P.O. Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

Item No. 15.1.3
Halifax Regional Council
February 7, 2023

TO: Mayor Savage and Members of Halifax Regional Council

SUBMITTED BY: Original Signed

Cathie O'Toole, Chief Administrative Officer

DATE: January 20, 2023

SUBJECT: **Terms of Reference for HRM's Solid Waste Strategy Review**

ORIGIN

June 23, 2020 Halifax Regional Council (Item No. 6.1):

MOVED by Councillor Austin, seconded by Councillor Mancini:

THAT Halifax Regional Council request the Chief Administrative Officer develop terms of reference for a solid waste strategy review and to include transitioning the garbage and recycling programs to a cart-based collection program in the review, pending a decision from the Province of Nova Scotia on the status of future legislation with respect to the municipal recycling program and Extended Producer Responsibility.

On December 1, 2020, Regional Council approved the Strategic Priorities Plan 2021-2025. As part of the plan, it was identified that Solid Waste Resources was to undertake the following strategic initiative:

- ***Improve Waste Diversion and Align Halifax's Solid Waste Strategy with HalifACT***

Conduct a review and update of the municipality's Solid Waste Strategy including aligning the strategy with HalifACT, promoting the circular economy and reviewing the municipality's recycling program.

LEGISLATIVE AUTHORITY

Halifax Regional Municipality Charter, SNS 2008, c. 39

By-law regarding solid waste
335 The Council may make by-laws respecting solid waste, including, but not limited to, … (j) respecting anything required to implement the integrated solid-waste resource management strategy of the Municipality.

RECOMMENDATION

It is recommended that Halifax Regional Council:

1. Approve the terms of reference for reviewing and updating the municipality's Solid Waste Strategy in accordance with the Key Themes outlined in this report.

EXECUTIVE SUMMARY

In 2020, Regional Council approved the Strategic Priorities Plan 2021-2025. As part of the plan, it was identified that Solid Waste Resources was to undertake the following strategic initiative:

- ***Improve Waste Diversion and Align Halifax's Solid Waste Strategy with HalifACT***

Conduct a review and update of the municipality's Solid Waste Strategy including aligning the strategy with HalifACT, promoting the circular economy and reviewing the municipality's recycling program.

There are several reasons for the strategic initiative, including the need to align the solid waste system with the municipality's climate change action plan HalifACT, and anticipated new provincial Extended Producer Responsibility (EPR) legislation that will result in major changes to HRM's recycling program. Furthermore, there is a need to update the municipality's solid waste strategy given that the last review was completed in 2014/2015 (2014 Strategy Update).

The 2014 Strategy Update confirmed the following objectives for the solid waste system:

- Maximize reduction, reuse, and recycling of waste resources.
- Maximize environmental and fiscal sustainability of the waste program.
- Foster public stewardship and conservation.

It is proposed for the current strategic update of HRM's solid waste system (New Strategy), that the following objectives are added:

- Align HRM's Solid Waste System with HalifACT, including making significant contributions towards:
    - Net-zero corporate emissions by 2030
    - 75% reduction in community emissions by 2030 as compared to 2016 baseline
    - Net-zero community emissions by 2050
    - Reducing waste generation by 30% by 2050
    - 100% waste diversion by 2050

- Contribute towards meeting the following objective outlined in the Province of Nova Scotia's 2022 Environmental Goals and Climate Change Reduction Act:
    - Reduce Nova Scotia's disposal rate from 402 kg per capita to 300 kg per capita by 2030. In 2020/2021 HRM's disposal rate was 361 kg per capita.

As part of the New Strategy, staff would like to focus on initiatives that will need to be implemented over the next 5 to 7 years to achieve 2030 objectives. This will facilitate a more focused review and place the solid waste system on a trajectory towards meeting the 2050 objectives.

It is envisioned that it will take approximately two years to complete the New Strategy. During this time frame, staff plan on engaging the public and completing key studies associated with *Key Themes.* After returning to Regional Council to provide an update and to possibly get further direction, staff plan to complete further public consultation, address any data gaps, and return to Regional Council with a final report. The table below provides an overview of the schedule to complete the New Strategy.

Table ES.1 – New Strategy Schedule

Task	Duration	Deadline
Task 1 – Phase 1 Public Consultation	2 months	October 31, 2023
Task 2 – Key Themes – Technical Studies	12 months	March 31, 2024
Task 3 – Update Regional Council	N/A	May-June 2024
Task 4 – Phase 2 Public Consultation	4 months	December 31, 2024
Task 5 – Data Gaps	6 months	December 31, 2024

Task	Duration	Deadline
Task 6 – Present Final Report to Regional Council	N/A	Jan-March, 2025

The *Key Themes* to be addressed by the New Strategy include:

1. Reviewing the impact of Provincial Extended Producer Responsibility (EPR) Legislation.
2. Contributing towards the Province of Nova Scotia's objective outlined in the 2022 Environmental Goals and Climate Change Reduction Act by reducing HRM's disposal rate per capita from 361 kg per capita to 300 kg per capita by 2030.
3. Aligning HRM's Solid Waste System with HalifACT.
4. Promoting the circular economy.
5. Evaluating transitioning the curbside collection program to a full cart-based program with automated collection.
6. Evaluating expanding the household special waste (HSW) program.
7. Evaluating expanding the new composting facility.
8. Evaluating expanding the Rural Refuse Depot operation.
9. Other items related to benchmarking, waste audits, and modernizing the Solid Waste Resource Collection and Disposal By-Law S-600.

