



SPECIAL UTILITY COMMITTEE AGENDA

August 29, 2019 – River Valley Room

Call to Order	9:30 a.m.	Recess	3:30 p.m. - 3:45 p.m.
Lunch	12 noon - 1:30 p.m.	Adjournment	5:30 p.m.

MEMBERS

B. Henderson, M. Walters, S. Hamilton, A. Paquette

ITEM		ACTION
1.	CALL TO ORDER AND RELATED BUSINESS	
1.1	Call to Order	
1.2	Adoption of Agenda	
1.3	Protocol Items	
2.	ITEMS FOR DISCUSSION AND RELATED BUSINESS	
2.1	Select Items for Debate	
2.2	Requests to Speak <i>Refer to Summary of Agenda Changes</i>	
2.3	Requests for Specific Time on Agenda <i>Refer to Summary of Agenda Changes</i>	
3.	REPORTS	
3.1	Waste Strategy - Comprehensive Waste Management Strategy - Waste Diversion Strategy <i>Council approval required Addendum</i>	
3.2	Waste Transition Plan <i>Addendum</i>	
3.3	Single Unit Waste Set-out Business Case <i>Addendum Replacement Pages Council approval required</i>	
3.4	Waste Services Supplemental Capital Budget Adjustment <i>Addendum</i>	

ITEM		ACTION
	<i>Council approval required</i>	
3.5	Bylaw 18590 - To Replace Bylaw 17555, the City of Edmonton Waste Management Bylaw <i>Addendum Council approval required</i>	
4.	PRIVATE REPORTS	
4.1	Contract Update <i>Sections 16 (disclosure harmful to business interests of a third party), 25 (disclosure harmful to economic and other interests of a public body) and 27 (privileged information) of the Freedom of Information and Protection of Privacy Act</i> <i>Addendum</i>	
5.	NOTICES OF MOTION AND MOTIONS WITHOUT CUSTOMARY NOTICE	
6.	ADJOURNMENT	

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Waste Strategy

Comprehensive Waste Management Strategy Waste Diversion Strategy

Recommendation

That Utility Committee recommend to City Council:

1. That the 25-year Comprehensive Waste Management Strategy, as set out in Attachment 2, of the August 29, 2019, City Operations report CR_5829, be approved.
2. That the cessation of new Commercial Waste Collection services be effective October 1, 2019, including commencement of the wind-down and transition of existing commercial collection accounts, and that wind-down exceptions be made for those commercial organizations that are willing to move to three-stream source separation (organics, recyclables and residual garbage) as part of an Early Adopters Program.

Previous Council/Committee Action

At the February 5, 2019, City Council meeting, the following motion was passed:

2. That a final analysis and recommendation for a Zero Waste framework be included as part of the 25-Year Strategy Report to Utility Committee in June 2019.

At the February 1, 2019, Utility Committee meeting, the following motion was passed:

That Administration provide a report to the June 28, 2019, Utility Committee meeting on a final strategy including results of additional citizen engagement on:

1. Source Separated Organics as outlined in Figure 2.1 of Attachment 2 of the February 1, 2019, City Operations report CR_5827.
2. Additional waste diversion and reduction programs.

and that Administration use the recommendations of Waste Free Edmonton, as outlined in M. Gorrie's handout from the February 1, 2019, Utility Committee meeting, as the basis for consultation on single use plastics in Phase 2.

At the March 20, 2018, City Council meeting, the following motion was passed:

5. That Waste Services report to Utility Committee in June 2019 with further recommendations on the Waste Strategy and corresponding amendments to Waste Management Policy C527.

At the November 8, 2016, City Council meeting, the following motion was passed:

3. That a comprehensive waste management strategy, complete with a site master plan of the entire Edmonton Waste Management Centre, be prepared and presented as part of the 2018 Supplementary Operating Budget Adjustment. The strategy shall be all encompassing, including but not limited to a review of overall site design and best practices related to municipal waste collection, waste sorting technologies, composting, anaerobic digestion and construction and demolition waste management.

In addition, a number of other past Council motions have shaped and directed the Waste Strategy. These are included in Attachment 1.

Executive Summary

This report provides an overview of the 25-year Waste Strategy and associated recommendations across seven categories. The 25-year Comprehensive Strategy (Attachment 2) outlines details supporting the new directions under a Zero Waste strategic framework. Recommendations will:

- Formalize Zero Waste as the strategic orientation for the City's Waste Strategy.
- Align with the direction provided in the August 29, 2019 Council Report CR_7173, Single Unit Waste Set-out Business Case.
- Support the move of the multi-unit residential sector and the Industrial, Commercial and Institutional sector to implement a Source Separated Organics Program, effective fall 2022.
- Recommend the cessation of the City's current Commercial Waste Collection Business Line.
- Allow Administration to develop restrictions on certain single-use plastics or single-use disposable materials and bring new guidelines into effect by January 2021.

Report

The 25-year Comprehensive Waste Management Strategy sets the City on a path of transformational change. It reaffirms key commitments - such as 90 percent diversion of waste from landfill, and advances recommendations that will position the City's

Waste Services Utility for the next 25 years. Program development recommendations, along with changes to the City's processing of waste, will take shape over the next seven years. Once programming and new processing facilities are fully operational, they can be evaluated and assessed, and any needed adjustments can be made.

Moving forward, the Strategy will pull on all potential levers to support ConnectEdmonton's strategic goals of Health City, Urban Places, Climate Resilience and Regional Prosperity. Its initiatives are aligned with corporate goals and with the inputs over the last year from multiple streams of analysis and the voices of Edmontonians.

The directions outlined in the 25-year Strategy and associated reports will impact:

- How waste is sorted at homes across the City, in a manner that aligns with new processing practices, and boosts the efficiency and effectiveness of processing at the Edmonton Waste Management Centre. The detailed business case to support the Waste Strategy is included as Attachment 1 in CR_7173.
- The requirements of both residents and the City of Edmonton, as outlined within the proposed Waste Bylaw (CR_6362) which enables implementation and enforcement of the new programming.
- The future direction of the multi-unit residential sector including additional work towards a new waste set-out requiring separation of organic materials from the waste stream.
- The future direction of Industrial, Commercial and Institutional (ICI) sector waste, including additional work towards requiring these sectors to participate in separation of organic waste and recycling by the fall of 2022.
- Commercial business lines, with a proposed wind-down of the current commercial collections, and advancing on previous Council direction to secure an operational partner for the City's current Construction and Demolition Recycling business line.
- The strategic orientation of the waste program, including by emphasizing waste reduction programming, including through restrictions on single-use plastics and other single-use disposables.

The Strategy recommends a new strategic framework – Zero Waste – as a means of focusing the transformation required. Zero Waste focuses on:

- Activities that promote prevention, reduction and reuse of materials.
- Greater emphasis on circular economy innovations that consider waste as a

resource/feedstock in the creation of beneficial projects.

- Measurements beyond diversion, including successful waste reduction.
- Aiming for continuous improvement within the waste system and expansion of performance indicators to capture the full social, environmental and performance impacts of the system.

A Zero Waste Framework is integrated across the strategy, with major initiatives advocating waste reduction including through:

- Citywide source separation of waste, including in the Industrial, Commercial and Institutional sector, to support higher diversion and more effective management of different waste feedstocks (types of waste).
- The development of an organics processing strategy that seeks to make use of organic materials with potential output of renewable natural gas and compost, materials with beneficial environmental impacts.
- Emphasis on maximizing the market potential of refuse derived fuel within the Waste to Biofuels Facility, and through exploration of other market opportunities.
- Enforcement of volume limits on residual garbage, seeking to motivate maximum utility of organic and recycling waste disposal.
- A robust Waste Reduction Strategy, which seeks operational improvements and new community partnerships to support a goal of impacting the City's diversion by up to 10 percent.
- A new focus on innovation through the Alberta Clean Energy Technology Accelerator (ACETA), which aims to use waste feedstocks to support and accelerate the use and valorization of municipal and biomass waste feedstocks to support the circular economy and reduction of greenhouse gas emissions.

Strategy Process and Methods

The Strategy and its components have been informed by inputs assembled or commissioned through Administration. Some of these will continue to inform the program as implementation plans are prepared. Inputs are outlined below.

- Two phases of qualitative and quantitative public engagement activities with single unit and multi-unit residential sectors, and from the Industrial, Commercial and Institutional sector. The engagement processes have collectively received more than 30,000 points of input through online and

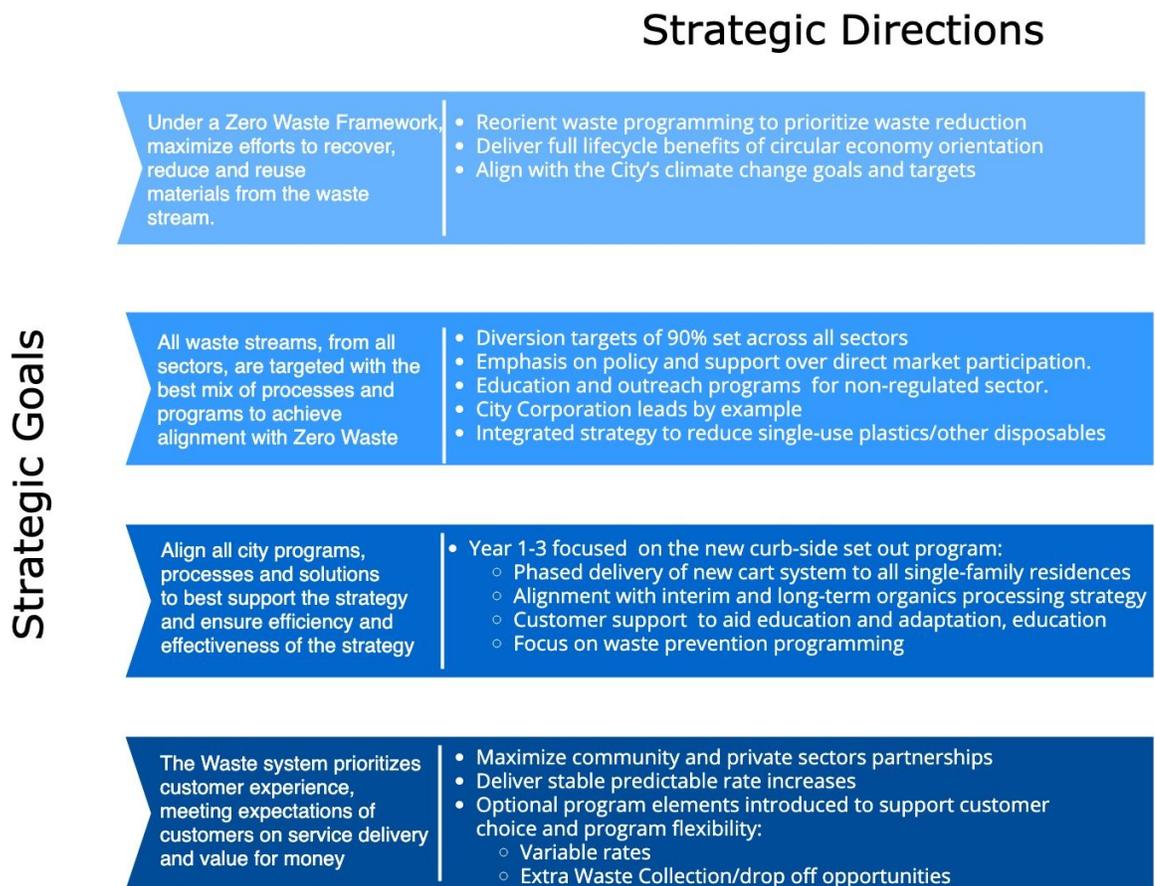
telephone surveys, meetings, workshops and public events. City staff were also engaged in both phases to assess impacts of proposed changes to operations.

- An internal review through the Program and Services Review, which assessed the current state of the City's four non-regulated business lines:
 - Commercial Collections
 - Commercial Self-Haul
 - Construction and Demolition Processing
 - Aggregate Recycling
- The February 2018 Waste Services Audit Report, which signaled operational challenges including a need to validate diversion methodology (approved for single unit residential sector by City Council in June 2018).
- A rate variability study (2019).
- A cost of service study (2018).
- Best practice research and market scans conducted internally and by external organizations.
- Submissions made by external waste processing organizations regarding potential technologies, services and processes.
- A Request for Expressions of Interest sent to waste industry members to gauge market interest for operating the City's Construction and Demolition Recycling Facility and to help inform Council's decision to seek an operational partner for this business, as part of the overall strategy work.
- The development, launch and startup of the Initial Cart Rollout to 8,000 households, beginning April 2019 to demonstrate how the system would work, and to provide opportunities to refine operations prior to a potential citywide launch.
- Advancement of the Organics Processing Facilities business case in support of a new organics processing approach, in alignment with the proposed single unit residential set out program.
- Assessments of aligned processing streams such as production of refuse derived fuel, changes to the City's recycling program and planned upgrades for the Materials Recovery Facility have helped to change the single unit set out and validate the proposed path to 90 per cent diversion of single unit residential waste.

Corporate Strategic Alignment and Waste Strategy Development

The 25-year Comprehensive Waste Management Strategy will fundamentally transform service delivery and deliver outcomes and actions that will primarily impact ConnectEdmonton’s strategic goal of Climate Resilience. Figure 1 below highlights the strategic goals and strategic directions that will support the waste strategy. In addition, these goals are aligned with the strategic goal of service delivery transformation.

Figure 1. Strategic Goals and Directions



More detail on the alignment between Council’s strategic goals, service delivery transformation and focus and outcomes of the Strategy is contained in Attachment 2.

Performance Management

As Administration implements new programs and processes, there will be ongoing alignment with the City's strategic goals. Edmonton's Strategic Plan and the Corporate Business Plan both provide the direction to coordinate activities and efforts to deliver services with the greatest value to Edmontonians.

Administration has identified four strategic focus areas to advance business performance across the department: Customer Excellence, Operational Excellence, Financial Accountability and Organizational Excellence. Over the next three years, Waste Services will undertake initiatives that align with the department's strategic direction, while transitioning service and program models. Furthermore, all performance measures will align with the newly developed Enterprise Performance Management Framework and measures will be updated as required to support approved initiatives emerging from the strategy. The framework lays out strategic objectives at the operational levels, defines internal process and enablers that are supported with performance metrics and challenging targets and aims to improve data-driven decision making. Waste Services Key Performance Indicators are outlined in CR_7172 Waste Services Business Plan.

Recommended Timeline

Critical milestones in the strategy rollout are noted on the timeline below, which adheres to the March 2018 Council motion that called for the launch of the single unit residential program beginning in fall 2020. Administration expects that this single unit residential program will have multiple phases with full deployment by the end of the second quarter of 2021. Program launch will begin in areas served by City waste collectors, allowing the program to benefit from the experience of employees who collected source separated organics during the Edmonton Cart Rollout, followed by the balance of neighbourhoods by June 2021. The Implementation Strategy can be found in Attachment 3.

Figure 2: Recommended Timeline



Next Steps

Pending approval of the strategy, additional streams of work will commence to bring forward regulations and bylaws for the following, as outlined in Attachment 4:

- Plastics and single-use items.
- Source separated organics programming for the multi-unit sector.
- Source separated organics programming for the Industrial, Commercial and Institutional sector.
- Wind-down of Commercial Collections, commencing October 1, 2019.

All new processes will be supported by targeted engagement and best practice research, and business cases will be developed for each additional program stream, before any program decisions are made. Subject to approval, the restrictions on single-use plastics will be in place as soon as the first quarter of 2021, based on details outlined in Attachment 5. Program changes for the multi-unit and Industrial, Commercial and Institutional sectors will begin implementation in the fall of 2022. Sufficient time will be allowed within the programs to allow impacted organizations to make necessary infrastructure and inventory adjustments.

The strategy also contains recommended changes to the City's current non-regulated business lines, including a wind-down of the current Commercial Collections business, and securing an operational partner for the Construction and Demolition Recycling business. The City's involvement in these business lines has been assessed as inadequate both in terms of achieving diversion and financial results.

In addition, the City's direct participation in the marketplace is seen as a barrier to cooperation with the waste industry, which perceives conflict with the City's dual roles as regulator and market participant. While it is clear that the City will have a role to play in ensuring the success of a mandatory Source Separated Organics Program, operational constraints, industry resistance and limited market success all underline

the recommendations that the City focus less on direct market participation and instead play a larger role as a regulator, providing rules, facilitating market development and providing resources and educational support.

Measurements

Across all activities, the City's overall diversion of waste from landfill will continue to be the primary measure of success. The 90 percent diversion target includes a more targeted focus on achieving 10 percent of diversion through waste reduction efforts. In August 2018, the single unit residential target for waste diversion was reaffirmed as 90 percent, a target first set in 2007 in Waste Management Policy C527. In August 2018, the single unit residential diversion targets and methodology were updated in alignment with the February 2018 Waste Services Audit Report. Based on the revised diversion rate calculation methodology, the final diversion rate for 2018 is 36 percent, which forms the baseline for the strategy.

As part of the recommendations contained in the strategy, 90 percent targets are also identified for the multi-unit residential and Industrial, Commercial and Institutional sectors. The strategy document lays out the factors influencing the City's path to 90 percent diversion in the single unit residential sector.

The methodology and path forward for the multi-unit and Industrial, Commercial and Institutional sectors will be identified through business planning and business case processes and through ongoing engagement with sector representatives.

Budget/Financial

Administration continues to strive towards achieving the financial indicators set out in the Waste Management Utility Fiscal Policy C558A including maintaining rates that are fair, stable and consistent while ensuring that the utility is financially sustainable over the long-term.

Administration's financial indicators incorporate the implementation of initiatives in the 2020 to 2022 business planning period. Initiatives include increasing residential and non-residential waste diversion, citywide implementation of the Source Separated Organics Program for single unit residences, enhancements to the Refuse Derived Fuel Facility and continuously improving the business in a fiscally responsible manner.

The financial indicators are measures of the proposed financial performance of Waste Services. Updated indicators for 2020 to 2022 are included in Attachment 1 of the August 29, 2019, City Operations report CR_7172. A full update to the measures will be presented in fall 2019 as part of the 2020 Waste Services Utility Rate Filing. The rate filing will continue the focus on achieving overall long-term financial sustainability,

balancing both capital and operating requirements with achievement of the financial indicators.

Public Engagement

A comprehensive citywide public engagement initiative was launched in October 2018 to support the development of the 25-year Waste Strategy, with a second phase of public engagement in spring 2019. The public engagement was designed to seek input from residents, multi-unit stakeholders, non-residential stakeholders and internal City employees on proposed waste management program and service changes.

The public engagement helped to inform the 25-year Waste Strategy and proposed changes to waste programs and services. The Phase 1 report was presented on February 1, 2019 (CR_5827) and the Phase 2 report is included below (Attachment 6). Additional background materials including survey data and detailed qualitative reports are available at edmonton.ca/futureofwaste.

Corporate Outcomes and Performance Management

Corporate Outcome(s): Edmonton is an environmentally sustainable and resilient city.						
Outcome(s)	Measure(s)	2018 Result	Target(s)			
			2019	2020	2021	2022
Edmonton is an environmentally sustainable and resilient city.	Single Unit Residential Waste Diversion Rate	36%	41%*	50%	64%	66%

*Due to the closure of the Edmonton Composting Facility, this target is not anticipated to be met.

Risk Assessment

Risk Element	Risk Description	Likelihood	Impact	Risk Score (with current mitigations)	Current Mitigations	Potential Future Mitigations
Project Management (Strategy Project)	Risk of not meeting timelines, cost and scope	2 - possible	2 - moderate	4 - low	Define project scope; track project timeline & cost; establish project governance committee and project management office.	Develop contingency plans for potential issues arising

Legal/ Regulatory	Regulator may have long review process before approving all permits due to program changes	4 - likely	2- moderate	8 - medium	Develop operational plans to expedite applications.	Establish a comprehensive process with the Regulator to provide them with information in a timely manner.
Public Perception	Customers perceive the strategy results as a reduction in services	4 - likely	2 - moderate	8 - medium	Proactively engage Council and the public in strategic planning and demonstrate alignments.	Develop a communication strategy that will focus on education and outreach and be responsive to customer needs.
Financial Stewardship	Strategy related costs exceed projections resulting in additional Utility rate increases	3 - possible	2- moderate	6 - low	Closely monitor program financials; include financial contingency in cost estimate.	Revise business model to address operational and financial effectiveness
Public Perception	Customer engagement in strategic changes lower than anticipated	2 - unlikely	2 - moderate	4 - low	Public engagement to determine public readiness and support of change. Engagement has been high.	Develop a comprehensive education and communications plan to address public engagement.

Attachments

1. Timelines and Past Motions
2. Edmonton 25-year Comprehensive Waste Management Strategy
3. Implementation Strategy
4. Program Action Plan
5. Elevated Enviro Report
6. What We Heard Report

Others Reviewing this Report

- A. Laughlin, Acting Deputy City Manager, Financial and Corporate Services
- C. Owen, Deputy City Manager, Communications and Engagement
- J. Meliefste, Acting Deputy City Manager, Integrated Infrastructure Services
- K. Armstrong, Deputy City Manager, Employee Services
- S. McCabe, Deputy City Manager, Urban Form and Corporate Strategic Development
- B. Andriachuk, City Solicitor

Timelines and Past Motions

For more than two years, City Council has provided direction that has shaped the 25-year Waste Strategy. This document provides a full list of relevant motions passed. The timeline below provides a visual overview of the timeline involved in the strategy creation.



Past Motions and Council Direction Impacts to Waste Strategy

Motion	Impact on Strategy
<p>At the March 20, 2018, City Council meeting, the following motion was passed:</p> <p>5. That Waste Services report to Utility Committee in June 2019 with further recommendations on the Waste Strategy and corresponding amendments to Waste Management Policy C527.</p> <p>and</p> <p>At the November 8, 2016, City Council meeting, the following motion was passed:</p> <p>That a comprehensive waste management strategy, complete with a site master plan of</p>	<p>Directed the creation of a new Waste Strategy</p>

<p>the entire Edmonton Waste Management Centre, be prepared and presented as part of the 2018 Supplementary Operating Budget Adjustment. The strategy shall be all encompassing, including but not limited to a review of overall site design and best practices related to municipal waste collection, waste sorting technologies, composting, anaerobic digestion and construction and demolition waste management.</p>	
<p>At the February 1, 2019, Utility Committee meeting, the following motion was passed:</p> <ol style="list-style-type: none"> 2. That a final analysis and recommendation for a Zero Waste framework be included as part of the 25-year Strategy Report to Utility Committee in June 2019. 	<p>Provided direction to assess Zero Waste as an overall framework for the new strategy, this was tested in the engagement across both phases.</p>
<p>At the February 1, 2019, Utility Committee meeting, the following motion was passed:</p> <p>That Administration provide a report to the June 28, 2019, Utility Committee meeting on a final strategy including results of additional citizen engagement on:</p> <ol style="list-style-type: none"> 1. Source Separated Organics as outlined in Figure 2.1 of Attachment 2 of the February 1, 2019, City Operations report CR_5827. 2. Additional waste diversion and reduction programs. <p>and that Administration use the recommendations of Waste Free Edmonton, as outlined in M. Gorrie's handout from the February 1, 2019, Utility Committee meeting, as the basis for consultation on single-use plastics in Phase 2.</p>	<p>This motion helped to frame the Phase 2 engagement including the scoping of potential restrictions for single-use plastics.</p> <p>Details of the Engagement are provided in the What We Heard Report (Attachment 4)</p>
<p>On February 5, 2019, City Council passed the following motion:</p>	<p>This motion authorized Administration to initiate a Request for Proposals (RFP) to</p>

<p>1. That the actions as outlined in Attachment 2 of the February 1, 2019, City Operations report CR_6361, be approved.</p> <p>2. That Attachments 1 and 2 of the February 1, 2019, City Operations report CR_6361 remain private pursuant to sections 24 (advice from officials) and 25 (disclosure harmful to economic and other interests of a public body) of the <i>Freedom of Information and Protection of Privacy Act</i>.</p> <p>Attachment 2 was presented in private and stated as follows:</p> <p>That, based on the substantive and positive input from the RFEOI process, Administration proceed with a formal Negotiated Request for Proposal to seek an operator for the Construction and Demolition operations at the Edmonton Waste Management Centre.</p> <p>As the Request for Proposal has since been posted publicly, the details of the motion can be disclosed (i.e. decision to proceed with NRFP), however the attachments associated with this motion should remain in private under ss. 24 and 25 of the <i>Freedom of Information and Protection of Privacy Act</i> as the negotiations pursuant to the RFP have not yet concluded.</p>	<p>seek an operating partner for the Construction and Demolition Recycling Facility at the Edmonton Waste Management Centre.</p> <p>This RFP closes on August 22, 2019.</p>
<p>Participate in strategy development, along with the Alberta Urban Municipalities Association as well as other municipalities to develop and advance a framework for an Extended Producer Responsibility policy framework that can be recommended to the Province of Alberta (CR_6363 Extended Producer Responsibility - Information Update on March 22, 2019).</p>	<p>Focus on Extended Producer Responsibility remains an active part of the City's Waste Reduction initiatives. Participation in the Alberta Urban Municipalities Association committee is ongoing and aligned with Administration's overall strategic work.</p>

THE FUTURE OF WASTE

EDMONTON 25-YEAR COMPREHENSIVE
WASTE MANAGEMENT STRATEGY

Edmonton



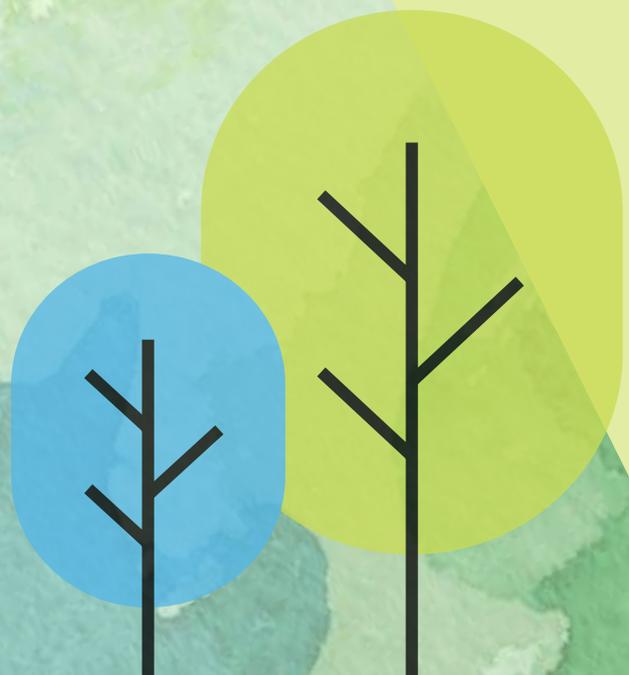


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1. EXECUTIVE SUMMARY

The Future of Waste: Edmonton 25-year Comprehensive Waste Management Strategy sets the City of Edmonton on a path of ambitious, transformational change. Under the broader framework of Zero Waste, the strategy adopts a broader lens to transform the system with new focus on efforts which will emphasize waste reduction in addition to affirming a commitment to 90 percent diversion of single unit residential waste from landfill. The diversion target is also recommended to be extended across all sectors: regulated and non-regulated and programs will be advanced to support these goals.

The Strategy positions the City's Waste Services Utility for the next 25 years with program developments that will take shape over the next five to seven years. Once programming and new processing facilities are brought on stream, the program can be evaluated and assessed, and any needed adjustments can be made.

The new Strategy seeks to pull on all potential levers to support the Council's strategic goals of Healthy City, Urban Places, Climate Resilience and Regional Prosperity. Its initiatives are aligned with corporate goals and with the inputs over the last year from multiple streams of analysis, along with the passionate voices of customers and stakeholders.

Under a Zero Waste Framework the Waste Strategy seeks a new path through:

- A commitment to a system that continuously improves and rethinks waste (so that products and packages are designed to lessen or eliminate waste at the outset), reused in beneficial ways and repurposed as feedstock within a circular economy. The Zero Waste approach is supported in the strategy by:

- A focused waste reduction strategy, a targeted strategy to prevent more materials from becoming part of the waste stream through operational refinements, increased engagement and partnership with the community and addressing calls for reduction in single-use plastics/ single-use disposables.
- Development and direction of waste feedstocks (types of waste, e.g., organics, plastics, etc.) to support production and innovations in the local economy. The City's expertise in developing Refuse Derived Fuel (RDF) has potential applications beyond the Waste to Biofuels Facility which can be explored. In addition, other feedstocks from plastics to textiles can be directed to appropriate markets.
- Better alignment of the collection of waste at the curb with the processing systems at the Edmonton Waste Management Centre. Past practices contribute to inefficiency and contamination, while future programs will enforce separation of organic waste from residual garbage, including through enforcement of volume limits. Separate collections of yard waste will ensure materials can be segmented from the system for beneficial processing. Together, these practices will enable better processing of waste toward beneficial end products with less contamination in the system.
- Delivering program change including associated capital requirements within the stable, predictable rate framework advanced in the 2018 Business Plan.



- Advancing new programming for single unit residences first, in tandem with the Single Unit Set-out Business Case (CR_7173). Collections systems, processing and waste reduction programming will be integrated to ensure program success.
- Advancing policy initiatives, including source separation, to better position the City in relation to non-regulated sectors. The City will play a role as a regulator, seeking to facilitate market-based responses to new system requirements and will immediately begin to withdraw from directly offering non-regulated services.
- Openness to alignment with regional municipalities as regional systems grow and major new investments are contemplated.
- Asking waste customers to do more to manage their waste at home and in turn, offering more in terms of customer choice and support. Recommendations propose to offer a choice on cart size, excess waste options and potential rate variability associated with cart choices.

Early learnings from the Initial Cart Rollout show how integral customer service and support will be to program success. Learnings from early adoption will continue to ensure programs are responsive and adjusted as required. More work is being done to understand how customers interact with the program and ensure support and education programs, including new digital programs, are responsive to customer needs.

The recommendations advanced in the Strategy will collectively transform the system and position the City to deliver on its goals through creation of a more effective, customer-responsive and efficient service.



2. STRATEGY PROJECT OVERVIEW

This report makes key recommendations in support of the City of Edmonton new 25-year Comprehensive Waste Management Strategy. It assesses the direction of operations and processes at the Edmonton Waste Management Centre (EWMC), new program directions for single and multi-unit residential waste collection, programming to advance waste diversion within the Industrial, Commercial and Institutional sectors (ICI), and a more targeted emphasis on waste reduction activities. Together, the initiatives refocus the City on meeting diversion targets, within a more holistic Zero Waste Framework, and in alignment with the City's strategic goals.

This Strategy emerged from a period of challenge that prompted the City to refocus. A combination of facility and operational challenges at EWMC, an operational review by the City Auditor and the City's Program and Service Review confirmed the need for change.

It points to opportunities to improve operational performance and align residential collections and processing to get the system back on track toward a goal of 90 percent single unit residential waste diversion from landfill. It also looks beyond diversion to identify opportunities to refocus the system toward waste reduction and management to support the City's strategic goals of Healthy City, Urban Spaces, Regional Prosperity and Climate Resilience.

Extensive engagement, best-practice research and program analysis were taken into account, as well as real-time findings from the Edmonton Cart Rollout, which is currently ongoing in 8,000 households. This active project is allowing Administration to learn, prior to citywide implementation, how best to implement changes and to identify key needs and challenges that will impact success.

Beyond program changes, the City's long-term strategic goals for its waste management system will require a new orientation and openness to new partnerships and processes that will not only address base operational needs, though these challenges remain significant, but that begin to refocus the corporate lens on activities that reduce the amount of waste generated and collected. Cumulatively, the 25-year Comprehensive Waste Management Strategy seeks to deliver transformational impacts and excellent service within a well-managed utility.

2.1. BACKGROUND: THE PATH TO EDMONTON'S NEW 25-YEAR COMPREHENSIVE WASTE MANAGEMENT STRATEGY

The development of the new Strategy began in June 2017, when the strategic and operational challenges of the current system came to light in the Waste Services Business Plan. The Plan noted structural challenges at the Edmonton Composting Facility and the implications associated with this development. It highlighted system deficiencies due to ongoing, high levels of contamination within the waste stream resulting from high concentration of organic materials (food and yard waste). Mixed and contaminated waste presents a challenge to processing equipment as it cannot screen out contaminants completely and therefore limits the effectiveness and the ability to produce beneficial end-material outputs like compost. Tackling system challenges requires households to separate organic waste from the waste stream for the plan to be successful in meeting its diversion goals.

In March 2018, a strategic update was provided to City Council recommending key steps to realign the overall Strategy. The following motions were passed:

1. That Administration review the scope and assumptions of the residential waste diversion metric, as outlined in the February 8, 2018, Office of the City Auditor report CR_5555 (Waste Services Audit) and return to Utility Committee by June 2018 with a recommendation on the diversion calculation methodology.

2. That Administration continue with targeted engagement and provide a report on the removal of grass, leaf and yard waste from the waste stream, the availability of alternate disposal options for leaf and yard waste, and further details on the proposed program, to Utility Committee in June 2018, and that Administration:
 - a. continue to collect grass clippings in 2018, pending the results of the public engagement,
 - b. implement special collection on yard waste (e.g. Christmas trees) in fall 2018.
3. That Administration proceed with initial planning for a Source Separated Organics (SSO) Program for organic waste processing and collection, with planned implementation starting in fall 2020 for the units receiving curbside collection.
4. That Waste Services engage citizens on the implementation of potential additional waste diversion programs, report citizen feedback and input to Utility Committee in October 2018, and factor citizen feedback and input into the implementation of any additional waste diversion programs.

Utility Committee also passed the following motions in June 2018:

- That Administration, as part of the Waste Management Strategy Update, provide an analysis of a Zero Waste target and associated calculations and strategy implications for residential, multi-family and non-residential waste and that consideration of a Zero Waste target be included in engagement exercises that will be done to support the waste management strategy update.

- That Administration look at current practises in other jurisdictions that have been used to reduce and/or eliminate the use of single-use plastics, including but not necessarily limited to plastic bags, cups and straws, and report back on mechanisms the City could use to make further progress on this issue.

In addition to the recommendations approved in March 2018, other elements will form part of the overall 25-year Comprehensive Waste Management Strategy, including recent City Auditor's recommendations, as well as those from the City's own internal review processes.

In August 2018, the framing for the 25-year Strategic Outlook Project Overview was presented to Utility Committee. In addition to advancing the recommendations accepted in the March 2018 Strategic Update, the Strategy project was framed to also include:

- Proposed changes to the Waste Management Bylaw (17555), and consideration of:
 - Adopting the goal of becoming a Zero Waste city and managing any potential implications.

- Broadening waste diversion strategies into the multi-unit residential sector, including setting a targeted diversion goal for this sector and determining needed collection programs and associated communications and educational programs.
- Increasing waste diversion in the non-residential sector, including setting a targeted diversion goal for this sector, and determining the appropriate path for the City to maximize its impact.
- Implementing additional waste prevention and reduction initiatives, including potential programs to restrict single-use plastics and to reduce food waste across all sectors.
- Coordinating with the Energy Transition Unit to explore opportunities to address climate change as per the Edmonton Declaration.
- Collaborating with regional partners.

In advance of this document, City Council also passed motions as part of the strategic approach to:

- Advance a Request for Proposal (RFP), seeking an operating partner for the City's Construction and Demolition Recycling Facility (CR_6361 Industrial, Commercial and Institutional Sector Strategic Review on February 1, 2019).
- Participate in strategy development, along with the Alberta Urban Municipalities Association as well as other municipalities to develop and advance an Extended Producer Responsibility policy framework that can be recommended to the Province of Alberta (CR_6363 Extended Producer Responsibility - Information Update on March 22, 2019).



2.2. STRATEGY PROCESS AND METHODS

SITUATIONAL ANALYSIS

The strategy development process began with an assessment of the City's current programming. Challenges were outlined in Council reports and directional recommendations were provided to help shape the process. Figure 1 provides a SWOT (strengths, weaknesses, opportunities and threats) overview of the current state of Waste Services.

Figure 1. Swot Analysis

STRENGTHS

- Strong public support for diverting materials from landfill
- Integrated waste processing infrastructure in place
- Expertise in refuse derived fuel (RDF) production
- Resident participation in previous waste strategies (including early adopting of recycling programs)

WEAKNESSES

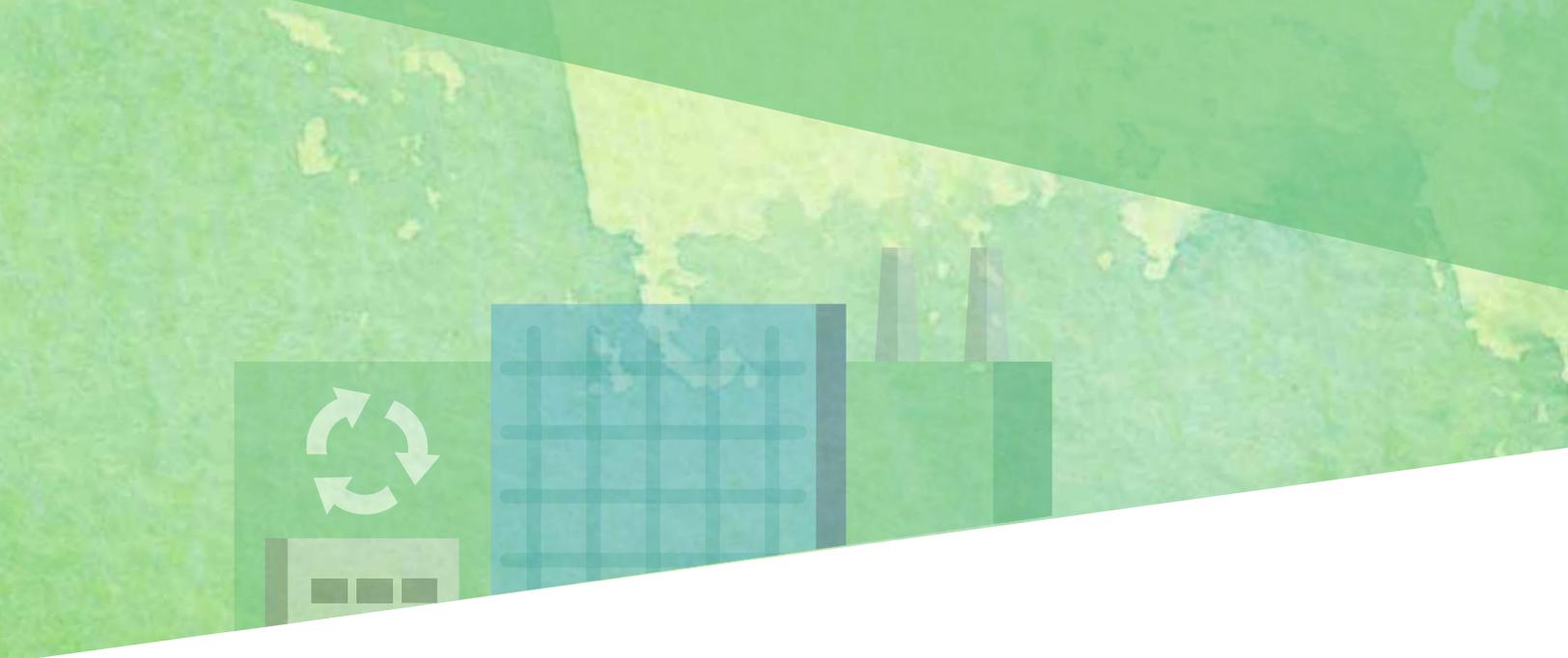
- Processing challenges including shut-down of Edmonton Composting Facility
- No source separation program in place (causes high contamination in the system)
- Limited focus on waste reduction programming
- Limited use of operational performance measures to inform waste business decisions
- Non-regulated programs not meeting stated goals
- Weak business case preparation methodologies

OPPORTUNITIES

- Processing strategies can be renewed at the same time as changes to collection programs
- Source separated organics programming is well established in the Edmonton region
- Growing grassroots campaigns looking for the City to restrict single-use plastics and other single-use disposables
- Zero Waste framing is increasingly well known
- Growing potential of RDF markets provides opportunities to increase diversion based on niche expertise

THREATS

- Lower participation in recycling programs
- Recycling programs, construction and demolition recycling impacted by restricted markets/ inadequate market development
- Reach into ICI markets limited by existing market-based initiatives; City cannot compete with the private sector



In developing a path forward, the Strategy and its components have been informed by a wide range of inputs assembled or commissioned through the City's Waste Services team. Some of these programs are ongoing and will continue to inform the program as implementation plans are prepared. This included:

- Two phases of qualitative and quantitative public engagement activities across the single unit and multi-unit residential sectors, and ICI sector. The engagement processes have collectively received more than 30,000 points of input through online and telephone surveys, meetings, workshops and public events. Waste Services staff and other City of Edmonton staff were also engaged in both phases to assess impacts of proposed changes to operations.
- An internal review through the Program and Service Review (2017-2018), which assessed the current state of the City's four non-regulated business lines:
 - Commercial Collections
 - Commercial Self-Haul
 - Construction and Demolition Processing
 - Aggregate Recycling
- The February 2018 Waste Services Audit Report, which signaled operational challenges including the need to validate diversion methodology (approved for single unit residential sector by City Council in June 2018).
- A rate variability study (2019)
- A cost of service study (2018)
- Ongoing best practice research and market scans conducted internally and by external organizations.
- Submissions made by waste processing organizations about potential technologies, services and processes.
- A Request for Expressions of Interest sent to waste industry members to gauge market interest for operating the City's Construction and Demolition Recycling Facility.
- The development, launch and startup of the Edmonton Cart Rollout to 8,000 households, beginning April 2019.
- The work of the Organics Processing Facilities Steering Committee, which brought forward a business case in support of a new organics processing approach at the Edmonton Composting Facility.
- Assessments of aligned processing streams such as production of refuse derived fuel, changes to the City's recycling program and planned upgrades for the Materials Recovery Facility.

2.3. WHAT WE HEARD

Throughout two phases of public engagement, Waste Services received more than 30,000 points of input. Edmontonians weighed in on the future of their waste system through surveys, public meetings, focus groups, tours of apartments and condo buildings, and at trade shows and events. It quickly became apparent that Edmontonians have passion for the system and a desire to 'get it right'. The What We Heard Report (Attachment 3) provides a fulsome overview of the key themes and details from public engagement which have been used to ground the data and outputs presented. Specific details on each area of engagement are also interspersed within this report to demonstrate how the engagement links to the recommended paths. In addition, comprehensive reports from both phases of engagement are available at edmonton.ca/futureofwaste.

The engagement produced some strong themes which speak to the overall strategic approach, and which helped to inform the Strategic Goals and Directions contained here. Some overarching themes included:

WHAT WE HEARD: ABOUT THE SCOPE AND DIRECTION OF CHANGE	
<p>Edmontonians support progressive waste practices.</p>	<ul style="list-style-type: none"> • But they are skeptical given recent challenges. • People want to get the system back on track and are willing to help, but they also want: <ul style="list-style-type: none"> • To see proof the program is working and they are getting a return on the money they contribute. • More emphasis on customer experience and customer convenience in order to participate fully.
<p>Move towards harmonization of systems across sectors, practices and within the region.</p>	<ul style="list-style-type: none"> • Differences in how programs are administered across the region can cause confusion and deter participation. • More focus on Extended Producer Responsibility (EPR) is needed. • A regional outlook supports market development opportunities and role clarity when people are generally following the same processes and rules.
<p>Just do it!</p>	<ul style="list-style-type: none"> • The program is complex, but the City is not breaking new ground. The majority of public engagement participants across residential and ICI sectors agree it is time to move toward source separation of organics. • The City should be willing to learn from others and apply lessons learned.



WHAT WE HEARD: ABOUT HOW CHANGE NEEDS TO OCCUR

Education and support are key to helping people adapt to a new system.

- People will need instruction, support and reinforcement to get the new process right.

Tools and support must be offered long term.

- This will be a high touch system. Consistent, ongoing support is necessary.

Make it easy

- Time constraints, cold winters with snowy residential streets, changing rules, language barriers, different cultures and different street or building configurations will all present unique challenges for changing overall system behaviour.
- People want clear rules and a program that makes sense, is easy to follow and not onerous to manage.

The yuck factor is real

- Concerns about odour, attraction of insects or rodents and mess are significant. The 'yuck factor' is a consistent worry.

WHAT WE HEARD: ABOUT THE NEED TO EXPAND OPPORTUNITIES FOR PARTICIPATION

Create conditions to help residents divert additional materials.

- The prospect of material dumping is seen as a major concern. Other concerns with program transition include fees at Eco Stations, inadequate management of bins and carts at multi-unit buildings, and insufficient opportunities for people to get rid of large materials, including grass and yard waste.
- A desire for more convenient and varied waste drop-off options.
- Enforcement will be key to making the new system work and ensure participation.

WHAT WE HEARD: ABOUT THE ROLE THE CITY PLAYS IN THE SYSTEM

The City needs to be a strong regulator, but not necessarily a market participant.

- The City should set standards and let the market ensure the standards are met.
- Delivery of system components need not focus on large-scale waste industry participants alone. There are unique, creative initiatives in the not-for-profit sector that can be leveraged to support waste reduction activities.

WHAT WE HEARD: ABOUT THE ROLE OF EMPLOYEES

City and Waste Services employees have been enthusiastic participants in process development.

- Waste Collectors are clear that the new system will work best if the City enforces new standards.
- Extensive education and support is necessary for residents to successfully comply with current and future changes to the waste system.
- Staff perceive the benefits of the new system include increased safety and efficiency.
- It is important for the City to lead by example (e.g., not use plastic materials in its offices and separating food scraps in City buildings).
- There is the potential to use the City's community-based facilities, like recreation centres, fleet service yards, libraries and LRT stations as drop-off locations for big bin and specialty items (e.g., electronics, batteries, printer cartridges).

WHAT WE HEARD: ABOUT MATERIAL RESTRICTIONS AND RECYCLING

Packaging, single-use plastics and other disposable items are clear issues, but the solutions are less clear

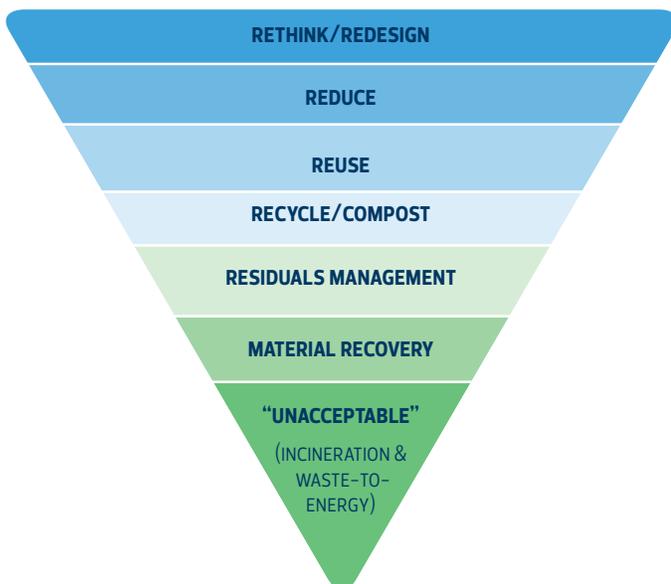
- From plastic bags to take-out containers, many residents and businesses deal with unwanted materials they can't recycle or return.
- People understand recycling markets are changing and materials they thought were being recycled are not. It's understood that a combination of new regulatory requirements, new market development efforts and material restrictions should be integrated to support diversion or reduction of these materials overall.

3. ZERO WASTE: A NEW STRATEGIC FRAMEWORK

In the February 2018 Waste Services Audit Report, the City Auditor noted challenges with the current system’s lack of emphasis on waste prevention programming, and recommended deliberate consideration of new strategy components, including spending allocations to ensure programs take a stronger focus on the internationally accepted solid waste management hierarchy (see Figure 2) which indicates prevention and reuse as the most sustainable methods of waste reduction.

The consideration of a Zero Waste Framework for this Strategy was borne out of these cautions, as well as the perspectives from public engagement where people expressed a desire to do more to reduce their impacts. Respondents indicated they are looking for programs, support and options to help them adopt practices to reduce their overall waste production and to see waste directed away from landfill.

Figure 2. Waste Hierarchy
(Source: Zerowastecanada.ca, 2018)



Zero Waste is defined by the Zero Waste International Alliance as:

[...] a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use. Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.

Adoption of a Zero Waste Framework is well aligned with collection, processing and waste reduction initiatives within the Strategy and supports the direction of the strategy and all related programs, business lines and services effectively by focusing on:

- More activities at the top of the waste hierarchy (rethink/ redesign, reduce, reuse).
- Circular economy innovations that consider waste as a resource/feedstock in the creation of beneficial projects.
- Measurements beyond diversion, including successful waste reduction, for example, achieving reductions in per capita waste generation.
- Continuous improvement within the waste system, consistent with performance indicators, which measure beyond diversion to capture the full environmental impacts of the system.

With this recognition, program directions in this Strategy all link to an overall Zero Waste Framework, as shown in Figure 3 below.

Figure 3. A Zero-Waste Strategic Framework





Broadly, emphasis on Zero Waste is integrated throughout the Strategy, and through current initiatives, with a focus on:

- Citywide source separation of waste, including in the ICI sector, to support higher diversion and more effective processing of different waste feedstocks.
- An organics processing strategy that seeks to make use of organic materials with potential output of renewable natural gas and compost, materials with beneficial environmental impacts.
- Maximizing the market potential of Refuse Derived Fuel (RDF) within the Waste to Biofuels Facility and exploration of other additional market opportunities.
- Enforcement of volume limits on residual garbage, seeking to motivate maximum utility of organic and recycling waste disposal.
- Leading the Alberta Clean Energy Technology Accelerator (ACETA), which aims to provide access to resources and feedstocks such as processed Municipal Solid Waste (MSW) and biomass, syngas from municipal solid waste residuals, landfill gas, anaerobic digestion gas and other processed materials or byproducts from solid waste processing and conversion. It also provides access to technology for hydrocarbon processing, upgrading and refining as well as experimentation and technology development.
- A range of programming shifts to support and inspire emergent and mature community-based initiatives to enhance waste reduction programming.
- Participation in efforts to promote Extended Producer Responsibility (EPR) policies, as per Council's motion on March 2019, that can ensure those who create products and packaging materials retain responsibility for the management of waste related to those materials, right through to the end of their life cycle. The motion from March 22 reads:
 - That Administration continue to work with and financially contribute \$50,000, from the 2019–2022 Waste Services Branch Operating Budget, towards the Alberta Urban Municipalities Association effort to develop a baseline that can inform the design of a provincial Extended Producer Responsibility program, in cooperation with other Alberta municipalities, producers and recyclers of packaging and paper products, and the Province of Alberta. This year, Edmonton is participating with the Alberta Urban Municipalities Association, the City of Calgary and many partner municipalities in promoting the establishment of an EPR framework in Alberta.
- A process outlined herein that will restrict and better manage single-use plastics/single-use disposables within the City.

3.1. WHAT WE HEARD ABOUT ZERO WASTE

Recommendations for supporting a Zero Waste Framework are also in alignment with results from the public engagement processes. Respondents in the public engagement were asked about their support for a Zero Waste goal, with the description that it would mean more focus of the City's efforts to boost waste reduction and reuse. More than 50 percent of respondents across all surveys indicated they would strongly support a Zero Waste goal¹.

Beyond endorsing a Zero Waste goal, residential survey respondents also offered their ideas for turning the goal into reality, recommending that the City pursue:

- Supporting/advocating for purchasing sustainable items
- Working with businesses to support waste reduction efforts.
- Supporting/advocating for making producers more responsible for their packaging and disposal of their products
- Developing additional waste prevention programming including:
 - Developing Food Waste Prevention Programs
 - Establishing additional Reuse Centres
 - Developing food collaborative recovery programs with the commercial sector
 - Providing support for item donation organizations and programs

Respondents also noted that they would like to see the City improve access and convenience of programs that support waste reduction, including through:

- Additional convenient drop-off locations for common household items like batteries, small electronics, light bulbs, printer cartridges and non-reusable clothing and household fabrics.
- More options for drop off, such as shopping malls, retail centres or grocery stores.
- Improved hours for access to Eco Stations, with more emphasis on evening and weekend hours.

Similar ideas and opinions were offered by the non-residential telephone survey respondents (N=501), 61 percent of whom strongly agreed with advancing a Zero Waste goal for the City. Non-residential respondents further offered that they would be interested in working with other organizations to support material reuse and reduction. Fifty-two percent of telephone survey respondents strongly agreed and a further 74 percent strongly agreed that businesses selling food should be responsible for preventing wasted food and donating.

¹ Results by survey source include 54% of 1000 respondents on the Leger Panel, 59% of 6,777 respondents to the City's online survey, and 56% of 2906 respondents from the City's Insight Community, respondents responded at a level of 8,9 or 10 out of a scale of 10).

3.2. WASTE STRATEGY STRATEGIC GOALS AND DIRECTIONS

The clear, concise messaging from the engagement process has helped to inform new strategic goals for the 25-year Comprehensive Waste Management Strategy. These goals evolve from key themes derived from the citizen engagement program and align with the go-forward direction recommended in the strategy. In addition, the Waste Strategy goals align with the City's strategic goals and will be advanced and assessed in conjunction with ConnectEdmonton, as outlined below:

Figure 4. Strategic Goals and Directions



3.3. CORPORATE STRATEGIC ALIGNMENT AND WASTE STRATEGY DEVELOPMENT

ConnectEdmonton: Edmonton's Strategic Plan 2019–2028 sets the direction for Edmonton's future. Four strategic goals have been adopted, articulating the transformational change required to achieve the City's Vision. The goals, actions and anticipated collaborations and partnerships outlined in this Strategy are developed in alignment with these goals.

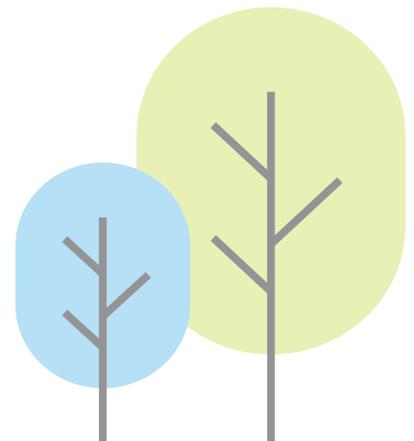
The 25-year Comprehensive Waste Management Strategy will fundamentally transform service delivery and deliver outcomes and actions that will primarily impact Council's Strategic Goal of Climate Resilience. Figure 5 below highlights the alignment between Council's strategic goals, service delivery transformation, the strategic focus areas that helped guide the strategy development process and the outcomes and recommendations included in the Strategy.

Figure 5. Council's Strategic Goals

	Strategic Goals	Strategic Directions
<p>Primary Impact CLIMATE RESILIENCE</p> 	<ul style="list-style-type: none"> · Under a Zero Waste Framework, maximize efforts to recover, reduce and reuse materials from the waste stream. · All waste streams, from all sectors, are targeted with the best mix of processes and programs to achieve alignment with Zero Waste 	<ul style="list-style-type: none"> · Reorientation of waste programming to prioritize actions which prevent waste from entering the waste stream/being directed to landfill (volume limits, grasscycling, material restrictions). · Strategies deliver full life cycle benefits of circular economy orientation (organics processing, community benefits). · Effective alignment with the City's climate change goals and targets · Diversion targets of 90 percent set across all sectors to drive towards maximum diversion. · Emphasis on policy and support over direct market participation. · Education and outreach programs developed for non-regulated sector. · City Corporation leads by example · Integrated strategy to reduce single-use plastics/other disposables in landfills (processing, reductions, restrictions).

Figure 5: Council's Strategic Goals (cont'd)

	Strategic Goals	Strategic Directions
<p>Service Delivery Transformation</p>	<ul style="list-style-type: none"> Align all city programs, processes and solutions to best support the strategy and ensure efficiency and effectiveness of the strategy. The waste system prioritizes customer experience, meeting expectations of customers on service delivery and value for money. 	<ul style="list-style-type: none"> Year 1-3 strategic direction focused upon successful implementation of the new waste set-out program including: <ul style="list-style-type: none"> Phased delivery of new cart system programming to all single unit residences. Alignment with interim and long-term organics processing strategy. Development of extensive customer support programming to aid education and adaptation. Focusing waste prevention programming on grass and yard waste. Maximize community and private sectors partnerships where best value and service standards can be met. Deliver stable predictable rate increases (2.5 percent per year until 2022). Optional program elements introduced to support customer choice and program flexibility: <ul style="list-style-type: none"> Variable rates Excess waste collection/ drop-off opportunities



3.3.1. CLIMATE RESILIENCE

The Strategy has a primary impact on Council's Strategic Goal of **Climate Resilience** by:

- Advancing efforts to improve the overall system effectiveness and getting single unit residential waste back on track toward diversion of 90 percent of waste from landfill, activity which will reduce overall emissions as well.
- Adopting a Zero Waste Framework, which will necessitate more robust measurement of the overall system impact including greenhouse gas (GHG) impacts and overall reduction of waste from the system, including through potential restrictions on single-use plastics and other single-use disposables.
- Establishing ambitious targets for waste diversion in the multi-unit residential and Industrial, Commercial and Institutional sectors, along with recommendations that these sectors implement new source separation programming by September 2022.
- Advancing processing strategies that support broader environmental goals, such as:
 - An Organics Processing Facilities development process underway which will process organic materials with renewable natural gas as an end-product (CR_6669), and the production of heat and electricity from the existing Anaerobic Digestion Facility.
 - Increased evaluation and development of Refuse Derived Fuel (RDF) which is produced from municipal solid waste (MSW) feedstocks as a renewable fuel source for the Waste to Biofuels Facility and other production processes.

3.3.2. SERVICE DELIVERY TRANSFORMATION

As the City moves to transition 400,000 households to separate organics at the source, Administration is mindful of the need to ensure equity across service delivery and support efforts to build clean and healthy communities.

- The Strategy structures program implementation to provide the customer support required to make system adaptations. Throughout the public engagement process, respondents articulated the need for support and education, and the same sentiments have been echoed by the participants in the Edmonton Cart Rollout, currently underway in 8,000 homes. Waste Services has provided active, high-touch support for residents through the City's social marketing team and through detailed ongoing opportunities for interaction between the residents and the City. These programs will continue to be developed in anticipation of citywide implementation.
- The Strategy has been refined and shaped through two phases of public engagement:
 - Recommendations to improve customer choice through choices in cart size, Excess Waste Program and rate variability respond to calls for more flexibility in the system.
 - Expanded programming recommendations for grass, leaf and yard waste, respond to resident concerns about the sufficiency of programming.
 - Programming to support those residents who need extra support though the Assisted Waste Programming is being reshaped through the initial cart rollout, with additional resources allocated through the Single Unit Waste Set-out Business Case (CR_7173).



- The strategy prioritizes community-based partnerships that support waste reduction goals. The strategy seeks to extend the potential of community-level programming that is already in place to tackle issues such as food waste. Additional programming will create more robust partnerships focused on waste reuse and recycling of materials.
- By growing emphasis on waste reduction programs, the strategic focus of the City moves towards emphasizing success at the top of the waste hierarchy, where waste can be prevented. It is here that new industries and programs (like food waste programs and textile recycling) can be seeded.
- Promotion of reuse of materials builds access to materials across communities and the Assisted Waste Program will help to ensure all Edmontonians are able to adapt and participate in new programs.
- Fiscal commitments in the Strategy and Single Unit Waste Set-out Business Case are aligned with fiscal commitments and the City's path to regional prosperity, by planning on stable and consistent rate increases all through the strategic transition, even as new infrastructure and programming are brought on stream.
- Improved management of Waste Services is being achieved through satisfaction of the audit recommendations from the February 2018 Waste Services Audit Report, through alignment with capital spending processes including the Organics Processing Facility (OPF) process, and responsiveness to inputs into this strategy. We have satisfied key audit recommendations and continue to utilize the audit findings to improve Waste Services overall.
- Recommendations are being advanced to change non-regulated lines of business, aligned with the recommendations of the City's Program and Service Review process. This will ensure City resources are placed where they are most needed. Program changes being advanced include conducting a Request for Proposal (RFP) for the Construction and Demolition Recycling operations and a recommended wind-down of the City's commercial collections.
- Ongoing business performance work will ensure that the key indicators of success are transparent, fair and aligned with organizational values. The strategy better positions the City to manage coming strategic changes.
- The Utility will be effectively managed, and planning for future programs and capital spending will be completed in potential alignment with regional partners.

As Edmonton plans for the long term, Waste Services will ensure it manages a responsive system that is operationally efficient and nimble enough to adapt to new technologies. It will align with the local market and changing context and take into account key stakeholder input.

3-4. PERFORMANCE MANAGEMENT

As Waste Services moves to implement new programs and processes, there is ongoing alignment with the City's strategic goals. Edmonton's Strategic Plan and the Corporate Business Plan both provide the direction to coordinate activities and efforts to deliver services with the greatest value to Edmontonians. In addition, Waste Services will work collaboratively to ensure new strategic initiatives align with those of the department, corporation, Council and residents and that new performance measures are developed to track the progress and effectiveness of new programs.

City Operations has identified four strategic focus areas to advance business performance across the department: Customer Excellence, Operational Excellence, Financial Accountability and Organizational Excellence. Waste Services will undertake initiatives over the next three years that align with the department's strategic direction, while transitioning service and program models.

Furthermore, all Branch performance measures will align with the newly developed Enterprise Performance Management Framework and measures will be updated as required to support approved initiatives emerging from the Strategy. The Framework lays out strategic objectives at the operational levels, defines internal process and enablers that are supported with performance metrics and challenging targets and aims to improve the Branch's data-driven decision making. Waste Services Key Performance Indicators are outlined in CR_7172 Waste Services Business Plan Report.

3.5. FINANCIAL IMPACTS OF THE STRATEGY

Waste Services continues to strive towards achieving the financial indicators set out in the Waste Management Utility Fiscal Policy C558A. The Branch strives to maintain rates that are fair, stable and consistent while ensuring that the utility is financially sustainable over the long term.

Waste Services' financial indicators incorporate the implementation of Branch initiatives in the 2020 to 2022 business planning period. Initiatives include increasing residential and non-residential waste diversion, citywide implementation of the Source Separated Organics Program for single unit residences, enhancements to the Refuse Derived Fuel Facility and continuously improving the business in a fiscally responsible manner.

The financial indicators are measures of the proposed financial performance of Waste Services. Updated indicators for 2020 to 2022 are included in Attachment 1 of the August 29, 2019, City Operations report CR_7172. A full update to the measures will be presented in fall 2019 as part of the 2020 Waste Services Utility Rate Filing. The rate filing will continue the focus on achieving overall long-term financial sustainability, balancing both capital and operating requirements with achievement of the financial indicators.

3.6. MEASURING IMPACTS

Across all activities, the City's overall diversion of waste from landfill will continue to be a major indicator of the impacts of waste programming. In August 2018, the single unit residential target for waste diversion was reaffirmed as 90 percent, a target first set in 2007 in Waste Management Policy C527. Diversion methodologies and baseline measures for the multi-unit sector and the industrial, commercial and institutional sector will be developed as those program areas are further developed. Methodology for deriving diversion impacts of waste reduction efforts will also be developed.

In August 2018, the single unit residential diversion targets and methodology were updated in alignment with the February 2018 Waste Services Audit Report. Based on the revised diversion rate calculation methodology, the final diversion rate for 2018 is 36 percent, which forms the baseline for the Strategy. This baseline is represented in the top box of the Path to 90% diagram below.

As shown in Figure 6, the low diversion rate for the current program reflects challenges at the Edmonton Waste Management Centre, including structural challenges at the Edmonton Composting Facility (ECF), which had operated intermittently since 2017 and was recently closed. Incremental improvements

can be anticipated as ongoing initiatives begin to impact the City's organics processing capacity, namely ensuring the full operation of the new Anaerobic Digestion Facility (ADF) by Q1 of 2020. Until a new long-term Organics Processing Facility can be brought on stream, the ADF, which has capacity for up to 40,000 tonnes of organic waste per year, will be a major part of organics processing as new programs come on stream in 2020.

In addition to the processing capacity of the ADF, the City is seeking to secure additional interim organics capacity to ensure source separated organics can be processed while the City's direct processing capacity is limited. The Waste Services Business Plan (CR_7172) speaks to the interim processing strategy which is targeting: available processing capacity in the region, development of additional cure site options (at the EWMC and on other available city property) and issuing of a Request for Expression of Interest (RFEOI) to industry to determine whether additional market-based processing (both open and in-vessel composting) can be brought on stream.

