
Memorandum

WMPSC-C 7-2024

Subject: Waste Management Strategic Plan Update

Date: August 27, 2024

To: Waste Management Planning Steering Committee

From: Jennifer Mazurek, Program Manager, Waste Policy and Planning

Purpose

The purpose of this memorandum is to provide members of the Waste Management Planning and Steering Committee (WMPSC) with an update on the development of Niagara Region's Waste Management Strategic Plan (the Plan). This update includes the vision, mission, guiding principles, goals, evaluation criteria for options, and Long List of options for consideration in the final version of the Plan. Additional background information about the Plan and associated phases, and the Long List, are included in Appendices 1 and 2.

Plan Development Process

The development of the Plan is a multi-phase process, with the initial phases (phases 1 and 2) laying the groundwork for the strategic direction that will shape the future of waste management in Niagara Region.

Phase one focused on foundational activities, including:

- providing a future outlook and reviewing shifting priorities, threats, and opportunities (e.g., regulatory changes, program enhancements, population projections, forecasted waste generation, housing changes);
- updating Niagara Region's 25-year waste tonnage and financial models;
- assessing the current waste management system;
- conducting a policy and program review of comparable municipalities; and
- researching best practices and alternative technologies.

These efforts culminated in a comprehensive gap analysis and extensive stakeholder consultations that informed the Plan's vision, mission, guiding principles, goals, and Long List options.

Building on the foundational work of the first phase, phase two aims to refine the Plan's vision, guiding principles and goals, as well as evaluating innovative program delivery

opportunities. This phase also includes further stakeholder consultations to refine the Plan's recommendations.

Phase three will translate the strategic direction into actionable plans. This phase will focus on:

- developing tonnage and costing projections of the options;
- establishing 3Rs (Reduce, Reuse, Recycle) targets for the 25-year planning period;
- creating an implementation plan for both the short and long-term options; and
- identifying strategies for adapting to legislative and regulatory changes.

Phase One Analysis

During the first phase, opportunities and challenges for the Region were assessed. Key areas of focus included using waste as a resource, waste diversion, the Region's role as a service provider, and asset management. This review considered social, economic, environmental impacts and highlighted risks that will be explored further during Phase 2. The key risks identified involve waste generation rates, uncertainties related to Blue Box transition, including material types and eligibility (e.g., non-eligible sources), and the management of existing waste infrastructure.

In addition, throughout the first phase, feedback from Council members and the public was integral in refining the strategic direction to align with latest developments in waste management and future trends. This input helps to ensure that the Plan is forward-looking and responsive to community needs.

As a result of these foundational activities, mission and vision statements, guiding principles and goals were created, and later updated based on consultation with Council members. A mission statement describes core value and purpose. A vision statement is future-based and provides the big picture of what the Region wants to achieve. Waste Management Services is proposing the following mission and vision statements:

Mission

We provide fiscally responsible waste management and resource recovery services to meet the needs of the community and promote environmental sustainability.

Vision

Leading the way in sustainable and innovative waste management services, to support a thriving community for generations to come.

Guiding Principles

Guiding principles provide a framework to inform decision making. The following guiding principles have been established:

1. **Customer Focused:** We design services to be accessible, convenient, and easy for the community to use.
2. **Financially Responsible:** We are committed to long term financial sustainability in delivering waste management solutions that benefit the community.
3. **Environmentally Considerate:** We value environmentally friendly solutions that reduce greenhouse gas emissions in our waste management practices.
4. **Future-Thinking:** We manage waste as a valuable resource through innovative practices and sustainable solutions.
5. **Innovative & Optimized:** We continuously explore new technologies and approaches to improve waste management processes and minimize environmental impact.
6. **Collaborative & Engaged:** We actively engage with our community, local organizations, and partners to foster collaborative efforts in waste reduction, resource recovery and regulatory compliance.
7. **Inclusive:** We embrace diversity and strive to serve all members of our community with respect and fairness.
8. **Adaptive:** We adjust our services as needs change and Niagara grows and evolves.
9. **Transparent:** We maintain open communication and actively engage with the community in waste management decision making.

