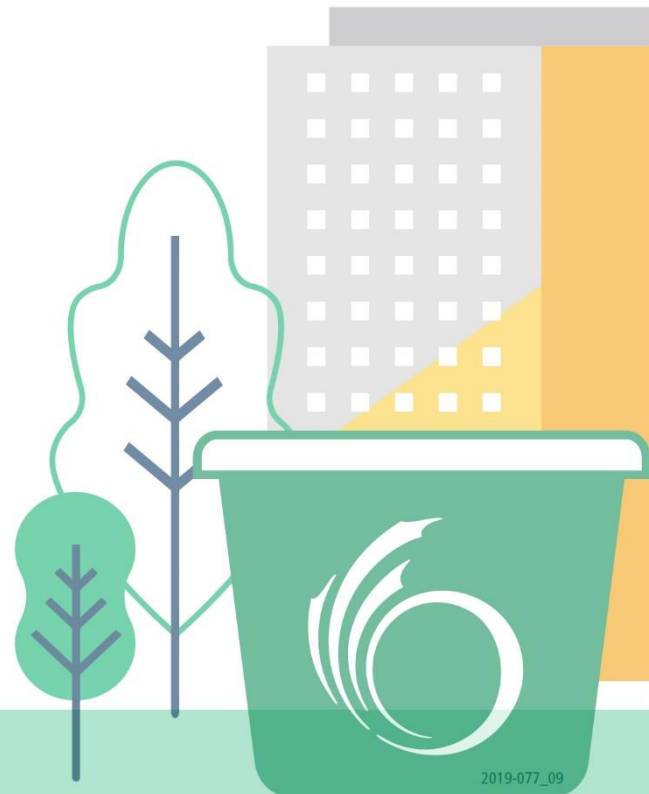


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Disclaimer

In preparing this report, HDR relied, in whole or in part, on data and information provided by the City of Ottawa and third parties that was current at the time of such usage, which information has not been independently verified by HDR and which HDR has assumed to be accurate, complete, reliable, and current. Therefore, while HDR has utilized its best efforts in preparing this report, HDR does not warrant or guarantee the conclusions set forth in this report which are dependent or based upon data, information or statements supplied by third parties or the client, or that the data and information have not changed since being provided in the report.

This Technical Memorandum was prepared by HDR Corporation, Dillon Consulting Limited and Robins Environmental.





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Executive Summary

As part of the development of the Solid Waste Master Plan (SWMP), the City of Ottawa is interested in how other Canadian municipalities are managing waste. This task was identified as a best practice review by the City as part of the development of the SWMP; however, it should be noted that there are very few documented best practices for waste management strategies, programs and initiatives. Each jurisdiction has implemented programs unique to their needs, which may not be applicable to other jurisdictions.

The term “best practices” also implies a comparison to the City of Ottawa’s program and Ottawa has also implemented some specific strategies that are different from other jurisdictions. For this reason, the HDR project team is using a “scan of strategies, practices and initiatives” to highlight some innovative and progressive material management strategies, practices and initiatives across Canada on the selected jurisdictions which may be of interest to the City. Given the team’s understanding of Ottawa’s current waste management system and the information presented in Technical Memo No. 2 - City of Ottawa - Solid Waste Management: Current State, only strategies, practices and initiatives that are different from what the City currently provides that will inform options to be considered in future tasks are presented.

A select number of Canadian jurisdictions were chosen based on how comparable the demographics are to Ottawa (e.g., population, density, urban/rural split) and on their progressive approaches to managing waste as part of their integrated waste management systems in the following specific categories:

- Waste Avoidance, Reduction and Reuse;
- Recycling and Diversion;
- Source Separated Organics (SSO) Diversion;
- Promotion and Education (P&E) and Engagement Initiatives, Techniques and Tools;
- Residuals Management;
- Sustainability Practices/Greenhouse Gas (GHG) Reduction;
- Service Delivery Approaches and Staffing Levels;



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- Funding Models for Solid Waste Management Services;
- Legislation that Affects Waste Management;
- Waste Management and Reduction Practices in Municipal Buildings, Yards, Operations (i.e., low income housing, long-term care, fleet);
- Special Events; and,
- Management of Industrial, Commercial and Institutional (IC&I) Waste (how/if service provided).

In total, eight Canadian jurisdictions were selected as leaders in waste-related strategies, programs and initiatives including: Halifax Regional Municipality, York Region (including the City of Markham), Durham Region, cities of Guelph, Toronto and Calgary, and Metro Vancouver (including the City of Vancouver and City of Surrey). The Region of Peel was selected as well for its innovation in Multi-residential (MR) waste diversion. Ottawa, Toronto, York and Peel make up the greatest percentage of multi-residential density in all of Ontario.

The strategies, practices and initiatives identified and researched for each category relative to the first 4Rs (reduce, reuse, recycle and recover) are summarized in Table 1. Residual disposal capacity availability, costs and high waste diversion targets have influenced the implementation of reduction, reuse and recovery initiatives and a summary of how each comparator municipality manages its residual waste is provided in Table 2. Overarching programs and initiatives that relate to the municipal waste management systems and their operation are summarized in Table 3. Some of the cells in the three tables below are blank (have a “-”), this is because examples are provided for some (but not all) categories and jurisdictions. This list is meant to highlight select examples researched and is not an exhaustive list of all examples for all jurisdictions reviewed. The selection of strategies, practices and initiatives was based on identifying examples that were different and unique to what the City currently provides. The absence of information for a particular municipality does not mean that they do not have any relevant practices/policies, but rather, that those practices/policies have already been captured in other municipalities.



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The summary tables also include the potential City customers the approach is/could be applicable to and are noted by the following abbreviations:

- Curbside residential - SF
- Multi-residential - MR
- Parks and public spaces - PPS
- City facilities - CF
- Partner programs – PP

The information in this Technical Memorandum is current as of January 31, 2020 and reflects the HDR project team's current knowledge and research of the best practices implemented by municipalities.



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Table 1: Strategies, Programs and Initiatives Related to the 4Rs

Municipalities	Reduction & Reuse	Recycling	Recovery
	Avoidance, reduction, reuse and diversion initiatives, Strategies that drive the first 4Rs	Recycling and SSO innovations	Recycling, SSO
Halifax Regional Municipality	<ul style="list-style-type: none"> Overarching P&E program for its integrated waste management system, including avoidance, reduction and diversion initiatives (See Table 1-2) (all) 	<ul style="list-style-type: none"> Curbside Collection Clear Bags and Set Out Limits (SF, CF) C&D Diversion (SF, MR, CF, PPS) Organics Ban (All) 	<ul style="list-style-type: none"> SSO Collection and Processing (all)
Durham Region	<ul style="list-style-type: none"> Overarching P&E program for its integrated waste management system, including avoidance, reduction and diversion initiatives (See Table 1-2) (all) Convert tires into blue box lids (SF) Reuse drop-off events (SF, MR) 	<ul style="list-style-type: none"> Expanded Curbside Collection Program (SF, MR) 	<ul style="list-style-type: none"> Approval for Anaerobic Digestion with Mixed Waste Processing (all)
York Region	<ul style="list-style-type: none"> Overarching P&E program for its integrated waste management system, including avoidance, reduction and diversion initiatives (See Table 1-2) (all) Repair Cafes (all) Lending Libraries (SF, MR) The Good Food Program (SF, MR) 	<ul style="list-style-type: none"> Public Drop-Off Facilities (SF, MR) Collection and Processing SSO (SF, MR, CF) 	-
Markham	<ul style="list-style-type: none"> Overarching P&E program to support its waste collection system, including avoidance, reduction and diversion initiatives (See Table 1-2) (all) 	<ul style="list-style-type: none"> Clear Bag Program (SF) Textile Recycling Program (SF, MR, CF) Neighbourhood Recycling Depots (SF, MR) Recycling at Community Mailboxes (SF) Waste Diversion Infrastructure Fee (SF) 	-
Guelph	<ul style="list-style-type: none"> Smart Cities food waste circular economy initiative (SF, MR, CF, PPS, PP) Overarching P&E program for its integrated waste management system, including avoidance, reduction and diversion initiatives (See Table 1-2) (all) ReCycle Bike Reuse Program (SF, MR) 	<ul style="list-style-type: none"> Multi-Residential Front-end Collection Program for recycling and SSO (MR) Parks Recycling (PPS) 	<ul style="list-style-type: none"> GHG Quantification of the SSO Processing Facility (all)
Toronto	<ul style="list-style-type: none"> Working Towards a Circular Economy (all) Overarching P&E and engagement initiatives, techniques and tools for its integrated waste management system, including avoidance, reduction and diversion initiatives (all) Repair Hubs (SF, MR, CF, PP) Sharing Space and Swaps (SF, MR, CF, PP) 	<ul style="list-style-type: none"> Toxic Taxi (SF, MR) Curbside Electronics Collection (SF, MR) Bulky Waste Recycling (SF, MR) Community Environment Days (SF, MR) Chute Closure Program (MR) Pilot Pet Waste Program (CF, PPS) 	<ul style="list-style-type: none"> Anaerobic Digestion (SF, MR, CF)
Calgary	<ul style="list-style-type: none"> Overarching P&E program for its integrated waste management system, including avoidance, reduction and diversion initiatives (See Table 1-2) (all) 	<ul style="list-style-type: none"> Financial Mechanisms to Increase SSO Diversion (SF, MR, CF, PP) 	-
Metro Vancouver	<ul style="list-style-type: none"> Waste reduction campaigns for garbage, food waste and clothing (all) Overarching P&E program for its integrated waste management system, including avoidance, reduction and diversion initiatives (See Table 1-2) (all) Single-use Item Strategy (all) 	<ul style="list-style-type: none"> Integrated Solid Waste and Resource Management Plan (all) Organics Ban From Landfill (all) 	-
Vancouver	<ul style="list-style-type: none"> Overarching P&E program for its waste collection system and landfill site, including avoidance, reduction and diversion initiatives) (all) 	<ul style="list-style-type: none"> Zero Waste Centre drop off depot (SF, MR) 	-
Surrey	<ul style="list-style-type: none"> Single-use Items and Plastics Reduction Strategy (all) Overarching P&E program for its integrated waste management system, including avoidance, reduction and diversion initiatives (See Table 1-2) (all) 	-	<ul style="list-style-type: none"> Biofuel Facility (SF, MR, PPS, CF)

SF = curbside residential, MR = Multi-residential, CF = City facilities, PPS = Parks and Public Spaces, PP = Partner programs



Table 2: Approach to Residuals Management

Municipalities	Diversion Target	Residuals Management Approach (description)	Remaining Landfill Capacity	Expected Closure Date	Type of Waste Accepted (e.g. non-hazardous MSW, C&D)	Eligible Customers (e.g. curbside residential, MR, commercial, etc.)	Residuals Facility(ies) Ownership	Residual Facility(ies) Operations
Halifax Regional Municipality	300 kg/person/year disposal target	Stabilized landfill within the municipality Waste is pre-processed prior to landfilling to initially recover recyclable materials and then composted to stabilize organic materials before landfilling	Not available	Not defined	Non-hazardous MSW	Curbside residential and IC&I (noting most IC&I waste goes to lower cost disposal facilities outside of HRM).	Halifax Regional Municipality	Private Sector
Durham Region	70% no set date	EFW - Durham York Energy Centre (DYEC) Uses mass burn incineration technology. Recovery of energy (20 year contract with the Independent Electricity System Operator)) Opened in 2016	N/A	Unknown	Non-hazardous MSW	Curbside residential only	Durham Region (with York Region)	Private Sector
York Region	Targets for 2031: <ul style="list-style-type: none"> 15% reduction green bin material 5% reduction of yard waste 5% reduction of other waste streams 5% reduction in garbage through reuse 5% increase in material diverted from landfill 90% diversion from landfill 60-80% of metals captured from residual waste 	All residual wastes are exported. <ul style="list-style-type: none"> Landfill - Walker South Landfill in Thorold, Ontario EFW - Durham York Energy Centre, Covanta Niagara (New York State), Emerald Energy from Waste (Brampton) 	N/A	Not defined	Non-hazardous MSW	Curbside residential only (EFW)	DYEC – co-owned with Durham Region Others - Private Sector	Private Sector
Markham	Waste diversion target of 80% (no date)	Not Applicable (N/A) - responsibility of York Region	N/A	N/A	N/A	N/A	N/A	N/A
Guelph	70% by 2021	Collected residual waste is transferred at Waste Resource Innovation Centre (WRIC) transfer station and hauled to Twin Creeks Landfill owned by Waste Management (Watford, Ontario)	N/A	Unknown	N/A	N/A	WRIC Transfer Station - City of Guelph Landfill – Private Sector	WRIC Transfer Station – City of Guelph Private Sector (WM)



Municipalities	Diversion Target	Residuals Management Approach (description)	Remaining Landfill Capacity	Expected Closure Date	Type of Waste Accepted (e.g. non-hazardous MSW, C&D)	Eligible Customers (e.g. curbside residential, MR, commercial, etc.)	Residuals Facility(ies) Ownership	Residual Facility(ies) Operations
Toronto	70% by 2026	Landfilling of waste at the City's Green Lane Landfill located in Southwold, ON (between St. Thomas and London) Purchased from a private sector owner in 2007 at a cost of approximately \$220 million.	9.953 million m ³	Capacity to 2037 Based on disposal of ~520,000 m ³ /year	<ul style="list-style-type: none"> Non-hazardous MSW IC&I and non-hazardous solid industrial waste Non-hazardous contaminated soils Sewage sludge from Toronto's municipal sewage treatment plants 	Curbside residential and a portion of the MR and non-residential sectors, parks and litter bins, street sweepings, as well as paid garbage from private waste haulers, Southwold Township, City of St. Thomas, York Region, other local municipalities and First Nations.	City of Toronto	Private Sector
Peel Region	75% by 2034 December 2017, Regional Council adopted the Roadmap to a Circular Economy in Peel with a target of Zero waste from residential sources in the Region of Peel	Collected residual waste is transferred from the Region's 6 Community Recycling Centres to the Twin Creeks Landfill owned by Waste Management (Wattford, ON).	N/A	N/A	Non-hazardous MSW	Curbside residential, MR	Private Sector	Private Sector
Calgary	70% by 2025	Landfilling of waste at three landfills: Spyhill Landfill, East Calgary Landfill and Shepard Landfill	47.6 million m ³ (combined)	30+ years for each site	Spyhill and East Calgary LF accepts: <ul style="list-style-type: none"> Non-hazardous MSW C&D recycling (recyclable wood, drywall, scrap metal and asphalt singles) Clean fill Yard waste. Shepard LF accepts: <ul style="list-style-type: none"> Industrial waste (incl. asbestos) Curbside residential waste at the Throw 'n' Go Facility 	Spyhill and East Calgary LF accept curbside residential, MR and IC&I. Shepard Landfill accepts industrial and residential waste (at the Throw 'n' Go Facility)	City of Calgary	Private Sector
Metro Vancouver	80% by 2020	Wastes are received at transfer stations and sent to: <ul style="list-style-type: none"> City of Vancouver Landfill Out of district landfills Burnaby Energy From Waste Facility (EFW) 	Vancouver Landfill - 8.9 million m ³	Vancouver Landfill - 2037	<ul style="list-style-type: none"> Non-hazardous MSW C&D Recycling Depot on Site Used Drywall Asbestos Waste Wood Waste Clean Wood Yard Waste New Drywall Food Waste Collection Area 	Residential (both SF and MR), Drop-Off, IC&I and C&D	Transfer Stations (5) – Metro Vancouver EFW – Metro Vancouver Landfill - City of Vancouver	Transfer Stations (5) – Private Sector EFW – Private Sector Landfill - City of Vancouver
Vancouver	Zero waste by 2040	Vancouver Landfill	8.9 million m ³	2037	<ul style="list-style-type: none"> Non-hazardous MSW C&D Recycling Depot on Site Used Drywall Asbestos Waste Wood Waste Clean Wood Yard Waste New Drywall Food Waste Collection Area 	Residential (both SF and MR), Drop-Off, IC&I and C&D	Transfer Station – City of Vancouver Landfill - City of Vancouver	Public



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Municipalities	Diversion Target	Residuals Management Approach (description)	Remaining Landfill Capacity	Expected Closure Date	Type of Waste Accepted (e.g. non-hazardous MSW, C&D)	Eligible Customers (e.g. curbside residential, MR, commercial, etc.)	Residuals Facility(ies) Ownership	Residual Facility(ies) Operations
Surrey	Zero waste by 2040	N/A - responsibility of Metro Vancouver	N/A	N/A	N/A	N/A	N/A	N/A

Table 3: Overarching Waste Management System Programs and Initiatives

Municipalities	P&E and engagement initiatives, techniques and tools	Sustainability practices/GHG reduction	Service delivery approach / Funding models for solid waste services	Legislation that affects waste management	Waste management and reduction practices in municipal buildings, yards, and operations	Special events	Management of IC&I waste
Halifax Regional Municipality	<ul style="list-style-type: none"> Tailored Presentations and Workshops (PP) Master Composter Recycler Program (SF, MR, PP) Beyond 3Rs for Businesses (PP) Curbside Give Away Weekend- Twice a year residents are permitted to put goods out at the curb for anyone to take on designated days. (SF, MR, CF) 	<ul style="list-style-type: none"> Environment and Sustainability Standing Committee (all) Corporate GHG Climate Change Targets (CF) 	<ul style="list-style-type: none"> Staffing Levels (all) Municipal Ownership with Contracted Operations (all) Municipal Taxes and Tipping Fees (SF, MR, PP) 	<ul style="list-style-type: none"> Provincial Landfill Disposal Bans (all) Mandatory Participation in Diversion Programs (SF, MR, CF, PP) C&D Diversion (SF, MR, CF, PP) Flow Control By-law (all) 	<ul style="list-style-type: none"> Clear Bag Limit (CF, PP) 	-	<ul style="list-style-type: none"> Source Separation By-law (SF, MR, CF, PP)
York Region	<ul style="list-style-type: none"> The Good Food Program (SF, MR) 	<ul style="list-style-type: none"> Sustainable Products Ranking Framework (all) Good Food Program (all) Corporate GHG Targets (CF) Community net-zero carbon emissions by 2051 (all) 	<ul style="list-style-type: none"> Mix of public and private sector ownership and operations (all) Municipal Taxes and Tipping Fees (SF, MR, PP) 	-	<ul style="list-style-type: none"> RCO 3Rs Gold Certified Building (CF) Sustainable Products Policy (CF) 	-	-
Markham	<ul style="list-style-type: none"> Gold Star Campaign (SF) Markham Collection Staff Appreciation Program (SF, MR) 	<ul style="list-style-type: none"> Greenprint Sustainability Plan (all) Net zero GHG emissions by 2050 (all) 	<ul style="list-style-type: none"> Waste collection delivered by the private sector. Municipal Taxes (SF, MR, PP) 	<ul style="list-style-type: none"> Mandatory Recycling (SF, MR) Development Standards for waste collection and diversion in new developments and redevelopments (MR, CF, PP) 	<ul style="list-style-type: none"> Zero Waste Policy (CF) Indoor Composting (CF, PP) 	-	<ul style="list-style-type: none"> BIAs and Businesses (PP) MR Buildings (MR) Schools and Places of Worship (PP)
Guelph	<ul style="list-style-type: none"> Public Awareness Campaign (Give Waste A New Life) (SF, MR) Waste Diversion Education Centre (SF, MR, PP) 	<ul style="list-style-type: none"> Civic Accelerator (PP, CF) Corporate 100% Renewable Energy by 2050 (CF). Community's Net Zero Carbon by 2050 goal (all). 	<ul style="list-style-type: none"> Solid Waste Resources Business Service Review (all) Municipal Taxes and Tipping Fees (SF, MR, PP) 	<ul style="list-style-type: none"> Grass Clipping Ban (SF, MR) Medical Waste Restrictions (PP) MR Collection (MR) 	-	<ul style="list-style-type: none"> Special Events Permit and Waste Fees (PPS, CF) 	<ul style="list-style-type: none"> IC&I Sector (PP) MR Buildings (MR)
Toronto	<ul style="list-style-type: none"> MR 3R Ambassador Program (MR) Plastic Free Picnic (SF, MR, PPS, PP) SUPs Public Consultation (SF, MR, PP) Blue Bin Design Sprint (SF, MR, PP) Blue Cart Contamination Campaign (SF) Waste(ED) Series (SF, MR) "Get that Garbage Outta Here" Campaign (all) Dog Park Pilot (PPS) 	<ul style="list-style-type: none"> Converting Methane to RNG (all) TransformTO (all) Circular Economy Procurement (CF) Corporate GHG emission targets (CF) 	<ul style="list-style-type: none"> Staffing Levels and Business Units (all) Mix of Public and Private Ownership and Operations (all) Public ownership of waste facilities, except for MRF Rate-Based System for Residential and Commercial Customers (SF, MR, PP) Garbage bag tags (all) Tipping Fees at Drop-Off Depots (SF, MR, PP) 	<ul style="list-style-type: none"> By-law to Require Participation in Diversion Programs (SF, MR, CF, PP) Development Standards for waste collection and diversion in new developments and redevelopments (MR, CF, PP) Adapt Policy (PP) 	<ul style="list-style-type: none"> Various (charges for collection, waste diversion plans, plastic water bottle ban (CF) 	<ul style="list-style-type: none"> Waste Management Plan (PPS, CF) Zero Waste Stations (PPS, CF) 	<ul style="list-style-type: none"> BIAs and Businesses (PP) Charities, Institutions and Religious Organizations (PP)


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Municipalities	P&E and engagement initiatives, techniques and tools	Sustainability practices/GHG reduction	Service delivery approach / Funding models for solid waste services	Legislation that affects waste management	Waste management and reduction practices in municipal buildings, yards, and operations	Special events	Management of IC&I waste
	<ul style="list-style-type: none"> • TOWasteApp (SF, MR, PP) 		<ul style="list-style-type: none"> • 				
Durham Region	<ul style="list-style-type: none"> • Bi-Annual Newsletter (SF, MR, PP) • Waste App (SF, MR, PP) 	<ul style="list-style-type: none"> • Durham York Energy Centre (all) • Corporate GHG emission targets (CF) • GHG goal statement for solid waste (all) 	<ul style="list-style-type: none"> • Mix of public and private sector ownership and operations for facilities (all). • Co-ownership of the Durham York Energy Centre (SF, MR, CF, PS) • Partial Pay-As-You-Throw Program (SF) 	-	<ul style="list-style-type: none"> • Elimination of bottled water, reduction in single-use items at Regional Headquarters (CF) 	-	-
Calgary	<ul style="list-style-type: none"> • Outreach to MR Buildings and Businesses (SF, MR, CF, PP) • Green Calgary (all) 	<ul style="list-style-type: none"> • Sustainable Environmental and Ethical Procurement Policy (CF) • Corporate GHG emission targets (CF) 	<ul style="list-style-type: none"> • Service Delivery Approach for and Review of Waste Collection Services (SF, MR) • Service Delivery Approach for Facilities (all) • User Fees that Represent True Cost of Services (SF, MR, CF, PP) • Tag-A-Bag Program (SF, MR) • Throw 'n' Go Areas (SF, MR, PS) • Landfill Revenues (all) • 	<ul style="list-style-type: none"> • Disposal Fees (SF, MR, PP) • Disposal Bans and Surcharges (all) • Mandatory Diversion from MR and Businesses (MR, PP) • Provincial EPR Programs (all) 	-	-	<ul style="list-style-type: none"> • IC&I and MR By-law (MR, CF, PP) • Support for IC&I through Green Calgary (PP)
Metro Vancouver	<ul style="list-style-type: none"> • P&E Videos and Images (SF, MR, PP) • Metro Vancouver Recycles (all) • Sustainability Region TV series and Community Breakfasts (all) • Hey! Food Scraps Aren't Garbage Campaign (all) 	<ul style="list-style-type: none"> • Metro Vancouver Sustainability Toolbox 2020 (SF, MR) • Carbon neutral Region by 2050 (all) 	<ul style="list-style-type: none"> • General Responsibilities and Service Delivery Approach (all) • Generator Levy (all) • Garbage Tipping Fees (SF, MR, CF, PP) • 	<ul style="list-style-type: none"> • Disposal Bans and Surcharges (all) • C&D Sector Diversion (SF, MR, CF, PP) 	-	-	-
Vancouver	<ul style="list-style-type: none"> • Overarching P&E program for its waste collection system and landfill site, including avoidance, reduction and diversion initiatives) (all) • Zero Waste 2040 (all) 	<ul style="list-style-type: none"> • Corporate GHG emission targets (CF) 	<ul style="list-style-type: none"> • Responsibilities and Service Delivery Approach (all) • Generator Levy and Surcharges (all) • • Solid Waste Utility (SF, MR, CF, PP) 	<ul style="list-style-type: none"> • Single-Use Item (SUI) Reduction Strategy and By-laws (all) 	-	<ul style="list-style-type: none"> • Green Events Planning Guide (PPS, CF) 	-
Surrey	<ul style="list-style-type: none"> • SSO Program Implementation (SF, MR, CF, PP) • Single-stream Recycling Visual Audits and Contamination Campaign (all) • School Workshops (CF, PP) • Online Waste Sorting Game (all) • Bio-Fuel Education Centre (SF, MR, PP) • Zero Waste 2040 (all) 	<ul style="list-style-type: none"> • Biofuel Facility (SF, MR, PPS, CF, PP) • Sustainability Charter (SF, MR, CF) • Sustainability Dashboard (SF, MR, CF, PP) • Corporate GHG emission targets (CF) 	<ul style="list-style-type: none"> • Service Delivery Approach (all) • Additional Annual Fee to Upsize or Increase Number of Collection Carts (SF, MR) • 	-	-	-	-
Peel Region	<ul style="list-style-type: none"> • MR Outreach Campaign (MR) • MR RFID System and Report Card (MR) 	<ul style="list-style-type: none"> • Zero greenhouse gas emissions from residential waste management (SF) 	<ul style="list-style-type: none"> • Mix of public and private sector ownership and operations (all). • 	-	-	-	-

SF = curbside residential, MR = Multi-residential, CF = City facilities, PS = Public Spaces, PP = Partner programs



1 Methodology

The waste management industry is constantly evolving and adapting to a number of changes with respect to product packaging, consumer behaviours and trends, economics and the regulatory landscape. With all these changes come new initiatives, programs and technologies that are being implemented by jurisdictions in order to adapt to the ever changing environment.

