot and at the East (Highway 5) transfer station are available to residents at no charge and to commercial haulers by permit (\$150 for the season). In 2021, an estimated 19,020 tonnes of organic material were diverted through the compost sites. Organics captured through the compost depots contributed 12.4%

toward the City's diversion rate of 24.7%. This total included 5,910 tonnes of leafy material (leaves and grass), 8,990 tonnes of woody material (branches, logs, and woodchips), 3,870 tonnes of sod and topsoil mixtures, and 250 tonnes of food waste.



Yard Waste Drop-off at Compost Depot

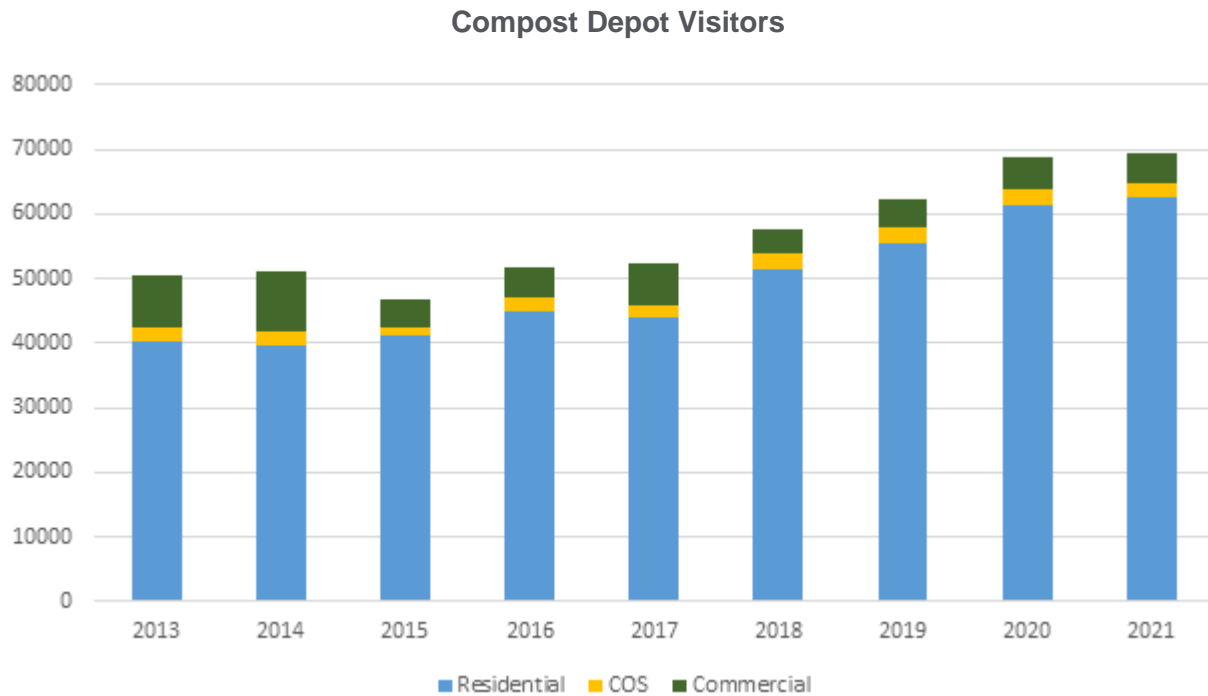
The East Depot serves as a transfer station and all materials are hauled to the West Depot for processing. Both compost sites are considered temporary as they are in areas designated for future development. The two depots operate every season from mid-April to early November. In 2021, the West Depot was open seven days a week and the East Depot was open five days a week (Thursday to Monday). Both depots were open on statutory holidays.

In 2021, a total of 69,305 vehicle visits were made to the compost depots, representing an increase of approximately 0.6% compared to 2020. 48,546 (73%) of visits were to the West Depot and 20,759 (27%) of visits were to the East Depot. Of this total, 62,531 or 90% of visits were made by the public (51,011 were drop-off customers and an additional 11,520 participated in the free Dig-Your-Own compost program); commercial customers were 4,424 or 6% of visits; and 2,350 or 3% of visits were from internal City customers including the Green Cart program, Parks Department, and less frequent groups such as Roadways and Operations. The graph below illustrates the number of visits made to the compost depots by these three sectors for the past seven years.

The Dig-Your-Own compost pilot program continued in 2021 whereby finished compost and mulch was made available to residents at no-charge. Interested residents were able to visit the West Depot during regular hours and access up to 1 cubic yard of compost from the public self-loading area. Approximately 11,520 customers participated in the program – an increase of 21% compared to 2019 – and removed nearly 5,900 cubic yards of materials from the depot. Regular updates were provided to residents through social media and the City website regarding the availability of compost and mulch. The Dig-Your-Own compost pilot program significantly reduced costs associated with staffing and cash handling requirements of a public compost sale, while still providing residents with the opportunity to benefit from the community compost

inventory. The removal of finished materials also helps provide additional space to accept new materials in 2022.

Compost Depot Visitor Loads, 2013–2021



Christmas Tree Drop-Offs

Temporary drop-off sites are set-up from December 26 to January 31, to collect undecorated natural trees and keep them out of landfills.

One Christmas tree drop off site was removed from service at 22nd Street and Witney Avenue and a new one made available at the Holiday Park Golf Course parking lot. All of the chipped tree material was delivered to the West Compost Depot.

On average, 5,000 to 6,000 trees are dropped off every year. In 2021, an estimated 43 tonnes of material were collected through this program. These trees are included in the compost depot tonnage total.

Other Waste Diversion Initiatives

Recycling Opportunities at the Saskatoon Regional Waste Management Centre (Landfill)



The City also manages a waste diversion area at the Saskatoon Regional Waste Management Centre, providing the opportunity to recycle and properly dispose of a variety of items including metals, batteries, and used oil and antifreeze.

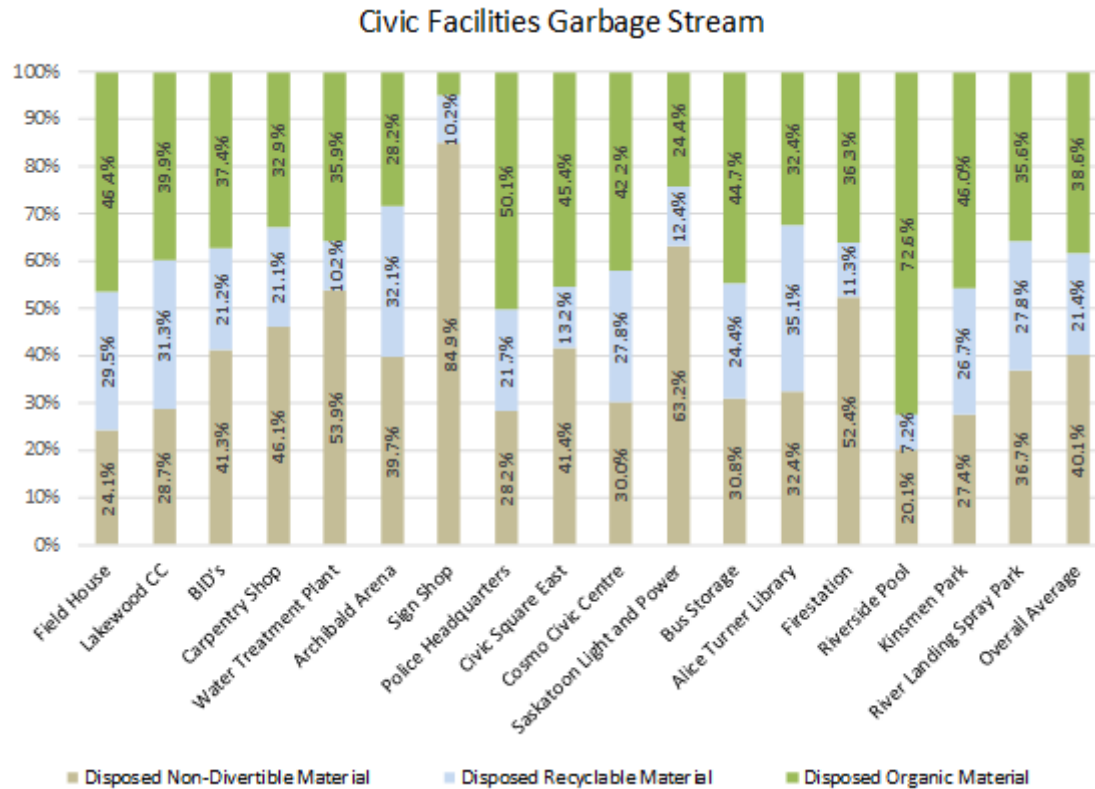
In total, 468 tonnes of material – including mixed metals, propane tanks, batteries, white goods (appliances), used oil, oil filters, and used antifreeze – were diverted from landfilling in 2021. The EcoCentre, under contract with the Saskatchewan Association for Resource Recovery Corporation, is one of nearly 200 collection facilities across Saskatchewan for used engine oil, filters, containers, and used antifreeze. The City accepts these materials (up to 500 litres of oil, 100 litres of antifreeze) at no charge to residents (costs are covered under the landfill operating budget). In 2021, the total quantities of used oil and antifreeze collected at the EcoCentre were 73,950 litres and 3,915 litres, respectively.