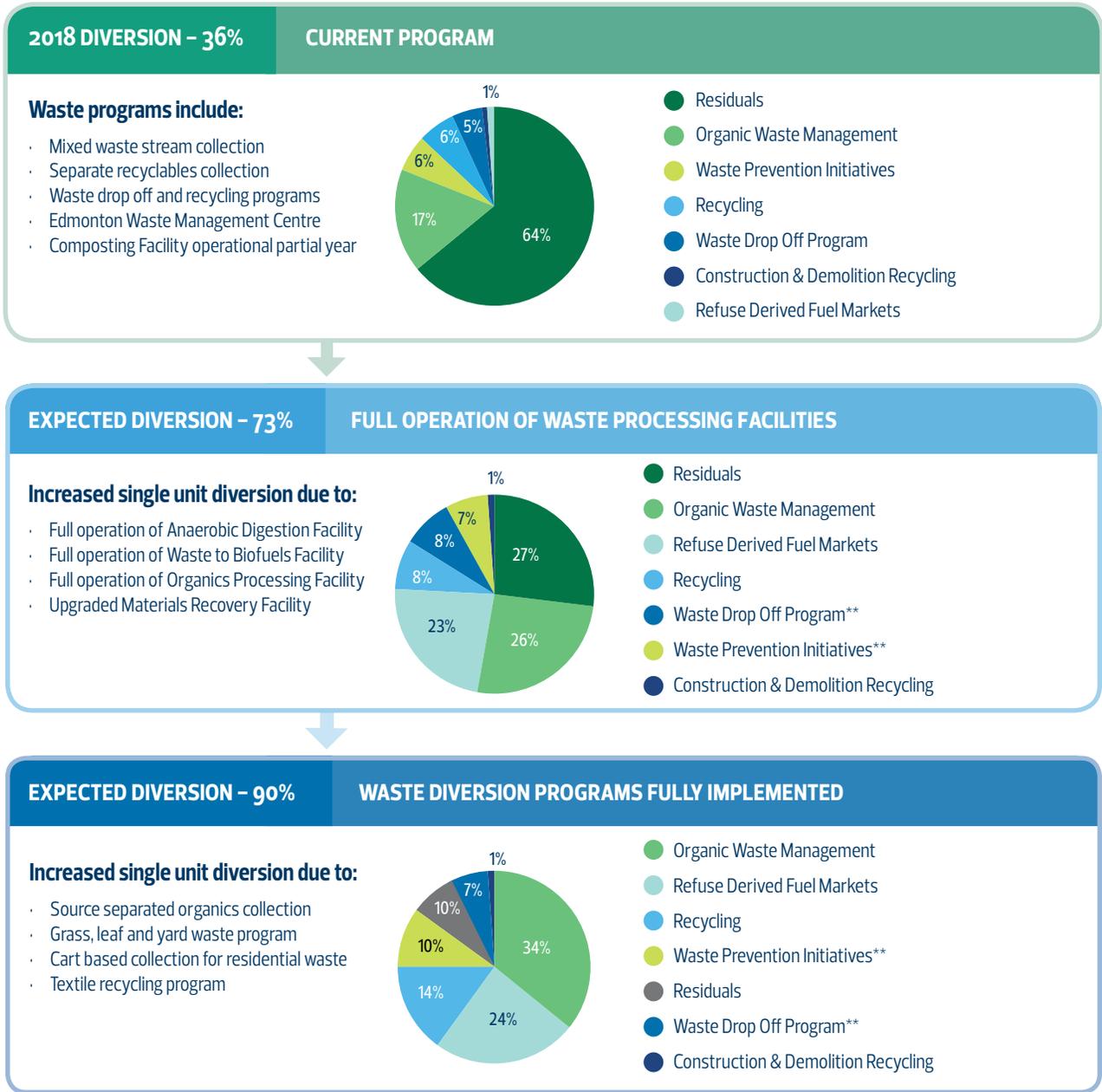
In addition to incremental improvements in organics processing, the production of RDF for the Waste to Biofuels Facility and other potential markets will begin to impact diversion rates over the next three years as production scales up to meet existing facility commitments and potential new market opportunities.

The second box in Figure 6 reflects an optimal processing environment at the Edmonton Waste Management Centre. The potential impacts of current or planned initiatives to increase diversion through additional processing are factored in here. These include securing a replacement for the ECF, as well as scaling up to full performance in terms of RDF production (in service to both the Waste to Biofuels Facility and other markets). As illustrated, bringing these new facilities to full operation, along with deploying the new citywide set-out, can bring the diversion rate to 73 percent within six to eight years.

Reaching 90 percent single unit residential waste diversion demands contemplation of additional factors in addition to achieving all projected operational improvements and high levels of compliance within the new Source Separated Organics (SSO) Program. The numbers in Figure 6 below assume maximum diversion through all initiatives and an additional focus on waste reduction initiatives which are estimated to account for 10 percent of the total diversion target. An extensive program development process will need to be scaled up to support these efforts, starting with a focus on the new set-out process alongside recycling, grasscycling and other efforts. It will take time and extensive, ongoing education and outreach to help residents adapt to new processes, and thus it is not anticipated that full impacts will be seen immediately.



Figure 6. The Path to 90%



3-7. RECOMMENDED TIMELINE

The critical milestones in the overall Strategy rollout are noted on the timeline below (Figure 7), which adheres to the March 2018 Council motion that called for the launch of the single unit residential Source Separated Organics (SSO) Program beginning in fall 2020. Administration expects that this single unit residential program will occur over two phases of implementation with an optional third phase if required.

In addition, following approval of the Strategy, additional streams of work will commence to bring forward regulations and bylaws for the following:

- Plastics and single-use items and waste reduction initiatives
- SSO programming for the multi-unit sector
- SSO programming for the ICI sector

These processes will be supported by targeted engagement and best practice research, and business cases will be developed for each additional program stream. In addition, given the need for organizations to adapt infrastructure, some lead-up time is required.

Subject to approval, the restrictions on single-use plastics will be in place as early as Q1 of 2021 and program changes for the multi-unit and ICI sectors will begin implementation in the fall of 2022. Sufficient time will be allowed within the programs to allow impacted organizations to make necessary infrastructure and inventory adjustments.

Figure 7. Recommended Timeline



3.8. OPERATIONAL ASSUMPTIONS AND LIMITATIONS

The strategy is advanced in consideration of a number of key operational assumptions. As was outlined in Waste Services' 25-year Strategy Update (August 23, 2018, CR_6216), the strategic work has been advanced in consideration of the current context of the Edmonton waste system and it seeks to align operations with programs offered as well as with customer input. Several changes were underway prior to the advancement of the strategy work. For example, a decision to commit to moving in the direction of source separated organics was made in March 2018, and structural issues at the Edmonton Composting Facility had already been identified and a process to replace it initiated.

Overall, Edmonton has made significant investments in its existing processing components along with its community facilities, such as Eco Stations and recycling depots. The strategy seeks to maximize the benefits of existing infrastructure while recommending opportunities for system improvement. Given the existing processing profile and investments to date, the strategy is somewhat path-dependent. Recommendations assume existing pathways will be maintained and enhanced.

To this end, a number of contextual assumptions and implications have influenced the strategic direction overall:

Source Separated Organics (SSO) Direction and Implications

- Council directed Waste Services to proceed with the development of an SSO Program in February 2019 (CR_6669). While the strategy development process helped shape and refine the recommended program, it did not consider alternatives to SSO programming.
- Procurements are being planned to support a new residential collection system which will roll out in Q3 2020. Procurements will maintain the current distribution between City and contracted collections in order to ensure the most advantageous transition to the future state, and to ensure that program delivery can meet projected timelines, set by Council in March 2018.
- The launch of citywide SSO programming for the ICI sector will require extensive program development work and development of new programs. The City must be vigilant about ensuring residential rates do not subsidize non-regulated activities; therefore some access to tax levy support may be required as programs are brought on stream.
- Bylaw changes enabling enforcement of new collection programming will come into effect immediately upon commencement of new service delivery.



Capital investment Constraints

- Edmonton has made significant investments in its existing processing facilities, such as improving Refuse Derived Fuel (RDF) production to meet the contractual requirements of the Waste to Biofuels Facility. This production process requires that the City direct up to 100,000 tonnes of municipal solid waste feedstock annually to create RDF for this facility. This commitment constrains the City's ability to otherwise direct that feedstock into other processes. However, where possible, the City will develop additional opportunities to direct excess or unused RDF into other potential market opportunities.
- The Single Unit Waste Set-out Business Case and the framework of a new collection system is aligned with the approved business case for a new Organics Processing Facilities (OPF). Changes to the scope of the new collection system will have a material impact on the OPF and will require impact scope, costs and timeline impacts to this process.
- The City has made significant investments in Eco Stations, the Reuse Centre and community recycling depots. The Strategy seeks ways to maximize the impact of these facilities by addressing customer expectations and leveraging this existing infrastructure to support other program changes or new program development.

Regulatory Context

- This Strategy considers the current regulatory context only. While key advocacy recommendations are made, the overall program approach assumes the status quo.

Recycling Strategy

- Understanding that only 11 percent of Canada's plastic waste is recycled provides a sobering call for new solutions (Environmental Defence, 2018) and this strategy begins to chart a path forward. The strategy recommends that a single-use plastics/single-use disposables approach integrate multiple solutions simultaneously, including regulatory instruments and EPR, reduction and reuse of materials (including through waste-to-energy applications such as production of RDF), new recycling market development and material restrictions.

3.9. NEXT STEPS

Details on program development directions are outlined in Attachment 6: Program Action Plan, which provides an overview of the recommended workplan for each program area as well as the background on direction, including relevant engagement results. Following approval of the Strategy, Administration will move forward with the following actions.

3.9.1. MULTI-UNIT RESIDENTIAL PROGRAM

By September 2020, Administration bring forward a business plan for a Source Separated Organics Program for the Multi-Unit Residential Sector, with a target implementation for the Fall of 2022. The planning process will also include development of diversion methodology for the sector based upon a goal of 90 percent diversion.

3.9.2. INDUSTRIAL, COMMERCIAL AND INSTITUTIONAL (ICI) SECTOR PROGRAMS

Following approval of the strategy and acceptance of the recommendation to wind down commercial collection services, Administration will begin wind-down of this business line commencing on October 1, 2019, and will complete its efforts to secure an operational partner for its construction and demolition operations.

In addition, Administration will move forward with the development of a Source Separated Organics Program for the Industrial, Commercial and Institutional sectors and will develop a business plan by September of 2020. A diversion methodology based upon a 90 percent diversion target, will be developed in conjunction with the waste industry.

3.9.3. WASTE REDUCTION PROGRAMMING

Between 2019 and 2022, current waste reduction programming will be adapted to support the citywide launch of a new single-unit residential waste set-out (CR_7173) and will focus on:

- Promoting grasscycling.
- Advancing opportunities, availability and awareness of options for alternate disposal of materials (Eco Stations, Reuse Centre, Big Bin Events).
- Expanding the reach of household and community composting programming.

In addition, by September 2020, Administration will develop a methodology and performance framework to measure the impact of waste reduction initiatives within the overall strategic framework. In addition, the framework will include recommendations on future program investment criteria.

3.9.4. SINGLE-USE PLASTICS/ SINGLE-USE DISPOSABLES

Administration will conduct additional public and industry engagement to inform regulations and bylaw provisions to support the following directions:

- a. By September 2020
 - i. the elimination of the following single-use plastics: straws and plastic shopping bags (subject to material and other exemptions). Exemptions will be determined prior to regulations being introduced, and will stipulate accepted substitute materials where appropriate.
 - ii. Restrictions of the following items: disposable utensils, takeout containers and plastic or disposable cups, with defined material exemptions and product substitutes to be developed where appropriate.
- b. The target implementation date for new bylaws will be January 1, 2021.

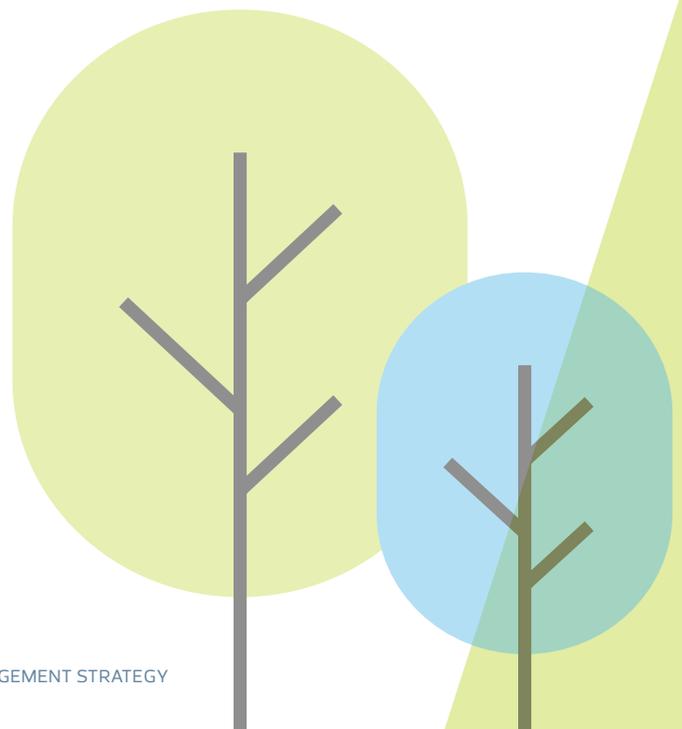
3.9.5. REGIONAL ALIGNMENT

Administration will continue to:

- Work with regional partners to source additional organics processing opportunities over the next one to five years until new processing capacity comes on stream.
- Continue to participate with the Waste Technical Working Group to have input into the final recommendations to the Metropolitan Region Servicing Plan and to seek opportunities to align the Strategy with program and investment planning across the region.

- Involve partners in discussions about investment or processing opportunities that may be realized through the City's Organics Processing Facilities project.

Bring the issue of single-use disposable materials to the Metropolitan Region Servicing Plan Waste Technical Working Group to look for opportunities to harmonize with potential initiatives within the region.





Implementation Strategy

The first steps in implementing the new Waste Strategy focus most intensely on the first major task, the introduction of a Source Separated Organics (SSO) program. This will be supported by additional, focused waste reduction programming, and will be supported by a new bylaw. All efforts cumulatively involve a major change management effort that will impact close to 220,000 households. Changing how waste is managed at household or commercial enterprises, will require extensive and ongoing communication, stakeholder engagement, outreach and education. Providing sufficient customer support and information resources for all Edmontonians to learn about changes to waste sorting and collections services, new bylaws and new waste reduction opportunities, will be vital to the successful implementation of these new programs.

Having set a high standard for engagement through the Future of Waste public engagement process and the initial cart rollout, a continued emphasis will be placed on keeping engagement of stakeholders high through initiatives that will:

- Inform residents of details about how and when changes will impact waste collection, or other diversion activities
- Explain why these changes are happening and how they will provide long-term benefits to Edmonton
- Ask residents how they wish to be informed and educated to ensure that the transition is as convenient and successful as possible.
- Be flexible - seeking to go to Edmontonians in their communities, where they live, shop and relax, rather than requiring people to seek out information.
- Always asking what more can be done.

The first major change contemplated in the Strategy is the roll-out of a citywide SSO Program to single unit homes, a program that will require a significant behavioural shift for residents.

In addition, restrictions on single-use plastics and disposable materials are contemplated to take shape as early as January 2021 - which is mid-way through the launch of the SSO Program. The changes will impact businesses where restrictions will change the materials offered. Significant, simultaneous education will be required to ensure Edmontonians are equally ready to adapt to these changes while they are also changing habits within their own homes.

The level of confidence of Edmontonians about the changes, even among those who are enthusiastic, is varied. In Phase 1 engagement, 38 percent of respondents indicated they would feel comfortable making the change to a new

SSO Program immediately. This leaves 62 percent who need support to make the changes contemplated.

As part of the current rollout program, there are clear indications about the potential of the program and about the level of support required. This experience, along with key findings from both phases of engagement, will inform a roll-out communications plan to support all program changes.

Timing and Next Steps

Subject to approval of the strategy and its associated recommendations, Administration will begin to develop implementation programs to support the new program directions. Implementation planning will align with the overall proposed program rollout in Figure 3, which adheres to the March 2018 Council motion that called for the launch of the single unit residential program beginning in fall 2020.

Single Unit Residential Waste Set-Out

Program development planning is underway in anticipation of this program launch including:

- Development of a project charter for the citywide Single Unit Residential Set-out
- Briefing of waste industry participants on the strategy and planned procurements
- Initiation of procurement processes.
- Ongoing program analysis through the initial cart rollout and journey mapping initiatives.
- Development of a communications, marketing and outreach program, including a digital strategy.
- Establishment of an internal engagement committee to ensure ongoing communication with Waste Services staff to support program changes.

Non-Regulated Business Lines

- An RFP process has already been issued for the City's Construction and Demolition Recycling Facility and a decision on issuing a contract is expected in Q3.
- Subject to Council's approval, wind-down of Commercial collections will proceed with an assessment of:
 - Customer impacts and consideration of potential organizations to be included in the immediately to assess current customer and contractual requirements, labour impacts, contracts and assessment of wind-down costs and other impacts.
 - A timeline will be provided to council prior to the end of 2019.

Additional SSO Programming

1. Subject to approval of the strategy, planning for a multi-unit SSO programming, will commence including:
 - Assessment of an appropriate methodology for assessment of diversion in this sector.
 - Initiation of a business planning process.
 - Development of a stakeholder committee to advise on the forthcoming work.

2. Subject to approval of the strategy, planning for ICI-SSO Programming will commence including:
 - Assessment of an appropriate methodology, in cooperation with waste industry participants to measure diversion in this sector.
 - Initiation of a business planning process.
 - Development of a stakeholder committee to advise on the forthcoming work.

Waste Reduction Strategy

Between 2019 and 2022, current waste reduction programming will be adapted to support the city-wide launch of a new single-unit residential waste set out (CR_7173) and will focus on:

- Promoting grasscycling.
- Advancing opportunities, availability and awareness of options for alternate disposal of materials (Eco Stations, Reuse Centre, Big Bin Events).
- Expanding the reach of household and community composting programming.

In addition, by September of 2020, Administration will develop a methodology and performance framework be developed to measure the impact of waste reduction initiatives within the overall strategic framework. In addition, the framework will include recommendations on future program investment criteria.

Regional Initiatives

- In support of the overall strategy, Administration will continue to participate in the development of recommendations on regional waste through the Regional Waste Technical Working Group.
- Regional partners will be consulted about potential opportunities to work together as part of the City's current Organics Processing Facility planning process, with either a view of accessing processing capacity or participating in an investment or other capacity.

- The City will also reach out to regional partners in sourcing short-term organics processing opportunities.

Initial Cart Rollout

The Initial Cart Rollout currently underway has highlighted a number of successful engagement tools, through the work of the City's Communications and Engagement teams, and front-line Waste Services staff.

The use of high-touch tactics like canvassers, informational leave-behinds, public drop-in sessions, workshops and site visits, presentations, pops-up events and event displays and the Waste Hotline have proved successful in securing high resident adoption, and issues management. Further, the ability of these teams to respond directly to residents' unique challenges with customized information, with a focus on helping users remove barriers and find solutions to meet their unique needs, has made for a smooth transition to the new system. While it would be an unreasonable resource burden to accomplish this level of service citywide, versus the current scope of 8,000 homes, there are a number of key learnings and tactics the City can leverage from the cart rollout.

Tools will be developed to allow residents to access this level of service digitally. Triage protocols through web-based channels, 311, Waste Hotline, and collector-initiated outreach tools will also be developed to ensure those residents who require a higher level of personalized support, receive it.

Social Marketing/Customer Care Approach in the Initial Cart Rollout

The key learning from the initial cart rollout indicates a high level of receptiveness to the new program, with a significant amount of intervention required. The marketing team and field supervisors from Collections helps drive behaviour change by providing personalized support and feedback to residents through multiple face-to-face conversations.

Residents were contacted prior to the delivery of carts to raise awareness about the program and provide solutions to anticipated challenges. During the first four weeks of the cart rollout, canvassers visited all the residences that improperly set out their carts or were not using their carts. The canvassers explained the rules and helped residents find solutions to common cart placement issues. At the end of May - eight weeks into the demonstration - canvassers initiated their second round of visits to all of the homes in the project area to address issues residents are experiencing, gauge their satisfaction with the carts, and check back in on whether opinion on their cart size has changed.

In addition to providing valuable operational data, information collected by canvassers will also help inform the marketing and communications strategies for

any future roll out of carts. By comparing residents' anticipated challenges and the issues they ended up experiencing, Waste Services can help them adapt to the changes more easily by timing and emphasising specific messages. By looking at how non-compliant cart set outs are distributed differently across neighbourhood types, we can emphasize specific information on the common mistakes to different neighbourhood types. Comparing residents' opinions on their cart size before and after they receive the carts will help the City predict the size of cart that will be most appropriate for them.

Analytics

Staff engaging with residents and collecting waste use a comprehensive data collection approach to facilitate efficient collaboration and real time reporting through dashboards that note:

- Waste collected for each stream within every community to a high level of detail.
- Additional tips to note how well the initial cart rollout cart allocations accommodate the waste volumes of that residence and neighbourhood.
- Details of non-compliance and areas where follow-up is required. Canvassers record the topics discussed with residents, and the results of the conversation.
- The application also facilitates deeper analysis of trends relating to specific neighbourhoods and collection issues, and measures the long term effectiveness of contact with the residences.

The Waste Hotline records the details of calls into the application and uses it to reference previous contact with field supervisors, canvassers or other hotline calls. This allows the agent to quickly provide accurate information to the resident on the nature of the issue and recommended actions to resolve it. If required, the agent can issue follow up actions to the field supervisor or canvassers through the application. Entering all the Waste Hotline calls into the application allows for the analysis of call trends by a variety of factors and the calls impact on resident behaviours.

The application also supports tracking outcomes from canvassing and perceived challenges, resident satisfaction with their cart size, and how the program perception changes over time.

All of this data links together operational reporting with resident engagement statistics to provide a near real time picture of the status of the cart rollout project as well as facilitating long term analysis for both operational and behaviour change learnings. The collection and analysis of data complies with City of Edmonton policies and industry standards.

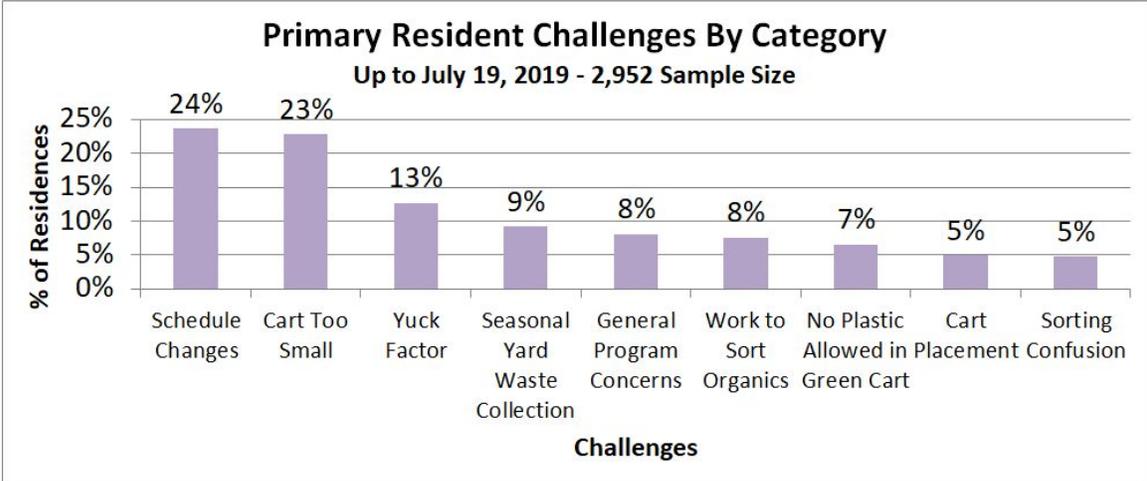
Initial Cart Rollout Areas - Key Operational Learnings

The information collected by canvassers, collectors, and supervisors during the Initial Cart Rollout to 8000 homes provides an overview of program performance and satisfaction, as well as highlight key issue areas to address as the program is launched City-wide.

Analysis is ongoing from this demonstration project to gauge how citizens will respond to the system and to ascertain the types and levels of support that will be required through the launch process. The following section provides some insights into learnings to date, followed by an outline of the tactics that will incorporate these learnings to support City-wide program launch.

Summary of User Barriers

Figure 10. Primary Resident Challenges



The most common challenges faced by residents using the new system is adjusting to the bi-weekly collection of garbage and the volume limits. While the “Yuck Factor” and work of sorting organic waste are prevalent challenges the lower prevalence of these issues indicates that adjusting to the new collection method is more difficult than developing new waste sorting behaviours.

This data was collected through door to door canvassing in the 14 weeks after cart delivery.

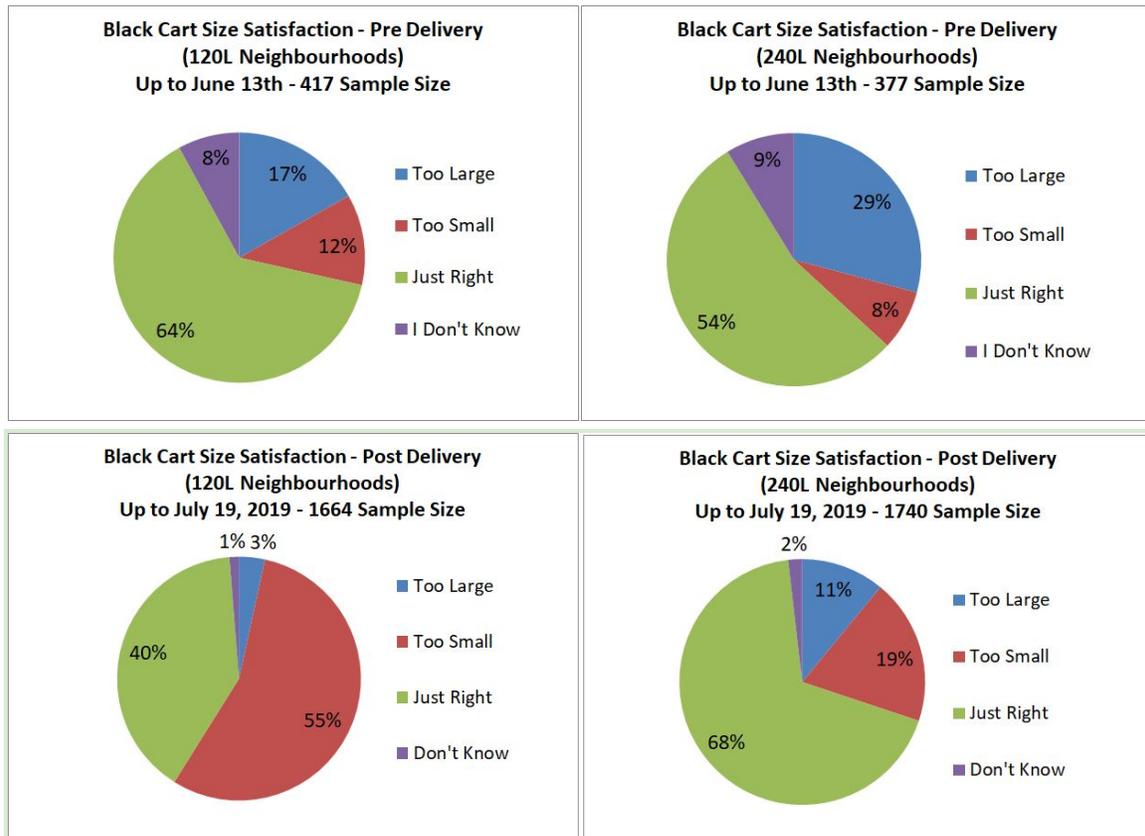
Impact to Collections Data Points

There are a number of key data points collected by the team that will impact the efficiency of start-up collections within the new program. These include:

- If the cart sizes selected are suitable for residents.
- Cart placement and set out guidelines.
- Special circumstances related to a specific neighborhood or type of housing.
- Refining the equipment needs.
- Refining the education needs.

A sample of learnings from this work includes the following:

Cart Size Satisfaction



These results indicate that residents in the 120L black cart neighbourhoods changed their opinion on the suitability of the cart size after using it. This is likely because residents had a difficult time considering how the change to the bi-weekly waste collection would impact their waste volumes.

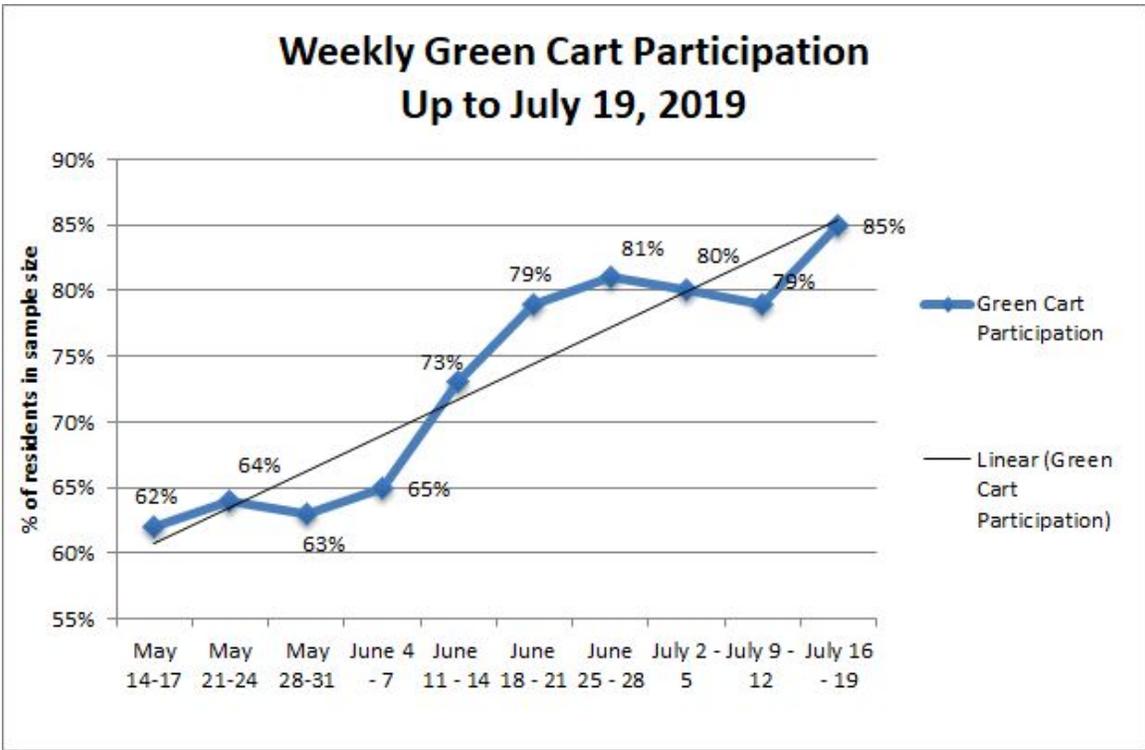
Residents were asked how they felt about their black cart size during door to door canvassing in the four weeks before cart delivery and the 14 weeks after cart delivery.

Impact to Processing Data Points

There are also a number of key data points collected by the team that will impact Processing. These include:

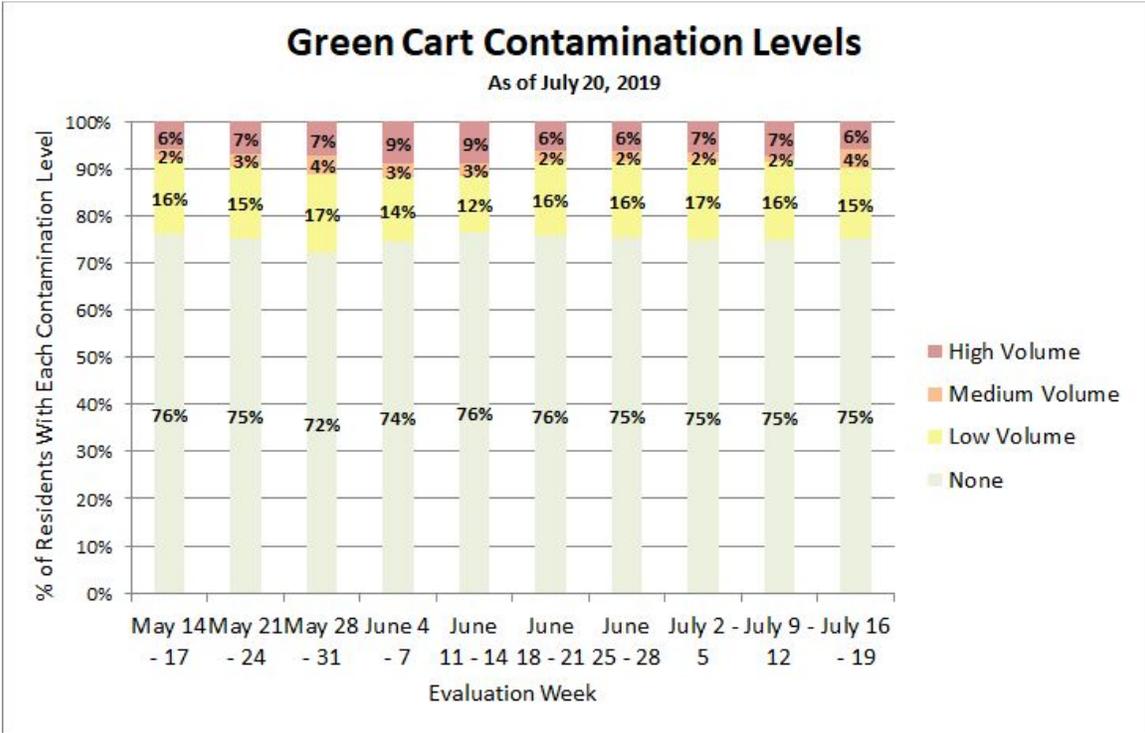
- The level of contamination in the organics stream which will help determine equipment needs and processing steps.
- Distribution of waste amongst the streams and the impact to overall tonnages sent to each processing facility.

Program participation



Usage of the green cart has been continually trending up over the spring and summer. Residents utilizing the yard waste top-up in the green cart has likely driven the steady increase in weekly participation since June as well as the availability of weekly collection over the summer, which aids in mitigating the “yuck factor”. The data above shows participation trends between May and mid-July, collected through a weekly visual set out inspection of a 20-25 percent sample size of each collection route in the demonstration area.

Contamination:



75% of green carts have been free of visible contamination during the spring and summer months. Together with the high participation, this shows that residents have quickly, and successfully, adopted the new sorting behaviours relating to SSO.

This data was collected through a weekly visual set out inspection of a 20-25 percent sample size of each collection route in the demonstration area. The contamination rate was determined by visual inspection of the bin with no touching of the waste which will under-report the actual contamination as non-visible contamination will not be counted.

Collector Feedback on the Initial Cart Rollout

Bi-weekly collector feedback sessions began after the launch of the initial cart rollout, and allow the project team to gather feedback from the collectors who worked on the automated trucks in the initial areas during the two weeks prior to the session.

Collectors expressed some challenges with the cart sizing, specifically with the 120L carts being small and top heavy and frequently falling over when touched

by the automated arms. Lack of level ground for cart placement and space constrictions on some routes are also a contributing factor.

Issues were also identified with cart placement, contamination and waste getting stuck in carts due to compaction. The collectors and field supervisors agreed that this will improve with proper ongoing education, clarification and enforcement.

Supporting a city-wide launch:

All of the foregoing data will help to support the education and outreach programming that will be developed to support the city-wide program launch. Key program elements will include:

Journey Mapping

A *user journey* is a timeline of user actions that describes the steps taken when navigating through waste services from their point of view. A *journey map* is a timeline of all touch points between users and the services available to them, including all channels in which they happen.

Journey mapping is an important addition to the planning process as it allows the department to gain a deeper understanding of all points of a journey, especially those that can often be missed by quantitative surveying. Through the definition of user personas, we will gain a better understanding of the categories of users, allowing us to better address their specific needs, tasks, expectations, satisfaction levels, and pain points throughout their journey.

The journey mapping project, currently underway in the first communities participating in the cart rollout, seeks to better understand how residents experience waste services in general, and the cart rollout specifically. This insight will allow the department to evolve services and resources to better support customers and will include:

- development of user personas for waste collection and drop-off services
- critical insight into how effective waste services are in bundling technologies to deliver increasingly digital experiences
- current levels of satisfaction/dissatisfaction with service levels
- which channels/touchpoints are the easiest to use and which are the most confusing
- depict the emotional alignment with service benefits

Journey mapping will inform operational decisions about how Waste Services' offerings are designed with the end-user in mind, ensuring users can accomplish their goals easier and faster, remove roadblocks, realize opportunities and build

habits around new processes. It will inform how we deliver, and how we talk about waste services going forward.

Further, once users' journeys are understood, Waste Services will be better able to identify key metrics and measures for tracking customer service management and user satisfaction.

Through the definition of key characteristics, Waste Services will gain a better understanding of the categories of users, allowing the Branch to better address their specific needs, tasks, expectations, satisfaction levels, and pain points throughout their journey. This will inform the development of impactful resources that speak to them directly, wherever they are in the process, through their preferred channels.

Digital Strategy

A digital strategy will inform the department's online marketing tactics and outline how it will reach its strategic goals online, while also improving residents access to digital information and services.

Digital tools enhance the capacity of the City to engage people individually and collectively, 24-7 and will work in a manner which is complementary to customer service programming through 311 and social marketing initiatives. Educational programming and broad-based information dissemination which can be personalized through digital platforms and potentially be embedded right in the carts. Beyond information resources, Waste Services will explore how digital services can help to deliver new programming, for example by:

- Allowing residents to go online to request a swap-out of their 240L black cart for a 120L cart, following an implementation period.
- Pushing notifications to subscribers to provide reminders about collection dates or any service changes.
- Delivering information through multiple information channels to ensure fast, efficient education and clarification for residents.
- Providing timely and customized feedback that facilitates one on one discussions, for example by allowing residents to initiate tickets about any service issue.
- Providing open and transparent access to data and performance metrics.

Through both phases of engagement, between 58 - 69 percent of respondents indicated their preference for online courses and information (videos, documents) to be made available to help them understand and learn about future changes to waste programs and services.

Building off the journey mapping work, development of a digital strategy will seek to maximize Waste Services' online presence to ensure residents have the information they need for a smooth transition to new programs.

Education and Outreach

Recognizing that not all stakeholders and the public can be engaged in the same way, different methods of educating and informing the public will be leveraged, based upon learnings from engagements, journey mapping and the Edmonton Cart Rollout. The most preferred source for receiving information about future changes to waste collection services are communications from the City (printed and electronic), information on the City of Edmonton website, and news/TV media.

The City's waste reduction programming will also support the transition to the new single-unit residential set out with programming that emphasizes not only the new rules but the potential impacts of:

- Grasscycling
- Managing food waste and maximizing recycling
- Use of alternative disposal opportunities (big bin events, ECO Stations, community recycling).

As programming is developed, the City will also leverage as many opportunities as possible to connect with residents in-person. Through public engagement, education and outreach efforts that support the cart rollout, it has been clear that having direct conversations with residents is an effective way to increase awareness of waste related matters, build trust with them and strengthen public support for potential program changes.

These efforts will continue by locating public outreach initiatives at high-traffic locations and events, such as shopping malls and recreation centres, and at strategically targeted public events such as the Edmonton Home and Garden Show.

This provides an opportunity to interact directly with large volumes of residents and educate them on the 'what, when, how and why' of program changes, as well as teach them about best practices for waste reduction, and sorting and separating waste at home.

Ongoing collaboration will occur with the City's Integrated Marketing and Communications team to deliver strategic, research-based change tools and tactics such as door-to-door canvassing initiatives and overall customer response that can be highly targeted towards solving customer challenges during program launch periods.

Many of the proposed program changes will have a significant impact on residents, businesses and organizations across the entire city. Our goal is to work with residents and stakeholders to support and enable them to participate successfully in new or different programs. The philosophy of the approach is to implement changes as collaboratively as possible with residents, rather than simply imposing the changes.

Program Action Plan

This document outlines the detailed actions that will occur based on the 25-year Comprehensive Waste Management Strategy and across multiple program areas including:

- Multi-Unit Residential Programming
- Industrial, Commercial and Institutional (non-regulated) Sector
- Waste Reduction Programming
- Single-Use Plastics/Single-Use Disposables
- Environment and Innovation
- Regional Alignment

Multi-Unit Residential Programming

Overview

The multi-unit residential sector has distinct circumstances and challenges in advancing a Source Separated Organics Program. Key challenges identified by residents, property owners and managers included:

- Limited, inconsistent or fragmented access to basic recycling services and infrastructure to accommodate these services.
- High resident turnover, which can hinder the effectiveness of building practices and impact the effectiveness of educational programs.
- The need for ongoing high-touch education and outreach to support behavioural and operational change management in this sector.
- A perception that residents' participation in recycling is low and that may be indicative of how broader programming will be received.
- High perception of risks for increased contamination and dumping, given the extent to which property managers currently deal with these issues.
- Waste Services staff identified the same challenges as listed above, with particular emphasis on enforcement, illegal dumping, and contamination. Staff also had concerns about the operational impacts of bin access.

What we heard about improving diversion in the multi-unit sector

In both phases of engagement, multi-unit residential representatives noted specific infrastructure challenges that would have to be overcome in order to accommodate a new system. Overall, support for a more progressive approach, including a Zero Waste goal, had the strong support of 50 percent of multi-unit residences, and the moderate support of an additional 18 percent.

Phase 2 of the engagement took a more qualitative approach which included approximately 25 multi-unit site visits to a range of building styles, including apartment buildings, condos, walk-ups, townhomes, non-market housing and high-rise properties. Each site presented a unique configuration and management style and the visits functioned as mini design charrettes, during which waste inspectors and building representatives were able to talk through potential solutions that may enable accommodation of proposed changes.

The problem solving exercises helped to inform staff of the range of issues to be managed. The approach demonstrates a more intensive, hands-on, educational change management program. Resources, as well as support for current and future infrastructure, operational, and policy changes, will be required for this customer group. Additional details from this engagement are available in the Multi-unit Engagement Appendix, available at edmonton.ca/futureofwaste.

In addition, the initial cart rollout programming areas include multiple multi-unit homes, which used to be serviced by hand collection due to the nature of these complexes and are now being serviced with carts. There are multiple points of learning from these multi-units, mainly revolving around the methods of communication and education needed. For example, meeting with the condo board or property management company to get their buy-in when possible was found to be extremely helpful in reducing complaints and confusion.

The recommended approach with the multi-unit sector allows more time for preparation and transition to help meet the sector's unique challenges and educational needs. Still, the overall goal is to make the transition and to target similar diversion metrics as the single unit residential sector. Multi-unit diversion results have been taken out of the City's overall diversion metric, which is now based solely on single unit residences. This change was approved in August 2018 and is consistent with municipal practice in Canada. As part of moving forward, a diversion target of 90 percent is recommended in alignment with the single unit diversion. But it is recommended that the methodology and baseline measurements for the sector be provided, along with a Program Business Case and recommended bylaw provisions by the end of Q3 2020.

Next Steps

Following approval of the strategy, Administration will move forward with the development of a source separated organics program for multi-unit residences. By June 2020, Administration will work through business planning and engagement processes to provide the following for Utility Committee's consideration:

1. A plan for a Source Separated Organics Program for the multi-unit residential sector, to be implemented effective fall 2022.
2. A business case for multi-unit residential source separated organics programming by the end of September 2020, along with recommended bylaw provisions.
3. A diversion methodology based upon 90 percent and baseline measurement for the sector.

Industrial, Commercial and Institutional Sector

Overview

It is estimated that Edmonton's total waste amounts to approximately one million tonnes each year (City Auditor Report, February 2018). Only 40 percent of that is impacted by regulated municipal programs, leaving a remaining 600,000 tonnes of waste that is predominantly managed through private sector providers. Waste Services is only legislated to provide services for residential properties within city limits -- the regulated waste service. In Edmonton, this also includes providing waste collection and processing for the entire multi-unit residential sector, something which is unique in Canada.

The City of Edmonton is not legislated to offer non-regulated waste services, but has nonetheless been active in this space since 2008, seeking to improve diversion rates in the non-regulated sectors.

As part of the Strategy work, an assessment was conducted of the City's current non-regulated business lines to determine whether participation in non-regulated business activities is the most effective way to influence diversion in these sectors. An extensive, preliminary review of the business lines was conducted by the City's Program and Service Review in 2018.

Building on the work from the Program and Service Review, public engagement was conducted to seek clarification from a variety of organizations on the ways the City can most effectively and efficiently impact waste reduction and diversion in the non-residential sectors.

Waste Services currently offers several lines of business within its non-regulated services which, at present, include:

- Industrial, Commercial and Institutional (ICI):
 - Commercial Collections: Waste Services, under contracts, collects non-residential waste and recyclables from commercial businesses, industrial businesses and institutions. Most contracts include

pre-processing at the Edmonton Waste Management Centre to enable diversion of waste materials from landfill.

- Commercial Self-Haul: Businesses may haul waste to the Edmonton Waste Management Centre and pay tipping fees for Waste Services to dispose of their waste. Currently this material is not being diverted from landfill.
- Construction and Demolition Recycling: This stream of business operates at the Edmonton Waste Management Centre and encompasses two major functions: recycling of mixed and segregated construction and demolition materials. These City services result in diversion of waste materials from landfill.

The City also provides aggregate recycling for concrete and asphalt from reconstruction projects, household renovations and private demolition. This service results in diversion of waste material from landfill and is free for customers. Aggregate recycling was not included in the strategic review. The business line was transferred to Waste Services in 2017 and while it experienced a net loss in 2017, transfer pricing changes were implemented in summer 2018 to better reflect fair market value and to position the line for a net neutral financial position going forward. Given this and that the City is the end-recipient of almost 100 percent of the recycled product, no changes are anticipated for this business line.

The balance of the program was reviewed, building on the work done by the Program and Service Review, which made clear that the City's participation in the non-regulated sector has failed to acquire a sufficient market share to truly impact the overall diversion in the ICI sectors or construction and demolition industry.

In assessing business lines, the strategic review maintained focus on the three key objectives which were established for participation in the non-regulated business, as noted below:

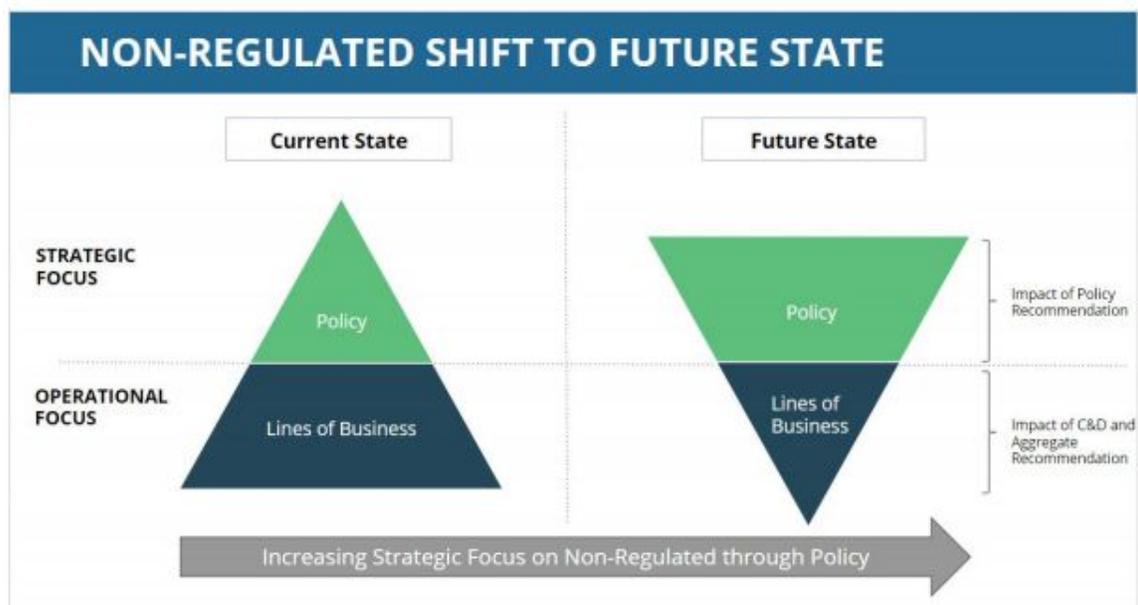
- Objective 1: Provide a financial contribution to the regulated services**
- Objective 2: Encourage diversion of non-residential waste material from landfill**
- Objective 3: Utilize excess capacity that exists at the Edmonton Waste Management Centre**

With respect to the overall achievement of program objectives, operational reviews have already established key issues:

- In terms of financial results, since 2012, the non-regulated program has collectively faced challenges in achieving break-even or positive net income. Since 2012, cumulative losses total \$6.2 million. This includes a one-time 'commodity transfer' a \$2.4 million adjustment in 2016 that was based on estimated value of inventory in construction and demolition. Despite changes to operational practices, this trend has not changed.
- Diversion calculations and methodology are not clearly defined or transparent and do not assess or report on effectiveness by line of business. The ability to properly ascertain diversion rates for the non-regulated sector is further impacted by the fact that it is estimated that only four percent of the sector's waste is processed by the City, and estimating diversion for the entire sector based on this highly segmented sample size is not useful.

Further, the City's ability to impact diversion in this sector is further affected by its current processing challenges, including the closure of the Edmonton Composting Facility. In order to measure the long-term diversion impact of non-regulated programs and policies, information from private haulers who collect for this sector must be reliable.

Figure 1. Non Regulated Shift to Future State



Moving forward, as shown in Figure 1, it is recommended that the City focus less on direct market participation and more on policy initiatives and programming that can impact how ICI organizations manage waste without the City being the direct service provider. Changes to ICI sector initiatives are made in line with this overarching strategic objective.

The non-regulated strategy is informed by the Program and Service Review report, as well as:

- A public engagement process that gathered input from non-regulated sector organizations to better understand their thoughts on the City's goals and role, as well as understanding the desired scope, breadth and mechanisms by which the City could support the maximum, cost-effective diversion of waste possible.
- Consideration of policy instruments, such as EPR and Leadership in Energy and Environmental Design (LEED) for green buildings, as well as the City's role in collecting and processing waste from this sector have been considered.
- In light of current challenges to the processing capacity, the Edmonton Waste Management Centre was assessed and findings contributed to the recommended direction.
- Opportunities to advance further partnerships with the private sector in the collection and processing of materials from the ICI and construction and demolition waste streams were also considered and, in the case of construction and demolition waste, advanced.

What we Heard about Improving Diversion in the Industrial, Commercial and Institutional Sector

The initial goal of advancing non-regulated programming in 2008 was to impact diversion rates in the ICI sector. Direct intervention in the sector has not achieved the desired results, but there is stakeholder support for broader diversion activities in this sector, as well as for endorsing a 90 percent diversion target. Phase 2 public engagement showed strong support for advancing waste diversion in the ICI sector, with 76 percent of non-residential respondents to the City's telephone survey indicating strong agreement that business and industry should be required to meet the 90 percent diversion target. This echoes early Phase 1 engagement results, where 71 percent of respondents strongly agreed that business and industry should be required to separate their waste.

Phase 2 engagement respondents also articulated what they see as the City's role in supporting a transition to a larger scale diversion program, including:

Areas where the City could provide support	Percentage of respondents who agreed	
	Non-Residential Survey (N=500) ¹	Mixed Topic Survey (N=179)
Being a role model by implementing waste sorting and reductions at City facilities	78%	65%
Providing large collection carts for pickup of sorted waste	76%	53%
Providing access to waste sorting and processing facilities or services for organizations	73%	50%
Providing sorting carts for businesses, including for staff or visitors	70%	49%

Further, 49 percent of respondents indicated they would require less than a year to meet a 90 percent diversion target within their own organizations. Sixty-two percent of respondents indicated they would need no additional resources from the City to make the transition, while 23 percent indicated they would favour a tax break or other credit as an incentive.

Other common themes carried across both phases of engagement included strong support of a Zero Waste goal (61 percent support in Phase 2 and 57 percent in Phase 1). Twenty-two percent of respondents indicated that they would like to be part of an advisory committee to help the city navigate the sector transition. Striking a broad-based stakeholder advisory committee will be part of the next phase of work, and those who indicated a desire to participate will be invited to do so.

Risks/Challenges

The potential effectiveness of an ICI-based SSO Program is potentially limited by the lack of processing capacity in the region. ICI respondents, including existing Waste Services customers, expressed frustration about the current state of

¹ Percentages indicate strong agreement, ratings of 8, 9 or 10

organics processing at the Edmonton Waste Management Centre, which is impacting their diversion targets, and about their inability to source sufficient processing regionally. Some waste haulers expressed frustration with being unable to access processing services at EWMC.

Several additional challenges were raised by respondents:

Challenges raised	Percentage of respondents who agreed	
	Non-Residential Survey (N=500) ²	Mixed Topic Survey (N=179)
Additional financial costs	40%	39%
Space to sort waste and/or store carts on site	43%	37%
Finding a company or business that will sort your mixed waste	36%	34%
Staffing or time needed to sort and manage waste	35%	33%
Communicating with others about how to sort waste	35%	29%
Lack of information about how to sort and manage waste	29%	n/a
Customer convenience and safety	35%	25%
Personal staff safety with sorting waste	34%	23%

A key challenge will involve the City's ability to track the effectiveness of the policy, something that is not currently possible within the ICI sector, given that 96 percent of waste is collected by the private sector and limited information is made available on how or if that waste is diverted. Increased transparency and reporting will be required to properly gauge the impact of the new policy.

² Percentages indicate strong agreement, ratings of 8, 9 or 10

Mitigations

In order to manage program development and implementation, a number of initiatives will be undertaken including:

- Establishment of stakeholder working committees (involving ICI customers and waste industry representatives) to help guide the changes and to anticipate what organizations will require to ensure a successful transition.
- Establishment of an Early Adopters Program, consisting of current City commercial customers who are targeting high waste diversion. The intent of the program will be to ensure the program is effectively launched in a number of organizations ahead of time in order to demonstrate key learnings and mitigate concerns or challenges prior to rollout across the ICI sector.
- A waste characterization study to profile ICI sector waste to help organizations understand diverse organizational profiles and plan for sector-specific responses.
- Development of educational program materials, case studies and resources to support business transition.
- Consideration of processing capacity issues, which can proceed in alignment with the development of the Organics Processing Facility (OPF) business case. While the City's responsibility is to process residential waste first, the OPF process will contemplate other potential sources of feedstocks, as well as potential market opportunities within the region. It is possible that some excess capacity at a new OPF can be utilized short-term and on a cost-recovery basis. This will allow the market to gauge potential feedstocks available for processing and help stimulate market response, while providing short-term processing capacity if required.
- Development of a diversion/environmental impact committee with waste industry representatives to determine an appropriate mechanism for public reporting on waste volumes, emissions and diversion successes, which would become part of the new policy.

Non-regulated Business Lines: Commercial Collections

The following recommendation is being advanced as part of the 25-year Strategy Report (CR_5829) for approval:

Recommendation:

1. Cessation of new Commercial Waste Collection services effective October 1, 2019, and commencement of the wind-down and transition of existing commercial collection accounts. That wind-down exceptions be made for those commercial organizations who are willing to move to three-stream source separation (organics, recyclables and residual garbage) as part of an Early Adopters Program.

Rationale for Recommendation:

The City's involvement in direct collection of waste from the ICI sector has been presented as inadequate in its efforts to impact waste diversion in the non-regulated sectors. While the business line has successfully grown a modest client base, its impacts are only felt on approximately four percent of the industry, and only a small number of city clients have been able to fully participate in waste diversion programming, now made more challenging with the closure of the Edmonton Composting Facility.

In addition, the City's direct participation in the marketplace is seen as a barrier to cooperation with the waste industry, which perceives conflict with the City's dual roles as regulator and market participant. However, opinions are mixed. Approximately 36 percent of ICI telephone survey respondents strongly agreed that the City shouldn't compete with the private sector, but 45 percent strongly agreed that the City should make waste services available to organizations. In addition, as was noted in the previous section, ICI respondents have expectations of how the City can mitigate challenges they anticipate.

While it is clear that the City will have a role to play in ensuring the success of a mandatory Source Separated Organics Program, operational constraints, industry resistance and limited market success all underline the recommendation that the City move away from direct market participation and instead play a larger role as a regulator, providing rules, facilitating market development and providing resources and educational support.

It is recommended that the City cease to offer commercial waste collection. Given the range of contractual obligations and the need to engage current clients on this decision, a firm date for cessation of commercial collections has not yet been determined.

In addition, the City has now established long-term relationships with a number of organizations who have worked closely with the EWMC to help them meet diversion targets. For this customer group, efforts will be made to transition them into an Early Adopters Program, where ongoing work will be done to support customer diversion efforts, such as processing sorted organic waste.

Risks/Challenges

The largest challenge in the City stepping away from direct participation will be in working with industry to identify opportunities for processing of separated materials, including organics, and in gaining insight into how pre-sorted waste is collected and processed. In addition, the City has ongoing contractual obligations to current clients so the wind-down period cannot be precisely scoped.

Mitigations

Risk mitigations will be aligned with overall ICI sector SSO Program development including:

- Existing high diversion customers will be accommodated through the transition and beyond in order to ensure minimal disruption to their programs. For those customers who wish to continue to work with the City as part of an Early Adopters Program, they will continue to receive processing from the City directly. Longer term processing support will be determined through processes aligned with the Organic Processing Facility business case development.
- Development of a diversion/environmental impact committee with waste industry representatives to determine an appropriate mechanism for public reporting on waste volumes and diversion rates as part of the new policy.
- The City will continue to communicate impacts of the program change to clients and will prioritize obligations to existing clients while working to transition accounts.

Commercial Self-Haul

Rationale for Recommendation

The Strategy does not recommend any immediate change to the current Commercial Self-Haul business line for at least the next five years. In the Program and Service Review, it was clear that this business line is effectively meeting its strategic goals. By continuing to allow hauling of non-regulated waste through the EWMC, the City continues to provide transfer facility services consistent with overall goals to impact the sector, and to secure feedstocks which can be processed to increase the City's overall diversion. However, given operational constraints at the EWMC, the potential to expand processing is not feasible in the near term.

Once operational issues are addressed, the City should reassess its commercial self-haul business line to better align with its policy environment, which will require source separation across all sectors. The City can continue to serve as a transfer station but its activities must support segregated waste streams.

To the extent that capacity exists at City facilities, opportunities may be pursued to support the overall policy direction. This is consistent with Phase 2 engagement telephone survey results, which found that 73 percent of respondents strongly agree they would like to see private sector operators given access to the City's processing facilities in order to ensure that sorted waste can be properly processed.

In addition, as the City explores avenues like Refuse Derived Fuel (RDF) market development, there is the potential that additional feedstocks may be required from beyond the residential base to ensure supply is available.

Finally, the revenue earned from this business line provides an ongoing revenue source to support non-regulated program development including development of the citywide Source Separated Organics Program for the ICI sector, and other non-residential waste diversion efforts.

Risks/Challenges

The City needs to strike the right balance between competing for processing business and providing needed processing capacity. It is not desirable that the City take actions that would stifle the efforts of the private sector to provide needed waste processing, however, it is not clear how the market will respond to emerging policies.

Mitigations

Consideration of processing capacity issues can proceed in alignment with the development of the Organics Processing Facility (OPF) business case. While the City's responsibility is to process residential waste first, it cannot subsidize non-regulated activities within City facilities. The OPF process will contemplate other potential sources of feedstocks, as well as potential market opportunities within the region. It is possible that some excess capacity at a new OPF can be utilized short-term and on a cost-recovery basis. This will allow the market to gauge potential feedstocks available for processing and help stimulate market response, while providing short-term processing capacity if required.

Construction and Demolition Waste

Construction and Demolition (C&D) waste recycling operations commenced in 2008 with the intention to reduce the amount of waste going to landfill. In 2012, this line of business expanded and a new mixed sorting facility was built to generate additional revenue from non-residential collection and increase diversion. The new facility provided customers with options to either bring source

separated materials or mixed loads of materials to be separated and processed on site.

Recent reviews, including the Program and Service Review, clearly show that the construction and demolition recycling program was accruing financial losses and could not meet the objectives set forth by Council. Further, the operational review found that:

- The construction and demolition diversion rate was 32 percent in 2017.
- There has been a downward trend the City's ability to secure end markets for materials.
- The use of construction and demolition recycled material at the Edmonton Waste Management Centre fell by 78 percent between 2015 and 2017.
- There has been a lack of detailed and accurate operational and managerial data available for waste management leadership to enable holistic, evidence-based management decisions.
- Pile (inventory) size has an Occupational Health and Safety impact and represents a safety and financial liability.

As mentioned in CR_6217 Industrial, Commercial and Institutional Sector report (August 23, 2018), Administration recommended revising the business model of the current construction and demolition waste processing operations. A Request for Expression of Interest (RFEOI) was issued to assess interest from potential proponents in managing the construction and demolition waste. As Canada's only municipal operator of a Construction and Demolition Recycling Facility, Waste Services wanted to seek opportunities to work with the private sector in an effort to:

- Improve Construction and Demolition Recycling Facility operations by incorporating business best practices, including more optimal orientation as a vertically integrated business that better manages both feedstock collection and development of end markets.
- Enhance the efficiency and effectiveness of current construction and demolition operations.
- Achieve growth in new markets by generating leads and setting new strategies to promote the products of the Construction and Demolition Recycling Facility.

- Accelerate the development and commercialization of the material produced at the Construction and Demolition Recycling Facility.
- Improve the overall diversion rate at the Facility.
- Ensure ongoing access to feedstocks that are optimally incorporated into other waste processing operations, including feedstocks required for the current Waste to Biofuels Facility.
- Improve the overall financial results of the Construction and Demolition Recycling Facility and ensure full cost recovery or better.

Waste Services received 11 submissions from interested bidders and, based on this response, received approval from City Council on February 1, 2019 to pursue a formal Request for Proposal (RFP) to seek an operator for the C&D operations at the Edmonton Waste Management Centre.

The main objective of the RFP is to create partnerships to continue providing construction and demolition services to the ICI sector, while achieving better diversion and improving the overall bottom line.

By reaching out to the private sector for this RFP, Waste Services wants to:

- Maximize diversion of construction and demolition materials from landfill by providing consistent service.
- Conserve the capital investment and ensure the long-term reliability and efficiency of the facility and process equipment by performing adequate preventative and corrective maintenance, and upgrading or replacing components and assemblies.
- Meet or exceed the City's existing diversion rate for C&D material on the site, specifically, 95 percent or higher diversion for segregated material and 50 percent or higher for mixed material.

The RFP will close on August 22, with the contract to be awarded in the fall.

Next Steps

Following approval of the strategy and acceptance of the recommendation to wind down commercial collection services, Administration will complete its efforts to secure an operational partner for its construction and demolition operations and wind down Commercial Collections.

In addition, Administration will move forward with the development of a Source Separated Organics Program for the Industrial, Commercial and Institutional

sectors. By September 2020, Administration will work through business planning and engagement processes to provide the following for Utility Committee's consideration:

1. An implementation plan for waste diversion programming with mandatory recycling and source separation of organic materials outlined for Industrial, Commercial and Institutional sector organizations within the City of Edmonton, with implementation to begin in fall 2022.
2. A business case for a new Industrial, Commercial and Institutional sector Source Separated Organics Program, along with recommended bylaw provisions.
3. A diversion methodology based upon a 90 percent diversion target, to be developed in conjunction with the waste industry.

Waste Reduction Programming

Overview of Program

Waste reduction programming focuses on the City's overall efforts to reduce the amount of waste generated within the City. The need for a concentrated focus on waste reduction was highlighted in the February 2018 City Auditor's report which noted that the City was not aligned with the internationally accepted solid waste management hierarchy (Zero Waste hierarchy) which prioritized prevention and reuse as the most sustainable methods of waste reduction.

The acute need for emphasis on reduce and reuse is observable by considering the waste footprint of Albertans. Where Canada's lowest waste generated per capita is seen in Nova Scotia at 386 kilograms annually, Alberta's per capita rate is more than double at 1,007 kilograms. Alberta's rate is also well above the national average of 720 kilograms (Conference Board of Canada, 2012).

Waste reduction strategies seek to impact diversion both through the beneficial management and processing of waste (recycling, composting) and preventing materials from entering the waste stream by changing habits of residents and businesses (lowering food waste, changing consumption patterns), by regulating reductions of some materials (restrictions of single-use plastics) and by changing inputs into the system through Extended Producer Responsibility (EPR) programs. EPR is "an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle" (Alberta Recycling Council).

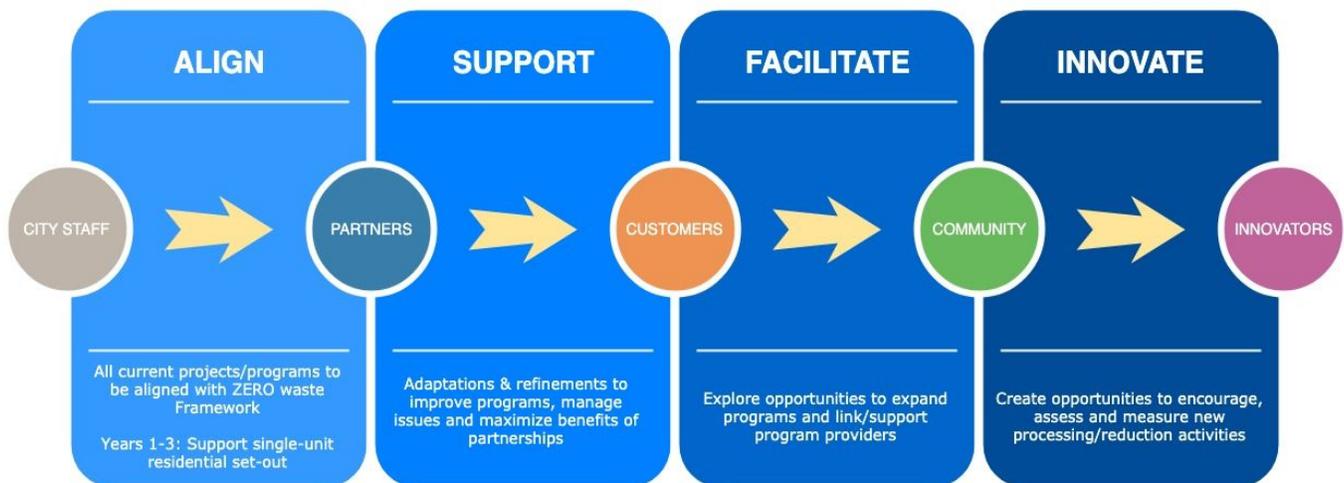
As noted in Section 3, accepting a Zero Waste goal necessitates more emphasis on waste reduction activities and a goal has been set for up to 10 percent of the City's total diversion to come from reduction. This target is supported by input from the engagement process which included targeted meetings with residents, community groups and the not-for-profit sector. These inputs have reinforced the need to focus more deliberately in this direction and have also provided some inspiration for the program framework contained herein which emphasizes providing more opportunities for residents to participate in waste reduction programming, as well as emphasizing much more collaboration with not-for-profits and for-profit organizations in this area.