Goals

Goals define the results to be achieved by the Plan. The following six (6) goals have been established:

1. **Optimize waste management resources and infrastructure:** Improve the efficiency of Niagara Region's waste management system and effectively utilize financial resources to deliver services.

2. **Increase beneficial recovery of material from waste:** Develop programs and initiatives to divert materials away from Niagara landfills for beneficial recovery.
3. **Increase beneficial reuse of materials:** Promote programs and initiatives that encourage the reuse of materials, reducing the amount entering the waste stream.
4. **Increase participation in waste management programs:** Enhance community engagement through programs and initiatives that boost participation in waste management efforts.
5. **Strive to be a zero-waste community:** Promote programs and initiatives to reduce waste generation, thereby requiring fewer resources for waste disposal.
6. **Reduce the carbon footprint of Niagara Region's waste management system:** Implement programs and initiatives to reduce greenhouse gas emissions from the waste management system, including new/improved infrastructure, operational changes, and advocacy efforts.

Long List Options & Evaluation

A Long List of potential options (Appendix 2) to support accomplishment of the goals, and ultimately the vision, was developed. The Long List was then evaluated using a multi-step screening process (outlined in Appendix 1). The resulting Short List will be the focus of Phase Two engagement and detailed analysis.

The options can be categorized into three types:

- those the Region can implement independently, such as building and operating solid waste facilities;
- those that require partnerships with others such as LAMs or NGOs, like modifying multi-residential building design standards; and
- those that involve influencing other decision-makers such as the Province, through policy changes like advocating for provincial bans or expanding materials covered under extended producer responsibility (EPR) programs.

Next Steps and Timelines

Phase Two engagement on the Short List continues in September with two (2) virtual open houses and a public survey open until September 30, 2024. LAMs will also have the opportunity to provide written comments by November 1, 2024.

Below is a high-level overview of timelines for key project milestones:

Project Milestones	Timelines
Consultation Series One	Complete
Development of Vision, Goals and Guiding Principles; Long List of Innovative Recommendations	Complete
Consultation Phase Two	Q2-Q4 2024
Draft Plan Developed	Q4 2024/Q1 2025
Consultation Phase Three	Q1 2025
Final Plan Presented	Q2 2025

Staff will continue to report on project progress and interested stakeholders can access updates and other project documentation on the Plan's [project website](https://www.niagararegion.ca/projects/waste-management-strategic-plan/) (<https://www.niagararegion.ca/projects/waste-management-strategic-plan/>).

Respectfully submitted and signed by

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Appendices

Appendix 1 Waste Management Strategic Plan Background Information and Long List Development Process

Appendix 2 Waste Management Strategic Plan Long List

Appendix 1 – Waste Management Strategic Plan Background and Long List Development Process

Background

The Waste Management Strategic Plan (the Plan) will guide Waste Management's strategic direction for the 25-year planning period, focusing on cost-effective, accessible, and innovative ways to use waste as a resource in a circular economy, while demonstrating leadership in sustainability and mitigating environmental impacts. The Plan is comprised of three phases:

- (i) Phase One: Assessment of System – 'Where We Are' (Phase One).
- (ii) Phase Two: Development of Direction and System Options – 'Where We Want To Go' (Phase Two).
- (iii) Phase Three: Preferred System – 'How We're Getting There' (Phase Three).

Phase One

Phase One engagement, designed to facilitate insight into what is important to Niagara region residents, is complete and included:

- Two (2) public and three (3) sector specific open houses in May 2024
- Separate public and Industrial, Commercial, and Institutional (IC&I) on-line surveys open from May 6, 2024 to May 31, 2024

Draft mission and vision statements, goals, and guiding principles were created by analyzing the data collected through the engagement. Mission and vision statements from comparator municipalities and Niagara Region, including the Region's priorities, were also assessed. Common themes were explored in working sessions with Niagara Region staff and the project consultant, GHD, leading to the creation of unique statements that reflect the long-term aspirations of the community.