In 2017, a program was implemented to divert bicycles from the landfill. Many of these bicycles are in poor condition and not recoverable; however, some of the bicycles are recoverable for either their parts or for complete refurbishment. The City partnered with a local, non-profit organization to collect bicycles delivered to the landfill and to re-use or refurbish them for use in the community. Of the 637 bicycles collected in 2021, 49% were successfully recovered for re-use, 31% were used for parts to fix other bikes, and 20% were recycled as scrap metal. The 'bike diversion rate' or the percentage of bicycles that were diverted from the waste and recycling streams was 80%.

Waste Diversion in Civic Facilities

The following figure illustrates the compositions of the garbage samples collected from 17 locations, in terms of garbage, recyclables, and organics. As the figure shows, the average amount of recyclable material in the garbage sample was 21%, and the average amount of organic material (food waste, yard waste, and compostable paper) was 39%.

Garbage Profiles from Civic Facilities and Public Bins in Business Improvement Districts in 2019



A number of other materials from civic sources are diverted from the waste stream annually. In 2021, these included 406 tonnes of scrap metal, and 71 tonnes of electrical transformers. Materials captured through these additional sources are not included in the City's diversion rate calculation.

Household Hazardous Waste Collection Program

Household hazardous waste is the discarded, unused, or leftover portion of household products containing chemicals that can cause illness or death to people, plants, and animals. These products are often labeled CAUTION, WARNING, CORROSIVE, EXPLOSIVE, FLAMMABLE, POISONOUS or TOXIC. Common household hazardous waste products include aerosols, cleaning solvents, oils, paints, pesticides, and batteries. These, and many other types of hazardous materials, should not be put in garbage or recycling bins, dumped on the ground, or poured down the drain. The City typically provides free drop-off events between April and November, for Saskatoon residents to safely discard of household hazardous waste. This program is for residential or household hazardous waste only; hazardous waste from businesses or other organizations is not accepted.

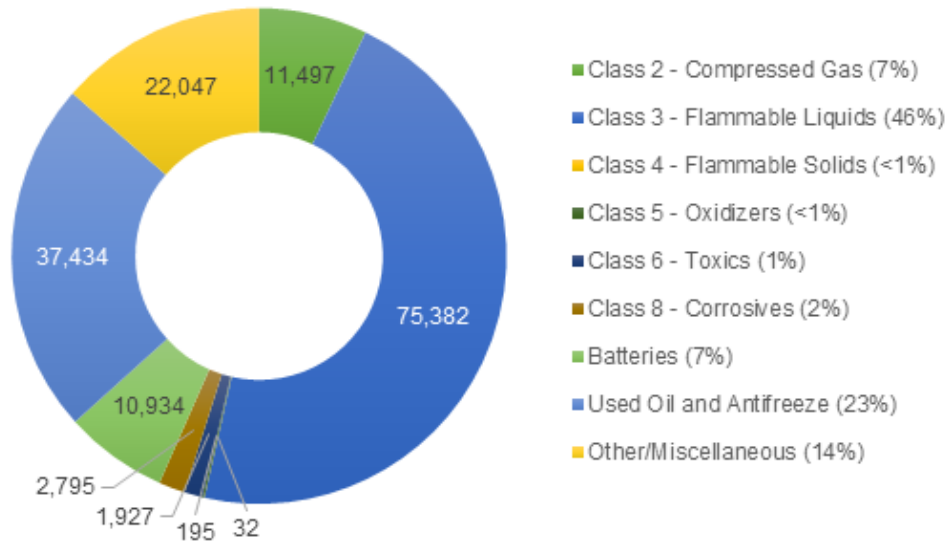
In 2021, 162 tonnes of hazardous materials were collected from 3,938 participants. HHW captured through the program contributed 0.1% to toward the City's total diversion rate of 24.7%. Eight collection events were hosted by the City in 2021, with contract costs totalling \$311,758. However, average costs per event and average costs per participant decreased in 2021, reflecting the financial benefit of the City's new agreement with Product Care Association of Canada as part of the Government of Saskatchewan's Household Hazardous Waste Product Stewardship Regulation.

Household Hazardous Waste Collection Event at Civic Operations Centre



Weight of Material Collected through the 2021 Household Hazardous Waste Program

Weight of Material Collected through the 2021 Household Hazardous Waste Program (Total = 162,243 kg)



Class 2 (Compressed Gas): aerosols, propane tanks, inhalers, fire extinguishers

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

Class 4 (Flammable Solids): flammable solids

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

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

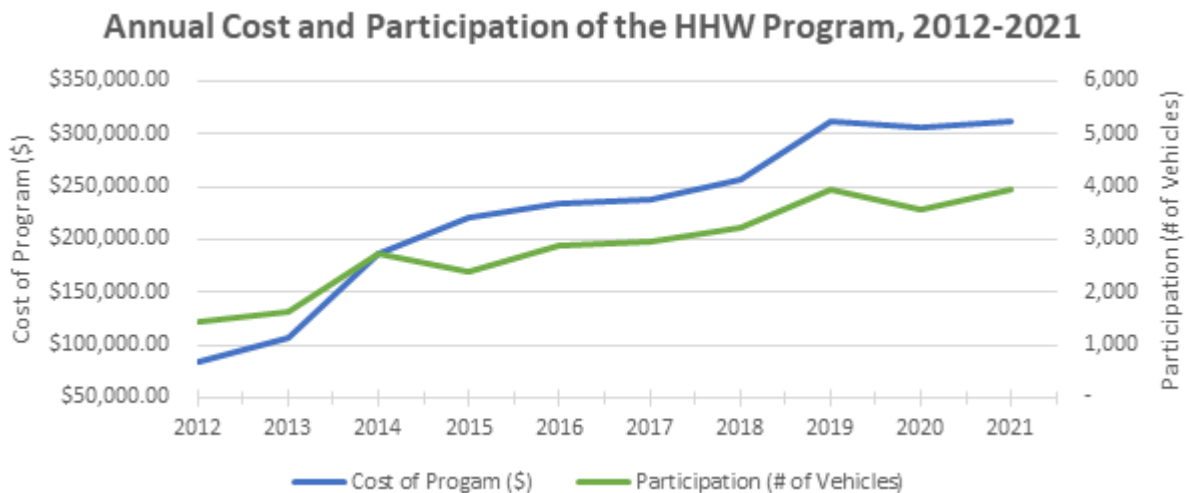
Class 8 (Corrosives): corrosive liquids and solids, mercury, ammonia solution

Batteries: alkaline, lead-acid, lithium

Used oil and antifreeze: used oil, used antifreeze, used oil filters

Other/miscellaneous: fertilizers, liquid cleaners, non-PCB light ballasts, fluorescent tubes, CFL bulbs, ink cartridges, lighters, treated railway ties, PCB light ballasts, sharps, smoke detectors, e-waste, test samples (unknowns)

Annual Cost and Participation of the Household Hazardous Waste Program, 2012-2021



Charity Bins

In 2021, 175 tonnes of textiles (mainly clothing) were collected at drop-off bins located at specific City-operated recycling depots. Textiles captured through the collection bins at these four locations contributed 0.1% toward the City's total diversion rate of 24.7%. The bins at the City's recycling depots were provided by Community Living and Diabetes Canada in 2021.