Overall the waste reduction approach will:

- Prioritize programming and supporting education and outreach initiatives that complement the new residential waste programming from 2019-2022.
- Ensure that the impact of waste reduction efforts can be measured, and that the path to achieving 10 percent of the city's diversion target through waste reduction efforts is clear.
- Focus on waste reduction in all sectors, single unit residential, multi-unit residential, and the Industrial, Commercial and Institutional sector.
- Consider how materials diverted from landfill will be processed, reused or recycled. Programming must consider complete life cycles of targeted materials, from collection to processing and end use.
- Emphasize the need for a regulatory structure to support Extended Producer Responsibility (EPR).
- Support families and communities through the City's education efforts, especially around issues of food waste.
- Anticipate changes in the market, how shopping and consumption patterns impact waste generation (e.g., through increased online shopping and food delivery, with associated packaging impacts) and impact the system overall, as well as changes in recycling markets that will impact the City's ability to market recyclable materials.

There are four streams of activities that the City will pursue to begin to shift emphasis on waste reduction, as shown in Figure 2 below.

Figure 2. Four Streams



Align

The first tier of activity focuses on how current education, outreach and waste reduction programming will align with the new strategy and support an overall Zero Waste Framework.

From 2019-2022, it is anticipated that program emphasis will be directed primarily in support of the new residential set-out program through:

- Reconfiguring current education and outreach programs and promotions to support the new single-unit residential set-out program.
- Education and outreach in support of grasscycling.
- Expansion of programming in support of home and community composting through the Master Composter Recycler Program.
- Improving awareness and availability of alternative drop-off opportunities through:
 - Eco Stations
 - The Reuse Centre
 - Big Bin Events
 - Expansion of alternative drop-off locations/events for materials like batteries
 - Food waste programming and household educational support
- Supporting program development to support organics separation in the multi-unit residential and ICI sectors.
- Expand public outreach to provide consistent education, support and resources on reuse and reduction opportunities, including messaging on

grasscycling, Waste Free Holidays and Waste Free Back to School.

Quick Wins

The second tier of activity will also be initiated within the 2019-2022 term, involving refining programming to better support the new Strategy and collection systems. The focus is on improving the waste reduction efforts of residents and businesses, and working more strategically with current and potential partners in the community, including the not-for-profit sector. Some of the work here will involve troubleshooting issues between the City, residents and partner organizations. Addressing these items should not require resource allocations or involve policy change.

Within this context, the City will begin to advance some key initiatives that will include:

- Assessing spacing arrangements at existing facilities to leverage additional waste reduction opportunities, including through partnerships with community groups or the not-for-profit sector.
- Assessing existing partnerships with community organizations and not-for profits, to consider opportunities for scope and performance improvement that allow the partnerships to grow and expand.
- Establishing a Waste Reduction Community of Practice between Waste Services and key stakeholder organizations (non-profit and commercial enterprises and organizations), with the City acting as a central coordinator for discussion and information-sharing, and to assist with quick escalation of issues and removal of barriers.
- Making educational materials available to non-profits who provide reuse and food waste programming to extend the City’s educational efforts (including by identifying appropriate food for donation and providing information on proper sorting of recyclable materials).

Facilitate

There are multiple areas where existing community-based programming is challenged by resource or structural issues but where the City could play a direct facilitation role, including by bridging gaps between organizations. In addition to meeting waste reduction goals, these efforts support the City’s broader strategic goals for a Healthy City and Urban Places. A number of potential initiatives originated from community members, who noted key gaps and identified opportunities for the City to step more overtly into this facilitating role.

Unlike the quick wins, these efforts will require more flexibility within the City organization, including shifting resources or changing existing program

structures. They are, however, well aligned with the City's overall strategic goals and the focus of this Strategy.

The goal here is to better align existing resources to support community-based efforts and improve overall program effectiveness. The City will work within its new Waste Reduction Community of Practice to prioritize, assess and problem-solve initiatives within this category. The following list of program initiatives will be considered:

- Assess the fee structure applied to not-for-profit organizations (including through comparisons with other city programs).
- Play a larger role in coordinating activities between organizations seeking to reduce food waste and support food redistribution, by:
 - Ongoing participation in national campaigns wherein resources and local models can be leveraged in Edmonton.
 - Advancement of new educational programs to change behaviour/helping with new shopping strategies.
 - Work with social agencies that are already facilitating food redistribution efforts (FRESH/Food strategy).
- Work to leverage connections between producers/retailers of food with end agencies that can support redistribution.

Innovate

A number of organizations are seeking to launch new business models, technologies and initiatives that could substantially improve the City's waste reduction and diversion efforts. However, activities in this category would require new resources and the support of an underlying process that streamlines and evaluates the advancement of qualified initiatives. The City should be oriented around ongoing assessment and evaluation of opportunities to improve the waste system, in alignment with its overall focus on Zero Waste.

As noted in the lead recommendation, a key part of materially shifting emphasis onto waste reduction activities involves understanding the performance impacts of waste reduction initiatives on the waste management system as a whole, and providing sound analysis to support potential resource allocations for new programming. Further, a process for migrating a portion of existing resource allocations to support and grow support for qualified new initiatives must be identified.

The focus for innovation activities will include:

- Creating an open-call forum wherein organizations seeking feedstock

materials (plastics, RDF, textiles, other materials), new technology solutions or partnership opportunities with the City (community composting, Big Bin Events) can be assessed through a regular, formal process. While proposals can be submitted at any time, Waste Services will initiate a formal assessment process bi-annually, supported by cross-industry technical experts and community representatives on a peer review committee. Proposals will be assessed on their potential to align with or enhance current programming, boost waste reduction or diversion efforts, or improve the development of circular economy.

- Direct technology-based proposals for assessment within the emergent system being developed for the Alberta Circular Economic Technology Accelerator (ACETA) initiative. This initiative will boost the City's efforts to use the feedstock and technical base at EWMC to support further economic spin-off activity.
- Partner with universities or research institutions to develop process and/or product improvement opportunities and apply to operations.
- Establish a grant allocation program and criteria to support community-based waste reduction initiatives, validated through the performance management framework.
- Evaluate future program opportunities (e.g., textile recycling) against potential markets for reuse or processing of target feedstocks.

Next Steps

Between 2019 and 2022, current waste reduction programming will be adapted to support the citywide launch of a new single-unit residential waste set-out (CR_7173) and will focus on:

- Promoting grasscycling.
- Advancing opportunities, availability and awareness of options for alternate disposal of materials (Eco Stations, Reuse Centre, Big Bin Events).
- Expanding the reach of household and community composting programming.

In addition, by September 2020, Administration will develop a methodology and performance framework to measure the impact of waste reduction initiatives within the overall strategic framework. In addition, the framework will include recommendations on future program investment criteria.

Single-Use Plastics/Single-Use Disposables

Overview

In addition to jurisdictional and best practice research reviewed in Phase 1 of public engagement, Waste Services has conducted additional engagement and commissioned additional external research (Attachment 4, Report by Elevated Enviro) to shape recommendations for managing single-use plastics and other single-use disposable items (single-use plastics/single-use disposables).

There is a growing understanding that Edmonton, like many cities, has problems in managing plastics and single-use disposables. The City is not immune to the challenges of increasingly sparse recycling markets and the sobering reality that in Canada, only 11 percent of recyclable materials are actually recycled. Research shows that waste levels can be reduced through material restrictions and outright bans, but research and engagement data note issues and caution care in how the City moves forward.

There is no one simple path.

While bans and restrictions are effective, there is no realistic catch-all restriction that can remove all materials from the waste stream, and all restrictions or bans will have to be applied in a manner that permits necessary exemptions within the overall rule framework.

As restrictions are applied, the City must assess the potential impacts presented by proposed substitutes, for example, in terms of increased greenhouse gas (GHG) impacts and production costs that offset the benefits of the restrictions. Where applied, restrictions must have a solid rationale, including in terms of how overall system consequences are to be measured.

The recommendations being advanced here suggest moving forward along two different lines:

- 1) Elimination of target items including plastic shopping bags and straws, with defined material and organizational exemptions to be developed.
- 2) Restriction of target items including disposable utensils, takeout containers and plastic or disposable cups, with defined material exemptions and product substitutes to be developed.

The recommendation seeks to simultaneously advance work on identifying additional or new processing opportunities. While there is market potential, the local industrial response is nascent and underdeveloped and insufficient market development work has been done. The City has an opportunity to direct materials to support industrial processes from large-scale development of Refuse Derived

Fuel (RDF) markets or other waste-to-energy applications, and to direct small scale support for new enterprises and not-for-profits who are seeking to advance solutions.

Across the ICI sectors however, there is a need to support a framework to ensure that materials collected are directed towards processing opportunities where appropriate, and that the impacts of any restrictions can be measured.

Efforts should also align with ongoing work in support of an Extended Producer Responsibility (EPR) framework. Alberta municipalities are disadvantaged by the lack of a framework which could offset municipal costs, set clear guidelines and provide material support to a struggling recycling industry. Ongoing efforts must include continuing to lobby the Government of Alberta to bring new rules forward under an EPR framework.

These recommendations seek to align actions to address the challenge of diverting these materials from landfill and away from failed recycling processes through an integrated policy framework that will advance simultaneous streams of activity. Further, because the context of recycling markets is changing and new regulatory structures, including the recent announcement of a forthcoming Federal single-use plastic ban, have the potential to change conditions, there is a mandatory five-year assessment period applied to this framework. This will obligate ongoing assessment to ensure goals are being met and consequences managed. In addition, as the new Federal rules come on stream, the City will have an opportunity to align its regulations with those that develop Federally.

What We Heard – Single-Use Plastics/Single-Use Disposables

It is clear from engagement that issues of single-use plastics and single-use disposables are topical, with engagement respondents indicating high levels of awareness. There is support for managing materials more effectively, including moving toward outright bans or restrictions on key items. Residential survey respondents indicated support for taking action to reduce the use of single-use plastics and disposables:

Item	Leger Panel (N=1,000)	Open-link Survey (N=6,773)	Insight Community Survey (N=2,096)
Plastic Straws			
Reduce (no fee)	30%	25%	26%
Eliminate	37%	48%	44%

Attachment #4

Do not restrict, but charge a fee	13%	9%	11%
No restrictions	17%	16%	16%
Plastic Shopping Bags			
Reduce their use	21%	16%	15%
Eliminate their use	31%	45%	36%
Do not restrict, but charge a fee	30%	23%	31%
No restrictions/no fee	15%	15%	16%
Styrofoam			
Reduce their use	22%	18%	17%
Eliminate their use	45%	59%	56%
Do not restrict, but charge a fee	14%	8%	10%
No restrictions/no fee	9%	5%	6%
Disposable Utensils			
Reduce their use	29%	26%	26%
Eliminate their use	22%	31%	24%
Do not restrict, but charge a fee	22%	20%	26%
No restrictions/no fee	19%	18%	19%
Takeout Containers			
Restrict their use	32%	28%	27%
Eliminate their use	15%	23%	17%

Do not restrict, but charge a fee	22%	22%	27%
No restrictions/no fee	23%	21%	22%

Among non-residential telephone survey respondents the results were similar:

Item	Telephone Survey
Plastic Straws	
Reduce (no fee)	26%
Eliminate	45%
Do not restrict, but charge a fee	11%
No restrictions	17%
Plastic Shopping Bags	
Reduce their use	22%
Eliminate their use	39%
Do not restrict, but charge a fee	27%
No restrictions, no fee	12%
Styrofoam	
Reduce their use	30%
Eliminate their use	42%
Do not restrict, but charge a fee	12%
No restrictions, no fee	13%
Disposable Utensils	
Reduce their use	28%
Eliminate their use	27%
Do not restrict, but charge a fee	21%

No restrictions, no fee	21%
Takeout Containers	
Restrict their use	24%
Eliminate their use	20%
Do not restrict, but charge a fee	26%
No restrictions, no fee	26%

At the same time, both individuals and organizations caution against reactionary policy responses that may appear out of context with larger environmental issues and potential opportunities.

People want to see the City advance an integrated policy response that:

- Addresses the challenge of plastic and disposable materials ending up in landfill;
- Provides solutions that do not solely replace one problematic item with another;
- Seeks to work with local industry, the community and innovators who are advancing initiatives to better use or reuse materials, e.g., as a potential fuel source.

Next Steps

Following approval of the strategy, Administration will conduct additional public and industry engagement to inform regulations and bylaw provisions to support the following directions:

- a. By September 2020
 - i. the elimination of the following single-use plastics: straws and plastic shopping bags (subject to material and other exemptions). Exemptions will be determined prior to regulations being introduced, and will stipulate accepted substitute materials where appropriate.
 - ii. Restrictions of the following items: disposable utensils, takeout containers and plastic or disposable cups, with defined material exemptions and product substitutes to be developed where appropriate.

- b. The target implementation date for new bylaws will be January 1, 2021.

In addition to public engagement, Administration will conduct further analysis to inform final recommendations including, but not limited to:

- A waste composition study to determine a baseline measure of plastic materials within the residential and Industrial, Commercial and Institutional streams, including waste disposed in public areas.
- Additional market scanning and research to support the definition of material exemptions and bring forward approved material lists which represent the lowest overall environmental footprint (emissions and diversion measures considered).
- Additional market analysis to assess opportunities to process current feedstock.
- Potential impacts of any prospective new Federal (or Provincial) legislation that may impact the shape of these activities.

Environment and Innovation

The overall orientation of the new Waste Strategy lies within a broader Zero Waste Framework, which encourages residents and organizations to participate in programs which divert waste at the source through reuse and reduction. In turn, the success of these programs, which will be measured on the diversion rate, will also support the City's broader sustainability goals.

The environmental footprint of the waste system is impacted by material disposed, material diverted from landfill and by what is reduced and prevented from ever becoming part of the waste stream. In addition, waste provides potential feedstocks such as RDF, an alternative fuel source developed primarily in support of the Waste to Biofuels Facility but with potential additional functions as a fuel replacement for petroleum in certain production processes. In addition, the transformation of organic materials into resources such as renewable natural gas and compost, as contemplated in the Organics Management report (CR_6669), also supports the City's overall environmental resilience.

Additional opportunities for environmental innovation are being lead by a new initiative: the Alberta Clean Energy Technology Accelerator (ACETA). The City is partnered in this initiative with CanmetENERGY, Natural Resources Canada, the University of Alberta and InnoTech Alberta. The project has received seed funding from Alberta Innovates' Climate Change Innovation and Technology Framework (CCITF)'s Clean Technology Facilities Support Program, and it aims to create a clean energy technology accelerator that would support and

accelerate the use and valorization of municipal and biomass waste feedstocks to support the circular economy and reduction of greenhouse gas emissions. Through the accelerator, potential processes will be given access to resources and feedstocks such as processed Municipal Solid Waste (MSW) and biomass, syngas from municipal solid waste residuals, landfill gas, anaerobic digestion gas and other processed materials or byproducts from solid waste processing and conversion. It can also provide access to technology for hydrocarbon processing, upgrading and refining as well as experimentation and technology development. This initiative will be centred at the Advanced Energy Research Facility, which is located at the Edmonton Waste Management Centre.

Further developing opportunities related to environmental innovation supports the continued integration of environmental and economic development outcomes. These outcomes are identified in two of the four Corporate Business Plan Goals: Climate Resiliency and Regional Prosperity. The opportunities for leveraging multiple outcomes through these goals demonstrates how environmental innovation can be directly tied to economic opportunity.

In addition, environmental benefits will be derived from efforts to reduce the City's overall waste footprint. Initiatives on single-use plastics, textile recycling, food waste, segregated collection of yard waste during high seasons, volume limits on residual garbage and Extended Producer Responsibility (EPR) all aim to support overall environmental resilience by reducing the amount of material that has to be managed by the waste system.

In addition, Waste Services is measuring environmental performance by working closely with the City's internal environment team on all aspects of governance and accountability and is constantly reviewing and discussing with representative areas where greenhouse gas (GHG) emissions could be reduced.

Currently, Waste Services is working within internal corporate programs to reduce GHG emissions and to ensure the corporation is resilient to future climate change (COE-EMP-006). As part of this program, Waste Services is developing its GHG Balance and SMART reduction targets. This effort will align with the Strategy's recommendation to pursue new diversion targets for the non-regulated Industrial, Commercial and Institutional sector, where currently the City has very limited access to information on amounts of waste collected and diverted.

Waste Services continuously monitors regulations, trends and changes. Each year, Waste Services collects nearly 15 million cubic metres of landfill gas (306,500 GJ), from Clover Bar Landfill, although this is diminishing as the waste decomposes and no more waste is being landfilled. Once fully operational, the Anaerobic Digestion Facility is also set to produce 4.1 million cubic metres of biogas (155,800 GJ) annually. Waste Services is looking at how to best use

these fuel sources, by taking into account all current and forecasting future term trends and developing cash flow models and business cases.

Waste Services will work with the City's corporate GHG team to assess upstream impacts from changes in waste programs as they come on stream to ensure that GHG emissions calculations are as accurate as possible.

Regional Alignment

Overview

Discussions that could impact the Edmonton Waste System are ongoing with our regional partners, including those in regard to Extended Producer Responsibility (EPR) initiatives and broader questions of aligning growing systems. Regional alignment of waste services and programming is undergoing consideration by the Metropolitan Regional Servicing Plan Task Force, which consists of elected representatives from municipalities around the region; Mayor Iveson is the City of Edmonton's representative. The Task Force work is supported by the Waste Technical Working Group, which consists of administration representatives from the Edmonton Metropolitan Regional Board municipalities. The Task Force and Waste Technical Working Group are building upon preliminary scoping conducted for the Metropolitan Regional Servicing Plan (Environmental Scan) in 2018. Recommendations of the Waste Technical Working Group will be made to the Board in October 2019.

To date, discussions at the Working Group have considered the changing context of solid waste management and the growing sense that more can be done to reduce environmental impacts and advance 'Circular Economy' initiatives, which focus on diverting materials from the waste stream back into the market. This work is also positioned as an alternative to the linear economy (make, use, dispose) (National Zero Waste Council).

The Working Group is also exploring how the region might work together to manage some key challenges over the next 10 to 25 years, including:

- Recycling capacity and availability for relevant materials.
- Organics processing capacity.
- Urban densification and associated service levels.
- Changes in waste stream characterization.
- Disposal capacity for construction and demolition waste.
- Funding constraints, especially for major facilities.
- Changes in technology for waste processing.
- Climate change impacts.

Participating municipalities will consider opportunities for collaboration that could include:

- In the context of major infrastructure development, whether processing needs could be examined at a regional level.
- In the overall effort to enhance the environmental resilience of the region, understanding that waste reduction and diversion help to significantly offset greenhouse gas (GHG) emissions and support climate change mitigation.
- Regional opportunities to create economies of scale and reduce costs overall, while providing similar or improved access to facilities and services.
- Regional opportunities to improve resident and organizational participation in programs by ensuring some level of harmonization, especially around product restrictions and initiatives to support EPR.

Moving forward, Waste Services will continue to seek to align its existing program planning processes with the ongoing regional discussions at both a political and administrative level, in line with Draft Metropolitan Regional Servicing Plan Principles, including:

- Act in a regional manner with a unified metropolitan services voice.
- Pursue leading and innovative practices.
- Share information and knowledge of metropolitan services and research.
- Recognize the distinct cultures and position of local jurisdictions.
- Encourage and support subregional initiatives.
- Build consensus on regionally-scaled investments.

And in line with Service Area Principles including:

- Promote life cycle thinking, based on the solid waste hierarchy.
- Support consideration and investment in regionally-scaled infrastructure.
- Seek economic and results-oriented opportunities for delivery of services on a regional scale.
- Support and encourage innovation within the region, with the goal of aligning solid waste management practices with the Draft Metropolitan Regional Servicing Plan.

Next Steps

Administration will continue to:

- Work with regional partners to source additional organics processing opportunities over the next one to five years until new processing capacity comes on stream.
- Continue to participate with the Waste Technical Working Group to have input into the final recommendations to the Metropolitan Region Servicing Plan and to seek opportunities to align the Strategy with program and investment planning across the region.
- Involve partners in discussions about investment or processing opportunities that may be realized through the City's Organics Processing Facility plan.
- Bring the issue of single-use disposable materials to the Metropolitan Region Servicing Plan Waste Technical Working Group to look for opportunities to harmonize with potential initiatives within the region.

Report prepared for

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Executive Summary

Courtney Powell, founder of Elevated Enviro, has been tasked by the Waste Service Department of the City of Edmonton to write a report on the implications of single-use plastics and items, and the effects of implementing a large scale, municipal ban of these items.

The City of Edmonton is considering implementing such a ban, and this investigation will provide insights on the outcomes of this potential action based on industry experience and expert-level knowledge of the subject matter from an unbiased, fact-based position.

This report will establish the context that gives rise to bans of this sort and examine the effectiveness of such bans by reviewing examples of this action on a regional, national and international level. In addition to considering the effect on plastic pollution, there are other considerations when banning single-use plastics and items, and many other effects that this action has in other important areas of the economy, environment and society. Elevated Enviro will also review programs that consider plastic pollution within the framework of other environmental issues.

By conducting a thorough and balanced investigation and consideration of all aspects of the aforementioned scenario, this report will conclude with recommendations for the City of Edmonton.

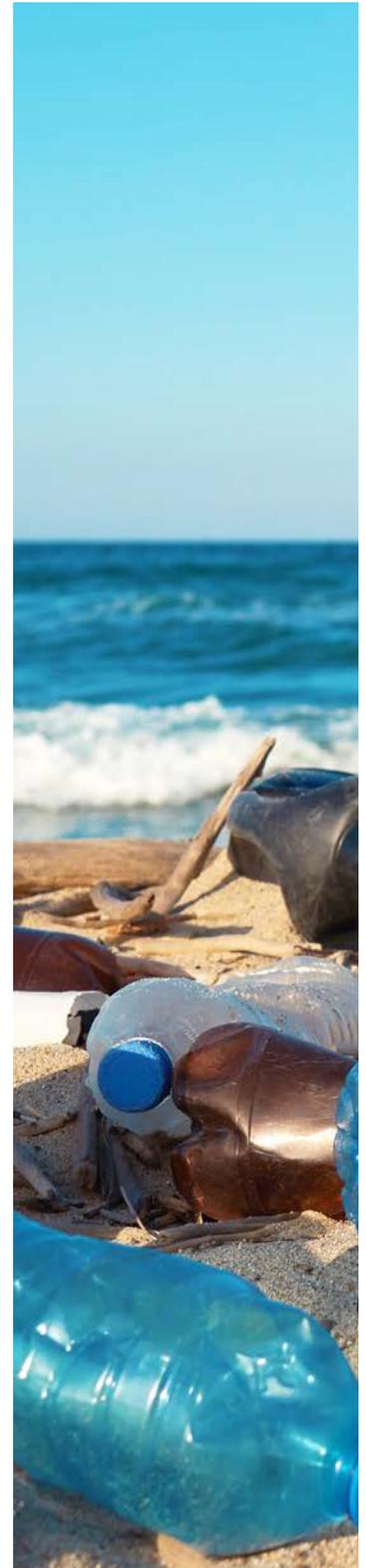


Drivers of Single-Use Bans

Awareness is growing regarding the impact our communities, municipalities and nations have on the world's environment. Issues like greenhouse gases, climate change and global warming have been in news headlines for decades. More recently, there has been growing attention towards consumerism and waste from our everyday products. Single-use products and their use have been a focus of discussions on how we can reduce our impact, particularly when considering single-use plastics. Pressure has been building for municipalities to adjust to changes by global recycling markets who have limited the amount and types of recyclable items they accept. Traditional or existing markets, such as China, have recently made dramatic changes to their procedures, and what they will accept and process. In February 2013, China started to inspect imported loads of recyclables with greater scrutiny; due to this increased scrutiny and pressure from global environmental movements, they made changes to the level of contamination they will accept (examples of contamination include mixed grades of plastic, mixed or unsorted materials such as paper in a plastic bale, or unwashed or unclean items still containing waste or organic material). China implemented new guidelines, shifting to a "0.5 percent contamination limit" (Resource Recycling Inc. 1).

Pressure is increasing on municipalities to act, as the realities of how much single-use plastic (and plastic in general) is actually recycled; these practices and policies are being examined, which is leading to some staggering information. The fact that "Canada only recycles 11 per cent of its plastic waste, letting the rest accumulate in landfills or the environment" (Environmental Defense 2) it is a hard for citizens to accept, and is becoming unacceptable to a growing percentage of the population. This evidence signifies that there is a major gap between what is possible and what is actually happening to manage and mitigate our environmental impact, and only adds to growing public concern and call for change. The amount of plastic waste that ends up in our environment is astounding, with at least an "estimated 8 million tonnes of plastic are dumped into the world's oceans every year" (2).

Many believe that single-use bans act to protect the environment, reduce plastic waste and limit plastic pollution. As a result of these beliefs and this growing pressure, many communities, municipalities and countries have begun to implement bans on single-use plastics and items to limit these concerns, and slow the rate at which this waste is being generated. This report shall suspend this belief to examine the implications of single-use bans from an unbiased and impartial position. To get an idea of the scope and scale of such a ban, the next three segments will review some of the regional, national and international bans that have been implemented.



Examples of Single-Use Bans in Alberta

There have been single-use plastic bans in Alberta for almost a decade, with one of the first municipalities to implement a single-use ban being Wood Buffalo in 2010. Wood Buffalo's ban is for single-use bags that are "less than 2.25 mils (.571 millimeter) thick polyethylene; and/or pulp or paper" (Municipality of Wood Buffalo 3); however, it does allow single-use bags for food service application, such as fast food meals or items, or medical applications, such as prescriptions.

More recently, Wetaskiwin City Council passed the Plastic Checkout Bag Bylaw at their regular October 9, 2018 City Council Meeting (City of Wetaskiwin 4). As of July 9th, 2019 Wetaskiwin will ban "selling or distributing single-use plastic checkout bags thinner than 2.0 mils thick" (4). Similar to the Wood Buffalo ban, single-use plastic bags can still be used in some food service applications, dry cleaning and floral establishments for their normal course of business, in addition to non-profit organizations.



Edmonton, Calgary and St. Albert are currently considering single-use bans of their own, and the effects of such an action. The details of these bans are being debated and evaluated in city council meetings and public engagement events, in addition to various environmental and advocacy groups, as well as the public at large in various channels of discussion.

Communities in Alberta are not alone in these actions; many municipalities across Canada have implemented single-use and single-use plastic bans. They all share similar goals of reducing the amount of plastic waste and working to address plastic pollution. Bans range from types of bags available for use, some just plastic and others ban all kinds. A few are detailed next.



Examples of Single-Use Bans in Canada

Recently, a by-law to regulate and ban the use of check out bags was approved in Victoria, B.C. The by-law defines a checkout bag to be “any bag intended to be used by a customer for the purpose of transporting items purchased or received by the customer from the business providing the bag” (City of Victoria 5). Their ban also includes “bags used to package take-out or delivery of food...and includes Paper Bags, Plastic Bags, or Reusable Bags” (5).

The Victoria ban states that no business shall provide a checkout bag and will only do so “if: (a) the customer is first asked whether he or she needs a bag; (b) the bag provided is a Paper Bag or a Reusable Bag; and (c) the customer is charged a fee not less than (i) 15 cents per Paper Bag; and (ii) \$1 per Reusable Bag. (3) For certainty, no Business may: (a) sell or provide to a customer a Plastic Bag; or (b) provide a Checkout Bag to a customer free of charge. (4) No Business shall deny or discourage the use by a customer of his or her own Reusable Bag for the purpose of transporting items purchased or received by the customer from the Business” (5). This is very extensive legislation, but similar to some of the Alberta bans, there are some exceptions for bulk food, prescriptions and flowers.



On June 1st, 2019 Vancouver B.C. will follow Victoria in banning plastic bags but will take it a step further by including straws, disposal cups and other containers. CBC News states that “2.6 million plastic-lined paper cups and two million plastic bags are thrown in the garbage in Vancouver every week” (6). They also state that “businesses must choose one of the following options: 1. No distribution of disposable cups or plastic/paper shopping bags at all, 2. Charging an extra fee for disposable cups or plastic/paper shopping bags, 3. Other solutions that will be proposed and finalized through consultation” (6).



Examples of Single-Use Bans in Canada

Saint-Lambert, Quebec implemented a single-use bag ban on April 22, 2018. According to the City of Saint-Lambert, “Somewhere between 1.4 and 2.7 billion shopping bags, mainly made of plastic, are distributed every year” in Quebec (City of Saint-Lambert 7). The reasoning behind the ban is that “banning single-use bags is to reduce the waste they generate as well as their environmental impact on nature and wildlife” (7). The type of plastic bag being banned is very similar to other bans, but includes “Plastic shopping bags that are less than 50 microns thick (lightweight)” (7). The explanation behind this ban on 50 microns thick is that “Bags that are thicker than this are unlikely to be swept away by the wind or water and to create litter.” (7). Again, much like the other bans explored here, exemptions are included for bulk food, prescriptions, dry cleaning and floral uses.



As more bans are implemented, focus on and momentum by other municipalities to follow suit is increasing (as is pressure). It seems clear that municipalities have identified that single-use plastic pollution is a concern of their residents, but also as an opportunity to be seen as a global leader on tackling pollution and environmental issues. These bans have not just been implemented in Canada, but around the globe. Next, we will review the scope of these international bans.

Examples of Single-Use Bans Internationally

The European Union has recently joined the growing list of governments enacting legislation, as “Single-use plastic items such as straws, forks and knives as well as cotton buds will be banned in the European Union by 2021”(Roth 8). This decision comes from “Growing concerns about plastic pollution in oceans and stories of dead whales with plastic in their stomachs, together with China’s decision to stop processing waste” (8). The vote addressed “banning 10 single-use plastics including plates, balloon sticks, food and beverage containers made of expanded polystyrene and all products made of oxo-degradable plastic”(8). The EU says that “EU countries can choose their own methods of reducing the use of other single-use plastics such as takeout containers and cups for beverages”(8).



In South America, Chile has had series of bans enacted on single-use plastics and other items. “In 2017, under the presidency of Michelle Bachelet, the country banned the use of plastic bags in 100 coastal communities” (United Nations Environment Programme 9). In May 2018, they took the ban one step further and “On 30 May, Chile became the first South American country to approve a nationwide ban on single-use plastic bags” (9). Other countries in Central and South America have implemented their own versions of a single-use ban; “Antigua and Barbuda was the first country in the region to ban plastic bags in 2016. Soon after, Colombia passed a similar ban, and in 2017 applied a tax to large plastic bags” (9).

Examples of Single-Use Bans Internationally

In January 2019, South Korea implemented a ban on plastic bags, focusing on supermarkets. “It will affect 2,000 major supermarkets and 11,000 supermarkets with a sales floor space greater than of 165 sq. m. Bakeries will also be barred from handing out plastic bags” (Osbourne 10). Similar to other bag bans, bags will still be issued for some food related uses, particularly wet items such as fish or meat. “Violating the ban comes with a fine of up to 3 million won (£2,100)” or \$3,487.00 dollars (10).



Single-use plastic items such as straws, forks and knives as well as cotton buds will be banned in the European Union by 2021.

Roth 8

These are just three international examples of governments that are acting against plastic pollution by way of a plastic bag ban and single-use ban. Action by countries in Latin America, Europe and Asia signifies the growing global attention to these issues, and also shows that this isn't solely a North American problem, but one facing the entire world. As a reaction to plastic waste ending up in our landfills, water ways and oceans, bans are being implemented as governments try to determine solutions or the best way to combat these issues. Plastic bags and other single-use items become pollution because of the failure to recycle these items where possible. It makes common sense that restricting their use will limit the amount that becomes pollution. The next section will test this common sense understanding and look at the effectiveness of bans.

Effectiveness of Single-Use Bans

Research conclusively shows that bans on single-use plastic bags significantly reduce the amount of this litter in residential areas, storm drain, rivers and other waterways. As many of these more comprehensive bans are newly enacted, research continues to be conducted on the effectiveness of this legislation.

A study was conducted by Scientist Action and Advocacy Network (ScAAN) to examine the effectiveness of single-use plastic bans and associated fees throughout the United States. It shows that “in San Jose, CA, a ban on thin plastic bags, coupled with a 10-cent fee on paper reduced bag litter in rivers to less than a third of the pre-ordinance levels. Neighborhood plastic bag litter from plastic bags dropped by more than half.

The prevalence of reusable bags increased from 4% to 62% post-ordinance and the prevalence of customers not using a bag increased from 19% to 43% post-ordinance (11).

The major recycling collection company in San Jose cut the time spent untangling plastic bags from their machines nearly in half” (11). A 2014 ban in Austin, Texas “succeeded in decreasing Austin’s thin plastic film waste in the litter and recycling streams” (11). The conclusion was that “all studies show that after a Ban/Fee Hybrid was implemented, many more people started bringing reusable bags-- and the number of people who chose not to use a bag at all at the register increased dramatically” (11).

It is clear from this comprehensive study that plastic bag bans and fees for their use do decrease plastic pollution and use of plastic bags.

These findings are supported by conclusive evidence presented in various other studies. In 2017, a review was conducted looking at “International policies to reduce plastic marine pollution from single-use plastics (plastic bags and micro-beads)” (Xanthos and Walker 12), which was conducted by examining a variety of plastic bag levy’s/fees and bans. The data on these bans was relatively new, but their principal conclusion was that “Despite limited outcome data, it is recommended that the rapidly growing global trend of increased levies or, better still, outright bans continue” (12).

The importance of this issue is well put by a recent article in Scientific American; “The non-profit Worldwatch Institute reports that at least 267 species of marine wildlife are known to have suffered from entanglement or ingestion of marine debris, most of which is composed of plastic;

Tens of thousands of whales, birds, seals and turtles die every year from contact with ocean-borne plastic bags” (13).



Effectiveness of Single-Use Bans

There is no doubt that plastic pollution is severely impacting marine wildlife in extremely negative ways, and there is a growing body of evidence that supports this conclusion. Photos of the devastating effects this plastic has on marine life are widely circulated on the internet (via social media) or traditional forms of media, and are largely responsible for the growing attention to this problem and public support for action against it.

A recent European Commission study on the impact of litter on North Sea wildlife found that some 90 percent of the birds examined had plastic in their stomachs.

Scientific American (13)



We can conclusively state that plastic bag bans reduce plastic pollution. With that in mind, the next step is to consider is how does a plastic bag ban act in relation to other environmental issues and concerns. There are alternative products available for consumers to substitute, but the impact on the environment caused by the use and production of such products must be considered. Single-use plastic products and bags are currently used by so many people globally that a shift in consumer behavior **will have implications for the environment in other ways that must be considered to truly have a positive effect.**

Impacts Beyond Plastic Pollution

There is no question that single-use plastic bag bans achieve the goal of reducing the amount of bags that end up as pollution in our communities, landfills, waterways and oceans. However, what these bans don't consider is their total environmental impact on areas beyond reducing plastic pollution.

These bans often act counter to reducing greenhouse gas emissions, as the production of alternatives causes more greenhouse gases to be emitted. This occurs because the total resource cost of single-use plastic bags is dramatically lower than the alternatives that consumers turn to after a ban is enacted. Examples of alternative products would be paper or cloth reusable shopping bags, paper or metal straws in place of plastic ones, or wood or organic-based single-use items.

In most cases, the difference in resources is attributed to the manufacturing and shipment of these alternative products; the alternatives use more material to manufacture or take more resources to do so. These alternatives are also typically heavier, which means more fuel is needed for transportation (and therefore, more emissions to ship these items to the end user).

One of the reasons that plastic is so prevalent in the packaging industry is the cost efficiency of the material versus these alternatives, which is derived from its efficiency of resource use. It is simply cheaper and easier to manufacture, produce, ship, and use plastic than alternative products. Following are examples of this resource differential, as well as research that supports these important facts.



Impacts Beyond Plastic Pollution

An article by the World Resources Institute states “Denmark’s Ministry of Environment and Food found that **you would need to reuse a paper bag at least 43 times** for its per-use environmental impacts to be equal to or less than that of a typical disposable plastic bag used one time. **An organic cotton bag must be reused 20,000 times to produce less of an environmental impact than a single-use plastic bag. That would be like using a cotton bag every day for nearly 55 years.** (Note that these figures aggregate the bags’ impact on water use, CO2 emissions, land use and more, but they do not include their impact on plastic pollution.)” (14).

Taking away the consideration of plastic pollution, the single-use plastic bag is actually a more environmentally friendly option when considering land use and emissions caused by the production of alternatives. **A plastic bag ban alone would act counter to other environmental goals, like reducing emissions and ensuring effective land use.**



A 2016 article by Wired.com details that the use of cotton reusable bags may seem ideal but what is not considered is that “a cotton bag has major environmental impacts of its own. Only 2.4 percent of the world’s cropland is planted with cotton, yet it accounts for 24 percent of the global market for insecticides and 11 percent for pesticides... A pound of cotton requires more than 5,000 gallons of water on average, a thirst far greater than that of any vegetable and even most meats” (Adler 15). Ultimately, the article concludes that:

The larger takeaway is that no bag is free of environmental impact, whether that’s contributing to climate change, ocean pollution, water scarcity, or pesticide use.

Adler 15

Impacts Beyond Plastic Pollution

When it comes to paper vs plastic, plastic comes out on top once again from an emission, water and land use efficiency standpoint. A June 2018 article from Clean Water Action states that “the production of paper bags is much more resource intensive in terms of energy and water” (Molinaro 16). The article also highlights clearly that “paper bags have more mass and are much heavier than plastic bags which means they require more fuel to transport”(16). Molinaro goes on to state that **“seven trucks are required to transport two million paper bags whereas only one truck is needed to transport the same number of plastic ones”** (16). This clearly demonstrates that the use of these alternative products is not a perfect (or even better) solution, and has unintended consequences to other aspects of the environment.



Food waste may be negatively impacted and actually increase upon implementation of bans on single-use plastics. A study by Denkstatt shows that the use of polypropylene bags for plaited yeast buns **dropped food waste to “0.8% food waste instead of 11%”**(17). The same study shows that a 350g cucumber with packaging will **reduce its food waste to “4.6% waste” (17) from 9.4% waste”** (17). The study also claims that the “typical impacts per kg of fresh food” (17) when packaged **“will increase CO2 levels by 70g” (17) but the reduced food waste will save “350g of CO2”** (17). The studies conclusion was “in most cases the protective function of food packaging is more important than the impact of different packaging materials, also regarding their recyclability”(17).



Based on the evidence presented here, there is a dilemma when considering total environmental cost, and a need to determine what our collective priorities are. If we want to reduce plastic pollution, bans on these items can be very effective in doing so. **However, banning plastic is counterproductive when considering other environmental goals like reducing CO2 emissions, land use and total resources to create products.** To find a balance between these two realities, the next section will review alternative options that help reduce plastic pollution and total resources.

Reducing Plastic Pollution VS Total Resource Cost

When thinking about the value chain of material waste and recycling, there are five main categories: manufacturing, collection, sorting, processing and markets for re-manufacturing. Within each one of these categories, there could be opportunities to create efficiencies that would reduce waste and increase recycling. This section will review other strategies than single-use bans that could reduce plastic pollution while considering goals of limiting land use and emissions.

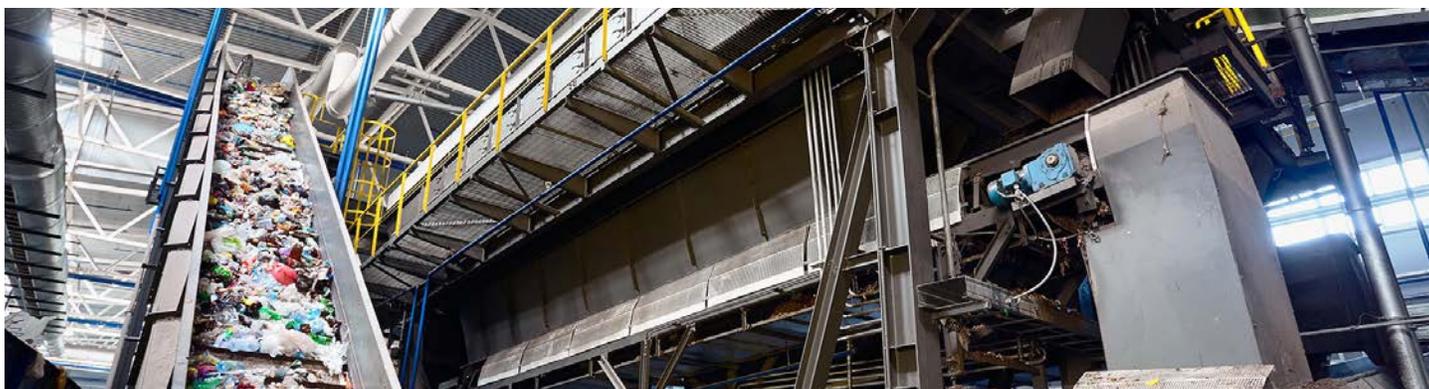
Effective Extended Producer Responsibility Programs (EPR) can reduce the amount or limit the kind of materials manufactures use. EPR means that “producers are responsible for designing, operating and paying for programs to manage the products and packaging they supply into the marketplace at end of life” (EPR Canada 18). This removes the financial burden from municipalities, as they have traditionally been responsible for the waste that is produced from these manufactures. For example, “in May 2014, BC launched North America’s first 100% EPR program through which producers assumed full financial and managerial responsibility for residential recycling of packaging and printed paper (PPP)” (18).

Quebec has an EPR program that “has addressed costs associated with non-designated materials collected through municipal recycling programs and sharing those costs between municipalities and producer responsibility organizations” (18). A 2017 study by EPR Canada claims that these programs have increased “significant tonnages of resource materials being recovered for recycling instead of being disposed of in landfill” (18). However, data on the impact of these EPR programs is difficult to collect as there is no standardized process across different regions.

EPR’s and the growing pressure on manufactures to reduce waste have encouraged companies like Procter & Gamble to create and fund associations to help reduce the packaging they use, collect the waste they produce and improve sorting processes.

In 2019, a group of 25 companies including P&G, Shell and Exxon Mobile created The Alliance to End Plastic Waste. They have committed “\$1bn (£778m) over the next five years, with an aspiration to raise that to \$1.5bn (£1.2bn) if further members join” (Harvey 19) to address the issue of plastic waste. The fund is intended to “invest in a wide variety of projects, including research and development into new recycling technologies, building infrastructure to collect and recycle waste, and cleaning of areas where plastic waste concentrates, such as in rivers” (19).

The association’s first step was to support The Incubator Network by Circulate Capital and Second Muse. The Incubator Network is to “invest in a wide variety of projects, including research and development into new recycling technologies, building infrastructure to collect and recycle waste, and cleaning of areas where plastic waste concentrates, such as in rivers” (Alliance to End Plastic Waste 20).



Reducing Plastic Pollution VS Total Resource Cost

Other companies are taking a proactive stance to reducing plastic waste. Crayola has recently launched their Color Cycle program where “through this initiative, students in K-12 schools across the continental United States and parts of Canada can collect and repurpose used Crayola markers” (21).



Spud.ca has launched their Pink Bag program; “this program aims to tackle single-use flexible plastic that is not accepted by curbside recycling programs” (Austin 22). Consumers that purchase products that use the “Pink Bag” send the bag back for Spud.ca to recycle. The bags get recycled through a partnership with Terra Cycle, a company that has a network of recycling facilities that can process various types of products.



Source Separation:

When an end-user washes & separates all materials to be recycled before they are collected and sent to the processing facility.

Terra Cycle is another example of a company that helps reduce single-use product and plastic pollution while considering emissions and land use. They achieve this through administering national programs with schools, direct to consumers and direct to businesses; these programs typically involve purchasing a box to sort a specific range of products, and then those groups returning those boxes full of items for processing. They accept products that most municipal recycling programs do not, and they count on the consumer to **source separate** their recyclables before sending them back to larger processing and distribution sites. These sites are either ran by Terra Cycle or in partnership with, who then send the recyclables to processing facilities that are able to process the materials into pellets (in the case of plastic) for remanufacturing. Through TerraCycle.com, consumers can purchase “Zero Waste Boxes” that collect and recycle “fluorescent lamps, plastic cups, action figures, art supplies, baby food pouches, beauty products, candy and snack wrappers” (23), and many other items that are difficult to recycle through traditional municipal programs.



Reducing Plastic Pollution VS Total Resource Cost

Improvements to the collection and sorting procedures of recyclable items would lead to more item recovery, and less single-use waste. The American Chemistry Council (ACC), Association of Post-consumer Plastic Recyclers (APR), Carton Council of North America (CCNA), Foodservice Packaging Institute (FPI) and the National Association for PET Container Resources (NAPCOR), created a commission to study the effectiveness of MRFs (Material Recovery Facilities). In their report, they found that dual stream MRFs that require residents to source separate their recyclables “offer the advantage of reducing loss of plastics and other containers to the paper streams” (RRS 24). This means that by utilizing dual stream MRFs, more single-use products could be potentially collected and captured, reducing contamination of the other streams of recyclable materials.

The equipment used in a MRF can impact the quality of sorting, with the study claiming that optical sorting machines can increase sorting efficiency and decrease contamination. This research states that “another piece of equipment in MRFs that can help improve separation of materials are optical sorters. Optical sorters can recognize materials based on what they are made of along with their size and shape” (24);

compared to the manual processes that are currently in place, it stands to reason that effective implication of technology could increase the amount of material being diverted.

Once the materials from MRFs are collected, sorted, and baled, markets need to exist that want to purchase these bales of material in order to be reprocessed into other products. The National Sword program implemented by China has placed pressure on municipalities to find other markets to sell their recyclables to, due to the increased restrictions.

Unfortunately, most municipalities in North America have largely ignored local markets and purchasers of recyclable materials, but these markets do exist, and there is no reason why they cannot be utilized. A search on [PlasticsMarkets.org](https://www.plasticmarkets.org) (25) for buyers of plastic yields 233 results. These buyers accept every grade of plastic from 1-7 and from every market: consumer, hazardous and commercial. Working with and utilizing these current markets could allow them to grow and provide opportunities for others to follow suit, increasing the amount of options available locally, and potentially increase the volume of recycling that occurs.



Bio-fuel facility: *Bio-fuel is created by converting organic waste into renewable natural gas and high quality compost material for reuse by consumers.*

Another option to address the question of how to manage our waste in an environmentally conscious way would be considering conversions of waste to fuel. In Alberta, Enerkem Bio Fuels operates a facility in partnership with the City of Edmonton and Alberta Innovates – Energy and Environment Solutions. The facility takes “household waste that is non-recyclable and non-compostable” (26) and processes it into a bio-fuel that helps to “reduce the volume of waste sent to landfills by over 100,000 metric tonnes per year” (26) in the Edmonton region. For materials that have no market to be recycled, this could be an option to repurpose them into another useful product, thus reducing their total resource cost and increasing their use before the end of their life cycle.

Looking Forward & Recommendation

The suspension of belief is over and the facts show that **there is a plastic and single-use pollution problem.** This problem is being highlighted and even increased by massive changes in the recycling marketplace. Plastic bag bans work in reducing bag pollution and it would be fair to suggest that wider bans that include other single-use items would do the same. It is also clear that bans do not act alone in an environmental silo where only plastic pollution is addressed.

Bans can encourage the use of alternative products, however those products increase emissions, tax the land and increase food waste (increasing CO2 emissions with it) at a significantly higher environmental cost than the items they replace.

EPR programs are having an effect in reducing waste, along with MRF facilities and corporate driven programs to return items back for recycling. Despite the reliance on China, recycling process facilities are not dead in North America. Further support of these facilities could lead to their growth, increasing the amount of single-use products that could be recycled while stimulating the local economy by increasing demand for these services. Changes to MRFs and the equipment they use could increase the quality of sorting, and the resulting quality of those material bales for these recycling facilities to buy and process.

Elevated Enviro recommends implementing a ban on single-use plastics and bags; however, we recommend that this ban be temporary. The ban should run in conjunction with other programs that reduce waste. We recommend programs like MRFs, EPRs and building supply chains and partnerships with local recyclers. Elevated Enviro also recommends moving towards multi stream MRFs, and increasing sorting capabilities by mandating source separation of materials by the residential and commercial sector to support multi stream MRFs. We also recommend investment in new technology such as optical sorters for these MRFs to increase effectiveness and recovery.

In order for these recommendations to be successful, thorough education of all users is critical. This could be achieved by a large scale marketing campaign, including media events, content created for social media, and public engagement. We would recommend sharing important information about the implications of alternative products and how best to use them, along with sharing knowledge of programs like Terra Cycle, Spud Pink Bag and Crayola Color Cycle would support this endeavor.



Recommendation

To effectively reduce single-use pollution in conjunction with minimizing land use and emissions of alternative products to replace single-use products we recommend the following staged process:

1. Implement a single-use ban.
2. Educate public on implications and recommended best practice of treatment to alternative products from bans.
3. Phase in more source separation requirements in the commercial and residential sectors.
4. Make changes to MRFs to accept multi-streams of recycling and increase their sorting ability through the implementation of technology.
5. Build supply chains and partnerships with existing local and North American recyclers.
6. Increase volume of material going to Enerkem bio-fuel facility.
7. Educate public on developed and developing return to manufacturing programs such as Terra Cycle, Spud Pink Bags, Crayola Color Cycle and more as they are created.
8. Phase out the single-use ban as recycling networks develop, and public engagement and education continues to increase.



Conclusion

We believe that by considering the information presented herein, a complete picture of the implications of implementing a single-use ban have been carefully explored, and that it is in the best interests of the City of Edmonton to proceed as outlined. The issue of plastic pollution and the environmental impacts of action are layered and complex, but it is our belief that solutions are possible today to address these issues. Careful and thoughtful action must be taken in order to achieve our collective goals of healthier communities and environments, both today and for future generations to come.

Elevated Enviro is more than happy to provide this report to the City of Edmonton and we look forward to collaboration and further discussion.

Yours very truly,



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ELEVATED ENVIRO



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Background

In 2018, Edmonton City Council, in the journey towards reaching a goal of 90 per cent diversion of waste from landfill, directed the Waste Services Branch to engage stakeholders and the public on potential changes and updates to waste programs and services. This input will inform and refine the strategic direction outlined in Administration reports in March 2018 and August 2018.

In March, 2018, Council approved a direction towards the implementation of a Source Separated Organics Program, and in August 2019, Council approved the outline of a broader 25-year strategic review that encompasses:

- + A move towards source separated organics (such as food scraps and yard waste)
- + Development of a new organics processing program
- + Consideration of the City's broader waste reduction goals, including consideration of:
 - + Acceptance of a zero waste framework overall
 - + Potential restrictions on single-use plastic items
 - + New programming to support reduction of food waste and textiles
 - + Other potential waste reduction programming
- + Diversion targets for the single-unit, multi-unit and non-residential (non-regulated) sectors
- + A revision of the City's current programming within the non-residential markets.

The two-phase public engagement process sought to gather input from four sectors:

- + Residents
- + Multi-unit stakeholders
- + Non-residential or ICI (Industrial, Commercial and Institutional) stakeholders
- + Internal City of Edmonton stakeholders

The Waste Services Branch contracted Stantec Consulting to develop and deliver a comprehensive public engagement process and activities. Phase 1 engagement took place from October to November, 2018 and the City heard from nearly 20,000 residents, businesses and institutions through public drop-in sessions, facilitated meetings and surveys. Proposed changes to waste set outs, collection frequency, and separation of food scraps, yard waste and recycling were discussed with residents while challenges with trying to sort and divert more waste were the focus of discussions with businesses and industry.

On the residential side, Phase 1 input demonstrated some key insights and directions for development of the strategy. For example:

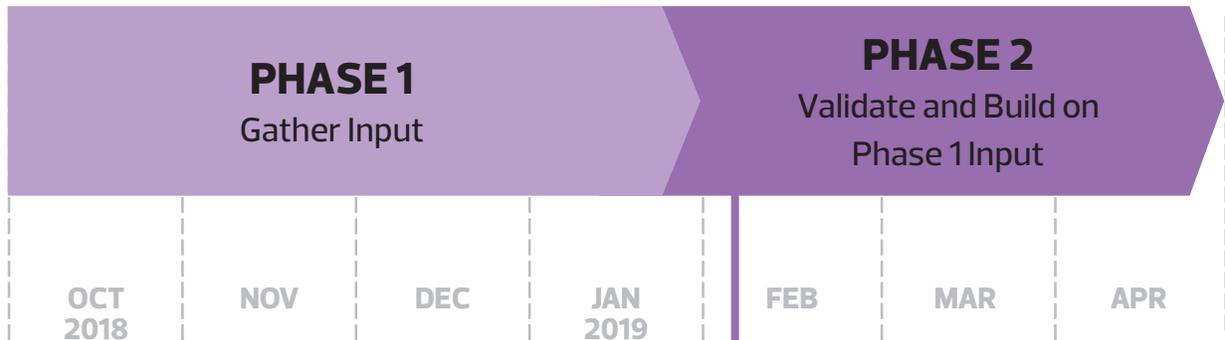
- + Respondents indicated that they are generally interested in a cart system and are willing to sort their food scraps;
- + People indicated general support for restricting single-use plastic items;
- + Large and small businesses said they want to divert more but also want a simple system for sorting and separating their waste;
- + The need for more education and more consistency in how to properly sort waste was often raised as a requirement for success across the city and the region. Proper sorting would reduce contamination so that recyclable materials have a greater value, which would help the City divert more waste from landfill;
- + Some of the challenges included a lack of clarity about the role of the City in managing waste in the non-residential sector, the need for education and awareness, and concerns with costs, space and infrastructure. Businesses talked about fees and lineups associated with drop-off locations.

Phase 2 engagement provided the opportunity for the City to "*keep talking about the future of waste*" with residents and stakeholders, to validate what was heard in Phase 1 and to delve into more detail with some of the proposed changes. In particular, residents were presented with proposed options of what future changes to curbside collection and restrictions on single-use plastics could look like for Edmonton.

Public drop-in sessions provided the opportunity to have conversations with participants and record comments, while subject matter experts were available to answer questions. Facilitated conversations and surveys were used to measure reactions to comments, plans, and ideas, as well as to reach out to voices that had not participated in Phase 1.

In all discussions, note takers and facilitators recorded comments and questions.

A two-phase public engagement process was proposed. This document describes the engagement in Phase 2.



PHASE 2 ENGAGEMENT TOPICS

Input was gathered on the following topics:

- + Changes and options for curbside waste collection, including sizes of garbage carts and options for setting out recyclables
- + Changes to seasonal grass, leaf and yard waste collection
- + Single-use plastics
- + Zero Waste goal for Edmonton
- + Community drop-off locations
- + Education opportunities
- + Extended Producer Responsibility
- + Role of the City and setting waste diversion targets (non-residential sector topic)

GENERAL COMMENTS

In general, residents and businesses are interested in finding ways to be more environmentally sustainable. Many residents want the City to introduce green carts for separation of food scraps faster than currently planned.

In many of the conversations, people discussed the history of waste in Edmonton with a sense of pride regarding the City's method of handling waste. They believed the City had world-class processing technology to divert waste from landfill and reduce their need to sort it themselves. There was a belief that the City was less dependent on landfill use than other jurisdictions because of the technology it employed. Edmontonians expressed dismay over the current situation and want the City to reclaim its role as a leader in waste management.

The Waste Services Branch is committed to reporting the results from the public engagement process. While this report does not itself contain recommendations, the results are being used to shape and inform recommendations for proposed changes that are being brought forward. The following is a summary of what we did and what we heard during Phase 2 public engagement.

WHAT WE DID

What We Did

Phase 2 public engagement for residents, multi-unit stakeholders, and employees was in the Refine spectrum of engagement. For non-residential stakeholders, engagement was in the Create spectrum.

The City of Edmonton's Public Engagement Spectrum.



Recognizing that not all stakeholders and the public can be engaged in the same way, different methods and timeframes were used to capture as many thoughts and perspectives as possible from residents and stakeholders. These included:

- + Public drop-in sessions
- + Surveys (see Appendix A for summary results)
- + Scheduled stakeholder workshops
- + Facilitated meetings and discussions
- + Phone interviews with multi-unit stakeholders and businesses
- + Site visits to multi-unit properties
- + Intercept polls in public locations, including farmers markets and events
- + Displays and presentations
- + Focus groups with ICI stakeholders and multi-unit residents
- + Social media comments

Changes from Phase 1

Some changes were incorporated into Phase 2 engagement based on feedback and observations from Phase 1, including:

- + Making the surveys shorter and more manageable in a single sitting;
- + Changing locations of some public drop-in sessions to improve flow of foot traffic;
- + Including more information for multi-unit resident, multi-unit stakeholders and non-residential stakeholders at the public drop-in sessions;
- + Adding more questions for public input on the storyboards at public drop-in sessions to gather information on a variety of topics;
- + Working with City inspectors and networks to increase participation of multi-unit stakeholders such as property managers; and
- + Multi-unit stakeholders were engaged through phone interviews, site visits, and stakeholder workshops, in lieu of an online survey.



City of Edmonton Tower April 8, 2019

Who participated?

The stakeholder list from Phase 1 was refined to add voices to the conversation. The stakeholder list included the general public and specifically targeted segmented participants from the following categories:

RESIDENTS

- + Single-unit and multi-unit residents
- + Seniors
- + Newcomers
- + Persons with disabilities and mobility challenges
- + Post-secondary students
- + Edmonton Insight Community

MULTI-UNIT STAKEHOLDERS

- + Property owners, managers, and management companies
- + Site and building managers
- + Condo boards and tenant associations

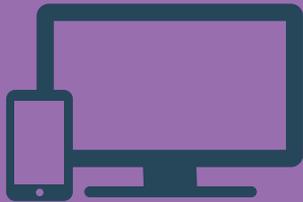
CITY OF EDMONTON STAKEHOLDERS

- + City of Edmonton employees
- + City of Edmonton Waste Services employees

NON-RESIDENTIAL STAKEHOLDERS (INDUSTRY, COMMERCIAL AND INSTITUTIONS)

- + Post-secondary institutional facilities and operations
- + Festivals and events
- + Commercial businesses and associations, including:
 - + Retailers
 - + Restaurants
 - + Food Distribution
 - + Large corporations
 - + Small businesses, including home-based businesses
- + Not-for-profit organizations
- + Industrial companies and organizations
- + Waste haulers
- + Large public venues

How did we communicate?



DIGITAL

1,425,400
website users (entire site)

41,318
Future of Waste site users



Facebook

590
Comments

178,143
Impressions

126,694
People reached



124.8K
Impressions

Google
Display Network

20.6K
Ad clicks

5.5M
Impressions



Facebook
Advertising

38.6K
Ad clicks

8.0M
Impressions

1.0M
People reached

3.9K
Reactions

660
Shares

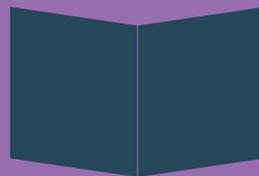


RADIO ADS

6.9M
People reached
(Adults 18+)

57%
of Edmontonians
18+ heard the ad

9.5
Average number
of times audience
heard the ad

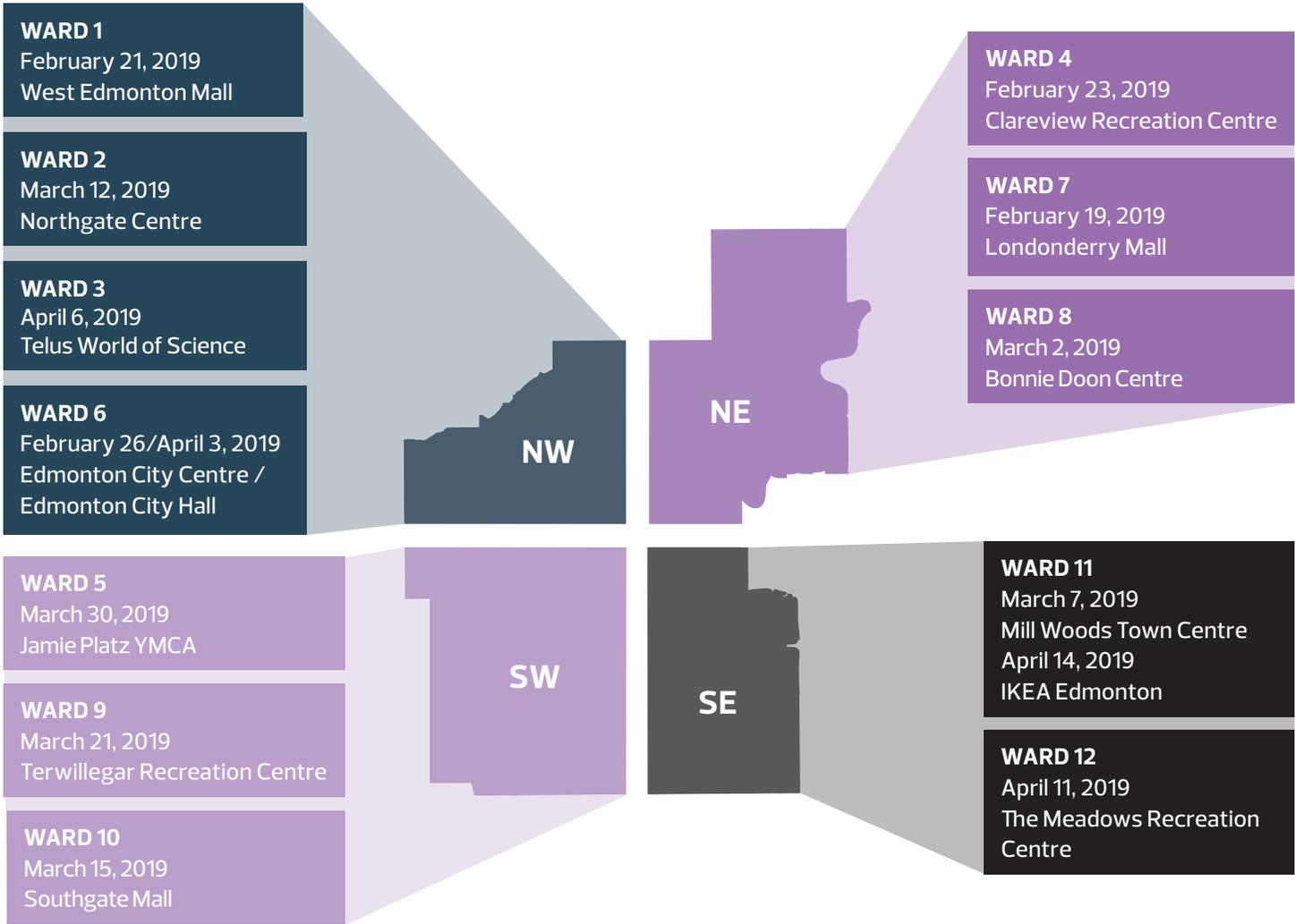


PRINT ADS

3.7M
Estimated
impressions
(Adults 18+)

PUBLIC DROP-IN SESSIONS

A total of 14 public drop-in sessions were held at convenient locations across the city between February 19 and April 14, 2019 with at least one session in each ward:



The goal of these drop-in sessions was to make it easier for the public to participate. During Phase 1 engagement, it was determined that drop-in sessions at high traffic areas such as recreation centres and malls were well attended, therefore many of these locations were used again in Phase 2. A mixture of evening, lunch time, and Saturday sessions were chosen in order to capture different audiences. Over 1,100 people in total attended the public drop-in sessions.

The final drop-in session at IKEA was the result of a collaboration with the City of Edmonton's Corporate Climate Leaders Program. Its members, including IKEA, are Edmonton businesses that have made a commitment to take action on climate change. Through this program, IKEA expressed interest in hosting a drop-in session as part of the kickoff for their in-store sustainability event.

At each public drop-in session, people were greeted by City of Edmonton staff, asked to sign in, and provided a briefing to help them navigate the information. A map of the City allowed participants to mark where they lived. Once greeted, people were either accompanied by a facilitator on a storyboard journey or left to read the storyboards on their own. In either case, a note taker captured their comments. Based on feedback from participants during Phase 1, drop-in sessions contained more information and input-gathering opportunities for single-unit residents, multi-unit residents and stakeholders, and non-residential stakeholders.

The public drop-in sessions included displays and storyboards, providing information on:

- + A timeline for the engagement process of the project
- + The importance of properly sorting waste
- + Changes to waste set outs and collection
- + Waste drop-off locations
- + Zero waste goal and hierarchy
- + Single-use plastics
- + Edmonton Cart Rollout
- + Monthly utility rates
- + Topics for multi-unit and non-residential stakeholder input

In addition to recording comments, facilitators encouraged people to vote on a variety of options, and to provide their comments, thoughts and ideas on sticky note areas of the boards.

Participants could vote and provide comments on the following proposed changes:

- + Ideas for a potential Zero Waste goal in Edmonton
- + Single-use plastics, such as categories of materials that could conceivably be restricted, and how the City should manage them
- + How to make drop-off locations easier to use and access
- + Proposed changes for seasonal grass, leaf and yard waste collection
- + Preference for blue bags or blue carts for recycling
- + Preferred cart size option for garbage set-out (120L or 240L black cart) for single-unit residents
- + Optionality on waste utility rates

While the drop-in sessions primarily attracted those living in single-unit homes, people living in apartments and condominiums also participated; some invited the City to view their waste collection process for input.

Multi-unit and non-residential stakeholders at public sessions were invited to participate in phone interviews and stakeholder workshops. A voicemail was set up specifically for these stakeholders to leave messages if interested in additional participation.

A station demonstrating proper waste sorting was set up to help educate participants about proposed changes to sorting of food scraps, recyclable materials and garbage. Actual carts were on display so people could see their size and interact with them (120L green, 120L black, 240L black, 240L blue).

City of Edmonton staff, subject matter experts (SMEs), and facilitators were available to record comments and answer questions. A comment box was provided to allow the public to leave any questions or comments that were not answered at the drop-in session. These questions were later answered by City of Edmonton staff.



IKEA Edmonton April 14, 2019

SURVEYS

Seven surveys were created and conducted on the City's website, through the City's Edmonton Insight Community, at public drop-in sessions, at events, and over the telephone.

RESIDENT SURVEYS:

Edmonton Panel

1,000 surveys

were conducted with Edmonton residents using a random sample of Leger's LegerWeb panel between February 11 and 23, 2019.

Data were weighted by age, gender, and region for Edmonton, according to Statistics Canada proportions.