Phase Two

Phase Two began on June 24, 2024, with a workshop for both WMPSC and Public Works Committee (PWC) members. Facilitated by GHD, the workshop provided members the opportunity to discuss the draft mission, vision, guiding principles, goals, and evaluation methodology. Additionally, members reviewed the results from Phase One engagement and examined examples of options categorized by goals for the long

list. Following the workshop, Long List options (Appendix 2 – Long List), for potential inclusion in the Plan, and an evaluation methodology to streamline this initial list, were then developed.

Long List Development

The broad Long List of potential options to support accomplishment of the goals, and ultimately the vision was derived from:

1. **Current state of waste management:** Including existing policies, programs, and contracts
2. **Regulatory Framework:** Current requirements and anticipated changes
3. **Input from Interested Parties:** Gathered during Phase One engagement, including input from the public, Local Area Municipalities (LAMs), Niagara Region staff, non-governmental organizations (NGOs), Urban Indigenous organizations, and business and industry groups.
4. **Jurisdictional Scan:** Based on other jurisdictions and industry best practices.

Long List Evaluation

GHD worked with Regional staff to narrow the initial Long List of Plan options to a Short List for further Phase Two consultation. The steps below define the Long List evaluation methodology.

1. Grouping Options

The Long List options were grouped into seven (7) categories reflecting waste management:

- Community Engagement & Education
- Policies & By-Laws
- Waste Reduction & Reuse
- Waste Collections & Operations
- Drop-Off Depots
- Processing & Disposal Infrastructure
- Innovation

2. Initial Evaluation

Each Long List option was evaluated against three (3) questions:

- Can the Region implement the option on its own?

- Does the option have a relatively low order of magnitude cost to implement (resources and dollar value), flexibility in how it is implemented, or can be accommodated within the Region's existing operating budget?
- Is the option easily linked to one or more of the overall goals of the Plan?

If answers to all three questions were "Yes", the option automatically moved to the Short List of items for further analysis. If one (1) or more of the answers were "No", further investigation was conducted using a Triple Bottom Line analysis.

3. Triple Bottom Line Analysis

The traditional Triple Bottom Line analysis used equally weighted social, environmental, and financial criteria to ensure a balance of attributes for sustainable outcomes. The criteria, aligned with the vision, guiding principles and goals, were:

- Financial
- Environmental
- Social

Each of the Criteria above were further subdivided into Indicators (e.g., costs, climate impacts, safety, and health impacts).

4. Scoring and Comparison

Each option requiring the Triple Bottom Line analysis was scored on all Indicators and the scores were aggregated at the Category level. Category scores were then combined to get an overall score.