Saskatoon Regional Waste Management Centre

Waste Disposal Services



Weigh Scale at Saskatoon Regional Waste Management Centre

Waste Disposal in Saskatoon

Waste disposal services provided by the City of Saskatoon include landfilling of garbage at the Saskatoon Regional Waste Management Centre, provision of containers and collection of garbage from single-family residential households (curbside collection), and collection of garbage from many multi-unit residential households and some commercial customers.

Saskatoon Regional Waste Management Centre (Landfill)

The Saskatoon Regional Waste Management Centre has been in operation since 1955. It is a sophisticated facility that is designed and operated to maximize available space and ensure solid waste is managed in a safe and environmentally sound manner. The Saskatchewan Ministry of Environment currently regulates the operations of the facility under a *Permit to Operate a Waste Disposal Ground*. On April 2, 2018, the City received a renewed permit based on a successful submission to the Ministry of Environment; the permit will expire on March 31, 2023.

In 2021, approximately 130,867 tonnes of material were accepted at the Saskatoon Regional Waste Management Centre. Of this total, approximately 94,000 tonnes required burial (garbage) and 36,300 tonnes were used as landfill cover (clean fill), while approximately 500 tonnes of material were separated for outbound recycling. City collection trucks were responsible for approximately 65,800 tonnes (70%) of the material landfilled.

The Saskatoon Regional Waste Management Centre is open to the public every day of the year except for December 25 and January 1. The site is a secure compound with fencing and

security checks after-hours. Six transfer bins are located on site for public waste disposal. Also, as outlined earlier in this report, several public drop-off areas are provided for metals, white goods (major appliances), batteries, propane tanks, used oil, containers, used filters, and used antifreeze.

Landfill Customers

The overall number of landfill visits increased between 2019 (79,056) and 2020 (87,755) and slightly decreased in 2021 (85,171). The number of chargeable vehicles (i.e. paying customers) entering the Saskatoon Regional Waste Management Centre also saw a slight decrease to 70,025, where there were 71,776 unique payment transactions. The balance of customer visits were non-chargeable loads including soil, used oil, and City collection vehicles.

Historically, the quantity of garbage that is hauled to the Saskatoon Regional Waste Management Centre as a result of municipal garbage collections has been tracked, but 2020 was the first year where the costs of disposal were incurred by the operating budget for collections. Of the 130,867 tonnes of material brought to the Saskatoon Regional Waste Management Centre in 2021, 22% were chargeable tonnes. The non-chargeable or “free” tonnes included 36,290 tonnes of clean fill.

Tipping fees at the Saskatoon Regional Waste Management Centre are \$105/tonne plus an entry fee of \$15 per vehicle; loads weighing less than 150 kg are only charged the \$15 entry fee. According to nation-wide benchmarking for 2020, the range of tipping fees for garbage was \$67 to \$150 per tonne, with an average of \$100 per tonne and a median of \$95 per tonne. Saskatoon’s tipping fee of \$105 per tonne falls within this range and remains unchanged since 2017.

Environmental Monitoring and Protection

A number of environmental protection measures are part of the regular operations at the Saskatoon Regional Waste Management Centre.

- ▶ **Surface water management** ensures that any storm water that may have come in contact with garbage does not flow off-site. Storm water management infrastructure also helps minimize the creation of leachate (garbage juice) and protects roadways and other customer-serving assets of the site. Improvements to storm water infrastructure are integrated into the capital improvement plan for the site.
- ▶ **Ground water monitoring** results are reviewed by an independent party each year to ensure the landfill is not impacting the environment beyond its site. In 2020, there were 59 monitoring locations analyzed (groundwater, surface water, and leachate).
- ▶ **Fire prevention and suppression** is critical. Materials within the mound have the potential to burn for prolonged periods and to release toxins into the atmosphere. Landfill staff are trained in fire prevention and suppression and operate a water truck on-site to respond to incidents in a timely manner. A strong relationship with the Saskatoon Fire Department has also been developed as landfill fires pose a unique challenge.
- ▶ **The Landfill Gas Collection and Power Generation Facility** operated full-time in 2021, extracting a total of 216,000,000 standard cubic feet of landfill gas. Of this total, approximately 85% was utilized for electricity generation and 15% was destroyed within the facility’s enclosed flare. In addition, approximately 9,800 MWh of electricity was produced in 2021 as a result of power generation from landfill gas.



Landfill Gas Collection and Power Generation Facility

Collections

Total Garbage Collected and Disposed

The total amount of waste collected by City trucks decreased from 65,000 tonnes in 2020 to 64,100 tonnes in 2021, with collections by the City accounting for 68% of the material landfilled in 2021. Single-family and multi-unit residential sources make up the majority of waste collected by City trucks; however, some commercial collections are combined with collections from multi-unit residential properties.

Garbage Collection for Single-family Residential Households

In 2021, garbage collection services were provided to approximately 74,000 single-family households; an estimated 52,600 tonnes of residential garbage were collected and there were more than 2.6 million scheduled black cart lifts (tips). Scheduled garbage collection occurred from Monday to Friday, including public holidays, except December 25 and January 1. In 2021, these collections were completed the weekends following December 25 and January 1. Weekly collections were provided from May to September, with the remainder of the year on a bi-weekly (i.e. every second week) collection schedule.

Garbage Collection for Multi-unit Residential Properties

The City provides one collection per week for each multi-unit residential property as part of regular service supported by property taxes. A multi-unit residential property may have a black cart or a metal waste bin depending on the configuration of the site. Approximately 85% (839 out of 982 sites) of multi-unit residential properties are collected by the City; the remaining

properties contract their garbage collections to private service providers. Additional levels of service may be contracted with the City or through a private waste management company.

Garbage Collection for Commercial Customers

Garbage collection is provided to commercial customers, including internal City of Saskatoon customers and residents who contract for additional carts and collections. In 2021, there were approximately 387 external commercial customers (total of 467 locations) and 18 internal City of Saskatoon customers (total of 38 locations).

Containers

Multi-Unit Residential Containers

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

The grant provides \$8 per year per residential unit. In 2021, 80% of eligible properties (29,772 units out of 37,213 units) submitted an application and received the grant payment, for a total value of \$238,176.00.



Residential Garbage Collection

Education, Outreach, and Enforcement

Education and Communications

Education and communications work to deliver the information needed for residents to participate in the City's various waste diversion programs. The effort is to build awareness, educate, and generate enthusiasm around waste diversion by communicating to residents in an engaging and informative manner. With the announcement of the global pandemic in March of 2020, original plans for 2021 Education and Communications were impacted and either delayed to 2022 or alternative strategies were completed.

Webpage and Online Engagement

Information about the City's waste diversion programs are available online through the City's various waste specific webpages communicated through various video and social media platforms, and through the *Saskatoon Waste Wizard*.

In 2021, there were 580,177 unique pageviews to the Waste & Recycling webpages. The Collection Calendar was the most visited waste-related webpage with 493,089 unique pageviews.