Open Link (Other Public)

6,689 surveys

were conducted through an online open link between February 10 and April 15, 2019. Only complete responses were included in reporting. Data are unweighted.

A separate multi-unit stakeholder online survey was not conducted, due to low response rates in Phase 1. These stakeholders were engaged through phone interviews, site visits, and stakeholder workshops.

Drop-in Sessions (Informed Public)

66 surveys

were conducted through an online open link between February 10 and April 15, 2019. These respondents completed the survey during one of the various public drop-in sessions. Complete and incomplete responses are included in reporting. Data are unweighted.

Edmonton Insight Community Panel

2,096 surveys

were conducted through the City's Edmonton Insight Community panel between February 28 and March 19, 2019. Data are unweighted.

Intercept Polls (Community Outreach)

49 polls

were conducted with individuals by City staff between February 10 and April 15, 2019.

NON-RESIDENTIAL SURVEYS:

Edmonton Insight Business Panel

179 surveys

were conducted through the City's Edmonton Insight Community business panel between March 29 and April 9, 2019. Only complete responses are included in reporting. Data are unweighted.

Phone Survey

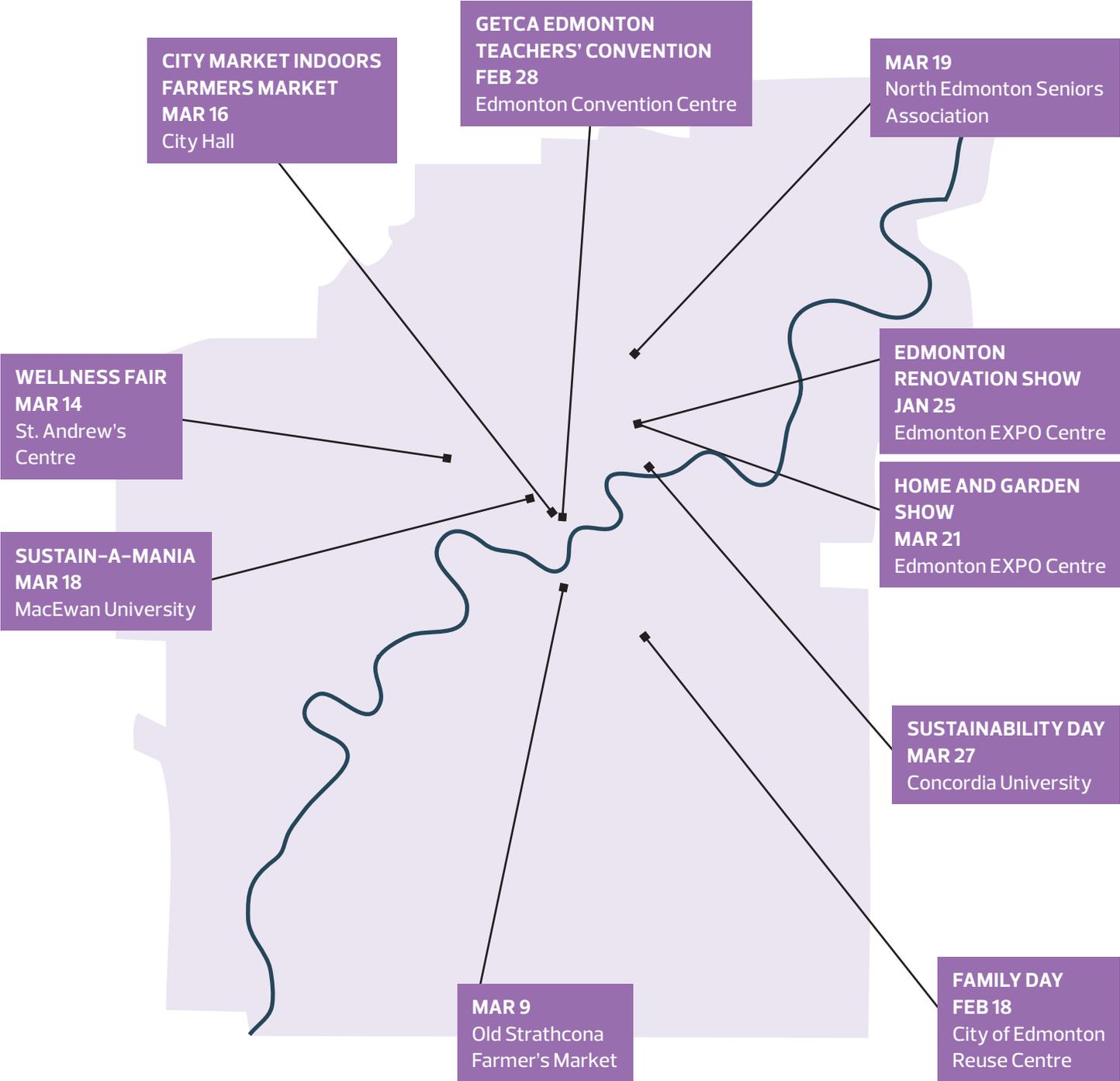
501 telephone interviews

were conducted by Leger interviewers between March 8 and April 5, 2019. Data are unweighted.

A summary analysis of findings for residential and non-residential surveys can be found in Appendix A.

POP-UP EVENTS AND EVENT DISPLAYS

In an effort to reach as many Edmontonians as possible, Waste Services staff went to locations and events to speak to residents and passersby. At these events, staff provided information about public engagement opportunities, and some of the proposed changes. People were also invited to fill out intercept polls. The locations included:



FACILITATED CONVERSATIONS

MULTI-UNIT STAKEHOLDERS

Condo boards, property and site managers, management companies, and developers were engaged in Phase 2 through workshops, meetings, telephone interviews, phone surveys, focus groups, site visits, and the public drop-in sessions. Multi-unit residents were also recruited to attend the focus groups. These conversations were intended to better understand constraints and opportunities for recycling, sorting of food scraps, and changes to the collection of grass, leaf and yard waste. Non-market housing property managers and developers were included in these conversations and site visits.

SITE VISITS

Approximately 25 multi-unit sites reflecting a variety of building and development styles (rental, condos, walk-ups, town houses, non-market, and high rise properties) across the city were visited by engagement consultants and inspectors. The sites are managed by different property managers, and have different waste set out configurations, including curbside and alley collection, bin collection including indoor vs. outdoor garbage bins, garbage chutes, recycling bins, garbage storage sheds, large roll-off bins, and garbage piles.

NON-RESIDENTIAL (ICI) STAKEHOLDERS

Businesses, associations, restaurants, grocery vendors, retail stores, industry, and not-for-profit organizations were engaged through workshops, meetings, presentations, employee engagement, online surveys, focus groups, and telephone interviews.

Members of the City's Corporate Climate Leaders Program reached out to participate in conversations about single-use plastics, diversion rates, and additional sorting of food scraps, which resulted in one presentation and the public drop-in session at IKEA. They were interested in having their employees participate in the conversation and as a result, one lunch and learn was conducted and two organizations took copies of the storyboards from the public drop-in sessions to gather employee comments.

Workshops, in-person meetings, and telephone conversations with ICI stakeholders focused on constraints and opportunities for additional diversion, sorting of food scraps in offices and single-use plastics.

Sessions were specifically held with lawn and yard care companies to discuss proposed changes to grass, leaf and yard waste, and with producers of single-use plastics to discuss waste management associated with these products.

Three meetings with not-for-profit organizations were held to better understand their interest and their potential role in reducing waste and sorting of food scraps, and to hear their thoughts on how the City should approach single-use plastics.

CITY OF EDMONTON EMPLOYEES

Two drop-in sessions were held on April 8 and April 17 for City of Edmonton employees at Edmonton Tower and City Hall. The purpose of these sessions was to gather input from employees as residents, and also collect insights on how potential changes to waste services would affect employees' work areas across the corporation. The storyboards and waste sorting demonstration were similar to the public drop-in sessions with some additional questions for employees.

CITY OF EDMONTON WASTE SERVICES EMPLOYEES

Waste Services employees were encouraged to complete either an online or paper survey, to share their perspectives on the proposed changes and how some of these might impact their operations. A total of 235 employees across the Branch from operational, technical, and administrative areas completed the survey.

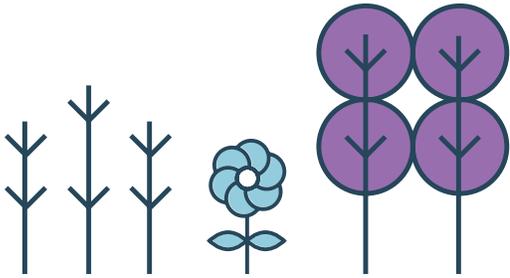


WHAT WE HEARD

WHAT WE HEARD

Common Themes with Phase 1

Conversations in Phase 2 allowed for a deeper dive into some of the topics discussed in Phase 1.



GRASS, LEAF AND YARD WASTE

COLLECTION SCHEDULE

In Phase 1, people were concerned about limiting scheduled yard waste pickups to one in the spring and one in the fall. Although people were pleased that the City was listening in Phase 1 and increased the proposed pickups to twice in the spring and twice in the fall, many (over 40 per cent in the survey) felt that this was still insufficient for the same reasons as discussed in Phase 1:

- + Mature neighbourhoods have many leaves that often take more than one cleanup to complete;
- + Weeds, dead flowers, and grass clippings are collected all summer and small green carts would not be large enough to accommodate this yard waste; and,
- + Storing grass, leaf and yard waste between pickups would generate significant odours and attract rodents. Fire hazards were also a concern. These comments were raised by residents as well as lawn care companies.

PAPER YARD WASTE BAGS

Yard care companies and residents were concerned that the paper bags would not be strong enough to replace plastic bags, especially if they got wet. They would also be difficult to stack and tie. The cost of the paper bags, which are seen as significantly more expensive than plastic bags, was another concern raised. A question was raised if burlap sacks could be used instead of paper.

What concerns do you have with using paper yard waste bags?

Bags could get soggy when wet
69%* **72%**** **78%*****

Break or tear easily
59%* **57%**** **59%*****

Cost of bags
51%* **49%**** **46%*****

Survey results. See Appendix A for more details.
* Edmonton Panel
** Open Link Respondents
*** Insight Community Panel

YARD CARE COMPANIES

Many yard care companies typically leave grass, leaf and yard waste with the owners of the properties they service. These companies raised concerns that hauling grass and yard waste to Eco Stations would be costly given tipping costs, time spent making extra trips and waiting in line. They were also concerned about:

- + Capacity of equipment such as trucks and trailers to haul yard waste along with equipment;
- + Passing on fees for these additional services onto customers, and how this would affect customer demand for service; and,
- + Reduced capacity to complete yard maintenance, due to extra hauling and tipping time needed.

Many suggested additional tipping sites, an "express lane" for lawn maintenance companies, elimination of fees, and extended hours would mitigate some of their concerns.

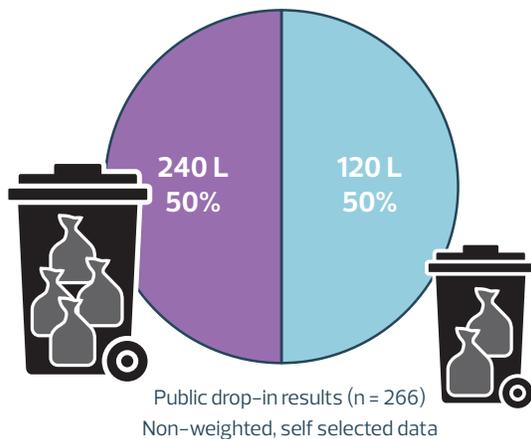


MOVING TO A CART-BASED SYSTEM

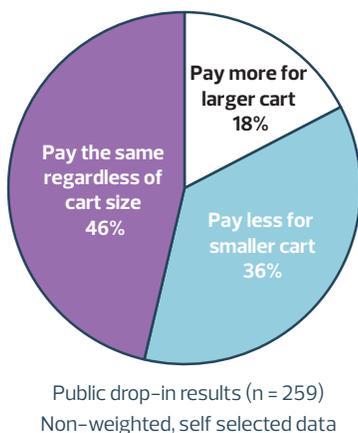
Proposed carts for garbage and food scraps continued to be generally liked by participants in Phase 2. In Phase 1, there was no clear preference for cart size, which was also the case in Phase 2. We heard that a “one size fits all” approach will not work given the different number of people that live in residences, and that residents should have the option to choose their cart size.

Most participants at drop-in sessions preferred having a blue cart over blue bags. Some saw the blue bag as a single-use plastic item that should not be encouraged, and others didn't like having to pay for blue bags.

If households were given the option to choose between 2 different sizes of black garbage carts, which would you prefer?

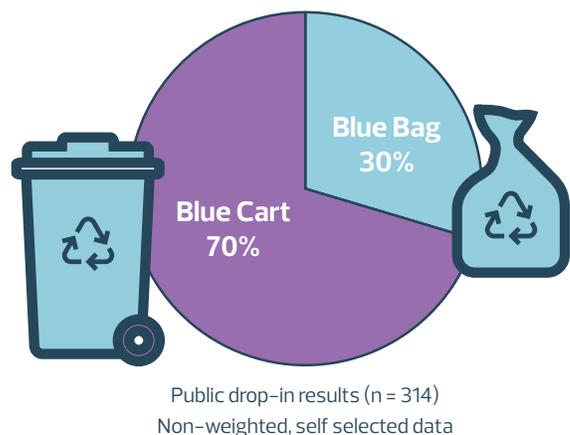


If 2 different sizes of black garbage carts are offered to households, the City may consider a difference in monthly rates, based on cart size. Which pricing structure would you prefer?



GENERAL COMMENTS ABOUT CARTS AND THEIR SIZE:

- + The 120L black cart was preferred by seniors, small families, and those who diligently sort their waste. Many thought providing this size would encourage people to carefully sort their waste. Others were concerned that providing the smaller size would result in garbage being illegally dumped, left in others' carts, or left beside the cart and not collected.
- + The 240L black cart was preferred by large families. Some large families, especially those with children in diapers, thought that a 240L black cart that was only picked up every two weeks would not be big enough, and wanted the option to have a second cart. Participants with families also felt that they shouldn't be penalized for having a family, and shouldn't have to pay extra for the larger cart.
- + There were concerns about not having sufficient space to store the carts, especially those with front street pickup who did not want to store carts in front of the house.
- + The proposed 120L green cart was seen as too big if only used for food scraps and too small for topping up with grass, leaf and yard waste.



55%* **67%**** **60%*****

Would prefer to switch to a 240L blue cart for collecting recyclables in the future.

Survey results. See Appendix A for more details.
* Edmonton Panel
** Open Link Respondents
*** Insight Community Panel

ADDITIONAL WASTE SORTING

Those who participated in discussions were generally supportive of additional waste sorting and recognize that other jurisdictions have incorporated separate food scraps and yard waste collection into their waste management practices for several years. Many wanted to participate in the rollout and asked when these changes would be introduced city-wide.

- + Multi-unit residents suggested that carts or bins for food scraps, recyclables, and garbage be located beside each other to make it easier to sort, and encourage more participation. Some residents will not make an effort to walk to a second or third bin, and instead throw all waste in the closest bin.
- + The non-residential sector was supportive of additional sorting but acknowledged that there were often financial barriers to implementing these changes. Commercial haulers provide different services. Some may promise high levels of waste diversion through mechanical sorting technology while others will only recycle clean cardboard. Stakeholders questioned if the City could impose rules on the private sector for recycling and sorting.
- + Concerns about space restrictions and additional sorting were raised by all sectors in both Phase 1 and Phase 2.
- + Many single-unit residents wanted the green cart program to be introduced right away and were disappointed that they weren't chosen for the rollout.

In Phase 2, site visits to several multi-unit residential buildings identified that challenges with additional sorting can be broader than simply finding space for additional bins or carts. Although location and number of bins are determined by property managers, sorting of food scraps would require space for an additional cart(s), but these also need to be in an appropriate location that can be accessed by a collection vehicle.

SINGLE-USE PLASTICS

Single-use plastics were discussed in further detail in Phase 2 with many people encouraging the City to restrict or eliminate their use. In both public drop-in sessions and facilitated conversations, participants were well aware of the waste associated with single-use plastics because of traditional media and social media reports. Many participants at public drop-in sessions typically favoured eliminating or restricting single-use plastic products, including Styrofoam, plastic straws, plastic bags, takeout containers and plastic utensils. Participants in facilitated conversations had the same concerns but highlighted different solutions, such as having the City work with other jurisdictions to collect, bale and sell single-use plastics to markets, introduce voluntary reduction programs, and work together on new technologies for recycling. Given the amount of information generated on single-use plastics, a separate summary of What We Heard on this topic can be found in Appendix B.

TOP TEN EMERGING TRENDS AND THEMES FROM ALL SECTORS

Despite the diversity of participants, common themes appeared in conversations with single-unit and multi-unit residents, multi-unit stakeholders, and ICI stakeholders. Zero Waste was a topic that required facilitation, as it tended to be unfamiliar to most participants. When the concept of Zero Waste was explained, people were supportive, but in some cases participants considered it to be a lofty goal.

Over half of survey respondents agree that given the proposed ideas to support waste reduction and reuse, they would support the Zero Waste goal.

54%* **59%**** **56%*****

Survey results. See Appendix A for more details.

* Edmonton Panel

** Open Link Respondents

*** Insight Community Panel

1. CONSISTENCY AND EDUCATION

- + Make people aware of what to recycle, and how to properly sort waste materials across the region. There is confusion over the items to put in the blue bag versus the garbage (e.g., plastic clamshell containers, aerosol containers). Increased education should lead to improved compliance.
- + Education needs to be multi-pronged to reflect that people learn in different ways. The City should use workshops, videos, infographics, and commercials to educate. Adding more curriculum content in schools will help educate children, who will take the information home and advise their parents of proper recycling and sorting practices. This could be done in collaboration with other jurisdictions in the region.
- + There needs to be a re-introduction of recycling education prior to the education of separating food scraps. This is especially important in the multi-unit residential sector.
- + Make people more aware of their role in Edmonton's waste system. Some people don't recycle because they believe the City sorts their waste for them and removes recyclable materials from the garbage.
- + There are differences in recycling and sorting practices across the region, which is confusing, and makes participation difficult.
- + If recycling and sorting rules were the same at home, work, school, leisure centres, parks, and festivals, participation would be easier to understand and take less effort. Ideally, sorting practices and containers would be the same at each location.
- + Participants were curious if the same rules could be applied across the region, the province, or the country. This was particularly true for chain restaurants who had multiple locations across the City, region, province and country.
- + Some industry participants recognized that consistency can be challenging because recyclable materials markets change and are difficult to predict. It was suggested that a regional approach of collaboration and cooperation may generate enough quantities of materials to help establish markets for recyclable materials.

2. MAKE IT EASY

Challenges to participation include time constraints, cold winters, bin configurations, changing rules, language barriers, different cultures and tenant turnover.

The City should assume that recycling and waste sorting may not be top priorities for most Edmontonians. Making changes that are as simple as possible will help ensure a greater likelihood of compliance and success.

3. JUST DO IT!

Many jurisdictions are currently separating food scraps and yard waste from the garbage and feel the City needs to simply start making changes. They don't feel that the proposed timelines for residents is fast enough. "If Fort McMurray can do it, Edmonton can do it!"

4. LEARN FROM OTHER JURISDICTIONS

Incorporate lessons learned from other jurisdictions that already have carts and food scraps separation programs in place.

As one of the last jurisdictions to introduce these types of changes, Edmonton has the benefit of avoiding the challenges faced by early adopters.

5. MAKE DROP-OFF OPTIONS MORE CONVENIENT AND ACCESSIBLE

Increase the number of drop-off locations across the city by either adding more Eco Stations or partnering with malls, stores, transit centres, community leagues, and churches.

Make drop-off hours more convenient by including Sundays and evenings. In the summer, Eco Stations should be open from 7 a.m. to 9 p.m.

Educate people about where and what to drop off.

Reducing or eliminating fees for dropping off items such as couches and mattresses would reduce illegal dumping.

Introduce Edmontonians to the "waste hierarchy triangle." Recycling is only one step in the process.

Encourage people to reduce and reuse.

Have additional Reuse Centres, including reuse facilities that the ICI sector, particularly retail, could utilize.

6. PACKAGING CHALLENGES AND EXTENDED PRODUCER RESPONSIBILITY

Packaging is a large challenge across all sectors. Many residents and businesses deal with unwanted packaging that they can't recycle or return to the seller.

Increased online shopping and participation in restaurant takeout delivery services have increased packaging waste without an environmentally friendly method to dispose of excess packaging.

Many recognize that this issue lies more with the provincial or federal government but encouraged the City to lobby in favour of such a program.

Others feel that it would be unfair to small 'mom and pop' shops to take on the extra expense that could come from an Extended Producer Responsibility initiative.

7. SINGLE-USE PLASTICS

Single-use plastics were mentioned in just about every conversation—particularly straws, shopping bags, coffee cups and Styrofoam. Everyone recognized the amount of waste created by single-use plastics, but conversations differed significantly on what to do next.

“Proceed with caution” was the advice from some facilitated conversations with ICI stakeholders. Although many encouraged or supported eliminating or restricting plastic straws, plastic shopping bags and Styrofoam, some voices recommended learning first how such a policy would affect the local economy, including jobs.

Additional results and key findings from the single-use plastics discussions are available in Appendix B.

8. ODOURS FROM FOOD SCRAPS CONTAINERS AND GREEN CARTS

Whether in the kitchen, a garbage room, or a place of business, people are concerned about the potential odours that could be generated from concentrating food scraps and yard waste in one kitchen pail or cart.

Residents consistently questioned why compostable bags could not be used in the green carts to reduce odour and keep the carts clean.

Residents suggested that the carts come with a hole in the bottom to facilitate washing/cleanliness.

9. ILLEGAL DUMPING

Residents were concerned that limits to the amount of garbage collected, or reduced collection schedules could lead to an increase in illegal dumping.

Some thought eliminating grass, leaf and yard waste collection over the summer could lead to dumping in the ravines, river valley, vacant lots and ditches.

Although fees for dropping off furniture and large items at Eco Stations may not seem like much, for many the expense is a deterrent to compliance and can lead to illegal dumping. Participants felt that they should not be charged money to help their City reach a Zero Waste target.

Multi-unit residential buildings currently spend thousands of dollars and many hours of staff time to regularly pick up illegally dumped furniture and dispose of it to avoid fines. They feel that they should not have to pay fees at City of Edmonton facilities to dispose of these items.

10. CITY'S ROLE REGARDING WASTE MANAGEMENT IN PRIVATE SECTOR

Multi-unit and ICI stakeholders thought that the City should set waste diversion and management standards, then let the market take the necessary measures to meet those standards.

Multi-unit residential property managers and owners want to be able to choose their hauler because they consider City rates excessive compared with the private companies. Comparisons with properties in other jurisdictions were made. Property managers want to be able to negotiate rates for waste services and select the company that provides the best service for the best price.

While the non-residential sector has the ability to choose their own hauler, most felt strongly that the City should not be competing with private companies.

INSIGHTS FROM EACH SECTOR

Many themes and topics were discussed across all sectors. This section contains summaries of key insights from each sector.

SINGLE UNIT RESIDENTIAL

Concerns with green carts

- + Most single-unit residents were surprised to learn that the City intends to prohibit the use of compostable bags in their green carts. They felt that the elimination of bags will increase odours and make cleaning difficult.
- + Seniors and those with limited mobility questioned their ability to tilt and sufficiently manoeuvre a green cart to properly clean it out.
- + Participants suggested that green carts should have a hole in the bottom to drain liquids. Others suggested that carts come with a lock to deter garbage scavenging and illegal dumping.

Make drop-off locations more convenient

- + Suggested locations included transit centres, buses, community leagues, and churches as drop-off locations for a variety of items, including batteries, light bulbs, and textiles. Another suggestion was that buses could have a container to collect batteries on board.
- + It was suggested that incentivizing people to drop off items with a punch card that could be redeemed for a free City recreation centre pass could increase compliance.
- + Fees for large items like couches and mattresses should be waived to reduce illegal dumping.
- + Many residents have difficulty hauling large items to an Eco Station or Big Bin Event because they don't have a vehicle or a truck. They hope that the City could expand the Assisted Waste program to include these people or allow residents to schedule large item pickups with the City.
- + Offer a one-stop location for dropping off recycling, stationery, Eco Station items, clothing, and donated household items, which would make it easier, rather than visiting several different drop-off locations.



Grass, leaf and yard waste

- + Many residents suggested creating neighbourhood drop-off locations for yard waste in the summer. However, finding storage space until City pickup time could be problematic.
- + Concerns were expressed about the integrity and durability of the proposed paper yard waste bags if these are stored outside when it rains, as well as the higher cost of purchasing paper bags compared with plastic bags.

Education and consistency

- + Education will help ensure consistency and make it easier.
- + Residents are confused by differences in waste sorting stations and expectations at festivals, recreation centres, shopping malls, and offices across Edmonton and the region. Some places have recycling or compostables containers, while others do not. Some locations provide multiple sorting bins for items that residents mix together in their blue bags at home, or that they often throw in the garbage.
- + Suggestions include use of highly visual graphics and marketing to educate the public and children, who will reinforce messaging at home and result in improved compliance.
- + More consistency is needed across Edmonton and the region.

Education is identified as the main idea or suggestion on how to get people on board and ensure compliance.

58%* **68%**** **69%*****

Would like online courses and information (videos, documents) made available.

Survey results. See Appendix A for more details.

* Edmonton Panel

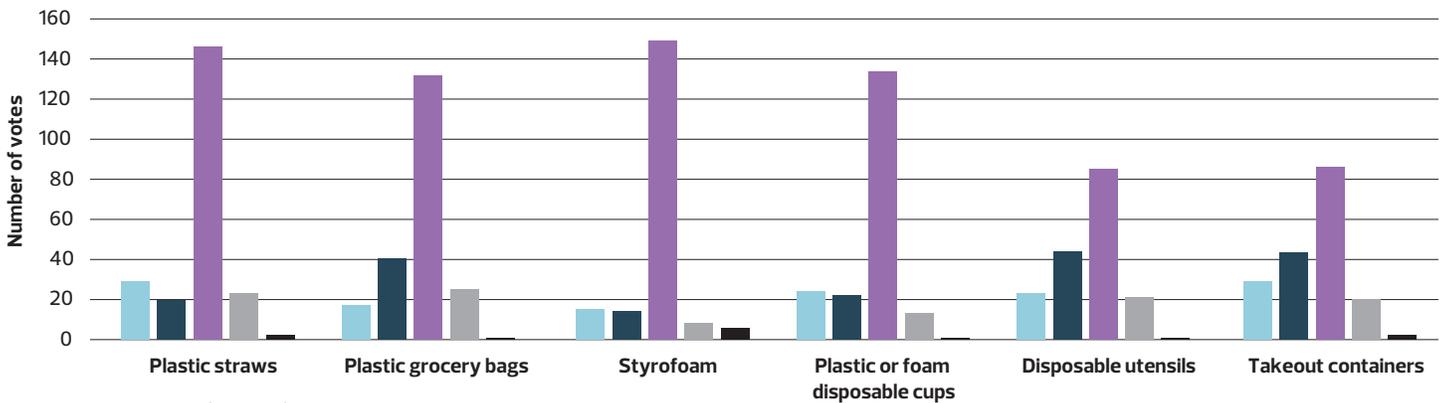
** Open Link Respondents

*** Insight Community Panel

Single-use plastics

- + There is significant support for eliminating single-use plastics among participants at the public drop-in sessions; it is not clear to what extent residents were influenced by others' votes at drop-in sessions.
- + Some residents want stronger incentives to reduce their consumption of single-use plastics and said a 5-cent fee at grocery stores was not a deterrent to use plastic bags. If a fee is charged for plastic bags and takeout containers, that fee should be applied to a sustainability fund rather than to the store's general revenue.
- + There was some support for the idea of the City working with smaller businesses to help eliminate single-use plastics.
- + Many stakeholders want the City to consider Extended Producer Responsibility programs and work to eliminate plastic packaging.

For these 6 different items, how would you prefer to see the City deal with them?



Public drop-in results (n = 1,175)
Non-weighted, self selected data

- Restrict their use, but no extra charge/fee
- Do not restrict their use, but do charge customers an extra charge/fee for use
- Eliminate their use
- No restriction (no extra charge/fee)
- Don't know

How should the City of Edmonton deal with single-use plastics?

Plastic straws	● *****	■	■
Plastic grocery bags	● *****	■	■
Styrofoam	● *****	■	■
Plastic or foam disposable cups	● *****	■	■
Disposable utensils	● **	● ****	● **
Takeout containers	● *****	● *****	● **

Survey results. See Appendix A for more details.

* Edmonton Panel

**Open Link Respondents

***Insight Community Panel



47%* **48%**** **60%*****

Think that consumers should be charged at least \$0.01 per-use fee for disposable items.

Survey results. See Appendix A for more details.

* Edmonton Panel

** Open Link Respondents

*** Insight Community Panel

MULTI-UNIT STAKEHOLDERS

Education and access to services are critical

- + Not all multi-unit residents have access to on-site recycle bins. Those that do may not have them conveniently located, resulting in improper disposal of garbage and recycling.
- + High tenant turnover can hinder the effectiveness of proper sorting efforts, resulting in inconsistent disposal of garbage and recycling. Continual education and awareness is needed for tenants, which can pose a challenge for building managers.
- + Property managers, condo board members, residents and City waste inspectors all suggested that the City should focus on increased recycling education and compliance before introducing additional sorting of food scraps.
- + Tenants need to understand the why and how of the current recycling program before introducing food scraps sorting. The feeling is, "if they haven't learned to recycle dry goods, they won't be good at sorting organic material."
- + Compliance is difficult to monitor.

Low participation

- + Recycling participation and compliance in the multi-unit sector is low. There is concern that introducing food scraps separation in some multi-unit residences will not improve waste diversion rates but increase contamination of both recyclables and food scraps.
- + In general, rental buildings, high rises, and non-market housing were said to have the lowest recycling participation and compliance among multi-unit residents, due to lack of understanding on how to recycle, proximity of recycling bins to units, tenant turnover, other priorities, and lack of interest in recycling.
- + High turnover in some buildings and different rules for recycling across jurisdictions reduce residential participation, as well as increase contamination of recyclables.
- + Recycling knowledge and participation is low in non-market housing developments.

Cost of service

- + Property managers and condo boards saw the cost per unit charged by the City for multi-unit waste collection as prohibitive.

Infrastructure concerns and challenges

- + Space is required for any additional bins and collection vehicles that are required for additional sorting.
- + Concern was raised by property managers and condominium owners over potential damage to private roads with additional trucks.
- + Parking spaces may have to be sacrificed for new bins, an idea that was not well-received.
- + If recycle bins were closer to units than garbage bins, recyclable material was frequently contaminated with garbage.
- + Property managers were sometimes reluctant to use bins on their property if they felt their placement was unattractive or resulted in odour complaints from units close to the bins.
- + Buildings and developments with high turnover had issues with dumping of furniture, barbecues, mattresses and other items, especially during moves. Disposing of these items creates significant costs for the property managers.

Food scraps separation challenges

- + Some property managers and developers see additional sorting of food scraps as plausible but challenging. They are concerned that introducing additional sorting requirements would not be successful because there are already low success rates and low participation in sorting garbage and recycling.
- + In non-market multi-unit residences, tenants and support staff have many obstacles to proper sorting, including other priorities, language barriers, cultural adjustments, financial issues, mental health issues, and medical issues.
- + In some complexes, food scraps container storage in units is seen as problematic. An additional container would take up space, which is already at a premium. This issue was predominantly raised in non-market multi-unit residences.
- + Some properties already have issues with pest management, including cockroaches, mice and other pests. There are concerns that keeping food scraps in units could exacerbate this problem.
- + Capital Region Housing offered a pilot program to teach tenants how to sort and recycle. They suggested the City partner with the social workers at their sites and run a test pilot now, well before new sorting changes are introduced.

NON-RESIDENTIAL (ICI) STAKEHOLDERS

Facilitated conversations covered several topics, although stakeholder discussions primarily focused on single-use plastics.

Participants understood the motivation behind developing a new long-term waste strategy and some have plans to introduce practices that are more environmentally friendly. However, their ability to do more is restricted by cost, capacity, space and in the case of some businesses (such as franchises), policies from headquarters not located in Edmonton.

The profit motive is the key driver to understanding or changing behaviour. For some, less waste or better separation equals fewer pickups which translates into lower costs. Conversely, for others, less source separation means lower labour costs at their sites (i.e., it all goes into one bin without paying the labour costs to separate it on site).

Most participants in the non-residential sector wanted to be kept informed, participate in future conversations and work together with the City on waste management changes and strategies.

Lawn and yard care companies

Businesses want to know well in advance where grass, leaf and yard waste will go. They sign multi-year maintenance contracts with property managers, condo boards, businesses and residents. Changes in drop-off requirements by the City (hauling to Eco Station versus leaving with owner) can change the cost of service significantly, which can affect the business.

- + Many companies leave grass, leaf and yard waste on site with the property owners for the City to haul. If they have to haul, they need a trailer, or they must make a separate trip for pickup.
- + Many mentioned that leaving grass on the lawn over the summer creates thatch, which increases the amount of cleanup required in the spring.
- + There was concern that reduced pickups in residential neighbourhoods will result in odours from grass and leaves left behind. There was also concern around companies' ability to complete scheduled maintenance in time for the two spring collection dates.

For commercial clients, grass, leaf and yard waste is typically put in a trailer. Lawn care companies said that Eco Stations are not set up to take trailers, should be open from 7 a.m. to 9 p.m. in the summer, should provide businesses with a pass to avoid lineups and should be located conveniently across the city.

- + Paper bags are considered less strong than plastic, are difficult to stack, can leak if wet, and are hard to tie or close.
- + Businesses feel that changes to grass, leaf and yard waste collection schedules will increase illegal dumping in ditches, ravines and the river valley.

Business and commercial associations

Discussions focused mainly on single-use plastics and packaging.

- + Most stores and restaurants want to reduce packaging and are considering moving towards using either recycled or recyclable packaging.
- + Significant increases in online shopping and takeout delivery businesses are increasing packaging requirements.
- + There is concern about additional costs associated with single-use plastic alternatives that could negatively affect businesses that have already been impacted by the economic downturn. Extra fees for coffee cups and plastic bags may help reduce their use in the first year, but may not be a long term solution and could harm businesses in a fragile economy.
- + Participants prefer voluntary measures over regulatory restrictions. For example, the single-use plastics ban in Vancouver allows businesses to design their own strategy for eliminating single-use plastics rather than being told what to do. Their method must show annual reductions in single-use plastic consumption.
- + Having a regional approach to regulation of plastics would create consistency, and also prevent customers from frequenting businesses in jurisdictions with fewer or no regulatory restrictions in place.
- + Reduction strategies with a phased approach are preferred over a sudden and complete elimination, to allow time to understand the effects of alternatives. For example, can bamboo straws or cardboard containers with grease be composted or recycled more easily than single-use plastics?
- + Associations are interested in working with the City to share effective examples of plastic restriction bylaws that consider how to handle specific items, like meat and pharmaceuticals.

Would these be a challenge for your business if you are asked to sort and reduce more of your waste in the future?	% Agree
Additional financial costs to set up, sort and remove waste	40% / 39%
Space to sort waste and/or store waste carts on-site	43% / 37%
Finding appropriate alternative materials that can be used	42% / 35%
Finding a company or business that will sort your mixed waste	36% / 34%
Staffing or time needed to sort and manage waste	35% / 33%
Finding/developing practices that focus on waste prevention and reuse	33% / 30%
Communicating with others about how to sort waste	38% / 29%
Lack of information about how to sort and manage waste***	29%
Process for food waste prevention, donation, and reuse	31% / 27%
Customer convenience and safety	35% / 25%
Personal/staff safety with sorting waste	34% / 23%

Survey results. See Appendix A for more details.

% Order: Non-residential Respondents / Mixed Topic

***Asked only of Mixed Topic respondents

Businesses

Many businesses struggle with non-recyclable packaging, such as Styrofoam, shrink wrap, plastic buckets and polymer plastic. They want the City to engage with the Government of Alberta to encourage Extended Producer Responsibility practices.

Some businesses send recyclable items to landfill because they would be charged an additional fee to recycle them.

Some businesses feel they are too large to affordably participate in City recycling programs, but too small to find a market for their own recyclables. They suggested the City become a 'clearing house' for these items, by collecting recyclable items from smaller businesses, so the collection and recycling process is economical.

Regarding single-use plastics:

- + Businesses cautioned the City not to "jump on the single-use plastics bandwagon" without conducting a business case and considering unintended consequences of restricting or eliminating their use.
- + Businesses suggested setting a minimum requirement for use of materials with post-consumer content. For example, all plastics used must be a minimum of 20 per cent post-consumer material. Incentivize manufacturing of products from post-consumer products. For example, in California, materials made of less post-consumer content cost more to purchase or use.
- + The money from single-use plastic fees should go into a sustainability fund, not into the store's general revenue.
- + Offer incentives to companies who help the City reach their zero waste goal.
- + Some more sustainable options are not cost competitive, and people often look for the cheapest price.

45%

Agree that the City should use its own authority to enact Extended Producer Responsibility rules

Survey results. See Appendix A for more details.

- + While some businesses in the food industry compost leftover food and/or donate leftovers, others are constrained by space and resources, and look to private haulers who promise to divert and recycle waste.
- + Businesses see a need for consistency and education with respect to sorting and recycling across the region as their customers are not all from Edmonton.
- + Keep signage simple and consider colour coding bins and carts across the region. Fancy graphics can be less effective in communicating a message than simple graphics and simple signs.
- + In some cases, forcing the issue (i.e., with more regulation and more enforcement) may be the only option to push some businesses to comply. At the same time, this pressure could encourage new businesses or technologies to emerge to provide innovative solutions for the business community.
- + For some, the private haulers have very restrictive (and expensive) terms including long-term contracts that are hard to break and very short option-to-renew periods. While most recognize that the City would have an unfair advantage in the waste hauling market, there was some sense that the additional competition could be good for the market overall.

Industry

Conversations focused on single-use plastics. While they recognized the waste that is created by these products, they also identified its contribution to the economy and employment in the city and the region.

- + Participants said that alternatives to single-use plastics can, in some cases, create hardship for those who have lower incomes, and can sometimes have a larger environmental footprint than the product they are replacing.
- + There is interest in working with the City and other jurisdictions to find solutions for plastic waste.
- + Participants believe mechanical recycling does not work because of cross contamination and the inferior products produced by using recycled materials.
- + There are many markets for recycled plastics, including single-use. Many examples of plastic recycling market opportunities were cited.
- + Participants advised exercising caution regarding eliminating the use of single-use plastics, due to "unintended consequences" that they had witnessed in other regions.
- + They suggest that manufacturers grade the quality of plastics and develop "end of life cycle" strategies to better deal with products.
- + Participants propose investing in a gasifier pyrolysis system for recycling, which can produce food quality plastic. In addition to single-use plastic waste produced by residents, they see an opportunity for clean feedstock from the single-use plastics generated by industry, including polymer plastic and Styrofoam.

Institutions

- + The biggest barrier to waste sorting is space. Efforts have been made to establish space in newer facilities but this is difficult in older facilities. Older facilities must pay additional fees for more frequent waste collection.
- + These waste programs cost money in processing, management, containers, receptacles, vendors and space. This takes away from the other services that institutions are expected and legislated to provide.
- + Rolling out the changes in phases would be helpful. In Calgary, one newer site was used as a test site. Food scraps were separated and converted to compost for staff for their gardens. This turned a new rule (separating food scraps) into a positive tangible outcome (compost for gardens).

"Our organizations would require some exemptions similar to those in Vancouver with respect to single-use plastics or restrictions."

Not-for-profit organizations

These organizations play an important role in managing waste, and figure prominently in reuse and recycling. Several programs exist—or could exist—that would allow not-for-profits to increase their capacity and divert greater amounts of waste from the landfill.

The focus for the not-for-profit sector conversations included:

- + *Quick wins*: Immediate actions that the City could implement to support not-for-profits who are committed to doing more to reduce and reuse waste.
- + *Direct assistance*: areas where the City would need to be more involved with not-for-profits to support their waste reduction efforts.
- + *Innovation*: opportunities for social enterprise and creation of new markets and investments.

Examples of Direct Assistance:

- + The City could provide support in the form of seasonal educational campaigns (around Christmas or at the end of the school year) to encourage people to reduce waste, by reusing and donating used items. The City could partner with schools and school boards to facilitate recycling and collecting school supply donations. In this way, the City could help “make it easy” to reuse and recycle.
- + Share City data with not-for-profits, such as how much the City is spending or is willing to spend to deal with dumped and damaged items. Some organizations could use this to develop a business plan to get funding to help support the City’s waste diversion efforts through their operations or projects.
- + Funding support to not-for-profits would help increase diversion rates.

Examples of Innovation:

- + Could the City provide additional support or programs to community leagues for their current and future initiatives? For example, one league organizes pickups from the elderly to bring large items to Big Bin Events.
- + Work with not-for-profits to find solutions for hard-to-repurpose or recycle items. For example, could the Waste to Biofuels Facility take old encyclopedias?
- + Are there other markets for recyclable materials that haven't been explored yet?

Waste services employees

In the survey for Waste Services employees, staff described the following challenges with a cart-based system:

- + Accessibility to stage and pick up carts;
- + Compliance issues such as carts being overfilled;
- + Continued use of bags; and
- + Expectation of a fee reduction for residents using a smaller cart.

Staff preferred that residents use a 240L blue cart for recyclables instead of bags. They also recommended allowing year-round topping up of green carts with grass clippings and yard waste.

Challenges Perceived by Waste Services Staff with Having Cart Waste Collection

- + Accessibility to stage/pick up carts (flat surface, vehicles, etc.)
- + Carts overfilled/bags left beside cart
- + Those using a small cart will want a rebate or fee adjustment

Recycling

- 59%** Would prefer residents to use a 240L blue cart for collecting recyclables in the future
- 51%** Have operational concerns with using blue carts
- 62%** Do not feel there are any reasons why we should continue to use blue bags for recyclables

Grass, Leaf, and Yard Waste (GLY)

- 50%** Like topping up green carts with GLY waste year round
- 34%** Like the seasonal collection of GLY waste, with 2 pickups in the spring and 2 pickups in the fall
- 30%** Are concerned about having waste in both carts and bags at the same time

Large Paper Yard Waste Bags

- 23%** Like collecting GLY waste in large paper bags
- 54%** Have no specific concerns regarding the proposed changes for GLY waste collections

City of Edmonton employees

Facilitators and note takers were not used at the two drop-in sessions for City staff. Comments were gathered from sticky notes attached to the storyboards. Many comments at the sessions mirrored those collected at the public drop-in sessions.

The following highlight unique comments generated by participants.

Single-use plastics:

- + Require that single-use items be made of biodegradable materials.
- + Add requirements regarding single-use plastics for all mobile food vendors before they can be approved for events.
- + Most swimming pool chemicals are in single-use containers. The City would need to work with suppliers to create options.
- + Provide penalties and incentives such as reducing taxes if restaurants use eco-friendly products and tax heavily if they don't.

Waste set-outs and food scraps collection:

- + Start food scraps collection in Edmonton Tower.
- + Use liners in food scraps containers to keep contents contained and off the roads.

Preferences for proposed changes:

- + Eliminate or restrict single-use plastics.
- + The 120L black garbage cart was preferred over the 240L size.
- + Blue cart preferred over blue bags.

Some ideas for zero waste:

- + Bylaw to enforce less packaging from manufacturers.
- + Make leaving grass clippings on lawns mandatory. Provide more information on improving the health of your lawn with grass clippings.
- + The City needs more Reuse Centres. Set up pop-up reuse drop-off locations on weekends at parks, parking lots, and community leagues.
- + Create a leftover program for schools instead of throwing out unwanted food. Package up food in reusable containers and give it to students to take home.

Drop-off locations:

- + Should offer disposal of sharps and needles, small furniture and textiles that can't be donated.
- + Should be free or lower fees, including free for City areas to use.
- + Needs to be a one-stop shop, versus multiple locations for different types, and open 7 days a week. Extended hours in the spring and summer.
- + Ideal locations include Fleet service yards, recreation centres, libraries, community league halls, LRT stations, malls and farmers' markets.

Other comments and concerns:

- + Workplace incentives:
 - + Encourage/provide incentives to use reusable containers and cups at work.
- + Unclear which plastic is recyclable, and which is not.
- + Some companies offer recycling of office materials like batteries, pens, etc.
- + Workplace waste bins:
 - + Each office/cubicle waste bin should not be lined with a plastic bag.
 - + Waste bins should just be emptied into a single large trash bag.
 - + How to deal with current garbage can areas that would not meet the container requirements?
- + How does the collection of food scraps occur at City facilities that have waste contracts with private companies?
- + Consider working with neighbouring municipalities on collection and/or processing of waste to improve economies of scale.
- + Reduced pickups and restricted volume will result in more dumping in transit trash (transit trash is different from waste trash).
 - + Who pays for clean up – transit or waste?
- + Road maintenance will be higher with more trucks collecting.

NEXT STEPS

NEXT STEPS

HOW INPUT FROM PHASE 1 AND 2 IS BEING USED TO INFORM DECISIONS

The information and input from both phases of public engagement will be used:

- + To develop Edmonton's new 25-year waste strategy, which will be presented to Utility Committee and City Council in 2019.
- + To inform and provide direction on how Waste Services continues to work with the multi-unit and non-residential stakeholders in developing proposed recommendations and program changes for these sectors.
- + In conjunction with results and feedback from residents participating in Edmonton's initial cart rollout. Input will help refine Waste Services' recommendations for a city-wide cart rollout, along with changes to grass, leaf and yard waste collection for residents. These recommendations will be presented to Utility Committee and City Council.

Approval from City Council is required before any changes to waste programs and services can be implemented.

A comprehensive What We Heard report with full results from phases 1 and 2 of public engagement will be made publicly available later in 2019.

APPENDICES

APPENDIX A

SURVEY REPORT (LEGER)

Report

City of Edmonton

Waste Services
Public Engagement Phase 2
Draft Survey Report



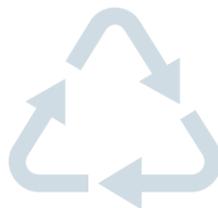
DATE 2019-05-15

Leger

We know Canadians

RESIDENTIAL RESPONDENTS

RECYCLING

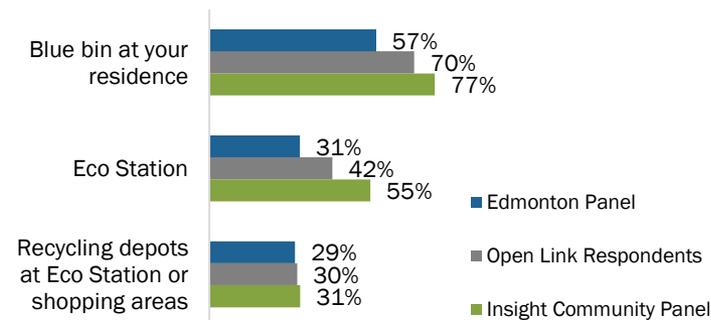


55% / 67% / 60%

would prefer to switch to a 240L blue cart for collecting recyclables in the future



Disposed of recyclables at...*



79% / 77% / 85%

have a dedicated cart or place for recycling*

% Order: Edmonton Panel Members / Open Link Respondents / Insight Community Panel

Base: Survey respondents who take their waste to the front street or back alley for pick-up by the City (EP, n=723; OL, n=5,656; ICP, n=1,712)

*Base: Survey respondents who place household waste in a large, shared bin or use a garbage chute that is shared with other residents (EP, n=263; OL, n=1,038-1,049; ICP n= 363)

CART SYSTEM

Percentage of single-unit respondents who would prefer a specific size of cart for garbage...

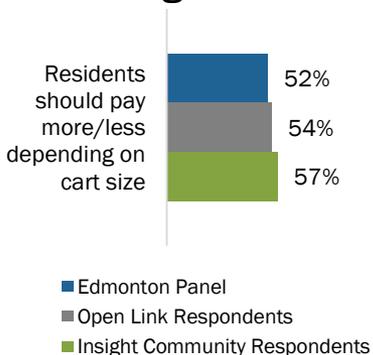


44% / 50% / 43%



41% / 41% / 47%

Pricing Structure



61% / 58% / 58%

Think a **difference** in monthly rate between the two cart sizes would be reasonable.

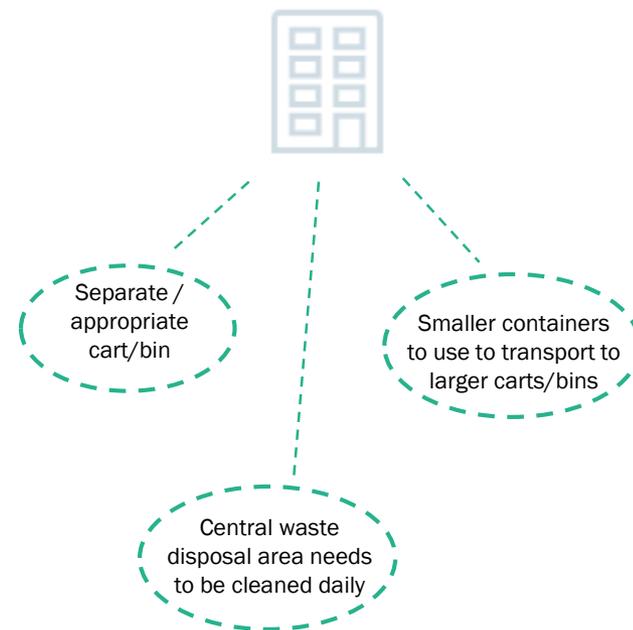
28% / 20% / 19%

Think a **\$2 to \$5 change** in the monthly rate would be reasonable for the difference in cart size

36% / 39% / 48%

Would be **unlikely*** to use a larger cart size if it costs more

Multi-unit respondents would like to see the following in their building to help ensure all residents can participate in sorting their food scraps...



% Order: Edmonton Panel / Open Link Respondents / Insight Community Panel

Base: Survey respondents who take their waste to the front street or back alley for pick-up by the City (EP, n=723; OL, n=5,645-5,653; ICP, n= 1,712)

*Unlikely = sum of 1,2,3 ratings

GRASS CLIPPINGS AND YARD WASTE COLLECTION



57% / 71% / 73%

Are responsible for disposal of any grass clippings, leaf and/or yard waste



52% / 58% / 58%

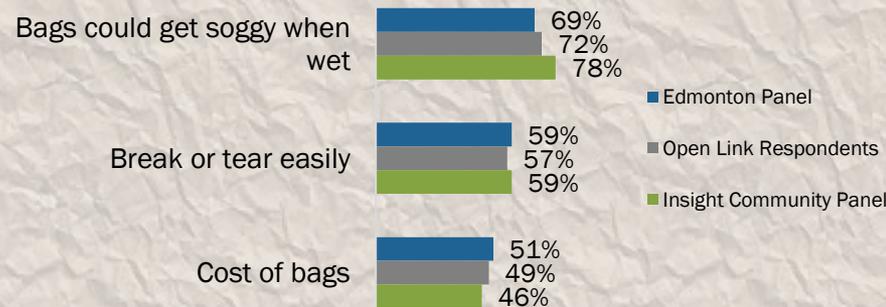
Agree that 2 collection days in the spring and 2 collection days in the fall for yard waste pick up, as well as being able to top up their green carts, are sufficient to meet their needs*

LARGE PAPER YARD WASTE BAGS

62% / 66% / 66%

Are willing to use large paper yard waste bags for disposing of yard waste, instead of plastic bags **

Concerns**



% Order: Edmonton Panel Members / Open Link Respondents / Insight Community Panel

Base: Survey respondents (EP, n=1,000; OL, n=6,755; ICP, n=2,096)

*Base: Survey respondents responsible for grass clippings and yard waste (EP, n=566; OL, n=4,815; ICP, n=1,521)

**Base: Respondents responsible for disposal of grass clippings and yard waste, and need grass and yard waste collection (EP, n=497; OL, n=4,572-4578; ICP, n=1,434)

SINGLE-USE PLASTICS

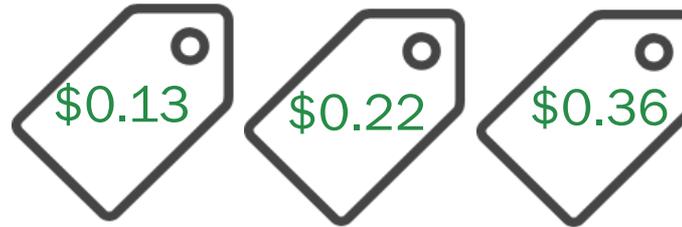
Items for Elimination/Restriction...

	Eliminate Use	Restrict Use (but no extra fee/charge)
Plastic straws	✓	
Plastic grocery bags	✓	
Styrofoam	✓	
Plastic or foam disposable cups	✓	
Disposable utensils**	OL only ✓	EP/ICP only ✓
Takeout containers**		✓

Per-use Fee for Disposable Items

47% / 48% / 60% of respondents think that consumers **should be charged at least \$0.01** per-use fee for disposable items.

Respondents feel there should be a charge of... (on average)



What items should be permitted or considered exempt from a restriction or elimination? →

- × Medical waste, diapers, sanitary products
- × Plastic straws
- × Plastic bags

Why?

- Medical and disability concerns
- Cost to consumers
- Item such as plastic bags can be reused, not necessarily single-use

Minimum Cost for Reusable Bags...



Agree* that there should be a minimum cost for reusable bags

% Order and \$ order : Edmonton Panel Members / Open Link Respondents / Insight Community Panel
 Base: Survey respondents (EP, n=1,000; OL, n=6,773-6,755; ICP, n=2,096)

*Agree = sum of 8,9,10 ratings

**ICP also indicated that this item should not be restricted but charge customers and extra charge/fee for use

DROP-OFF LOCATIONS



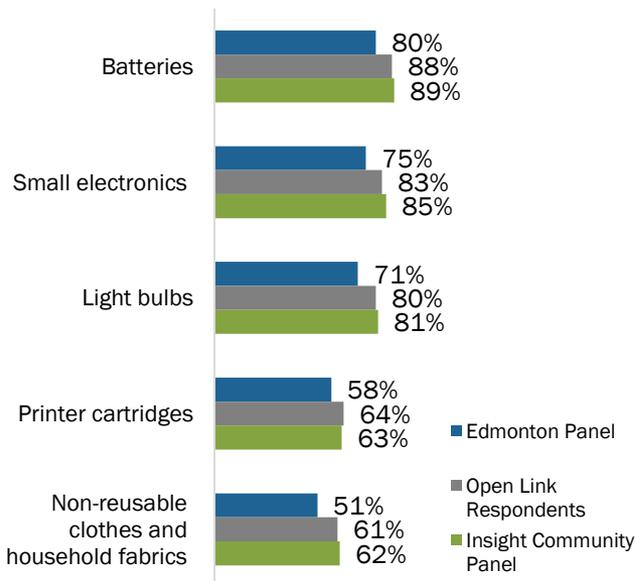
57% / 73% / 80%

of single-unit respondents **have brought items for disposal** to an Eco Station within the past 12 months*

COMMUNITY DROP-OFF AREA PREFERENCES

ECO-STATION PREFERENCES

Items for Drop-Off



Location



55% / 63% / 57%

Grocery Stores



51% / 54% / 57%

Shopping Malls and Retail Centres

Hours of Operation

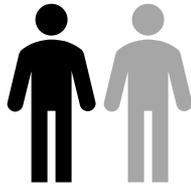
	Afternoon	Evening
Monday		✓
Tuesday		✓
Wednesday		✓
Thursday		✓
Friday		✓
Saturday	✓	
Sunday	✓	

“The City can have **more / accessible locations** to increase access to drop-off locations for those without vehicles.”

% Order: Edmonton Panel Members / Open Link Respondents / Insight Community Panel
 Base: Survey respondents (EP, n=1,000; OL, n=6,755; ICP, n=2,096)

*Base: Survey respondents who take their waste to the front street or back alley for pick-up by the City (EP, n=723; OL, n=5,645; ICP, n=1,712)

ZERO WASTE

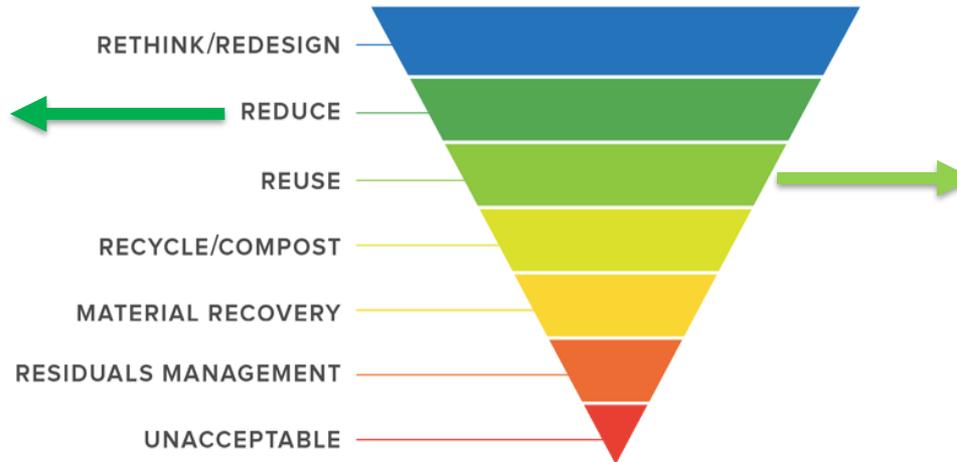


Over half (54% / 59% / 56%) of Edmontonians **agree*** that given the proposed ideas to support waste reduction and reuse, they would **support** the zero waste goal

The City should further explore...

- ✓ Supporting, advocating for **purchasing sustainable items**
- ✓ **Working with businesses** to support waste reduction efforts
- ✓ Supporting, advocating for **making producers more responsible** for their packaging and disposal of their products
- ✓ Developing **food waste prevention programs**

ZERO WASTE HIERARCHY



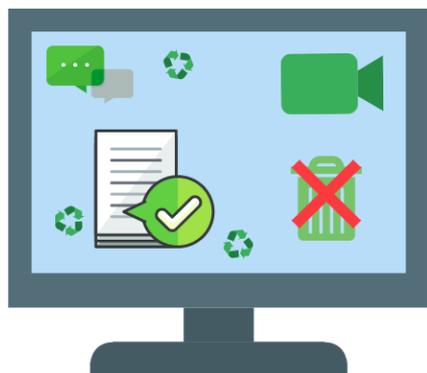
The City should further explore...

- ✓ Establishing **additional Reuse Centre(s)**
- ✓ Food recovery programs for **commercial sector**
- ✓ Support for **item donation organizations and programs**

Source: Zero Waste Canada 2018

EDUCATION AND COMMUNICATION

Educational Resources



58% / 68% / 69%

Would like **online courses and information** (videos, documents) made available

Education is identified as the main idea or suggestion on how to get people on board and ensure compliance.

Preferred Communication Channels for Updates and Progress



63% / 65% / 64%

News / TV Media

www.edmonton.ca

57% / 65% / 65%

City Website

Ambassador-Type Program**



43% / 42% / 44%

Are on the fence* that this type of program would be positively received by the other residents and the property manager in their building

% Order: Edmonton Panel Members / Open Link Respondents / Insight Community Panel

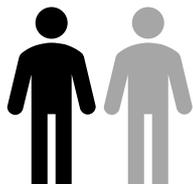
Base: Survey respondents (EP, n=1,000; OL, n=6,755; ICP, n=2,096)

*Are on the fence = sum of 4,5,6,7 ratings

**Base: Survey respondents who place household waste in a large, shared bin or use a garbage chute that is shared with other residents (EP n=263, OL n=1,038; ICP, n=363)

NON-RESIDENTIAL RESPONDENTS

ZERO WASTE



61% / 49% of survey respondents agree* a zero waste goal is something that Edmonton business should support



76% / 64% of survey respondents think that business and industry should have the same target to divert 90% of their waste because:

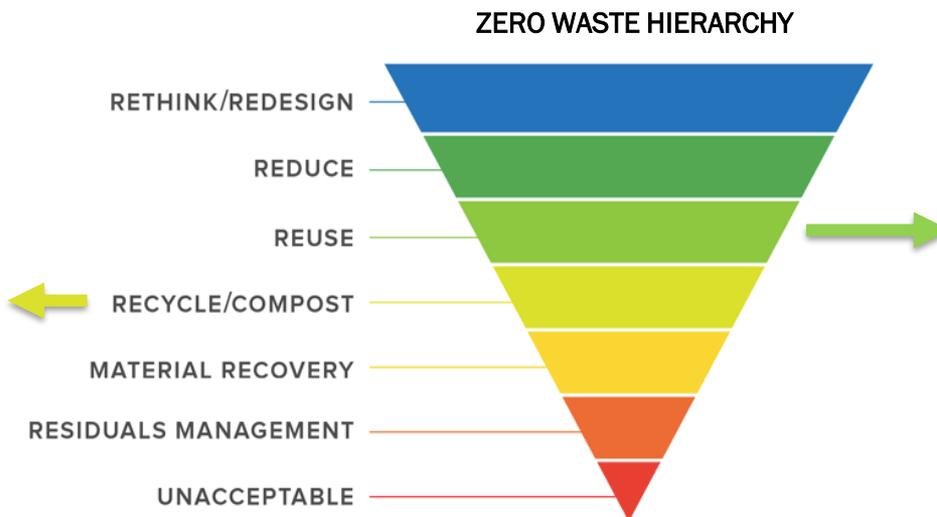


Nearly half (49%) of non-residential respondents think it will take 1 year or less for their organization to reach the 90% diversion target**

- ✓ It's good for the environment
- ✓ We all need to do our part

Support/agree* businesses being required to...

- ✓ Separate **compostable food waste** (51% / 53%)
- ✓ Separate **recyclable materials** (75% / 69%)



- ✓ Agree* would be interested in working with other organizations to **support the reuse of materials and reduction of waste** (52% / 48%)
- ✓ Agree* businesses that serve/sell food should be **responsible for preventing wasted food and donating** (74% / 63%)

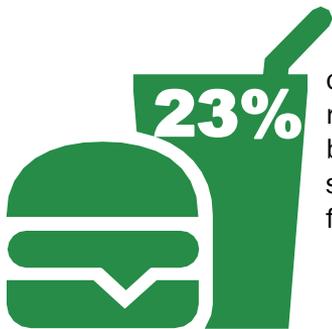
Source: Zero Waste Canada 2018

% Order: Non-residential Respondents / Mixed Topic
 Base: Survey respondents (NR, n=501; MT, n=179)
 *Support/Agree = sum of 8,9,10 ratings
 ** Non-residential respondents only

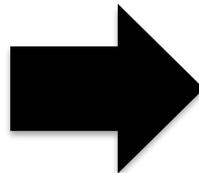
SINGLE-USE PLASTICS

Items for Elimination/Restriction...

	Eliminate Use	Restrict Use (but no extra fee/charge)	Do Not Restrict Use (but charge)	No Restriction
Plastic straws	✓			
Plastic grocery bags	✓			
Styrofoam	✓			
Plastic or foam disposable cups	✓			
Disposable utensils	MT only ✓	I only ✓		
Takeout containers**			MT only ✓	MT only ✓



23% of non-residential respondent businesses sell or serve any kind of food***



Support and infrastructure needed to be less reliant on disposable items...*/***

- ✓ *Would use biodegradable products*
- ✓ *Affordable substitutions*
- ✓ *Support in cost (subsidies)*
- ✓ *Access to alternative items*

(19% indicate don't know/refused; 17% indicate not applicable to business/do not use disposable items)

Base: Survey respondents (NR, n=501; MT, n=179)

*Base: Survey respondents with a food service business (NR, n=116)

**Not asked of Non-residential respondents

*** Not asked of Mixed Topic Respondents

CHALLENGES WITH SORTING WASTE AND CURRENT WASTE



Challenges With Sorting Waste	% Agree*
Additional financial costs to set up, sort and remove waste	40% / 39%
Space to sort waste and/or store waste carts on-site	43% / 37%
Finding appropriate alternative materials that can be used	42% / 35%
Finding a company or business that will sort your mixed waste	36% / 34%
Staffing or time needed to sort and manage waste	35% / 33%
Finding/developing practices that focus on waste prevention and reuse	33% / 30%
Communicating with others about how to sort waste	38% / 29%
Lack of information about how to sort and manage waste***	29%
Process for food waste prevention, donation, and reuse	31% / 27%
Customer convenience and safety	35% / 25%
Personal/staff safety with sorting waste	34% / 23%

Current Waste**



36% of non-residential respondents estimate that **1-5%** of their organizations **current waste that is compostable is**

53% of non-residential respondents

indicate there are **no other challenges** their organization may face regarding sorting and reducing their waste. Among those who did provide a challenge...

\$ cost was the top mention

% Order: Non-residential Respondents / Mixed Topic
 Base: Survey respondents (NR, n=501; MT, n=179)

*Agree = sum of 8,9,10 ratings

Asked only of Non-residential respondents *Asked only of Mixed Topic respondents

EDMONTON BUSINESSES WANT THE CITY TO SUPPORT CHANGES BY...