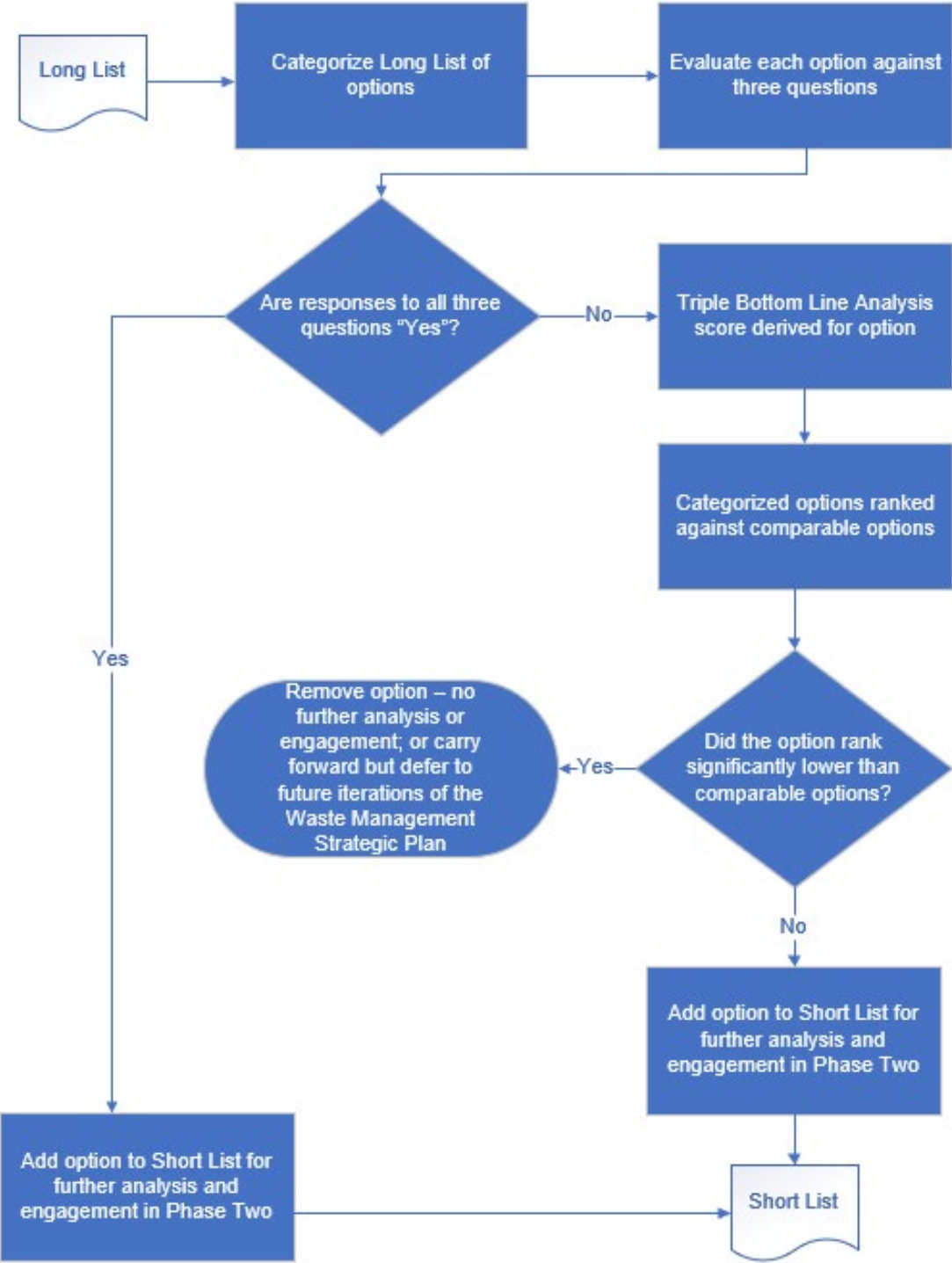
5. Decision Making

Options with a Triple Bottom Line score were compared against other options within the same Waste Management category (Step 1). The results determine if:

- The option should be carried to the Short List for further analysis.
- The option should not be carried forward in the Plan.
- The option should be carried forward in the Plan, but deferred to future iterations (i.e., a viable option, but not within the first five years of the Plan)

Figure 1 below illustrates the Long List evaluation process.

Figure 1: Long List Evaluation Methodology



As described in the memo, the Short List of options will be the focus for the remainder of Phase Two engagement and analysis.

Appendix 2 – Waste Management Strategic Plan Long List

Long List by Category

The tables below display the Long List options for potential implementation in the Waste Management Strategic Plan, organized by category.