Student Programs – Recycling Education Centres

The City has partnered with our recycling services providers to administer an external education source to the public in the form of an Educational Centre/Room at the vendor's facility. Recycling education is available to Saskatoon Residents ages nine and up; targeting students grade four and up. All in-person tours were suspended for the entirety of 2021 to comply with COVID-19 restrictions and from external restrictions including teacher staffing shortages. Focus for 2021 was placed on developing virtual options to continue with these programs without having participants actively at the centre/room.

- ▶ **Loraas Recycle: Education Center** targets audiences from single-family dwellings and businesses with education focused on increasing the awareness on how and why to recycle, the recycling process at the MRF, reducing recycling contamination for the safety of employees, and to emphasize the importance of waste diversion and environmental stewardship. In 2021, there were a total of nine virtual tours and two large-scale virtual events (Earth Day and Waste Reduction Week) with 1,790 participants.
- ▶ **Cosmopolitan Industries: Education Room** targets audiences from multi-family dwellings and provides information on how and why to recycle, other waste diversion programs, and the benefits of recycling including the opportunities that recycling provides in the community to adults with intellectual disabilities. In 2021, 8 virtual tours were given to the public.

2021 Collection Calendar

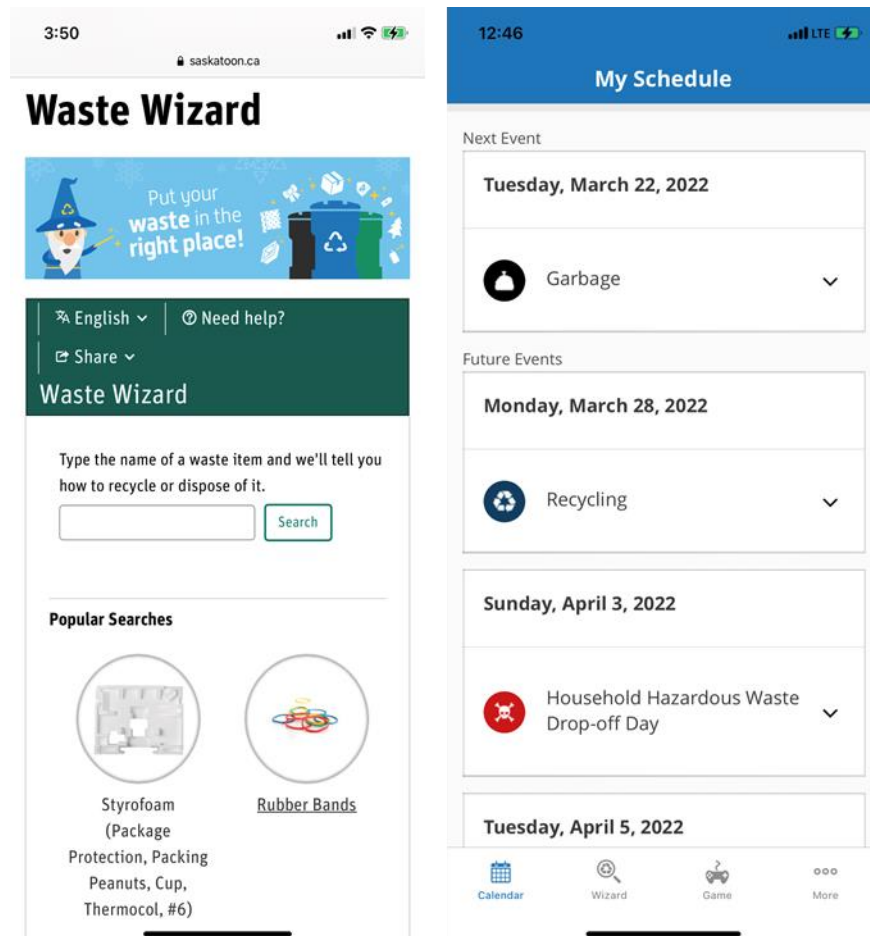
After successfully rolling out the paperless approach in 2019, the City continued to make use of its digital assets in 2021 for delivering the annual collection calendar to residents.

Residents were given the option to:

- ▶ View their calendar online at saskatoon.ca/collectioncalendar
- ▶ Download a PDF calendar from the website
- ▶ Sign up for collection reminders by e-mail, phone, or twitter
- ▶ Add their collection calendar to their own digital calendar (e.g. Outlook, Google, etc)
- ▶ Download the *Saskatoon Waste Wizard* mobile app

By the end of 2021, there were a total of 37,533 curbside addresses set up with collection reminders.

Collection Calendar Promotion and Schedule Look-up via Website and App

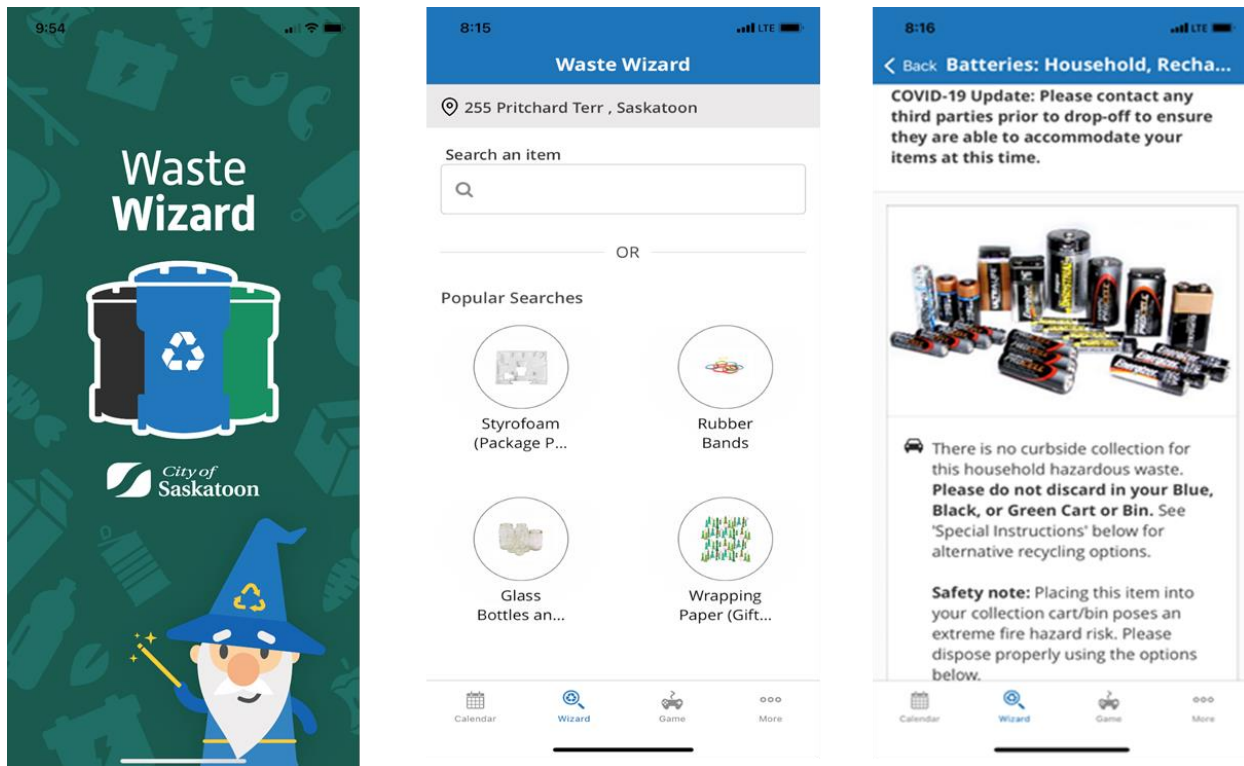


Saskatoon Waste Wizard and Waste Sorting Game

The Saskatoon Waste Wizard is a tool for residents to research how to properly dispose of recyclable or waste materials within Saskatoon. In 2021, 64,862 materials were searched on the Saskatoon Waste Wizard, a 35.4% increase from 2020, with Styrofoam, glass bottles and jars, paint and paint cans, automotive oil, and wrapping paper being the top five searched materials.