Importance of Support* from the City

Importance* of Education Information from the City**

- ✓ Guidelines about proper sorting, storage, and disposal of different types of waste properly (74%)
- ✓ Information about alternatives to using single-use plastics (69%)
- ✓ Consistent signage and templates for staff and visitors that can be used by multiple organizations (65%)
- ✓ Example plans or templates to help you set up your own waste sorting station on-site (64%)
- ✓ Information about why sorting and reducing waste is important (63%)
- ✓ Reporting on Edmonton's progress in achieving waste diversion goals (60%)

% Order: Non-residential Respondents / Mixed Topic

Base: Survey respondents (NR, n=501; MT, n=179)

**Support/Important = sum of 8,9,10 ratings*

***Asked only of Non-residential respondents*

EXTENDED PRODUCER RESPONSIBILITY

45% Agree* that the City should use its own authority to enact extended producer responsibility rules**

Importance* of City Involvement

69% / 60%

Advocate and promote take-back programs where material is collected and returned to producers

73% / 54%

Involvement in programs that provide incentives for reducing waste

67% / 52%

Advocate for legislation that will ensure consistency in waste management practices across all municipalities in the Capital Region

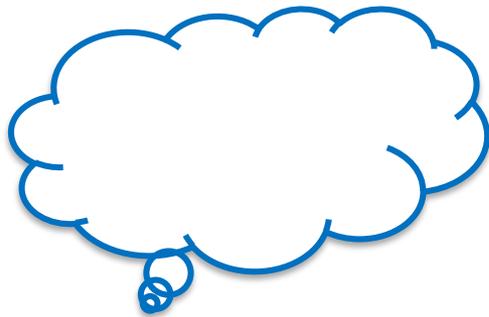
69% / 49%

Advocate for legislation and bylaws that will ensure consistency in waste management practices across Edmonton

Agreement* with City Initiatives**

- ✓ Private sector operators should be able to access the City's waste processing facilities in order to ensure waste that is sorted can be properly processed (73%)
- ✓ The City should provide waste services only in cases where there are not enough private companies or facilities to provide a sufficient level of service for all of Edmonton (42%)
- ✓ The City should provide waste services to organizations, even though private companies may also provide similar services (45%)
- ✓ There are plenty of private collectors, the City doesn't need to compete with the private sector (36%)
- ✓ The City should only provide waste services that are not provided by any private companies (36%)

ADDITIONAL RESOURCES



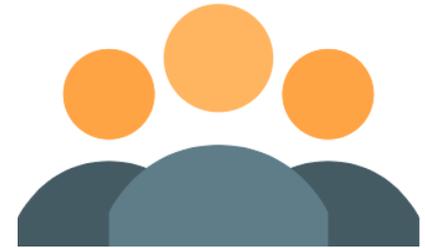
62%

of respondents require **no additional** resources from the City to keep as much waste as possible out of the landfill



23%

of respondents would like the City to consider a **tax incentive/break/credit** as an incentive for keeping as much waste as possible out of the landfill



22%

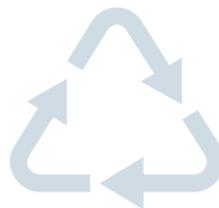
of respondents would be interested in being **considered for an advisory committee**

WASTE SERVICES STAFF

CHALLENGES WITH HAVING CART WASTE COLLECTION



RECYCLING



59%

would prefer residents to use a 240L blue cart for collecting recyclables in the future

51%

have operational concerns with using blue carts

- ✓ Contaminated bins
- ✓ Lack of knowledge of what goes where (proper sorting)
- ✓ Space/storage for carts

62%

do not feel there are any reasons why we should continue to use blue bags for recyclables

GLY WASTE COLLECTION



50%

Like* topping up green carts with GLY waste year round



34%

Like* the seasonal collection of GLY waste, with 2 pick ups in the spring and 2 pick ups in the fall



30%

Are concerned* about having waste in both carts and bags at the same time

Other Concerns

- ✓ Not enough collections
- ✓ Bag storage
- ✓ Bags could get soggy when wet

LARGE PAPER YARD WASTE BAGS

23%

Like* collecting GLY waste in large paper bags

54%

Have no specific concerns regarding the proposed changes for GLY waste collections

APPENDIX B

SINGLE-USE PLASTICS SUMMARY

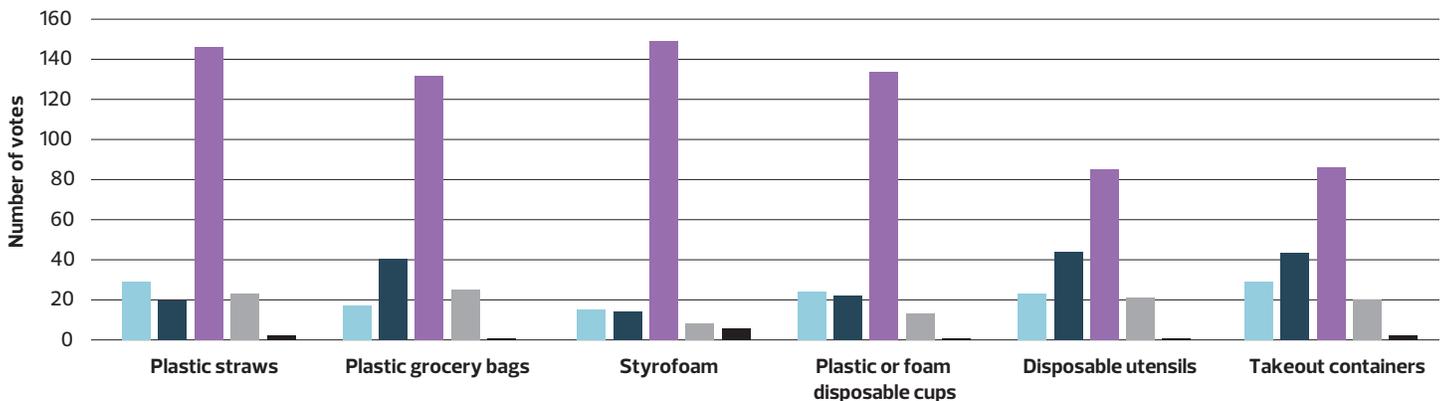
Overview

Most stakeholders and the public participating in Future of Waste public engagement conversations are aware of single-use plastics and their effects on the environment. Some of their knowledge comes from other jurisdictions, social media, and/or other media. A recent episode of CBC's Marketplace was often discussed at public drop-in sessions. Although many would applaud the City if it eliminated single-use plastics, others would see it as a reactionary response that failed to consider the bigger picture and other alternatives and potential opportunities.

Overall, stakeholders and the public who participated in the online survey and public drop-in sessions consistently showed interest and significant support

for the City to restrict or eliminate single-use plastics. Facilitated conversations with organizations such as Edmonton Public School Board and the City of Edmonton's Environmental Advisory Committee strongly favoured eliminating all plastics. Other facilitated conversations identified opportunities for the City to play the role of a "clearing house" for single-use plastics, potentially at the regional level, to gather single-use plastics from multiple jurisdictions and businesses for sale to recycling markets and as feedstock for other processes. Participants in facilitated conversations cautioned the City to undertake a careful analysis and beware of unintended consequences of eliminating plastics. They identified several models from around the world that provided an economic return on single-use plastics.

For these 6 different items, how would you prefer to see the City deal with them?



Public drop-in results (n = 1,175)
Non-weighted, self selected data

- Restrict their use, but no extra charge/fee
- Do not restrict their use, but do charge customers an extra charge/fee for use
- Eliminate their use
- No restriction (no extra charge/fee)
- Don't know

How should the City of Edmonton deal with single-use plastics?

Plastic straws	● *****	■	■
Plastic grocery bags	● *****	■	■
Styrofoam	● *****	■	■
Plastic or foam disposable cups	● *****	■	■
Disposable utensils	● **	● ****	● **
Takeout containers	● *****	● *****	● **

Survey results. See Appendix A for more details.

* Edmonton Panel

**Open Link Respondents

***Insight Community Panel

Survey Results and Comments

Most survey respondents, both residential and non-residential, support the restriction or elimination of single-use plastics.

There is a near-majority that support the elimination of:

- + Styrofoam
- + Plastic or disposable cups

A further number of respondents support restrictions.

There is significant support for the elimination of:

- + Straws
- + Plastic grocery bags
- + Disposable utensils
- + Takeout containers

A further number of respondents support restrictions on these items.

Given how frequently plastic bags were raised in conversations at public drop-in sessions and facilitated meetings, the survey results showed that plastic bags were not the most favoured single-use plastic to restrict or eliminate. Based on feedback from drop-in sessions, this may be because many people reuse them instead of buying new plastic bags.

ELIMINATE THEIR USE

	Residential	Non-residential
Plastic straws	37%/48%/44%	45%/50%
Plastic grocery bags	31%/45%/36%	39%/41%
Styrofoam	45%/59%/56%	42%/55%
Plastic or foam disposable cups	43%/51%/49%	42%/58%
Disposable utensils	22%/31%/24%	27%/28%
Takeout containers	15%/23%/17%	20%*

Residential: Edmonton Panel/Open Link/Insight Community Panel

Non-residential: Phone surveys/ Mixed Topic

* Not asked of phone survey respondents

RESTRICT THEIR USE, BUT NO EXTRA CHARGE/FEE

	Residential	Non-residential
Plastic straws	30%/25%/26%	26%/23%
Plastic grocery bags	21%/16%/15%	22%/13%
Styrofoam	22%/18%/17%	30%/19%
Plastic or foam disposable cups	23%/20%/19%	29%/16%
Disposable utensils	29%/26%/26%	28%/23%
Takeout containers	32%/28%/27%	24%*

Residential: Edmonton Panel/Open Link/Insight Community Panel

Non-residential: Phone surveys/ Mixed Topic

* Not asked of phone survey respondents

Public Drop-In Session Input and Comments

SUPPORT FOR ELIMINATION

Voting at sessions showed that there is significant support for the restriction or elimination of single-use plastics among participants at the public drop-in sessions. However, the choices were made on an open voting station board at public sessions so the results should be interpreted carefully. It is possible that some votes may have been influenced by previous votes or marks on the board. Some residents wanted stronger incentives to reduce their consumption of single-use plastics and said a 5-cent fee at grocery stores was not a deterrent to using plastic bags. Others felt that the 5-cent fee should be allocated to sustainability programs. Some supported the idea of the City working with smaller businesses to help eliminate single-use plastics, such as disposable cups and utensils. Many stakeholders wanted the City to also consider programs such as provided by the Extended Producer Responsibility and eliminate the plastic found in packaging.

THOSE WHO DID NOT SUPPORT

During conversations, some residents said they do not want to eliminate plastic bags from grocery stores because they reuse those bags and were concerned that their elimination would require them to purchase plastic bags for other uses (e.g., garbage, or picking up dog poop). Some residents liked the durable takeout containers that could be reused, referring frequently to those used by Boston Pizza. Some were reluctant to support the elimination of single-use plastics like straws because some people with disabilities need straws for drinking and feeding.

QUESTIONS

Many participants questioned whether the City was concerned over the energy to produce single-use plastics or the environmental footprint of plastics that end up in landfill and asked how the City would eliminate single-use plastics.

Facilitated Meetings and Workshop Input and Comments

Overall, industry is interested in reducing or eliminating single-use plastics that end up in landfill. At facilitated meetings, participants asked questions about what impact eliminating single-use plastics would have on the regional/local economy and jobs. There was discussion about the life cycle of plastic, and if the industry could buy and reuse single-use plastic for feedstock. Industry is interested in meeting with the City to discuss how they can collaborate to minimize single-use plastics going to landfill.

The key themes below emerged from facilitated meetings and workshops.

INNOVATION

Innovation is essential and attracts business and employment. Recycling and repurposing single-use plastics create job opportunities and investment in Edmonton. For example, Goodwill is collecting some single-use plastics in Edmonton. Extra fees charged from the use of plastic items should go into a sustainability fund, not into a store's general revenue.

HEALTH SERVICES

Institutions dealing with health services are keenly interested in reducing single-use plastics; however, they must do so in a way that preserves sterilization and minimizes the risk of contamination for patients and the public. Health service organizations do not want to eliminate plastic straws that are needed by patients. Waste haulers will not recycle anything that may have been in contact with bodily fluids as it is considered biohazardous material.

REGIONAL APPROACH

There is a lot of confusion among residents and businesses about what plastics can be recycled, given that each municipality, even though adjacent to Edmonton, has different sorting rules. Participants expressed interest in all municipalities across the province working together to create consistent guidelines. There is an opportunity for the City to lead a regional model for recycling and waste management that would provide this consistency. The economic benefits of markets for recycled products could be better attained at the regional level by gathering larger quantities of materials for sale.

UNINTENDED CONSEQUENCES AND LIFE CYCLE OF PLASTICS

Some participants recommended having honest conversations around elimination of single-use plastics. The City was cautioned to be careful about eliminating single-use plastics and to consider potential repercussions. Comments around the market for single-use plastics included:

- + Single-use plastic materials may be used and needed as feedstock in several industries.
- + The market is cyclical. The City should establish processes that can drive the market or be responsive to the market.
- + The City should invest in technology that will recycle and reuse plastic materials. Respondents indicated that they believe there are excellent examples of profitable markets and models in China, Europe and Australia.
- + Begin with the end in mind. If the intent is to make landfills obsolete in 100 years, start there and work backward. If the City cares about Zero Waste, focus on waste diversion and invest in solutions to make this happen. Some municipalities are focusing on this goal.
- + Look at the bigger picture. Consider Extended Producer Responsibility.
- + The City should conduct end-of-life and life cycle analyses as part of the strategy.

ROLE OF THE CITY

The following suggestions were made that would involve the City taking a leadership role either within the city limits or within the region:

- + Many participants are interested in having the City act as a resource for knowledge, leadership and networking in all areas of waste management, particularly market information about single-use plastics.
- + Some businesses have attempted to reduce and recycle but have found that the volumes of single-use plastics they generate are too small to collect, bale and sell to market, and are too big to participate in the City services without incurring a cost. They suggest the City become a "clearing house" for single-use plastics generated by business and industry. The City could collect or coordinate the collection of excess plastic such as the large plastic sheets that cover floors in display halls, plastics in food packaging and those used to cover pallets, bread bag ties and plastic pails similar to those sold at hardware stores. Instead of going to landfill, they could see the City collecting or coordinating the collection of these items and either selling, distributing or reusing them. They think that City involvement as a clearing house would generate the necessary economies of scale required for these items to be bundled or baled and sold.
- + Offer incentives to companies who help the City reach their Zero Waste goal.

IDENTIFYING PLASTICS

Some participants in the industrial, commercial and institutional (ICI) sectors suggested separating different types of recyclable materials at the source would help increase the market value of recycled items. Others recommended that manufacturers grade and label plastics. The grading and labeling of plastics would assist Materials Recovery Facilities in sorting and recycling. The more difficult the plastic is to recycle, the more it costs.

- + Require materials to contain a minimum amount of recycled material. For example, all plastics must contain 20 per cent post-consumer content, or a certain percentage of the material must be able to be recycled. This could be scalable, so that the higher the recyclable material content, the lower the cost of the product. California has a similar policy.
- + Eliminating mixed materials would be better than eliminating single-use plastics. Products made from mixed materials are harder to recycle, contaminate recyclable materials and decrease overall values of recyclable materials being sold.
- + Invest in or provide incentives to manufacture products from recyclable plastics.

Instead of eliminating single-use plastics, introduce a bylaw that requires producers to identify what products are made of and what grade they are (for customers and for recovery facilities). Customers could then make informed decisions.

Participants felt that the big focus needs to be reducing as much as you can.

CONFLICTING POLICIES

Food producers and food service businesses have innovative ideas on reducing plastics in their industry, but are bound by Alberta Health Services' policies and procedures, and continue to use plastics for sanitary reasons.

QUESTIONS POSED BY NON-RESIDENTIAL STAKEHOLDERS

- + Is the City just jumping on the bandwagon without sufficient analysis?
- + What is the point in elimination or restriction? What is the market demand?
- + What is the City's role within industry? The City must have an all-encompassing policy related to what drives recycling, describing the purpose and the market for recycling in Edmonton.
- + Which items can be recycled?
- + What happens at the end of a product's useful life?
- + What is happening with single-use plastics around the world?
- + Where are innovation and opportunities happening?
- + What are the long-term unintended consequences of eliminating single-use plastics?
- + Can industry use single-use plastics for feedstock?



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Waste Transition Plan

Recommendation

That the August 29, 2019, City Operations report CR_7172, be received for information.

Executive Summary

Waste Services is progressing toward a more environmentally sustainable future that provides Edmontonians with maximum economic and environmental benefits while ensuring rates remain stable and consistent. With a focus on waste reduction, Administration's priorities and initiatives are directed towards programs and services that support the minimization of materials ending up in landfills.

Key focus areas for 2020 to 2022 include:

1. Waste Diversion and Reduction Programs;
2. Citizen and Community Support;
3. Interim Organics Management;
4. Environmental Stewardship;
5. Build Business Maturity; and
6. Fiscal Accountability.

Aligned to the broader 25-year Waste Strategy (August 29, 2019, CR_5829), efforts within these key focus areas will result in positive short and long-term impacts that support the journey toward a healthier city, with vibrant urban places across a broader regional backdrop and increasing climate resilience.

Report

Overview

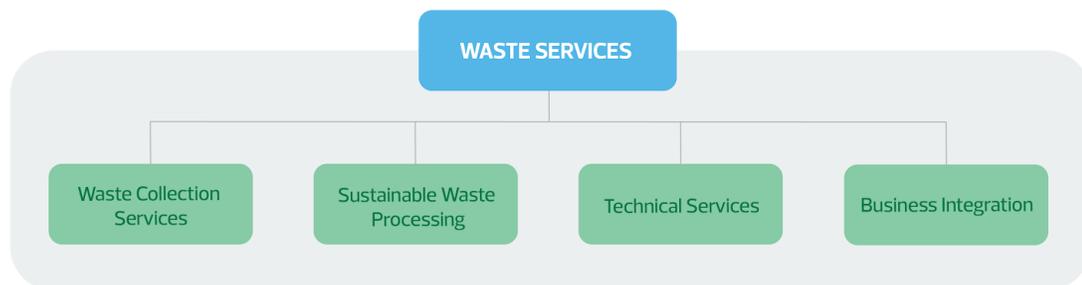
Waste Services' vision to be a customer-driven proponent of sustainable and innovative waste management, will continue to be a focus during this business planning period. The implementation of major program changes will be aligned to Waste Services' mission: to provide waste management services for the City of Edmonton, taking into consideration the needs of residents, the preservation of natural resources, the protection of the environment and the financial capabilities of the City.

Alignment with the vision and mission begins with the organizational structure of the Branch. Waste Services consists of four sections, each strategically aligned to

achieve these goals.

- Waste Collection Services responds to the needs of customers through efficient and effective waste collection and drop-off services.
- Sustainable Waste Processing operates the Edmonton Waste Management Centre with a focus on receiving and sorting residential waste in an effort to recover valuable resources and minimize the amount of waste going to landfill.
- Technical Services is dedicated to the engineering, technical support, innovation and environmental compliance of waste processing and collection operations.
- Business Integration is responsible for defining Branch strategy, facilitating operational direction, resource allocation, financial governance and Branch-wide alignment to corporate directives.

An Asset Management team has been created with specific responsibility for life cycle management of waste processing facilities and infrastructure assets. The team is developing an asset management strategy and plans to guide activities to maximize asset service life, while minimizing the life cycle cost. The team will ensure that all activities align with the City's approved Infrastructure Strategy.



Waste Services' organizational structure is fully aligned to the Corporate Business Plan, which organizes the City of Edmonton's work through:

- **Our strategic objective** - to make transformational impacts in our community
- **Our service objective** - to deliver excellent services to our community
- **Our supporting objective** - to manage the corporation for our community

Waste Services is highly integrated and aligned to this plan and supports the City's success in advancing these objectives.

Waste Diversion

The 25-year Waste Strategy outlines new program directions for single and multi-unit residential waste collection, programming to advance waste diversion within the Industrial, Commercial and Institutional sectors and a more targeted emphasis on waste reduction activities.

Single Unit Programs

- Transition to four stream waste collection (organics; grass, leaf and yard waste; garbage; and recycling) with a cart-based system for organics and garbage (green cart and black cart) and seasonal collection of yard waste. Single unit residences will begin to transition to the new program in fall 2020.
- Learnings from the Edmonton Cart Rollout, where curbside waste collection program changes have been implemented for 8,000 households, will also be used to inform the citywide launch of the Source Separated Organics Program.

Multi-unit Programs

- Extending waste diversion strategies into the multi-unit residential sector will include setting a targeted diversion goal for this sector and determining required collection programs and associated communications and educational programs. The methodology and baseline measurements for the sector will be established, along with a Program Business Case and recommended bylaw provisions by the end of fall 2020.
- The multi-unit sector has unique challenges and educational needs, and this recommended approach allows more preparation and transition time to help ensure these needs are accommodated. Source separation program changes for the multi-unit sector are planned to begin implementation in the fall of 2022.

Non-residential Programs (Industrial, Commercial and Institutional)

- A strategic and policy review continues in this area and public engagement was completed with the non-residential sector to help determine whether the City's current path would meet the policy objectives. The City's participation in the non-residential sector is not part of its regulated mandate, which is to provide waste services to residential households.
- Reports on the Industrial, Commercial and Institutional Sector were presented to Utility Committee on August 23, 2018 (CR_6217) and February 1, 2019 (CR_6361). Based on the information in those reports and Council's direction, a Request for Proposal was issued in June 2019 to seek a third party operator for the Construction and Demolition waste operations. The Request for

Proposal is expected to close in August 2019. At that time, proposals will be evaluated and the contract will be awarded to the successful proponent.

- The 25-year Waste Strategy recommends changes to other business lines in this sector, including a wind-down of commercial collection and a migration of self-haul work to support greater diversion (pending processing capacity). Additional changes include recommended restrictions on single-use plastics and other single-use materials to come into effect January 2021 and source separation program changes to begin implementation in the fall of 2022.

Waste Reduction

Waste reduction encourages more effective use of natural resources and prevents the generation of waste in the first place. Reduction is at the top of the waste hierarchy as it is the most effective method of pollution prevention and is often the most cost-effective waste management option in the long term.

Waste reduction means using processes, practices, materials or products that avoid or minimize the creation of waste or environmental disturbance and reduce risk to human health or the environment.

The City will pursue three streams of activities over the next three years to begin to shift emphasis on waste reduction:

Quick Wins

These initiatives are all about refining current operations to better support waste reduction efforts; working more strategically and collaboratively with potential partners in the community, including the not-for-profit sector; and developing a more active “trouble-shooting” effort between the City, residents and partner organizations. Addressing these items should not require resource allocations or policy change.

Direct Facilitation

There are multiple areas where existing community-based programming is challenged by resource or structural issues, but where the City could play a direct facilitation role, including between organizations, to help bridge gaps. A number of potential initiatives originated from community members who noted gaps and identified opportunities for the City to step into this facilitating role. The City will develop a Waste Reduction Community of Practice to prioritize, assess and problem-solve initiatives within this category.

Innovation

A number of organizations are seeking to launch new business models, technologies and initiatives that could substantially improve the City’s waste reduction and reuse, and diversion efforts. Activities in this category would require allocation of new

resources and a process to streamline, evaluate and support the advancement of qualified initiatives. The City will continually evaluate opportunities to improve the waste system, in alignment with a zero waste goal.

Citizen and Community Support

Through the public engagement process, Administration was able to better understand the types of programs Edmontonians are looking for to support the city's progression toward a more environmentally sustainable future. A few of the key program support areas that will be the focus over the next three years include:

Education and Outreach

Administration engages Edmontonians in a wide variety of education and outreach initiatives aimed at increasing awareness, expanding knowledge and supporting environmental practices. In addition to ongoing waste reduction campaigns, Waste Services provides programs, tours, presentations and workshops to education facilities, individuals and public groups in an effort to improve Edmonton's environmental sustainability.

Administration will be broadening its outreach efforts over the next few years, creating new partnerships, programs, initiatives and materials to support all sectors in their waste reduction efforts. By focusing on an inclusive Waste Reduction Program, Waste Services aims to enable up to 10 percent of its 90 percent diversion from this programming.

The Waste Reduction Program is also aligned to support the Waste Services Interim Organics Management work through increased awareness and expansions of current composting programs.

Composting Programs

A key element of the Waste Reduction Program is the removal of organic materials from the waste stream. Currently Administration offers a number of programs aimed at turning organic materials into compost, most notably the Master Composter Recycler Program. This 'learn and serve' program sees volunteers completing forty hours of free training followed by at least 35 hours of volunteering. They are community advocates for waste reduction and help Edmontonians reduce, reuse, recycle and compost. Other programs that support the removal of organic materials from the waste stream include Compost Workshops, where residents are introduced into the world of soil and how to get started with backyard composting and Compost 'S cool that teaches Edmontonians everything from composting and soil building to weed and pest management. From Labour Day to Victoria Day residents have around the clock access to drop off food scraps in the site compost bins and, during the summer, at the Compost 'S cool site. Through the Compost 'S cool, a Composting Coach helps residents start composting by answering questions, providing a tour and

a chance to try some tools, sharing a few tricks and helping residents make a mini-worm bin to take home.

Finally, the composting program includes collaborative efforts with the Parks Section with City Operations' Parks and Roads Branch and Sustainable Food Edmonton, a non-profit organization that initiates and supports projects and programs to encourage the building of community through urban agriculture, to assist composting initiatives with Community Gardens.

To increase the amount of organic material being diverted from landfill, the composting programs will be expanded making them available to a wider audience, and increasing the amount of education and outreach provided to communities across Edmonton.

Assisted Waste Program

Administration offers an assisted waste collection service for eligible customers who have difficulty getting their recycling or garbage to the curb or lane. The program sees collectors picking up garbage and recycling from outside the front or back door of the home at no additional charge for this service.

With the transition to automated-collection, Administration is reevaluating program delivery to ensure that eligible residents with mobility issues receive the same level of care and service with the new cart rollout system.

Eco Stations

The City has four Eco Stations where residents can drop off unwanted waste material. Waste Services embarked on extensive public engagement in an effort to understand how to best support residents transitioning to more environmentally sustainable waste management practices. Residents identified more accessible Eco Station hours as a key support element. Waste Services will be implementing a change of Eco Station hours starting this fall to better support resident access to these facilities. Eco Stations will be open on a trial basis seven days a week during spring and fall. Residents will be able to drop off uncontaminated grass, leaf and yard waste free of charge throughout the year. These changes will not only increase diversion of this material from landfill but support residents in achieving the City's environmental goals by making drop off options more available.

Excess Waste Program and Variable Rates

Throughout the extensive public engagement sessions, the message has been clear that while residents are comfortable with the transition to the new waste set-out program, they will also need help in managing the transition. Providing options to residents for waste disposal will help to smooth the transition. During the first phase of cart roll out, all residents will receive a 240L black cart for residual waste at the

start of the program and will be given the option to change to a 120L cart within six months of program start, should they choose. Residents who choose a smaller cart will receive some rate benefit associated with this choice. This is a direct incentive for those households who choose to set out less waste. The potential rate impact of this program is described in the Single Unit Set-out Business Case (CR_7173).

Administration will also implement an Excess Waste Program for residual waste. This program will allow residents the ability to purchase specially branded clear bags for disposal of residual household garbage only. To support the City's goal of 90 percent diversion from landfill, use of these bags for yard and leaf waste, recyclables and organic materials would not be permitted.

The Excess Waste Program is meant to provide options that give some flexibility to households who may need occasional access to additional residual waste set-out capacity (ordinary household trash) yet provide a direct economic incentive to generate less waste and to increase recycling and source separation of organics.

The program will be based on a full cost-recovery model and the initial price per bag for the program will be included as part of the 2020 Rate Filing.

Interim Organics Management

Edmonton is transitioning toward a more environmentally sustainable future. A key component of that progression is the implementation of a four-stream waste management system, where organic material and recyclables are removed from the residual waste stream that ends up in landfills. The transition is anticipated to be complete in 2025 with the commissioning of the new Organics Processing Facilities. In the interim, Administration has identified options to ensure that as much material as possible is diverted.

Edmonton Composting Facility

The Aeration Hall (where composting takes place) was officially shut down in May 2019. Facility condition investigations of the structure in 2017 showed signs of significant structural deficiencies. A recent investigation indicated that conditions in the facility have deteriorated further and Administration concluded it was no longer safe to operate the facility.

The Edmonton Composting Facility was the primary source of organic waste processing capacity for the rate payers and commercial customers. The facility is anticipated to be replaced over time (see section below). Without access to the Aeration Hall the only organics processing capacity available for the next five years will be the new Anaerobic Digestion Facility and the capacity that exists at the Edmonton Waste Management Centre cure site to windrow compost yard waste.

Therefore, in the short term, organics processing will be partially directed to the Anaerobic Digestion Facility. Once fully commissioned, the Anaerobic Digestion Facility is anticipated to process up to 40,000 tonnes of organic waste per year. The residential Source Separated Organics Program, once implemented citywide, will produce an estimated 68,000 tonnes of material per year, leaving a processing gap of an estimated 28,000 tonnes per year. Through the Source Separated Organics demonstration area (8,000 homes) Waste Services continues to evaluate the projected volume of Source Separated Organics for the full roll-out.

In the interim, priority access to the Anaerobic Digestion Facility will be given to Edmonton Cart Rollout participants and major commercial customers who are able to source separate their organics, and the single unit residents (in that order). Until construction of new Organics Processing Facilities is complete, it is likely that organic material from multi-units will not be processed. Additionally, a new open windrow composting program for leaf and yard waste is being investigated, to serve the needs of both the single unit and multi unit residents for the next number of years.

To close the processing gap in the interim, Administration is taking the following actions:

- Administration has reached out to other jurisdictions in the Edmonton Metropolitan Region to see if there is an opportunity to partner for additional windrow compost capacity in 2020. This partnership could take on any form.
- A Request For Expression of Interest has been released to better understand the available interim sourcing options for organics processing until the Organic Processing Facilities are completed. Engineered fabric and steel remote structures as well as in-vessel composting systems are being explored. In-vessel composting systems can consist of metal or plastic tanks or concrete bunkers in which air flow and temperature can be controlled. The interim solution may be set up at the Edmonton Waste Management Centre or another location as required.
- Other options are being pursued from existing commercial composting in the local area. Access to composting options at a scale to serve the Edmonton residents is very limited. However, a mix of smaller commercial options may provide some viable interim capacity.
- Administration continues to evaluate its participation in the processing and composting of biosolids. This non-regulated line of business utilizes organic waste processing capacity that could otherwise be used for the processing of organic waste. A change in this program could result in additional processing capacity for residential waste.
- To support additional yard waste diversion, this fall, Eco Stations will be open seven days a week from September 29 to November 9, 2019.

Organics Processing Facilities

At the February 1, 2019 Utility Committee, Administration presented a business case with a recommended approach for organics management (CR_6669 Organics Management). The required renewal of the Edmonton Composting Facility prompted the development of a long-term strategy for the facility. The business case outlined four feasible alternatives for renewal. The recommended approach involves demolishing the existing composting facility and constructing a new anaerobic digestion facility on the current site along with new equipment to generate renewable natural gas from biogas.

Administration has completed the initial Public-Private-Partnership (P3) project screening, which supports further evaluation and analysis and a secondary screening for P3 viability. The decision of when the Organics Processing Facilities will be built and if the P3 approach is accepted will impact the Branch's financial position. All facilities are anticipated to be fully operational by 2025.

Planned actions over the next three years include:

- Completion of P3 assessment for the new Organics Processing Facilities. The resulting business case will be presented to Committee and Council in spring 2020 and provide direction for developing long-term strategies for the future Organics Processing Facilities, which includes the Anaerobic Digestion Facility and the compost cure site, to meet the City's existing and future organics processing needs.
- Continued research into updated organic waste processing technologies.
- Design of the new Organics Processing Facilities and related procurement.
- The Remote Cure Site Expansion Project, currently underway, will provide the necessary physical expansion to the current external cure site to reduce bottlenecks under both current and future organic processing facility capacity scenarios.

Environmental Stewardship

In addition, Waste Services supports the City's Environmental Protection and Stewardship programs by reducing Edmonton's carbon footprint and protecting the natural environment through diversion of waste from landfill. This business plan aligns to the City of Edmonton's Waste Management Policy C527, which commits to delivering sustainable waste management service exceeding provincial waste diversion and processing standards.

Landfill Closure

The closure of the Clover Bar Landfill is ongoing. The development of the overall closure plan (including landfill gas, storm water, leachate and groundwater) is making

steady progress. Waste Services is communicating with Alberta Environment and Parks prior to the submission of the final closure plan. Procurement for construction to complete the capping of the landfill will begin once the City receives approval on the proposed plan.

Completion of this work depends on a number of factors, including the effectiveness of leachate removal and slope stability. However, managing landfill closure and executing environmental due diligence is one of the Branch's top priorities. The Branch is also updating the landfill closure liability to ensure closure activities are properly managed. An update of the financial impacts will be provided as part of the 2020 utility rate filing.

Landfill Environmental Impacts

Waste Services has designated expertise and resources to actively identify and manage all landfill-related environmental risks and liabilities. The relationship with Alberta Environment and Parks is strong and has been built on trust, open communication, diligent reporting and follow-through. The elevated groundwater level at the EWMC site, particularly next to the landfill, has been addressed by rebuilding a new diversion system to replace the non-functional old one. Monitoring wells and devices have been added to understand the landfill slope stability impacts due to high leachate levels.

Administration has successfully concluded a triple-win solution with Alberta Environment and Parks and EPCOR to have the collected leachate treated at Goldbar Wastewater Treatment Plant. This will ensure that a significant amount of leachate can be collected and treated with minimal cost. Leachate seepage was proactively managed by immediate solutions and a long-term management strategy is being developed.

Planned actions over the next three years include:

- Working on capping and closure of the Clover Bar Landfill.
- Construction and operation of a groundwater diversion system at Edmonton Waste Management Centre.
- Reduction of leachate levels within Clover Bar Landfill and working on all other environmental due diligence.

Building Business Maturity

Performance Management

Waste Services continues to mature its performance management practices and will continue to align with the Corporate Enterprise Performance Measurement program.

In 2018, Waste Services developed a Performance Management Framework that fully enables data-driven decision making. In the framework, a total of 24 Branch measures and 46 service measures were established through a customer-centric approach, focusing on results that matter to residents and City Council. Rigorous measuring, reporting, reviewing and accountability structures have been established to ensure that Waste Services' performance management is sustainable, effective and efficient.

Part of the Performance Management Framework focused on revisiting the relevance and effectiveness of existing performance measures, resetting performance targets to be achievable yet challenging and developing a new set of Key Performance Indicators (Attachment 1) to measure the success of program and service delivery.

Administration also revised the methodology for calculating the residential waste diversion rate. The methodology shows the contribution of each program and included resetting the targets to reflect the various waste initiatives that started in 2018. The single unit residential diversion rate is now accurately allocated across customer types. The multi-unit and non-residential diversion rate calculation methodology will be developed as part of the overall waste strategy.

Planned actions over the next three years include:

- Development of waste diversion rate calculation methodology for the multi-unit and Industrial, Commercial and Institutional sectors.
- Review, refinement and alignment of performance measurement system.

Shared Services Value

The City of Edmonton employs a Shared Services model whereby support services required for the operations of all City businesses are provided through centralized areas of expertise, for example, Employee Services and Corporate Procurement and Supply Services. This approach takes advantage of efficiencies gained through economies of scale and opportunities to provide more robust systems and support. Waste Services is fully expensed for its portion of shared services costs.

As part of the overall strategic review, shared services costs will be reviewed to ensure Waste Services is receiving the indicated services at rates that are appropriate. This will ensure Waste Services continues to provide fair value for customers for these shared services.

Planned actions over the next three years include:

- Work with corporate partners to evaluate service requirements.
- Realize productivity improvements through consolidation processes.
- Identify integration opportunities to increase efficiencies.

Refuse Derived Fuel Enhancement

Waste Services has initiated the refuse derived fuel enhancement project to improve system reliability. Upon completion, the operational performance of the Refuse Derived Fuel Facility will be significantly improved and will also provide the ability to send refuse derived fuel material to alternative markets.

Planned actions over the next three years include:

- Review and implement process improvements and redundancies to ensure continuous availability of equipment.
- Construct an off-take system that will allow refuse derived fuel material to be produced and shipped off or stored, thereby improving the production capacity of the plant.

Sustainable Innovation

Waste Services has partnered with the University of Alberta, Innotech Alberta and CanmetENERGY and successfully secured a \$4 million grant from Alberta Innovates to form the Alberta Clean Energy Technology Accelerator (ACETA). This three-year collaborative research grant will help the Branch develop an innovation and research model to support Smart City's vision and economic development in the clean energy sector. Additionally, this work will promote the use and availability of the Advanced Energy Research Facility. In addition, Waste Services is seeking to boost the potential end markets for refuse derived fuel. This is based on expertise developed at the Edmonton Waste Management Centre and subject to product availability given ongoing commitments to the Waste to Biofuels Facility.

Planned actions over the next three years include:

- Develop an innovation and research model to support economic development in the clean energy sector.
- Seek financial and operational sustainability for the Advanced Energy Research Facility.

Environmental Commitment

A branchwide Enviso implementation gap analysis was recently completed and an action plan for all levels of leadership, supervisors and front line employees has been developed. Administration is committed to the City's Enviso policy, continually improving operations, compliance with environmental regulations and preventing pollution. Enviso is an environmental management system that provides a way for the City to both manage and improve environmental performance.

Planned actions over the next three years include:

- Include Enviso requirement in Branchwide strategy/planning development and consciously making decisions with environmental impact considerations.
- Designate resources as appropriate to fulfill Enviso requirements in all business areas.
- Review and update all existing operational procedures, ensure staff are aware of their environmental responsibilities and follow procedures.

Fiscal Accountability

Waste Services continues to strive towards achieving the financial indicators as set out in Waste Management Utility Fiscal Policy C558A. The Branch focuses on providing stable and consistent rate increases of 2.5 percent while achieving cash targets and working to achieve debt to net asset targets to ensure the Utility is financially sustainable over the long-term.

Waste Services' financial indicators incorporate the implementation of Branch initiatives in the 2020 to 2022 business planning period. Initiatives include increasing residential and non-residential waste diversion, citywide implementation of the Source Separated Organics Program for single unit residential households, enhancements to the Refuse Derived Fuel Facility and continuously improving the business in a fiscally responsible manner.

Net income and rate increases are required on a go-forward basis to manage the Utility's long-term financial sustainability, ensure sufficient funding for operations and provide funding for capital initiatives such as the rehabilitation or replacement of the composting facility and the rollout of strategic program changes. To provide stable rate increases as reflected in this Business Plan, the Branch has focused on operational efficiencies and managing within existing staff complements. Attachment 2 details the programs and services that are provided to single unit residents based on the monthly rate (as of 2019).

Key to Waste Services overall financial success is the management of non-rate and commercial revenues as several programs including Construction and Demolition Recycling (C&D), Commercial Collections and Biosolids undergo substantial programmatic changes. Also facing pressure is revenue from the Materials Recovery Facility as the industry responds to global economic forces. Waste Services' ongoing focus on expense management will help mitigate the impact of these revenue risks.

Risks and Mitigations

Several emerging risks have been identified for the 2020 to 2022 timeframe. Waste Services has conducted a thorough risk assessment for each of these risk areas, accounting for both short-term and long-term operational, capital and financial

impacts that may occur. Mitigation strategies have been developed for each area to minimize risk to the Utility and to the rate-payer. An overview of the identified high-level risks is included in Attachment 3.

Next Steps

Over the next three years, Administration will begin to implement components of the 25-year Waste Strategy. The focus on a new collection model, additional waste diversion and waste reduction in the residential sector will move Edmonton toward Council’s goal of 90 percent residential diversion from landfill. In addition, refined non-regulated programs will launch and be managed. Waste Services will also ensure fiscal accountability with minimal stable rate increases, continuous business improvements and a renewed focus on safety, employees and customers.

The next three years will be a period of significant transition for Waste Services. Many program and service changes are planned as a result of the 25-year Waste Strategy. Waste Services is well equipped to move forward with these changes and is also well positioned to deal with identified risks to ensure the success of the new strategy.

Corporate Outcomes and Performance Management

Corporate Outcome(s): Edmonton is an environmentally sustainable and resilient city						
Outcome(s)	Measure(s)	2018 Result(s)	Target(s)			
			2019	2020	2021	2022
Edmonton is an environmentally sustainable and resilient city	Single Unit Residential Waste Diversion Rate	36%	41%*	50%	64%	66%

*Due to the closure of the Edmonton Composting Facility, this target is not anticipated to be met. A full list of Waste Services Key Performance Indicators are available in Attachment 1.

Attachments

1. Waste Services Key Performance Indicators
2. Value for Money Infographic
3. Risk Overview

Others Reviewing this Report

- A. Laughlin, Acting Deputy City Manager, Financial and Corporate Services
- C. Owen, Deputy City Manager, Communications and Engagement
- J. Meliefste, Acting Deputy City Manager, Integrated Infrastructure Services
- S. McCabe, Deputy City Manager, Urban Form and Corporate Strategic Development
- B. Andriachuk, City Solicitor

Waste Services Key Performance Indicators

GOAL	PERFORMANCE MEASURE	ACTUALS	TARGETS			
		2018	2019	2020	2021	2022
Customer Excellence	Overall Satisfaction with Eco Stations	No survey conducted	94%	94%	94%	94%
	Overall Satisfaction with Residential Collection Service	No survey conducted	90.5%	91%	91%	91%
	Number of Missed Collections per 10,000	2	2	2	2	2
Operational Excellence	Single Unit Residential Diversion Rate*	36%	41%**	50%	64%	66%
	Kilograms of Waste Collected per Capita	251	260	255	250	245
	Kilograms of Recycling Collected per Capita	41	48	49	51	52
	Number Reportable Environmental Incidents	21	20	20	20	20
Financial Accountability	Annual Net Income (\$000s)	18,134	12,317	12,329	10,584	14,641
	Stable Rates	2.3%	2.5%	2.5%	2.5%	2.5%
	Debt to Net Assets Ratio	81.7%	75.4%	73.6%	73.3%	73.7%
	Cash Position (\$000s)	74,091	53,471	39,560	23,023	21,646
Organizational Excellence	Engagement Survey Employee Response Rate	71%	N/A	78%	N/A	80%
	Percentage Turnover per 100 FTEs	5.1%	5.5%	5.5%	5.5%	5.5%
	Lost Time Injury Frequency Rate	4.35	20% less than last year			

*Until 2016 the residential diversion rate was reported. Starting in 2017, the single unit residential diversion rate was reported. The new calculation is fully supported by reasonable customer tonnage allocation assumptions, procedural methodology and an internal quality control process.

**Due to the closure of the Edmonton Composting Facility, this target is not anticipated to be met.



Drop Off
\$0.88



Eco Stations
\$2.72



Reuse Centre
\$0.27

**What Residents
Get for Their
Monthly Rates**



**Refuse Derived
Fuel Facility**
\$3.35



Collections
\$17.27

\$47⁰⁸



**Materials Recovery
Facility (MRF)**
\$2.89



**Waste Education
Programs**
\$1.18



Landfill
\$8.17



Organics Processing
\$10.35

Waste Services Risk Overview

The following table identifies the top risks for the Waste Services Branch.

RISK CATEGORY	RISK DESCRIPTION	INITIAL RISK SCORE	MITIGATIONS	RISK SCORE ADJUSTED FOR MITIGATION
Financial Stewardship	Increased capital and operating expenses due to deteriorating infrastructure, reduced operational efficiency and requiring capital upgrades	20 high	<ul style="list-style-type: none"> Develop a comprehensive asset management program Conduct annual facility condition assessments Implement a rigorous preventative maintenance program 	6 low
Financial Stewardship	Declining non-rate and commercial revenues as several programs including C&D, Commercial Collections and Biosolids undergo substantial programmatic changes. Also declining MRF revenue in response to global economic forces.	16 high	<ul style="list-style-type: none"> Non-regulated program losses are mitigated through the Financial Stabilization Reserve (FSR) loan Re-negotiate contractual rights and obligations with customers/vendors Implement comprehensive cost avoidance protocols 	9 medium
Environmental Stewardship	Environmental regulatory non-compliance can lead to fines and revocation of licenses by Alberta Environmental Park Services and includes programs such as Clover Bar Landfill	16 high	<ul style="list-style-type: none"> Processes in place to proactively identify environmental releases Work collaboratively with Alberta Environment & Parks on all regulatory permits and reports 	6 low
Occupational Health and Safety	Inadequate safety measures on Waste Services sites may result in injury of staff and customers, predominantly in high risk operational areas	16 high	<ul style="list-style-type: none"> Creation of a Waste Services Safety Culture Task Force Extensive front-line engagement and participation Procedural rigor increase (root cause analysis, incident reporting, equipment and safety training) Enhanced management expectations and accountability 	8 medium
Technology	The waste to biofuels equipment is aging and requires upgrade or replacement. Cutting edge technology is usually connected with high financial and operational risks	16 high	<ul style="list-style-type: none"> Discuss options with Enerkem Conduct annual facility condition assessment Implement a rigorous preventative maintenance program 	9 medium
Environmental Stewardship	Accidental release to air, ground, water that can cause adverse effects to the environment and residents by compromising Branch's legal and regulatory obligations	16 high	<ul style="list-style-type: none"> Maintain inspections of all facilities, infrastructure and Envisio system Provide adequate training to staff to report and deal with spills Implement odour management strategy 	9 medium

Attachment #3

Project Management	Integration of the Anaerobic Digestion Facility into waste processing operations could fail causing an operational disruption and increased budget requirement. Increased impact on the risk due to decommissioning of the ECF	16 high	<ul style="list-style-type: none">• Develop a diligent project control plan in place• Develop a new ECF/organic facility strategy	12 medium
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Single Unit Waste Set-out Business Case

Recommendation

That Utility Committee recommend to City Council:

That the Single Unit Set-out Business Case, as set out in Attachment 1 of the August 29, 2019, City Operations report CR_7173, be approved.

Executive Summary

Waste Services is committed to environmental responsibility by minimizing the amount of residential waste sent to landfill. The goal is to divert 90 percent of single unit residential waste as established in the Waste Management Policy C527. This also supports ConnectEdmonton's strategic goal of Climate Resilience by contributing to transformational change in how Edmonton's waste will be managed and how services will be delivered.

The current residential waste collection program requires significant changes to support the City's 90 percent single unit residential diversion goal. Waste Services' current two-stream residential collection program allows for unlimited comingled waste (organic and garbage) and recycling at curbside. The materials are processed at the Edmonton Waste Management Centre where a portion is diverted from landfill.

A large component of Edmonton's residential waste stream is organic waste which includes both food and yard waste. As this material accounts for up to 58 percent of total residential waste, having diversion programs in place to manage this material is necessary. Waste Services is proposing transformational changes to the current waste collection programs. These changes include source separation of organic waste and an improved residential curbside set-out by adopting a cart-based system.

The attached business case (Attachment 1) provides detailed analysis on various set-out configurations considered. Based on the analysis, Administration recommends that a four-stream residential set-out be approved. Separating organic waste at curbside will improve diversion efforts and bring the City closer to its single unit residential diversion goal.

Report

In the last few years, the single unit residential waste diversion rate has decreased from 52 percent in 2016 to 36 percent in 2018. The reduction is linked to processing challenges at the Edmonton Waste Management Centre including the previous

seasonal operation of the Edmonton Composting Facility and the delay of the full operation of the Waste to Biofuels Facility. Waste Services initiated the process of shutting down and decommissioning the Edmonton Composting Facility effective May 29, 2019, due to ongoing structural issues. Organics processing will be transitioned to the new Anaerobic Digestion Facility over time as the facility continues through its commissioning phase, however this may still have an impact on the diversion rate based on facility capacity.

Through an internal review completed in June 2017, Administration recognized that in addition to the existing waste processing facility challenges, the 90 percent diversion target cannot be achieved with the existing waste management programs. New waste diversion programs would need to be developed and implemented in order to achieve this goal. In March 2018, Administration presented its Waste Management Strategy Update to City Council, and was given direction to investigate and plan for an updated waste diversion program, targeted to single unit residential units, including a source separated organics program.

Administration continued this investigation and has developed the attached business case. This business case evaluates the transition of the current curbside residential waste set-out to the proposed four stream set-out as described below:

- **Source Separated Organics:** Residential kitchen organics will be separately collected at the curb in a green cart. Residents will also be permitted to fill up their green cart with compostable yard waste, including leaves and grass clippings. Green cart collection will occur weekly in the spring, summer and fall, and biweekly in the winter. Biweekly collection in the winter months is possible as colder temperatures reduce odours generated by the organic material and the volume is significantly reduced due to no leaf and yard waste.
- **Seasonal Leaf and Yard Waste:** A separate, seasonal collection of residential yard waste, including items like garden waste, leaves and grass clippings, on predetermined days. Leaf and yard waste will be collected two times in the spring and two times in the fall in kraft paper bags.
- **Recycling:** Recyclables will continue to be collected in blue bags at curbside on a weekly basis. Residents may set out unlimited blue bags for recycling.
- **Garbage:** Remaining garbage will be collected in black carts on a biweekly basis. Residents will have the choice of a 120 litre or 240 litre black cart.

Each stream was evaluated in detail with variations on cart composition, size and collection schedules. High-level cost estimates for potential alternatives were prepared and analyzed through a detailed financial model considering both operating and capital costs and Net Present Value (NPV). The alternatives were also evaluated

based on long-term and short-term overall risks as well as social and environmental impacts (impact on single unit residential waste diversion rate). The most favorable alternatives from each stream with the highest recommendation score were bundled together as the recommended curbside collection set-out (see Figure 1 below).



Figure 1: Recommended Curbside Collection Set-out for Single Unit Residences

Based on the business case analysis, Administration recommends transitioning to the new waste set-out in Figure 1. This set-out will serve the needs of residents based on what was heard in the public engagement and is also expected to increase the single unit residential waste diversion rate by approximately seven to 11 percent. This anticipated increase in waste diversion is in addition to other waste diversion initiatives, such as the implementation of waste reduction programs, commissioning of the Anaerobic Digestion Facility, and the production of refuse derived fuel, to name a few.

While the proposed waste set-out will positively impact the diversion rate and is supported through public engagement and operational/financial analysis, Administration recognizes that the transition from the current system to the new program will be a challenge for some residents and as such is proposing to implement the following programs to aid in the transition.

Excess Waste Program

Waste Services will also implement an Excess Waste Program for residual waste. This program will allow residents the ability to purchase special branded clear bags for

disposal of residual waste only. To support the City's goal of 90 percent diversion from landfill, use of these bags for recyclables and organic materials would not be permitted.

The Excess Waste Program is meant to provide options that give some flexibility to households that may need occasional access to additional residual waste set-out capacity (ordinary household trash) and yet provide a direct economic incentive to generate less waste and to increase recycling and source separation of organics.

The program will be based on a full cost-recovery model and the initial price per bag for the program will be included as part of the 2020 Rate Filing.

Rate Variability

The recommended set-out allows for residents to choose their black cart size. Options will be developed as part of the implementation plan to create opportunities for residents to choose and to have the chance to swap carts periodically or in special circumstances. In an effort to complete a smooth transition from the current waste set-out to a cart based system, all residents will receive a 240L black cart in the phase 1 rollout. Once residents have had an opportunity to utilize this cart size (approximately 6 months), they will be given an opportunity to exchange their 240L black cart for a smaller, 120L black cart, based on their requirement. This approach will allow the City to provide consistent services while allowing residents to experience the 240L black cart before committing to a particular size.

The rate model associated with offering multiple black cart sizes is to have specific rates associated with each cart size. Through recent public engagement, residents were asked about whether rates should be impacted by the cart size that residents choose.

- 54 percent of respondents agreed that a change in the utility rate would be reasonable if different cart sizes were used.
- 40 percent agreed that residents should all pay the same amount regardless of cart size.

When asked to consider a hypothetical pricing change, respondents provided feedback on the scope of price incentive that should be provided, at the following levels:

Price difference suggested (per month)	Percentage of respondents who agreed
At least \$1	58%

Between \$2 to \$5	20%
Between \$6 to \$10	18.4%
Between \$11 to \$20	10%

To help assess the option of rate variability, Administration commissioned a third-party to conduct a Rate Design Study assessing the financial impact to rates of introducing alternative collection options for single unit residential customers. The study built a rate design model in which the allocation of operating and capital expenditures could be selected based on the two potential input assumptions (based on large versus small cart allocations). The optimal model would consider the black cart size as the only point of variability, with all other service utilization considered equal. The model assumed a range of choice distributions to potentially forecast the optional rate impact of providing a choice.

This modelling makes some assumptions as follows:

- The rate spread needs to be significant enough to motivate behaviour change.
- For those residences that do not register an up-front choice on cart size, a default value of a 240L cart will be assigned. Therefore, notwithstanding public engagement data, a 25/75 percent split would be likely, with a potential spread between \$5 and \$6.
- The possibility of excess waste programming is also contemplated so any rate spreads need to be sensitive to the impacts of this program in light of that option.

By leading the rollout of this new waste set-out program with a standard 240L black cart, offering rate variability depending on the size of the black cart chosen and supplementing with an Excess Waste Program, Waste Services will be well positioned to deliver efficient waste services, increase waste diversion rates, minimize rate impacts and maintain strong customer satisfaction scores from residents.

If Council wishes to advance rate variability with the new programming, the rates would be available as early as 2021.

Strategic Alignment

Waste Services is aligned to the Corporate Business Plan and supports the City in advancing the plan's objectives and strategic goal of Climate Resilience. The proposed set-out will allow Waste Services to contribute to the delivery of excellent services through more efficient and effective waste collection and support the corporation through better processing of that waste. This will help ensure

Edmontonians receive maximum economic and environmental benefits while minimizing the cost of managing solid waste. The City's Environmental Protection and Stewardship programs are also supported by reducing Edmonton's carbon footprint and protecting the natural environment through diversion of waste from landfill.

Budget/Financial

Waste Services requests funding for the residential waste collection program under capital profile 20-81-2041, as set out in Attachment 1 of the August 29, 2019, City Operations report CR_7174. The recommendation will require capital expenditures of \$51.5 million between 2020 and 2022 for the purchase of carts, fleet vehicles and other related expenditures. Over the complete 30 year life-cycle of the program, a total of \$145 million in capital funding is required. In addition to the capital costs, one-time and ongoing operating costs of \$15 million over the next three years are required and are accounted for within existing appropriations.

The cost of add-on services, such as excess waste program, assisted waste collection, additional leaf and yard waste collection, and additional Big Bin Events, have also been included in the business case for Council review and consideration.

Public Engagement

A comprehensive citywide public engagement initiative was launched in October 2018 to support the development of the 25-year Waste Strategy, with a second phase of public engagement in spring 2019. The public engagement was designed to seek input from residents, multi-unit stakeholders, non-residential stakeholders and City employees on proposed waste management program and service changes.

The engagement process covered the set-out options extensively. Full details of both qualitative and quantitative inputs are available in the What We Heard report (CR_5829 Attachment 3) and the detailed survey attachments which are available at edmonton.ca/futureofwaste. Some highlights from the engagement results on program direction included:

- Across all surveys (data equally weighted across 13,564 responses), 68 percent of people prefer a migration to a cart-based system, compared to 23 percent who prefer bags (Phase 1 engagement).
- 62 percent of respondents (data equally weighted) strongly agreed that they "will gladly take the necessary steps to adopt these changes." (Phase 1 engagement)
- 75 percent of respondents (data equally weighted) strongly agreed with the statement that it is "important to keep as much waste out of landfills as possible." (Phase 1 engagement)

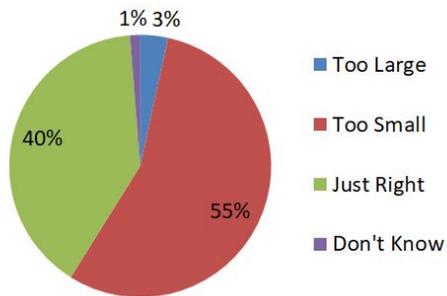
- People are concerned about odours and mess associated with the green carts. The issue has also been prominent in the initial cart rollout to 8,000 homes. In response, the City has adopted guidelines to allow for paper bags and compostable bags certified by the Biodegradable Products Institute for the citywide implementation.
- People want to see more location options for disposing of large items and increased scope of what can be collected. (Phase 1 and Phase 2 engagement)
- In Phase 1 engagement, respondents asked for more than two (one in spring and one in the fall) collections for a grass, leaf and yard waste program, and for the ability to top up their green carts with grass and yard waste. Fifty-two percent of Phase 2 respondents indicated they were satisfied with two spring and two fall seasonal pickups and the top up option.
- Staff expressed enthusiasm and support for the program direction while cautioning that education and enforcement will be necessary for program success.

In addition, the engagement process brought forward requests for some degree of optionality. For example, respondents were asked to choose between a 120 litre and 240 litre black cart. There was no clear preference, even in the initial cart rollout where people are adapting to the system and ongoing preference is stated for access to each cart size. Some residents feel a smaller cart suits their needs in terms of space, maneuverability and the needs of smaller households, while others prefer the larger cart.

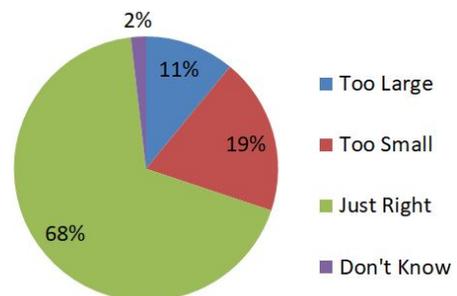
In the final Phase 2 survey when respondents were asked about cart size, 48 percent preferred a 240 litre black cart, and 42 percent indicated they would prefer a 120 litre cart (all survey responses equally weighted).

Finally, follow-up canvassing in the initial cart rollout areas continues to show a diversity of views:

**Black Cart Size Satisfaction - Post Delivery
(120L Neighbourhoods)
Up to July 18th - 1664 Sample Size**



**Black Cart Size Satisfaction - Post Delivery
(240L Neighbourhoods)
Up to July 18th - 1740 Sample Size**



Corporate Outcomes and Performance Management

Corporate Outcome(s): Edmonton is an environmentally sustainable and resilient city.						
Outcome(s)	Measure(s)	2018 Result	Target(s)			
			2019	2020	2021	2022
Edmonton is an environmentally sustainable and resilient city.	Single Unit Residential Waste Diversion Rate	36%	41%*	50%	64%	66%

*Due to the closure of the Edmonton Composting Facility, this target is not anticipated to be met.

Risk Assessment

Risk Element	Risk Description	Likelihood (after current mitigations)	Impact (after current mitigations)	Risk Score (with current mitigations)	Current Mitigations	Potential Future Mitigations
Project Management	Difficult to determine how many residents will choose the 120 L black cart vs the 240 L black cart resulting in inventory excess or shortfall	3 - possible	2 - moderate	6 - low	Use Public Engagement results to estimate; Offer only 240L black carts for initial roll out; offer Excess Waste Program to mitigate excess waste needs	Have a contingency plan for both finance and project implementation

Single Unit Waste Set-out Business Case

Technology / Equipment	External cure site not in operation in fall 2020 leading to decreased processing of leaf and yard waste collected and increased tonnage of material landfilled	4 - likely	2 - moderate	8 - medium	Find an alternate solution to process the leaf and yard waste volume for fall 2020, when the program rolls out to approximately half of the City	Have a contingency plan in place for future processing capacity options
Technology / Equipment	Addition of grass to ADF will reduce the methane yield and revenue generation from ADF	4 - likely	2 - moderate	8 - medium	Analyze the SSO from the demonstration phase and evaluate methane generation	Include in the new ADF scope that the facility must be able to handle the materials including food waste and yard waste

*For a complete list of risks associated with the business case please refer to page 44 in Attachment 1.

Attachment

1. Single Unit Waste Set-out Business Case

Others Reviewing this Report

- A. Laughlin, Acting Deputy City Manager, Financial and Corporate Services
- C. Owen, Deputy City Manager, Communications and Engagement
- B. Andriachuk, City Solicitor



Single Unit Waste Set-out

Business Case

City Operations | Waste Services

City of Edmonton

Capital Profile: CPP# 20-81-2041

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1. Summary

1.1. Single Unit Waste Set-out Business Case Summary

The current residential waste collection program needs significant changes to support the City's current 90 percent single unit residential diversion goal. The two stream residential collection program currently offered by Waste Services allows for collecting unlimited comingled waste (organic and garbage) and recycling at the curbside. The materials are processed at the Edmonton Waste Management Centre (EWMC) where a portion is diverted from landfill.

Waste Services is committed to environmental responsibility by aiming to divert 90 percent of single unit residential waste from landfill. In the last few years, the diversion rate has been slowly decreasing, reaching a low of 36 percent in 2018. The reduction in single unit residential waste diversion is linked to current processing challenges at the EWMC, including the seasonal operation of the Edmonton Composting Facility, and the continued delay of the full operation of Enerkem Alberta Biofuels.

The Single Unit Residential Waste Diversion Rate was restated in 2018 based on the City Auditor's review. Specifically, it was noted in the 2018 Audit report that Waste Services cannot achieve its 90 percent diversion target through the existing waste management program. New waste diversion programs would need to be implemented in order to achieve this goal.

Waste Services recognized the current context as both a challenge and an opportunity to make the necessary changes and improvements to current waste management program. One of these initiatives identified is separating the organic waste in the garbage stream collected at the curbside.

At the March 20, 2018, City Council meeting, the following motions were passed:

2. That Administration continue with targeted engagement and provide a report on the removal of grass, leaf and yard waste from the waste stream, the availability of alternate disposal options for leaf and yard waste, and further details on the proposed program, to Utility Committee in June 2018, and that Administration:
 - a. continue to collect grass clippings in 2018, pending results of the public engagement
 - b. implement special collection on yard waste (eg. Christmas trees) in fall 2018.
6. That Administration provide a report in June 2018 on options for a pilot project on the source separated organics program prior to the planned fall 2020 program implementation.

This business case evaluates the transition of the single unit set-out at the curbside into the following four streams:

- **Source Separated Organics (SSO) Stream:** Residential kitchen organics will be separately collected at the curb in a green cart. Residents will also be permitted to fill up their green cart with compostable yard waste, including leaves and grass clippings. Green cart collection will occur weekly in the spring, summer and fall, and biweekly in the winter. Biweekly collection in the winter months is possible as colder temperatures reduce odours generated by the organic material and the volume is significantly reduced due to no leaf and yard waste.
- **Seasonal Leaf and Yard Waste (L&YW) Stream:** A separate, seasonal collection of residential yard waste, including items like garden waste, leaves and grass clippings, on predetermined days. Leaf and yard waste will be collected two times in the spring and two times in the fall in kraft paper bags.
- **Recycling Stream:** Recyclables will continue to be collected in blue bags at curbside on a weekly basis. Residents may set out unlimited blue bags for recycling.
- **Garbage Stream:** Remaining garbage will be collected in black carts on a biweekly basis. Residents will have the choice of a 120 litre or 240 litre black cart.

Waste Services evaluated each of the above streams, with variations on cart composition, size and collection schedules in detail for this business case. High-level cost estimates for potential alternatives have been prepared and analyzed through a detailed financial model considering both operating and capital costs and Net Present Value (NPV). The alternatives were also evaluated based on long-term and short-term overall risks as well as social and environmental impacts. The most favorable alternatives from each stream with the highest recommendation score were bundled together as a curbside collection set-out.

1.2. Single Unit Waste Set-out Business Case Recommendation

Based on the results of this process, Waste Services is recommending the following curbside set-out for collection of residential waste as outlined in Figure 1. This business case requests approval for the recommended single-unit waste set-out program.

The single-unit waste set-out program will require approximately \$145-million in capital funding to roll-out and manage the setout programs for the next thirty years. The recommended set-out anticipates approximately \$51.5-million in capital and \$15-million in operating expenses in the next three years to successfully roll-out the program to the residents. These funds will be used for purchasing carts and associated accessories, automated collection and crew maintenance vehicles, including automated fleet as well as and maintenance storage yard and processing equipment and managing other program related expenses.

The cost of add-on services, such as assisted waste collection, excess waste program, additional leaf & yard waste collection, and additional Big Bin Event, has also been included in this business case for Council review and consideration.

The overall impact to the diversion rate through the recommended program change will be approximately eight to 12 percent, thus improving the gap between the current diversion rate and the 90 percent goal.



Figure 1: Recommended Curbside Collection Set-out for Single Unit Residences

2. Background

2.1. Setting the Stage for Sustainable Waste Management

For more than 25 years, Waste Services has sought to continually evolve the City of Edmonton’s waste management practices to achieve environmental and financial sustainability by diverting waste from landfill. Residents are encouraged to reduce, reuse and recycle waste. The City’s Waste Management Strategic Plan¹ was last updated in 2008. This strategic plan provided the framework for an integrated system that blends strong community engagement programs with effective collection systems and innovative waste processing technologies.

The themes of waste diversion from landfill and sustainability were also affirmed in the City of Edmonton’s Strategic Plan: *Connect Edmonton*². This plan sets the path through strategic actions for the City to use incentives, education and partnerships to increase Edmontonians’ participation in waste reduction, and achieves a landfill diversion rate of 90 percent for residential waste with focus on recycling, composting and recovery.

¹ Waste Management Strategic Plan 1993

²Connect Edmonton- Edmonton’s Strategic Plan (2019-2028)

This is further reiterated in *The City of Edmonton's Waste Management Policy*³, which commits the City to provide sustainable waste management services, with due regard to evolving needs, preservation of natural resources, protection of the environment and the financial capabilities of the City. This is achieved with a waste system that meets the environmental, economic and social requirements to divert waste from landfill and provides sustainable waste solutions to Edmontonians.

2.2. Current Situation

2.2.1. Collections and Processing

Waste Services currently provides the following two-stream manual collection services to both single unit and a small number of multi-unit residents.

1. **Garbage stream:** allows residents to set out mixed garbage waste in black bags. There is currently no imposed limit on the number of black bags collected manually every week.
2. **Recycling stream:** allows the residents to set out recyclable materials in blue bags. There is no limit on the number of blue bags collected manually every week. This program is voluntary and has over 90 percent participation.

The garbage stream allows the residents to set out mixed garbage containing organic and compostable waste (including food scraps, grass, leaf and yard waste) along with other household waste. This mixed waste is taken to the Edmonton Waste Management Centre (EWMC) for processing. When the garbage stream arrives at the EWMC, it is mechanically sorted at the Pre-Processing Facility (PPF) inside the Integrated Processing and Transfer Facility (IPTF) and is then further processed at the Edmonton Composting Facility (ECF), Refuse Derived Fuel (RDF) facility or sent to landfill. In the past, the waste material was then sent to ECF and then the Cure Site for curing before it becomes compost that generates revenues through its sale, for Waste Services.