Table 1. Community Engagement and Education (CE)

No.	Option Name	Option Description
CE1	Transition to Digital Waste Guides	This option involves transitioning from paper waste guides to digital waste versions. For residents who request printed versions, the guides would be consolidated and shortened to fit on one printed page.
CE2	Develop Education Centre at Waste Management Facility	This option involves partnering with post-secondary institution(s) to establish educational centres (site to be determined). These centres can create opportunities for students and academia to collaboratively design and deliver educational programs, inspiring youth to explore careers in the waste industry.
CE3	Develop Public Dashboard for Diversion	This option involves developing an online public dashboard for tracking and reporting diversion. The dashboard would feature charts, graphs, and visuals that display organics, recycling, garbage tonnage, and reduction and diversion metrics. This could increase public visibility and foster a greater sense of ownership over the community's performance.
CE4	Develop Property Registry	This option involves creating a property registry to enhance education, outreach, and waste services for households (single and multifamily) and businesses requiring additional support. The collected data would provide the Region greater insight into the challenges faced by specific households/ businesses, enabling further improvements to waste education programs and services.

No.	Option Name	Option Description
CE5	Develop Community Partnership Strategy	This option involves partnering with relevant community-based organizations and forming regional working groups with representatives from multiple sectors. The goal would be to share information, provide resources, and leverage opportunities for engagement and education (e.g., conferences and workshops).
CE6	Develop Targeted Education Strategies	This option involves developing educational strategies on specific topics such as food waste, multi-residential waste, plastics, school programs, landfill education and engagement, etc.

Table 2. Policies & By-Laws

No.	Option Name	Option Description
PB1	Provincial Advocacy Campaigns	This involves continued advocacy to the provincial government on issues of importance to Niagara Region, including Extended Producer Responsibility, deposit programs, increased diversion targets and enforcement for commercial properties, ban of organic waste in landfills, and special levies for the IC&I sector.
PB2	Explore Options for User Fee and Cost Recovery System	This option involves reviewing options for cost recovery and/or user fees, potentially including full or partial user fees, community benefit charges from developers and cost recovery from producers.
PB3	Enhanced Enforcement Program	This involves enhancing existing enforcement efforts to address specific issues such as curbside contamination, green bin participation or illegal dumping.
PB4	Review the Implementation of the Service Level Agreements with LAMs	This option involves collaborating with local municipalities to review the implementation of service level agreements. This process can facilitate ongoing communication, establish unified goals and service level standards, and define key performance indicators to track performance over time.
PB5	Waste Collection Guidelines for New Development	This option involves reviewing and revising guidelines for new development to provide guidance on suitable waste collection areas and infrastructure. Specific considerations for multi-residential properties would include planning for front-end bins, material sorting, triple chutes, etc.

No.	Option Name	Option Description
PB6	Streamline Exemption Programs to Align with Municipal Comparators	This option involves comparing existing curbside exemptions with those in other municipalities to increase consistency across Ontario.
PB7	Response Plan to Community Emergencies	This option involves developing a plan to ensure optimized responses through appropriate resources allocated to address emergency events impacting communities across the region.

Table 3. Waste Reduction & Reuse (RR)

No.	Option Name	Option Description
RR1	Repair Programs and Initiatives	This option involves partnering with or developing repair programs and initiatives at centralized locations, campuses, or even the regional landfill. These opportunities may include Repair Cafes or Clinics, Sewing Repair Hubs, or enhancing existing programs such as the Broken Spoke Program.
RR2	Reuse Programs and Initiatives	This option involves partnering with or developing reuse programs such as share sheds, a "lendery", curbside giveaway days, and free markets.
RR3	Special Events Initiatives	This involves the Region providing education and engagement at community events, as well as supporting event organizers by offering tools and resources to minimize and divert waste generated at special events. This approach can increase the Region's visibility and demonstrate its commitment to sustainable waste management.
RR4	Subsidies, Rebates and Grants for Waste Reduction	This option involves creating programs that offer grants, subsidies, or rebates to non-profit organizations to support community-driven projects focused on waste reduction and diversion, circular economy, and education and awareness. Funding may also be provided to private organizations for research, development, and innovation that advance waste diversion and reduction.