While there are many examples of innovative approaches to managing waste across Canada and the globe that could also be included, the project team, in collaboration with the City, identified eight Canadian jurisdictions to be reviewed. In the team's judgment, these jurisdictions utilize best or better practices that could be considered by the City. The selected jurisdictions operate at a similar scale and/or service delivery approach to Ottawa and/or have similar demographics.

A scan of material management strategies, practices and initiatives was undertaken on a select number of Canadian jurisdictions. These jurisdictions were chosen based on how comparable the demographics are to Ottawa (e.g., population, density, urban/rural split) and on their progressive approaches to achieving high diversion rates and managing waste in the following categories:

1. Waste Avoidance, Reduction and Reuse;
2. Recycling and Diversion;
3. SSO Diversion
4. Promotion and Education (P&E) and Engagement Initiatives, Techniques and Tools;
5. Residuals Management;
6. Sustainability Practices/GHG Reduction;
7. Service Delivery Approaches and Staffing Levels;
8. Funding Models for Solid Waste Management Services;
9. Legislation/Policies that Affects Waste Management;
10. Waste Management and Reduction Practices in Municipal Buildings, Yards, Operations (low income housing, long-term care, fleet);



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11. Special Events; and
12. Management of IC&I Waste (how/if service provided).

In total, eight Canadian jurisdictions were chosen in collaboration with the City of Ottawa, as follows:

- [Halifax Regional Municipality](#);
- [Durham Region](#);
- [Region of Peel](#), for multi-residential collection initiatives only;
- [York Region](#) (supplemented with some specific information for [the City of Markham](#));
- [City of Guelph](#);
- [City of Toronto](#);
- [City of Calgary](#); and,
- [Metro Vancouver Regional District](#) (supplemented with some specific information for the [City of Vancouver](#) and [City of Surrey](#)).

Figure 1 shows the eight selected jurisdictions and their 2016 populations (Statistics Canada). Note that two jurisdictions also include examples from local municipalities (i.e., cities of Markham, Vancouver and Surrey). Table 4 provides statistics on the selected jurisdictions, including 2017 waste diversion rates and the rationale for their selection.

A common factor for all the selected municipalities is that progressive reduction and diversion programs were developed because of limited or expensive options for residuals management. Residuals management is a core service for municipal solid waste programs. When a municipality is faced with reduced residuals disposal capacity, the associated costs significantly increase for finding new capacity, as well as operating costs compared to traditional landfill options. With increased disposal costs, the business case to implement waste reduction and diversion programs becomes more favourable because the programs are less expensive or comparable in costs to disposal. There is also an expectation from the local community, and in some cases a requirement of the regulatory authority (e.g., in Ontario any facility requiring an environmental assessment must

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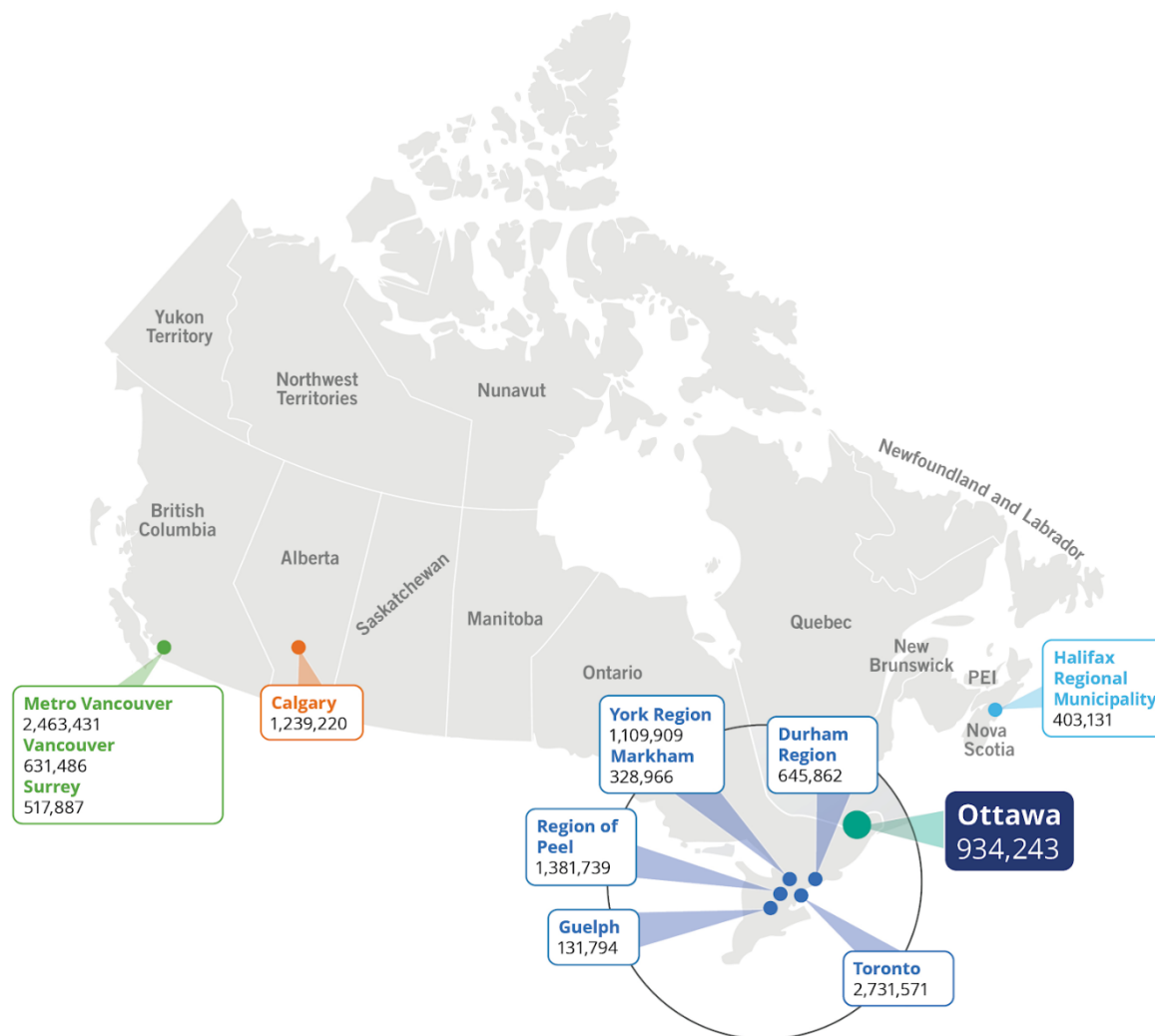
demonstrate the need for disposal capacity), that 4Rs programs be implemented to ensure the amount of waste requiring disposal is limited to the extent possible. As a result, limited/expensive residual disposal is a key driver for finding alternative options to reduce the amount of residual waste requiring disposal and setting high diversion rates.

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Figure 1: Canadian Jurisdictions Included in Scan of Strategies, Practices and Initiatives



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Table 4: Rationale for Selected Jurisdictions in Scan

Jurisdiction	Population (2016)	Population Density (people/km ²)	Demographics	Performance (Waste Diversion Rate and/or Generation Rate) (2017 and for the residential sector unless otherwise stated)*	Rationale for Inclusion in Strategies, Practices and Initiatives Research
Ottawa	934,243	333.4	Urban / suburban / rural	Waste Diversion Rate - 41.4% Generation Rate - 362 kg/capita	<ul style="list-style-type: none"> N/A
Halifax Regional Municipality	403,390	73.4	Urban / suburban / rural	Waste Diversion Rate - estimated 61.0% (2016) (Waste Generation Rate not available)	<ul style="list-style-type: none"> Provincial waste disposal bans; Municipal by-laws and policies supporting waste diversion and consistent with Provincial obligations; and,

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Jurisdiction	Population (2016)	Population Density (people/km ²)	Demographics	Performance (Waste Diversion Rate and/or Generation Rate) (2017 and for the residential sector unless otherwise stated)*	Rationale for Inclusion in Strategies, Practices and Initiatives Research
					<ul style="list-style-type: none"> • Clear bag policies and enforcement.
Durham Region	645,862	255.9	Urban / suburban / rural	<p>Waste Diversion Rate – 64.7%</p> <p>Generation Rate - 376 kg/capita</p>	<ul style="list-style-type: none"> • Similar demographics; • Only municipally owned Energy From Waste (EFW) facility in Ontario (co-owned with York Region); • Will be updating their Solid Waste Master Plan in 2020; • Plan to construct an Anaerobic Digester (AD) facility for processing SSO; and,

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Jurisdiction	Population (2016)	Population Density (people/km ²)	Demographics	Performance (Waste Diversion Rate and/or Generation Rate) (2017 and for the residential sector unless otherwise stated)*	Rationale for Inclusion in Strategies, Practices and Initiatives Research
					<ul style="list-style-type: none"> Partial Pay as You Throw (PAYT) program.
York Region	1,109,909	629.9	Urban / suburban / rural	Waste Diversion Rate - 68.0% Generation Rate - 314 kg/capita	<ul style="list-style-type: none"> Waste reduction campaigns; Responsible for delivery of all waste management services aside from collection; Similar population; and Are currently updating long-term master plan (2019).
Markham	328,966	1,549.2	Urban / suburban	<i>*Not estimated separately – assume York Region performance.</i>	<ul style="list-style-type: none"> Policies and legislation promoting zero waste at



Jurisdiction	Population (2016)	Population Density (people/km ²)	Demographics	Performance (Waste Diversion Rate and/or Generation Rate) (2017 and for the residential sector unless otherwise stated)*	Rationale for Inclusion in Strategies, Practices and Initiatives Research
					the residential and IC&I sectors.
Guelph	131,794	1,511.1	Urban / suburban / rural	Waste Diversion Rate - 57.7% Generation Rate - 444 kg/capita	<ul style="list-style-type: none"> • P&E campaigns and food waste reduction efforts; • Waste collection services provided by City staff; • Owns processing facilities; and • Recently completed service delivery review and is in the process of updating long-term master plan.



Jurisdiction	Population (2016)	Population Density (people/km ²)	Demographics	Performance (Waste Diversion Rate and/or Generation Rate) (2017 and for the residential sector unless otherwise stated)*	Rationale for Inclusion in Strategies, Practices and Initiatives Research
Toronto	2,731,571	4,334.4	Urban	Waste Diversion Rate - 51.6% Generation Rate - 283 kg/capita	<ul style="list-style-type: none"> SSO diversion and waste reduction, recycling and diversion initiatives. Also has a variable rate program; Owns infrastructure, does mix of waste collection (public/private split), circular economy initiatives; and Recently updated long-term master plan (2016).
Peel Region	1,382,000	1,108.3	Urban / suburban / rural	Waste Diversion Rate – 48.6% Generation Rate - 360 kg/capita	<ul style="list-style-type: none"> Included to review MR programs only.



Jurisdiction	Population (2016)	Population Density (people/km ²)	Demographics	Performance (Waste Diversion Rate and/or Generation Rate) (2017 and for the residential sector unless otherwise stated)*	Rationale for Inclusion in Strategies, Practices and Initiatives Research
Calgary	1,239,220	1,501.1	Urban / suburban	Waste Diversion Rate (all sectors) – estimated 49% (2018) Generation Rate (all sectors) - 368 kg/capita	<ul style="list-style-type: none"> • Similar population; • Promoting waste diversion in the IC&I sector; and • Establishing organic ban at landfill.
Metro Vancouver	2,648,493	854.6	Urban / suburban / rural	Waste Diversion Rate (SF & MR) – 54% (2018) Generation Rate (all sectors) – 1360 kg/capita (2018) Generation Rate (SF) – 450 kg/capita (2018)	<ul style="list-style-type: none"> • Material disposal bans; • Responsible for waste disposal; • Aggressive waste reduction/diversion strategy and innovative diversion programs;

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Jurisdiction	Population (2016)	Population Density (people/km ²)	Demographics	Performance (Waste Diversion Rate and/or Generation Rate) (2017 and for the residential sector unless otherwise stated)*	Rationale for Inclusion in Strategies, Practices and Initiatives Research
					<ul style="list-style-type: none"> Split between different demographics; and Updating long-term master plan.
Vancouver	631,486	5,492.6	Urban	Not estimated separately – assume Metro Vancouver performance Generation Rate - 318 kg/capita	<ul style="list-style-type: none"> Establishing and promoting waste reduction including developing a zero waste strategy and Single Use Plastics (SUPs) strategy.
Surrey	517,887	1,636.8	Urban / suburban	*Not estimated separately – assume Metro Vancouver performance.	<ul style="list-style-type: none"> Established first closed loop program with SSO conversion to Compressed Natural

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Jurisdiction	Population (2016)	Population Density (people/km ²)	Demographics	Performance (Waste Diversion Rate and/or Generation Rate) (2017 and for the residential sector unless otherwise stated)*	Rationale for Inclusion in Strategies, Practices and Initiatives Research
					Gas (CNG) and use in collection vehicles.

*As there is no federal level reporting on waste diversion and generation rates, the rates listed in this table may have been calculated differently.

References:

Ontario Municipalities – [RPRA Datacall](#)

Halifax Regional Municipality - Vancity State of Waste Report; Correspondence with Nova Scotia Environment

Calgary – [Waste Diversion Rate](#); [Waste Disposed Rate](#)

Metro Vancouver – [Metro Vancouver 2018 Annual Report](#)

Vancouver - [Metro Vancouver 2018 Annual Report](#); Vancity State of Waste Report

Surrey - [Metro Vancouver 2018 Annual Report](#)



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Give Away Weekends where residents place unwanted and gently used items at the curb for residents to take and reuse. The City’s Take It Back! program encourages local businesses to take back materials that they sell for reuse, recycling or disposal. Within the City’s corporate offices, redundant office furniture is reused as much as possible and the internal “Green Exchange” programs provides a forum for staff to reuse, swap or buy used items and post “green” related advertisements.

The Trail Waste Facility Landfill accepts and beneficially reuses solid non-hazardous waste soil generated within the City. The City is targeting 100 percent beneficial reuse of biosolids, primarily through local agricultural land application which results in significant cost savings.

Table 5 provides a summary of the jurisdictions included (York Region, Guelph, Toronto, Durham Region, Metro Vancouver and Surrey), the program/approach title researched in this sub-section and the potential applicability to City of Ottawa customers noted in brackets.

Table 6 provides detailed descriptions of the programs and approaches reviewed. The examples featured illustrate that reduction and reuse can be achieved by a mix of service-type programs, partnerships, policy direction and P&E campaigns as part of overall P&E efforts (Section 2.4). The policies provide a framework for municipal by-laws that are eventually developed to support the policy direction as outlined in Section 2.9.

Table 5: Programs and Initiatives Related to Waste Avoidance, Reduction, and Reuse

Jurisdiction	Avoidance / Reduction / Reuse
York Region	<ul style="list-style-type: none"> Repair Cafes (all) Lending Libraries (SF, MR)
City of Guelph	<ul style="list-style-type: none"> Smart Cities food waste circular economy initiative (SF, MR, CF, PPS, PP) ReCycle Bike Reuse Program (SF, MR)
City of Toronto	<ul style="list-style-type: none"> Working Towards a Circular Economy (all) Repair Hubs (SF, MR, CF, PP) Sharing Space and Swaps (SF, MR, CF, PP)



Durham Region	<ul style="list-style-type: none"> Convert tires into blue box lids (SF) Reuse drop-off events (SF, MR)
Metro Vancouver	<ul style="list-style-type: none"> Waste reduction campaigns for garbage, food waste and clothing (all) Single-use Item Strategy (all)
City of Surrey	<ul style="list-style-type: none"> Single-use Items and Plastics Reduction Strategy (all)

SF- Curbside residential, MR - Multi-residential, PPS - Parks and public spaces, CF - City facilities, PP - Partner Programs

Table 6: Waste Avoidance, Reduction and Reuse Scan Results

Jurisdiction	Strategies, Practices and Initiatives
York Region	Repair Cafes York Region piloted two Repair Cafés in partnership with NewMakelt in 2017. Repair Cafés are free events that connect people who need items repaired with volunteer "fixers" who bring life back to belongings like small appliances, garden tools, electronics, and bicycles, with the goal of reducing waste and making something useable again. The Repair Café has partnered with NewMakelt which is a collaborative space enabling residents to start innovative, creative, entrepreneurial and learning endeavors. In 2018, six Repair Cafés were held at local libraries and cafés.
	The Lendery The Region has opened one of two lending libraries that are/will be located at public libraries. The libraries accept donated gently used items that residents can borrow such as tools, kitchen appliances, sporting and camping equipment, party supplies (e.g., Bluetooth speakers) and arts and crafts supplies (e.g., knitting needles). There is an online catalogue that residents can access to hold and/or check availability of items.
Guelph	Smart Cities- Our Food Future Initiative In May of 2019, Guelph and Wellington County were awarded the Smart Cities Challenge prize for the Our Future Food Initiative, which includes a \$10 million grant from Infrastructure Canada to implement their Smart Cities vision: Our Food Future. With this prize, Guelph-Wellington aim to become an inclusive food-secure ecosystem and Canada's first circular food economy. The focus of their vision is their 50x50x50 by 2025 initiative, which has the goals of: <ul style="list-style-type: none"> Increasing access to affordable and nutritious food by 50 percent;