Figure 2 shows the current flow of waste collected and processed at the EWMC.

³ https://www.edmonton.ca/city_government/documents/PoliciesDirectives/C527.pdf

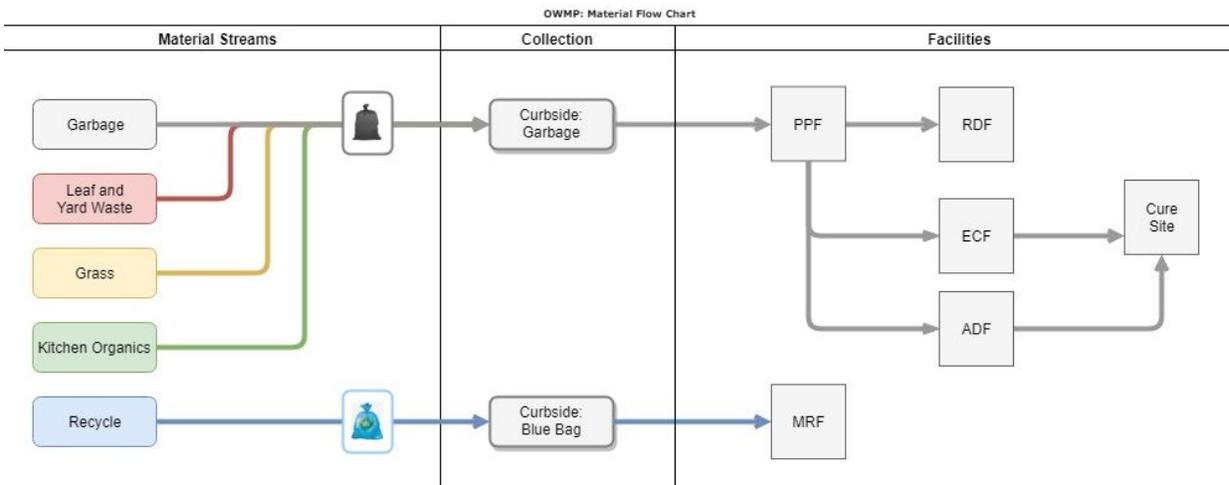


Figure 2: Current Waste Flow

The recycling stream (blue bags) is collected separately and processed at the Material Recovery Facility (MRF). Material is sorted by equipment and people into different commodity types and sold to various recycling processors for beneficial reuse.

2.2.2. Issues Identified with the Current Waste Collection and Processing

2.2.2.1. Collection

The current method of collection for single unit residents is manual collection using garbage bags. Comingled garbage collected in bags can be heavy and sometimes contains materials such as broken glass or needles that can cause injury to collectors during pickup. Also, manual collection is not the most current method of collection.

2.2.2.2. Processing

The current method of sorting mixed waste was based on convenient customer service approach, however, due to the mechanical sorting/separation at IPTF, materials are unable to be sorted by type resulting in a significant amount of non-organic materials such as diapers, rubber balls, K-cups etc. make it into the compost. Similarly, as there is no effective way to remove organics in this mechanical sorting, organic materials such as grass and food scraps enter the process to create contamination in the feedstock or Refuse derived Fuel (RDF) for the waste to biofuels facility.

In 2016, the material processed at the ECF contained about 72 percent organics and 28 percent non organic material (high contamination). During the winter, the contamination percentage frequently ranges higher, towards 50 percent of non organic material. Although pre-screening and post-screening are in place, contaminants such as glass shards are present in the compost. Because of this, the compost is given the rating of a Category B by the Compost Quality Alliance and has restricted end uses. These contaminants make the compost unsuitable for common residential uses such as landscaping and gardening, thus limiting its potential sales and impeding diversion. Figure 3 illustrates the mixed material entering the ECF and its low quality derived compost.



Figure 3: The photo depicts the inbound contaminated waste stream to the ECF, sorted out from the residential garbage stream (left) and the processed compost (right). The lower quality of the end product is visible in the photo on the right.

According to Waste Characterization Study⁴ conducted in 2016, approximately 58 percent of the single unit residential garbage is organic waste with 21 percent kitchen organic waste and 36 percent grass, leaf and yard waste. During the spring, summer and fall, larger volumes of grass, leaf and yard waste are collected with residential curbside collection. Although residents are encouraged through educational campaigns to grasscycle, approximately 50,000 tonnes of grass, leaf and yard waste⁵ is collected and processed, and some is sent to landfill.

Diversion of grass and yard waste would boost Edmonton's diversion rate significantly, and ensure the overall garbage stream has less moisture which allows for more effective processing.

The waste to biofuels process is another significant component of the goal to achieve 90 percent residential diversion from landfill. The wet organic waste is not ideal for the waste-to-biofuels process, given that this process relies on a dry waste feedstock for optimum efficiency. In 2016, approximately 18 to 20 percent of the feed directed to the RDF consisted of the wet organic material due to which Waste Services invested in additional processing and drying equipment.

2.2.3. Opportunity

Edmonton's single unit residential diversion rate as of 2018 was 36 percent⁶. Edmonton is currently faced with a large gap between this current residential diversion rate and the 90 percent goal. Getting to 90 percent requires focus on the entire waste stream, starting with how households are asked to manage their waste in the home. Waste Services' Strategy Update (CR_5124) outlines the path and program changes that will be required to achieve this goal.

⁴ COE 4-Seasons Waste Characterization Study Final Report

⁵ CR_5826 Alternate Collection and Diversion Options for Grass, Leaf and Yard Waste

⁶ CR_6862 Waste Services 2018 Annual report

The gap between the projected diversion rate and the 90 percent goal could be best addressed by aligning Edmonton's waste management practices with current best practices for municipal waste. It requires focus on the entire waste stream, including diversion, sorting activities, as well as reduction and reuse initiatives, undertaken at the household level, and allows for more effective processing of waste feedstocks, with reduced moisture and contamination challenges.

The Aeration Hall Building of the ECF was operated seasonally from late 2017 until it closed in May 2019, following proactive investigations into ongoing structural issues⁷. The structural issues that the ECF experienced allow for the opportunity to re-envision how waste is collected and processed in the City of Edmonton. Administration provided recommendations in February 2019 on the long-term composter strategy, as outlined in report CR_6669 Organics Management⁸. Council approved that Administration proceed with Public Private Partnership (P3) planning of a digester and present the business case outlining the set-out and collection of organic stream and its correlation with the composter business case in June 2019. An update on the P3 evaluation will be provided to the Utility Committee in the fall of 2019, and the business case for Gate 2 will be advanced in the spring of 2020. This business case impact adds to the digester strategy and will help Administration initiate the development of the long-term strategy for the Organics Processing Facilities (replacement of the ECF facility and technology). Waste Services' existing Anaerobic Digestion Facility (ADF) is currently undergoing commissioning. Once operational, the facility will provide further organic waste processing capacity.

This unique opportunity allows Waste Services to design a waste collection program at the same time as developing an organics processing facility using current technology. By making this combined decision and improving on a number of other processes, Waste Services is able to further advance towards its goal of diverting up to 90 percent of residential waste from landfill.

3. Context Analysis

3.1. Environmental Scan

Between 2016 and 2017, Waste Services conducted an extensive environmental scan⁹ to identify best practices in waste management across Canada. Approximately 23 Canadian municipalities were examined in terms of efficiencies and effectiveness in their waste program and service delivery. Nineteen of these municipalities were also examined for their waste collection streams, method (manual vs automated), frequency, cart sizes and volume limits¹⁰. A list of these municipalities and their programs and diversion rates is shown in Appendix A.

The municipal scan below showed that City of Edmonton lags behind many Canadian municipalities, namely in two areas; the employment of some of the current collection best practices such as automation, which is shown to increase collector safety and efficiency of collection; and using different carts sizes to fit the needs of the residents. Also, SSO collection at the curb has been proven to increase the diversion rate of other municipalities that offer this

⁷ CR_5306 Composter Detailed Plan and Plan of Action, April 23, 2018

⁸ CR_6669 Organics Management

⁹ CR_5184 Waste Management Strategy Update

¹⁰ Automated Collection Summary Report

program to their residents. Separating organics from garbage stream through SSO and leaf and yard waste programs reduces the contamination of these materials entering organics processing facilities thus increasing both the quality and quantity of the resulting useful end products. This in-turn decreases the amount of these materials in the landfill, improving the overall diversion rate.

The municipal scan results are described in details below:

3.1.1. Source Separated Organics

Twenty-one out of the 23 municipalities have implemented an SSO program. Nationally, this includes municipalities such as Toronto, Ottawa, and Vancouver. Regionally it includes Calgary, St. Albert, Fort Saskatchewan, Leduc, Spruce Grove and Strathcona County. Some municipalities also placed limits on the volume of garbage set-out through a cart system or bag limit thus limiting the garbage tonnage while increasing participation in recycling, SSO programs and other available programs (such as reuse programs).

3.1.2. Leaf and Yard Waste

Many municipalities have developed and implemented grass, leaf and yard waste diversion programs. All of the 23 municipalities researched have a grasscycling education program in place encouraging residents to leave the grass clippings on the lawn. Fifteen of the 23 Canadian municipalities/regions profiled have a separate yard waste program, which includes either seasonal curbside collection or drop-off locations that accept the material as a self-haul option.

3.1.3. Method of Collection

Twenty-one of the 23 municipalities have chosen to use automated collection for garbage, SSO, or both. Automated waste collection is the standard industry practice in North America because it is safer, cleaner and more efficient than manual collection. Larger Canadian cities such as Toronto, Calgary, Vancouver, Richmond, Winnipeg and Regina all use automated collection for residential and commercial waste. Nearby Capital region municipalities of Strathcona County, Fort Saskatchewan, Leduc, St. Albert and Spruce Grove use automated collection for their garbage.

3.1.4. Cart Size Offerings

Approximately, seven of the 15 municipalities that have automated garbage stream production, offer their residents the choice of more than one cart size. Additionally, 10 of these 15 municipalities with automated garbage including St. Albert, Regina, Guelph and Winnipeg also allow for tagging an additional garbage bag or getting an additional black cart for a fee.

3.1.5. Recycling Best Practices

A municipal scan for the best practices within the recycling industry in Canada shows that separation of recyclables at the curb using either a dual stream or three stream separation is

an effective method to reduce contamination of the recycling bales.

Recycling stream municipal scan of 36 municipalities showed that approximately 15 of the 36 had either a dual-stream or a three-stream collection for recycling including municipalities like Waterloo, City of North Vancouver, Metro Vancouver, Richmond, Region of Durham, Halifax and Barrie. These municipalities separate their recyclables based on plastic, paper and/or glass material. Remaining 21 municipalities had a single stream co-mingled recycling program, similar to Edmonton's program, and includes Calgary, Surrey, City of Toronto, City of Saskatoon, St. Albert and Guelph. Separating by streams allows for cleaner recyclable bales with lesser contamination in them.

Recent developments in the Recycling commodities market, namely the implementation of the Green Wall in China has resulted in challenges in finding final end products for many commodities. With this in mind, we will continue to evaluate changes in municipal best practices over the next few years to determine how best to deal with these influences and make the necessary changes at that time.

4. Initiative Description

4.1. Initiative Description

This business case proposes significant changes to the current waste collection program and the way single unit residents set out their waste for collection in the City of Edmonton. These changes will include a four stream collection and processing instead of the current two streams.

In June 2017, the first steps were taken on the path towards the future of waste services when Administration presented the 2018-2020 Waste Services Business Plan¹¹ to Utility Committee which identified increasing residential diversion activities as an essential focus area for Waste Services. This update, along with the findings from an extensive research study between the summer of 2017 and January 2018, set the stage for the recommended activities in CR_5184 Waste Management Strategy Update¹² presented to the Council in March 2018. Council approved seven motions for Waste Services during this Strategy Update, which included: planning a source-separated organics program for organic waste processing and collection, with planned implementation starting in fall 2020; providing a report on alternate collection methods for grass, leaf and yard waste; and continuing engagement with residents on the implementation of potential waste diversion programs.

In August 2018, Administration submitted reports on the Source Separated Organics (SSO) Pilot (CR_5832)¹³ and Alternate Collection and Diversion Options for Grass, Leaf and Yard Waste (CR_5826)¹⁴. These reports outlined the options that would be included in the public engagement activities along with a demonstration phase for the program changes outlined in CR_5184 Waste Management Strategy Update. Council approved the demonstration phase¹⁵

¹¹ CR_5520 Waste Services Business Plan

¹² CR_5184 Waste Management Strategy Update Report

¹³ CR_5832 Source Separated Organics Pilot

¹⁴ CR_5826 Alternate Collection and Diversion Options for grass, leaf and yard waste

¹⁵ CR_5832 Source Separated Organics Pilot

with the 120L green organic cart and alternate collection of leaf and yard waste pilot programs in August 2018, thus giving approval for administration to proceed with planning for the implementation of an organics program citywide.

The proposed waste collection and processing streams are:

- Source Separated Organics (SSO) Stream
- Seasonal Leaf & Yard Waste Stream
- Garbage Waste Stream
- Recycling Waste Stream

4.1.1. Source Separated Organic (SSO) Stream

Organics separation at the source is an effective method of reducing the environmental impact of solid waste. In the SSO program, households will segregate compostable kitchen organic waste materials, such as food waste. This organic waste will be set out for collection separately from their garbage.

Once the organic waste is collected by the City, it can be processed directly at organics processing facilities (ADF) without being pre-processed at the IPTF with other household garbage.

4.1.2. Seasonal Leaf & Yard Waste (L&YW) Stream

The seasonal L&YW stream includes a separate L&YW collection program and a free drop-off service. Residents will be encouraged to set out their leaf and yard waste, separately from their garbage and SSO on predetermined dates from spring to fall. The L&YW will be collected by Waste Services. Residents will also be provided with the opportunities to drop off L&YW at the Eco Stations, Big Bin Events, and the Edmonton Waste Management Centre for free. Such materials can then be processed directly at the cure site without going through a processing facility.

4.1.3. Garbage Stream

Removal of the organic waste from the garbage will decrease the total tonnage of materials in this stream. In addition, residents will be limited to the space available in their black carts for their garbage materials. This increases the incentive to maximize recycling and organic separation. Waste Services will continue to provide collection of garbage to the residents. This stream will capture all remaining materials that do not enter the organic or the recycling stream.

4.1.4. Recycling Stream

Waste Services will continue to collect recyclable materials at the curbside. Residents will be able to continue to separate recyclable materials such as plastic, paper, and metal cans etc. in their blue bags and set it out for collection at the curb.

4.2. Anticipated Outcomes

The following anticipated outcomes will be achieved through these updated program changes:

- An estimated increase in the current diversion rate by approximately seven to 11 percent to contribute towards the 90 percent single unit residential diversion target. This forecasted diversion rate impact is predicated on the assumptions that waste sorting and diversion facilities fully function at the EWMC, end product markets for all recyclable commodities are available, and that residents fully participate in the proposed program change.
- An expected decrease in the amount of garbage set-out by single unit residents.
- A cleaner organics stream as an input to OPF and ADF processes, resulting in an increase in comparative efficiency of organics processing and higher quality compost.
- Behavior changes in single unit residents, which includes how residents sort and set out their household waste.
- Reduction in the expected moisture content in Refuse Derived Fuel.

4.3. Scope

The following options are considered in scope for this business case:

Waste Collection

- Addition of automated collection of source separated organic stream.
- Addition of seasonal leaf and yard waste curbside collection stream.
- Changing the current method of garbage collection from manual to automated.
- Potential change in collection method and/or frequency of the recycling stream.

Residential Waste Drop off

- Impact on Big Bin events, Eco-station programs and the Residential Transfer Station

Processing

- Change in processing requirements related to the new Organics Processing Facility (OPF), Curesite, IPTF Pre-Processing facility, MRF and landfilling.

Financial

- Capital and operating budgets to support the program changes.
- Net Present Value (NPV) analysis.
- Revenue Requirement (RR) analysis
- Utility rate change for different black cart sizes.

Education, Outreach and Enforcement

- Development and delivery of education and outreach materials, programs, and strategies.

4.4. Out of Scope

The following services, although aligned, are managed separately and considered out of scope in this business case:

- Multi-unit residential sector receiving waste container collection service.
- Non-residential waste programs.
- Waste Bylaw update and related resourcing requirements.
- Waste Management Policy update.
- External Curesite Project: capital and operational expenses.
- OPF Business Case and financial approval.
- MRF retrofit.

4.5. Critical Success Factors

The following critical success factors have been identified:

- Enhanced project planning during the single unit waste set-out program development process to identify a clear and complete scope.
- Risk identification and management to minimize the risks during program planning and implementation.
- Council and corporate leadership endorsement of the proposed program changes.
- Council's approval of funding for the proposed program changes.
- Residents' acceptance of, support of, participation in, and compliance with the proposed program changes.
- Decision on the OPF long term strategy by Council in 2020 and completion of the External Curesite project on time will impact the scope, planning and delivery of both the SSO and L&YW seasonal collection programs.
- Interim solutions to process received SSO volume between 2021-2025 need to be developed, due to the operational disruptions in demolishing current ECF and construction of the new OPF between 2021 to 2025.

5. Options Analysis Methodology

A three step elimination process (outlined in Figure 4) was used to shortlist the potential options for this business case. Pre-screening was the same for all the options considered for the four streams in this business case and included:

- Alignment with Corporate goals and Waste Services' 25-year business strategy
- Potential feasibility/achievability of the viable options
- Maintaining Waste's service level to the City's single unit residences participating in the current waste collection program

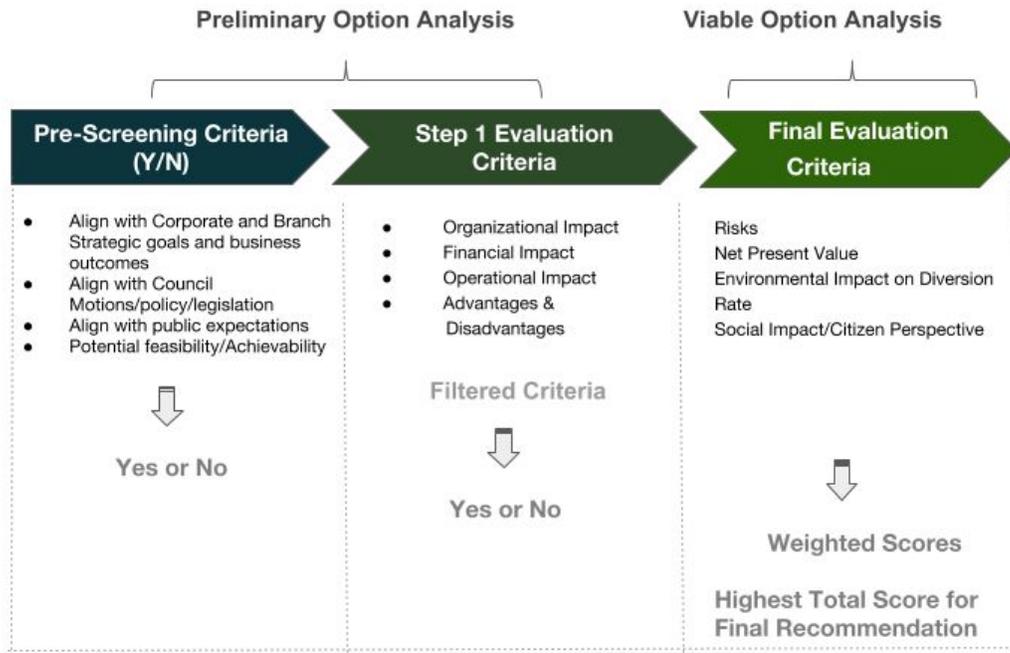


Figure 4: Business Case Option Elimination Steps and Final Evaluation Criteria: All the options for this business case went through a rigorous option analysis as shown above.

5.1. Strategic Alignment

The Corporate Business Plan¹⁶ organizes the City of Edmonton’s work into three objectives:

- **Our strategic objective** is to make transformational impacts in our community
- **Our service objective** is to deliver excellent services to our community
- **Our supporting objective** is to manage the corporation for our community

Waste Services is highly integrated and aligned to this plan and supports the City’s success in advancing these objectives. Waste Services’ 25-year Strategic Outlook¹⁷ has been identified as a major initiative that will support advancement of the strategic goal of Climate Resilience. As a key component of that strategy, the Single Unit Waste Set-out Business Case is critical in advancing progress towards that goal.

This business case allows Waste Services to contribute to the delivery of excellent services through more efficient and effective waste collection and support the corporation through better processing of that waste. This will help ensure Edmontonians receive maximum economic and environmental benefits while minimizing the cost increases of managing solid waste.

¹⁶ Corporate Business Plan (2019-2022)

¹⁷ CR_6216 Waste Services: 25 year Strategic Outlook, Project Overview

In addition, this business case supports the City's Environmental Protection and Stewardship programs by reducing Edmonton's carbon footprint and protecting the natural environment through diversion of waste from landfill. The project aligns to the City of Edmonton's Waste Management Policy C527¹⁸ which commits to delivering sustainable waste management service exceeding provincial waste diversion and processing standards.

Finally, the Single Unit Waste Set-out Business Case is also strategically aligned with a number of other distinct but related initiatives that are currently underway. While these initiatives are outside the scope of this project, their outcomes will impact its overall success, and all will be important components of achieving the ultimate goal of 90 percent diversion.

- The OPF Business Case and Project Plan are being developed concurrently, which will provide direction towards developing long term strategies for the OPF to meet the City's existing and future organic processing needs.
- The Remote Cure Site Expansion Project, currently underway, which will provide the necessary physical expansion to the current external cure site to reduce bottlenecks under both current and future ECF capacity scenarios.

5.2. Public Engagement

Consideration of public engagement has also been a major factor in the business case. The business case option analysis and alternative section are based on two phases of public engagement conducted between October 2018 and April 2019, gathering close to 30,000 points of input. Input was gathered through surveys, drop-in sessions and facilitated conversations among four sectors: residents, multi-unit stakeholders, non-residential or ICI (Industrial, Commercial and Institutional) stakeholders and internal City of Edmonton stakeholders. These perspectives helped inform and refine the proposed strategy and program recommendations. Summary highlights from phase 1 include:

- 62 percent¹⁹ of residents responded strongly that they would "gladly take the necessary steps to adopt these changes".
- Approximately 70 percent of survey respondents preferred options for setting out their garbage in a cart, rather than a bag.
- Participants were generally supportive of sorting more at home.
- At least 55 percent of residents wanted to be able to top up their green cart with grass clippings if this was permitted.
- Residents in general believed two yard waste collections per year (once in spring and once in fall) wasn't sufficient, but 52 percent indicated that they would be satisfied with two collections each season.

A key takeaway that was highlighted during this phase of public engagement was the desire of residents to have incentives to participate in the proposed program changes. This desire was highlighted by approximately 50 percent of respondents, and could be achieved by offering multiple garbage cart size options, with associated utility rates.

¹⁸ https://www.edmonton.ca/city_government/documents/PoliciesDirectives/C527.pdf

¹⁹ CR_5829 Waste Strategy- Comprehensive Waste Management Strategy

5.3. Analysis of Options

In this step, all shortlisted alternatives were further analyzed by reviewing the potential advantages and disadvantages, risks and financial costs. Administration also considered the Phase 1 and 2 public engagement results while evaluating these options. Figure 5 below depicts the methodology used to shortlist and analyze the alternatives to reach the final recommendation. The process and metrics used to arrive to the shortlisted alternatives for the program considered various factors. A two step elimination process was used to shortlist the potential options for this business case to two major alternatives which were further analyzed to form the final recommendation. The second elimination step involved looking at previous Council decisions from 2018 to plan for the SSO program using the 120L green carts.

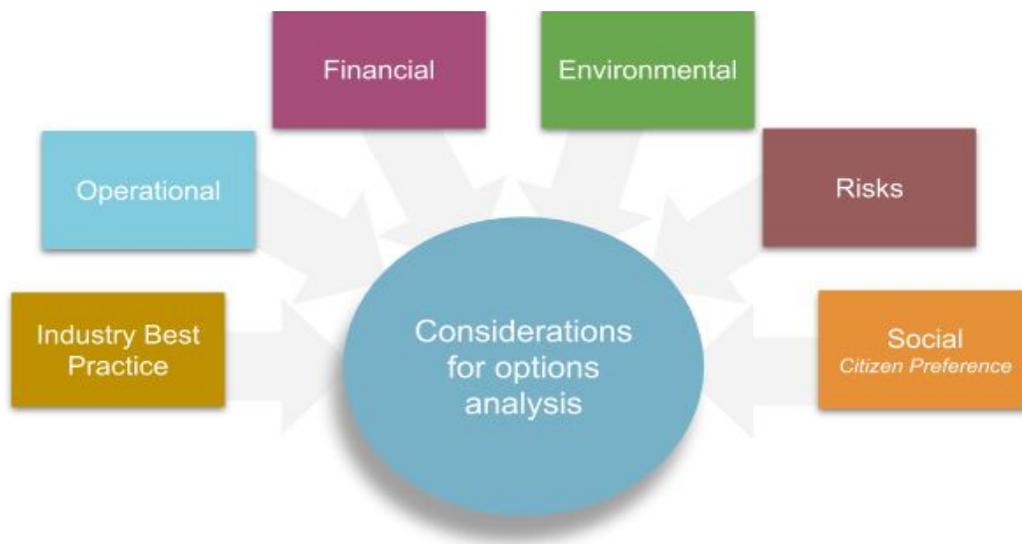


Figure 5: Business Case Alternative Methodology: All the options for this business case went through a rigorous option analysis as shown above.

5.3.1. Operational Considerations

The process and metrics used to arrive to the shortlisted alternatives for each stream’s curbside collection program considered various factors such as the method and frequency of collection.

5.3.1.1. Methods of Collection

Both manual and automated methods for collection were evaluated for this business case. The term ‘automated collection’ generally refers to the use of garbage trucks equipped with hydraulically operated jointed arms with cart grasping mechanisms mounted to them. The operator does not need to leave the cab of the truck, but uses in-cab controls to manipulate the arm to grasp a cart set out along the curb or alley, tip it into the truck’s hopper, then place it back. Automated waste collection is an industry standard. Automated waste collection trucks are standard manufacturing, while manual collection trucks are a more customized product.

This customization limits the number of vendors who can supply the trucks.

Automation allows for multiple benefits to the City and residents such as:

- a. Placing waste in carts reduces the probability of ripped or torn bags, resulting in reduced litter and improved aesthetics
- b. Increased prevention of rodents and animals gaining access to waste
- c. Ease of moving the carts for residents due to wheels
- d. Decreased work related injuries due to picking up of heavy and bulky garbage bags containing sharp objects.
- e. The expense to purchase the cart is partially offset over the life of the carts due to the residents having to purchase less garbage bags
- f. Reduction in the utilization of single use plastics
- g. Increased collection efficiency, when extra bags outside the carts are not collected.

Because of these reasons, Administration went forward with analyzing the automation for all the four streams. Due to major advantages of automation for both garbage and SSO streams, this was the method of preference for them.

Seasonal Leaf and Yard Waste Stream

Waste Services evaluated the collection in 240L carts, clear bags, kraft paper bags or black bag as methods of collection for the seasonal L&YW program for this stream. Both black bags and clear bags scored low due to the need of bag breaking equipment and possible contamination and were eliminated. Both the carts and kraft paper bags were evaluated for automated and manual collection methods for this program.

Recycling Stream

Waste Services evaluated both the manual and automated collection using blue bags and 240L carts based on surrounding municipalities such as Calgary, Sherwood Park and St.-Albert. Because of similar recycling material tonnage collection trend between the municipalities, 240L cart was considered sufficient for collecting recycling material for the Edmonton residents hence no other cart size was analyzed for this program.

5.3.1.2. Frequency of Collection

Source Separated Organics Stream

Kitchen organics contain higher odour and decomposing material which can attract insects and bugs if left unattended for a long time. This can be one of the major concerns with residents. In winter, the odor is not a major concern due to decrease in the insect activity and decomposition in cold weather. Thus, weekly collection frequency in summer and biweekly collection frequency in winter were considered for this business case.

Seasonal Leaf and Yard Waste Stream

Waste Services evaluated four, eight and 15-times collection frequencies in a year. The cost analysis showed that eight times collection had a similar cost as 15 times collection while providing less service, hence this option was eliminated.

Garbage Stream

Administration evaluated both weekly and biweekly options for collecting the garbage stream. With the removal of odor-causing organic material from garbage, collecting the garbage biweekly a feasible option for this business case.

Recycling Stream

Waste Services currently offers weekly collection of comingled recycling material in unlimited number of blue bags, which forms the status quo for this stream. Biweekly collection frequency was evaluated and compared to the current status quo. Biweekly collection frequency reduces the requirement of fleet and resources required for this stream, which can then be used to compensate for the resource demands in the organic stream. However, reducing the collection frequency may be perceived as a reduction in the service level by the residents, and it runs counter to efforts to encourage residents to maximize recycling efforts. Blue bag recycling currently contributes over six percent to the single unit residential waste diversion rate. A reduction in service from weekly to biweekly with associated volume limits could reduce this diversion rate impact. With the new recycling strategy being developed for MRF, Waste Services decided to continue with the weekly co-mingled recycling frequency. We may revisit the recycling frequency in the future as we further consider the strategic direction for the MRF.

5.3.1.3. Processing Feasibility

Source Separated Organics Stream

Waste Services evaluated the current processing capacity at EWMC for SSO stream processing. The current AD facility is under commissioning and is expected to be fully operational in 2019. This facility will process approximately 40,000 tonnes of organic material from the green cart. The current ECF will be demolished and a new facility will be constructed as outlined in Organic Management Report.²⁰ The new facility will be sufficient to process the organic tonnage for the next 30 years. However, high level cost estimates from the Edmonton Composting Facility Long Term Strategy business case show that the top-up option results in an additional \$45 million capital investment versus the no-top-up option. However, based on a review of both operating and capital costs of this program, the total cost per tonne is actually lower if residents are permitted to top-up their green bin. This lower cost results from the differential in providing the additional collection.

Seasonal Leaf and Yard Waste Stream

²⁰ CR_6669 Organic Management

Waste Services evaluated both the cure site and AD facilities for receiving and processing the additional L&YW. The AD process of anaerobically digesting organics produces methane and compost. Compost produced is then transferred to the cure site for final processing. The benefit of this process is that it produces methane as a bi-product, which is captured and combusted to produce carbon-di-oxide (CO₂) to generate heat and power. However, introduction of L&YW to the AD facility reduces the quality of the produced methane. Also, the existing AD size is not sufficient to handle all the L&YW collected under this program. A much larger AD facility will need to be built to process this material with additional capital and operating expenses, on top of the expenses mentioned in the Edmonton Composting Facility Long Term Strategy Business Case. Composting at a cure site is a more cost effective option to handle the additional L&YW and also saves on the material transfer costs from AD to curesite for the final composting step, compared to processing the material at AD. Due to these reasons, processing of L&YW at a cure site was chosen as the processing site for the seasonal L&YW collected in this Stream.

Garbage Stream

Currently, garbage is sorted at the Pre-Processing Facility (PPF) at the Integrated Processing and Transfer Facility (IPTF). The introduction of the SSO stream will result in the removal of the organic fraction from the garbage stream, resulting in a reduction in tonnage of material entering the facility. The material that does get processed through PPF will be transferred to RDF or landfilled.

Recycling Stream

The comingled recycling material collected will continue to be processed at MRF in the future. The current capacity of MRF is 58,000 tonnes and is sufficient to process the material received in the next four years as per CR_6866 Materials Recovery Facility report to Council in February 2019.²¹ Waste Services will revisit MRF requirements in the future and will address any infrastructure and recycling collection related changes at that time.

5.3.2. Social and Resident Preference

Source Separated Organics (SSO) Stream

Phase 1 public engagement results indicate that the largest percentage of residents (55 percent) of survey respondents would be likely or very likely to use the option to top-up their green cart with L&YW.

Seasonal Leaf and Yard Waste Stream

Phase 2 public engagement results indicate that approximately 52 percent of the residents felt that 2 collections in spring and 2 collections in fall would be sufficient to meet their needs.

Garbage Stream

²¹[CR_6866 Material Recovery Facility Report](#)

Public engagement phase 1 results indicated that 68 percent of the residents preferred the automated carts over the 23 percent preferring the black bags. Further analysis was based on the size of the black garbage carts needed by residents. Two major cart sizes were evaluated, 120L and 240L black carts. Public engagement phase 1 and 2 gave mixed results, showing that residents were torn between paying more and getting a bigger cart size. Forty-one percent felt that their households did not generate enough garbage to fill the entire 240L cart, while 48 percent felt that 120L cart was too small. Fifty-two percent of the residents agreed that utility rate should be impacted by the cart size chosen at the curb. 54 percent of the residents agreed to pay extra for receiving the bigger carts. Because of such diversity in residents responses, Waste Services evaluated two scenarios of providing either the bigger cart size of 240 L or optionality of using 120L and 240L cart based on resident needs.

Waste Services partnered with Grant Thornton LLP to develop a rate design model to provide a cost range to differentiate pricing for each size of garbage cart. Results from the rate design model show that the expected differential in rates for a customer choosing a 120L cart would be between \$5 to \$6 less than the rate charged to a customer choosing a 240L cart.²²

Public engagement phase 2 results indicated that 44 percent of residents were interested in receiving the 240L black cart and 41 percent wanted the 120L cart. Due to such a close percentage response, Administration decided to offer the residents a choice between the two cart sizes in Alternative 2 and 4. Hence for Alternatives 2 and 4 residents will be allowed to choose the size of their black cart based on their needs. The public engagement phase 2 results also showed that 54 percent of the residents agreed to having a different utility rate based on their cart choice.

Through recent public engagement, residents were asked about whether rates should be impacted by the cart size that residents choose.

- 54 percent of respondents agreed that a change in the utility rate would be reasonable if different cart sizes were used.
- 40 percent agreed that residents should all pay the same amount regardless of cart size.

When asked to consider a hypothetical pricing change, respondents weighed in on the scope of price incentive that should be provided, at the following levels:

Price difference suggested (per month)	Percentage of respondents who agreed
At least \$1	58%
Between \$2 to \$5	20%
Between \$6 to \$10	18.4%
Between \$11 to \$20	10%

²² Single Unit Rate Design Study

Table 1: Percent of Responses favoring the variable cart prices

As the cart size preference input was collected from residents who haven't used carts yet, Waste Services will verify the residential preference between 240L and 120L black carts through the demonstration project with 8,000 homes, who received the automated collection since mid-April 2019.

5.3.3. Environmental

As part of the analysis of the options for each stream, contribution to the rate of diversion from landfill was considered.

5.3.4. Financial

As part of the analysis of the options for each stream, the capital and operating costs, as well as the NPV and revenue requirement, were all considered. The financial analysis for each program are demonstrated in the Appendixes to this document.

5.4. Recommendation Methodology

In addition to the aforementioned criteria and perspectives, the final recommendation scoring for the business case programs under the respective streams is based on the following:

Criteria	Percentage
	Weighting
Risks	20.0
Net Present Value (\$)	35.0
Environmental- Diversion rate	20.0
Social Impact/ resident preference	25.0
Total (%)	100

Table 2: Recommendation Matrix Criteria and Weighted Scoring

The overall risks, NPV, environmental and social impact was calculated for each alternative and percentage weight was determined based on Table 1. A total score was then calculated out of the weighted score of 100.

6. Alternative Analysis

The above methodology was used to narrow down the feasible options to the respective alternatives for the four streams within this business case. The alternatives analysis is described in details below.

6.1. Source Separated Organics (SSO) Stream

This stream contains the SSO program that allows for separation of kitchen organic waste from the current garbage stream. A detailed table of the viable options and shortlisting is listed in Appendix B

6.1.1. Shortlisted Alternatives SSO Program

The shortlisted alternatives for the SSO program are described in Figure 6.

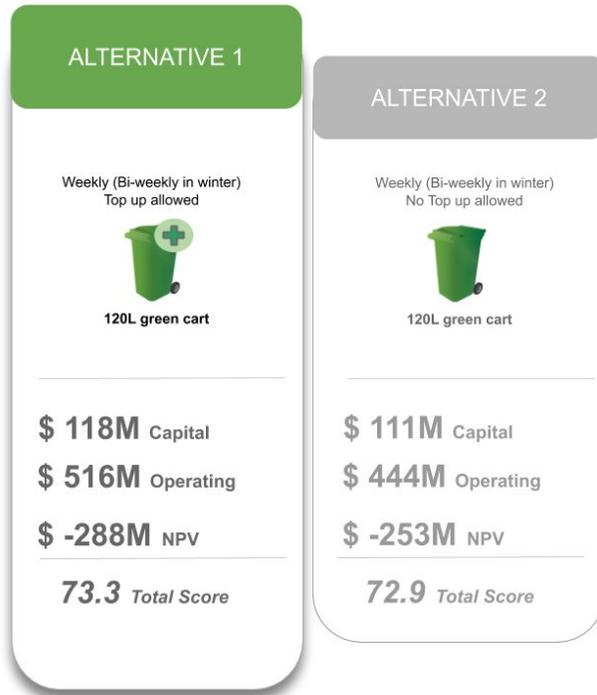


Figure 6: Shortlisted alternatives for SSO Program including Thirty Year (2020-2049) Cost Impact.

6.1.2. Cost Benefit Analysis

Assumptions for SSO Program:

The following assumptions are applied to all of the evaluated alternatives for the financial analysis:

- On an average, residents generate approximately five kilograms of kitchen waste per household per week.
- Waste Services will collect approximately 88,000 tonnes of organic waste, including yard waste, in green carts from single unit residential homes in 2024. This amount is projected to increase at an annual rate of 1.6 percent.
- Five percent contingency was used in 2021 and 2022 for operating costs and then 10 percent contingency was used from 2023-2049 to account for additional costs associated after program rollout.
- The Greenhouse Gas (GHG) credits received by Waste Services for the SSO program change has been accounted for in the Edmonton Composting Facility

Renewal Business Case and will not be inputted in this business case to prevent double counting of these credits.

- The SSO program will be rolled out from summer/fall 2020 to 2022.

Detailed list of assumptions for financial analysis for the business case is listed in Appendix C.

COSTS for SSO Program:

Figure 6 above depicts the total capital and operating costs for the next thirty years (2020-2049). A detailed financial comparison of both the alternatives is outlined in Appendix D. Financial analysis for revenue generation comparison between the alternatives is outlined in Appendix E.

The cost impact analysis shown in Figure 6 above indicates that alternative 2 with 120L green cart and no top up has a lower net capital and operating cost of approximately \$111 and \$444 million in the next 30 years respectively. This alternative also has a lower net present value of negative \$253 million approximately. Comparatively, alternative 1 has a higher capital and operating expense of approximately \$118 and \$516 million respectively. It also has a higher negative NPV of \$288 million in the next 30 years due to higher number of fleet and associated operating and maintenance costs.

RESOURCING for SSO Program:

The total resources required for SSO stream alternatives were captured in the financial analysis and are a mix of permanent and temporary FTEs. Alternative 1 requires a higher resource demand of approximately 8 more FTEs compared to alternative 2. This is due to higher requirement of collectors required to cover the same route in the same time frame due to topping up of the green carts for alternative 1.

6.1.3. Recommendation for SSO Program Change

SSO program alternatives were further analyzed using the recommendation matrix shown in Table 1. Alternative 1, 120L green cart with the top up, scored higher in the total weighted score in the matrix, with a score of 73.3 percent because of higher environmental and social impact scores, compared to alternative 2, which had a score of 72.9 percent. Alternative 1, scored lower on the NPV compared to alternative 2 due to higher capital costs associated with the alternative.

Due to this reason, Administration is recommending to proceed with alternative 1, **120L green cart with the top up** for the SSO stream change.

6.2. Seasonal Leaf and Yard Waste (L&YW) Stream

This program contains the L&YW program that allows the residents to separate the L&YW from regular garbage. Any material that does not fit in the 120L SSO cart will be picked up in a separate seasonal collection in kraft paper bags.

Detailed table of the viable options and shortlisting is listed in Appendix F.

6.2.1. Shortlisted Alternatives for Seasonal L&YW Program

The shortlisted alternatives for the L&YW stream are described in Figure 7.

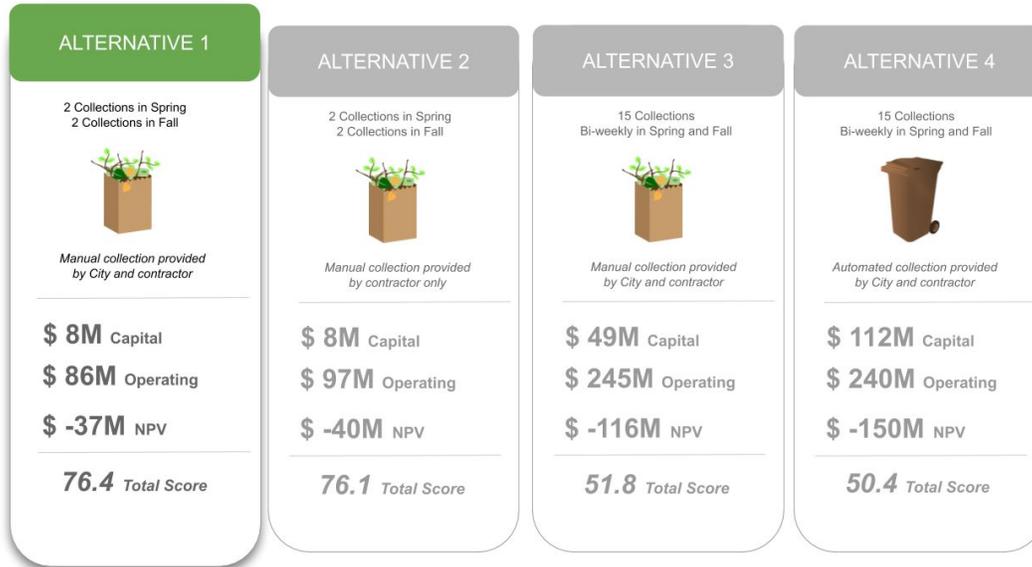


Figure 7: Shortlisted alternatives for L&YW Program including Thirty Year (2020-2049) Cost Impact.

6.2.2. Cost Benefit Analysis

ASSUMPTIONS for L&YW Program:

The following assumptions are applied to all of the evaluated alternatives for the financial analysis:

- Approximately 15,000 tonnes of L&YW material will be collected, twice in spring and fall through this program
- All L&YW FTEs are seasonal and are required approximately nine months of the year
- For Alternatives 1 and 2, L&YW seasonal collection will be conducted using employee overtime and vendor services for a total of four collections per household per year, thus eliminating the need for capital spending on collection trucks on this seasonal service
- For Alternatives 3 and 4, which are biweekly collection of L&YW, additional fleet and operators will be required to meet the service needs.
- No additional eco-station lifts or big bin events are planned.

Detailed list of assumptions for financial analysis for the business case is listed in Appendix C.

COSTS for L&YW Program

Figure 7 above depicts the total capital and operating costs for the next thirty years (2020-2049). A detailed financial comparison of all the alternatives is outlined in Appendix G. A financial analysis for revenue generation comparison between the alternatives is outlined in Appendix H.

The cost impact analysis shown in Figure 7 above indicates that alternative 1, has the lowest operating cost and negative NPV of approximately \$86 and \$37 million respectively, Alternative 2 has the second lowest operating cost and negative NPV of approximately \$97 and \$40 million respectively. Both alternative 1 and 2 have the same capital expense of approximately \$8 million. Both alternatives 3 and 4, with collections occurring 15 times biweekly, have higher capital and operating expenses than alternative 1.

RESOURCING for L&YW Program

The total resources required for L&YW program alternatives were captured in the financial analysis and are a mix of permanent and temporary FTEs. The resource requirement for alternative 1 and 2 is the lowest at approximately 1.5 FTEs. Alternative 3 and 4 with fifteen times manual and automated biweekly collection have a much higher resource impact of 22 and 24.25 FTEs respectively.

6.2.3. Recommendation for Seasonal L&YW Program

The L&YW alternatives were further analyzed based on the recommendation matrix shown in Table 1. Alternative 1 scored 76.4 percent, which is the highest total weighted score in the recommendation matrix based on its higher social impact, compared to alternative 2, which scored 71.6 percent. Alternative 1 also scored better in the risk and NPV compared to all the other alternatives. Both alternative 1 and 2 score slightly low in the environmental diversion category compared to alternatives 3 and 4 due to the less frequency of pickup. The remaining alternatives 3 and 4 scored much lower score of 51.8 and 50.4 percent respectively. Both these alternatives scored much lower in the NPV score due to higher capital costs associated with them. These alternatives also have a lower social preference score as majority of the residents felt that twice in the spring and twice in the fall collection was sufficient for their needs.

Based on the recommendation scores, Administration is recommending alternative 1, **four times manual collection of L&YW (twice in the spring and twice in the fall), with collection provided by City and contractor.**

6.2.4. Additional L&YW collection

Waste Services also reviewed the cost for an additional L&YW collection program to be provided on an ad-hoc basis. This could be accommodated through the provision of an additional curbside collection of L&YW material, separate Big Bin Event focused on the collection of L&YW material or a more focused collection of this material at Eco Stations. While the provision of additional Big Bin Events can be accommodated with existing

resources, additional L&YW curbside collections requires the addition of waste collectors and waste collection vehicles. Estimated operating cost for these additional events are listed in Table 2 below.

Event	Estimated Operating Cost (2022)
One Additional Curbside Collection	\$566,000*
One Additional Big Bin Event	\$50,000

* This cost applies when there is no more than two additional curbside collections of Leaf and Yard Waste.

Table 3: Estimated operating cost for additional curbside collection and Big Bin Event.

6.3. Garbage Program

The garbage program will continue to provide collection of garbage to the residents. This stream will capture all remaining materials that do not enter the organic or the recycling stream.

Detailed table of the viable options and shortlisting is listed in Appendix I.

6.3.1. Shortlisted Alternatives for Garbage Program

The shortlisted alternatives for the garbage program are described in Figure 8.

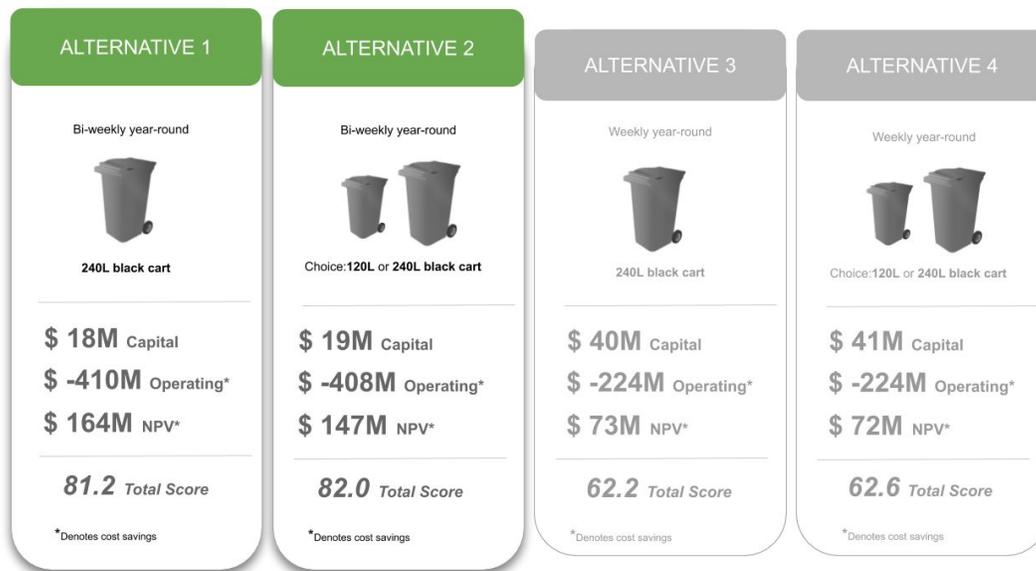


Figure 8: Shortlisted alternatives for Garbage Program including 30-Year (2020-2049) Cost Impact.

6.3.2. Cost Benefit Analysis for Garbage Program

ASSUMPTIONS for Garbage Program:

The following assumptions are applied to all of the evaluated alternatives for the financial analysis:

- Hotline staff required to maintain the resident enquiry for program change were counted under organic stream and hence have not been re-counted for the garbage alternatives.
- All costs are incremental to the status quo, the current weekly black bag collection which will have zero additional capital and operating expenses.
- Five percent contingency was used in 2021 and 2022 for operating costs and then 10 percent contingency was used from 2023-2049 to account for additional costs associated after program rollout.
- All financials costs assume that only one free black cart size exchange is allowed for the residents. The fee for additional cart exchange has not been factored in the total costs or revenues.

Detailed list of assumptions for financial analysis for the business case is listed in Appendix C.

COSTS for Garbage Program

Figure 8 above depicts the total capital and operating cost for thirty years (2020-2049).

A detailed financial comparison of all the alternatives is outlined in Appendix J. Financial analysis for revenue generation comparison between the alternatives is outlined in Appendix K.

The cost impact analysis shown in Figure 8 above indicates that alternative 1 has a slightly higher operating cost savings of approximately \$410 million compared to alternative 2 that has an operating cost savings of approximately \$408 million. Alternative 1 also has a slightly higher positive NPV of \$164 million compared to alternative 2 that has a positive NPV of approximately \$161 million. Capital expense of alternative 1 and 2 are also very similar to approximately \$18 and \$19 million respectively, arising from similar investment to roll out the automation program. Both alternative 3 and 4 have the highest capital expenses of approximately \$40 and \$41 million respectively, and lower operating savings, thus making them the least favorable financially.

RESOURCING for Garbage Program

The total resources required for garbage stream alternatives were captured in the financial analysis and are a mix of permanent and temporary FTEs. The resource requirements for both alternative 1 and 2, automating carts collected biweekly are the lowest with an approximate savings of 30 FTEs. On the other hand, alternative 3 and 4 have a cost saving of 14 FTEs only. The FTE saving from the garbage stream will be used to compensate for the FTE requirements for the SSO program. The net change in FTEs will be discussed in section 7.2 in details.

6.3.3. Recommendation for Garbage Program

The garbage stream alternatives were further analyzed based on the recommendation matrix shown in Table 1. Alternative 2, biweekly, automated collection, offering optionality to residents with either the 120L or the 240L black carts had the highest overall weighted score of 82 percent in the recommendation matrix score due to higher risk and environmental impact scores, followed closely by alternative 1, biweekly, automated collection using 240L black carts, which scored 81.2 percent. Alternative 3 and 4 both scored lower at 62.2 and 62.6 percent respectively, due to their lower NPV, environmental scores. All the four alternatives scored the same on the social impact score due to similar preference of the residents for these alternatives.

The social impact scores between alternate 1 and 2 are the same because there is no clear distinction in the percent of people preferring the 240L versus the 120L black carts. However, residents did prefer to have a choice between the two carts so that they could adjust the cart size based on their household demands.

Administration recommends alternative 2, **Biweekly, automated collection, offering optionality to residents with the use of either the 120L or the 240L black carts** for further consideration by Council. An overall cost impact of the recommended and alternative program set-outs will be analyzed in section 8 for ease of differentiating the potential curbside programs to Council.

6.3.4. Other Additional Add-On Programs

6.3.4.1. Additional Assisted Waste Program

Waste Services will continue to provide service to the residents who are unable to place their organic, garbage and recycling waste at the curbside. As observed in municipalities with similar programs in place it is expected that the number of residents requiring assistance will increase with the new program rollout. An additional amount between \$350,000 and \$400,000 annually is estimated to adapt and maintain the level of service the City provides, and to support the transition to new program requirements.

6.3.4.2. Excess Waste Program

In addition, Waste Services will also implement an 'Excess Waste Program' for residual waste. This program will allow residents the ability to purchase specially branded clear bags for disposal of residual waste only. To support the City's goal of 90 percent diversion from landfill, use of these bags for recyclables and organic materials would not be permitted. The Excess Waste Program is meant to provide options that give some flexibility to households who may need occasional access to additional residual waste set-out capacity (ordinary household trash), yet provide a direct economic incentive to generate less waste and to increase recycling and source-separation of organics.

Some municipalities in Canada offer a similar extra garbage collection programs, including Airdrie, Vancouver, St. Albert, Toronto, and Guelph. In these municipalities extra garbage bag collection are typically offered within the price range of three to six dollars.

This excess waste program, if implemented, would be offered on a full cost recovery basis. The garbage bags would be priced to fully offset any additional capital and operating expenses incurred.

A preliminary analysis of the program cost estimates an approximate \$2 million in additional capital expense and an ongoing annual operating expense of \$3.5 million requirement to operate this program. An anticipated price per bag will be in the range of three to five dollars per bag. If approved by Council, the initial price per bag for the program will be included as part of the 2020 Utility Rate Filing.

6.4. Recycling Program

Besides the organic and garbage streams, Waste Services also evaluated the current recycling program. This stream will continue to provide co-mingled recycling collection services to the residents.

Detailed table of the viable options and shortlisting is listed in Appendix L.

6.4.1. Shortlisted Alternatives for Recycling Program

Municipal benchmarking showed different industry best practices for recycling stream. These best practices were reviewed for frequency and method of collection. There are also new emerging trends in the recycling markets to reduce the contamination in the stream and dual stream collection and processing of recyclables. Waste Services proposed the rehabilitation strategy²³ for MRF to Council in 2019 because of the evolving markets and trends. Waste Services will continue to monitor and make the necessary changes as required in the future. The shortlisted alternatives for the recycling stream are described in Figure 9.

²³ CR_6866 Material Recovery Facility Report

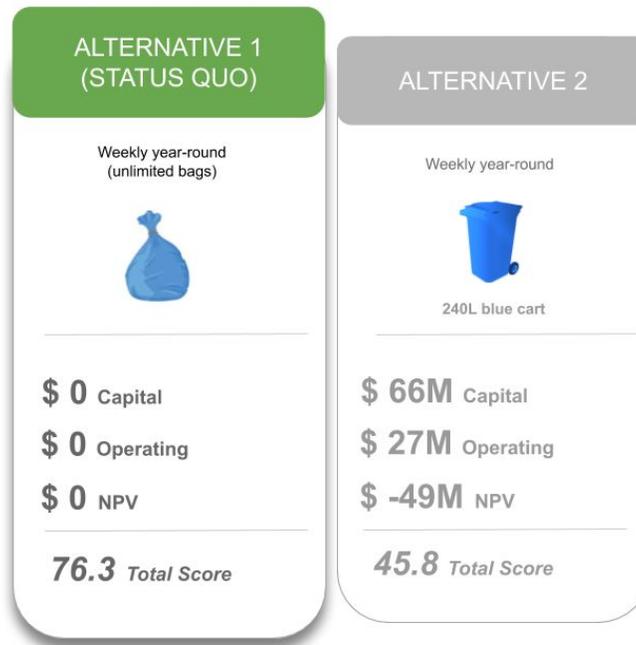


Figure 9: Shortlisted alternatives for Recycling Program including Thirty Year (2020-2049) Cost Impact.

6.4.2. Cost Benefit Analysis for Recycling Program

ASSUMPTIONS for Recycling Stream Program:

The following assumptions are applied to all of the evaluated alternatives for the financial analysis:

- Capital expenses required to update MRF facility and equipment have been put forward in the MRF business case²⁴ and hence have not been added for the alternatives in the set-out business case.
- All costs are incremental to the status quo, the current weekly unlimited blue bag collection which will have no additional capital and operating expenses.

Detailed list of assumptions for financial analysis for the business case is listed in Appendix C.

COSTS for Recycling Program

Figure 9 above depicts the total capital and operating cost for thirty years (2020-2049).

A detailed financial comparison of all the alternatives is outlined in Appendix M. Financial

²⁴ CR_6866 Material Recovery Facility Report

analysis for revenue generation comparison between the alternatives is outlined in Appendix N.

The cost impact analysis shown in Figure 9 above, indicates that alternative 1, the status quo does not have any additional capital or operating expenses. Under this alternative Waste Services will continue to operate in the current manner with the same operating costs and resources. Comparatively, alternative 2, weekly collection of automated 240L blue carts requires an additional capital and operating budget of approximately \$66 million and \$27 million respectively. This alternative also has a negative NPV of approximately \$49 million, thus making it more expensive.

RESOURCING for Recycling Stream

The total resources required for recycling stream alternatives were captured in the financial analysis and are a mix of permanent and temporary FTEs. There are no changes to the FTE requirement for status quo (alternative 1). The overall resource requirement for alternative 2 is a saving of two FTEs due to lower number of collector requirements in this scenario.

6.4.3. Recommendation for Recycling Program

Recycling stream alternatives were further analyzed using the recommendation matrix shown in Table 1. Alternative 1 scored the highest total weighted score of 76.3 percent in the recommendation matrix because of receiving the highest NPV value score due to no change in the capital and operating expenses for this alternative, indicating this is the most cost effective alternative. Alternative 2, scored a lower score of 45.8 percent, due to lower NPV scores. Alternative 2 scored higher in risks and social impact scores. Both alternative 1 and 2 has the same environmental score due to diverting the same tonnage of material from the landfill.

Based on the recommendation matrix score above, Administration is recommending continuing with the status quo recycling collection of **weekly manual collection of commingled recyclables in blue bags**.

7. Single Unit Waste Set-out Business Case Recommendations

7.1. Waste Services Recommended Program Set-out and Costs

Administration is bringing forward the recommended set-out Waste Services curbside collection for Council's consideration. The program set-out and associated 30-year capital and operating costs are shown in Figure 10.

Recommended set-out has the highest overall score of 77 percent. This set-out has an overall capital and operating expenses of approximately \$145 and \$195 million respectively. It also has a negative NPV of approximately \$164 million.

Figure 10 also shows the alternate set-out, which differs from the recommended one in that it

proposes the 240L black cart for garbage and has a slightly lower overall score of 76.9 percent. The alternate set-out has similar capital and operating expenses of approximately \$144 and \$193 million respectively. It also has a negative NPV of approximately \$161 million.

Even though both the recommended and alternate set-outs have very small differences in capital and operating expenses, NPV and overall scores, Waste services recommends the following set-out program due to its preference by the residents as observed in the public engagement phase 2 results.

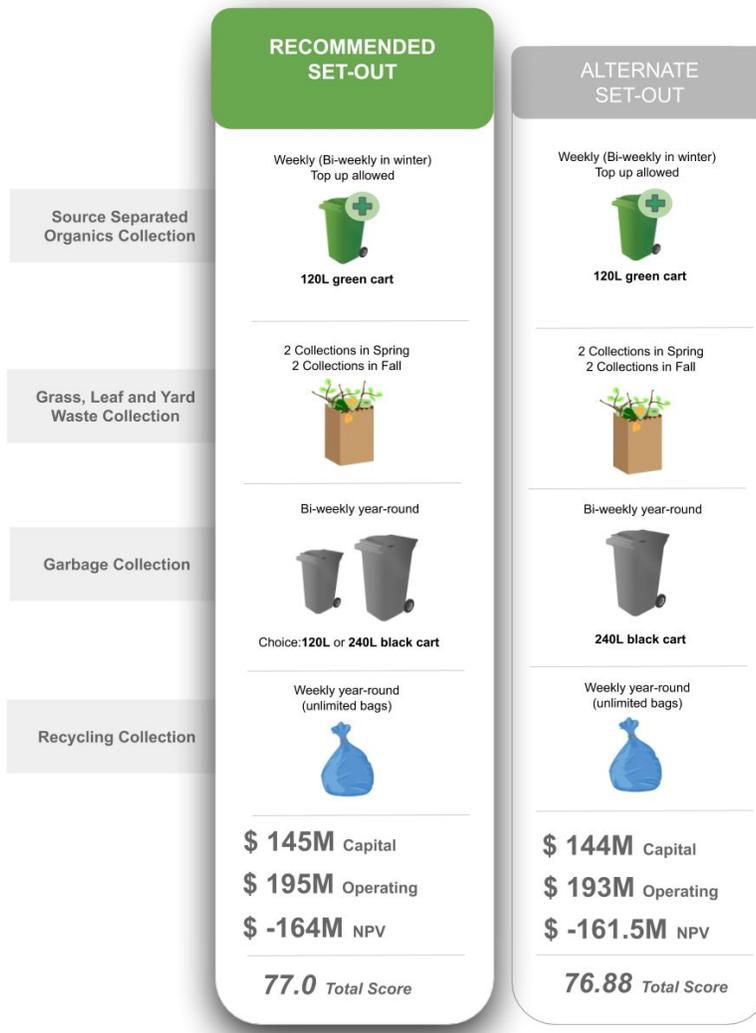


Figure 10: Two Possible Waste Services Curbside Program Set-outs and their associated capital and operating costs

7.2. Resourcing, Fleet and 4-Year Financial Requirement

Both the recommended and alternate set-outs have the same resource demand of 16.5 additional permanent and seasonal FTEs required from 2022 onwards. On top of this, both

set-outs also require additional 19 temporary FTEs to cover the cart roll-out program, public education and outreach, and GIS mapping between 2020 and 2023.

Net fleet and associated capital cost requirement for the recommended and alternate set-out is similar and is shown in Table 3. Net cost impacts to Waste Service as outlined in this business case have been forecast within the current business plan, and will primarily be offset with internal efficiencies as presented in the 2020 Business Plan.

Fleet Number and Cost (2020)	Recommended Set-Out	Alternate Set-Out
Net Fleet Number	4	4
Total Capital Cost (2020)	\$1,455,132	\$1,455,132

Table 4: Net Fleet Requirement for Recommendation set-outs 1 and 2.

Total three year (2020-2022) capital and operating costs for the recommended and alternate set-outs are outlined in Table 4. Recommended set-out has a capital expense of approximately \$51.5 million. Comparatively alternate set-out has a capital expense of approximately \$50.4 million. Both the recommended and alternative set-out have very similar operating expenses of approximately \$15 and \$13 million respectively.

Package	Recommended Set-Out	Alternate Set-Out
Total Capital Cost (2020-2022)	\$ 51,493,678	\$ 50,390,631
Total Operational Cost (2020-2022)	\$14,984,099	\$13,183,130

Table 5: Cumulative 4 Year (2020-2022) Capital and Operating Costs for recommended and alternate set-out.

The assisted waste collection program, which is offered to residents who are unable to place their organic, garbage and recycling waste at the appropriate set-out location, will continue to be provided. Reliance on this program is anticipated to grow due to the changing set-out program. The additional funding required to continue to support this program is estimated to be between \$350,000 and \$400,000 annually. This amount will be accounted for in Waste Services annual rate file.

The overall impact of the recommended set-out on the diversion rate is shown in Table 5. The recommended set-out program change is expected to increase the single unit residential waste diversion rate by between eight to two percentage points. This will help reach the 90 percent residential waste diversion goal set in the Waste Strategy²⁵. The SSO program shows a range between five to nine percent for the diversion rate due to the dependency of the diversion on the completion of the new composting facility. All numbers assume that the current facilities at EWMC are functioning at their full capacity.

²⁵ CR_5829 Waste Strategy - Comprehensive Waste Management Strategy Report

Waste Services Set-Out Programs	Change in Diversion Rate
SSO Program	5% to 9%
Seasonal Leaf and Yard Waste Program	2%
Total	7% to 11%

Table 6: Change in Diversion Rate for the Recommended Set-Out

8. Organizational Change Impact for the Single Unit Waste Set-Out Business Case

8.1. Stakeholder Requirement, Operational and Business Impacts

Table 6 below identifies the stakeholders and their requirements and the business and operational impacts associated with them.