No.	Option Name	Option Description
RR5	Rewards and Recognition Programs	This option involves development of recognition programs promoting positive diversion behaviour at the household level, similar to the City of Guelph's Recycling Star Program. This initiative would be geared towards food and organic waste given EPR changes.
RR6	Develop Excess Soil Management Strategy	This option involves developing a strategy to regulate and improve the management of soils currently occupying landfill space. The strategy may consider the Regional acquisition of a soils site for exclusive Regional use.
RR7	Develop Single-Use Plastic Strategy	This option involves developing a strategy to minimize the use of single-use plastics, aligned with Federal and Provincial regulations (Bill 82). This may include regional bans on additional single-use plastics not already covered under Federal and Provincial Regulations. The strategy may also help businesses eliminate the unnecessary use of single-use and takeaway items through webinars and partnerships with local community groups.
RR8	Develop Construction and Demolition Waste Diversion Strategy	This option involves creating diversion guidelines for residential developments in the Region. This may include design and planning guidelines, promoting deconstruction and reuse of materials, and mandating on site diversion of recyclable materials.
RR9	Develop Food Waste Reduction Strategy	To support the Province's Food and Organic Waste Framework, this option involves strategic partnerships with LAMs, community-based organizations, and local businesses to prevent food waste. This effort can promote food waste prevention within the industrial, commercial and institutional (IC&I) sector and also facilitate community pantries in low-income neighbourhoods to distribute donated food to those in need.

No.	Option Name	Option Description
RR10	Develop Multi-Residential Waste Diversion Strategy	A strategy, developed in partnership with LAMs, property managers and developers, aims to increase diversion and reduce contamination within this sector. This can include options such as chute closure, or requiring tenants to use identifying digital cards or mobile apps to access chutes or waste containers for disposal.
RR11	Develop Hazardous and Special Products Strategy	This option involves developing a strategy to focus on decreasing Hazardous and Special Products (HSP) generation and maximizing diversion away from landfills. This could include a review of hours at Niagara's drop off depots accepting HSP or the use of mobile HSP services.

Table 4. Waste Collections & Operations

No.	Option Name	Option Description
CO1	Waste Characterisation Studies	This option involves undertaking periodic waste audits and composition studies on the garbage, recycling, and organics received at its landfills or transfer stations. These studies would help identify the quantity and types of materials being received, as well as diversion and contamination rates. This information and data can inform waste reduction and diversion initiatives, enhance education and improve community engagement.
CO2	Review and Optimize Collection Contract	This option involves exploring ways to optimize collection contracts. This could include shifting to a four day collection week to account for statutory holidays and delays, optimizing collection routes, reviewing/confirming eligibility to receive the Region's collection services, and reviewing comparator municipal contracts and select considerations to carry forward for evaluation (e.g., electric vehicles).
CO3	Expand Curbside Collection to include Additional Materials	This option involves ways to enhance current waste diversion programs, such as expanding curbside collection to include materials such as textiles.

No.	Option Name	Option Description
CO4	Develop Public Space and Parks Strategy	This strategy would focus on improving diversion and reducing litter in parks and public spaces. This would involve developing service-level agreements with local municipalities, evaluating collection infrastructure like standardized litter receptacles, container capacity readers, real-time data collection systems, centralized collection containers, and automated compaction systems with remote sensors to monitor and reduce collection frequency.
CO5	Explore Container Options for Curbside Pickup	This option involves exploring various container options for curbside pickup, including automation, different cart types, clear bags, and Optibag systems.

Table 5. Drop-off Depots

No.	Option Name	Option Description
DO1	Review Drop-off Depots Levels of Service	This option involves reviewing the levels of service at drop-off depots to maximize efficiency and increase participation and could include reviewing operating hours.
DO2	Automated and Remote Technologies at Drop-off Depots	This option involves using automated and remote technologies [radio frequency identification detection (RFID) systems, container capacity readers, and real-time data collection systems] at drop-off depots to improve performance monitoring.
DO3	Expand Reuse Centres within Drop-off Depots	This option involves the expansion of reuse centers within drop-off depots to increase use of current waste drop-off operations. Presently, the Region utilizes West Lincoln, Niagara Road 12, Welland, and Humberstone Drop-off Depots for reuse initiatives. Increasing the space available at these Drop-off Depots would support the Region in the long-term preservation of landfill space.
DO4	Add new drop-off depot locations	This option would consider new drop-off locations in Niagara Region, and would include similar types of materials and operations as the existing drop-off locations

No.	Option Name	Option Description
DO5	Offer additional services at drop-off depots	This option would consider adding additional services at drop-off depots such as green bin pickup, and other to be determined re-use programs.