The online Waste Sorting Game is an additional education tool that helps residents identify the proper waste stream for common household items. In 2021, the game was played 4,054 times with 1,994 completions and 43 certificates printed.

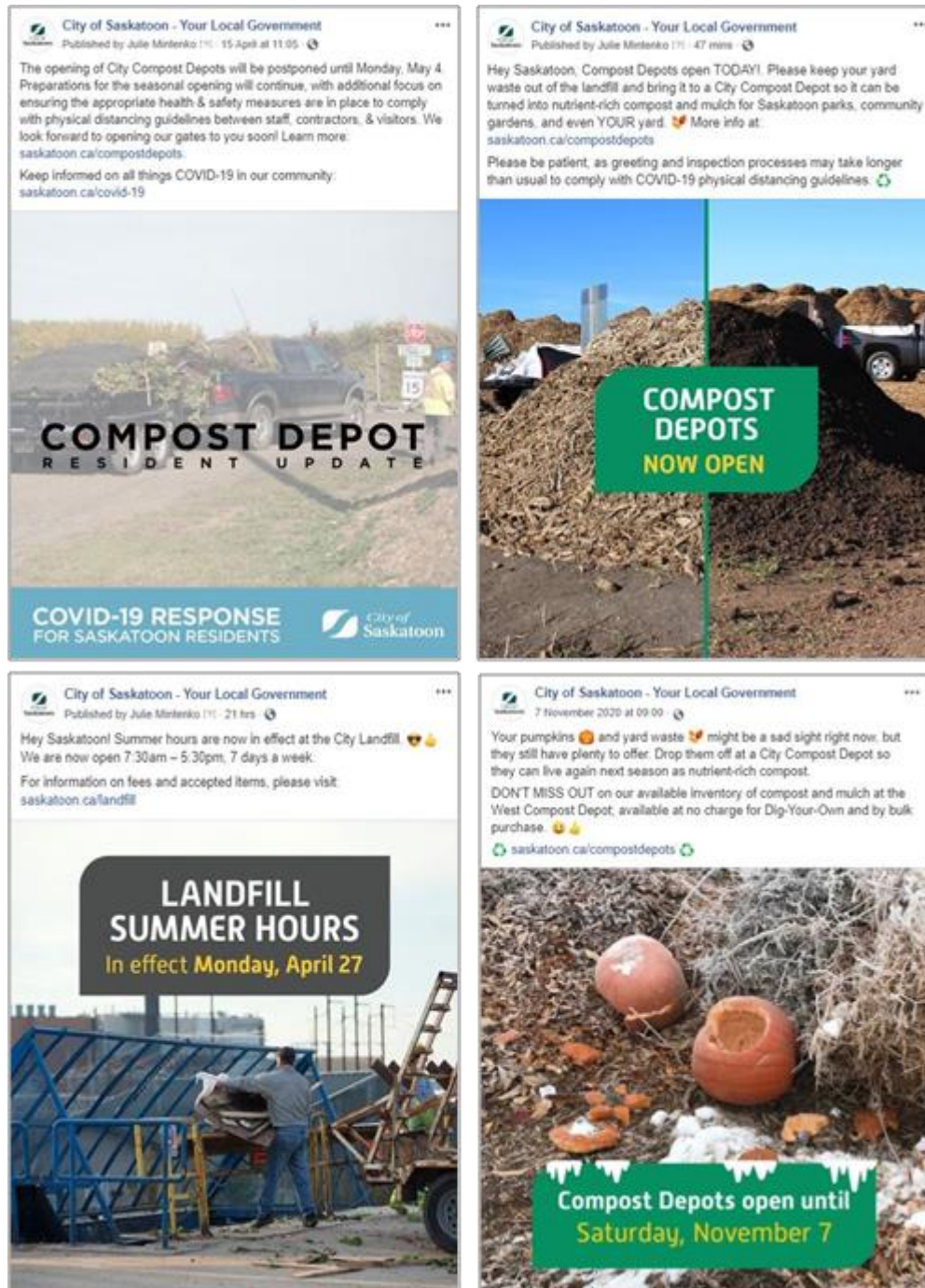
The public can also find out about other local recycling opportunities through the Saskatchewan Waste Reduction Council's province-wide online database of information on where to recycle a variety of materials. The City partners with the Saskatchewan Waste Reduction Council (SWRC) in promoting this online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



Material Look-up on Saskatoon Waste Wizard App

Landfill and Compost Depots

Regular communications were carried out regarding openings, temporary closures, site conditions, etc. to ensure residents were always made aware of the accessibility of the City landfill and compost depots. Communications regarding modified services and/or procedures due to the pandemic were also communicated. PSAs, service alerts, website updates, and social media posts were primarily used to communicate to residents.



Landfill and Compost Depot Updates via Social Media

Household Hazardous Waste Drop-off Days



City of Saskatoon - Your Local Government
5 July 2020

11:15 am - Approximate wait time is 30 mins.

Like Comment

City of Saskatoon - Your Local Government
5 July 2020

10:00 am - Approximate wait time is 1 hr 15 mins. Line extending to Valley Road.

1 comment

Like Comment

HHW Drop-off
Sunday, June 7
[CIVIC OPERATIONS CENTRE]
57 Valley Road, Saskatoon

City of Saskatoon GFL

7

SUNDAY, 7 JUNE 2020 FROM 09:00 CST-15:30 CST

Household Hazardous Waste Drop-off Day
Free - 57 Valley Rd, Corman Park No 344, S5K 50K, Canada

About Discussion Edit

Details

- 471 people responded
- Event by City of Saskatoon - Your Local Government
- 57 Valley Rd, Corman Park No 344, S5K 50K, Canada
- Sunday, 7 June 2020 from 09:00 CST-15:30 CST
- Price: free - Duration: 6 hr 30 min
- Public - Anyone on or off Facebook

HHW DROP-OFF DAYS ARE BACK!

After a bit of a delay, we're happy to announce that our first event of the season will be on **SUNDAY, JUNE 7 (9am-3:30pm)** at the Civic Operations Centre (57 Valley Road) bit.ly/HHWmap.

Common HHW materials include aerosols, automotive fluids, batteries, cleaners, cylinders, light bulbs, medications, yard chemicals, vaping products, and more. These and many other types of hazardous materials require safe disposal and should not be put in your garbage or recycling containers, dumped on the ground, or poured down the drain. A list of acceptable materials and information on future events can be found at saskatoon.ca/hazardouswaste.

COVID-19 UPDATE: Please visit saskatoon.ca/hazardouswaste for important guidelines and restrictions that will be in place to help reduce the spread of the virus.

To avoid potentially long line-ups and wait times, visit saskatoon.ca/wasteward to find other means of recycling and safe disposal. See less

Insights
Last 7 days: 25 Feb - 4 Mar

People reached 13,390 +0 last 7 days	Responses 471 +0 last 7 days
Audience Women 35-44 23% of total responses	Track ticket sales Track ticket sales on your next event by adding a ticket link.

See More

Promotion of Household Hazardous Waste Drop-off Days continued through the City website, social media, and PSAs, as well as MyCity for internal audiences. Site signage was updated monthly, and event wait times were also introduced through the Facebook events to help residents better manage their time and avoid the long line-ups.

Recycling Awareness Campaigns

Two educational awareness campaigns ran in 2021. Campaigns were promoted through various traditional and digital marketing channels.