Jurisdiction	Strategies, Practices and Initiatives
	<ul style="list-style-type: none"> • Creating 50 new circular businesses and collaborations; and, • Increasing circular economic revenues by 50 percent by recognizing the value of “waste”. <p>This Smart Cities Our Future Food vision includes collaborations with industry, academia, community organizers, and entrepreneurs and will use technology and data to create a circular food economy. Moving from the current “Take-Make-Dispose” approach will result in a reduction in food waste throughout the system from farms to homes. Data from the City’s waste management system will help to identify opportunities.</p> <p>ReCycle Bike Reuse Program Guelph has a ReCycle Bike Reuse program that encourages residents to drop-off unwanted, usable bikes at the Waste Resource and Information Centre. There is also coordination with Police Services to reuse stolen bikes. The program helps to divert bikes from landfill. Residents are allowed to pick-up up to two bicycles per year, free of charge and are required to sign a waiver.</p> <p>The City encourages residents to reduce waste and recover reusable items. The ReCycle Bike Reuse program supports these goals by providing increased access to waste reduction opportunities and options. This program promotes sustainability while helping out the community.</p>
Toronto	<p>Working Towards a Circular Economy As a result of the Long Term Waste Management Strategy, the City is working towards the aspirational goal of a circular economy which moves away from the make-take-dispose approach to materials management, to a system that focuses on product longevity, renewability, reuse and repair. The City’s Solid Waste Management Services division now has the Circular Economy and Innovation unit which aims to drive the circular economy in Toronto. The unit is responsible for developing and implementing detailed plans and recommends policies regarding solid waste related programs and policies to help Toronto achieve its circular economy target. The unit pursues public engagement activities, representing the City/Division at industry associations and Committees, implementing City-wide change initiatives, executing pilot projects, including community reduce and reuse programs, working with small and medium sized businesses to inform them about waste reduction and the circular economy and exploring how the City can build circular principles into procurements, and achieve more sustainable</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>outcomes in what it purchases. This unit also leads the Circular Economy Working Group which is comprised of representatives from local businesses and community groups from various sectors in Toronto.</p> <p>Repair Hubs This program provides dedicated workshops to encourage repair and reuse of clothing and other textiles with the goal to help reduce the amount of textiles discarded each year. Repair activities include instructions on the basics of alterations and repairs, and instructions on how to make and design clothes from repurposed textiles. Attendees are given access to tools, equipment and supplies needed to repair their own clothing. Workshops and work spaces are also provided for bicycle repair.</p> <p>Sharing Space and Swaps The City is developing sharing and reuse spaces to help promote a shift in culture towards reusing, sharing, repairing and repurposing. The City has partnered with the Toronto Tool Library (a private non- profit entity) to offer space in a couple of libraries to provide a range of equipment for loan as a low-cost, resource sharing and space-saving alternative to purchasing and owning tools. The City has also partnered with companies to provide Musical Instrument Lending Libraries at two public library branches. The music library offers a collection of musical instruments such as guitars, ukuleles, bongos, violins and more that can be borrowed for free with a valid library card.</p> <p>Toronto has numerous swap programs for books, clothing, and household goods.</p>
Durham Region	<p>Convert Tires into Blue Box Lids In August 2019, the Region launched its second phase of a pilot project, called “Put a Lid on Litter” designed to reduce blowing litter from blue boxes during curbside setout. The Region distributed about 700 new blue boxes to target neighbourhoods in Ajax, Clarington and Whitby, which featured lids that are constructed from used tires that have been reclaimed from the Region’s landfill that is undergoing a pilot of landfill mining. This is a “Designed in Durham” solution, and is a partnership between the Region and Emterra. The used tires are processed into crumb rubber and fabricated into a lid that fits over the corners of the blue box. The results to date have been positive with the lids reducing litter from overflowing blue boxes.</p> <p>Reuse Drop-Off Events</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>Hosts eight reuse drop-off events from March to October each year, in partnership with local charities - Habitat for Humanity Durham, Salvation Army and Diabetes Canada. Each month, residents can drop off reusable items to designated Regional facilities or locations identified by partnering municipalities.</p>
Metro Vancouver	<p>Metro Vancouver undertakes communications and behaviour change campaigns to support zero waste objectives that specifically focus on waste reduction. Campaigns have been developed to reduce waste during the Christmas season, reduce food waste and textile waste and have specific waste reduction goals for the campaigns based on targets established in the 2010 Integrated Solid Waste and Resource Management Plan (currently being updated).</p> <p><u>Create Memories, not Garbage Campaign</u> – The waste reduction campaign called “Create Memories, not Garbage” is launched for each Christmas season and aims to get people to think about what they are giving as gifts and consider giving gifts of time, experience or long lasting gifts rather than an item that will eventually end up in a landfill.</p> <p><u>Love Food Hate Waste Campaign</u> - Metro Vancouver paid a license fee to the UK Waste and Resources Action Program (WRAP) to use the Love Food Hate Waste promotional and web based materials. The campaign was officially launched in May 2015, and was intended to assist Metro Vancouver achieve its goal of reducing per capita waste generation by 10% by 2020.</p> <p><u>Think Thrice About Your Clothes Campaign</u> – The “Think Thrice About Your Clothes” campaign focuses on reducing textile waste. The campaign encourages residents to reduce, repair, and re-use their clothes to minimize waste.</p> <p>Single-use Item (SUI) Strategy In February 2019, Metro Vancouver wrote to the Minister of the Environment and Climate Change Strategy and the Minister of Municipal Affairs and Housing in support of the Union of B.C. Municipalities’ resolution requesting a provincial SUI strategy. Metro Vancouver has since released their recently developed SUI toolkit in an effort to provide information on a range of policy options for local governments to consider in hopes of a harmonized approach</p>



Jurisdiction	Strategies, Practices and Initiatives
	on this issue. The toolkit details the impact and potential approaches to handle SUIs and provides guidance on policy and regulatory options (e.g., by request only, mandatory fee, ban, require reusable) for different SUIs such as cups, takeout containers, bags, straws and utensils.
Surrey	SUIs and Plastics Reduction Strategy Recognizing the growing importance of addressing the impact of single-use items and plastic packaging, in May 2019 City Council requested City staff to develop a SUI and Plastic Packaging Strategy . As part of the strategy development, the City is encouraging residents and businesses to provide their feedback through an online survey to assist the City in understanding the public's views, how the strategy may impact them and which items should be included.

2.2 Recycling and Diversion

Recycling programs and waste diversion initiatives reduce materials from ending up in a landfill. Recycling is a recovery operation where waste materials are reprocessed into new products whether for the original or other purposes. The primary municipal recycling program is the curbside collection of printed paper (fibres) and packaging (containers). Waste diversion initiatives provide mechanisms to divert and recycle additional materials (e.g., HHW, textiles, appliances, mattresses, batteries) from landfill as well as enhance recycling efforts.

Recycling includes SSO diversion; however for the purposes of this Technical Memorandum, SSO diversion initiatives are discussed separately in Section 2.3. Technologies associated with processing and recovering recyclables from MRFs is included in the Waste Management Technologies and Approaches Memo. Recycling and waste diversion programs are supported by P&E efforts, as outlined in Section 2.4, and implementation of municipal by-laws and policies as outlined in Section 2.9.

The City of Ottawa has a two stream curbside recycling program (containers and fibres) and materials are collected on alternating weeks. A pilot recycling program for City parks was introduced to approximately 50 City parks in 2018 where recycling containers are



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placed directly beside garbage containers. The intent of the pilot is to determine the best way to implement a full scale parks recycling program.

Table 7 provides a summary of the jurisdictions included (Halifax Regional Municipality, York Region, Markham, Guelph, Toronto, Durham Region, Metro Vancouver and Vancouver), the program/approach title researched in this sub-section and the potential applicability to City of Ottawa customers noted in brackets. Table 8 provides detailed descriptions of the programs and approaches reviewed. There are also overarching waste management programs that will result in increased participation in recycling and diversion programs. Examples of promotion and education campaigns, pay as you throw, bag limits and bag tags, material bans, policies, etc. are provided in later sections of this Technical Memorandum.

Table 7: Programs and Initiatives Related to Recycling and Diversion

Municipalities	Recycling and Diversion
Halifax Regional Municipality	<ul style="list-style-type: none"> Residential Clear Bags and Set Out Limits (SF)
York Region	<ul style="list-style-type: none"> Public Drop-Off Facilities (SF, MR)
City of Markham	<ul style="list-style-type: none"> Clear Bag Program (SF) Textile Recycling Program (SF, MR, CF) Neighbourhood Recycling Depots (SF, MR) Recycling at Community Mailboxes (SF) Waste Diversion Infrastructure Fee (SF)
City of Guelph	<ul style="list-style-type: none"> MR Front-end Collection Program (MR) Parks Recycling (PPS)
City of Toronto	<ul style="list-style-type: none"> Toxic Taxi (SF, MR) Curbside Electronics Collection (SF, MR) Bulky Waste Recycling (SF, MR) Community Environment Days (SF, MR) Chute Closure Program (MR)



Durham Region	<ul style="list-style-type: none"> Expanded Curbside Collection Program (SF, MR)
Metro Vancouver	<ul style="list-style-type: none"> Integrated Solid Waste and Resource Management Plan (all)
City of Vancouver	<ul style="list-style-type: none"> Zero Waste Centre (SF, MR)

SF - Curbside residential, MR – Multi-residential, PPS – Parks and public spaces, CF – City facilities, PP – Partner Programs

Table 8: Recycling and Diversion Scan Results

Jurisdiction	Strategies, Practices and Initiatives
Halifax Regional Municipality	<p>Residential Clear Bags and Set Out Limits</p> <p>A clear garbage bag program has been implemented to encourage recycling and waste diversion. Halifax Regional Municipality currently operates a bag-based residential recyclables collection program (use of a cart-based system is currently being evaluated by staff). Single-family homes are allowed up to six garbage bags and unlimited bags of recyclables per collection day, while MR buildings (two to six units) are allowed up to five bags or containers per unit. Waste bags must be clear, with the exception of one permitted opaque “privacy” black bag (i.e., five clear and one opaque). Recyclable containers and packaging must be placed in blue bags and recyclable paper can be placed in any SUP bag (e.g., grocery bags) or placed in a blue bag. Corrugated cardboard must be broken down and tied in bundles next to the recycling bags at the curb.</p>
York Region	<p>Public Drop-Off Facilities</p> <p>York Region has a series of seven drop-off facilities that are located throughout the Region that accept different material types. Recyclables are free to drop-off and mixed loads/residual waste have a per tonne or per unit fee. There are two Community Environmental Centres (CECs) that accept residual waste plus a variety of waste materials for diversion, including appliances, C&D materials, electronics, metals, textiles and Blue Bin recyclables, two MHSW and recyclable depots and one yard waste drop-off depot.</p>

Jurisdiction	Strategies, Practices and Initiatives
Markham	<p>Clear Bag Program</p> <p>Markham's Clear Bag program for garbage was introduced in April 2013. Through the biweekly collection program residents can place an unlimited number of clear bags at the curb for collection. However, residents can only place up to four small, opaque privacy bags (shopping bag sized) in the clear bags or in collection containers per collection. Collection crews will reject the clear bags if they contain Blue Box materials, textiles, organics, MHSW, or Electronic waste.</p> <p>Collection crews will leave behind clear garbage bags containing 15 percent or more contamination and make a judgement call while collecting. Any large opaque bags placed curbside are affixed with a white "Oops!" sticker and left behind. The colour white was chosen as the sticker was easily distinguished and highly visible on an opaque (black) bag. Waste collection contractors also use yellow "Oops!" stickers for a wider variety of non-compliance issues. Markham's approach has resulted in 98 percent clear bag compliance and resulted in an overall 10 percent increase in diversion.</p>
	<p><u>Textile Recycling Program</u></p> <p>The City of Markham launched a Textile Recycling Depot program in June 2016 by providing convenient waste diversion drop-off services at 75 locations including fire halls, community centres and MR complexes. Locations are where it is most convenient for residents to access and in the case of the Fire Stations they had good lighting and 24/7 access and monitoring by fire fighters. No other locations or partnerships were sought for this program. The City also allows textiles to be dropped off at any of the four neighbourhood recycling depots and provide textile collection bins in MR complexes. The textile recycling program targets all types of textiles including clothing, shoes, accessories, linens, fabrics and household textiles. The City's website mentions that accepted items can be worn, torn, or stained and that single socks and shoes are accepted. The City has partnered with the Salvation Army to collect textiles from drop-off bins which have sensors that notify when bins are full. The MR bins are serviced by the Canadian Diabetes Association. In April 2017, Markham banned textiles from curbside collection (supported by its clear garbage bag program),</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>becoming the first community in North America to do so. It can easily monitor the textile ban through the City's Clear Bag program.</p> <p>Neighbourhood Recycling Depots</p> <p>Markham has established four local recycling depots that offer a range of recycling opportunities including Blue Box material, scrap steel, tires, textiles, expanded polystyrene, plastic bags, fluorescent tubes and bulbs, batteries, cell phones, toners, lamps, eye glasses, as well as books and bicycles for reuse. The neighbourhood centres are "City of Markham" branded and receive strong resident support. The recycling depots are community based and tend to be located at community centres. The depots do not accept garbage, organics, yard waste, household hazardous waste, electronics or appliances and residents are directed to York Region depots for these items.</p> <p>Recycling at Community Mailboxes</p> <p>Markham provides recycling collection bins at all 2,500 Canada Post community mailboxes (for unwanted flyers, junk mail, etc.). The cost to provide the bins is covered by developers as a requirement of the development agreement when a new development is approved. Mailbox recyclables are collected weekly on the same day as recycling collection as part of the curbside collection routes.</p> <p>Waste Diversion Infrastructure Fee</p> <p>Developers of new single family homes are required to pay for and distribute recycling and composting bins and educational materials to new homes as part of the subdivision / site plan approval process. The City charges \$75 per unit which covers the costs of the bins and material. Authority for the fee is through a condition in the site plan / subdivision agreement and letter of credit. Waste Management is a commenting department on all development applications including new builds and site plan amendments. All development applications are reviewed by Waste Management and clauses are added as conditions in the development agreement.</p>
Guelph	MR Front-End Collection Program



Jurisdiction	Strategies, Practices and Initiatives
	<p>In 2018, the City began to prepare for expanding its in-house collection program to the MR sector with front-end collection and in 2019 began the roll out of the new waste collection program following the approval of updates to the City’s waste management by-law as outlined in Sections 3.9 and 3.12. The opt-in program aims to:</p> <ul style="list-style-type: none"> • Improve the City’s capture of recyclables and organics by getting more MR properties participating in three-stream collection and ensure compliance with the provincial Food and Organic Waste Framework Policy; • Provide waste collection to MR properties with indoor waste storage or small outdoor storage areas that were inaccessible by automated trucks; • Educate the MR community about proper waste sorting; and • Deliver on requests from many MR homeowners and tenants to provide them with City-run three-stream waste collection services. <p>In 2019, the City of Guelph extended collection services to additional MR properties by using front-end loading collection trucks equipped with Curotto-Cans¹, in order to keep costs contained. The Curotto-Can unit can be installed for routes that service carts and then removed for routes where front-end bin lifting is required.</p> <p>Parks Recycling</p> <p>In 2018, the City introduced a two-stream (waste and recycling) collection pilot program in 30 of Guelph’s community and neighbourhood parks.</p> <p>In an effort to keep the City’s parks clean, residents are encouraged to use the Guelph map app: 311GIS to report litter or waste concerns in a City park. Residents can tag a location where they notice a full garbage can and the City will send a cleanup crew.</p>
Toronto	Toxic Taxi

¹ Curotto-Cans are a “hopper-like” attachment to a front-end loader truck which allow collection of carts and other materials into a “hopper”. When the “hopper” is full, it is emptied overhead into the rear of the truck.



Jurisdiction	Strategies, Practices and Initiatives
	<p>Toronto offers a Toxic Taxi service for MHSW where residents call in and schedule the service, which is provided for free. The service extends to MR buildings that receive Toronto waste collection services.</p>
	<p>Electronics Recycling</p> <p>Toronto offers curbside collection of electronic waste in addition to accepting these materials at drop-off depots and events. Materials are set out separately and collected on the same day as garbage.</p>
	<p>Bulky Waste Recycling</p> <p>Toronto recycles mattresses and box springs collected as part of its bulky waste collection. The mattresses and ceramic sinks and toilets are collected together along with other bulky waste and separated out at a local transfer station. In 2016, the City signed a five-year mattress recycling contract with Recyc-Mattresses, located in Toronto. If the mattresses are visibly infested with bed bugs or wet or damaged then they go into the garbage stream.</p> <p>Toronto also recycles ceramic sinks and toilets as part of its bulky waste program. The City contracts the ceramic dismantling with Try Recycling in London, Ontario, who assumes ownership of the delivered ceramics, markets all products and retains all resulting revenues.</p>
	<p>Community Environment Days</p> <p>Community Environment Days are events which provide residents with alternative means to drop-off reusable materials and safely dispose of MHSW, electronic waste and other items. Compost is also made available to residents free of charge during the event. One event is held in each ward annually from April through to August on Saturdays or Sundays, providing a convenient and more local access to these services.</p>
	<p>Chute Closure Program</p> <p>Toronto has introduced a chute closure program allowing MR buildings to close their garbage chutes to improve waste diversion by locating all diversion and garbage drop off together in a convenient location(s). Participation in the program requires a poll of residents and can be</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>implemented in the building if supported by 51 percent or more of units (vote). The uptake has been very poor with only 23 buildings out of ~4,200 choosing to close their chutes after taking the poll.</p>
Durham Region	<p>Expanded Curbside Collection Program</p> <p>Durham Region provides curbside collection services for batteries, electronics and porcelain goods to the local municipalities it services. Batteries are collected at the curb twice a year in the spring and fall and residents are required to put the batteries in clear resealable plastic bags and label the bags (labels provided in the yearly calendars received) and then place the bag on top of the paper blue box on the battery recycling day. In 2018, the Region diverted 28 tonnes of single-use batteries. Waste electronics and porcelain goods are picked up in most municipalities by appointment only.</p> <p>Durham Region provides collection services for batteries, electronics and textiles to most MR buildings serviced by the Region.</p>



Jurisdiction	Strategies, Practices and Initiatives
Metro Vancouver	<p>Integrated Solid Waste and Resource Management Plan</p> <p>Metro Vancouver’s recycling and waste diversion targets that were established in the 2010 Integrated Solid Waste and Resource Management Plan (Plan) are supported by P&E programs as outlined in Section 2.4 and various material bans at disposal facilities as outlined in Section 2.9. The Plan had a target of achieving a regional diversion rate of 70% by 2015 and an aspirational target of achieving 80% by 2020, assuming there are sustained markets in place for diverted materials. In 2018, the overall diversion rate was 64%. Metro Vancouver includes source separated materials utilized as fuel in its definition of diversion rate. The 70% target requires the following approximate diversion rates by sector:</p> <ul style="list-style-type: none"> • Single-family residential – 65% • Multi-family residential – 30% • IC&I – 70% • Demolition, land clearing and construction – 80%. <p>Metro Vancouver is not responsible for the collection of waste from the residential or non-residential sectors. However, all local municipalities must adhere to Metro Vancouver’s regulations and policies.</p>
Vancouver	<p>Zero Waste Centre</p> <p>The City’s recycling depot was renamed as the Vancouver Zero Waste Centre and is a reuse and recycling drop-off facility. Materials such as books, textiles, tools, and recyclables are accepted, as well as MHSW.</p>





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All of the municipalities in Table 3.5 have Green Bin programs in place and use either aerobic composting or anaerobic digestion to process Green Bin materials. Processing technologies vary depending on the types of material accepted and energy markets at the time when the facilities were established.

Table 9: Programs, Technology and Initiatives Related to SSO Diversion

Jurisdiction	SSO Diversion
Halifax Regional Municipality	<ul style="list-style-type: none"> Organics Ban, SSO Collection and Processing (all) Aerobic composting of SSO (SF, MR, CF)
York Region	<ul style="list-style-type: none"> Collection and Processing (SF, MR, CF) Aerobic composting and anaerobic digestion of SSO (SF, MR, CF)
City of Guelph	<ul style="list-style-type: none"> GHG Quantification of the SSO Processing Facility (all) Aerobic composting of SSO (SF, MR, CF)
City of Toronto	<ul style="list-style-type: none"> Anaerobic digestion of SSO (SF, MR, CF, PPS) Pilot Pet Waste Program (CF, PPS)
Durham Region	<ul style="list-style-type: none"> Approval for AD with Mixed Waste Processing (all) Aerobic composting of SSO (SF, MR, CF)
City of Calgary	<ul style="list-style-type: none"> Financial Mechanisms to Increase SSO Diversion (SF, MR, CF, PP) Aerobic composting of SSO (SF, MR, CF)
Metro Vancouver	<ul style="list-style-type: none"> Organics Ban from Landfill (all) Aerobic composting of SSO (SF, MR, CF)
City of Surrey	<ul style="list-style-type: none"> Anaerobic digestion of SSO (SF, MR, CF) Biofuel Facility (SF, MR, PPS, CF)

SF- Curbside residential, MR - Multi-residential, PPS - Parks and public spaces, CF - City facilities, PP - Partner Programs

Table 10: SSO Diversion Scan Results

Jurisdiction	Strategies, Practices and Initiatives
Halifax Regional Municipality	<p>Organics Ban, SSO Collection and Processing</p> <p>Compostable organics are banned (provincially effective June 1, 1997) from landfill in Halifax Regional Municipality. Green Carts and leaf and yard material are collected curbside every second week in Halifax Regional Municipality except during the months of July, August, and September</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>where the green cart collection frequency increases to weekly across the municipality. Acceptable materials for compost in Halifax Regional Municipality include food waste, paper towels, soiled paper products, and LYW. Grass trimmings are not permitted in Green Carts; Halifax Regional Municipality promotes grass cycling as a component of its educational program.</p> <p>A dedicated six week seasonal LYW collection service is provided to residents in the spring and fall, with the material being processed at a contracted composting facility.</p> <p>All residential, as well as all IC&I generated SSO is delivered to one of two provincially-approved composting facilities owned by Halifax Regional Municipality (operated by contractors).</p>
York Region	<p>Collection and Processing York Region has a SSO program that accepts food waste, diapers and pet waste in plastic bags. Processing of materials is contracted out to three private facilities and the Region completed a feasibility study in 2017 for processing SSO within the Region's boundary when current contracts expire in 2027. Anaerobic digestion has been identified by the Region as the preferred method for processing SSO. The 2020-2029 ten year capital budget (2025-2028) includes \$100 million project for a SSO facility. Collection of organics is the responsibility of the lower tier municipalities; processing is the responsibility of York Region.</p>
Guelph	<p>GHG Quantification of the SSO Processing Facility The City of Guelph's Organic Waste Processing Facility (OWPF) is located at the Waste Resource Innovation Centre (WRIC). The City owns the OWPF and it is operated by a private contractor. The aerobic composting facility reduces GHG emissions compared to landfill and the City quantifies and records the emission reductions in order to claim the reductions toward a voluntary GHG reduction market or regulated cap-and-trade scheme. In 2018, the GHG emission reductions associated with SSO material originating from within the City of Guelph were 6,438 tonnes of CO_{2e}. The City continues to sell carbon credits on the voluntary market at received \$592,000 in unbudgeted revenues in 2019 as reported in [December 2019 (Report No. IDE-2019-120, 2019 Sale of Emission Reduction Credits (Carbon Credits) and Next Steps)] Revenues had been removed from the budget due to market uncertainty.</p>



Jurisdiction	Strategies, Practices and Initiatives
Toronto	<p>Anaerobic Digestion The City has two anaerobic digestion (AD) facilities dedicated to processing residential SSO material. The facilities use a wet AD technology which enables the City to accept pet waste, diapers, and sanitary waste in plastic bags in its Green Bin program. An AD facility also requires less space than an aerobic composting facility. During the preparation stage, a hydropulper uses water to establish a slurry of SSO matter. Any plastic materials float to the top of the slurry and are skimmed off and heavy materials (bones, inerts) sink to the bottom. Methane gas, generated by the process, is converted to RNG (or flared) to reduce GHG emissions. The Dufferin AD facility was the first facility to have equipment installed to upgrade the biogas to RNG, which is being injected into the natural gas grid under an agreement with Enbridge. Toronto wanted to be able to recycle diapers and sanitary products and the wet AD system with the hydropulper allowed these wastes to be added to the green bin. This system also allowed residents to use plastic bags to contain the food waste and place in to the green bins. The environmental benefits of replacing diesel with RNG are quite significant and are consistent with the City's goal of reducing GHGs by 30% and 80% below 1990 levels in 2020, and 2050, respectively. The use of RNG in City trucks is expected to start in March 2020.</p> <p>Dog Waste Recycling Pilot Program The City conducted a pilot dog waste recycling program in 21 dog parks which included three pilots (Green Bin, carry in / carry out and a septic waste pilot). Of the three pilots, only the pilot where Green Bin carts were provided directly beside dog parks showed success and was expanded to 17 locations. Visual inspections of the carts were completed to determine the participation and capture rate of dog waste. The dog waste is composted at Toronto's AD facilities. The success of the pilot has resulted in plans to be expanded to other locations. Details on how the City measured their success are not publicly available.</p>
Durham Region	<p>Approval for AD with Mixed Waste Processing The Region launched a region-wide green bin program in 2006. The organic material was composted at a privately-owned aerobic composting facility. The program was limited as the facility could not process pet waste,</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>diapers, sanitary waste or organics with high contaminants (i.e. from MR sector).</p> <p>Recognizing the limitations, the Region began to investigate AD over 10 years ago by conducting studies of organic management options. Staff have had Council support for the idea of AD. Councillors visited wet and dry AD facilities in Europe and in June 2018, the Regional Council approved an AD facility, with mixed waste processing (MWP) at the front-end, as the preferred technologies for the Region's long-term organics management strategy.</p> <p>In June 2019, Council approved \$165 million for AD with MWP. The facility is expected to divert an additional 30% of organics from the residual waste stream, freeing up capacity at the Region's Energy from Waste (EFW) facility. The methane from the AD process will be converted into RNG and the digestate will be turned into fertilizer products.</p>
Calgary	<p>Mechanisms to Increase SSO Diversion</p> <p>In order to achieve a diversion goal of 70 percent by 2025, Calgary implemented a Green Cart program in 2017 for curbside residents alongside a Food and Yard Waste By-law requiring MR complexes and businesses to divert food and yard waste. Single-family waste is collected by City collection trucks, whereas MR buildings and businesses are collected via private haulers. The City initially increased disposal rates for IC&I loads containing food and yard waste at disposal facilities before implementing an organics disposal ban at City landfills. Effective October 1, 2018, loads of IC&I garbage must contain less than 20 percent of food and yard waste or they are subject to a disposal surcharge. Loads are visually inspected. These by-laws are only enforceable at City owned facilities. The City does not have authority to enforce this regulation at any private waste facility.</p>
Metro Vancouver	<p>Organics Ban from Landfill</p> <p>As a means to encourage food scrap recycling, reduce methane gas contributions and create compost and bioenergy, Metro Vancouver has implemented an organics ban from landfill. This ban applies to all sectors (residential, self-haul, ICI and C&D), including each member municipality in the Region as of January 2015. Enforcement is carried out at regional disposal facilities via a surcharge of 50 percent on the cost of disposal for</p>



Jurisdiction	Strategies, Practices and Initiatives
	loads with an excessive amount of food scraps (visual assessment from Metro Vancouver Inspectors – typically 10% or more food waste is considered excessive). The Region provides food scraps recycling tools, case studies and tips for restaurants and grocers.
Surrey	Biofuel Facility The City of Surrey implemented their curbside organics program in 2011 and in 2018 constructed the Surrey Biofuel Facility to process the collected organics. One of the products created at the biofuel facility is renewable natural gas (RNG) which is upgraded to create a compressed natural gas (CNG). The City uploads the CNG to the FortisBC natural gas energy grid and makes use of the equivalent of 100 percent of the RNG generated at the facility for use as fuel in their curbside collection contractor's vehicles. In the initial stages of operations, issues with the RNG process were noted. These issues were addressed and the facility is now operational. Annually, the facility produces approximately 120,000 gigajoules of RNG and 45,000 tonnes of compost.