Primary Stakeholder		
Stakeholder Name	Stakeholder Requirement	Business and Operational Impact
Waste Services Branch (internal)	To identify a waste collection program for residents currently receiving two-stream hand collection services, and implement a program to increase the waste diversion from landfills. The program should meet the financial, environmental and social goal	<ul style="list-style-type: none"> Increased diversion from landfill by changing public behavior with the program Increased resource demands to meet the service level (collection and processing) Increased resource demands for public engagement, education and outreach Increased capital and operational costs for collection, processing and education Development of new enforcement strategies to implement the program changes
Fleet and Facility Services Branch (internal)	To be communicated adequately on fleet and equipment procurement and maintenance needs as well we the project schedule	<ul style="list-style-type: none"> Increased resource demands for fleet and processing equipment acquisition and the maintenance of the new automated fleet
Communications and Engagement Department (internal)	To develop and deliver high quality public education, outreach, communication and engagement.	<ul style="list-style-type: none"> Increased resource demands for providing public engagement, communication,

	To ensure 311 is ready for the program change	<p>and education</p> <ul style="list-style-type: none"> • 311 needs to be fully trained on the program changes
Executive Leadership Team (internal)	To ensure the comprehensive and complete information is provided so the ELT makes informative decisions.	<ul style="list-style-type: none"> • To provide directions/decisions on the project and review/approve the business case
City Council (internal)	To ensure the comprehensive and complete information is provided so the City Council makes informative decisions.	<ul style="list-style-type: none"> • To review this business case and provide political directions • To expect to receive resident inquiries/feedback on the program changes
Parks and Road Services Branch (internal)	To ensure there is no negative impact on street cleaning and snow removal/plowing	<ul style="list-style-type: none"> • To work collaboratively with Waste Services Branch to ensure waste can be properly set out, and street cleaning and snow removal/plowing can also be performed to meet the residents needs.
COE Facilities (internal)	To be adequately trained on the program change requirement and provided support	<ul style="list-style-type: none"> • To lead by example and participate in the program change
City of Edmonton Unions (external)	To support and collaborate with Waste Services in accordance with 'Working Relationship Agreement' principles	<ul style="list-style-type: none"> • To support and collaborate with Waste Services in accordance with 'Working Relationship Agreement' principles
Single/Multi-Unit Residents receiving hand collection (external)	To ensure the program change continues to meet the resident needs, the information is clearly communicated to residents, and support is in place to remove service disruption during the program change	<ul style="list-style-type: none"> • Increased education demands to fully implement the program changes • Increased need to sort waste at household level • Increased need for waste material storage space • Need of a collection calendar • Need of clear education and information on sorting into new streams • Need of ongoing support
Waste Collection Services Vendors (external)	To have adequate time to bid and prepare for the new collection contract.	<ul style="list-style-type: none"> • Opportunity to bid and work for the City on the new collection program • Resource needs for providing the service to the City
Waste Cart Vendors (external)	To have adequate time to bid and prepare for the new cart supply and	<ul style="list-style-type: none"> • Opportunity to bid and work on the City cart supply and

	distribution contract	<p>distribution contract</p> <ul style="list-style-type: none"> • Need to provide quality work and meet the City's schedule requirements
EPCOR (external)	To ensure any changes required in the billing system and waste account setup are communicated adequately to EPCOR and all relevant staff are trained	<ul style="list-style-type: none"> • To update the billing system and waste account setup system. Ensure all relevant staff are trained
Secondary Stakeholder		
Stakeholder Name	Stakeholder Requirement	Business and Operational Impact
Financial Services Branch (internal)	To ensure increased transparency in the allocation of the proposed budget and to ensure Waste meets its obligations under the Waste Management Utility Fiscal Policy	Expertise is required for providing finance support
Integrated Infrastructure Services (IIS) Department (internal)	To be communicated adequately on capital projects that need to be delivered by IIS as a result of the program change, and on the impacts on any other capital projects that IIS manages.	Expertise is required for providing support and delivery of all waste infrastructure projects
Corporate Procurement and Supply Services Branch (internal)	To be communicated adequately on project procurement needs	To provide resources to meet the project procurement needs
Law Branch (internal)	To be consulted on all legal items to reduce the project risks	To provide legal advice and risk management advice on Waste Services program changes, including legal advice on new procurement, existing collection contract renewal, program change enforcement, and other items
Community Standards and Neighbourhood Branch (internal)	To ensure the bylaw enforcement needs are communicated adequately to the Branch and the required work can be managed with the Branch's capacity	To work collaboratively with Waste Services Branch on an enforcement program, and provide bylaw enforcement according to the consent
City Planning Branch (internal)	To ensure the illegal suites identified during the program rollout are reported to City Planning	To follow up on the illegal suites reported by Waste Services Branch during the program rollout
Employee Services (internal)	To be communicated adequately on HR management needs (Hiring,	To provide resources on HR management needs (Hiring, etc)

	etc.)	
Open City and Technologies (internal)	To be communicated adequately on IT needs	To provide resources on IT needs
Waste OHS (internal)	To ensure the project align with all OHS Acts, Codes, Regulations and the COE OHS Policies/Procedures/Directives	To provide resources to review and finalize the project OHS program
Alberta Environment and Parks (external)	to ensure the program change meets all requirements under Alberta Environmental Protection and Enhancement Act	To review and approve any approval or amendment to existing approvals
Media	To be informed of the project decisions and progress and be provided of information required	To provide resources on reporting the project decisions and progress
Corporate Enviso team	To ensure the project align with the Corporate Enviso requirements	To provide resources to review and finalize the project Enviso documents
City Waste Truck Contractor	To be communicated adequately on the needs for vehicle modifications/purchasing	To provide resources to ensure all garbage truck modifications/purchasing meets the City timeline
Local Waste Management Organizations	To be informed of the project decisions and progress and be provided of information required and to provide input	To provide input and assist the City to promote the project
Business Performance Customer Experience Branch	To ensure the project align with City Operations Departmental goals/initiatives	To provide resources on project procurement and provide project input

Table 7: Stakeholder Requirement, Business and Operational Impacts of the Recommended Set-outs

9. Single Unit Waste Set-out Business Case Key Risk(s) and Mitigating Strategy

The high impact risks and mitigation strategies for the single unit waste set-out program are summarized below. The risk impact outlined in the table below are based on risk scores before the mitigation strategies for the set-out program are in place.

RISK(S)	IMPACT	MITIGATION STRATEGY
Difficult to determine how many residents will choose the 120L black cart vs the 240L black cart resulting in inventory excess or shortfall	High	<ul style="list-style-type: none"> Use public engagement phase 2 results to get the best estimate for the business case and correct the budget once the results are available prior to the full

		<p>program implementation</p> <ul style="list-style-type: none"> ● Offer only 240L black carts for initial roll out; offer Excess Waste program to mitigate excess waste needs
External cure site not in operation in fall 2020 leading to decreased processing of leaf and yard waste collected and increased tonnage of material landfilled	High	<ul style="list-style-type: none"> ● Find an alternate solution to process the L&YW volume for fall 2020, when the program rolls out to approximately half of the city ● Have a contingency plan for future processing capacity options
Windrow and snow removal during the winter may be problematic	High	<ul style="list-style-type: none"> ● Meet with Parks and Road Services to develop a plan ● Learn from other municipalities with similar winter conditions
Procurement delays for carts, equipment and fleet due to delayed decision by Council	High	<ul style="list-style-type: none"> ● Develop procurement management plan ● Develop procurement documents as early as possible to avoid delays ● Have City leadership support on expediting procurements ● Update business case as per Council's decision ● Update project plan and schedule based on decision made by the Council
Declining non-rate and commercial revenues as several programs including C&D, Commercial Collections and Biosolids undergo substantial programmatic changes. Also declining MRF revenue in response to global economic forces	High	<ul style="list-style-type: none"> ● Non-regulated program losses are mitigated through the Financial Stability Reserve loan ● Re-negotiate contractual rights and obligations with customers/vendors ● Implement comprehensive cost avoidance protocols
Addition of grass to ADF will reduce the methane yield and revenue generation from AD	High	<ul style="list-style-type: none"> ● Include in the new ADF scope that the facility must be able to handle the materials including food waste and yard waste ● Analyze the SSO from the demonstration phase and evaluate methane generation
Residents do not have the adequate knowledge on the size of the black carts needed for their residential garbage needs	High	<ul style="list-style-type: none"> ● Provide all Phase I residents a 240L black cart to start with and allow them to change into a 120L cart
Improper set-out by residents	High	<ul style="list-style-type: none"> ● Have public outreach and education plan finalized for the roll out ● Apply experience and lessons learned from the demonstration project to

		improve communication and education <ul style="list-style-type: none"> ● Have a plan in place for different thresholds and scenarios of non-compliance ● Update Waste Bylaw
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Table 8: Risk Impacts and Mitigation Strategies of the Recommended Set-outs

10. Conclusion and Recommendations

10.1. Conclusion

This business case demonstrates the need to transition the single unit waste collection program and the importance of separating the organic waste from the current mingled garbage stream. Based on the information gathered during the phase 1 and 2 of engagement, the recommended set-out offers residents a solution to meet their needs as well as has a positive impact on the residential diversion rate. The recommended programs have higher overall evaluation score, thus making it the most effective set-out as a whole.

On top of the recommended set-out, Waste Services can offer additional pickup services to meet the needs for additional L&YW and garbage on as needed basis. The extra waste program can be used as a one-off to dispose additional garbage collected during the week or holidays, at an extra cost to the residents. An additional seasonal leaf and yard waste pick up and extra big bin events can also be offered to collect additional L&YW generated on as needed basis.

10.2. Single Unit Waste Set-out Business case Final Recommendations

Based on the preceding analysis, Waste Services recommends transitioning to the new waste set-out. This set-out contains:

- 120L green cart with top-up collected weekly in spring, summer and fall and biweekly in winter,
- Manual seasonal collection of L&YW, collected twice in the spring and twice in the fall
- Resident choice between 120L or 240L black carts collected biweekly
- Manual collection of recycling in blue bags collected weekly

This set-out will serve the residents need based on what Waste Services heard from them in the public engagement and also provides the best possible residential diversion from landfill.

10.3. Project Responsibility and Accountability

The Waste Services Single unit set-out program Sponsor is the Branch Manager of Waste Services. The program oversight is provided by the General Supervisor of Business Strategy Planning & Support and Program Manager for Waste Strategy Development.

The overall capital program is divided into:

of the organic material collected at the curb and the overall diversion rate.

11.2. Education and Outreach Implementation

Implementation of single unit set-out program will be accompanied by a comprehensive public education and outreach strategy. This is a collaborative approach, designed to support residents through the transition, and ensure that they have the knowledge, tools and confidence required to participate effectively in new programs. Education and outreach tactics include (but are not limited to):

- Broad reaching public communications & marketing campaign
- Development and distribution of public information and resource materials
- Digital media strategy to distribute information and collect resident feedback through various digital media channels
- Public information sessions (drop-in style) at various public locations and events across the city
- Door-to-door canvassing
- Integrated customer service/support through 311 and Waste Hotline

These methods and tactics are being tested and evaluated during the demonstration phase. Related learnings will help inform the education and outreach plan, which will be implemented over a five year period, with the highest concentration of efforts and resources allocated within the first two years of new program implementation.

11.3. Demonstration Phase Implementation

The single unit waste set-out demonstration program started in April 2019 and will run through April 2020. Approximately 8,000 homes were chosen to receive the 120L green carts for SSO (top-up is allowed) and 10-20 kraft paper bags for the seasonal leaf and yard waste collection programs respectively. Approximately 4,000 homes received the 120L and 4,000 received 240L black carts for the garbage stream program. The results of the demonstration phase will be used to fine-tune the full program implementation. Waste Services will analyse the waste composition and understand residents green and black cart needs by the end of this program. Results from the demonstration phase will be used understand residents needs and other program rollout and implementation related issues and problems.

11.4. Single Unit Waste Set-out Program Changes Implementation

The program, upon City Council approval in September 2019, will be implemented in multiple phases between fall 2020 and 2022.

11.5. Bylaw, Enforcement Strategy and Compliance

The current Waste Management Bylaw 17555 is being updated concurrent to this business case. This bylaw will provide governance to complement the educational and programming strategies that will accompany the transition to the new residential waste set-out. Waste Services is collaborating with internal stakeholders such as the Community Standards Branch to develop an operational enforcement and escalation strategy that will allow residents to easily come into compliance with the new bylaw by

prioritizing education and outreach; and utilizing grace periods. The bylaw project will govern the single unit set-out project compliance and is required for the proper performance management for the program.

11.6. Performance Indicators

Waste Services will measure the effectiveness of the program after rollout on a regular basis by measuring the key performance indicators (KPIs) such as:

- Overall Single Unit Residential Diversion Rate
- Single Unit Residential Diversion from Landfill of SSO, L&YW, Garbage and Recyclables
- Total Operating Cost per Tonne
- Tonnes of material collected for SSO, L&YW, Recycling and Garbage
- Contamination rate in garbage stream for both SSO and L&YW
- Overall residential customer satisfaction with Waste Services Program

11.7. Critical Dependencies Impacting Timeline

Multiple factors and decision will impact the timeline for this business case including but not limited too:

- Delay in a Council decision on the set-out program recommendation in September 2019 will impact the final program rollout in 2020 to 2022. This is the most crucial step to proceed with tendering and procurement of long lead time items such as carts and collection services.

12. Review and Approval Process

The following review and approval process was followed for this business case:

Review Step	Reviewer
Review 1	Team Lead of Business Integration, Working group, Project Managers for Waste Services Program and General Supervisors of Business Integration section
Review 2	Director of Business Financial Analytics, Director of Business Integration, Director of Waste Collection Services, Director of Sustainable Waste Processing, Director of Technical Services, Director of Asset Management and Branch Manager Waste Services
Review 3	Deputy City Manager
Review 4	Corporate Communications, Business Partners (IIS)
Review 5	Utility Advisor, City Manager
Review 6	Utility Committee report presented

12.1. Business Case Sign Off

The business case will be approved (signed and dated) by the Program Sponsor, Program Manager of the Waste Services Set-Out program, Directors of Technical Services, Sustainable Waste Processing Services, Business Integration and Safety Engagement. The final approval will be received from the Waste Services Branch Manager and the Deputy City Manager prior to submission to Utility Committee and the Council.

13. Appendices

Appendix A: Municipal Waste Services Program and Diversion Rates (2015-2016)

Appendix B: Alternative Shortlisting Criteria Table (SSO Program)

Appendix C: Assumptions for Financial Analysis for Single Unit Curbside Set-Out Business Case

Appendix D: Costs- Financial Analysis Summary Comparison (SSO Program)

Appendix E: Comparison of Revenue Requirement of Alternatives (SSO Program)

Appendix F: Alternative Shortlisting Criteria Table for Collections (L&YW Program)

Appendix G: Costs- Financial Analysis Summary Comparison (L&YW Program)

Appendix H: Comparison of Revenue Requirement of Alternatives (L&YW Program)

Appendix I: Alternative Shortlisting Criteria Table (Garbage Stream)

Appendix J: Costs- Financial Analysis Summary Comparison (Garbage Stream)

Appendix K: Comparison of Revenue Requirement of Alternatives (Garbage Stream)

Appendix L: Alternative Shortlisting Criteria Table (Recycling Stream)

Appendix M: Costs- Financial Analysis Summary Comparison (Recycling Stream)

Appendix N: Comparison of Revenue Requirement of Alternatives (Recycling Stream)

Appendix A - Municipal Waste Service Programs and Diversion Rates (2015-2016)

Municipality/ Region	Residential Diversion Rate (please see notes below)	Separate Garbage	Separate Recycling	Separate Organics	Separate Yard Waste	Clear Bags	Allow Privacy Bags	Mandatory Grasscycling	Garbage bag/Volume Limits
Region of York	91% **	x	x	x	x				x
Markham	81% **	x	x	x	x	x	x	x	x
Surrey	72% **	x	x	x	x				x
St. Albert	67% **	x	x	x	x				x
Metro Vancouver	63%**	x	x	x					x
Guelph	63%*	x	x	x	x	x			x
Strathcona County	61%**	x	x	x	x				x
Halifax	61% *	x	x	x	x	x	x	x	x
City of Vancouver	60% *	x	x	x	x				x
Halton	58%**	x	x	x					x
Barrie	54% **	x	x	x	x				x
Region of Niagra	54%**	x	x	x				x	x
Region of Durham	53%**	x	x	x	x				x
Edmonton	52% **	x	x						
Toronto	52% **	x	x	x	x			x	x
Leduc	51%**	x	x	x	x				x
Region of Peel	50% **	x	x	x	x				x
Montreal	47% **	x	x	x	x				x
Ottawa	44%**	x	x	x					x
Calgary	34% **	x	x	x					x
Winnipeg	33% **	x	x		x				x
Saskatoon	22%**	x	x	x***	x***				x
Fort Saskatchewan	21% **	x	x	x					
Regina	20% **	x	x						x

* 2015 Residential Diversion Rate

** 2016 Residential Diversion Rate

*** Optional at Additional Cost

The above table shows that City of Edmonton's diversion rate in 2016 was 52 percent. The new diversion rate calculation methodology for single unit residence, reviewed by the auditor and highlighted in CR_5520 Waste Services Business Plan, was used to adjust the diversion rate. The revised 2017 and 2018 diversion rate of 39 and 36 percent for single unit residences was accepted by the auditor.

Appendix B - Alternative Shortlisting Criteria Table (SSO Program)

Step 1 Elimination	Option	Green Cart size	Green Bin top up Y/N	Step 2 Elimination	Going Forward
	1	120L	Yes		Yes
	2	120L	No		Yes
	3	240L	Yes		No
	4	240L	No		No
	5	360L	Yes		No
	6	360L	No		No

The table above shows the two steps used to eliminate the six possible SSO collection program options to final two alternatives that were analyzed in detail in the business case. Table below illustrates the details on the two steps used for elimination above.

Elimination Steps	Step 1	Step 2
Elimination Criteria	Alignment with Corporate goals and Waste Service’s 25-year business strategy	Approved Council recommendation to use plan the SSO program using the 120L green carts
	Potential feasibility/achievability of the viable options	
	Maintaining Waste service level to the City single unit residences participating in the current waste collection program	

Appendix C - Assumptions for Financial Analysis for Single Unit Curbside Set-out Business Case

Assumptions	
•	A 10 percent contingency has been added to all the final capital cost numbers to allow for unforeseen event in the future.
•	Annually compounded inflation rate is 1.9 percent based on average 2019-2022 Corporate budget guidelines was used as Consumer Price Index (CPI) for analysis. The final capital numbers are estimates and may fluctuate based on market conditions.
•	Trend function was used to forecast the unit counts based on the historical data presented for growth in residential counts.
•	Waste Bylaw will be updated in time for full program implementation and the resource and costs associated with this has not been included in the business case.
•	Five percent of the green carts rolled out will be sufficient to maintain the cart and accessories inventory for replacing broken carts or cart parts and maintaining growth as needed.
•	15 percent spare ratio in truck numbers is sufficient to count for the downtime required to maintain a healthy fleet on the road.
•	Five spare arms will be sufficient to maintain the automated truck arm inventory for maintenance purposes.
•	Three cart maintenance crew vehicles will be sufficient to maintain the cart roll-out program per automated stream for Waste Services.
•	One cart maintenance shop and yard sufficient for storing and maintaining carts per automated waste stream
•	Fuel cost is calculated at approximately \$0.929 per kilometer travelled by the vehicle based on historical trend from 2017 and 2018.
•	Fleet maintenance cost is calculated at approximately \$2.70 per kilometer travelled by the vehicle.
•	Automated arm maintenance is calculated at approximately \$5,000 per automated truck annually.
•	Total kilometer distance for the tandem truck was calculated using the 2018 FAST data. An additional 19 percent was added to the kilometers to factor in the growth and increased distance travelled by the trucks for the SSO program and the garbage stream.
•	Contractor costs are assumed to be the same as the Waste Services Collection cost of service.
•	The Cure Site capacity for processing the additional tonnage is adequate.

Appendix D - Costs- Financial Analysis Summary Comparison (SSO Program)

Waste Services Vehicle & Equipment (2019-2022)	ALTERNATIVE 1-120L cart Top UP	ALTERNATIVE 2-120L cart No Top UP
Total Capital Cost	(\$117,851,375)	(\$110,676,374)
Total Revenues	\$0	\$0
Total Operating and Maintenance Costs	(\$516,236,201)	(\$444,011,246)
Project Net Inflows (Outflows)	(\$634,087,577)	(\$554,687,620)
WACC Discount Rate	5.32%	5.32%
Net Present Value	(\$287,912,389)	(\$253,685,577)

Note: The above table demonstrates the full life-cycle costing approach of the thirty year capital and operating requirements.

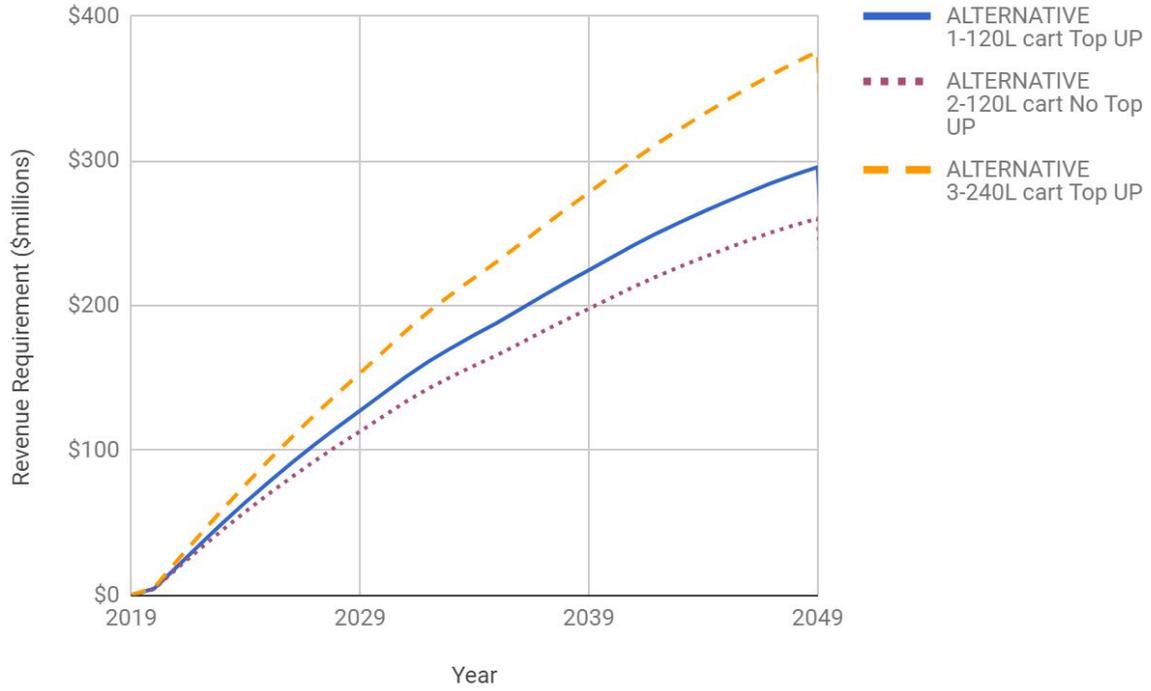
Appendix E - Comparison of Revenue Requirement of Alternatives (SSO Program)

Cumulative Revenue Requirement (from base year)	ALTERNATIVE 1-120L cart Top UP	ALTERNATIVE 2-120L cart No Top UP	ALTERNATIVE 3-240L cart Top UP
CPV @ Yr 5	64,268,324	57,772,872	76,419,370
CPV @ Yr 10	127,376,827	113,114,940	153,277,019
CPV @ Yr 15	179,724,141	158,600,422	219,393,920
CPV @ Yr 20	224,524,077	197,849,879	278,038,063
CPV @ Yr 25	264,917,935	233,338,962	332,113,752
CPV @ Yr 30	295,678,525	260,137,703	375,446,987
Capital Cost Summary (Base Year Dollars)	ALTERNATIVE 1-120L cart Top UP	ALTERNATIVE 2-120L cart No Top UP	ALTERNATIVE 3-240L cart Top UP
Equipment	87,875,110	82,588,910	98,881,993
Building	350,000	350,000	350,000
Other (engineering/PM/etc)	0	0	0
Total base costs	88,225,110	82,938,910	99,231,993
<i>Add: contingency, inflation</i>			
Contingency	8,822,511	8,293,891	9,923,199
Inflation	20,803,754	19,443,573	23,263,942
Total Capital	117,851,375	110,676,374	132,419,134
<p><u>Economic Assumptions</u> Inflation (compounded each year) 1.90 percent Contingency 10 percent Analysis is based on 30 years to capture the full life cycle costs of the assets Assumes borrowing required at 70 percent (based on current Utility split) at four percent</p>			

Revenue Requirement Summary (CUMULATIVE PRESENT VALUE to use for graph)

Year	Calendar Year	Alternatives	
		ALTERNATIVE 1-120L cart Top UP	ALTERNATIVE 2-120L cart No Top UP
0	2019	\$0	\$0
1	2020	\$4,569,573	\$4,188,148
2	2021	\$19,560,337	\$18,404,486
3	2022	\$34,868,246	\$31,913,090
4	2023	\$49,914,022	\$45,155,307
5	2024	\$64,268,324	\$57,772,872
6	2025	\$78,008,480	\$69,840,586
7	2026	\$91,176,607	\$81,398,138
8	2027	\$103,799,214	\$92,469,701
9	2028	\$115,898,936	\$103,075,669
10	2029	\$127,376,827	\$113,114,940
11	2030	\$139,147,096	\$123,405,979
12	2031	\$150,844,658	\$133,629,303
13	2032	\$161,461,316	\$142,868,539
14	2033	\$170,880,512	\$150,998,324
15	2034	\$179,724,141	\$158,600,422
16	2035	\$188,234,341	\$165,915,155
17	2036	\$197,451,477	\$173,981,151
18	2037	\$206,865,747	\$182,286,934
19	2038	\$215,885,170	\$190,238,914
20	2039	\$224,524,077	\$197,849,879
21	2040	\$233,340,594	\$205,610,016
22	2041	\$242,083,268	\$213,296,616
23	2042	\$250,191,521	\$220,418,997
24	2043	\$257,716,013	\$227,023,187
25	2044	\$264,917,935	\$233,338,962
26	2045	\$271,817,863	\$239,385,608
27	2046	\$278,426,640	\$245,172,727
28	2047	\$284,754,225	\$250,709,087
29	2048	\$290,482,511	\$255,675,436
30	2049	\$295,678,525	\$260,137,703

Cumulative Present Value Revenue Requirement Chart SSO Alternatives



Appendix F - Alternative Shortlisting Criteria Table for Collection Services (Leaf and Yard Waste Program)

	Option	Frequency of L&YW seasonal	Automation Y/N	City-contractor Split Y/N	Collected regular Y/N		Going forward		Going forward
Step 1 Elimination	1	15/year	Y	Y	Y	Step 2 Elimination	YES	Step 3 Elimination	NO
	2	15/year	N	Y	N		YES		YES
	3	15/year	Y	N	Y		YES		NO
	4	15/year	Y	Y	N		YES		YES
	5	15/year	N	Y	N		NO		NO
	6	8/year	Y	Y	Y		NO		NO
	7	8/year	N	Y	N		NO		NO
	8	8/year	Y	N	Y		NO		NO
	9	8/year	Y	Y	N		NO		NO
	10	8/year	N	Y	N		NO		NO
	11	6/year	Y	Y	Y		NO		NO
	12	6/year	N	Y	N		NO		NO
	13	6/year	Y	N	Y		NO		NO
	14	6/year	Y	Y	N		NO		NO
	15	6/year	N	Y	N		NO		NO
	16	4/year	Y	Y	Y		YES		NO
	17	4/year	N	Y	N		YES		YES
	18	4/year	Y	N	Y		YES		NO
	19	4/year	Y	Y	N		YES		NO
	20	4/year	N	Y	N		YES		YES
	21	2/year	Y	Y	Y		NO		NO
	22	2/year	N	Y	N		NO		NO
	23	2/year	Y	N	Y		NO		NO
	24	2/year	Y	Y	N		NO		NO
	25	2/year	N	Y	N		NO		NO

The table above shows the three steps used to eliminate the six possible leaf and yard waste collection program options to final four alternatives that were analyzed in detail in the business case.

Table below illustrates the details on the three steps used for elimination above.

Elimination Steps	Step 1	Step 2	Step 3
<p>Elimination Criteria</p>	<p>Alignment with Corporate goals and Waste Service's 25-year business strategy</p>	<p>Twice a year not enough for collection based on Phase I results hence eliminated; six times per year and eight times per year has the same resource and fleet requirement as 15 per year hence eliminated</p>	<p>Collected with current resources on Mondays with overtime to reduce fleet and resource requirement</p>
	<p>Potential feasibility/achievability of the viable options</p>		
	<p>Maintaining Waste's service level to the City single unit residences participating in the current waste collection program</p>		

Appendix G - Costs- Financial Analysis Summary Comparison (Leaf and Yard Waste Program)

Waste Services Vehicle & Equipment (2019-2022)	ALTERNATIVE 1- 4X manual collection	ALTERNATIVE 2- 4X manual collection contracted out	ALTERNATIVE 3-Manual Collection biweekly (15X)	ALTERNATIVE 4- -Automated 240L cart Collection biweekly (15X)
Total Capital Cost	(\$8,067,593)	(\$8,067,593)	(\$49,107,283)	(\$111,533,880)
Total Revenues	\$11,056,047	\$15,619,087	\$39,292,874	\$39,292,874
Total Operating and Maintenance Costs	(\$86,372,506)	(\$97,687,113)	(\$245,950,025)	(\$240,061,564)
Project Net Inflows (Outflows)	(\$83,384,052)	(\$90,135,619)	(\$255,764,434)	(\$312,302,569)
WACC Discount Rate	5.32%	5.32%	5.32%	5.32%
Net Present Value	(\$37,324,632)	(\$40,250,904)	(\$116,294,305)	(\$149,876,444)

Note: The above table demonstrates the full life-cycle costing approach of the thirty year capital and operating requirements.

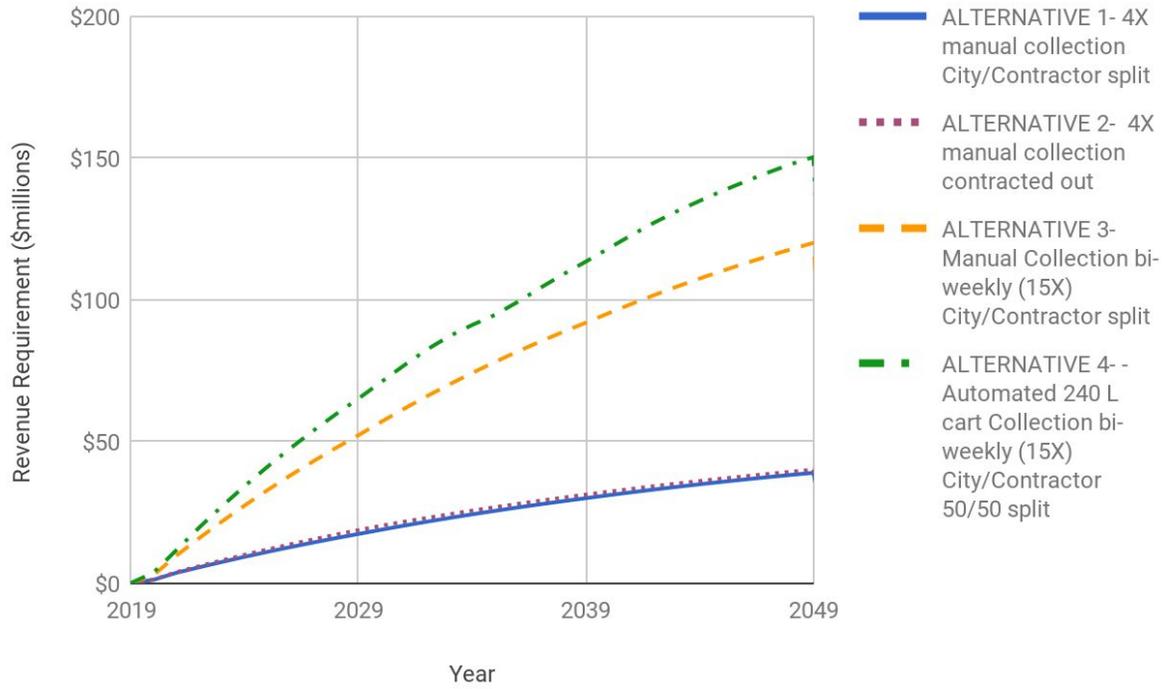
Appendix H - Comparison of Revenue Requirement of Alternatives (Leaf and Yard Waste Program)

Cumulative Revenue Requirement (from base year)	ALTERNATIVE 1-4X manual collection City/Contractor split	ALTERNATIVE 2-4X manual collection contracted out	ALTERNATIVE 3-Manual Collection biweekly (15X) City/Contractor split	ALTERNATIVE 4-Automated 240 L cart Collection biweekly (15X) City/Contractor 50/50 split
CPV @ Yr 5	9,265,757	9,955,395	27,363,747	34,217,706
CPV @ Yr 10	17,328,268	18,677,947	52,170,640	65,080,667
CPV @ Yr 15	24,250,330	25,548,459	74,129,329	91,047,724
CPV @ Yr 20	29,954,679	31,191,977	91,878,556	113,434,715
CPV @ Yr 25	34,859,127	36,011,894	107,448,542	134,843,680
CPV @ Yr 30	38,905,154	40,012,647	120,033,096	150,277,383
Capital Cost Summary (Base Year Dollars)	ALTERNATIVE 1-4X manual collection City/Contractor split	ALTERNATIVE 2-4X manual collection contracted out	ALTERNATIVE 3-Manual Collection biweekly (15X) City/Contractor split	ALTERNATIVE 4-Automated 240 L cart Collection biweekly (15X) City/Contractor 50/50 split
Equipment	0	0	30,401,865	77,657,412
Building	6,000,000	6,000,000	6,000,000	6,000,000
Other (engineering/PM/etc)	0	0	0	0
Total base costs	6,000,000	6,000,000	36,401,865	83,657,412
Add: contingency, inflation				
Contingency	600,000	600,000	3,640,187	8,365,741
Inflation	1,467,593	1,467,593	9,065,232	19,510,727
Total Capital	8,067,593	8,067,593	49,107,283	111,533,880
Economic Assumptions Inflation (compounded each year) 1.90 percent Contingency 10 percent Analysis is based on 30 years to capture the full life cycle costs of the assets Assumes borrowing required at 70 percent (based on current Utility split) at four percent				

Revenue Requirement Summary (CUMULATIVE PRESENT VALUE to use for graph)

Year	Calendar Year	Alternatives			
		ALTERNATIVE 1- 4X manual collection	ALTERNATIVE 2- 4X manual collection contracted out	ALTERNATIVE 3-Manual Collection biweekly (15X)	ALTERNATIVE 4- -Automated 240 L cart Collection biweekly (15X)
0	2019	\$0	\$0	\$0	\$0
1	2020	\$1,159,289	\$1,229,411	\$2,815,534	\$3,718,186
2	2021	\$3,623,894	\$3,857,290	\$9,689,726	\$11,626,564
3	2022	\$5,567,176	\$5,958,113	\$15,837,543	\$19,571,313
4	2023	\$7,447,229	\$7,990,180	\$21,725,227	\$27,074,660
5	2024	\$9,265,757	\$9,955,395	\$27,363,747	\$34,217,706
6	2025	\$11,007,210	\$11,838,402	\$32,763,597	\$41,016,974
7	2026	\$12,681,621	\$13,649,420	\$37,934,814	\$47,488,223
8	2027	\$14,291,610	\$15,391,245	\$42,887,002	\$53,646,478
9	2028	\$15,839,689	\$17,066,562	\$47,629,347	\$59,506,070
10	2029	\$17,328,268	\$18,677,947	\$52,170,640	\$65,080,667
11	2030	\$18,813,696	\$20,206,719	\$56,876,193	\$70,920,998
12	2031	\$20,253,573	\$21,618,229	\$61,474,244	\$76,766,795
13	2032	\$21,638,214	\$22,977,745	\$65,877,005	\$82,316,669
14	2033	\$22,969,777	\$24,287,202	\$70,092,734	\$87,120,212
15	2034	\$24,250,330	\$25,548,459	\$74,129,329	\$91,047,724
16	2035	\$25,481,858	\$26,763,304	\$77,994,346	\$94,604,466
17	2036	\$26,666,266	\$27,933,456	\$81,695,012	\$99,182,343
18	2037	\$27,805,381	\$29,060,568	\$85,238,241	\$104,175,685
19	2038	\$28,900,957	\$30,146,232	\$88,630,646	\$108,922,654
20	2039	\$29,954,679	\$31,191,977	\$91,878,556	\$113,434,715
21	2040	\$31,006,607	\$32,229,146	\$95,225,857	\$118,104,252
22	2041	\$32,026,618	\$33,228,346	\$98,482,396	\$122,749,931
23	2042	\$33,007,712	\$34,190,980	\$101,601,198	\$127,158,548
24	2043	\$33,951,399	\$35,118,397	\$104,588,064	\$131,178,088
25	2044	\$34,859,127	\$36,011,894	\$107,448,542	\$134,843,680
26	2045	\$35,732,286	\$36,872,720	\$110,187,942	\$138,368,835
27	2046	\$36,572,213	\$37,702,074	\$112,811,341	\$141,673,905
28	2047	\$37,380,188	\$38,501,113	\$115,323,600	\$144,812,496
29	2048	\$38,157,442	\$39,270,947	\$117,729,369	\$147,792,340
30	2049	\$38,905,154	\$40,012,647	\$120,033,096	\$150,277,383

Cumulative Present Value Revenue Requirement Chart Leaf and Yard Waste Alternatives



Appendix I - Alternative Shortlisting Criteria Table (Garbage Stream)

Step 1 Elimination	Option	Collection Method	Weekly/ Biweekly	Step 2 Elimination	Going forward	Step 3 Elimination	Going forward
	1	120L	Weekly		YES		NO
	2	120L	Biweekly		YES		NO
	3	240L	Weekly		YES		YES
	4	240L	Biweekly		YES		YES
	5	360L	Weekly		NO		NO
	6	360L	Biweekly		NO		NO
	7	120L + 240L	Weekly		YES		YES
	8	120L + 240L	Biweekly		YES		YES
	9	Unlimited Black Bags	Weekly		NO		NO
	10	Unlimited Black Bags	Biweekly		NO		NO
	11	Clear Bags	Weekly		NO		NO
12	Clear Bags	Biweekly	NO	NO			

The table above shows the three steps used to eliminate the six possible garbage stream collection program options to final four alternatives that were analyzed in detail in the business case.

Table below illustrates the details on the three steps used for elimination above.

Elimination Steps	Step 1	Step 2	Step 3
<p>Elimination Criteria</p>	<p>Alignment with Corporate goals and Waste Service's 25-year business strategy</p>	<p>Eliminate 360L and manual collection</p>	<p>Eliminate 120L</p>
	<p>Potential feasibility/achievability of the viable options</p>		
	<p>Maintaining Waste's service level to the City single unit residences participating in the current waste collection program</p>		

Appendix J - Costs- Financial Analysis Summary Comparison (Garbage Stream)

Waste Services Vehicle & Equipment (2019-2022)	ALTERNATIVE 1- 240L Biweekly Automated	ALTERNATIVE 2-120L or 240L Biweekly automated	ALTERNATIVE 3- 240L weekly automated	ALTERNATIVE 4-120L or 240L weekly Automated
Total Capital Cost	\$ (17,969,775)	\$ (19,310,936)	\$ (40,062,256)	\$ (40,748,913)
Total Revenues	\$ -	\$ -	\$ -	\$ -
Total Operating and Maintenance Costs	\$ 409,459,839	\$ 407,658,870	\$ 224,236,290	\$ 224,300,084
Project Net Inflows (Outflows)	\$ 391,490,064	\$ 388,347,934	\$ 184,174,033	\$ 183,551,170
WACC Discount Rate	\$ 0	\$ 0	\$ 0	\$ 0
Net Present Value	\$ 163,722,274	\$ 161,201,406	\$ 72,619,268	\$ 71,937,553

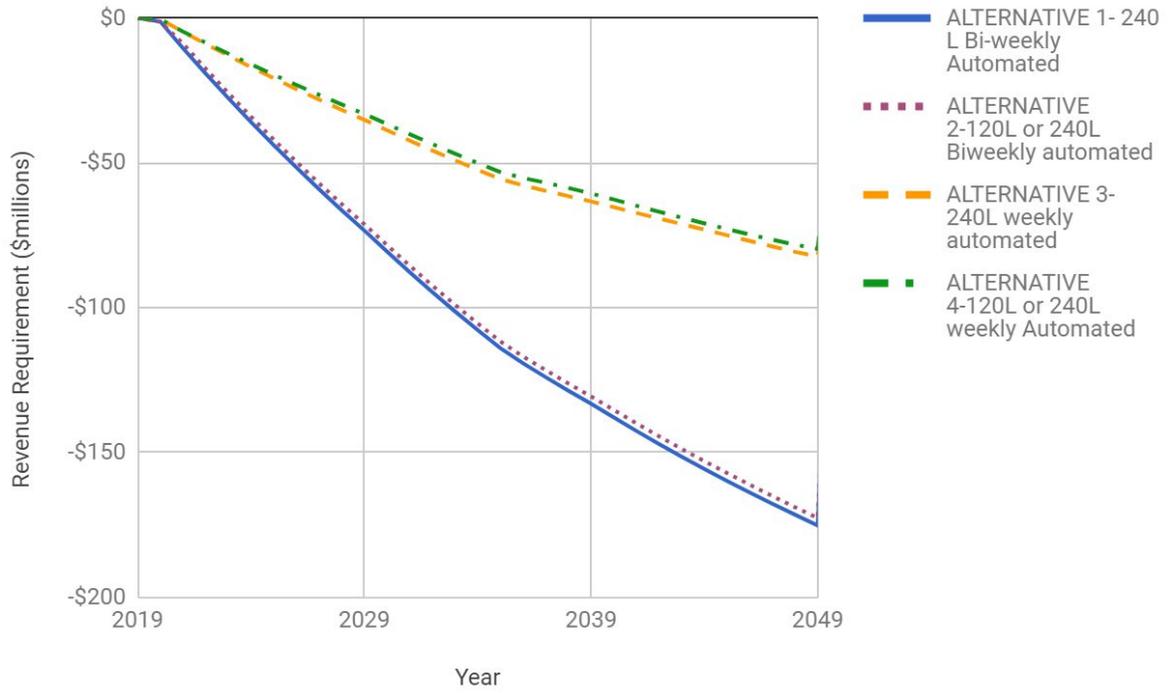
Note: The above table demonstrates the full life-cycle costing approach of the thirty year capital and operating requirements.

Appendix K - Comparison of Revenue Requirement of Alternatives (Garbage Stream)

Cumulative Revenue Requirement (from base year)	ALTERNATIVE 1-240L Biweekly Automated	ALTERNATIVE 2-120L or 240L Biweekly automated	ALTERNATIVE 3-240L weekly automated	ALTERNATIVE 4-120L or 240L weekly Automated
CPV @ Yr 5	(35,844,954)	(33,994,977)	(16,904,459)	(15,932,496)
CPV @ Yr 10	(73,344,682)	(71,176,065)	(35,122,036)	(33,098,563)
CPV @ Yr 15	(107,734,023)	(105,442,496)	(52,373,780)	(50,031,725)
CPV @ Yr 20	(133,201,449)	(130,658,472)	(63,313,485)	(60,557,488)
CPV @ Yr 25	(155,731,536)	(153,033,768)	(73,044,163)	(70,900,491)
CPV @ Yr 30	(175,235,276)	(172,649,043)	(82,342,017)	(79,715,945)
Capital Cost Summary (Base Year Dollars)	ALTERNATIVE 1-240L Biweekly Automated	ALTERNATIVE 2-120L or 240L Biweekly automated	ALTERNATIVE 3-240L weekly automated	ALTERNATIVE 4-120L or 240L weekly Automated
Equipment	13,490,912	13,876,667	30,246,010	29,929,441
Building	350,000	75,000	75,000	75,000
Other (engineering/PM/etc)	0	0	0	0
Total base costs	13,840,912	13,951,667	30,321,010	30,004,441
<i>Add: contingency, inflation</i>				
Contingency	1,384,091	1,495,167	3,032,101	3,100,444
Inflation	2,744,772	2,864,103	6,709,145	6,644,028
Total Capital	17,969,775	18,310,936	40,062,256	39,748,913
Economic Assumptions				
Inflation (compounded each year) 1.90 percent Contingency 10 percent Analysis is based on 30 years to capture the full life cycle costs of the assets Assumes borrowing required at 70 percent (based on current Utility split) at four percent				

Revenue Requirement Summary (CUMULATIVE PRESENT VALUE to use for graph)					
Year	Calendar Year	Alternatives			
		ALTERNATIVE 1- 240L Biweekly Automated	ALTERNATIVE 2-120L or 240L Biweekly automated	ALTERNATIVE 3- 240L weekly automated	ALTERNATIVE 4-120L or 240L weekly Automated
0	2019	\$0	\$0	\$0	\$0
1	2020	-\$1,182,913	-\$1,234,692	-\$330,273	-\$361,918
2	2021	-\$10,356,013	-\$8,737,360	-\$4,753,896	-\$4,631,559
3	2022	-\$19,119,250	-\$17,431,035	-\$8,910,761	-\$8,501,500
4	2023	-\$27,612,865	-\$25,841,035	-\$12,960,183	-\$12,258,424
5	2024	-\$35,844,954	-\$33,994,977	-\$16,904,459	-\$15,932,496
6	2025	-\$43,823,386	-\$41,900,433	-\$20,745,869	-\$19,524,775
7	2026	-\$51,555,802	-\$49,564,771	-\$24,486,674	-\$23,036,363
8	2027	-\$59,049,623	-\$56,995,148	-\$28,129,114	-\$26,468,403
9	2028	-\$66,312,060	-\$64,198,526	-\$31,675,404	-\$29,822,068
10	2029	-\$73,344,682	-\$71,176,065	-\$35,122,036	-\$33,098,563
11	2030	-\$80,570,838	-\$78,364,063	-\$38,711,319	-\$36,577,026
12	2031	-\$87,709,845	-\$85,479,598	-\$42,284,830	-\$40,088,159
13	2032	-\$94,610,164	-\$92,357,919	-\$45,749,553	-\$43,497,140
14	2033	-\$101,282,355	-\$99,009,713	-\$49,111,550	-\$46,810,820
15	2034	-\$107,734,023	-\$105,442,496	-\$52,373,780	-\$50,031,725
16	2035	-\$113,972,517	-\$111,663,535	-\$55,539,120	-\$53,162,323
17	2036	-\$119,215,050	-\$116,860,075	-\$57,781,182	-\$55,224,511
18	2037	-\$124,009,314	-\$121,586,692	-\$59,649,459	-\$56,843,100
19	2038	-\$128,669,636	-\$126,184,437	-\$61,493,119	-\$58,641,893
20	2039	-\$133,201,449	-\$130,658,472	-\$63,313,485	-\$60,557,488
21	2040	-\$137,902,042	-\$135,315,253	-\$65,278,865	-\$62,651,419
22	2041	-\$142,567,930	-\$139,949,440	-\$67,271,610	-\$64,788,813
23	2042	-\$147,090,889	-\$144,443,345	-\$69,224,404	-\$66,873,736
24	2043	-\$151,477,423	-\$148,803,503	-\$71,140,037	-\$68,910,712
25	2044	-\$155,731,536	-\$153,033,768	-\$73,044,163	-\$70,900,491
26	2045	-\$159,854,511	-\$157,124,462	-\$74,994,597	-\$72,843,836
27	2046	-\$163,851,925	-\$161,142,761	-\$76,956,126	-\$74,741,523
28	2047	-\$167,720,129	-\$165,098,259	-\$78,866,042	-\$76,535,369
29	2048	-\$171,513,783	-\$168,934,192	-\$80,725,519	-\$78,238,278
30	2049	-\$175,235,276	-\$172,649,043	-\$82,342,017	-\$79,715,945

Cumulative Present Value Revenue Requirement Chart Garbage Stream Alternatives



Appendix L - Alternative Shortlisting Criteria Table for Recycling Stream

Step 1 Elimination	Option	Collection Method	Weekly/ Biweekly	Step 2 Elimination	Going forward	Step 3 Elimination	Going forward	Step 4 Elimination	Going forward
	1	120L Co-mingled	Weekly		YES		NO		NO
	2	120L Co-mingled	Biweekly		YES		NO		NO
	3	120L Dual Stream	Weekly		NO		NO		NO
	4	120L Dual Stream	Biweekly		NO		NO		NO
	5	240L Co-mingled	Weekly		YES		YES		YES
	6	240L Co-mingled	Biweekly		YES		YES		NO
	7	240L Dual Stream	Weekly		NO		NO		NO
	8	240L Dual Stream	Biweekly		NO		NO		NO
	9	360L Co-mingled	Weekly		YES		NO		NO
	10	360L Co-mingled	Biweekly		YES		NO		NO
	11	360L Dual Stream	Weekly		NO		NO		NO
	12	360L Dual Stream	Biweekly		NO		NO		NO
	13	Manual Co-mingled	Weekly		YES		YES		YES
	14	Manual Co-mingled	Biweekly		YES		YES		NO
	15	Manual Dual	Weekly		NO		NO		NO
16	Manual Dual	Biweekly	NO	NO	NO				

The table above shows the four steps used to eliminate the six possible recycling collection program options to final two alternatives that were analyzed in detail in the business case.

Table below illustrates the details on the four steps used for elimination above.

Elimination Steps	Step 1	Step 2	Step 3	Step 4
Elimination Criteria	Alignment with Corporate goals and Waste Service's 25-year business strategy			
	Potential feasibility/achievability of the viable options	MRF strategy will be presented in 2019 which will address multiple streams, eliminate dual stream	Based on municipal scan and data from surrounding municipalities and the tonnage collected by Edmonton 240L is sufficient to cover the recycling needs of the residents at this time	Eliminate biweekly; will be addressed in strategy
	Maintaining Waste's service level to the City single unit residences participating in the current waste collection program			

Appendix M - Costs- Financial Analysis Summary Comparison (Recycling Stream)

Waste Services Vehicle & Equipment (2019-2022)	ALTERNATIVE 1 Weekly manual bag collection; comingled (status Quo)	ALTERNATIVE 2 Weekly automated 240L cart collection; comingled	Alternative 2 Net Change from Status Quo
Total Capital Cost	\$ -	\$ (66,022,766)	\$ (66,022,766)
Total Revenues	\$ -	\$ -	\$ -
Total Operating and Maintenance Costs	\$ -	\$ (26,517,795)	\$ (26,517,795)
Project Net Inflows (Outflows)	\$ -	\$ (92,540,560)	\$ (92,540,560)
WACC Discount Rate	\$ 0	\$ 0	\$ -
Net Present Value	\$ -	\$ (48,892,682)	\$ (48,892,682)

Note: The above table demonstrates the full life-cycle costing approach of the thirty year capital and operating requirements.

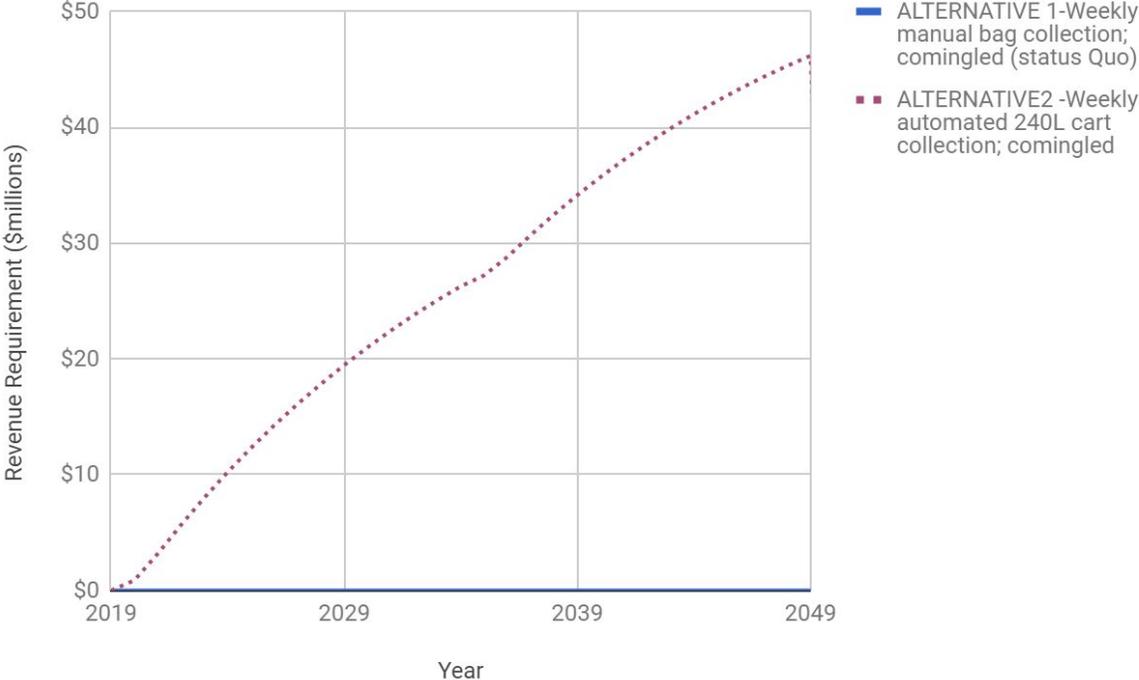
Appendix N - Comparison of Revenue Requirement of Alternatives (Recycling Stream)

Cumulative Revenue Requirement (from base year)	ALTERNATIVE 1-Weekly manual bag collection; comingled (status Quo)	ALTERNATIVE2 -Weekly automated 240L cart collection; comingled
CPV @ Yr 5	0	10,219,107
CPV @ Yr 10	0	19,460,330
CPV @ Yr 15	0	26,265,229
CPV @ Yr 20	0	34,143,644
CPV @ Yr 25	0	41,133,815
CPV @ Yr 30	0	46,174,727
Capital Cost Summary (Base Year Dollars)	ALTERNATIVE 1-Weekly manual bag collection; comingled (status Quo)	ALTERNATIVE2 -Weekly automated 240L cart collection; comingled
Equipment	0	49,294,943
Building	0	350,000
Other (engineering/PM/etc)	0	0
Total base costs	0	49,644,943
<i>Add: contingency, inflation</i>		
Contingency	0	4,964,494
Inflation	0	11,413,328
Total Capital	0	66,022,766
<p><u>Economic Assumptions</u> Inflation (compounded each year) 1.90% Contingency 10% Analysis is based on 30 years to capture the full life cycle costs of the assets Assumes borrowing required at 70% (based on current Utility split) at 4%</p>		

Revenue Requirement Summary

Year	Calendar Year	Alternatives	
		ALTERNATIVE 1-Weekly manual bag collection; comingled (status Quo)	ALTERNATIVE 2-Weekly automated 240L cart collection; comingled
0	2019	\$0	\$0
1	2020	\$0	\$879,696
2	2021	\$0	\$3,164,262
3	2022	\$0	\$5,657,966
4	2023	\$0	\$8,007,136
5	2024	\$0	\$10,219,107
6	2025	\$0	\$12,300,850
7	2026	\$0	\$14,258,988
8	2027	\$0	\$16,099,816
9	2028	\$0	\$17,829,315
10	2029	\$0	\$19,460,330
11	2030	\$0	\$20,994,282
12	2031	\$0	\$22,441,362
13	2032	\$0	\$23,801,528
14	2033	\$0	\$25,074,656
15	2034	\$0	\$26,265,229
16	2035	\$0	\$27,207,085
17	2036	\$0	\$28,809,129
18	2037	\$0	\$30,693,471
19	2038	\$0	\$32,470,546
20	2039	\$0	\$34,143,644
21	2040	\$0	\$35,715,846
22	2041	\$0	\$37,200,246
23	2042	\$0	\$38,597,376
24	2043	\$0	\$39,907,666
25	2044	\$0	\$41,133,815
26	2045	\$0	\$42,283,844
27	2046	\$0	\$43,359,430
28	2047	\$0	\$44,362,934
29	2048	\$0	\$45,300,215
30	2049	\$0	\$46,174,727

Cumulative Present Value Revenue Requirement Chart Recycling Stream Alternatives



Note: Alternative 1 revenue requirement is zero as it assumes no incremental costs (status quo).

Waste Services Supplemental Capital Budget Adjustment

Recommendation

That Utility Committee recommend to City Council:

That the Source Separated Organics Program profile in the amount of \$51.5 million, as an amendment to the 2019-2022 Waste Services Capital Budget, as set out in Attachment 1 of the August 29, 2019, City Operations report CR_7174, be approved.

Executive Summary

During the 2019-2022 Waste Services Capital Budget discussion, Utility Committee recommended to City Council that the Source Separated Organics Program profile remain unfunded until Waste Services returns with a business case for the program. Report CR_7173 presents the Single Unit Waste Set-out Business Case in support of this capital profile request with recalculated capital costs of \$51.5 million. This report (CR_7174) details the capital profile request and its implication on the 2019-2022 Waste Services Capital Budget. It also supports ConnectEdmonton's strategic goal of Climate Resilience by contributing to transformational change in how Edmonton's waste will be managed and how services will be delivered.

Report

In the 2019-2022 Waste Services Capital Budget, the capital profile for the Source Separated Organics Program was marked as unfunded. However, the amount of the profile remained in the Capital Budget for forecasting purposes. At the time of this decision, the Waste Services Capital Budget was reduced by the amount of the profile, which was \$54.35 million.

Report CR_7173 presents the Single Unit Waste Set-out Business Case in support of this capital profile request with recalculated capital costs of \$51.5 million, which is \$2.85 million lower than originally forecast. If the capital profile is approved, the 2019-2022 Waste Services Capital Budget would need to be increased by \$51.5 million to provide for the procurement of capital assets required to support the Single Unit Waste Set-out program, in particular residential waste containers and related assets. The procurement process must be started in mid-October 2019 to ensure timelines for the project remain on track. Delays in funding and procurement may jeopardize the citywide rollout of the Source Separated Organics Program.

While the capital profile was not previously funded in the 2019-2022 Waste Services Capital Budget, it did remain in the capital budget forecast so there will be no increase to the Utility Rate by funding this capital profile. The reduction in the profile of \$2.85 million will be factored into the 2020 Utility Rate Filing.

This capital profile provides funding for the Single Unit Waste Set-out Business Case (CR_7173). Capital assets under this profile include funding for purchasing carts and associated accessories, automated collection and crew maintenance vehicles, storage yard and processing equipment required to successfully roll out and manage this program.

Budget/Financial Implications

This report provides revised calculations for the 2019-2022 Waste Services Capital Budget and the capital profile for the Source Separated Organics Program has been marked as recommended. If this capital profile is approved, the capital budget will increase by \$51.5 million (see Attachment 1). If City Council accepts Utility Committee's recommendation, the revised Waste Services Capital Budget would be \$283.9 million, comprised of \$270.9 million in 2019-2022 (including 2018 carry-forwards), and \$13 million in 2023 and beyond that was previously approved (see Attachment 2).

Public Engagement

A comprehensive citywide public engagement initiative was launched in October 2018 to support the development of the 25-year Waste Strategy, with a second phase of public engagement in spring 2019. The public engagement was designed to seek input from residents, multi-unit stakeholders, non-residential stakeholders and internal City employees on proposed waste management program and service changes.

The public engagement helped to inform the 25-year Waste Strategy and those components in turn inform the changes required for the Source Separated Organics Program. So although public engagement was not completed specifically for this report, results of the public engagement informed the decision for the business case that is tied to this capital budget adjustment.

Corporate Outcomes and Performance Management

Corporate Outcome(s): The City of Edmonton has a resilient financial position			
Outcome(s)	Measure(s)	2018 Result	2019 Target
The City of Edmonton has a resilient financial position	Debt to Net Assets Ratio	81.7%	75.4%
	Stable Rates	2.3%	2.5%

Risk Assessment

Risk Element	Risk Description	Likelihood	Impact	Risk Score (with current mitigations)	Current Mitigations	Potential Future Mitigations
Project Management	Implementation of the Single Unit Waste Set-out Program may be delayed if funding is not approved	5 - almost certain	3 - major	15 - high	Completion of a comprehensive set out business case with sound recommendations Learnings from the demonstration project to 8,000 households	Strong budget management and capital planning

Attachments

1. Source Separated Organics Capital Profile Report
2. Capital Summary

Others Reviewing this Report

- A. Laughlin, Acting Deputy City Manager, Financial and Corporate Services
- C. Owen, Deputy City Manager, Communications and Engagement
- B. Andriachuk, City Solicitor

PROFILE NAME: **SOURCE SEPARATED ORGANICS PROGRAM**
 PROFILE NUMBER: **20-81-2041**
 DEPARTMENT: **Utilities**
 LEAD BRANCH: **Waste Management Services**
 PROGRAM NAME:
 PARTNER:
 BUDGET CYCLE: **2019-2022**

RECOMMENDED

PROFILE STAGE: **L2 - Update Profile**
 PROFILE TYPE: **Standalone**
 LEAD MANAGER: **Michael Labrecque**
 PARTNER MANAGER:
 ESTIMATED START: **January, 2019**
 ESTIMATED COMPLETION: **December, 2022**

Service Category: Utilities		Major Initiative:	
GROWTH	RENEWAL	PREVIOUSLY APPROVED:	-
20	80	BUDGET REQUEST:	51,494
		TOTAL PROFILE BUDGET:	51,494

PROFILE DESCRIPTION

Initiative Description

This business case proposes major changes to the current waste collection program and the way single-unit residents set out their waste for collection in the City of Edmonton. These changes will include three stream collection and processing streams instead of the current two streams. The associated capital profile includes funding for purchasing carts and associated accessories, automated collection and crew maintenance vehicles, storage yard and processing equipment required to successfully roll out and manage this program.

In June 2017, the first steps were taken on the path towards the future of waste services when Administration presented the 2018-2020 Waste Services Business Plan to Utility Committee which identified increasing residential diversion activities as an essential focus area for Waste Services. This update, along with the findings from an extensive research study between the summer of 2017 and January 2018, set the stage for the recommended activities in CR_5184 Waste Management Strategy Update presented to the Council in March 2018. Council approved seven motions for Waste Services during this Strategy Update, which included: planning a source-separated organics program for organic waste processing and collection, with planned implementation starting in Fall 2020; providing a report on alternate collection methods for grass, leaf and yard waste; and continuing engagement with the citizens on the implementation of potential waste diversion programs.

In August 2018, Administration submitted reports on the Source Separated Organics (SSO) Pilot (CR_5832) and Alternate Collection and Diversion Options for Grass, Leaf and Yard waste (CR_5826). These reports outlined the options that would be included in the public engagement activities along with a demonstration phase for the program changes outlined in CR_5184 Waste Management Strategy Update. Council approved the demonstration phase with the 120 litre green organic cart and alternate collection of leaf and yard waste pilot programs in August 2018, thus giving approval for administration to proceed with planning for the implementation of an organics program city-wide.

The proposed waste collection and processing streams are:

- Source Separated Organic (SSO) Stream
- Seasonal Leaf and Yard Waste (L&YW) Stream
- Garbage Waste Stream
- Recycling Waste Stream

Source Separated Organic (SSO) Stream: Organics separation at the source is an effective method of reducing the environmental impact of solid waste. In the SSO program, households will segregate compostable kitchen organic waste materials, such as food waste. This organic waste will be set out for collection separately from their garbage. Once the organic waste is collected by the City, it can be processed directly at organics processing facilities (ie. ADF) without being pre-processed at the IPTF with other household garbage.

Seasonal Leaf & Yard Waste (L&YW) Stream: The seasonal L&YW program includes separate L&YW collection program and the free L&YW drop off service. Residents will be encouraged to set out their leaf and yard waste, separately from their garbage and SSO on predetermined dates from spring to fall. The L&YW will be collected by Waste Services. Residents will also be provided with the opportunities to drop off L&YW at the Eco Stations, Big Bin Events, and the Edmonton Waste Management Centre for free. Such materials can then be processed directly at the cure site without going through a processing facility.

Garbage Stream

Removal of the organic waste from the garbage will decrease the total tonnage of materials in this stream. In addition, residents will be limited to the space available in their black carts for their garbage materials. This increases the incentive to maximize recycling and organic separation. Waste Services will continue to provide collection of garbage to the residents. This stream will capture all remaining materials that do not enter the organic or the recycling stream.

Recycling Stream

Waste Services will continue to collect recyclable materials at the curbside. Residents will continue to separate recyclable materials such as plastic, paper, glass bottles, metal cans etc. in their blue bags and set it out for collection at the curb.

In Scope

Waste Collection

- Addition of automated collection of source separated organic stream.
- Addition of seasonal leaf and yard waste curbside collection program.
- Changing the current method of garbage collection from manual to automated.
- Potential change in collection method and/or frequency of the recycling stream.

Residential Waste Drop off

- Impact on Big Bin events, Eco-station programs and the Residential Transfer Station Processing

- Change in processing requirements related to the new Organics Processing Facility (OPF), Curesite, IPTF Pre-Processing facility, MRF and landfill.

Financial

- Capital and operating budgets to support the program changes.
- Net Present Value (NPV) analysis.
- Revenue Requirement (RR) analysis
- Utility rate change for different black cart sizes.

Education, Outreach and Enforcement

- Development and delivery of education and outreach materials, programs, and strategies.

Out of Scope

The following services, although aligned, are managed separately and considered out of scope in this business case:

- Multi-unit residential sector receiving waste container collection service.
- Non-residential waste programs.
- Waste Bylaw update and related resourcing requirements.
- Waste Management Policy update.
- External Curesite Project: capital and operational expenses.
- OPF Business Case and financial approval.
- MRF retrofit.

PROFILE BACKGROUND

The current residential waste collection programs need significant changes to support the City's current 90% single unit residential diversion goal. The two stream residential collection offered by Waste Services allows for collecting unlimited comingled garbage (organic and refuse) and recycling at the curbside. The materials are processed at Edmonton Waste Management Centre (EWMC) where a portion is diverted from landfill. In the last few years, Edmonton's single-unit residential diversion rate has been slowly decreasing and it reached a low of 36% in 2018. The reduction in single unit residential waste diversion is linked to current challenges in processing at EWMC, including the seasonal operation of the Edmonton Co-Composting Facility, and the continued delay of full operation of Enerkem Alberta Biofuels. The Single Unit Residential Waste Diversion Rate was restated in 2018 based on a review of the City Auditor. Specifically, it was noted in the 2018 City Auditor report that Waste Services cannot achieve its 90% diversion target through the existing program, and will need to implement new waste diversion programs in order to achieve this goal.

PROFILE JUSTIFICATION

Opportunity

Edmonton's single unit residential diversion rate as of 2018 was 36 percent. Edmonton is currently faced with a large gap between this current residential diversion rate and the 90 percent goal. Getting to 90 percent requires focus on the entire waste stream, starting with how households are asked to manage their waste in the home. Waste Services' Strategy Update (CR_5124) outlines the path and program changes that will be required to achieve this goal.

The gap between the projected diversion rate and the 90 percent goal could be best addressed by aligning Edmonton's waste management practices with current best practices for municipal waste. It requires focus on the entire waste stream, including diversion, sorting activities, as well as reduction and reuse initiatives, undertaken at the household level, and allows for more effective processing of waste feedstock, with reduced moisture and contamination challenges.

This unique opportunity allows Waste Services to design a waste collection program at the same time as developing an organics processing facility using current technology. By making this combined decision and improving on a number of other processes, Waste Services is able to further advance towards its goal of diverting up to 90 percent of residential waste from landfill.

Anticipated Outcomes

The following anticipated outcomes will be achieved through this updated program:

- An estimated increase in the current diversion rate by approximately 8-12 percent to contribute towards the 90 percent single unit residential diversion target. This forecasted diversion rate impact is predicated on the assumptions that waste sorting and diversion facilities fully function at the EWMC, end product markets for all recyclable commodities are available, and that residents fully participate in the proposed program change
- An expected decrease in the amount of garbage set-out by single unit residents
- A cleaner organics stream as an input to ADF processes, resulting in an increase in higher quality compost
- Behavior changes in single unit residents, which includes how residents sort and set out their household waste
- Reduction in the expected moisture content in Refuse Derived Fuel.

STRATEGIC ALIGNMENT

This business case aligns with the Corporate Strategic Objective related to Climate Resilience, the Service Objective related to Environmental Protection, and the Supporting Objective related to Environmental Stewardship. This profile aligns with the new strategic goals of the City of Edmonton and the City's Waste Management Policy C527 which commits to delivering sustainable waste service exceeding provincial waste diversion and processing standards. This profile also aligns with Waste Services Integrated 25-Year Strategic Outlook.