Need Help Recycling: Ask the Waste Wizard

- ▶ In market: Fall (April)
- ▶ To combat wish-cycling, residents are encouraged to “Ask the Wizard” where items go for proper disposal. This campaign’s goal was to promote the use of the Saskatoon Waste Wizard and have residents download the app. The campaign brought extra attention to certain problematic items including textiles, tanglers, household hazardous waste materials, and organics.

Naughty and Nice, Recycling Advice

- ▶ In market: Winter (December/January)
- ▶ This campaign focused on providing residents with simple advice on acceptable and non-acceptable holiday specific recycling materials. During this campaign, the Waste Wizard was brought to life and provided snippets of information to assist residents in proper recycling. Focus was also placed on reusing and reducing waste at this time of year.
- ▶ The partnership with Saskatoon Transit continued, using the Jingle Bell Express buses as a means to help deliver our holiday waste messaging. On-bus engagement was limited due to the pandemic, so focus shifted toward engaging with residents through social media with videos, contests, etc.
- ▶ The City also partnered up with several Christmas tree lots around the city to help promote the City’s drop-off sites for tree composting, and with the Midtown Plaza and Lawson Heights Mall takeover of their waste diversion wall.



Holiday Recycling Campaign Artwork

Black Cart (Garbage) Education

We were in the neighborhood...

CART PLACEMENT TIPS:

- ✓ Set out your cart by 7 a.m. on your collection day.
- ✓ Make sure your lid is completely closed.
- ✓ Place your cart according to the guidelines below.
- ✓ Return your cart to your property by 7 p.m. to prevent fines, theft, or damage.
- ✓ Please ensure only the appropriate items are placed in your cart.

Front Street Collection

Back Lane Collection

For cul-de-sac collection scenarios and more information, visit:
saskatoon.ca/cartplacement

saskatoon.ca/waste
 24/7 Customer Care Centre: 306-975-2486

...and we noticed some things about your cart:

- Your cart was **not accessible** to our collection vehicles and employees.
- Your cart was **overfilled**, preventing the lid from closing.
- Your cart was **not four feet away** from surrounding obstructions.
- There was **waste on your cart lid** and/or on the ground.

Comments _____

Normally these issues would prevent us from emptying your cart, but we collected it this time and left this note to ensure that we're able to serve you in the future.

See tips on reverse to help us serve you better.

Black Cart Non-compliance Notification Tag

To help promote efficient and effective garbage collection services, the City began an education campaign in the fall of 2019. Non-compliance with cart usage or placement guidelines (e.g. overfilled carts, lack of appropriate spacing at the curb, etc.) was followed-up by delivering an informational cart tag for residents. In these instances, the contents of the black carts were collected; however, this friendly reminder was left to help ensure successful collections in the future.

Recycling Depot Education

In an effort to address the issues happening at City recycling depots regarding overfilled bins, contamination, and illegal dumping, Environmental Protection Officers were equipped with educational handouts to give to residents. Updated bin decals were also developed with installation continuing through 2021. The updated decals provide additional information on non-accepted materials, bylaw information and illegal dumping, and point to the Waste Wizard as a recycling resource.

Recycling Depot Tips

Help us minimize contamination, run an efficient and successful recycling program, and ensure the safety of all the people that handle these materials.

1. Only place accepted material in the bins.
2. Flatten all cardboard, rinse all containers and place loosely into the bin. Please do not use bags.
3. Place recyclables fully in the bin. Do not leave items outside or on top of bins.
4. For your safety, never climb into recycling bins or remove materials from bins.
5. Depots are for residential use only.

We're here to help!
If you have any questions please contact the 24/7 Customer Care Centre:
306-975-2486
garbage@saskatoon.ca

Illegal dumping of unaccepted items or misuse of the recycling depots can result in fines of up to \$2,000 under the Waste Bylaw #8100. Please report these offences at saskatoon.ca/illegaldumping

Recycle Safe. Recycle Right. Recycle Clean.

Dirty items ruin recycling, hazardous items can cause damage and injuries, and unrecyclable items have no value and contaminate the recycling stream.

ACCEPTED	NOT ACCEPTED
<ul style="list-style-type: none"> Plastic Containers Beverage Containers Cardboard Mixed Paper Aluminum Foil and Tin Cans Household Glass 	<ul style="list-style-type: none"> Black Plastic NEW Polycoat NEW Hazardous Waste Electronics Batteries Electrical Cords Styrofoam Plastic Bags Food Waste Needles Wood Tires Propane Tanks Paint Furniture Other Household Garbage

Don't know where it goes? Don't guess. Ask the Wizard!
Visit saskatoon.ca/wastewizard to search an item for recycling and disposal information.

City of Saskatoon | cosmo industries | Towards 70%

Recycle!

Plastics #1-7

Beverage Containers

Flattened Cardboard

Household Glass

Foil and Cans

Mixed Paper

NOT ACCEPTED

Electronics
Plastic Bags
Styrofoam
Black Plastic
Hazardous
Furniture
Appliances
Yard & Food Waste
Wood & Metal
Household Garbage

By City of Saskatoon Bylaw #8100, these items are not accepted. NO ILLEGAL DISPOSAL. Violators will be prosecuted. To report illegal dumping call 306-975-2486.

Creating Opportunities for Persons with Disabilities
www.cosmoindustries.com • 306.955.2100

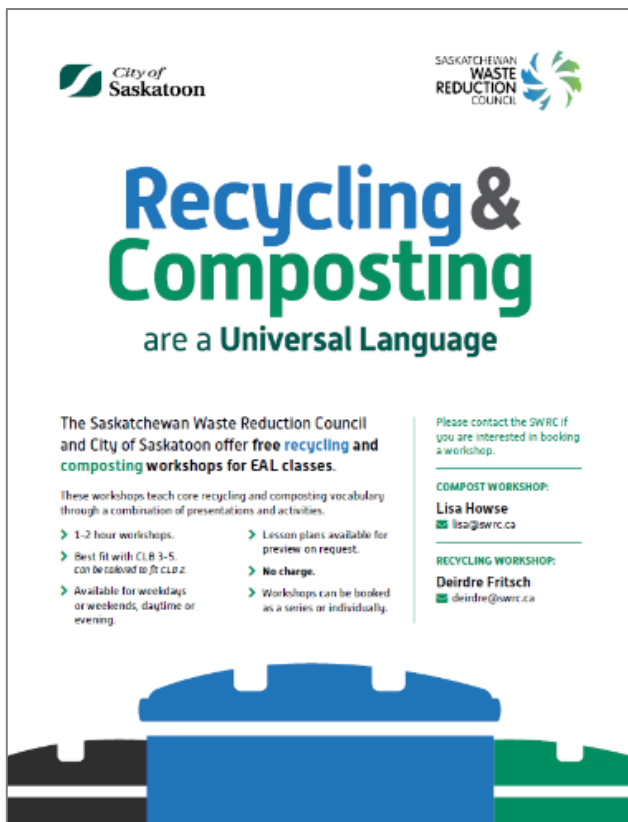
Don't know where it goes? Ask the Wizard!
saskatoon.ca/wastewizard

Recycling Depot Blitz Handouts

Newcomer Workshops

Using recycling and composting awareness as the subject for ‘English as an Additional Language’ training, new Canadians were provided both language training and information about the City’s recycling and composting programs during 31 virtual workshops with 358 participants in 2021. Traditionally 40 workshops are completed annually, but COVID-19 restrictions paused this program and with the additional time a virtual program is being piloted with focus on level C2 to C5 students.

As an additional tool for this program, the procurement of translation services was completed in 2020 with the creation of recycling poster available for download on the City’s Newcomer Program webpage. Posters are available in five alternative languages including: Arabic, Cree, French, Mandarin, and Spanish. In addition, a multi-language add on was introduced to the Saskatoon Waste Wizard tool with 14 alternative languages that residents can use to search for proper disposal of garbage, recycling, and organic materials.