2.4 Promotion and Education (P&E) and Engagement Initiatives Techniques and Tools

P&E and engagement programs and initiatives are essential to support the delivery of municipal waste management services and achieve zero waste, recycling and diversion goals. The P&E programs provide information and resources to users of solid waste programs through a variety of approaches and multi-media. Tools can include but are not limited to public meetings, workshops, webinars, displays in public spaces, promotional events, community events, coordination with other municipal departments, education centres, print materials, direct mail, radio, television, telephone support, websites, mobile applications and/or social media. They can be used alone or in combination. Campaigns can be general in nature or targeted to specific user groups to increase effectiveness and use a combination of tools based on available budget and staffing resources. Diversity and demographics is also a consideration in selecting appropriate tools, tactics and languages. Social marketing techniques are used to influence and change individual user behaviours and practices.



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*Table 11: Programs and Initiatives Related to P&E and Engagement Initiatives
Techniques and Tools*

Jurisdiction	Promotion and Education and Engagement Initiatives, Techniques and Tools
Halifax Regional Municipality	<ul style="list-style-type: none"> Tailored Presentations and Workshops (PP) Master Composter Recycler Program (SF, MR, PP) Beyond 3Rs for Businesses (PP) Curbside Give Away Weekend- Twice a year residents are permitted to put goods out at the curb for anyone to take on designated days. (SF, MR, CF)
York Region	<ul style="list-style-type: none"> The Good Food Program (SF, MR)
City of Markham	<ul style="list-style-type: none"> Gold Star Campaign (SF) Markham Collection Staff Appreciation Program (SF, MR)
City of Guelph	<ul style="list-style-type: none"> Public Awareness Campaign (Give Waste A New Life) (SF, MR) Waste Diversion Education Centre (SF, MR, PP)
City of Toronto	<ul style="list-style-type: none"> MR 3R Ambassador Program (MR) Plastic Free Picnic (SF, MR, PPS, PP) SUPs Public Consultation (SF, MR, PP) Blue Bin Design Sprint (SF, MR, PP) Blue Cart Contamination Campaign (SF) “Get that Garbage Outta Here” Campaign (all) Dog Park Pilot (PPS) Recycle Coach (SF, MF)
Region of Peel	<ul style="list-style-type: none"> MR Outreach Campaign (MR) MR RFID System and Report Card (MR)
Durham Region	<ul style="list-style-type: none"> Bi-Annual Newsletter (SF, MR, CF, PP) Waste App (SF, MR, CF, PP)
City of Calgary	<ul style="list-style-type: none"> Outreach to MR Buildings and Businesses (MR, PP) Green Calgary (all)
Metro Vancouver	<ul style="list-style-type: none"> P&E Videos and Images (SF, MR, PP) Metro Vancouver Recycles (all) Sustainability Region TV series and Community Breakfasts (all) Hey! Food Scraps Aren't Garbage Campaign (all)
City of Surrey	<ul style="list-style-type: none"> SSO Program Implementation (SF, MR, CF, PP) Single-stream Recycling Visual Audits and Contamination Campaign (all)



Jurisdiction	Promotion and Education and Engagement Initiatives, Techniques and Tools
	<ul style="list-style-type: none"> School Workshops (CF, PP) Online Waste Sorting Game (all) Bio-Fuel Education Centre (SF, MR, PP)

SF - Curbside residential, MR - Multi-residential, PPS - Parks and public spaces, CF - City facilities, PP - Partner Programs

Table 12: Promotion and Education and Engagement Initiatives, Techniques and Tools Scan Results

Jurisdiction	Strategies, Practices and Initiatives
Halifax Regional Municipality	<p>Halifax had a budget of \$984,000 for its P&E initiatives in 2019-20, which is approximately \$4.95 per household.</p> <p>Tailored Presentations and Workshops Through a contract with Divert NS (a not-for profit organization), four full-time Halifax Regional Municipality (HRM) employees are funded as education staff to promote reduction, reuse, recycling and recovery through public education and community engagement initiatives. A percentage of the Enviro-Depot revenues from refundable bottle deposit returns is used to fund the education team and their initiatives. The education team uses a variety of techniques and platforms to communicate with the public including, but not limited to, the Halifax Recycles App and social media.</p> <p>HRM Solid Waste personnel also offer free presentations and workshops to schools, universities, businesses and community groups. These presentations are customized to each classroom organization to connect to curriculum priorities requirements. Through these interactive sessions, participants learn about topics like the waste management hierarchy, tips on how to generate less and sort waste, what happens to waste after it gets picked up and how to backyard compost. Education staff also set up waste management displays at local festivals, events and trade shows.</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>HRM hosts a variety of waste management events each and every year including the Master Composter Recycler (MCR) programs (September/October), Annual Curbside Give Away Weekends (June & October), the Beyond 3 Rs Business Recognition program, and the Recycling Ambassador Volunteer program.</p> <p>Master Composter Recycler Program</p> <p>The MCR program is a free four-week education program offered every fall by HRM. Through training sessions, hands-on workshops, and facility tours, citizens become more knowledgeable about how waste is managed in the Halifax region, from collection to processing and disposal. Participants also learn waste-reduction techniques including backyard composting and other affordable at-home solutions. The MCR program is open to all HRM residents interested in becoming waste champions within their families, communities, and workplaces. The program can currently accommodate 20 participants, who are expected to attend all seven two-hour sessions over a five week period.</p> <p>Beyond 3 Rs</p> <p>Beyond 3 Rs is a recognition program developed and run by Halifax Regional Municipality that is designed to highlight businesses and organizations in HRM going beyond the blue bag, and seeking out alternative ways to manage the waste produced. Beyond 3 Rs recognizes businesses who are actively seeking ways to reduce, reuse, and recycle waste material that will increase the quantity of waste diverted from landfill, and conserve resources. The pillars of the program include waste reduction, innovation, continuous improvement, and community impact.</p>
York Region	<p>The Good Food Program</p> <p>The Good Food program was launched in 2015 to engage residents with messaging, tools and workshops encouraging behaviour change to reduce food waste. The Good Food program emerged from the</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>SM4RT Living Plan's goal to achieve a 15 percent reduction in food waste found in the Green Bin by 2031. This award-winning program is designed to prevent food waste and promote health benefits through meal planning, smart shopping and food storage. Environmental Services partnered with Community and Health Services to develop and deliver this messaging. Information on the P&E budget is not publicly available.</p> <p>This unique collaboration extends the program's reach and increases credibility by incorporating health subject matter experts. More recently, the program has launched the "You're the Chef" program targeting kids and encouraging them to learn how to cook and healthy eating. "You're the Chef" is a food literacy program originally developed in Niagara Region and made available to other municipalities. This program is not focused on reducing food waste; however food waste reduction is one component of the education program.</p>
Markham	<p>Gold Star Campaign Markham initiated its Gold Star campaign in 2013 as part of the launch of the clear bag program. Through this campaign 80,000 gold star stickers were placed on the Green Bin lid if it was set out and clear bags, blue boxes and a Green Bin were fully compliant with the City's programs. The campaign used summer students who went through neighbourhoods on collection days looking for compliant set outs. Residents would phone City staff asking for a star if their neighbour had one and some residents were spotted wearing them around the community.</p> <p>Markham Collection Staff Appreciation Program Collection staff are the public face of waste management services and a recognition program has been implemented to recognize staff. When Markham receives a compliment about collection staff, they give the staff person a \$10 Tim Horton's gift card or two movie tickets.</p>
Guelph	<p>Public Awareness Campaign (Give Waste A New Life) Beginning in 2011, the City has taken a number of initiatives to divert waste from landfill such as the construction of the organics processing facility and the introduction of fully automated waste collection with carts. In order to communicate these changes, the City</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>implemented a public awareness campaign. The brand solution revolved around the slogan <i>Give Waste a New Life</i>, with an image of a butterfly composed of recyclable and organic materials as a logo. For these campaigns, P&E tools included:</p> <ul style="list-style-type: none"> • Maps, brochures, user guides and collection calendars; • Posters and displays; • Local newspaper ads; • Radio commercials and transit ads; and • Script and storyboard for an educational video. <p>These campaigns resulted in an increase in sorting compliance and waste diversion. The <i>Give Waste a New Life</i> campaign also resulted in 99 percent of households using their carts on their regularly scheduled collection date. These campaigns have received a number of communication awards, including:</p> <ul style="list-style-type: none"> • Gold Excellence Award from the Solid Waste Association of North America; • Gold Award from the Recycling Council of Ontario; • Silver Promotion and Education Award from the Municipal Waste Association; and • Pinnacle Award from Canadian Public Relations Society (CPRS) Hamilton. <p>Information on the P&E budget is not publicly available.</p> <p>Waste Diversion Education Centre</p> <p>The Waste Diversion Education Centre is located in the organic waste processing facility building and provides visitors with an understanding of how Guelph's organics, recyclables and garbage are collected and processed and how to minimize and divert the amount of waste created and garbage sent for landfilling. The Centre also offers a guided tour within the Waste Resources Innovation Centre. Tours are available April 1 to October 31 for Guelph schools only and provide an opportunity to learn from the City's Solid Waste Resources employees. The guided tours provide detailed introduction on topics such as how to reduce your environmental footprint, how to sort waste properly, how the City's waste management system works and education on waste diversion program.</p>



Jurisdiction	Strategies, Practices and Initiatives
Toronto	<p>Toronto had a budget of \$3.9 million for its P&E initiatives in 2019, which is approximately \$3.42 per household.</p>
	<p>MR 3R Ambassador Program The City supports waste diversion programs in MR buildings with its 3Rs Ambassador program, in which volunteers in buildings are trained to be waste diversion ambassadors for their building and help to educate other tenants about proper waste diversion. 3Rs Ambassador volunteers must attend a three hour training session conducted by the City that covers topics such as how to properly recycle and reduce waste going to landfill. Volunteers are asked to commit ten hours per month to promote the 3Rs in their building.</p>
	<p>Plastic-Free Picnic 2019 was the first year of the City's Plastic Free Picnic as part of the City's Live Green Toronto team. The event was held at a local public square to mark SUP Free Day in Toronto and to celebrate those who have taken the Toronto pledge to have a SUPs free lunch during the month of July as part of the international Plastic Free July campaign. The pledge was promoted by Live Green Toronto and those that took the pledge to go SUP-free at lunch for a part of July were entered into a draw for a prize. This campaign started in Australia and has inspired 120 million participants in 177 countries. Other events hosted by Live Green Toronto include: Secondhand Sunday (April 28 and Sept 29, 2019), Climate Action Fair, Screening of Wasted! The Story of Food Waste with panel discussion, Really Really Free Market, Zero waste cafes, repair cafes, etc.</p>
	<p><u>SUPs Public Consultations</u> The City is holding two phases of public consultations to get feedback on reducing single-use and takeaway items. Engagement of Toronto residents, businesses and other stakeholder groups has been through public events, stakeholder meetings, webinars, polling, an online survey and email comments. More than 20,000 people participated in Phase 1 consultations with Phase 2 currently on-going.</p> <p>During Phase 1, the majority of participants expressed support for the reduction of single-use items, a desire for using reusables instead of</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>disposables and support for mandatory and voluntary approaches to ensure reduction across the City.</p> <p>Blue Bin Design Sprint On November 9th, 2018, the City of Toronto’s Solid Waste Management Services hosted a Blue Bin Design Sprint to better understand the feelings and insights around blue bin recycling using a human-centered design approach. The event attracted 64 participants who were asked “How might we reduce contamination in the Toronto Blue Bin recycling program?” Staff learned the key challenges to recycling properly and will use the information to develop more effective approaches to reduce contamination, such as education campaigns on proper ways to recycle, information on what happens in the recycling process to understand why are we doing this and how technology works, enhanced enforcement recycling rules, providing incentives and leveraging community leaders and organizations</p> <p>Blue Cart Contamination Campaign The City has launched an educational campaign to reduce the 26% contamination in the blue cart. Staff have sent letters to residents explaining the high contamination and launched a six-month pilot project that has inspectors going through residential recycling bins to catch unwanted materials. Inspectors inspect the materials and leave tags to explain that contamination was found. Collection crews are not currently rejecting these blue carts with heavy contamination and are starting with education first; however, the City may reject the tagged carts in the future. If the City proceeds with rejection they may also charge back a \$20 cost recovery fee to remove the materials.</p> <p>Wast(ED) Series</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>As part of the Long Term Waste Management Strategy, the City organized four educational waste-focused speaker series that showcased local initiatives that are changing the way in which waste is reduced, reused and recycled. Topics included community organizations, clothing, food and zero waste. Four one-off events were held in 2015 in April (reuse), May (clothing), July (food) and October (zero waste conference / circular economy).</p>
	<p>Get that Garbage Outta Here Campaign Toronto Raptors basketball fans have become very familiar with Jack Armstrong's (TSN Sports Broadcaster) classic "get that garbage outta here", which can usually be heard multiple times during Raptors games. The City leveraged his local celebrity status and the Raptors popularity and success to produce a commercial in 2018 that aired on the radio and Twitter. The commercial reminds residents to not throw their garbage out in recycling bins and to "recycle right".</p>
	<p>Dog Park Pilot As mentioned in Section 2.3, the City conducted pilots on options to divert organics (especially dog waste) from disposal and the recycling stream. The successful pilot program had Green Bins placed next to litter and recycling bins that were accompanied by signage explaining the pilot. The signs also requested that individuals use the paper bags and scoops provided to ensure that all of the bin contents are compostable. The City launched a Twitter campaign with the hashtag #NoPOOinBlue in 2018. The videos included a dog named Potter to educate people to make sure dog waste is not placed in the blue bin.</p>
	<p>TOWasteApp The TOWasteApp has multiple service offerings including waste collection schedules, events, drop-off depots or donation centre locations etc. The app also features the City's Waste Wizard to help residents correctly sort items.</p>
Region of Peel	<p>MR Outreach Campaign Garbage is collected from MR buildings twice a week and recycling is collected once a week (some buildings receive pickup twice a week for recycling because of storage space restrictions).</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>Peel has introduced recent improvements including the creation of a MR database to track building recycling performance, improved promotion and education materials and use of onboard weigh-scales to measure and record weights of materials generated at each building.</p> <p>Peel Region has developed a comprehensive P&E and outreach campaign focusing on incorrect set outs in MR buildings where residents use plastic bags to store recyclables and then toss the tied-off bag into the recycling bin. This results in additional time and labour at the MRF to open and empty the bags. To correct this situation, residents received reusable bags for storing the recyclables with the goal of carrying the bag to the recycling bins and emptying out the contents loosely. At the same time, Peel staff launched the “Recycle Right” campaign and P&E materials to distribute to residents. Staff also set up lobby displays and attended the displays to answer questions that residents had about the recycling program.</p> <p>MR RFID System and Report Card</p> <p>In 2012, the Region awarded a contract for the design and delivery of a radio-frequency identification (RFID) waste collection reporting system for the Region’s collection services provided to over 700 MR buildings and 1,000 IC&I locations. The Region began with a pilot test in the fall of 2013 which concluded in spring of 2015. The pilot tested the hardware and software functionality of the equipment as well as the design and distribution of a report card communication approach. Each front-end bin was provided with a RFID tag, which was recorded along with the weight of the bin every time it was collected. The data was recorded in a centralized database and the data was used to monitor and analyze the waste diversion activities of each building. A report card template was tested which would provide the building owners/property management feedback on their waste diversion versus garbage disposal efforts. After the pilot test period the system was deemed successful and approval was granted to move to the full scale implementation phase in April 2015. Analysis of data between July 2016 and March 2017 showed that condominium buildings performed better than rental buildings and other types of properties. High and low performers were identified</p>



Jurisdiction	Strategies, Practices and Initiatives
	through a ranking list by their diversion rate. Low performers were to receive a focused P&E approach.
Durham Region	<p>Durham had a budget of \$408,000 for its P&E initiatives in 2019, which is approximately \$1.72 per household.</p> <p>Bi-Annual Newsletter The Region produces the “Durham Works”, the Works Department’s external newsletter, which is distributed twice annually via mail to approximately 220,000 households in the Region (also available online). The newsletter includes topical waste management information such as proposed facility and program changes, results of waste management studies, blue box and recycling tips, and why and how programs work. The Region also distributes an annual waste calendar via mail which is also available online.</p> <p>Waste App Similar to Ottawa’s mobile app, Durham Region has an app also developed and owned by ReCollect Systems Inc. that carries similar functionalities as Ottawa’s app (e.g., what can/cannot be recycled, collection day reminders). The Region’s Waste App also enables waste management call centre staff to employ a waste boundaries viewer to have direct access to GIS data for residents in order to respond to public inquiries immediately while being able to spatially view information through a mapping application.</p>
Calgary	<p>Outreach to MR Buildings and Businesses Calgary’s P&E budget is approximately \$1.3 million which includes all communications and education in 2019. This is approximately \$2.66 per household.</p> <p>Support services are provided for MR and business waste diversion programs on the City’s website and include waste audit kits, presentations by City staff, signage, case studies and other online materials to aid in the development of a diversion program. MR complexes are required to inform residents of the list of food and yard waste and recyclable materials permitted in the diversion program at least once per year and provide clear signage for the containers. In</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>addition to semi-regular contamination audits and green cart capacity studies, the City carries out regular spot checks on blue and green carts as well as random inspection on commercial loads at City landfills. Residents with contamination will receive a tag on their cart identifying unacceptable material.</p> <p>Green Calgary The City financially supports Green Calgary, an environmental charity that promotes waste diversion in the community, school and workplace through community events, lunch and learn programs, waste consulting services and waste workshops. Funding is received through City Grants (accounting for approximately 25% of Green Calgary's annual revenue).</p>
Metro Vancouver	<p>P&E Videos and Images Metro Vancouver provides videos about their recycling program, the zero waste challenge, and suggestions on consistent colour schemes for signage, and images for the local municipalities. Metro Vancouver offers various products and images that can be downloaded for free on their website with the intent to make the program more recognizable.</p> <p>Specific information on Metro Vancouver's P&E budget is not available.</p>
	<p>Metro Vancouver Recycles is a website where residents and businesses can look up and review where to reuse and/or recycle most products in the region. Search engines are provided for residents and businesses and a Google™ map shows the nearest location(s) with colour coding labels for reuse and recycle options in the results.</p>
	<p>The Sustainable Region TV series examines how Metro Vancouver manages growth, protects the environment, and delivers vital services to residents of the region to support its sustainability programs. Residents can learn about environmental challenges including waste management. The episodes are available on the Region's website.</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>Metro Vancouver's Sustainability Community Breakfasts is a series of monthly breakfast meetings that focuses on regional sustainability issues. They provide an opportunity to increase awareness and understanding of current topics, to bring together individuals and organizations interested in sustainability, and to build networks and partnerships. The Breakfasts cover a range of topics that appeal to individuals across all sectors: private, public, academic and non-profit. They typically feature one or more presentations that focus on current projects and priorities in the region. Following the breakfast, participants are encouraged to stay for informal networking and discussions about sustainability topics and trends to help expand awareness and engagement with these issues. Recent topics have included:</p> <ul style="list-style-type: none"> • Tackling SUIs in the Region • Think Thrice about your clothes - reduce, repair and re-use • Reducing textile waste in the Region • Tackling food waste
	<p>Hey! Food Scraps Aren't Garbage Campaign Metro Vancouver launched an enhanced organics recycling campaign to further build on the region's waste diversion successes by reminding people: "Hey! Food Scraps Aren't Garbage".</p> <p>In 2019, Metro Vancouver released YouTube, social media, transit shelters, bus sides and television ads relating to Hey! Food Scraps Aren't Garbage. Residents with questions regarding composting are encouraged to engage with Metro Vancouver via Instagram using the hashtag #GreenBinQandA to have their questions answered.</p>
Surrey	<p>Surrey had a budget of \$500,000 for its P&E initiatives in 2019, which is approximately \$5.00 per household.</p> <p>SSO Program Implementation The City completed visual audits on curbside containers in 2015 over several weeks post-implementation of the curbside organics collection program for contamination. Households that consistently had contamination in the SSO stream were visited by staff for an education session at their household. As the City is culturally</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>diverse, staff who spoke multiple languages were available to conduct the sessions. Pamphlets were also provided in multiple languages that aimed to provide graphics as much as possible versus text.</p> <p>Single-Stream Recycling Visual Audits and Contamination Campaign Similar to organics carts, the City completes visual audits on recycling carts for contamination. Carts that have contamination are left with a tag indicating materials that were found that are not allowed in the carts. The City completes this on an annual basis and targets collection routes that have high amounts of contamination.</p> <p>In 2017, average non-PPP (printed paper and packaging) contamination in Surrey's single-stream recycling was 11% (total contamination including glass neared 20%), well above the <3% rate set out in the contract with Recycle BC and putting the City at risk of fines. A waste audit based P&E campaign was launched targeting the worst contamination routes, including curbside waste audits, brochure mail out to approximately 35,000 homes, letters to repeat offenders (5,000 households), advertisements and cart enforcement stickers (what goes in, what stays out).</p> <p>In 2018 and 2019, the City targeted 2,000 households per day on 'hot routes'. Recycling material was collected via rear-load vehicles and contaminants were left in clear bags marked 'Contamination' beside the resident's blue cart. Stickers continued to be placed on carts identifying non-acceptable material and a door-to-door campaign followed to educate repeat offenders. Gold stars were left for improved homes with no continued issues.</p> <p>School Workshops The City of Surrey provides a series of workshops on the topics of waste, energy and water conservation free to teachers that request these programs. The City, in partnership with a contractor, develops the theme and program for the workshops that meet curriculum requirements for the different grades (Grades 2, 4, 5, 9 and 10). The City's contractor delivers the workshops and provides all of the tools and materials.</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>Online Waste Sorting Game The City provides an online waste sorting game as a fun and engaging way for residents to learn about the City's waste collection rules.</p> <p>Bio-Fuel Education Centre The City's biofuel facility (discussed in Section 2.6) includes an education centre featuring windows that allow visitors to observe the processing system. Tours are available upon request and provide insights into facility functions including feedstock collection, compost creation and biogas production.</p>

2.5 Residuals Management

Residuals management is considered to be the last option for managing municipal waste and is still required even with the most advanced waste management systems. Landfilling of waste is a traditional method of managing municipal solid waste, however, finding new sites can be extremely difficult in developed municipalities due to lack of available land and public opposition. For some municipalities, reduced availability of landfill options for residuals management within their municipal boundaries has influenced alternative options for residuals management as well as the implementation of waste avoidance, reduction, reuse, recycling and recovery programs. Ottawa is uniquely positioned with two existing private landfills located within it's boundaries and one just outside, two newly approved private landfills within in boundaries, and five private transfer stations within the City boundaries (and the near surrounding area). Residuals management capacity is minimized by setting high waste diversion targets. The diversion target provides a framework for the various elements of an integrated municipal solid waste management system.