ALTERNATIVES CONSIDERED

Several options were reviewed, please refer to "Alternative Analysis" Section of the attached business case for details

COST BENEFITS

Please refer to "Single-Unit Set-Out Business Case Recommendation" Section of the attached business case for detailed financial analysis.

KEY RISKS & MITIGATING STRATEGY

Please refer to "Single – Unit Waste Set-Out Business Case Key Risk(s) and Mitigating Strategy" Section of the attached business case.

RESOURCES

Both the recommended set-out program demands 16.5 new permanent and seasonal FTEs required from 2022 onwards. On top of this, it also requires additional 19 temporary FTEs to cover the cart roll-out program, public education and outreach and GIS mapping between 2020 and 2023.

CONCLUSIONS AND RECOMMENDATIONS

This business case demonstrates the need to transition the single-unit waste collection program & the importance of separating the organic waste from the current mingled garbage stream. The recommended set-out solutions together with seasonal L&YW pick-ups & extra big bin events not only address residents' waste disposal demand, but also make a positive impact on the residential diversion rate. Tag-a-bag program was proposed to dispose additional garbage during the week or holidays at extract costs to the residents.

- 120L green cart with top-up: weekly in spring, summer and fall; bi-weekly in winter

- Manual seasonal collection of L&YW: 2 times in spring and 2 times in fall

- Resident choice between 120L or 240L black cart: bi-weekly

- Manual collection of recycling in blue bags: weekly

PROFILE NAME: **Source Separated Organics Program**

RECOMMENDED

PROFILE NUMBER: **20-81-2041**

PROFILE TYPE: **Standalone**

BRANCH: **Waste Management Services**

CAPITAL BUDGET AND FUNDING SOURCES (000's)

APPROVED BUDGET		Prior Years	2019	2020	2021	2022	2023	2024	2025	2026	2027	Beyond 2027	Total
	Approved Budget												
	Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-	-
	Current Approved Budget	-	-	-	-	-	-	-	-	-	-	-	-

BUDGET REQUEST	Budget Request	-	-	26,877	23,459	1,158	-	-	-	-	-	-	51,494
	Revised Funding Sources (if approved)												
	Self-Liquidating Debentures	-	-	26,877	23,459	1,158	-	-	-	-	-	-	51,494
	Requested Funding Source	-	-	26,877	23,459	1,158	-	-	-	-	-	-	51,494

REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	-	-	26,877	23,459	1,158	-	-	-	-	-	-	51,494
	Requested Funding Source												
	Self-Liquidating Debentures	-	-	26,877	23,459	1,158	-	-	-	-	-	-	51,494
	Requested Funding Source	-	-	26,877	23,459	1,158	-	-	-	-	-	-	51,494

CAPITAL BUDGET BY ACTIVITY TYPE (000's)

REVISED BUDGET (IF APPROVED)	Activity Type	Prior Years	2019	2020	2021	2022	2023	2024	2025	2026	2027	Beyond 2027	Total
	Other Costs	-	-	26,877	23,459	1,158	-	-	-	-	-	-	51,494
	Total	-	-	26,877	23,459	1,158	-	-	-	-	-	-	51,494

OPERATING IMPACT OF CAPITAL

Type of Impact:

Branch:																
	Rev	Exp	Net	FTE												
Total Operating Impact	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Capital Summary

	2019-2022	2023 and Beyond	Total
Waste Services			
Original 2019-2022 Capital Budget	\$ 264,601,340	\$ 13,000,000	\$ 277,601,340
Source Separated Organics Program Recommended as Unfunded	\$ (54,349,958)		\$ (54,349,958)
Approved 2019-2022 Capital Budget	\$ 210,251,382	\$ 13,000,000	\$ 223,251,382
2018 Budget Carried Forward	9,191,633	-	9,191,633
Adjusted Budget Prior to Spring 2019 SCBA	\$ 219,443,015	\$ 13,000,000	\$ 232,443,015
<u>2019 Spring SCBA Adjustments</u>			
Council Adjustments			
<u>Source Separated Organics Program</u> <u>Recommended for Funding</u>	51,493,590	-	51,493,590
Total Council Adjustments	\$ 51,493,590	\$ -	\$ 51,493,590
TOTAL ADJUSTED CAPITAL BUDGET	\$ 270,936,605	\$ 13,000,000	\$ 283,936,605

Bylaw 18590

To Replace Bylaw 17555, the City of Edmonton Waste Management Bylaw

Recommendation

That Utility Committee recommend to City Council:

That Bylaw 18590 be given the appropriate readings.

Purpose

To replace Waste Management Bylaw 17555 with an updated Waste Services Bylaw.

Readings

Bylaw 18590 is ready for three readings.

Position of Administration

Administration supports this Bylaw.

Previous Council/Committee Action

At the August 23, 2018, Utility Committee meeting, the following motion was passed:

3. That Administration return to Utility Committee in June 2019 with recommendations to revise the Non-Regulated Waste Strategy and corresponding policies and the Waste Management Bylaw (Bylaw No. 17555) based on all related findings.

Executive Summary

Waste Services Bylaw 18590 (Attachment 1) is the proposed Bylaw which will replace Waste Management Bylaw 17555. The new Bylaw will facilitate proposed program changes including the introduction of automated collection and required source separation of waste for residential households. Customer classes have been redefined in order to levy the appropriate rate based on the type of service rather than the type of residence being serviced. Schedules have been added to the new Bylaw to easily facilitate amendments and to enhance ease of reading by moving long lists of materials out of the main document. Guidelines have been added to provide flexibility without the need for amendments where Waste Services anticipates this will be necessary. The Bylaw supports ConnectEdmonton's strategic goal of Climate Resilience by

contributing to transformational change in how Edmonton's waste will be managed and how services will be delivered.

Report

Waste Services is proposing to change its curbside collection program, as described in CR_7173 Single Unit Waste Set-out Business Case and CR_5820 Waste Strategy. The current Waste Management Bylaw 17555, does not include provisions that allow for these collection program changes. Administration has rewritten the bylaw to reflect the proposed program changes outlined in the reports and proposes that Waste Management Bylaw 17555 be replaced by Waste Services Bylaw 18590, which reflects the introduction of source separation as well as the use of carts for automated collection. Introducing carts will require residents to follow new set out rules in order to realize the anticipated operational benefits of the automatic collection service. These and other changes are described below. Additional information is also provided in Attachment 2.

Automated Collection and Source Separation

Waste Services has proposed changes to the current waste collection program and the way residents set out their waste for collection in the City of Edmonton as recommended in report CR_7173. These changes include source separation and the introduction of automated collection. If the recommendations in CR_7173 are approved, single unit residential households will transition from the current waste set out and collection program to using carts and separating their waste into four streams (garbage, organics, recycling, and leaf and yard waste) starting in fall 2020.

Until that time, the current waste set out and collection program for residential households would continue and is permitted in the proposed Bylaw. There are no proposed changes at this time for existing apartments and condos that utilize bins.

Redefined Customer Classes

Bylaw 17555 defined customer classes and the applicable rate based on the number of dwelling units on a single tax parcel. For example, a single dwelling unit on a single tax parcel was deemed a Single Unit Residential Customer. Multiple dwelling units on a single tax parcel were deemed Multi-Unit Residential Customers. These customer classes were charged a different monthly rate. As a result of these class definitions, there is a subset of customers that pay the multi-unit rate even though they receive the same waste collection service associated with the single unit customer class.

Bylaw 18590 corrects this misalignment by redefining customer classes based on the type of service received rather than the number of dwelling units on a tax parcel. There are two broad customer classes defined as Residential Curbside (customers who use bags or carts), and Residential Bin Collection (customers who use bins). This change

will allow Waste Services to appropriately charge utility rates based on the actual cost of servicing each type of customer. Within the Residential Curbside class, customers will be assessed different rates based on the size of the garbage cart used. Customers that receive single unit collection service but are currently paying the multi-unit rate will be charged a transitional rate and, over time, transitioned to the Residential Curbside rates charged to other customers receiving the same service.

Addition of Schedules and Guidelines

Bylaw 18590 provides updated definitions and the framework for regulating and controlling the storage, collection, processing and disposal of waste within the City of Edmonton. The added schedules in the Bylaw address aspects that will require amendments (e.g. Waste Service Rates) and subject matter that is unlikely to change frequently (e.g. Prohibited Waste and Restricted Waste).

Guidelines are stand-alone documents that address topic-specific information. Council approval will not be required to update or change Guidelines. They are intended to address subject matter where Waste Services anticipates a need for flexibility. For example, a Waste Set Out Guideline can be created to vary cart or bin set out requirements for a subset of homes where difficulties with collections are encountered. The Recyclable Materials Guideline can be updated in response to changing market conditions for products. Guidelines include Waste Facility Fees (these fees were previously included in Bylaw 17555 Schedule A), Excluded Organic Materials, Recyclable Materials, Yard and Leaf Waste, Special Handling, and Approved Excess Waste Set Out and Collection. Guidelines are included in Attachment 3.

Public Engagement

A comprehensive citywide public engagement initiative was launched in October 2018 to support the development of the 25-year Waste Strategy, with a second phase of public engagement in spring 2019. The public engagement was designed to seek input from residents, multi-unit stakeholders, non-residential stakeholders and internal City employees on proposed waste management program and service changes.

The public engagement helped to inform the 25-year Waste Strategy and those components in turn inform the changes required in the Bylaw.

Budget/Financial Implications

The main financial implication of the proposed Bylaw is the change to customer classes. Approximately 27,000 multi-unit customers, as previously defined in Bylaw 17555, will be transitioned from the monthly Residential Bin Collection (multi-unit) waste utility rate (\$30.60 in 2019) to the monthly Residential Curbside (single unit) waste utility rate (\$47.08 in 2019). This transition will be phased in over five years, beginning in 2020 to avoid rate shock for these customers. Over the five year period,

the total increase for these customers will be \$16.48, or approximately \$3.30 per year (based on 2019 rates). Assuming all customers are fully transitioned to the new rate after the five year transition period, this rate increase could result in \$5 million in additional annual revenue; half of which was factored into Waste Services' 2019 Utility Rate Filing. This revenue will be used to fund operating and capital requirements.

Legal Implications

Bylaw 18590 is authorized under the *Municipal Government Act* RSA 2000 Chapter M-26.

Corporate Outcomes and Performance Management

Corporate Outcome(s): Edmonton is an environmentally sustainable and resilient city.						
Outcome(s)	Measure(s)	2018 Result	Target(s)			
			2019	2020	2021	2022
Edmonton is an environmentally sustainable and resilient city.	Single Unit Residential Waste Diversion Rate	36%	41%*	50%	64%	66%

*Due to the closure of the Edmonton Composting Facility, this target is not anticipated to be met.

Attachments

1. Bylaw 18590 Waste Services Bylaw
2. Summary of Proposed Bylaw Changes
3. Waste Guidelines

Others Reviewing this Report

- A. Laughlin, Acting Deputy City Manager, Financial and Corporate Services
- C. Owen, Deputy City Manager, Communications and Engagement
- R. Smyth, Deputy City Manager, Citizen Services
- B. Andriachuk, City Solicitor

THE CITY OF EDMONTON
BYLAW 18590
WASTE SERVICES BYLAW

Whereas in accordance with the Municipal Government Act RSA 2000 Chapter M-26, Section 7, Council may pass bylaws for municipal purposes respecting the safety, health and welfare of people and the protection of people and property, nuisances, services provided by or on behalf of the municipality, public utilities, and the enforcement of bylaws; and

Whereas in accordance with the Municipal Government Act RSA 2000 Chapter M-26, Section 8, Council may in a bylaw passed regulate or prohibit, and provide for a system of licences, permits or approvals, and

Whereas it is desirable to regulate and control the storage, collection and disposal of waste within the City of Edmonton;

Edmonton City Council enacts:

PART I - PURPOSE, DEFINITIONS & RULES FOR INTERPRETATION

- | | | |
|--------------------|---|---|
| PURPOSE | 1 | The purpose of this Bylaw is to regulate and control the storage, collection, processing and disposal of waste within the City of Edmonton, and to levy rates and fees for certain services provided by the City. |
| DEFINITIONS | 2 | In this Bylaw: <ul style="list-style-type: none">(a) “alley” means a lane intended primarily for access to the rear of adjacent premises;(b) “bag” means a plastic bag used for the collection of waste;(c) “bin” means a container used for the storage and collection of waste with a capacity of more than three-hundred-sixty-five (365) litres and includes a garbage bin and blue bin;(d) “blue bag” means a translucent blue coloured bag used for the collection of recyclable materials;(e) “blue bin” means a blue coloured bin used to store and dispose of recyclable materials; |

- (f) “**Bylaw**” means this Bylaw as it may be amended from time to time and includes all Schedules to this Bylaw and all Guidelines issued pursuant to this Bylaw;
- (g) “**cart**” means a container provided by the City to a premise which is used to collect waste through mechanical means and includes a garbage cart and an organic cart;
- (h) “**certified compostable**” means bags that are certified and labeled as compostable by the Biodegradable Products Institute;
- (i) “**City**” means The City of Edmonton;
- (j) “**City Manager**” means the chief administrative officer of the City or delegate;
- (k) “**City Waste Facilities**” means facilities operated by the City to accept waste for disposal and includes Eco Stations, the Edmonton Waste Management Facility (or “EWMC”), and community recycling depots;
- (l) “**collection**” or “**collects**” means picking up and gathering waste from a residential premises by the City;
- (m) “**collection day**” means the day on which waste collection is scheduled to take place from a residential premises;
- (n) “**commercial hauler**” means a person who is licenced under applicable laws to collect and transport waste to a City Waste Facility or to any other waste management facility authorized to receive and dispose of waste under applicable laws;
- (o) “**construction and demolition waste**” means materials generated in the course of construction, demolition or renovation on a property;
- (p) “**container**” means a vessel used to store and facilitate waste collection and includes a bin, cart, bag, blue bag, kraft paper bag and garbage can but does not include a public litter receptacle;

- (q) “**dwelling unit**” means a self-contained residential living unit comprised of one or more rooms accommodating sitting, sleeping, sanitary facilities, and a principal kitchen for food preparation, cooking, and serving;
- (r) “**front street**” means a road intended primarily for access to the front of adjacent premises;
- (s) “**garbage**” means waste other than recyclable materials, organic materials, yard and leaf waste, restricted waste, prohibited waste or construction and demolition waste;
- (t) “**garbage bin**” means a bin used to store and dispose of garbage;
- (u) “**garbage can**” means a vessel permitted under this Bylaw for the purpose of garbage storage and disposal which is smaller than 100 liters in size;
- (v) “**garbage cart**” means a collection cart provided by the City for the collection of garbage;
- (w) “**kraft paper bag**” means a double ply paper bag, without a plastic liner, designated by the City Manager as compostable used for the collection of yard and leaf waste with a dimension not to exceed 40 centimetres by 30 centimetres by 87.5 centimetres;
- (x) “**mixed-use site**” means a property which contains one or more residential premises and one or more non-residential premises;
- (y) “**non-residential premises**” means any property, or self-contained portion of a property, used for industrial, commercial or institutional purposes, or for any other purpose other than residential occupancy;
- (z) “**non-residential waste**” means waste that is generated from non-residential premises;
- (aa) “**obstruction**” means any permanent or moveable object whose proximity to containers while placed in the set out location for collection will impair, hinder, interfere or obstruct collection and includes, but is not limited to,

fences, trees, tree branches, bushes, parked cars and bollards;

- (bb) “**organic materials**” means biodegradable waste derived from plants and animals, or any part thereof, but does not include organic materials designated as excluded in the Excluded Organic Materials Guideline;
- (cc) “**owner**” includes the person shown as owner on the land title for a property, the occupant of a premises, the lessee or tenant of a premises, or the condominium board of a condominium property, as applicable;
- (dd) “**organic cart**” means a collection cart provided by the City for the collection of organic materials;
- (ee) “**prohibited waste**” means material designated as prohibited waste in Schedule A;
- (ff) “**recyclable materials**” means the material designated as recyclable materials by the City Manager in the Recyclable Materials Guideline;
- (gg) “**residential premises**” means a property, or self-contained portion of a property, that contains a dwelling unit;
- (hh) “**residential rate**” means the monthly service rate for waste management services provided by the City to a residential premises as set out in Schedule C;
- (ii) “**residential waste**” means waste that is generated from a residential premises;
- (jj) “**restricted waste**” means material designated as restricted waste in Schedule B;
- (kk) “**set out**” means the placement of containers on the scheduled collection day in the location required to facilitate collection in accordance with this Bylaw;
- (ll) “**source separate**” “**source separated**” or “**source separation**” means the obligation imposed under this Bylaw upon persons to segregate waste prior to disposal

into distinct categories of waste including prohibited waste, restricted waste, special handling waste, garbage, recyclable materials, organic materials, yard and leaf waste, and construction and demolition waste;

(mm) “**waste**” means any material disposed of by an owner or person through collection or at a City Waste Facility, or which is otherwise abandoned by a person within the boundaries of the City, and includes residential waste, non-residential waste, recyclable materials, organic materials, construction and demolition waste, restricted waste, prohibited waste and special handling waste; and

(nn) “**yard and leaf waste**” means the materials designated as yard and leaf waste by the City Manager in the Yard and Leaf Waste Guideline.

RULES FOR INTERPRETATION 3

The table of contents, marginal notes and headings in this Bylaw are for reference purposes only.

PART II - GENERAL

WASTE DISPOSAL 4

No person shall set out waste for collection or dispose of waste at a City Waste Facility except in accordance with this Bylaw.

INTERFERENCE WITH WASTE 5

A person shall not interfere with, disturb, or remove the contents of a container.

SCAVENGING 6

- (1) A person shall not scavenge waste at any City Waste Facility.
- (2) A person shall not scavenge waste from a container.

TAMPERING WITH CONTAINER 7

A person shall not damage, tamper with or vandalize a container.

PUBLIC LITTER RECEPTACLE 8

A person shall not place waste produced at residential premises or non-residential premises into a public litter receptacle.

WASTE DISPOSAL 9

An owner may only store waste on the premises from which it was generated.

10

No person shall deposit waste into a container without the consent of an owner of the residential premises or the non-residential premises where the container is located.

CITY WASTE FACILITIES

- 11 (1) Every person must obey all signs, posted regulations, and directions of site attendants at City Waste Facilities.
- (2) No person shall ignite, cause to be ignited, or deposit any burning or smouldering material or waste at City Waste Facilities.
- (3) Every person must ensure that only recyclable materials are disposed of at a community recycling depot.
- (4) Every person must ensure that recyclable materials disposed of at a community recycling depot are properly sorted and segregated before disposal into a blue bin designated to receive a specific type of recyclable material.

PART III - SOURCE SEPARATION OF WASTE AND CONTAINER SPECIFICATIONS

AUTHORIZED CONTAINERS

- 12 Every owner of a residential premises must ensure that all waste set out for collection has been source separated and placed within the correct type of container required under this Bylaw.

GARBAGE

- 13 (1) Every owner of a residential premises must ensure that garbage set out for collection is contained within the garbage cart or garbage bin provided by the City for use at that residential premises.
- (2) Notwithstanding subsection (1), an owner of a residential premises that has not been provided with a garbage cart or garbage bin by the City may dispose of garbage from that residential premises using bags and garbage cans authorized under this Bylaw.

ORGANIC MATERIALS

- 14 (1) Every owner of a residential premises must ensure that all organic materials set out for collection is source separated and contained within the organic cart provided by the City for use at that residential premises.
- (2) Notwithstanding subsection (1), an owner of a residential premises that has not been provided with an organic cart by the City is not required to source separate organic materials and may set out organic materials for collection in the same manner authorized under this Bylaw for garbage collection.

RECYCLABLE MATERIALS

(3) No owner of a residential premises shall use a plastic liner, plastic bag, compostable bag or any other type of liner in an organic cart except for newspaper, compostable paper products, or certified compostable bags.

- 15 (1) Every owner of a residential premises that has been provided with a blue bin must ensure that all recyclable materials set out for collection are source separated and contained within the blue bin.
- (2) An owner of a residential premises that has only been provided with a garbage bin is not required to source separate recyclable materials and may dispose of recyclable materials in the garbage bin.
- (3) An owner of a residential premises that has not been provided with either a garbage bin or a blue bin must source separate recyclable materials and may set out recyclable materials for collection in a blue bag or in a bundle fastened using only tape which shall not exceed 1.2 metres in length and 0.75 meters in diameter, weighing less than 20 kilograms.

YARD AND LEAF WASTE

- 16 (1) Every owner of a residential premises must ensure that all yard and leaf waste set out for collection is source separated and entirely contained within the organics cart provided by the City for use at that residential premises.
- (2) Notwithstanding subsection (1), where the City Manager has designated additional collection days for the collection of yard and leaf waste, an owner of a residential premises may set out:
- (a) yard and leaf waste using approved kraft paper bags that weigh less than 20 kilograms; and
 - (b) branches less than 20 centimeters in diameter that are securely tied using compostable twine, string or rope in bundles no more than 1.2 metres in length and 0.75 meters in diameter, weighing less than 20 kilograms.
- (3) Notwithstanding subsection (1), an owner of a residential premises that has not been provided with an organic cart is not required to source separate yard and leaf waste and may set out yard and leaf waste for collection from that residential premises in the same manner authorized under this Bylaw for garbage collection.

**CARTS AND BINS
PROVIDED BY
CITY**

- 17 (1) All containers issued by the City to owners pursuant to this Bylaw shall remain the property of the City and may be removed or replaced at any time at the discretion of the City Manager.
- (2) Every owner must ensure that containers provided by the City are secured against theft and loss.
- (3) Every owner must ensure that all containers provided by the City to their premises remain at the premises except when set out to facilitate collection or during transport by an owner to and from a City Waste Facility.
- (4) No person or owner shall alter, modify or vandalize any container owned by the City.
- (5) Every owner of a premises shall promptly report to the City any damage to, or theft of, a City-owned container.

**GARBAGE CAN
SPECIFICATIONS**

- 18 An owner of a residential premises who is permitted to set out garbage for collection in garbage cans pursuant to this Bylaw must ensure that the garbage cans meet the following specifications:
- (a) two rigid fixed handles;
- (b) an unattached removable and properly functioning watertight lid;
- (c) made of rust resistant material;
- (d) a tapered cylindrical design;
- (e) smooth rim;
- (f) no smaller than 60 litres and no larger than 100 litres in capacity;
- (g) between 70 to 80 centimetres in height and 40 to 50 centimetres in diameter at the top;
- (h) without wheels; and
- (i) in safe, serviceable condition.

**BAG
SPECIFICATIONS**

- 19 Every owner must ensure that bags set out for collection are securely tied at the top and that they are constructed of sturdy plastic material which meets the following specifications:
- (a) capable of reliably holding 20 kilograms of contents when lifted;
 - (b) no smaller than 60 litres or larger than 121 litres in capacity;
 - (c) between 75 to 85 centimetres in height and between 65 to 75 centimetres in width; and
 - (d) a blue bag must be used for recyclable materials and no waste other than recyclable materials may be disposed of in a blue bag.

EXCESS WASTE

- 20 (1) The City Manager may issue an Excess Waste Collection Guideline for the purpose of authorizing owners to set out excess waste, or any source separated fraction of excess waste, for collection at a residential premises.
- (2) The City Manager has the discretion and authority to impose terms, conditions, rules and requirements, including the power to vary requirements of this Bylaw for the purpose of facilitating excess waste collection from residential premises.
- (3) The City Manager shall not permit excess waste to be collected from any location other than from residential premises in the City of Edmonton where the City provides regularly scheduled collection services.
- (4) The City Manager's authority to establish the terms, conditions, rules and requirements for the disposal of excess waste through set out and collection includes the ability to:
- (a) refrain from selling products to permit excess waste disposal through collection;
 - (b) establish requirements that are more restrictive than the minimum requirements of this Bylaw;
 - (c) make source separation of excess waste mandatory;
 - (d) designate mandatory specifications as to the size, weight,

colour or any other type of specification relating to plastic bags, kraft paper bags or any other type of container that the City Manager may permit to be used for excess waste collection;

- (e) limit the volume of excess waste that may be disposed of through collection; and
- (f) refuse to collect excess waste due to non-compliance with this Bylaw or any requirement of the Excess Waste Collection Guideline.

PROHIBITED WASTE

- 21 (1) No person shall set out prohibited waste for collection or dispose of prohibited waste at a City Waste Facility.
- (2) Every owner of a residential premises must ensure that prohibited waste is not set out for collection.

RESTRICTED WASTE

- 22 (1) No person shall set out restricted waste for collection.
- (2) Every owner of a residential premises must ensure that restricted waste is not set out for collection.
- (3) Every owner of a residential premises must ensure that restricted waste from their residential premises is disposed of at an Eco Station, the EWMC or by other lawful means.
- (4) Every owner of a non-residential premises must ensure that restricted waste from their non-residential premises is disposed of by lawful means.

SPECIAL HANDLING WASTE

- 23 Every owner of a residential premises shall ensure that waste designated by the City Manager in the Special Handling Guideline is only set out for collection in accordance with the requirements of the Special Handling Guideline.

WASTE SERVICE RATE

- 24 (1) Every owner of a residential premises is responsible to ensure monthly payments are made to the City for collection services provided to their residential premises in accordance with the applicable Monthly Waste Utility Rate as described in Schedule “C”.
- (2) Every owner of a residential premises is responsible to ensure payment of the Monthly Waste Utility Rate for collection services even where:

- (a) no waste is set out for collection;
- (b) all or part of the residential premises is vacant; or
- (c) waste has not been collected from the residential premises as a result of non-compliance by any owner of the residential premises with the requirements of this Bylaw.

PART IV - CONTAINER SET OUT AND STORAGE

SET OUT GUIDELINES

- 25 (1) The City Manager may issue Set Out Guidelines that modify, alter, waive or impose additional obligations with respect to container set out and storage that shall be binding upon every owner of a residential premises that falls within the specified class of residential premises described in a Set Out Guideline.
- (2) The City Manager may issue a directive or directives to the owner or owners of a residential premises that modify, alter, waive, or impose additional obligations with respect to container set out and storage.

SET OUT TIMES

- 26 (1) Every owner shall ensure that containers and waste are not set out for collection at their residential premises before 4 p.m. on the day prior to collection day.
- (2) Every owner who fails to set out containers and waste for collection by 7 a.m. on a collection day at their residential premises may be refused collection services by the City on that collection day.
- (3) Every owner shall remove all containers and waste that was not collected from the set out location at their residential premises no later than noon on the day following collection day.

CONTAINER USE

- 27 Every owner shall use containers in accordance with the following:
- (a) the lid of containers must remain completely closed except when waste is being placed into the container;
 - (b) waste must be placed into containers, other than waste

placed into a bag, in a manner that will allow waste to easily dislodge and fall freely from the container during collection;

- (c) the amount of waste must not exceed the maximum weight specified on the container and if no maximum weight is specified on a container, other than a bin, the weight of the waste must not exceed 20 kilograms;
- (d) containers must be kept in a clean and sanitary condition;
- (e) containers must not be chained, tied or fastened to any other object or the ground; and
- (f) the lids of containers must not be chained closed or otherwise locked.

**CONTAINER
POSITIONING AT
DESIGNATED SET
OUT LOCATION**

28

Every owner of a residential premises shall ensure that containers are set out only on scheduled collection days in accordance with the following:

- (a) for residential premises designated to receive front street collection, containers must be located:
 - (i) between the boundaries of each side of the residential premises as those boundary lines extend past the property line into the front street; and
 - (ii) on the front street so as not to obstruct the roadway with the rear of each container no more than 30 cm from the curb;
- (b) for residential premises designated to receive alley collection, containers must be located:
 - (i) between the boundaries of each side of the residential premises as those boundary lines extend past the property line into the alley; and
 - (ii) in a location that does not obstruct the roadway with the front of the container no more than 30 cm away from the road surfacing.

**CART
POSITIONING
AWAY FROM
OBSTRUCTIONS**

- 29 Every owner of a residential premises who are required to dispose of waste in a cart or carts shall ensure that when they are placed in the set out location:
- (a) each cart is spaced at least 1 metre apart from any other cart;
 - (b) there are no obstructions within 1 metre to either side of the cart or 0.5 meters behind the cart;
 - (c) that there are no obstructions within 3 metres above the cart; and
 - (d) each cart must be upright with the front facing towards the roadway.

**OTHER SET OUT
LOCATION
REQUIREMENTS**

- 30 Every owner of a residential premises must ensure that:
- (a) there are no obstructions within 1 metre to either side of a container or within 0.5 metres behind the container;
 - (b) the alley set out location is no more than 25 cm higher than the level of the adjacent road surfacing;
 - (c) the alley set out location is constructed and maintained in good repair to provide an even, level surface; and
 - (d) the alley set out location is maintained in a clean and tidy condition, including the removal of snow, ice and any other obstructions.

**CONTAINER AND
WASTE STORAGE**

31 Every owner of a residential premises must store all waste and containers, other than bins, at a location between the front wall of the residential premises and the rear property line of the residential premises.

**BIN POSITIONING
AWAY FROM
OBSTRUCTIONS**

- 32 Every owner of a residential premises that is provided with a bin or bins by the City shall ensure compliance with the following requirements:
- (a) the set out location for each bin must facilitate safe, efficient and direct collection vehicle access in a manner acceptable to the City Manager;
 - (b) the set out location for each bin must be at the same

grade as the adjacent road surface;

- (c) the set out location and surrounding areas must be maintained to keep it free from snow, ice and obstructions; and
- (d) if the set out location will require the City to move bins into proximity of the collection vehicle before hoisting, the set out location cannot require movement of the bins greater than 9.1 metres from an indoor set out location into position for the collection vehicle, or 6.1 metres from an outdoor set out location into position for the collection vehicle, and the path over which the bins are moved must be smooth, level and at the same grade as the adjacent road surfacing.

PART V - GENERAL SET OUT

PROVISION OF COLLECTION SERVICES

- 33 (1) The City may suspend or terminate collection at a residential premises or mixed-use site, in whole or in part, for any duration of time deemed appropriate by the City Manager where:
 - (a) an owner is in default of payment of the residential rate, the non-residential rate or any fine under this Bylaw;
 - (b) an owner has failed to use a container or containers in accordance with this Bylaw including a failure to source separate waste into the required container;
 - (c) containers and waste have not been set out for collection in accordance with this Bylaw;
 - (d) waste is unsafe to collect due to a failure of an owner to construct and maintain a suitable set out location;
 - (e) waste poses a health hazard or environmental hazard; or
 - (f) the City has given reasonable notice of its intention to do so.
- (2) If the City decides to terminate collection at a residential premises, the City will provide reasonable notice to an owner of

the residential premises providing the reasons for its decision and the effective date of the termination.

PART VI - NON-RESIDENTIAL WASTE

OWNER RESPONSIBLE

- 34 (1) Every owner of a non-residential premises must ensure that a sufficient number of bins or other containers are provided at the property to store all waste generated at the non-residential premises.
- (2) Every owner of a non-residential premises must remove waste from the property to ensure that waste will not result in health and safety hazards to occupants, visitors or any other person and to ensure the waste does not result in a nuisance, such as unsightly conditions.

NON-RESIDENTIAL WASTE

- 35 (1) Every owner of a non-residential premises at a mixed-use site must ensure that non-residential waste is not set out for collection or disposed of in a container provided by the City for the collection of residential waste.
- (2) Notwithstanding subsection (1), an owner of non-residential premises at a mixed-use site who has entered into a contract with the City for collection of non-residential waste may dispose of waste in a container provided by the City for residential waste disposal at that mixed-use site.

COST OF SERVICE REIMBURSEMENT

- 36 If the City collects non-residential waste at a mixed-use site where an owner of a non-residential premises has failed to provide sufficient containers for its non-residential waste then, in addition to any fine authorized under this Bylaw, every owner of the non-residential premises shall be liable to pay for the cost of collecting the non-residential waste in an amount determined by the City Manager.

PART VII - POWERS OF THE CITY MANAGER

CITY MANAGER ROLE

- 37 In addition to any other power, duty, or function prescribed by this Bylaw the City Manager may:
- (a) approve or designate specifications for bins, containers,

carts and bags;

- (b) approve Guidelines and directives;
- (c) designate the type of collection services that a residential property will receive;
- (d) determine the collection day, time and frequency of collection;
- (e) grant approvals and permissions described in this Bylaw;
- (f) establish systems for billing and collecting rates, fees and charges;
- (g) establish fees for containers and any service provided by the City with respect to collection, processing and disposal of waste;
- (h) suspend or terminate the collection of waste from residential premises and mixed-use site;
- (i) modify, vary or waive any requirement imposed on the City, owners or persons pursuant to this Bylaw, or approve exemptions to this Bylaw, including the power to waive fees;
- (j) enter upon any property, residential premises or mixed-use site to inspect waste, set out locations, City-owned containers, or for any other reason in furtherance of the purposes of this Bylaw; and
- (k) delegate any powers, duties or functions under this Bylaw to an employee or agent of the City.

PART VIII - ENFORCEMENT

OFFENCE	38	A person or owner who contravenes this Bylaw is guilty of an offence.
CONTINUING OFFENCE	39	In the case of an offence that is of a continuing nature, a contravention constitutes a separate offence in respect of each day, or part of a day, on which it continues and a person or

		owner guilty of such an offence is liable to a fine for each such day.
FINES	40	(1) A person or owner found guilty of an offence under this Bylaw is liable to a fine in an amount not less than \$250. (2) If a person or owner is guilty of a subsequent offence, the fine amounts established in this section are doubled.
MUNICIPAL TAG	41	(1) A municipal tag may be issued for any offence under this Bylaw. (2) If a municipal tag is issued for an offence, the municipal tag must specify the fine amount established by this Bylaw for the offence.
PAYMENT IN LIEU OF PROSECUTION	42	A person or owner who commits an offence may, if a municipal tag is issued for the offence, pay the fine amount established by this Bylaw for the offence and if the full amount is paid on or before the required date, the person or owner will not be prosecuted for the offence.
VIOLATION TICKET	43	(1) If a violation ticket is issued for an offence under this Bylaw, the violation ticket may: (a) specify the fine amount established by this Bylaw for the offence; or (b) require a person or owner to appear in court without the alternative of making a voluntary payment. (2) A person who commits an offence may, if a violation ticket is issued specifying the fine amount established by this Bylaw for the offence, make a voluntary payment equal to the specified fine amount.
PROOF OF EXEMPTION	44	The onus of proving that a person is exempt from a requirement under this Bylaw is on the person alleging the exemption on a balance of probabilities.
CERTIFIED COPY	45	A copy of a record of the City, certified by the City Manager as a true copy of the original, will be admitted in evidence as prima facie proof of the facts stated in the record without proof of the appointment or signature of the person signing it.
VICARIOUS LIABILITY	46	For the purposes of this Bylaw, an act or omission by an employee or agent of a person is deemed to be an act or

omission of the person if the act or omission occurred in the course of the employee's employment or agency relationship with the person.

- | | | |
|---------------------|----|--|
| CORPORATIONS | 47 | If a corporation commits an offence under this Bylaw, every principal, director, manager, officer, employee, or agent of the corporation who authorized, assented to, acquiesced, or participated in the act or omission that constitutes the offence is guilty of the offence whether or not the corporation has been prosecuted for the offence. |
| PARTNERSHIPS | 48 | If a partner in a partnership is guilty of an offence under this Bylaw, each partner in that partnership who authorized, assented to, acquiesced, or participated in the act or omission that constitutes the offence is guilty of the offence. |
| REPEAL | 49 | The Waste Management Bylaw, Bylaw 17555, is repealed. |

Read a first time

Read a second time

Read a third time

SIGNED AND PASSED

THE CITY OF EDMONTON

MAYOR

CITY CLERK

SCHEDULE A PROHIBITED WASTE

The items in this Schedule A are designated to be “prohibited waste” under the Waste Services Bylaw 18590.

- Asbestos or waste containing asbestos
- Biomedical waste (meaning waste that is generated by non-residential premises, and that contain or may contain pathogenic agents that may cause disease in humans exposed to the waste, and is defined in the Waste Control Regulation, Alta Reg 192/1996 to the Environmental Protection and Enhancement Act, RSA 2000, c E-12 and any successor to that legislation)
- Explosives, firearms and ammunition
- Hot ashes
- Radioactive waste (liquid, gas or solid) that contains a radioactive nuclear substance as defined in the Nuclear Safety and Control Act
- Unknown waste, where the composition, substances and are not readily discernible and where the methods required for proper disposal and handling are in doubt
- Waste that is unsuitable for processing and disposal as determined by the City Manager

SCHEDULE B RESTRICTED WASTE

The items in this Schedule B are designated to be restricted waste under the Waste Services Bylaw 18590.

- Appliances
- Biohazardous or pathogenic waste
- Compressed gas containers
- Concrete blocks or slabs
- Construction and demolition waste
- Cooking oil in excess of 1 litre
- Electronics
- Furniture
- Highly combustible or explosive materials other than ammunition, bombs and military explosives
- Household hazardous waste, meaning waste that is generated by residential premises that requires special handling and contains corrosive, toxic, flammable, or reactive ingredients as specified by the Alberta Recycling Management Authority
- Light bulbs
- Liquid waste
- Friable waste (material which is easily crumbled or breaks down to powder)
- Medical sharps
- Pharmaceuticals
- Railroad ties and other wood products chemically treated with creosote
- Renovation waste
- Tree stumps
- Vehicle waste
- Waste that is unsafe for the collector to access or handle
- Hazardous waste as defined in the Waste Control Regulation, Alta Reg 192/1996 to the Environmental Protection and Enhancement Act, RS 2000, c E-12 and any successor to that legislation.

**SCHEDULE C
WASTE SERVICE RATES**

The Monthly Waste Utility Rates described in this Schedule C are authorized pursuant to the Waste Services Bylaw 18590.

The City Manager is authorized to charge the applicable Monthly Waste Utility Rate in Table 1 to an owner of a residential premises for collection services in each month of the calendar year indicated therein. The applicable Monthly Waste Utility Rate shall be determined on the basis of the type of collection service provided to a residential premises.

TABLE 1 – RESIDENTIAL WASTE UTILITY RATES

Type of Service	Monthly Waste Utility Rate (2019)
Residential Curbside (Large Garbage Cart)	N/A
Residential Curbside (Small Garbage Cart)	N/A
Residential Curbside (No Garbage Cart Provided)	\$47.08
Residential Curbside (Multi-Unit Transition Rate)	\$30.60
Residential Bin Collection	\$30.60

The Residential Curbside (Multi-Unit Transition Rate) in Table 1 shall only be applicable to the limited class of owners of residential premises who satisfy the requirements of the definitions and criteria stated below:

Definitions

- (i) “**hand collection**” means the manual collection service of waste from garbage cans and curbside bag disposal which was the type of service provided by the City to limited numbers of multi-unit residential properties in exchange for monthly payments of the multi-unit residential waste service rate in accordance with the repealed Waste Services Bylaw 17555

and for clarity, does not include the type of service defined as “bin collection” in this Schedule C;

(ii) “**bin collection**” means the mechanical collection service of waste disposed of in bins which was the type of service provided by the City to the majority of multi-unit residential properties in exchange for monthly payments of the multi-unit residential waste service rate in accordance with the repealed Waste Services Bylaw 17555 and for clarity, does not include the type of service defined as “hand collection” in this Schedule C.

Eligibility Criteria

The City Manager may charge the Residential Curbside (Multi-Unit Transition Rate) in Table 1 in each month of the calendar year indicated therein to an owner of residential premises provided that the following criteria are satisfied:

- (a) As of the date on which Waste Services Bylaw 17555 was repealed, the owner’s residential premises must be a property that received hand collection exclusively;
- (b) As of the date on which Waste Services Bylaw 17555 was repealed, the owner’s residential premises must not be a property that received bin collection; and,
- (c) Beginning on the day that Waste Services Bylaw 18590 comes into effect, and at all times during which the Residential Curbside (Multi-Unit Transition Rate) is included as a Type of Service in Table 1, the owner must continuously occupy the same residential premises that received hand collection pursuant to Waste Services Bylaw 17555 and the owner must at all times continue to be the account holder for waste utility services provided to that residential premises.

Summary of Proposed Bylaw Changes

Overview

Waste Services has proposed changes¹ to the current waste collection program and to the way residents set out their waste for collection in the City of Edmonton. These changes include source separation and the introduction of automated collection. If approved, residents will start to transition from the current set out and collection program to using carts and separating their waste into garbage, organics, recycling, and leaf and yard waste. While there are substantial proposed changes for residents living in single unit dwellings, those residents living in apartments and condos that are serviced by bins will be following the status quo as there are no proposed changes for that sector at this time. Bylaw 18590 provides set out requirements to facilitate automatic cart collection services.

This document highlights the major changes from the current Waste Management Bylaw 17555 that have been incorporated in the new Waste Services Bylaw 18590.

1) Definition of Customer Classes

Discussion: The previous Bylaw 17555, defined customers based on the number of dwelling units on a single tax parcel which in turn determined the assessed rate. For example, a single dwelling unit on a single tax parcel was deemed a Single Unit Customer. Multiple dwelling units on a single tax parcel were deemed Multi-Unit Customers. Each customer type, Single Unit and Multi-Unit, were charged different Monthly Waste Utility Rates. This resulted in some customers being placed in the Multi-Unit customer class and paying the corresponding lower rate even though they received the waste collection service associated with the Single Unit customer class.

The new Bylaw 18590 defines customer class by service type. There are two service types: (1) Residential Curbside (customers who set out their waste in either bags or carts), and (2) Residential Bin Collection (customers who set out their waste in a bin). The change will allow the Waste Utility to charge the appropriate rate to all customers based on the service they receive rather than the number of dwelling units on a tax parcel.

¹ Single Unit Waste Set-Out Business Case CR_7173

Approximately 27,000 Multi-Unit customers, as previously defined in Bylaw 17555, will be transitioned from what was previously the multi-unit rate so that they pay the same rate as other customers who receive similar Residential Curbside service. This transition will be phased in over five years beginning in 2020.

The following table highlights the key changes from Bylaw 17555 to Bylaw 18590.

Bylaw 17555	Bylaw 18590												
<p>Part 1, Section 2 Definitions:</p> <p>(u) “multi-unit residential” means: (i) a class of building containing more than one dwelling unit, except for row housing where each dwelling unit is on a separate tax parcel; or (ii) a class of property containing more than one building with dwelling units on a single tax parcel; as determined from property assessment records, or other means including on site verification.</p> <p>(gg) “single unit residential” means: (i) a class of building containing no more than one dwelling unit; (ii) row housing where each dwelling unit is on a separate tax parcel; or (iii) a mobile home located in a trailer park; as determined from property assessment records or other means including on site verification.</p>	<p style="text-align: center;">—</p>												
<p>Schedule A- Waste service rates, fees & charges</p> <table border="1"> <thead> <tr> <th>Type of residential Premises</th> <th>Monthly rate</th> </tr> </thead> <tbody> <tr> <td>Single Unit Residential</td> <td>\$47.08</td> </tr> <tr> <td>Multi-Unit Residential</td> <td>\$30.60</td> </tr> </tbody> </table>	Type of residential Premises	Monthly rate	Single Unit Residential	\$47.08	Multi-Unit Residential	\$30.60	<p>Schedule C- Waste Service Rates</p> <p>Table 1 - Residential Waste Service Rates</p> <table border="1"> <thead> <tr> <th>Type of service</th> <th>Monthly Waste Utility Rate (2019)</th> </tr> </thead> <tbody> <tr> <td>Residential Curbside (Large Garbage Cart)</td> <td>N/A</td> </tr> <tr> <td>Residential Curbside</td> <td>N/A</td> </tr> </tbody> </table>	Type of service	Monthly Waste Utility Rate (2019)	Residential Curbside (Large Garbage Cart)	N/A	Residential Curbside	N/A
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	(Small garbage cart)	
	Residential Curbside (no Garbage Cart Provided)	\$47.08
	Residential Curbside (Multi-Unit Transition Rate)	\$30.60
	Residential Bin Collection	\$30.60

2) Automated Collection and Source Separation

Discussion: Waste Services Bylaw 18590 will transition the current curbside waste collection program to the new program where carts are provided to customers. This includes provisions to implement source separation requirements. Because the new waste collection program will be introduced over time in phases, the new Bylaw maintains provisions to generally continue and maintain the current set out requirements for customers who have not received carts.

The following sections highlight key additional provisions in Bylaw 18590 to implement the new program.

Part III- Source Separation of Waste and Container Specifications:

a) *Sections 12-16* address the separation of garbage, organics, recycling, and leaf and yard waste for those who have transitioned to the new set out and have been provided a cart by the City. Sub-sections within each of these provisions allow the current program to continue for customers who have not yet received carts.

b) *Sections 17-19* outline the various containers that may be used for those who have transitioned as well as those who have not. Once the transition to the new waste collection program is complete, the sections pertaining to the old set out will be removed.

3) Schedules and the Addition of Guidelines

Discussion: Bylaw 18590 provides the broad Waste Utility framework by dealing with core subject matter. Schedules in the Bylaw address aspects that will require amendments (for example Waste Service Rates) and subject matter that is unlikely to change frequently (for example Prohibited Waste and Restricted Waste). Schedules have been proposed for Prohibited Waste and Restricted Waste to easily facilitate amendments. Changes to the Bylaw and Schedules will require Council approval through amendments.

Guidelines are stand-alone documents that address topic-specific information. Council approval will not be required to update or change Guidelines but they will be published alongside the Bylaw 18590.² They are intended to address subject matter where Waste Services anticipates a need for flexibility. For example, a Set Out Guideline can be created to vary cart or bin set out requirements for a subset of homes where difficulties with collections are encountered. The Recyclable Materials Guideline can be updated in response to changing market conditions for products. Guidelines include Waste Facility Fees (these fees were previously included in Bylaw 17555 Schedule A), Excluded Organic Materials, Recyclable Material, Yard and Leaf Waste, Special Handling, and Excess Waste Collection.

The Schedules to Bylaw 18590 include:

Schedule A - Prohibited Waste

This schedule defines waste that cannot be collected by the City or accepted at any City Facility (i.e. ammunition, nuclear materials, etc.).

Schedule B - Restricted Waste

This schedule defines waste that will not be collected, but which will be accepted at an appropriate City Waste Facility (i.e. paint, solvents, etc.).

Schedule C - Waste Service Rates

This schedule establishes the Monthly Waste Utility Rates assessed to each residential premises based on the service provided.

² The Guidelines will be published in a similar manner to the Guidelines authorized under Traffic Bylaw 5590

https://www.edmonton.ca/city_government/bylaws/bylaws-t.aspx

The Guidelines to Bylaw 18590 include:

Waste Facility Fees

User fees for Waste Facilities such as the Edmonton Waste Management Centre and Eco Stations. These fees were previously included in Bylaw 17555 - Schedule A.

Excluded Organic Materials

Materials that are organic in nature, but may not be set out for collection in an organics cart. Flexibility will be useful to allow an optimized waste stream for organic waste processing.

Recyclable Material

Recyclable materials that are accepted for collection. Flexibility will allow the City to make changes to reflect fluctuating market conditions for recyclable materials.

Yard and Leaf Waste

Yard waste materials that are accepted for collection.

Special Handling

Some waste can be collected but must be prepared in a specific manner first, due to safety concerns or other issues. The Special Handling Guideline deals with animal waste, dusty waste, medical waste, and sharp objects. These provisions were previously included in Bylaw 17555 under Part II-Residential Waste, sections 21-26. Using a Guideline will give Waste Services the ability to update it quickly if it is necessary to deal with other types of waste.

Excess Waste Collection

Specifies the conditions under which residents are permitted to set out additional garbage for collection.

Set Out

Bylaw 18590 includes provisions to prescribe the location where customers will need to place carts on collection days. The set out rules in the Bylaw should be sufficient to cover the majority of homes in Edmonton. However, Waste Services expects to encounter difficulties collecting waste in carts and bins from some types of homes and properties. The exact nature of problems cannot be predicted in advance. To avoid revisions to the Bylaw in the future and to avoid creating extensive sets of rules in the Bylaw, each of which would be specific to a subclass of homes, the Bylaw allows Waste Services to issue Set Out Guidelines. Set Out Guidelines may modify, alter, waive or impose additional obligations with respect to set out and storage for specific customers.

Removed Provisions

1) Base Level of Service

Discussion: This section was determined to be unnecessary as under the MGA the City already has the power to provide a utility. The City will provide waste collection service to all residents whether they choose to put waste out for collection by the City or not. All residents are required to pay the designated rate for service. If they choose to contract another service provider to handle their waste, it would not replace the City service.

Other municipalities require that citizens use the provided waste utility service because revenue is generated from the waste collected. The City does not generate revenue in the same manner, and therefore does not require residents to use the collection service. However, to fund the waste utility service, the City requires all residents to pay rates. Therefore, the rates are mandatory, but the use of the service itself is not.

Bylaw 17555	Bylaw 18590
Part 1 - Section 2 Definitions: <i>(b) "base level of service" means the collection, processing and disposal of waste from residential premises in accordance with the requirements and within the volume limits outlined in this Bylaw;</i>	—
Part II - Residential Waste, Base Level of Service: <i>4 The City shall provide the base level of service for all residential premises located within the collection area.</i> <i>5 No person shall provide the base level of service for residential premises in the collection area unless authorized to do so by the City Manager.</i>	—

2) Waste Limits

Discussion: In Bylaw 17555, section 10, “Waste Limits” refer to base level of service average amounts descriptive of an average capacity accounted for when formulating the single and multi-unit utility rate, rather than prescribing a maximum volume limit. These provisions were removed as an average amount is difficult to monitor and enforce and there were no provisions to address residents who do set out more than the base level or “limit” as described in section 10.

In alignment with the new program changes, the introduction of carts and utility rates that are tied to the size of cart provided to the customer will provide volume limits as residents will be limited to the size and number of carts they are provided with by the City.

Additionally, section 26 (1) of Part IV- Container set out and Storage, instructs residents to only fill containers in a way that allows the lid to close, for materials to flow loosely from containers (not overly packed) and the waste and container must not exceed the maximum weight. These provisions provide limits to the preparation and amount of waste that may be set out for collection.

Bylaw 17555	Bylaw 18590
<p>Part II - Residential Waste, Section 10 Waste Limits:</p> <p><i>The base level of service provides collection, processing and disposal for an annual average amount of four (4) 100 litre containers per week for single unit residential premises and two (2) 100 litre containers per week for multi-unit residential premises that receive hand collection</i></p>	<p>—</p>

3) Right of Entry and Ownership of Waste

Discussion: Bylaw 17555, Section 34, Right of Entry was removed as the common law allows all persons to take possession (and therefore inspect) abandoned possessions. Waste set out for collection is abandoned under the common law. For example, this common law right allows the Edmonton Police Service to inspect garbage for evidence of criminal activity.

In Bylaw 18590, the ability to enter a property for the purposes of inspection is part of the City Manager's Powers in Part IX.

Bylaw 17555 section 84 and 85 were removed as this information is now covered by Part I- Purpose, Definitions & Rules for Interpretation, where the definition of owner as been updated to say *“includes the person shown as owner on the land title for a property, the occupant of a premises, the lessee or tenant of a premises, or the condominium board of a condominium property; as applicable”*

Owners are responsible for properly setting out waste for collection under Bylaw 18590, as well as taking their containers back from front street or back alley set out locations (Part IV-Container Set Out and Storage, sections 25 (2) (3)).

An owner continues to be responsible for waste they set out until the City takes possession of it. If it is not collected by the City due to non-compliance with the Bylaw, the owner must remove it from the set out location as it is unlawful to dispose of waste on public property. The Bylaw provides a limited right to put waste on public property for a limited period of time on collection days.

Bylaw 17555	Bylaw 18590
<p>Part II - Residential Waste, Section 34 Right of Entry:</p> <p><i>Collectors, assessors and inspectors may enter upon residential premises at all reasonable times for the purpose of collecting and inspecting waste that is set out for collection, inspecting set out locations and assessing residential</i></p>	<p>Part IX- Powers of the City Manager, Section 37 City Manager Role:</p> <p><i>(j) enter upon any property, residential premises or mixed-use site to inspect waste, set-out locations, City-owned containers, or for any other reason in furtherance of the purposes of this Bylaw; and,</i></p>

<p><i>premises for applicable base level of service to be provided.</i></p>	<p><i>(k) delegate any powers, duties or functions under this Bylaw to an employee or agent of the City.</i></p>
<p>Part VII - General, Section 84 and 85 Ownership of Waste:</p> <p><i>All waste set out for collection remains the property of the person placing the waste until accepted by the City at the time of collection.</i></p> <p><i>The City retains ownership of all environmental attributes resulting from waste knowingly accepted and processed through its facilities.</i></p>	<p>—</p>

4) Liability and Safety

Discussion: Bylaw 17555 , Part II, section 35 was replaced with a more comprehensive section in Part V - General Set Out section 32. The power to withhold service is included as part of the City Manager’s powers.

Bylaw 17555, Part II, sections 36 and 37 were removed as they do not award any additional powers that aren’t granted under the MGA and were therefore not useful to include in Bylaw provisions. If the City collectors believe it is too dangerous to collect the waste, or too difficult to collect the waste without damaging property, they are not obligated to do so. Other claims will have to be dealt with by the Law Branch after a determination of liability is completed.

Bylaw 17555	Bylaw 18590
<p>Part II - Residential Waste</p> <p>Section 35 - Withhold Collection Section 36 - Damage to Containers Section 37 - Damage to Roads</p>	<p>Part V - General Set Out, Section 32</p> <p><i>The City may suspend or terminate collection at a residential premises or mixed-use site, in whole or in part, for</i></p>

<p><i>The City may withhold collection service for residential premises where waste is not set out in accordance with this Bylaw</i></p> <p><i>The City will not be responsible for damage to containers resulting from normal, repetitive collection activity.</i></p> <p><i>The City will not be responsible for damage to roads or infrastructure on residential premises resulting from normal operation of collection vehicles.</i></p>	<p><i>any duration of time deemed appropriate by the City Manager where:</i></p> <ul style="list-style-type: none"> <i>(a) an owner is in default of payment of the residential rate, the non-residential rate or any fine under this Bylaw;</i> <i>(b) an owner has failed to use a container or containers in accordance with this Bylaw including a failure to source-separate waste into the required container;</i> <i>(c) containers and waste have not been set out for collection in accordance with this Bylaw;</i> <i>(d) waste is unsafe to collect due to a failure of an owner to construct and maintain a suitable set out location;</i> <i>(e) waste poses a health hazard or environmental hazard; or</i> <i>(f) the City has given reasonable notice of its intention to do so.</i> <p>Part IX - Powers of the City Manager, Section 37 City Manager Role:</p> <ul style="list-style-type: none"> <i>(h) suspend or terminate the collection of waste from residential premises and mixed-use site;</i>
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WASTE GUIDELINES

Yard and Leaf Waste Guideline

1.0 Application

1.1 Pursuant to Waste Services Bylaw 18590, the following are yard and leaf waste materials that are accepted for collection by the City.

- (i) Branches
- (ii) Grass clippings
- (iii) Houseplants
- (iv) Leaves
- (v) Pine cones
- (vi) Sticks and twigs
- (vii) Tree roots
- (viii) Tree trimmings
- (ix) Yard and garden trimmings
- (x) Apples

Excluded Organic Materials Guideline

1.0 Application

1.1 Pursuant to Waste Services Bylaw 18590, the following items are excluded organic materials which must not be disposed of in an organic cart:

Biodegradable or compostable plastics except certified compostable bags

Branches greater than 20 cm in diameter for Yard Waste Collection

Branches greater than 2.5cm in diameter for Green Cart collection

Textiles

Wax products

Sod and soil

Kitty litter

Leather products

Noxious and prohibited weeds

WASTE GUIDELINES

Recyclable Material Guideline

1.0 Application

1.1 Pursuant to Waste Services Bylaw 18590, the items and materials in this Recyclable Material Guideline are designated to be recyclable material.

A. Recyclable materials set out for collection must adhere to the following conditions:

1. Caps and lids must be removed and disposed of as garbage
2. All materials must be cleaned or rinsed, and free of contamination from food waste

B. Acceptable recyclable materials include only the following:

Aerosol can (empty)	Broth carton	Coiled paper notebook
Aluminium can	Calendar	Comic books
Aluminium tart shell	Cardboard	Conditioner bottle
Aluminum pie plate	Cardboard box	Construction paper
Aluminum tray	Cardboard tube	Cookie tin
Baby food jar	Catalogue	Cooking oil bottle (empty)
Baby wipe container	Cereal box	Dishwash soap bottle
Bag-in-a-box (wine)	Chocolate box (paper or cardboard)	Drain cleaner container (empty)
Beer bottle	Cigarette package	Dry cleaning bag
Beer can	Coffee can (plastic)	Eggnog carton
Beverage can	Coffee can (tin)	Envelope (not padded)
Bleach bottle (empty)	Coffee creamer bottle	Fabric softener bottle
Books	Coffee creamer carton	File folder
Boost drink bottle	Coffee cup cardboard sleeve	Flyers
Bottle cap, beer	Coffee cup tray (paper)	Foil take-out food container
Bread bag (plastic)		
Brochure		

B. (Cont d) Acceptable recyclable materials are limited to:

Foil tray	Paper	dressing bottle
Frozen fruit bag (not stand-up pouch)	Paper bag	Plastic shopping bag
Frozen vegetable bag (not stand-up pouch)	Paper booklet	Plastic spray bottle
Gift bag (paper)	Paper egg carton	Plastic take-out food container
Gift box (paper, cardboard)	Paper leaflet	Plastic tubs & lids
Gift wrap (paper)	Paper notebook	Plastic vitamin bottle (empty)
Glass bottle (beverage)	Paper receipts	Pop bottle
Glass bottle (non-beverage)	Paperback book	Pop can
Glass jar	Pasta box	Postcard
Greeting card	Peanut butter jar	Shampoo bottle
Hand soap container (plastic)	Phone book	Shaving cream can (empty)
Ice cream pail	Pizza box	Shoebox
Index dividers (paper)	Plant pots & trays (plastic)	Soup can
Juice box	Plastic clamshell container	Soup carton
Juice carton	Plastic bag	Spice bottle
Juice or drink pouch	Plastic bakery container	Sticky note
Laundry detergent bottle	Plastic bottle (beverage)	Strawberry clamshell container
Laundry detergent box (boxboard)	Plastic bottle (non-beverage)	Tetra-pak
Lotion bottle	Plastic bulk food bag	Textbook
Magazine	Plastic container	Tissue box
Maps (paper)	Plastic egg carton	Toilet paper tube
Margarine container	Plastic food wrap box	Vinegar bottle
Metal food can	Plastic jug	Whipped cream can (empty)
Milk carton	Plastic mayonnaise jar	Windshield washer fluid container
Milk jug	Plastic medicine bottle (empty)	Wine bottle
Mouthwash bottle	Plastic pill bottle (empty)	Yogurt container
Moving boxes	Plastic produce bag	Yogurt cup
Newspaper	Plastic retail bag	Ziploc bag
Paint swatch	Plastic salad clamshell container	
	Plastic salad	

Special Handling Guideline

1.0 Application

1.1 Pursuant to Waste Services Bylaw 18590, the waste materials in this Special Handling Guideline may only be set out for collection at a residential premises if they have been prepared by an owner in accordance with the requirements of this Special Handling Guideline.

1. The following definitions apply for the purpose of the Special Handling Guideline:

- (i) **medical sharp** means a needle device or any non-needle sharp used for withdrawing body fluids, accessing an artery or vein, administering medications or other fluids, or any other device that can reasonably be expected to penetrate the skin or any other part of the body.;
- (ii) **medical waste** means waste that is generated by residential premises for the purpose of home medical care, but does not include waste which contains or may contain pathogenic agents that may cause disease in humans exposed to the waste, including blood bags or catheter bags;

2. Animal waste may only be set out for collection in accordance with the following:

- (i) animal waste disposed of as garbage must be double bagged and securely tied; or
- (ii) animal waste disposed of as organic materials may be placed in the organic cart in accordance with the following:
 - (a) no plastic bags are allowed in the organic cart, other than compostable bags or a kraft paper bag; and,
 - (b) cat litter cannot be disposed of in the organic cart.

3. Dusty waste must be double bagged, securely tied and disposed of as garbage.

4. Medical waste must be double bagged, securely tied and disposed of as garbage. Medical sharps and pharmaceuticals are not garbage; they are restricted waste which cannot be disposed of through curbside set out and collection.
5. Sharp objects, which includes but is not limited to, glass, nails, screws, razor blades, knives, metal scraps, or wood splinters must be contained in a sealed cardboard box which is clearly labeled as Sharps and disposed of as garbage.
6. Wet waste must be thoroughly drained, double bagged, securely tied, and disposed of as garbage.

WASTE GUIDELINES

Waste Facility Fees Guideline

1.0 Application

1.1 Pursuant to Waste Services Bylaw 18590, the following fees are authorized by the City Manager.

ECO STATION FEES

ITEM	CHARGE
Electronics	No charge
Household Hazardous Waste	No charge
Recyclable Materials (clean)	No charge
Reuse Centre Material (acceptable material only)	No charge
Scrap Metal	No charge
Tires (Only tires managed under the Provincial Tire Recycling Program will be accepted from residential customers)	No charge
Small Items (chair or comparable volume)	\$8 per item
Large Items (sofa or comparable volume)	\$16 per item
Items requiring CFC (chlorofluorocarbon) removal	\$16 per item
VEHICLE LOADS:	
partial load	\$28 per load
pickup truck, van or utility trailer equivalent to level half-tonne	\$38 per load
pickup truck, van or utility trailer equivalent to heaping half-tonne	\$48 per load
cube van load	Subject to viewing for comparison to half-tonne load

EDMONTON WASTE MANAGEMENT CENTRE FEES

ITEM	CHARGE	MINIMUM CHARGE
Residential Waste	\$67	\$20
Non-residential Waste	\$96	\$40
Mattresses or Box Springs (residential)	\$67 (\$16 surcharge per item in addition to per tonne fee)	\$20
Mattresses or Box Springs (non-residential)	\$96 (\$16 surcharge per item in addition to per tonne fee)	\$40
Grass and Leaves (segregated)	\$38	\$20
Soil (clean, residential only)	\$41	\$20
Electronics (clean, segregated)	No charge	No charge
Metals (clean, segregated)	No charge	No charge
Charitable Organization Waste	\$26	\$20
Special Handling	\$128	\$128
Tires (Managed under the Provincial Tire Recycling Program)	No charge	No charge
Tires (Not managed under the Provincial Tire Recycling Program)	\$128	\$128

CONSTRUCTION AND DEMOLITION WASTE FEES

ITEM	CHARGE	MINIMUM CHARGE
Mixed C&D Waste (with at least 75% wood, metal, asphalt/concrete, cardboard, clean film plastic and drywall – clean and unpainted)	\$90	\$20
Asphalt/Concrete (clean and segregated, maximum size 80 x 80 cm)	\$36	\$20
Asphalt/Concrete (oversized)	\$53	\$20
Asphalt Shingles (clean and segregated)	\$87	\$20
Brush and Trees (clean and segregated, minimal/no root soil and stumps, trees larger than 51 cm diameter must be cut into pieces no longer than 61 cm)	\$65	\$20
Drywall (clean and segregated, unpainted)	\$48	\$20
Metals (clean and segregated, ferrous and non-ferrous)	No charge	No charge
Wood (clean and segregated, unpainted and untreated)	\$65	\$20
Wood (painted or stained)	\$90	\$20
Wood Chips (clean and segregated, from brush and trees)	\$65	\$20

OTHER SERVICE CHARGES

ITEM	CHARGE
Landfills records search	\$65 per search

Excess Waste Collection Guideline

1.0 Application

- 1.1 Pursuant to Waste Services Bylaw 18590, an owner of a residential premises provided with a garbage cart by the City is required to dispose of all garbage within the garbage cart (Bylaw s. 13 (1)) and the volume of garbage disposed of must not exceed the capacity of the garbage cart in order to ensure the lid remains closed (Bylaw s. 27(1)) (collectively the "Requirements").
- 1.2 The purpose of this Guideline is to authorize owners of residential premises to dispose of excess garbage through set out and collection in a manner that does not satisfy the Requirements.
- 1.3 Pursuant to section 20 of the Waste Services Bylaw 18590, the City Manager has the discretion to authorize the disposal of excess waste, or any source separated fraction of excess waste.
- 1.4 Pursuant to this guideline, the City Manager will hereby permit owners of residential premises to dispose of source separated excess garbage through collection.

2.0 Rules for Excess Garbage Set out and Collection at Residential Premises

- 2.1 An owner of residential premises is permitted to set out additional garbage for collection in excess of the limits imposed by the Requirements in accordance with the following:
 - a) The City will offer excess garbage bags for sale to owners of residential premises specifically marked and designated for disposal of excess garbage.

- b) Excess garbage may be set out for collection at a residential premises if it is contained in a City approved excess garbage bag purchased by the owner.
- c) Every owner must ensure that no more than two excess garbage bags are set out for collection on the day scheduled for collection of garbage at their residential premises.
- d) Every owner must ensure that waste is source separated in accordance with section 12 of the Bylaw and only garbage may be disposed of in an excess garbage bag. Every owner must ensure that excess garbage bags do not contain any recyclable materials, organic materials, or yard and leaf waste.
- e) Excess garbage bags must be securely tied at the top and must not weigh more than 20 kilograms each.
- f) Except as modified by this Guideline, every owner must ensure that waste is set out for collection in accordance with the requirements of the Bylaw and any Guidelines applicable to the residential premises.
- g) Excess garbage bags must be located 1 meter away from any cart when set out for collection. Excess garbage bags may be piled together in a group.
- h) Owners must ensure that excess garbage bags are only set out with carts on garbage collection day. Any excess garbage bag which has not been collected by the City on the collection day must be removed and stored in accordance with Bylaw requirements.
- i) Failure to comply with the above conditions may result in the excess garbage not being collected, and/or a violation ticket may be issued to the owner of the residential premises.