Newcomer Workshop Ad



Multi-Unit CBSM Material and Multi-Unit Recycling Bin

Multi-Unit Residential Recycling Program Awareness

The City and Cosmopolitan Industries worked together to develop a community based social marketing (CBSM) program that would identify multi-unit buildings experiencing high recycling contamination rates and conduct regular audits and education to help residents in their recycling efforts. This program was put on hold due to the pandemic, but all creative development was completed in 2020.



Cosmopolitan Industries continues to provide outreach to building managers and residents. The education program in 2020 (pre-pandemic) included 33,000 door hangers placed in multi-unit buildings throughout the city and 40 recycling classes with 876 students. Updated bin decals were also updated at all multi-unit buildings.

Recycling Education Unit

The City partners with the Saskatchewan Waste Reduction Council (SWRC) to provide waste and recycling education to the community through the City's Recycling Education Unit. The 4-year contract was amended to accommodate COVID Restrictions. All in-person events for 2021 were cancelled. Funds were re-allocated to a virtual initiative 'YXE Waste Tour' providing recycling education and proper disposal tips in the form of 12 videos shared online and on social media platforms. The purchase of digital equipment was completed in 2021 to upgrade the trailer and make it less hands-on and promote previous ads in the future. Installation and upgrades will continue into 2022.



Recycling Education Unit from 2019

YXE Waste Tour

In collaboration with the SWRC, the City continued the use of the 'YXE Waste Tour' as an alternative educational tool to the REU. Jonah returned to assist the City with a "Home Edition" video tour, playing off the success of 2020. Videos educated residents on problematic recyclables and waste based on specific areas of their home. Twelve-videos were shared on the City website, YouTube, and all social media channels from June through September.

The video series included:



- ▶ Welcome - Home Edition Introduction
- ▶ Paper - Office
- ▶ Plastics Video 1 of 2 - Washroom
- ▶ Plastics Video 2 of 2 – Kitchen and Laundry Room
- ▶ Household Glass – General and Kitchen
- ▶ Tin and Aluminium – Patio and Kitchen
- ▶ Delivery Packaging
- ▶ Food Delivery Packaging
- ▶ Single-Dwelling - Recycling Rules and Cart Placement
- ▶ Multi-Unit Recycling - Recycling Rules
- ▶ Curbside Recycling
- ▶ Curbside Swap - Reuse

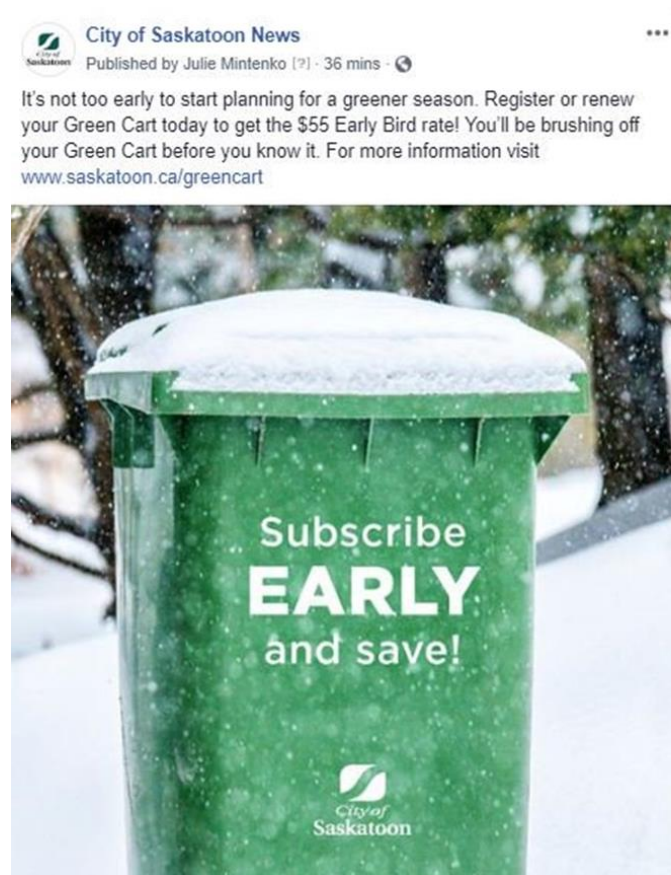
Home Composting Education

The SWRC has been running composting education programs since 1993 and in partnership with the City since 1995. Composting programs and services are included within the City's Healthy Yards program. The 2021 program included the following:

- ▶ 36 compost bin rebates of \$20;
- ▶ 26 home visits for residents seeking one-on-one composting support;
- ▶ 18 workshops;
- ▶ 1 new Compost Coaches;
- ▶ 'What's your Composting Style?' quiz; and
- ▶ A Compost Hotline, accessible by phone or email, received 81 inquiries.

Green Cart Program Education and Marketing

In 2021, the number of Green Cart subscribers reached an all-time high of 11,916 (over 9,330 returning and over 1,500 new subscribers). Promotional efforts focused on encouraging previous subscribers to renew but to also encourage new subscriptions. This was done through direct mail letters and email to previous subscribers, social media and PSAs to reach a broader audience, and messaging campaigns attached to weekly collection reminders. Regular communication with subscribers was maintained throughout the season through monthly emails delivering Green Cart tips and program-related information.



The flyer features a dark header with the "Green Cart Program" logo and the text "YARD & FOOD WASTE". The main content includes the heading "GREEN CART SEASON IS HERE! NOW WHAT?" followed by a paragraph: "Whether you're a new or returning subscriber, we thought you would enjoy some pointers throughout the season to make the most of your Green Cart experience." Below this is a section titled "What goes in your Green Cart?" with six icons and their corresponding categories: "Unbagged Yard Waste", "Fruits and Vegetables", "Bread, Noodles, and Other Grains", "Coffee Grounds, Paper Filters and Paper Teabags", "Eggs and Eggshells", and "Food-Soiled Paper Products". A call to action says "ASK THE WIZARD!" in a green box. At the bottom, it says "THANK YOU FOR PUTTING YOUR WASTE IN THE RIGHT PLACE!" and provides the website saskatoon.ca/greencart. The footer includes the "Towards70%" logo, the City of Saskatoon logo, and the website saskatoon.ca/greencart.

Saskatoon Curbside Swap

The objective of the Curbside Swap is to encourage residents to pass along reusable household items, reduce the number of items ending up in the landfill, and to build a sense of community in the same way that garage sales do. The City provides information, guidelines, and customizable marketing materials on its website to help residents plan and promote their own Curbside Swaps.

Promotions for this event ran from mid-August to early September with the event taking place on September 11th, 2021. This event was promoted using the City website, social media, PSAs, and the Saskatoon Waste Wizard app. There were 485 recorded listings and the website received 1,017 unique pageviews during the promotional period.



Curbside Swap Campaign Artwork

Waste & Recycling Workers Week (Week of June 17)

The City (specifically Water & Waste Operations) continued its priority of recognizing the amazing staff of the solid waste industry during Waste & Recycling Workers Week (WRWW). This was particularly relevant during the pandemic which saw frontline workers of all kinds, putting themselves at risk to keep the City moving during a difficult time. In addition to promoting this through internal channels, communications were focused more heavily online and through social media to help generate awareness among residents. Opportunities to surprise and delight some of our biggest (little) fans was also a welcomed addition to this week of celebration and community appreciation.



Waste & Recycling Workers Week Campaign Artwork

Waste Reduction Week in Canada (October 18-22)

The City helped generate awareness around Waste Reduction Week in Canada by with our service provider Loraas Recycle for a virtual Waste Reduction Week (WRW) campaign. The purpose of this event is to challenge residents to look at their waste reduction and diversion practices in various areas, provide them with interesting facts, and give them with access to local resources to help in their reduction and diversion efforts. Daily topics included: Circular Economy, Textiles, E-Waste, Plastics, and Food Waste. Information was shared on Global TV, hot calls with local radio networks, through the Public and Catholic School Divisions, on both the City and Loraas' social media platforms, and a public virtual Zoom session. There were 64 registrants to the Zoom event, including 32 classes of approximately 25 students. In total, Loraas' social posts had a reach of 15,000.