The Trail Road Landfill Facility is owned by the City and is where all curbside and multi-residential waste is disposed. The current estimated lifespan of the facility is 2041 based on current waste diversion efforts. The City's waste diversion target and residuals management approaches will be updated through the Solid Waste Master Plan (Plan).



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Table 13 provides a summary of the residuals management approaches used by the jurisdictions, types of waste accepted and waste diversion targets that have been set to reduce waste requiring disposal to provide context for the programs that have been developed and examples provided in this Technical Memorandum. Innovative technologies are discussed in detail in the Technical Memorandum prepared as part of Task 5.

Table 13: Residuals Management Approach and Diversion Targets

Jurisdiction	Residuals Management Approach	Diversion Target
Halifax Regional Municipality	<ul style="list-style-type: none"> Stabilized landfill within the municipality Waste is pre-processed prior to landfilling to initially recover recyclable materials and then composted to stabilize organic materials before landfilling 	<ul style="list-style-type: none"> 300 kg/person/year disposal target
Durham Region	<ul style="list-style-type: none"> EFW - Durham York Energy Centre (DYEC) Uses mass burn incineration technology. Recovery of energy (20 year contract with the Independent Electricity System Operator) 	<ul style="list-style-type: none"> 70% no set date(63%) in 2018 annual report)
York Region	<ul style="list-style-type: none"> All residual wastes are exported. Landfill - Walker South Landfill in Thorold, Ontario EFW - Durham York Energy Centre, Covanta Niagara (New York State), Emerald Energy from Waste (Brampton) 	<ul style="list-style-type: none"> 90% diversion of residual waste from landfill, which has been achieved (94% in 2018) EFW is included in diversion target
City of Markham	<ul style="list-style-type: none"> N/A - responsibility of York Region 	<ul style="list-style-type: none"> Waste diversion target of 80% (no date)



Jurisdiction	Residuals Management Approach	Diversion Target
		<ul style="list-style-type: none"> In 2008, Markham Council adopted 'Zero Waste' policy
City of Guelph	<ul style="list-style-type: none"> All residual waste is transferred at Waste Resource Innovation Centre Transfer Station and exported to the Twin Creeks Landfill owned by Waste Management (Watford, Ontario) 	<ul style="list-style-type: none"> 70% by 2021
City of Toronto	<ul style="list-style-type: none"> Landfilling of waste at the City's Green Lane Landfill located in Southwold, ON (between St. Thomas and London) 	<ul style="list-style-type: none"> 70% by 2026
Peel Region	<ul style="list-style-type: none"> Peel delivers residual waste to a privately owned landfill. Future plans for a mixed waste processing facility (2025-2029) estimated at \$195 million (2020 proposed budget) 	<ul style="list-style-type: none"> 75% by 2034 December 2017, Regional Council adopted the Roadmap to a Circular Economy in Peel with a target of Zero waste from residential sources in the Region of Peel
City of Calgary	<ul style="list-style-type: none"> Residual waste is disposed of at three City owned landfills: Spyhill Landfill, East Calgary Landfill and Shepard Landfill 	<ul style="list-style-type: none"> 70% by 2025
Metro Vancouver	<ul style="list-style-type: none"> Wastes are received at transfer stations and sent to: <ul style="list-style-type: none"> City of Vancouver Landfill Out of district landfills Burnaby Energy From Waste Facility 	<ul style="list-style-type: none"> 80% by 2020
City of Vancouver	<ul style="list-style-type: none"> Residual waste is disposed at the City's landfill site 	<ul style="list-style-type: none"> Zero waste by 2040



Jurisdiction	Residuals Management Approach	Diversion Target
City of Surrey	<ul style="list-style-type: none"> Residual waste is sent to the Vancouver landfill site. 	<ul style="list-style-type: none"> Zero waste by 2040

2.6 Sustainability Practices / Reduction of Net GHG Emissions

One of the intents of a sustainable practice is to reduce the impact on the environment which can also reduce GHG emissions.

In 2013, the City of Ottawa developed the Sustainable Purchasing Guidelines. The City's procurement group works collaboratively with departments to provide support and guidance related to the use of the guidelines and ensures the guidelines have been appropriately considered when goods and services are being procured, while working within the regulations of the City's Purchasing By-law.

The City of Ottawa approved a landfill gas utilization agreement in 2005 and commissioned a gas-to-energy facility through an agreement with PowerTrail Inc. at the Trail Waste Facility Landfill. The City does not own the rights to the gas and has limited control over determining how the landfill gas is collected or destroyed; however, the regulatory directive is to mitigate landfill gas migration at the property boundary as well as alleviate offsite odour impacts. The landfill gas collected powers six one-megawatt internal combustion reciprocating engines and produces approximately six megawatts of electricity, which is enough to power 6,000 homes in Ottawa. This resource could displace fossil fuels currently being used in the market.

The City of Ottawa has a Climate Change and Resiliency Unit within the Planning, Infrastructure and Economic Development Department and has a number of initiatives underway to reduce GHG emissions and reduce impacts of climate change. The City declared a Climate Emergency on April 24, 2019.

Table 14 provides a summary of the jurisdictions included (Halifax Regional Municipality, York Region, Markham, Guelph, Toronto, Durham Region, Calgary, Metro Vancouver and



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Surrey), the program/approach title researched in this sub-section and the potential applicability to City of Ottawa customers noted in brackets.

Table 15 provides detailed descriptions of the programs and approaches reviewed.

Table 14: Programs and Initiatives Related to Sustainability Practices / Reduction of Net GHG Emissions

Jurisdiction	GHG Targets	Sustainability Practices/GHG Reduction
Halifax Regional Municipality	Reduce corporate GHG emissions by 30% below 2008 levels (88,700 tonnes eCO ₂) by 2020. Halifax Regional Municipality has not yet established a community-level GHG emissions reduction plan, but plans to do so moving forward. Long term target is reducing GHG emissions to 1 tonne eCO ₂ per capita by 2050.	<ul style="list-style-type: none"> Environment and Sustainability Standing Committee (all) Corporate Climate Change Targets (CF)
York Region	Energy plan targets 60 per cent reduction in annual corporate greenhouse gas emissions by 2051 compared to the Region's 2014 baseline (no solid waste specific targets), Net-zero carbon emissions by 2051.	<ul style="list-style-type: none"> Sustainable Products Ranking Framework (all) Good Food Program (all) Vision 2051 Sustainability Plan
City of Markham	Net zero GHG emissions by 2050 - no specific goal for Solid Waste	<ul style="list-style-type: none"> Greenprint Sustainability Plan (all)
City of Guelph	Corporate 100% Renewable Energy by 2050. Community's Net Zero Carbon by 2050 goal.	<ul style="list-style-type: none"> Civic Accelerator (PP, CF)
City of Toronto	Reduce corporate GHG emissions by 30% by 2020, 65% by 2030 and 0 by 2050 or sooner, from 1990 levels.	<ul style="list-style-type: none"> Converting Methane to RNG (all) TransformTO (all)



Jurisdiction	GHG Targets	Sustainability Practices/GHG Reduction
		<ul style="list-style-type: none"> • Circular Economy and Innovation Unit (all) • Circular Economy Procurement (CF)
Durham Region	<p>Corporate GHG Emission Reduction Targets:</p> <ul style="list-style-type: none"> • 5% by 2015 • 20% by 2020 • 80% by 2050 <p>Goal for waste - Support a sustainable integrated waste-management system that reduces GHG emissions through prevention, reduction, reuse, recycling, recovering and disposal.</p>	<ul style="list-style-type: none"> • Durham York Energy Centre (all)
City of Calgary	80% reduction in city-wide emissions below 2005 levels by 2050	<ul style="list-style-type: none"> • Sustainable Environmental and Ethical Procurement Policy (CF) • Environmental Management System (all) • Climate Mitigation Action Plan (all) • Long Range Urban Sustainability Plan (all)
Metro Vancouver	Carbon neutral Region by 2050	<ul style="list-style-type: none"> • Metro Vancouver Sustainability Toolbox 2020 (SF, MR)
City of Surrey	80% reduction by 2050 from 2007 levels	<ul style="list-style-type: none"> • Biofuel Facility (SF, MR, PPS, CF, PP) • Sustainability Charter (SF, MR, CF) • Sustainability Dashboard (SF, MR, CF, PP)

SF- Curbside residential, MR - Multi-residential, PPS - Parks and public spaces, CF - City facilities, PP - Partner Programs



Table 15: Sustainability Practices / Reduction of Net GHG Emissions Scan Results

Jurisdiction	Strategies, Practices and Initiatives
Halifax Regional Municipality	<p>Environment and Sustainability Standing Committee Halifax Regional Municipality's Environment and Sustainability Standing Committee provides assistance and advice to Regional Council relating to solid waste, energy security, sustainable parks, forests, open spaces, and water resource management.</p> <p>Corporate Climate Change Targets In 2011, Halifax Regional Municipality Council adopted a target to reduce corporate (i.e., municipal operations) GHG emissions by 30 percent below 2008 levels by 2020. In 2018, the municipality launched HalifACT 2050; a long-term climate change plan to reduce emissions and assist Halifax Regional Municipality communities in adaptation. The plan will guide efforts to reduce emissions by conserving energy and increasing access to clean energy sources. Notably, with respect to climate change, Regional Council declared a climate emergency on January 29, 2019. There are no direct ties to solid waste. All aspects of the program are related to 'green' energy (e.g. solar), LED light upgrades, increased efficiency through building retrofits (LEED certified), identifying vulnerable areas or buildings that could be impacted by climate change, green space and urban design, and community gardens.</p>
York Region	<p>Sustainable Products Ranking Framework In its 2019 Corporate Energy and Demand Management Plan, it was recommended that York Region employ a sustainable products ranking framework in its procurement policy to foster better evaluation of all goods and services from environmental and social perspectives. The framework is designed to compare, rank and weigh purchases based on set Regional requirements (e.g., cost, efficiency, etc.) as well as the degree to which the environmental (e.g. GHG reduction) and social impacts of concern have been reduced or eliminated.</p> <p>Good Food Program The Region's Good Food program aims to help people eat more healthy meals and reduce wasted food. The program has a goal to reduce food waste by 15% by 2031. It has been estimated that York Region could potentially save 53,200 tonnes of GHG emissions by 2031. The goal was</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>established as part of the Region's Long Term Waste Management Plan, the SM4RT Living Plan.</p> <p>Vision 2051 Sustainability Plan The Vision 2051 Sustainability Plan describes the Region in 2051 and sets sustainability priorities in eight goal areas, with a target of net zero carbon emissions. The plan acknowledges that actions will be required to reduce waste and that waste is a resource. Actions include solutions to achieve a zero waste society, education and awareness, advocating for industry responsibility for lifecycle costs of products and zero waste, resource recovery, energy from waste and reuse initiatives.</p>
Markham	<p>Greenprint Sustainability Plan The Sustainability Plan was published in 2011 and is a 50 to 100 year plan to achieve an environmentally, economically, socially and culturally vibrant community. One of the 23 objectives in the Plan is to achieve zero material waste by 2050, which is part of its commitment to becoming a net zero GHG city by 2050.</p>
Guelph	<p>Civic Accelerator The City of Guelph has a program called the Civic Accelerator. This program enables the City to work with and engage in innovative practices with companies, entrepreneurs and startups. The goal is to create solutions that will help address municipal problems. The Civic Accelerator was developed in conjunction with the Guelph Lab, the City of Guelph's civic innovation partnership with the University of Guelph. The Civic Accelerator will play a role in reducing/eliminating SUPs from City facilities and with Guelph-Wellington becoming Canada's first circular food community. The program will help to bring together existing funding programs and providers for better coordination and new partnerships as they create 50 new circular food business and collaboration opportunities. Reducing SUPs and food wastes will result in a reduction in GHG emissions.</p>
Toronto	<p>Converting Methane to RNG In 2019 the City entered into a partnership with Enbridge Gas Distribution to begin installing equipment at the Dufferin Anaerobic Digester (AD) Facility which will allow the City and Enbridge to transform the biogas produced from processing Toronto's Green Bin organic waste into RNG and inject that gas into the natural gas grid. Once in the grid, the City will be able to use the</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>compressed natural gas to fuel its collection trucks. Transition of the fleet to CNG is in progress and 48% of the fleet or 121 units were in service as of January 31, 2019. Toronto is estimating in the 2019-2023 Green Fleet Plan that converting to CNG collection trucks vehicles will result in vehicle lifetime operating savings of \$7.1 million and GHG reduction of 10, 563,627 CO₂e/kg.</p> <p>TransformTO In October 2019, Toronto's City Council unanimously voted to declare a climate emergency with the goal of accelerating its efforts to mitigate and adapt to climate change through Toronto's Climate Action Plan. The City's climate action strategy is called "TransformTO" which will reduce locally generated GHG emissions by targeting the highest generating GHG emission activities. TransformTO aims to achieve net zero GHG emissions by 2050 (or sooner). With 10 percent of GHG emissions in Toronto generated by waste (with food waste being the primary source), the City has set a goal of 95 percent diversion of waste from landfill by 2050.</p> <p>Circular Economy Unit As outlined in Section 3.2 the City's Solid Waste Management Services division now has the Circular Economy and Innovation Unit which aims to drive the circular economy in Toronto.</p> <p>Circular Economy Procurement Toronto has developed the Circular Economy Procurement Implementation Plan and Framework (CE Framework), which is intended to increase the amount of goods and services (including City contracts) that are repairable by design, have lower lifecycle GHG emissions, are less toxic, and rely less on raw material extraction/consumption.</p>
Durham Region	<p>Durham York Energy Centre</p> <p>The Durham York Energy Centre is an energy-from-waste facility, located in Durham Region and developed by Durham and York Regions to manage post-diversion residual waste. In 2018, Durham York Energy Centre generated 102,090 megawatts of electricity from the waste, generating enough electricity to power approximately 10,000 homes a year which helps to conserve fossil fuels. The facility has the ability to use the generated steam energy in district heating systems in the future. This facility also allows Durham and York</p>



Jurisdiction	Strategies, Practices and Initiatives
	Regions to manage residual waste near the source of generation to reduce GHGs associated with transportation.
Calgary	<p>Sustainable Environmental and Ethical Procurement Policy Since 1992, the City of Calgary has introduced a number of environmental policies aimed at conserving resources, preventing pollution and improving environmental performance. The most recent policy, Sustainable Environmental & Ethical Procurement Policy, governs procurement activities at the City of Calgary ensuring the environmental and social benefits are considered for all products and services. This includes acquisition of materials with recycled content and consideration of the life-cycle of a product or service.</p> <p>Environmental Management System Calgary identifies and tracks their environmental impacts and risks through EnviroSystem, an ISO 14001 Environmental Management System. EnviroSystem aims to reduce the environmental impact of its decision making and operations and drive the development of policies and plans to meet Calgary's green goals, such as the Sustainable Environmental & Ethical Procurement Policy,</p> <p>Climate Mitigation Action Plan Climate Mitigation Action Plan is part of Calgary's Climate Resiliency Strategy that aims to reduce city-wide emissions to 80 per cent below 2005 levels by 2050. The Plan outlines the City's actions to improve energy management and reduce GHG emissions under five key areas: Building and Energy Systems, Transportation and Land Use, Consumption and Waste, Natural Infrastructure and Leadership. Within Consumption and Waste, actions underway or completed include quantifying the composition and amount of GHG emissions associated with consumption and waste, implementing a PAYT black cart program, investigating options to reduced single-use items, implement EPR regulations, divert organics from landfills and introduce by-laws requiring IC&I organic waste collection.</p> <p>Long Range Urban Sustainability Plan The City has implemented a long-range urban sustainability plan (imagineCALGARY).</p>



Jurisdiction	Strategies, Practices and Initiatives
Metro Vancouver	<p>Metro Vancouver Sustainability Toolbox2020 - A Youth4Action Leadership Field Course</p> <p>The Metro Vancouver Sustainability Toolbox (MVST) is an experience-based youth leadership program for Metro Vancouver students. The course provides a range of opportunities for students to learn the principles of sustainability, systems thinking and leadership by exploring the challenges, and opportunities facing the region and developing the knowledge and competencies necessary to take action and to influence a sustainable and livable region. The course includes a tour of waste management facilities.</p>
Surrey	<p>Biofuel Facility <i>See Section 2.4</i></p> <p>Sustainability Charter Surrey's Sustainability Charter 2.0 is an ambitious 40-year vision for sustainability in Surrey. It outlines how the City is planning to become a thriving, green, inclusive city and guides all City decisions and outlines what is wanted for the community as a whole, updating the first Charter created in 2008. The Sustainability Charter 2.0 has eight overlapping themes looking to the year 2058, which are: Inclusion, Public Safety, Ecosystems, Education and Culture, Health and Wellness, and Infrastructure.</p> <p>Sustainability Dashboard The City's Sustainability Dashboard was developed to help implement the Sustainability Charter. The interactive Dashboard is accessible on the City's website (http://dashboard.surrey.ca/) and helps City staff and the community see the progress made towards socio-cultural, environmental and economic wellbeing. Community Waste is an indicator under the theme Infrastructure and the dashboard shows historic diversion rates as well as target diversion rates for 2020 and 2058. Residents can subscribe to the website for news and updates.</p>

2.7 Service Delivery Approaches and Staffing Levels

Approaches to operations and facility ownership, i.e. public (in-house) or private sector (contracted), of municipal waste management services differ among jurisdictions depending on a number of considerations including services offered, service levels, scale of operations, local factors (e.g., capital and operating budgets, risk tolerance for facility



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ownership and operations, availability of local service providers, and availability of municipal staff and expertise), program performance, service reviews, and provincial legislation. The number of solid waste management staff also differ depending on service delivery approaches and requirements for monitoring of closed landfill sites, which is an ongoing activity.

The following provides an overview of these considerations in comparing service delivery approaches and staffing levels:

Services Offered – The types of waste management services vary depending on municipal responsibilities and waste diversion targets. Responsibilities for waste management services vary depending on the municipal structure (single tier vs upper tier vs lower tier) Upper tier municipalities may not have full responsibility for all waste management functions. High diversion targets result in a larger offering of programs and services.

- **Service Levels** – Service expectations and targets (e.g. diversion rates, frequency of collection) vary amongst programs and are a consideration in determining how best to deliver the services.
- **Scale of Operations** – the number of customers and quantities of waste materials to be managed varies based on population and is a consideration in determining service delivery approaches.
- **Local Factors** – Service delivery approaches also vary depending on local factors such as the municipality's ability to fund capital projects, facility ownership risk tolerance, availability of local private sector service providers and municipal expertise to operate specialized facilities. Contracted operations reduce municipal staffing requirements; however, public and private sector costs can be comparable especially when a competitive environment is introduced. Contracted facilities reduce capital costs but introduce risks to waste management system capacity when contracts expire, or unexpectedly become unavailable, if alternatives are not available in the marketplace. Contracted operations also reduce flexibility to make program changes during a contract without adding costs.

Program performance – Performance measurement is a means of monitoring how well a service model is working and ensuring that service delivery approaches continue to be



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effective in terms of costs and defined service expectations. Seven of the selected municipalities participate in the annual performance measurement reporting (Halifax Regional Municipality, York Region, Durham Region, Peel Region, Toronto, Calgary, Vancouver) and five of these are members of the [Municipal Benchmarking Network Canada](#) (MBNC). It should be noted that the City of Ottawa is not a member of the MBNC. The MBNC is a 16-member municipal partnership established in 2016 that benchmarks municipal services across 37 service areas including solid waste. It grew from the Ontario Municipal CAO's Benchmarking Initiative and now includes municipalities from six provinces. MBNC municipalities report annually on seven measures for the [Waste Management Service area](#):

Service Level Measures

1. Tonnes of All Residential Material Collected per Household
2. Tonnes of Residential Solid Waste Disposed per Household
3. Tonnes of Residential Solid Waste Diverted per Household

Community Impact Measure

1. Percent of Residential Solid Waste Diverted

Efficiency Measures

1. Total Cost for Garbage Collection per Tonne - All Property Classes
2. Total Cost for Solid Waste (All Streams) Disposal per Tonne - All Property Classes
3. Total Cost for Solid Waste Diversion per Tonne - All Property Classes

The annual report also includes the previous two years of data, which shows trends. The MBNC notes six influencing factors in comparing data from year to year and between municipalities.