Table 6. Processing & Disposal Infrastructure

No.	Option Name	Option Description
PD1	Develop Emergency Response Plan for Waste Management Infrastructure	This option will review and plan for potential necessary infrastructure adjustments in response to the climatic stimuli and their effects, (i.e. making waste management infrastructure more resilient for future changing climate).
PD2	Develop Mixed Waste Processing Facility	This involves developing a mixed waste processing facility to recover recyclable items for market and organic material for further processing. This results in a residual waste stream that is / can be further processed into refuse-derived fuel (RDF) or landfilled. This is an alternative to recovering materials where source separation is not feasible or less successful (e.g., high-density residential areas).
PD3	Shift Organics Processing from Composting to Anaerobic Digestion	This involves development of an anaerobic digestion facility or contracting with an existing facility. This would increase the range of organic waste that could be collected.
PD4	Develop Leaf and Yard Waste Processing Facility	This option involves developing a leaf and yard waste processing facility at a Regional facility to provide additional in-house composting capacity.
PD5	Implement Landfill Mining	This option involves mining the Region's small, closed landfills (i.e., excavating waste to recover soils and materials, gain landfill capacity, and mitigate environmental impacts) to eliminate long-term liabilities and costs. Following mining, landfill reclamation can be used to re-engineer the site with improved compaction and cover placement.

Table 7. Innovation

No.	Option Name	Option Description
IN1	Scale House Software Review	A review of the current scale house software can improve the quality of data collection and provide a deeper understanding of how different waste types and corresponding quantities move throughout the system to inform the development of relevant education, promotion programs, and policies.
IN2	Maintenance Management System	This involves developing a robust maintenance management system, focusing on preventative maintenance of waste management system facilities and equipment to optimize operations and reduce maintenance downtime.
IN3	Develop Climate Mitigation Strategy	This involves a strategy to reduce the greenhouse gas emissions generated through the waste management system, reduce energy use, and identify opportunities to generate energy. This could include a landfill gas management strategy, alternative fuels (e.g., CNG, LNG, RNG) replacing traditional petroleum-based fuels (e.g., diesel, gasoline), and alternative fleet vehicles (e.g. EV, hybrid, fuel cell, autonomous).
IN4	Dispose of Residual Waste using Alternative Technology	This involves processing residual waste through alternative technologies, including thermal treatment and/or Mechanical Biological Treatment.
IN5	Smart Collection Technologies	This option involves exploring, implementing and connecting the various relevant smart collection technologies such as front-end bin sensors, radio frequency identification, collection cameras and tracking, and GPS monitoring. These can help minimize collection frequency, collect real-time information for improved waste management strategies, and enable evidence-based decision-making.
IN6	Consider Opportunities to Integrate with the Region's Wastewater Strategy	This option involves integrating with the Region's wastewater strategy, such as co-digestion.

No.	Option Name	Option Description
IN7	Monitoring Developments in AI and its Applicability to Region's Waste Management System	This option involves monitoring and exploring various opportunities that exist within the space of artificial intelligence and how these can be applied to the Region's waste management system. This option involves engaging with relevant service providers to identify and understand the applicability of these to the specific needs of the Region's waste management system.
IN8	Innovation Labs	This involves partnering with the Province, LAMs, community partners, and/or private industry to develop research and technology-based innovation programs with the aim of developing and testing new technologies focused on waste reduction and diversion and building a circular economy.

As previously noted in the evaluation process, a Short List of items from the above tables will be the focus for the next round of engagement.