Waste Reduction Week— Loraas Recycle Social Campaign

Waste Bylaw Enforcement

The City's Environmental Protection Officers focus on issues in the community related to *Bylaw No. 8310, The Waste Bylaw*. In addition to education on and enforcement of *The Waste Bylaw*, Environmental Protection Officers are also responsible for responding to hydraulic spills, illegal dumping, and waste and recycling container complaints, as well as conducting bylaw related education initiatives for the general public.

The Waste Bylaw specifies that carts must be removed from the public right-of-way after collection day, to reduce the potential for illegal dumping, theft, damage, scavenging, misuse, unsightliness, and congestion for residents and collection trucks.

The neighbourhood cart education and enforcement initiative consists of three phases including: initial inspections and an education letter to non-compliant homeowners, a follow-up inspection and warning letter, and ultimately a final inspection with a Notice of Violation including a \$100 ticket issued for any carts still remaining in the public right of way.

Neighbourhood inspections, although resource intensive, showed a significant decline in the number of carts that remain in the public right-of-way. In 2021, a total of 662 education and warning notices were delivered, and 20 locations were eligible for a ticket or received ticket, demonstrating a compliance rate of greater than 97% as a result of the education-first approach. The education and enforcement initiative for the targeted back lane collection neighbourhoods is

now complete. The initiative began in 2014 and was concluded in 2021. Over the course of the initiative, a total of 9,531 education and warning notices were delivered and 263 were eligible for a ticket or received a ticket, demonstrating a compliance rate of 98% as a result of the education-first approach.

In April 2021, the Environmental Protection Officers conducted a secured & covered load inspection and education initiative at the Landfill and Compost Depots. The *Waste Bylaw* Specifies that no person shall transport any waste in the City unless it is properly secured or covered. During the initiative, a total of 478 education guides (Landfill – 133, East Compost Depot – 157, West Compost Depot – 188) were distributed and 22% of vehicles were in non-compliance. Enforcement for non-compliance was conducted using the education-first approach. The secured & covered load inspection and education initiative is scheduled to occur again in 2022.

Appendix A – Waste-to-Energy

Waste-to-Energy Facilities in Canada

There are currently seven operational waste-to-energy facilities in Canada, as outlined in the chart below.³ Incinerators are the most common technology in five of the facilities, four of which currently generate energy and the fifth is in the process of adding energy generation. The other two facilities use gasification or pyrolysis. Gasification is a process that transforms a carbon-based material, such as municipal solid waste, into other forms of energy through a chemical reaction and in the absence of combustion. Pyrolysis is the heating of an organic material in the absence of oxygen, in which the chemical compounds that make up that material thermally decompose into combustible gases and charcoal.

Name	Type of Facility	Waste Type	Location	Year Commissioned	Comments
L'incinérateur de la Ville de Québec	Incinerator with Energy Recovery	Post-recycled MSW; wastewater sludge	Québec, QC	1974	Heat used to dry wastewater sludge prior to incineration
Covanta Burnaby Renewable Energy	Incinerator with Energy Recovery	Post-recycled MSW	Burnaby, BC	1988	25% of Metro Vancouver's waste
Emerald Energy From Waste	Gasification with Energy Recovery	MSW	Mississauga, ON	1992	Excess steam sold to neighboring paper mill
Durham York Energy Centre	Incinerator with Energy Recovery	Post-recycled MSW	Durham Region, ON	2016	
Sustane Chester	Waste Separation Technology and Pyrolysis	Post-recycled MSW	Chester, NS	2021	In first year of operations
PEI Energy Systems EFW	Incinerator with Energy Recovery	Post-recycled MSW	Charlottetown, PEI	1981	District heating and hot water system
L'incinérateur municipal de Lévis	Incinerator	Post-recycled MSW; hospital waste	Lévis, QC	1976	In the process of being retrofitted to generate energy

Waste-to-Energy Facility Capacities and Costs

Facility capacity, energy recovery, capital costs, operational costs (total and net cost per tonne to process waste), and revenue from energy generation are provided in the table below. Not all costs are publicly available. For most facilities, capital costs to build are unavailable since they were built and operated by the private sector and only charged the municipality for processing or are not relevant due to the age of the facility. The costs per tonne are for the facility's operations only and exclude collections and other administrative costs (such as reserve contributions). For context, the City of Saskatoon's landfill accepted 94,067 tonnes of material for burial (excluding clean fill) in 2019, and landfill operations costed \$40 per tonne (excluding collections and other administrative costs).

Name	Capacity (tonnes/ year)	Energy Recovery		Capital Cost to Build	Annual Operating	
					Costs	Revenue
L'incinérateur de la Ville de Québec	312,000	Steam	-	-		
Covanta Burnaby Renewable Energy	285,000	Electricity	28 MW	N/A	\$20.5M (2019); <i>net cost of \$57.45 per tonne</i>	\$5.8M energy; \$0.3M metal
Emerald Energy From Waste	187,000	Steam, Electricity	9.3 MW	Privately operated – contract with Peel Region ended in 2012.		
Durham York Energy Centre	140,000	Electricity	17.5 MW	\$284.2M	\$16.8M (2020); <i>net cost of \$120 per tonne</i>	\$8.5M energy; \$0.7M recovered materials
Sustane Chester	70,000 (when fully commissioned)	Biomass Pellets, and Synthetic Diesel	-	\$16M (planned cost)	-	-
PEI Energy Systems EFW	25,784 (2018)	Steam, Electricity, Hot Water	-	-	\$1.1M (2018); <i>\$44 per tonne</i> (paid by Island Waste Management Corporation)	-
L'incinérateur municipal de Lévis	26,800	-	None	-	\$1.4M (2013); <i>\$52/tonne</i> (paid by Lévis)	-

Complementary Programs in Municipalities with Waste-to-Energy Facilities

The following chart shows the other waste programs that communities served by waste-to-energy facilities have in place. It also shows the diversion rate, as reported by the community. All communities served by waste-to-energy facilities have collections of residential recycling, organics, and Eco Centres that are the same model as Recovery Park. All communities where diversion rates were available have a rate of diversion at least twice as high as the City of Saskatoon, demonstrating that waste-to-energy facilities typically complement diversion programs, not replace them.

Name	Landfill	Residential Recycling Collection	Residential Organics Collection	Eco Centre	Diversion Rate
L'incinérateur de la Ville de Québec	100,000 tonnes/year (65% ash)	Yes	In development (anaerobic digestion)	Yes	55% (2017)
Covanta Burnaby Renewable Energy	75% of Metro-Vancouver's garbage is landfilled	Yes	Yes	Yes	63% (2019)
Emerald Energy From Waste	Privately Operated – contract with Peel Region ended in 2012.				
Durham York Energy Centre	41,190 tonnes (2018); 22% of total waste	<i>Durham Region</i> Yes	<i>Durham Region</i> Yes	<i>Durham Region</i> Yes	<i>Durham Region</i> 63% (2018)
	<i>York Region</i> 20,183 tonnes (2018); 6% total waste landfilled	<i>York Region</i> Yes	<i>York Region</i> Yes	<i>York Region</i> Yes	<i>York Region</i> 65% (2018) before waste-to-energy; 94% including waste-to-energy
Sustane Chester	Surrounding areas and municipality	Yes	Yes	Yes	90%
PEI Energy Systems EFW	10% residual from facility (6,900 tonnes/year)	Yes	Yes	Yes	64%
L'incinérateur municipal de Lévis	6,100 tonnes residual	Yes	Yes	Yes	