1. Diversion Efforts – type and number of programs offered
2. Education – public education and outreach efforts
3. Geography – location, size, density, housing types, urban form
4. Government Structure – single tier vs. upper tier
5. Infrastructure –disposal capacity availability and transportation distances



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Organizational Form – varying service levels, providers and standards

- **Service Reviews** - Detailed reviews of service delivery levels and performance help to assess delivery approached to ensure they are optimized and are continuing to deliver value at a reasonable cost. They are done periodically and involve a detailed examination of what services are provided, delivery methods, resource requirements, costs and available performance measures to identify opportunities for improvement.
- **Provincial Regulations** – Regulatory requirements vary across Canada and also shape service delivery. Producer responsibility legislation is shifting program delivery responsibilities away from municipalities. Changes are in progress in Ontario, including transition of the Blue Box Program to full producer responsibility by December 31, 2025. In BC, RecycleBC (formerly known as Multi-Material BC) took on full responsibility for recycling programs as of October 3, 2016. As a result of RecycleBC, homeowners are no longer charged a recycling utility for curbside recycling collection and now receive the basic recycling service at no cost through RecycleBC. RecycleBC is funded by retailers, manufacturers and restaurants, shifting costs for management of PPP away from homeowners. Materials accepted curbside from Vancouver households is consistent with materials accepted curbside from Surrey households and other municipal curbside collections across the province so that there is consistency across the program. Provincial EPR programs are available to both municipalities and across the province.

Ottawa Solid Waste Services has an approved staff complement of 73.4 full time equivalent positions in 2020 and is comprised of approximately 170 staff persons involved in the collection, processing and disposal of waste, along with the long term planning aspects of managing the waste. The staffing levels are a combination of permanent full-time employees as well as budgeted temporary positions for the In-House Operations for collection in two of the five curbside collection zones. Although they are budgeted, the temporary positions for In House Operations are established only for the duration of the collection contracts. Should the City's In-House Operations not be awarded a Zone, some or all of these positions would be eliminated. Responsibilities are broken down by each of



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the following five branches within Solid Waste Services, each headed by a Program Manager who report directly to the Director of Solid Waste Services:

- Waste Processing and Disposal
- Solid Waste Compliance
- Collections Operations
- Waste Collections
- Long-Term Planning

In terms of service delivery approach, the City has a mix of in-house and privately contracted out waste collection services, contracts out the processing of recyclables, SSO (excluding excess LYW) and HHW and owns, operates and maintains the following:

- the Trail Waste Facility landfill;
- PowerTrail - the Trail Waste Facility landfill gas utilization system, a public private partnership between the City and Energy Ottawa and operated by a contractor;
- the Springhill Landfill (which is operated by a contractor);
- the Barnsdale LYW composting pad;
- a yard for the City's waste collection vehicle fleet and 17 yards for equipment maintenance, roads clean up and on-street waste collection; and,
- 1,300 City parks and about 4,300 hectares of parkland where garbage and litter is managed.

The City also monitors several closed landfill sites, including the Nepean Landfill.

Table 16 provides staffing levels, service delivery models and the program/approach title researched in this sub-section on how service delivery approaches are being reviewed and adapted, noting the potential applicability to City of Ottawa customers in brackets. Table 17 provides detailed descriptions of the programs and approaches reviewed.



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Table 16: Service Delivery Approach & Staffing Levels

Jurisdiction	# of Full Time Equivalent Municipal Staff (2019)	Service Delivery Approach	Performance Measurement / Service Reviews
Halifax Regional Municipality (Single Tier)	19	<ul style="list-style-type: none"> Waste collection delivered by the private sector (all) Facilities owned by Halifax Regional Municipality and operated by the private sector (all) 	<ul style="list-style-type: none"> MBNC Reports MBNC results in annual budget
Durham Region (Upper Tier)	72.1	<ul style="list-style-type: none"> Mix of public and private sector ownership and operations for facilities (all) Waste collection completed by contracted forces (SF, MR) Co-ownership agreement with York Region for the Durham York Energy Centre 	<ul style="list-style-type: none"> MBNC MBNC results and program specific performance measures reported in annual budget
York Region (Upper Tier)	31	<ul style="list-style-type: none"> Responsible for processing and disposal of waste from nine local municipalities. Not responsible for waste collection. Mix of public and private sector 	<ul style="list-style-type: none"> MBNC MBNC results and program specific measures reported in budget and annual report



Jurisdiction	# of Full Time Equivalent Municipal Staff (2019)	Service Delivery Approach	Performance Measurement / Service Reviews
		ownership and operations for facilities (all) <ul style="list-style-type: none"> Co-ownership agreement with York Region for the Durham York Energy Centre 	
City of Markham (Lower Tier)	5	<ul style="list-style-type: none"> Responsible for waste collection (SF, MR) Waste collection delivered by the private sector. 	<ul style="list-style-type: none"> None
City of Guelph (Single Tier)	71	<ul style="list-style-type: none"> Responsible for collection, diversion, processing and residuals disposal In-house waste collection (SF, MR) Owns and operates composting facility, MRF, transfer station Mix of private and public operations 	<ul style="list-style-type: none"> Solid Waste Resources Business Service Review (all)
City of Toronto (Single Tier)	1,122.80	<ul style="list-style-type: none"> Responsible for collection, diversion, processing and residuals disposal Collection services delivered by both municipal and contracted services 	<ul style="list-style-type: none"> MBNC MBNC results and program specific performance measures reported in annual budget



Jurisdiction	# of Full Time Equivalent Municipal Staff (2019)	Service Delivery Approach	Performance Measurement / Service Reviews
		<ul style="list-style-type: none"> Mix of public and private sector ownership and operation of facilities (all) 	
Peel Region (Upper Tier)	196.8	<ul style="list-style-type: none"> Waste collection completed by private sector (SF, MR) Mix of public and private sector ownership and operations for facilities (all) 	<ul style="list-style-type: none"> MBNC MBNC results and program specific performance measures reported in annual budget
City of Calgary (Single Tier)	693	<ul style="list-style-type: none"> Responsible for collection, diversion, processing and residuals disposal Waste collection done through municipal services (SF, MR) Mix of public and private sector ownership and operations for facilities (all) 	<ul style="list-style-type: none"> MBNC MBNC results and program specific performance measures reported in annual budget
Metro Vancouver (Upper Tier)	39	<ul style="list-style-type: none"> Responsible for transfer, processing and disposal facilities (all) Mix of public and private sector ownership, private sector operations 	<ul style="list-style-type: none"> Program specific performance measures reported in annual budget



Jurisdiction	# of Full Time Equivalent Municipal Staff (2019)	Service Delivery Approach	Performance Measurement / Service Reviews
City of Vancouver (Lower Tier)	218.9	<ul style="list-style-type: none"> Responsible for waste collection (SF, MR), landfill operation (all) and zero waste depot operation (SF, MR) 	<ul style="list-style-type: none"> Program specific performance measures reported in annual budget
City of Surrey (Lower Tier)	20	<ul style="list-style-type: none"> Responsible for waste collection Public-private ownership of biofuels facility 	<ul style="list-style-type: none"> Program specific performance measures reported in annual budget

SF- Curbside residential, MR - Multi-residential, PPS - Parks and public spaces, CF - City facilities, PP - Partner Programs

Table 17: Service Delivery Models and Staffing Levels Scan Results

Jurisdiction	Strategies, Practices and Initiatives
Halifax Regional Municipality	<p>Staffing Levels Halifax Regional Municipality is a single tier municipality responsible for collection, diversion, processing and disposal of waste. The Waste Resources department has a total of 19 personnel consisting of a Manager (plus two support staff), a Program Manager - Engineering and Contract Services (plus six staff), a Team Lead - Education and Promotion (plus seven staff) and a Diversion Policy Coordinator.</p> <p>Municipal Ownership with Contracted Operations Halifax Regional Municipality has a fully contracted operation of its facilities and programs, while retaining ownership of facilities. All residential collection services are provided through private contract. Halifax Regional Municipality owns a MRF, two composting facilities, and one municipal solid waste processing facility and landfill, all of which are operated by the private sector. Halifax Regional Municipality provides curbside collection services to single family homes and all MR buildings up to a maximum of six units. MR buildings with seven or more units located in areas where municipal collection is already provided may also be eligible for curbside collection.</p>



Jurisdiction	Strategies, Practices and Initiatives
Durham Region	<p>Service Delivery Approach for Regional and Local Government Waste Collection</p> <p>Durham Region manages curbside collection of recyclables, organics, LYW and garbage in six of the eight local municipalities. The Region collects curbside blue box recyclables in the other two local municipalities who provide curbside garbage, LYW and Green Bin collection to single-family households. Durham Region also collects from 25,000 MR units and some BIAs.</p> <p>Mix of Public and Private Ownership and Operations The Region uses a mixture of publicly and privately owned and operated facilities including three drop-off depots, five MHSW facilities, seven closed landfills, one MRF, two composting (SSO/LYW) facilities and the Durham York Energy Centre (DYEC). The Region is in the midst of planning an organic waste AD with mixed waste processing facility to pre-sort all waste before being sent to the DYEC to ensure recovery of green bin and recyclable materials is maximized.</p> <p>Co-Ownership of the Durham York Energy Centre The DYEC is jointly owned by Durham and York Region. The terms are set out in an agreement (Co-Owners Agreement) between the two municipalities and include provisions for the capital contributions based on share of processing capacity (78.6% Durham and 21.4% York), ownership of the facility and lands, sharing of costs for upgrades over the life of the facility, capacity entitlement and sharing of unused capacity, operating costs, delivery of waste to the facility, facility management including the development of a Management Committee for oversight and term of 20 years.</p>
York Region	<p>Mix of Public and Private Ownership and Operations The Region owns and operates two Community Environment Centres, a transfer station, a yard waste depot, and three MHSW depots (with one also being a recycling depot). The MRF is owned by the Region and operations are contracted out. The Region contracts out the processing of Green Bin organics at private sector facilities. A portion of residual waste is sent to the Durham York Energy Centre (co-owned by Durham and York Region) while the remaining residual waste is sent to privately owned disposal facilities.</p>



Jurisdiction	Strategies, Practices and Initiatives
Guelph	<p>Solid Waste Resources Business Service Review</p> <p>The City of Guelph's Solid Waste Resources undertook a business services review of their operations in 2017 as part of the City's larger process to conduct business service reviews. The following lists the solid waste elements considered in the review with the current service delivery approach noted in brackets: collections (in-house), Green Bin material processing (own facility, contract operations), MRF (own and operate), leaf and yard waste processing (contract), MHSW management (own and operate), public drop-off depot (own and operate), transfer station (own and operate) and residual waste management (contract).</p> <p>The purpose of the review was to review the City's current services and determine if the service delivery approach exceeded or was in line with comparator municipalities or if changes needed to be made. The findings indicated that the City of Guelph meets or exceeds service levels of the other applicable municipalities in all but one waste service element (MRF) included in the scope of the review. The City has been implementing the approved recommendations coming out of the service review.</p>
Toronto	<p>Staffing Levels and Business Units</p> <p>The City of Toronto is a single tier municipality responsible for collection, diversion, processing and disposal of waste. Solid Waste Management Services provides waste services to all single-family and some MR and private sector customers (e.g., schools, City divisions) and has approximately 1,100 full time equivalent staff persons. The division operates under the following four business units:</p> <ul style="list-style-type: none"> • Collections and Litter Operations; • Infrastructure Development & Asset Management; • Policy, Planning and Support; and • Processing and Resource Management. <p>Mix of Public and Private Ownership and Operations</p> <p>Toronto has a mix of public and private operations and owns most of its major facilities, including the Green Lane Landfill, two AD facilities and seven transfer stations and MHSW depots. Recycling processing is a contracted service at a private sector MRF. Toronto has divided its single-family residential curbside program into four collection zones in which the City services two zones and the private sector (under contract) services the other two zones. The City conducted a review of collection costs in 2017 and</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>confirmed that the public/private operating model continues to be cost effective.</p> <p>The City also contracts out the front-end collection service to MR properties receiving City waste collection services (includes recycling and Green Bin).</p>
Peel Region	<p>General Service Delivery Approach</p> <p>Peel Region is an upper tier municipality responsible for collection, processing and disposal of waste for three local municipalities (cities of Brampton, Mississauga and the Town of Caledon). The Region uses a mix of public and contracted operations and ownership. The Region owns most of its major facilities including a MRF, two organics processing facilities and a curing site, six community recycling centres and a transfer station. Residual waste is disposed at a private sector site. The Region also uses privately owned organics processing facilities and transfer stations. The Region contracts out curbside and front-end collection services to MR properties receiving Regional waste collection services, and operation of one community recycling centre.</p>
Calgary	<p>Service Delivery Approach for and Review of Waste Collection Services</p> <p>The City uses its own staff to provide automated cart curbside collection for garbage, SSO and recyclables to single-family homes and some additional customers. MR complexes and businesses must establish their own waste hauler contract (City or private sector) for all garbage, recycling and SSO services. In 2015, the City reviewed its collection operations and confirmed the continuation of public operating model based on it being more cost effective than contracted services.</p> <p>Service Delivery Approach for Facilities</p> <p>The City owns and operates several drop-off recycling depots, MHSW drop-off locations and three landfills. The City owns and contracts out the operations of a composting facility that was recently constructed to complement the curbside food and yard waste collection program.</p> <p>Commercial and MR SSO is processed by a number of private composting facilities. A MRF in Calgary is owned and operated by a private company, with which the City contracts to sort and recover recyclables. No transfer stations are operated by the City.</p>



Jurisdiction	Strategies, Practices and Initiatives
Metro Vancouver	<p>General Responsibilities and Service Delivery Approach</p> <p>Metro Vancouver is a Regional District for 21 municipalities, one electoral district and one Treaty First Nation. Metro Vancouver is responsible for waste reduction, recycling planning and the operation of a series of solid waste facilities in the region.</p> <p>Metro Vancouver owns 5 waste transfer stations across the region and one waste-to-energy facility. Operations of all of these facilities are contracted out.</p>
Vancouver	<p>Responsibilities and Service Delivery Approach</p> <p>The City of Vancouver is a lower tier municipality in Metro Vancouver. The Waste Reduction and Recovery Department is responsible for garbage and organics collection. The City of Vancouver also owns and operates the regional landfill, a transfer station and a zero waste centre (drop-off depot for reuse and recycling). The City elected to hand over recycling collection to RecycleBC and therefore no longer collects recyclables from households. The City collects garbage, organics and leaf and yard waste from single family homes and duplexes. Waste collection services are not provided to most apartments or condos and for those on the City's service, materials are collected in wheeled carts only.</p>
Surrey	<p>Service Delivery Approach</p> <p>The City of Surrey is a lower tier municipality in Metro Vancouver. The Solid Waste section is responsible for the collection of garbage, recycling and organics from approximately 100,000 single-family and 36,000 MR customers. Waste collection is conducted by the private sector. As a result of RecycleBC the City chose to continue to act as the curbside collector under the new recycling system and receives payment from RecycleBC to deliver this service. The City has relinquished their ability to sell recyclables which are turned over to RecycleBC.</p> <p>The City entered into a public-private partnership for the ownership of the Biofuel facility to process organic waste and contracts out the operations.</p>



2.8 Funding Models for the Provision of Solid Waste Services

There are different models to fund the many aspects of a solid waste management system. Charging user fees can fully or partially recover costs for services from system users to reduce the burden on general property taxes, provide incentives to change behavior to reduce or divert waste, increase participation of diversion programs and provide a means of distributing costs more fairly among waste management system users.

The City of Ottawa provides the following programs and services:

- Collection and Disposal of Residential and some IC&I Waste (multi-residential building and small businesses through the City's Yellow Bag program);
- Residential Waste Diversion Programs;
- Operational Planning;
- Landfill Operations;
- Compliance Management; and,
- Asset Management.

The programs and services are funded directly through a variety of sources, including an annual per household user fee rate, general property taxes, revenues and user fees. More specifically, the per household fee funds residual garbage collection and disposal, landfill operations and compliance, long term planning, capital replacement costs, some administrative overhead as well as a contribution to the landfill closure/post closure liability. The general tax levy funds all diversion related costs including recycling and green bin collection and processing, household hazardous waste as well as graffiti and soil management. The 2020 solid waste user fees are \$96 per property (curbside) and \$56.50 per MR unit (containerized), while the tax levy is approximately \$39 per year for the average household. Businesses, through the Yellow Bag program, are able to purchase yellow bags in packages of four for \$16.00 (January 1, 2020 rate); no additional fees are charged for recycling and SSO to be collected. Tipping fees are charged at the Trail Road Facility based on type of material and are available on the City's [website](#). The 2020 fee for residential, commercial, demolition and construction garbage is \$110/tonne and for loads <100 kilograms there is a flat rate of \$11.20 per load. It is important to note that the IC&I



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sector also funds diversion costs via the general tax levy, although they don't receive the service from the City. Furthermore, the IC&I sector partially funds landfill costs via the tipping fees charged at the Trail Waste Facility for IC&I waste disposed at the facility.

The City receives funding for the Blue and Black Box program, MHSW, used tires and electronic waste through the Resource Productivity and Recovery Authority (RPPA). For 2019, this funding source amounted to approximately \$5.8 million. It should be noted that this funding will be changed/eliminated in the future with changes to diversion program regulations.

Table 18 provides a summary of the jurisdictions included (Halifax Regional Municipality, Toronto, Durham, Calgary, Metro Vancouver, Vancouver and Surrey), the 2019 gross and net budget for each municipality, program/approach title researched in this sub-section and the potential applicability to City of Ottawa customers noted in brackets.

Table 19 provides detailed descriptions of the programs and approaches reviewed.

Table 18: Funding Models for the Provision of Solid Waste Management Services

Jurisdiction	2019 Gross Operating Budget*	2019 Net Operating Budget**	Funding Models for the Provision of Solid Waste Management Services
Halifax Regional Municipality	Not published	\$33.7 M	<ul style="list-style-type: none"> Municipal Taxes and Tipping Fees (SF, MR, PP)
Durham Region	\$82.2 M	\$48.5 M	<ul style="list-style-type: none"> Partial Pay-As-You-Throw Program (SF)
City of Toronto	\$391.6 M	(\$20.0 M)	<ul style="list-style-type: none"> Rate-Based System (SF, MR, PP) Garbage Bag Tags (all) Tipping Fees at Drop-Off Depots (SF, MR, PP)
City of Calgary	\$172.5 M	\$20.8 M	<ul style="list-style-type: none"> User Fees (SF, MR, CF, PP) Tag-A-Bag Program (SF, MR) Throw 'n' Go Areas (SF, MR, PPS)
Metro Vancouver	\$107.2 M	(\$4.1 M)	<ul style="list-style-type: none"> Generator Levy (all)

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Jurisdiction	2019 Gross Operating Budget*	2019 Net Operating Budget**	Funding Models for the Provision of Solid Waste Management Services
			<ul style="list-style-type: none"> Garbage Tipping Fees (SF, MR, CF, PP)
City of Vancouver	\$74 M	(\$5.7 M)	<ul style="list-style-type: none"> Generator Levy and Surcharges (all) Garbage Tipping Fees (SF, MR, CF, PP) Solid Waste Utility (SF, MR, CF, PP)
City of Surrey	\$36.9 M	(\$6.0 M)	<ul style="list-style-type: none"> Generator Levy and Surcharges (all) Solid Waste Utility (SF, MR, CF, PP) Additional Annual Fee to Upsize or Increase Number of Collection Carts (SF, MR)

SF- Curbside residential, MR - Multi-residential, PPS - Parks and public spaces, CF - City facilities, PP - Partner Programs

*Gross Operating Budget is the total operating budget for the services provided from the jurisdiction as per Council approved budgets.

**Net Operating Budget is the operating budget after all revenue sources, including user fees (e.g., tipping fees, user fees, user rates. etc.) and other funding sources (e.g., sale of recyclable material, stewardship funding, etc.) as per Council approved budgets. Municipalities with negative net operating budgets make contributions to capital.

Table 19: Funding Models for the Provision of Solid Waste Services Scan Results

Jurisdiction	Strategies, Practices and Initiatives
Halifax Regional Municipality	<p>Municipal Taxes and Tipping Fees</p> <p>Funding for the municipality's waste management system (residential collection, transfer, diversion, disposal and other waste management services) is generated from municipal taxes, revenue from IC&I tipping fees at Halifax Regional Municipality facilities and through various Divert Nova Scotia programs (e.g., Municipal Diversion Credits program, Enforcement Funding program, MHSW program). The various diversion programs are typically stewardship agreements (tires, electronics, paints, milk packaging, etc.) while the remainder of the programs are provincially supported and are targeted at other items that are banned from landfill disposal (e.g. refundables and other blue bag recyclable items).</p> <p>Halifax Regional Municipality set tipping fees at facilities under their control, namely the Otter Lake Waste Processing and Disposal Facility (garbage), the Ragged Lake and Burnside Composting Facilities (SSO) and the Bayers Lake Recycling Facility (recyclables). Tip fees are</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>established in collaboration with contracted facility operators to meet the terms of operational agreements and encourage diversion. 2019 tip fees for garbage are \$10 per 100 kg. Loads that are less than 100 kg are charged a minimum of \$5.</p>
Toronto	<p>Rate-Based System for Residential and Commercial Customers</p> <p>Toronto Solid Waste operates as a rate-based service and has eliminated all IC&I cross subsidy of the residential program and reliance on property taxes. All solid waste operations are self-sustaining and costs are recovered by a variety of user fees to fully recover all costs for waste management services. The various revenue sources result in a negative net budget that is balanced to zero through transfers to reserves to fund capital. Rate categories include: residential home owners (SF); apartments above businesses; multi-residential buildings; businesses; charities, institutions and organizations; and fees at drop off depots. All fees are available on the City's website: https://www.toronto.ca/services-payments/property-taxes-utilities/utility-bill/solid-waste-rates/</p> <p>Toronto has a variable cart program in which residents pay a different fee based on the size of the garbage cart and the rate increases as the size of the garbage cart increases. For single family, 2019 fees ranged from \$259.75 (small cart – 75 litres) to \$496.73 (extra-large cart – 260 litres). Financial relief is available for low income seniors and low income persons living with a disability through an application process. Rebates are available for small and medium carts (120 litres) and in 2019 reduced the fee to \$99.71 for a small cart and \$241.63 for a medium cart. Rates for 2020 increased by a blended increase of 2.45 per cent. The rebate for 2020 will not be finalized until the tax supported budget is approved in February 2020. It is the City's intention to phase out the rebate by 2022 to transition to a sustainable utility model. Annual rates are billed to the City's utility bill based on the size of the garbage bins registered for the property. The City of Toronto bundles all waste management and waste diversion system costs into the garbage collection fee which covers garbage collection and disposal, Blue Bin collection and processing, Green Bin collection and processing, leaf and yard waste collection and processing, and other waste diversion activities. The pricing structure for the carts provides a financial incentive to reduce garbage and use the diversion programs.</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>Waste management services are also provided to the MR sector and fees are based on the overall volume of garbage. Similar to the residential rates, MR fees include the costs for Blue Bin, Green Bin, leaf and yard waste and other waste diversion activities. The MR rate is a base fee of \$215.37 per unit per year and fees apply for excess garbage. A fees estimator (excel spreadsheet) is provided on the City's website as a tool for buildings to estimate fees depending on the type of collection service (curbside, front-end bin) and number of units.</p> <p>The City also operates a commercial garbage subscription program for small commercial establishments in which an annual fee (\$287.74 in 2019) is charged to businesses for garbage bins.</p> <p>Garbage Bag Tags Extra garbage tags may also be purchased for a fee (\$26.90 for one sheet – 5 bag tags). The fee covers the cost of diversion programs, such as Blue Bin recycling and Green Bin organics but these services are only provided to customers using authorized bags/bins/carts/front-end containers for City garbage collection.</p> <p>Tipping Fees at Drop-Off Depots Tipping fees are also charged for drop-off of materials at City drop-off depots. The 2020 tipping fees are \$127.22/tonne and there is a flat fee of \$12.73 for garbage and renovation waste loads under 100 kg.</p>
Durham Region	<p>Partial Pay-As-You-Throw Durham Region has a partial pay-as-you-throw program which allows residents to place up to four bags of garbage at the curb (bi-weekly) without being tagged. Any additional garbage must have tags that cost \$2.50 each. The remainder of fees are paid through property taxes. The average 2019 property tax bill for solid waste management was \$197.00. All households that are eligible for waste collection (as defined in by-law 46-2011) pay for the service, regardless if service can be provided due to physical constraints (e.g., turning radii are too small for waste collection vehicles). In instances where there are physical constraints and Durham Region cannot provide service, the property must pay for private collection in addition to the fee on their property tax. The partial PAYT system</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>provides a financial incentive to stay within the four bag limit and flexibility to place out additional waste for a fee.</p> <p>Currently, 400 apartment buildings and townhouse sites receive collection. The by-law states that if any garbage collected from MR buildings are in excess of the garbage bag limit they may be subject to a collection fee; however, to-date this has not been charged to any MR building as Durham Region does not have scales on waste collection vehicles to determine the weight of materials disposed of at individual MR buildings.</p>
Calgary	<p>User Fees that Represent True Cost of Services</p> <p>Funding for waste management is generated from a mandatory monthly cart program user fee for each of the carts (black, blue and green) provided. In 2019, the Black Cart (garbage) fee was \$6.85 per month and the Blue Cart fee was \$8.80 per month (an increase of \$0.30 from 2018 due to increased recycling contract costs). The Green Cart fee was originally subsidized with \$20 million from annual property taxes; however, it was removed for 2019 so that the public understands the true cost of the service and that the users of the service are paying for the full cost of services they are receiving. In 2018, the full Green Cart program cost was \$9.00 per month but with the \$2.50 tax subsidy, \$6.50 was reflected on the monthly utility bill. The 2019 rate was calculated as follows: \$9.00 (program cost) minus \$0.50 (cost savings from bi-weekly winter collection) + \$0.15 (inflation) = \$8.65 per month. Revenue generated by the sale of recyclables and compost offsets the monthly fees of the Blue and Green Cart programs.</p> <p>The City is contemplating a variable set-out PAYT program using RFID, where customers are charged based on how often their cart is set out for collection. Pilots will be undertaken in 2020/2021 looking at current cart set-out behaviour, costs associated with tracking cart collection, benefits of the program, impact to revenue and value customers place on a variable set-out billing program.²</p>

² <https://pub-calgary.escribemeetings.com/Meeting.aspx?Id=ef42ecbf-6637-4a6d-97f2-b863cbd906c1&Agenda=PostMinutes&lang=English&Item=28>



Jurisdiction	Strategies, Practices and Initiatives
	<p>The City does not service MR buildings as there is a mix of public / private collectors. MR buildings can choose the services they would like to receive (noting that the City does not provide any MR building recycling collection) and the standard for development permits is 3 yd³ of waste (garbage, recycling and organics) per every ten units. A 3 yd³ waste bin is approximately \$155/month and a 3 yd³ organics bin is \$75/month per MR building if the City collects these materials.</p> <p>Tag-a-Bag Program A tag-a-bag program for excess garbage has been recently approved by City Council with residents being able to purchase a \$3 tag for excess garbage starting in mid-2020.</p> <p>Throw ‘n Go Areas Residential customers are provided with Throw ‘n’ Go areas allowing residents to conveniently dispose of a variety of items not accepted in regular collection. Minimum charges (\$25 per load) or tonnage fees apply to a number of items including mattresses, large appliances, vacuums, furniture, LYW, lawnmowers, C&D materials and paper and cardboard.</p> <p>Landfill Revenues In 2018, the City reduced landfill tipping fees (\$113 per tonne in 2019) to attract more commercial waste and implemented monthly disposal rates for facility account customers to generate revenue for landfill operation and maintenance and capital costs.</p>
Metro Vancouver	<p>Generator Levy As of 2018, Metro Vancouver applied a Generator Levy set at \$42 per tonne at each of the eight facilities (transfer stations, Energy from Waste facility, landfill). The Generator Levy is intended to ensure that fixed costs for activities such as transfer stations and solid waste planning are funded by all mixed municipal solid waste generators in the region whether or not waste from those generators is delivered to Metro Vancouver and/or City of Vancouver waste facilities. The Generator Levy is included in tipping fees for any waste delivered to Metro Vancouver or City of Vancouver disposal facilities and would be remitted by waste haulers to Metro Vancouver for any mixed municipal solid waste not delivered to these disposal facilities.</p> <p>Garbage Tipping Fees</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>Starting January 1, 2020 garbage tipping fees will increase by \$5 per tonne except for large loads (greater than 9 tonnes), which will increase by \$9 per tonne. The new fees will be \$147 per tonne (<1 tonne), \$125 per tonne (1-9 tonnes) and \$99 per tonne (>9 tonnes). Municipal waste is accepted at \$113 per tonne. A transaction fee of \$5 is charged for each load of material received to cover the fixed costs of facility operations. The lower commercial tipping fee is intended to decrease the export of commercial waste outside of the Region.</p>
Vancouver	<p>Generator Levy and Surcharges The City implemented the Metro Vancouver Generator Levy in 2018 as described above. The cost to operate the Vancouver South Transfer Station and the Vancouver Landfill, including capital costs funded from reserves, are recovered through tipping fee revenues. Tipping fees set for the landfill and transfer station are based on those established by Metro Vancouver. A minimum surcharge of \$65 is applied to garbage loads containing one or more banned or hazardous item. A 50 percent surcharge is applied to loads containing >5 percent recyclable materials, and starting in July 2018 a 100 percent surcharge was applied to loads containing over 20 percent expanded polystyrene packaging.</p> <p>Solid Waste Utility Like Toronto, Vancouver offers a variable cart program in which residents pay a different flat annual utility rate based on the size of the garbage and green cart (higher rate for larger cart). Five variable cart sizes are available (from 75 L to 360 L) for garbage carts and four are available for Green Carts (120 L to 360 L). 2019 annual rates for garbage range from \$83 for the smallest bin (30 kg limit) up to \$163 for the largest bin (150 kg limit) for bi-weekly garbage collection (\$106 to \$196 for weekly collection). Annual rates for green carts range from \$126 (120 L cart) to \$214 (360 L cart). This encourages residents to save money and use the most efficient bin size per household. Annual rates are billed to resident's property taxes for garbage and Green Bin collection. Residents can put out excess garbage by buying a tag for \$2.</p> <p>The City provides garbage and organics collection for a limited number of MR and commercial buildings; however private haulers are typically contracted to collect garbage and food/yard waste for these customers. For MR properties that receive City collection services, a</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>minimum size and quantity of carts are provided based on the number of units which also determines the annual rate. For example, for a five unit MR building the annual garbage fee is \$163 for a total of 360 L; however, for a 15 unit MR building the annual garbage fee is \$404 for a total of 720 L.</p> <p>Vancouver residents are not charged a curbside recycling utility fee as they receive recycling collection at no cost. As of October 3, 2016, RecycleBC is responsible for curbside recycling collection and is funded by retailers, manufacturers and restaurants that supply packaging and paper products. MR buildings may opt out of the RecycleBC program by selecting a different service provider, however recycling costs will not be offset by RecycleBC.</p>
Surrey	<p>Additional Annual Fee to Upsize or Increase Number of Collection Carts</p> <p>The City of Surrey provides five different sized carts for waste collection and charges an additional \$145 per year for residents wishing to upsize the standard 240 L garbage cart for curbside collection to a 360 L. For additional garbage carts requested above the basic standard carts issued, residents pay either \$145 per year (80 L/120 L), \$290 per year (180 L/240 L) or \$429 per year (360 L) extra (2019 rates).</p>

2.9 Legislation Targeting Waste Management / Diversion

In Canada, waste management systems are impacted by regulations from all three levels of government (federal, provincial and municipal). Waste reduction and diversion policies and programs, regulations and standards for the transportation of waste and the approval and monitoring of waste management facilities and operations are established by the federal and provincial governments. Refer to the Legislative Review Memo and the Review of Policy and Trends Memo, as well as previous sections of this Memo for descriptions of relevant federal and provincial waste policies and programs and legislative instruments.

Waste management in Canada is primarily regulated at the provincial level. The provinces set specific targets and direction for municipalities and the City of Ottawa's solid waste management services and programs are strongly influenced by these federal and



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provincial requirements. Municipalities are typically responsible for managing the collection, recycling, composting and disposal of household waste in accordance with the policies and regulations established by the provincial and federal government.

Municipalities are delegated powers under their provincial *Municipal Act* to govern within their jurisdiction. The *Municipal Act* gives municipalities broad powers to pass by-laws and govern within their jurisdiction. Legislative changes are effective in controlling and protecting the operation of the waste management system and improving waste diversion if properly enforced. It is noted that these powers to pass by-laws for various activities (e.g., regulating activities, issuing licenses, charging fees, etc.) vary within and between provinces. The *Municipal Act, 2001* sets out rules for all Ontario municipalities except the City of Toronto, which has unique and additional powers under the *City of Toronto Act* as the Province's largest municipality. Responsibilities and powers are further set out in the act establishing the municipal jurisdiction (e.g., *City of Ottawa Act, 1999*).

The City of Ottawa is required to collect, transport, process and dispose of waste for the single-family residential sector, which includes curbside collection of garbage (including bulky items), and designated Blue and Black Box materials as well as the drop-off events for MHSW. SSO and Christmas trees are not mandatory to collect but are a part of City programs.

Table 20 provides a summary of the jurisdictions included (Halifax Regional Municipality, Markham, Guelph, Toronto, Calgary, Metro Vancouver and Vancouver), the program/approach title researched in this sub-section and the potential applicability to City of Ottawa customers noted in brackets.

Table 21 provides detailed descriptions of the programs and approaches reviewed.



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Table 20: Programs and Initiatives Related to Legislation Targeting Waste Management and Diversion

Jurisdiction	Legislation Targeting Waste Management and Diversion
Halifax Regional Municipality	<ul style="list-style-type: none"> Provincial Landfill Disposal Bans (all) Mandatory Participation in Diversion Programs (SF, MR, CF, PP) C&D Diversion (SF, MR, CF, PP) Flow Control By-law (all)
City of Markham	<ul style="list-style-type: none"> Mandatory Recycling (SF, MR) Development Standards (MR, CF, PP)
City of Guelph	<ul style="list-style-type: none"> Grass Clipping Ban (SF, MR) Medical Waste Restrictions (PP) MR Collection (MR)
City of Toronto	<ul style="list-style-type: none"> By-law to Require Participation in Diversion Programs (SF, MR, CF, PP) Development Standards (MR, CF, PP) Adapt Policy (PP)
City of Calgary	<ul style="list-style-type: none"> Disposal Fees (SF, MR, PP) Disposal Bans and Surcharges (all) Mandatory Diversion from MR and Businesses (MR, PP) Provincial EPR Programs (all)
Metro Vancouver	<ul style="list-style-type: none"> Disposal Bans and Surcharges (all) C&D Sector Diversion (SF, MR, CF, PP)
City of Vancouver	<ul style="list-style-type: none"> SUI Reduction Strategy and By-laws (all)

SF- Curbside residential, MR - Multi-residential, PPS - Parks and public spaces, CF - City facilities, PP - Partner Programs

Table 21: Legislation Targeting Waste Management / Diversion Scan Results

Jurisdiction	Strategies, Practices and Initiatives
Halifax Regional Municipality	Provincial Landfill Disposal Bans Provincial Solid Waste Resource Management Regulations define landfill disposal bans for a wide variety of materials including electronic waste,



Jurisdiction	Strategies, Practices and Initiatives
	<p>redeemable beverage containers, recyclable paper, recyclable containers, used tires, automotive lead-acid batteries, hazardous waste, and compostable organic material. Halifax Regional Municipality's program focuses on source-separation requirements for recyclables and organic materials, with the majority of other items being covered by stewardship programs.</p> <p>Mandatory Participation in Diversion Programs By-law S-600, Respecting Solid Waste Resource Collection and Disposal is the primary By-law within the municipality targeting waste management and diversion in support of the programs and services offered by Halifax Regional Municipality and the Provincial waste bans. All single-family residents, MR buildings and IC&I establishments must separate waste into two stream recyclables and organics. IC&I establishments (including MR buildings) must provide adequate space and proper signage for the bins.</p> <p>C&D Diversion C&D material is also banned from Halifax Regional Municipality's municipal solid waste landfill and must go to licensed processing facilities (defined in a municipal By-law). Licensing designations for C&D facilities in Halifax Regional Municipality include transfer (CD-1), processing (CD-2) and landfilling (CD-3). Halifax Regional Municipality has a mandated C&D material diversion rate of 75% for all C&D facility licensees.</p> <p>Flow Control By-law A flow control by-law is also in place in Halifax Regional Municipality to prevent waste export to lower cost (no diversion) disposal sites outside of the Municipality, but enforcement is limited in scope. The by-law was initially intended for IC&I, municipal solid waste and C&D; however, the by-law was amended shortly after its inception in 2002 based on a ruling from the Supreme Court of Nova Scotia on the basis that the provisions in the <i>Municipal Government Act</i> of Nova Scotia do not provide municipalities such as Halifax with the power to create monopolies or to impose flow controls based on such monopolies. The by-law is currently only in place for C&D materials.</p>
Markham	<p>Mandatory Recycling All residents (single-family and multi-family residential properties) must participate in recycling and Green Bin programs to receive garbage</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>collection. Markham has a curbside ban on grass clippings, textiles, MHSW and electronic waste through By-law 32-95. These material bans are being effectively enforced through the City's clear bag program as described in Section 2.2.</p> <p>Development Standards</p> <p>The local municipalities within York Region are responsible for development plans. Markham has built into its development standards that new MR buildings must establish three stream collection ensuring that waste diversion is as convenient as garbage disposal. This also applies to new commercial and office buildings. All MR buildings must use Markham collection services and must participate in waste diversion programs. The development agreements require Council approval and the collection by-law requires adherence with development standards to be eligible for collection.</p> <p>Markham requires developers to post letters of credit (ranging from \$5,000 to \$50,000) for all new MR and commercial buildings that go through Planning Approvals. The letters of credit help ensure that the developers develop and maintain convenient recycling and organics collection systems. After two years, staff will inspect the buildings to ensure that the diversion program is working properly and the building has met the City's design and operating requirements. If a building passes inspection, the letter of credit is cancelled, if not, the owner is given a set time to correct the problem. The policy was amended in 2016 to require an additional letter of credit of \$50,000 for buildings incorporating automated recycling systems to ensure that high quality systems are installed and operating.</p>
Guelph	<p>By-law (2019) - 20392 is the main by-law for the management of waste within the City of Guelph and was recently updated in March 2019 to include changes for MR collection services, grass clippings and medical waste collection as described below. Recent by-law changes include:</p> <ul style="list-style-type: none"> • Enabling MR properties to apply for waste collection services (all streams) • Formalizing a standard level for collection services (e.g., frequency of collection, number and size of carts available to residents); • Adding procedures, practices, and policies in place at the Waste Resource Innovation Centre; and • Removing references to outdated practices, policies, and procedures.



Jurisdiction	Strategies, Practices and Initiatives
	<p>Grass Clippings Ban After April 1, 2020 Guelph will begin enforcing a ban on grass clippings. This material is now defined as a non-collectable waste under the waste management waste by-law and will not be accepted in any waste stream including the curbside organics or yard waste collection programs. Guelph stated in a City Council report one of the reasons for the ban was the added costs to the City's collection and organic processing operations. Before the ban in 2020, Guelph will increase P&E efforts to increase awareness on how to properly manage grass clippings, with a focus on leaving them on the lawn as a way to support healthy lawn growth.</p> <p>Medical Waste Restrictions In April of 2019 Guelph ceased all waste collection from facilities that generate medical waste. The facilities include doctor and dentist offices, veterinary clinics and tattoo parlours. The City began communicating this change to the facilities in January of 2019 in order for them to arrange for private waste collection. The change was made for health and safety reasons related to collection and processing waste materials. Biomedical waste is a non-collectable waste under the City's waste management by-law and under provincial regulations.</p> <p>MR Collection Under the March 2019 updates to the waste management by-law, Guelph started collecting from MR properties in the spring of 2019. Under the by-law a MR property is a property with six or more dwelling units. The by-law includes an application process to request collection services, however, participation is not mandatory. The City expects to onboard up to two MR properties per week. This added collection service will increase the amount of recyclables and organics being diverted from landfills.</p>
Toronto	<p>By-law to Require Participation in Diversion Programs The City has a number of by-laws and standards which incentivize and mandate participation in diversion programs; however, MR buildings that have private collection are not required to follow the same standards as those that receive City collection. The City is considering passing a by-law that would apply to all MR buildings, regardless of their service provider mandating City-wide waste diversion requirements. Preliminary public</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>consultation was conducted in 2017 and the City is currently investigation implementing this by-law.</p> <p>The City's waste collection by-laws require all customers, including MR developments, to participate in the Blue Bin and Green Bin collection programs and to receive garbage collection.</p> <p>Development Standards Development standards for new buildings are set out in the Toronto Green Standard. It includes a range of sustainability standards including solid waste for various building types (both City owned facilities and agencies). The standard was introduced in 2006 on a voluntary basis and the third version of the standards took effect in 2018. Toronto has also built into its development standards that new MR buildings must establish a three-stream collection system that ensures that waste diversion is as convenient as garbage disposal. Buildings can construct a three chute system on every floor, a three stream collection station on every floor, or a tri-sorter approach. Buildings can also choose to not install a chute system at all and have all residents/tenants take their materials to a common storage location.</p> <p>Adapt Policy The City has implemented the Adapt Policy (May 2018) to help Toronto better tackle new and emerging packaging materials such as compostable and biodegradable packaging, that are introduced into the market without being tested for their compatibility with municipal end-use processing facilities and end market demands. The policy is applied to any producer who wants to bring new packaging into Toronto's recycling or composting program (e.g., compostable coffee pods). It identifies a process to request a new material (various channels) and steps for approval, including an initial review by the General Manager, assess policy considerations (e.g., circular economy, triple bottom line, alignment with provincial/federal policies, implications on service agreements) and determine if material testing should proceed at a processing facility, and material testing sponsor agreement including recovery of associated costs, educating residents if accepted, and assessing impacts on the solid waste management system.</p>
Calgary	In accordance with the City's 2025 70% waste diversion goal, the City implemented a number of rate and by-law amendments requiring recycling



Jurisdiction	Strategies, Practices and Initiatives
	<p>and food and yard waste diversion for single-family homes, multi-family complexes (with five or more units) and businesses and organizations.</p> <p>Disposal Fees The City increased disposal fees for commercial loads containing paper, cardboard, food and yard waste disposed at City landfills. Waste disposal and recycling rates are mandated by the Waste & Recycling By-law and include monthly disposal rates for facility account customers and collection cart program rates. Differential disposal rates are provided by City landfills for basic sanitary waste, industrial waste, recyclable materials and compostable material.</p> <p>Disposal Bans and Surcharges More recently, Calgary implemented disposal bans at City Landfills on recyclable materials, organics, wood waste and C&D waste. Loads of commercial garbage must contain less than 10% recyclable materials, less than 20% or more of food and yard waste and/or less than 10% C&D materials or are subject to a disposal surcharge (\$180 per tonne).</p> <p>Mandatory Diversion from MR and Businesses The Waste & Recycling By-law is the main by-law that governs how and what materials are managed and disposed of in the City. As of February 1, 2016, the By-law requires multi-family complexes to provide recycling for residents and requires the same for business and organizations as of November 1, 2016. The City also has a Food and Yard Waste By-law mandating multi-family complexes and business and organizations to separate food and yard waste from the garbage waste stream, as of November 1, 2017. To aid multi-family complexes and businesses in meeting the by-law changes, the City provide support services to implement waste diversion programs, such as waste-audit kits, presentations by City staff, posters, case studies and other online material.</p>
Metro Vancouver	<p>Disposal Bans and Surcharges As per By-law No. 306, 2017 - Tipping Fee and Solid Waste Regulation By-law, disposal facilities owned by Metro Vancouver all have disposal bans for organics, recyclable materials, hazardous materials, wood waste and stewardship materials. Surcharges apply if these materials are found in the garbage at Metro Vancouver disposal facilities. A \$65 minimum surcharge, plus the potential cost of removal, clean-up or remediation will be applied to</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>loads containing banned hazardous and operational impact materials or product stewardship materials. A surcharge of 50 percent of the tipping fee on the entire load will be applied to loads containing banned recyclable materials, and a surcharge of 100 percent of the tipping fee will be applied to loads containing over 20 percent expanded polystyrene packaging.</p> <p>C&D Sector Diversion</p> <p>Metro Vancouver has been targeting recycling in the C&D sector as a method to achieving the region's waste diversion goals. Metro Vancouver has the authority to regulate, prohibit or impose requirements on certain activities that affect people and property. This includes setting rules for garbage collection, disposal and waste diversion for all sectors where waste is disposed at their facility.</p> <p>Initiatives such as the Clean Wood Disposal Ban, Recyclable Materials Ban and Drywall Ban are proving effective by contributing to a reduction in the amount of divertible materials in the C&D waste stream. Wood waste is 56.5% of C&D waste in Metro Vancouver. Metro Vancouver has also developed a demolition, land clearing and construction Waste Management Tool Kit. This guide is intended to help contractors, designers and building owners maximize the amount of C&D waste diverted from disposal through salvage, reuse and recycling.</p>
Vancouver	<p>Single-Use Item (SUI) Reduction Strategy & By-laws</p> <p>On June 5, 2018, City Council approved the SUI Reduction Strategy for a made-in-Vancouver strategy to reduce waste from SUIs. The Strategy includes plastic and paper shopping bags, cups, containers, foam, straws and utensils and includes all material types - not just plastic. On November 28, 2019, City Council approved new by-laws to reflect the strategy and a phased approach to ban items over the next several years, starting with a ban on foam cups and foam take-out containers on January 1, 2020. Plastic and compostable plastic straws are proposed to be banned by April 22, 2020. On January 1, 2021 a ban on plastic bags with fees on paper (\$0.15 increasing to \$0.25 in the second year) and reusable bags (\$1 increasing to \$2 in the second year) is proposed, as well as a \$0.25 minimum fee on all disposable cups and by-request requirement for single-use utensils. City staff are currently working with Vancouver Coastal Health to explore opportunities to launch a reusable takeout container program in Vancouver. Additional</p>



Jurisdiction	Strategies, Practices and Initiatives
	efforts are currently being undertaken to encourage a mug share program throughout the City.

2.10 Waste Reduction and Management Practices in Municipal Buildings, Yards and Operations

Many municipalities implement waste reduction and management practices at their City facilities as an extension of the programs offered to curbside residential, MR and IC&I properties.

The City provides curbside collection service to approximately 150 City facilities that do not exceed the residential garbage limit of six items of garbage every 14 days. These properties include facilities such as libraries, community centres and fire stations. City facilities that exceed the residential garbage limit are serviced through the containerized collection service. In terms of current practices, garbage bins have been removed from all desks at City Hall and the Solid Waste Services administration building at the Trail Waste facility, where there are centralized garbage collection in common areas and kitchens. There is also a scrap metal recycling program in place.

Table 22 provides a summary of the jurisdictions included (Halifax Regional Municipality, Durham Region, York Region, Markham, and Toronto), the program/approach title researched in this sub-section and the potential applicability to City of Ottawa customers noted in brackets.

Table 23 provides detailed descriptions of the programs and approaches reviewed for waste management and reduction practices in municipal buildings, yards, and operations (e.g. low income housing, long term care, fleet).



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Table 22: Programs and Initiatives Related to Waste Reduction and Management Practices in City Facilities

Jurisdiction	Waste Management and reduction practices in municipal buildings, yards, operations (low income housing, long-term care, fleet)
Halifax Regional Municipality	<ul style="list-style-type: none"> • Clear Bag Limit (CF, PP)
Durham Region	<ul style="list-style-type: none"> • Elimination of bottled water, reduction in single-use items at Regional Headquarters (CF)
York Region	<ul style="list-style-type: none"> • RCO 3Rs Gold Certified Building (CF) • Sustainable Products Policy (CF)
City of Markham	<ul style="list-style-type: none"> • Zero Waste Policy (CF) • Indoor Composting (CF, PP)
City of Toronto	<ul style="list-style-type: none"> • Various (charges for collection, waste diversion plans, plastic water bottle ban (CF)

SF- Curbside residential, MR - Multi-residential, PPS - Parks and public spaces, CF - City facilities, PP - Partner Programs

Table 23: Waste Reduction and Management Practices in City Facilities Scan Results

Jurisdiction	Strategies, Practices and Initiatives
Halifax Regional Municipality	<p>Clear Bag Limit</p> <p>Any Halifax Regional Municipality municipal facilities that qualify for municipal solid waste collection must meet the six bag clear bag limit for municipal solid waste collection, which allows one opaque “privacy” bag. If the bags are contaminated with recyclables, food waste, or other prohibited items they are not collected. Most facilities are not serviced by municipal collection and instead must hire private haulers for their waste collection needs. There are no limits or restrictions on the waste collection for these facilities as they would be responsible for commercial hauling rates.</p>
Durham Region	<p>Eliminating Single Use Plastics at Regional Headquarters</p> <p>In April 2019, the Region eliminated the sale of bottled water at its Headquarters, installed two water refilling stations, require compostable take out containers at its cafeteria along with compostable paper straws.</p>
York Region	<p>York Region has explored approaches to reducing waste at York Region facilities including revamping its waste signage in York facilities to</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>incorporate waste reduction messaging and improve diversion. The Region offers three-stream services (residual waste, recycling and organics) at some Regional facilities, depending on the operations.</p> <p>RCO 3Rs Gold Certified Building York Region's Administration Centre was the first municipal building in Canada to earn gold certification as part of the Recycling Council of Ontario's 3R certification program for excellence in waste reduction and diversion. The building has three stream collection available throughout and organic Green Bins are provided in every washroom to collect paper towels to be composted. It also has implemented a water bottle ban at Regional Council and Committee meetings.</p> <p>Sustainable Products Policy York Region has developed a Sustainable Products Policy relating to the purchasing of sustainable ongoing consumables, durable goods, reduced mercury lamps, and facility alterations and additions. The policy supports the Leadership in Energy and Environmental Design (LEED®) for Existing Buildings. This policy applies to all Regional employees purchasing the applicable products for use at the York Region Administrative Centre.</p>
Markham	<p>Zero Waste Policy The City of Markham has implemented a zero waste policy at all City facilities. The City provides garbage, recycling, Green Bin services to municipal facilities. In its Civic Centre, all garbage bins were removed from cubicles and offices and were replaced with recycling and organic bins. As part of its zero waste policy, organic Green Bins are provided in every washroom to collect paper towels to be composted. Through the City's Zero Waste Food Services Policy, any food services and events held in Markham facilities cannot use single-serving condiments, must divert food waste and recyclables, cannot use polystyrene food containers and all straws/stir sticks must be compostable. For City functions, enforcement is easier as it is written into the Mission Green Policy for the City, as compared to external events.</p> <p>Indoor Composting The City also piloted the Oklin indoor composter at the City Civic Centre staff lunch room in 2009. The program was stopped due to slight odours being noticed given the lack of ventilation to the outside. The City is</p>



Jurisdiction	Strategies, Practices and Initiatives
	operating a larger indoor composter unit at a kitchen within a seniors home. Food waste generated from meal preparation is put into the unit, the food breaks down into a liquid which flows into York Region's sanitary sewer. This unit has been operational for several years and with the proper ventilation, no odours are noticeable.
Toronto	<p>Various</p> <p>The City provides garbage, recycling and Green Bin services to municipal buildings and charges for the service and is supported by the Toronto Green Standard for any new facilities.</p> <p>Toronto requires City agencies, boards, and departments to develop waste diversion plans to meet the City's waste diversion target.</p> <p>Toronto has banned the sale and distribution of plastic water bottles in its facilities and parks in 2012. The ban in civic centres took place in 2008.</p>

2.11 Special Events

This section reviews what waste management programs and guidelines exist for special events, such as community events, park events and events held in municipal facilities.

Garbage collection for all special events in the City of Ottawa is the responsibility and the expense of the event organizer. Some events may secure City support at their cost, such as the Federal Government for Canada Day at Parliament Hill (collection services provided by the City). For special events under 500 participants, Solid Waste Services can supply and deliver Green Bins, as well as collect the organic material once the event is completed. There are no charges for bin rentals nor is there a collection service fee. Solid Waste Services collects Green Bins from approximately 30 events per year. The organic material is collected with the regular curbside collection program; therefore, tonnages are not tracked separately for these events.

City Wide Allocations (Recreational, Cultural and Facility Services) are responsible for the supply of recycling containers (clearstream recycling bags) for both glass-metal-plastic and paper/cardboard, provided the special event is on City property and under 500



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participants. Event organizers pick up the recycling bags at a City yard and after the event, organizers dispose of recyclables in larger recycling bins located at a City yard or bring the material back home to be put out on their recycling collection day.

For larger special events, the use of recycling stations and organics collection is strongly encouraged through the comprehensive event guide that that City's Event Central provides to special event permit applicants. The event guide outlines best practices and tips for greening an event. Waste material tonnages for large special events are not recorded by the City.

Table 24 provides a summary of the jurisdictions included (Guelph, Toronto, and Vancouver), the program/approach title researched in this sub-section and the potential applicability to City of Ottawa customers noted in brackets. Table 25 provides detailed descriptions of the programs and approaches reviewed.

Table 24: Programs and Initiatives Related to Special Events

Jurisdiction	Special Events
City of Guelph	<ul style="list-style-type: none"> Special Events Permit and Waste Fees (PPS, CF)
City of Toronto	<ul style="list-style-type: none"> Waste Management Plan (PPS, CF) Zero Waste Stations (PPS, CF)
City of Vancouver	<ul style="list-style-type: none"> Green Events Planning Guide (PPS, CF)

SF- Curbside residential, MR - Multi-residential, PPS - Parks and public spaces, CF - City facilities, PP - Partner Programs

Table 25: Special Events Scan Results

Jurisdiction	Strategies, Practices and Initiatives
Guelph	<p>Special Events Permit and Waste Fees</p> <p>The City of Guelph requires event organizers to apply for a special events permit. As part of the application, event organizers are required to complete a Waste Management Plan six weeks before the event takes place. Guelph has a Special Event Diversion Handbook available online as well as a step-by-step guideline posted on their website. The Waste Management Plan for Special Events requires the following information:</p>



Jurisdiction	Strategies, Practices and Initiatives
	<ul style="list-style-type: none"> • Event organizer information; • Event information; • Number of attendees expected • Number of food vendors • Number of portable washrooms • Name of waste hauler; • Where material will be sent; • Estimated number of bins or carts required; • Waste sorting station information; and • Outline of waste diversion at event. <p>If organizers plan on renting City of Guelph Carts, the City will provide these free of charge. If damaged, the City charges \$52 per cart. Tipping fees for garbage are priced at \$80.00 per tonne or \$15 per cart and there are no tipping fees for organics and recycling (to encourage waste diversion). If recycling or organics carts are rejected due to high rates of contamination (greater than 5 percent by visual inspection), they will be sent to landfill, and the Event Organizers will be responsible for paying the garbage tip fee (\$15.00 per cart).</p>
Toronto	<p>Waste Management Plan</p> <p>Toronto will provide garbage, recycling and organic bins at public events (e.g., street festivals, walks/runs) if arrangements are made in advance with City staff. If the event is held at City parks, organizers have to complete a Waste Management Form and coordinate waste management collection with the private sector. Toronto will only issue a permit after a Waste Management Plan is submitted and approved by Solid Waste. The application can be found online on the City's website. The City also has a Special Event Diversion Handbook available online. The Waste Management Plan must include:</p> <ul style="list-style-type: none"> • Disposal bin placement; • A site plan showing the disposal bin location(s) and all recycling and waste container locations; • Information about the private company hired to clean up, including: <ul style="list-style-type: none"> • The company name; • Contact person; • Phone number;



Jurisdiction	Strategies, Practices and Initiatives
	<ul style="list-style-type: none"> • The time to do the clean-up; and • A copy of the contract. <p>Zero Waste Stations Toronto has funded pilot programs to promote zero waste stations at local farmers markets. These stations provide reusable foodware to be used at food stalls which avoids the need to use SUI foodware. There are several local farmers markets that have introduced zero waste stations including the Withrow Park Farmers Market, Leslieville Farmers Market and Christie Pitts Farmers Market. In the case of the Withrow Park Farmers Market zero waste station, in 2019, it achieved a reduction of 10,000 single use units (e.g plates, cutlery, mugs/cups, bowls), 134 lbs of food waste diverted and composted, and use of beverage vendors reusable sample-sized cups, amounting to 1,715 cups not being thrown out after one-time use.</p>
Vancouver	<p>Green Events Planning Guide The City has a Green Events Planning Guide that will help event coordinators plan their event with tips, checklists, and information sheets for vendors and volunteers. The guide provides information on local suppliers and service providers, as well as services and equipment that the City of Vancouver can provide. As part of an event application, event coordinators must fill in a green event form that explains how they will plan to minimize the event's environmental impact. If the vendor selects the City to complete the waste collection there will be a minimum charge of \$300 that includes bin rentals and removal of diverted and disposed materials. The more bins required for the event, the more the waste services will cost. There are no stipulated limits for City collection. The City also provides contact information for other waste haulers and service providers for event planners to contact. The guide recommends one zero waste station (garbage, recycling – paper and mixed containers, and organics) for every 500 people attending the event.</p>

2.12 Management of Industrial, Commercial and Institutional (IC&I) Waste

This section reviews the management and operations related to non-residential waste generated by the IC&I sectors. MR buildings have been included in this section as they are often considered to be IC&I properties by municipalities based on how collection services



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are provided. Often, when lumped in with IC&I, there is limited data (tonnes of materials collected) specific to the MR sector available.

The following provides brief descriptions of the IC&I / MR customers the City of Ottawa services and the level of service offered.

- **Multi-Residential:** provides curbside collection service to all properties and containerized waste collection services to properties with six or more units. There are a mix of property types: townhouse communities, low rise apartments, units above commercial properties and high-rise buildings.
- **Places of Worship:** provides curbside collection service if the residential garbage limit of six items every 14 days is not exceeded. If exceeded, they must register for service under the Yellow Bag program or seek private waste collection.
- **Schools:** The Green Bin in Schools program has over 230 participating schools and is an extension of the City's residential Green Bin program to help promote diversion at both home and school. The City provides, free of charge: curbside Green Bins, classroom-sized containers, program signage and weekly collection services.

Yellow Bag Program: The City provides curbside collection service to small commercial businesses that meet the requirements (e.g., generate 16 bags or less of garbage every two weeks) and register for the Yellow Bag program. Yellow bags are sold in packages of four for \$15.60 (\$3.90 per bag) (2019 rate). The collection of recyclables and SSO is provided at no additional cost.

Table 26 provides a summary of the jurisdictions included (Halifax Regional Municipality, Markham, Guelph, Toronto and Calgary), the program/approach title researched in this sub-section and the potential applicability to City of Ottawa customers noted in brackets.

Table 27 provides detailed descriptions of the programs and approaches reviewed.



Table 26: Programs and Initiatives Related to the Management of IC&I Waste

Jurisdiction	Management of Industrial Commercial and Institutional Waste
Halifax Regional Municipality	<ul style="list-style-type: none"> Source Separation By-law (SF, MR, CF, PP)
City of Markham	<ul style="list-style-type: none"> BIAs and Businesses (PP) MR Buildings (MR) Schools and Places of Worship (PP)
City of Guelph	<ul style="list-style-type: none"> IC&I Sector (PP) MR Buildings (MR)
City of Toronto	<ul style="list-style-type: none"> BIAs and Businesses (PP) Charities, Institutions and Religious Organizations (PP)
City of Calgary	<ul style="list-style-type: none"> IC&I and MR By-law (MR, CF, PP) Support for IC&I through Green Calgary (PP)

SF- Curbside residential, MR - Multi-residential, PPS - Parks and public spaces, CF - City facilities, PP - Partner Programs

Table 27: Management of IC&I Waste Scan Results

Jurisdiction	Strategies, Practices and Initiatives
Halifax Regional Municipality	<p>Source-Separation By-law</p> <p>Halifax Regional Municipality (HRM) source separation By-law (Respecting Solid Waste Resource Collection and Disposal, S-600) stipulates that a source separation program for garbage, recyclables, and organic materials is required at all multi-residential and IC&I properties in HRM as follows:</p> <p><i>“The property owner of an industrial, commercial or institutional premise shall ensure that adequate space is provided on the premises to accommodate containers for the collection of source-separated ICI waste, organic materials and recyclable materials generated at the premises so as to comply with the provincial disposal bans and to facilitate their disposal, composting or recycling in accordance with the Municipality’s waste resource management system.”</i></p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>HRM requires all multi-residential and IC&I properties to arrange their own collection services from the private sector. The HRM will provide technical support to buildings in need of help to set up waste diversion programs</p> <p>Property owners must provide adequate bins and signage. Signs must be posted to give instructions on proper sorting to staff, tenants, or visitors in IC&I establishments. In MR buildings that have a garbage chute, a sign must be posted telling residents where to find bins for recycling and organics collection.</p>
Markham	<p>All collection services provided through the City to IC&I establishments or MR buildings are completed through a private sector contract.</p> <p>BIAs/Businesses The City provides garbage, recycling, Green Bin services to Business Improvement Areas (BIAs) and businesses on residential collection routes. In order to receive collection services on residential routes, businesses must meet residential curbside collection requirements. Businesses in BIAs receive extra old corrugated cardboard collection once per week. All MR and commercial/institutional that receive City collection services must source separate their waste into the three streams – recyclables, organics and garbage. Collection services are governed by By-Law 32-95 - A By-Law To Establish And Maintain A System For The Collection And Disposal Of Refuse In The Town Of Markham.</p> <p>MR Buildings All MR buildings must accept waste collection services from Markham, unless the infrastructure cannot accommodate collection vehicles. Staff estimated that 93% of all MR buildings receive City collection services. MR buildings receive weekly garbage, recycling and green bin collection using front-end bins.</p> <p>Schools and Places of Worship The City of Markham provides free recycling and organic waste collection to public, private and catholic schools and churches throughout the City. Markham has provided one-time grants to schools to set up the infrastructure (\$2500 grant per school to 10 schools per year). Businesses need to comply</p>



Jurisdiction	Strategies, Practices and Initiatives
	with curbside limits/requirements in the by-law. See Section 3.9 for a link to the by-law.
Guelph	<p>The City provides service to downtown businesses and any other business that set out garbage, recycling and organics to the curb in accordance with the City's By-law - Number (2019) -20392 - A By-law to provide for the management of waste within the City of Guelph. The optional service is provided to increase waste diversion.</p> <p>IC&I Sector</p> <p>The City offers weekly organic and bi-weekly garbage and single-stream recycling to IC&I customers (outside of the BIA) as an opt-in service. All businesses that receive automated cart collection services must participate in the source separation programs in order to receive service as per the City's waste management by-law (2019) - 20392. In the case of the downtown core, businesses receive collection of all three streams six days a week (Monday through Saturday).</p> <p>Over the years, the City has been extending its services to include other small businesses (e.g., strip malls), cafeteria waste from some industrial buildings, and while the City doesn't provide service to public and private school boards it does provide service to alternative schools (e.g. private schools).</p> <p>Since the waste management by-law does not set boundaries for which IC&I establishments can receive City collection services, the City is undergoing an assessment of eligibility criteria used by other similar jurisdictions for providing services to businesses, with the intention of setting its own eligibility criteria for City collection services.</p> <p>The City no longer provides medical waste collection to medical clinics and dental offices that receive City collection services.</p> <p>MR Buildings</p> <p>The City has been transitioning MR buildings to front-end collection and offers garbage, recycling and green bin services. All MR collection services are provided through a private contract. The City offers weekly organic and bi-</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>weekly garbage and single-stream recycling collection to MR buildings as an opt-in service. Some selected large MR buildings receive an increased collection frequency. The City's waste management by-law (2019) – 20392 was updated in 2019 outlining the MR requirements. There is an application process to receive collection services, which includes the submission of a waste management plan and source separation commitment for separation of organics, recycling and waste. The waste management plan and source separation commitment is also required for site plan approval and when approval has been given by the City for construction of a MR building. The source separation commitment includes acknowledgement of the obligations to source separate waste, provide systems to sort waste, communicate to tenants and obligations to comply with the Ontario Regulation 103/94 and the Food and Organics policy statement. The waste management by-law also includes requirements for multi-residential developments.</p>
Toronto	<p>BIAs and Businesses The City provides garbage, recycling and Green Bin service to BIAs or businesses in other designated areas as noted in Section 2.7. The requirements are set out in Chapter 841 of the Toronto Municipal Code, Waste Collection Commercial Properties. The service is intended for small commercial businesses (e.g., retail, restaurants) and there is an application process to determine if the business is eligible. To be eligible for collection service the main criteria is that the business cannot exceed 500 m² and must be fewer than four stories or at least one-third space is residential (no size restrictions). Eligible businesses must use a bin or purchase garbage tags. The City collects from the BIA areas at night on main streets providing one night per week service. Businesses can pay to receive additional organic collection (two, five or six times additional weekly collection) but this additional service only applies to organics. Businesses must purchase bins and subscribe to the service and can purchase tags for extra waste.</p> <p>Charities, Institutions and Religious Organizations The City also provides curbside garbage, recycling and organics collection service to Charities, Institutions and Religious Organizations (CIROs) that meet eligibility criteria and complete an application. Registered charities may also qualify for a rebate of 40 percent of property taxes paid if they meet eligibility requirements. In order to qualify for City collection services, the</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>building cannot exceed 500 m² and must be fewer than four stories or at least one-third space is residential (no size restrictions) and fewer than four stories. There is no fee for recycling and weekly organics collection, however, CIROs can purchase extra Green Bin Organics collection frequencies.</p> <p>MR Buildings The City provides collection services to MR buildings as noted in Section 2.7. This includes garbage, Blue Bin, Green Bin and leaf and yard waste and service can be provided either curbside or on property, depending on the building. There are approximately 409,000 MR units (2016) receiving services, representing approximately 65% of the MR buildings. Buildings using private collection services are not eligible for Blue Bin or Green Bin collection services provided by the City. Buildings can apply to opt out of the City program and opting out is an “all or nothing” decision, leaving the building to find its own means of complying with Regulation 103/94 requiring buildings to provide recycling programs.</p>
Calgary	<p>IC&I and MR By-law</p> <p>The City of Calgary’s By-law Number 20M2001 - Being A By-law of The City Of Calgary To Regulate and Manage Waste is the City’s waste and recycling by-law and requires businesses, organizations and MR complexes to have recycling and organic diversion programs in place.</p> <p>As of November 1, 2017, businesses and organizations in Calgary must have waste diversion programs in place. This applies to all businesses and organizations, including property management companies, offices, stores, malls, restaurants, hotels, schools, healthcare facilities, manufacturers, factories, non-profits, places of worship, warehouses and other operations. The by-law stipulates what materials must be diverted.</p> <p>As of February 1, 2016, all MR complexes (e.g. apartments, condos and townhomes) must provide recycling services for residents and as of November 1, 2017, MR complexes must separate food and yard waste from their garbage for composting or diversion. The by-law stipulates what materials must be diverted.</p>



Jurisdiction	Strategies, Practices and Initiatives
	<p>Owners of IC&I establishments and MR complexes are also responsible to ensure clear signage is posted on all waste collection containers, indicating what type of waste materials can be disposed of in each collection container.</p> <p>The City does not provide municipal collection services to businesses, organizations or MR buildings. The City of Calgary, however, provides separate commercial fee based garbage, recycling and food and yard waste collection services for businesses, organizations and commercial fee based garbage and food waste, and yard waste services to MR buildings, competing directly with the private collection providers. The City does not compete with private haulers for recycling services provided to MR buildings.</p> <p>Support for IC&I through Green Calgary The City also supports Green Calgary through City grants. Green Calgary is a non-profit organization that provides technical assistance to IC&I establishments to help them reduce/divert waste. Services include a help desk, waste assessment and consulting services, lunch and learn programs, recycler verification programs, waste workshops, event greening and green guides for the workplace.</p>

3 Next Steps

This Memo presents a high level review of strategies, practices and initiatives to manage waste from Canadian municipalities for consideration by the City as part of the options identification in future tasks. The strategies, practices and initiatives provided are related to the various elements of an integrated waste management system including the 5Rs, P&E and engagement initiatives, service delivery models, funding models, legislation/policies, sustainability practices and special events. These could also apply to various waste streams and sectors served by the City and have been noted how they apply to other customer types.

In the next phase of the SWMP, a list of options will be developed for the City's consideration. It is likely that some of the strategies, practices and initiatives described in this Technical Memorandum will be considered as part of the SWMP in the next phase.



Plan directeur des **déchets solides**

Options will be weighed using an evaluation tool designed for Ottawa, and a needs assessment will be undertaken unique to Ottawa's current system, and also taking into consideration our future system needs over the life of the SWMP.