BACKGROUND

In 2020, Regional Council approved the Strategic Priorities Plan 2021-2025. As part of the plan, it was identified that Solid Waste Resources was to undertake the following strategic initiative:

- ***Improve Waste Diversion and Align Halifax's Solid Waste Strategy with HalifACT***

Conduct a review and update of the municipality's Solid Waste Strategy including aligning the strategy with HalifACT, promoting the circular economy and reviewing the municipality's recycling program.

There were several reasons for the strategic initiative, including:

- Recognizing that solid waste management contributes to both greenhouse gas emission sources (e.g., landfills) and sinks (e.g., diversion programs), there is a need to align HRM's solid waste system with the municipality's climate change action plan HalifACT.
- Anticipation that the Province of Nova Scotia will enact a new Extended Producer Responsibility (EPR) legislation within the next 6 months. This will mean major changes to HRM's recycling program and shift responsibility of program delivery to industry. It is critical that the municipality assess the impact of EPR legislation on existing infrastructure and collection programs.
- The last strategic review of the municipality's solid waste system was completed in 2014/2015 (2014 Strategy Update). The 2014 Strategy Update was successful in identifying strategic priorities and resulted in the implementation of initiatives such as clear bags for garbage, development of a new organics processing facility, and increased public education for multi-residential properties. As all of the 2014 Strategy Update implementable initiatives have been completed, there is a need for the municipality to update the strategy and plan for the future.

Jurisdiction Review of Solid Waste Strategic Plans

A brief jurisdictional scan of Canadian, US and European cities was conducted to identify common themes and to compare approaches taken to develop solid waste strategic plans. A summary of this scan can be found in Attachment 1. Efforts were made to identify jurisdictions that have established programs which offer multi-stream waste collection services similar to HRM.

Despite differences in style or scope of solid waste services provided, the most common themes identified as part of solid waste strategic plans included:

- Waste reduction policies and promotion
- Circular economy
- Food waste prevention
- Access to programs (e.g., creating new programs, expanding availability)

The approaches taken in the development of plans and targets/goals varied based on the specific needs in each jurisdiction (i.e., one size does not fit all). Tactics included a combination of studies conducted by staff and consultants, paired with public consultation (i.e. surveys, focus groups, targeted stakeholder meetings).

Review of Key Performance Indicators

The effectiveness of solid waste systems can be measured using a number of metrics. In HRM the key performance indicators (KPIs) utilized for business planning and reporting to Regional Council are residential diversion rate and disposal rate per capita (kilograms landfilled per capita). These metrics are shown in Attachment 2 – Key Performance Indicators.

Residential diversion rate is calculated using a methodology developed by Municipal Benchmarking Network Canada[1], which describes the percent of residential waste diverted away from landfill disposal. In 2021/2022, HRM's residential diversion rate was 57% which outperforms the median of 46% reported by other jurisdictions across Canada, depicted in Figure 2 in Attachment 2.

Based on tonnage data submitted by each landfill site, and Statistics Canada population data, Nova Scotia Environment and Climate Change (NSECC) calculates a provincial and municipal disposal rate per capita. This factors all residential, commercial and construction waste disposed of in landfill. In 2020/2021, HRM's disposal rate was 361 kg per capita, while the provincial rate was 402 kg per capita. Statistics Canada last reported national disposal rates in 2018, at which time the average per capita disposal was 694 kg[2]. HRM's preliminary estimate for 2021/2022 is 372 kg per capita[3] based on increased disposal from the IC&I sector, relative to growth.

DISCUSSION

Objectives

As part of the 2014 Strategic Update, Regional Council confirmed the objectives of the solid waste system originating from the 1995 Integrated Waste/Resource Management Strategy (1995 Strategy) developed by the Community Stakeholder Committee (CSC)[4]. The current objectives of the solid waste system are to:

- Maximize reduction, reuse, and recycling of waste resources.
- Maximize environmental and fiscal sustainability of the waste program.
- Foster public stewardship and conservation.

It is proposed for the current strategic update of HRM's solid waste system (New Strategy), that the following objectives are added:

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[1] Municipal Benchmarking Network Canada is a municipal benchmarking program which HRM participated in up to 2018.
[2] Statistics Canada. Solid waste diversion and disposal tables. 2018
[3] Due to the timing of the reporting cycle, disposal data is not able to be verified for several months following the end of the fiscal cycle.
[4] In 1994, Halifax County, supported by the other three area municipalities (City of Halifax, City of Dartmouth, and Town of Bedford) initiated a process to develop a regional waste strategy. This initiative was led by the CSC, on behalf of Halifax County.

- Align HRM's Solid Waste System with HalifACT, including making significant contributions towards:
    - Net-zero corporate emissions by 2030
    - 75% reduction in community emissions by 2030 as compared to 2016 baseline
    - Net-zero community emissions by 2050
    - Reducing waste generation by 30% by 2050
    - 100% waste diversion by 2050

- Contribute towards meeting the following objective outlined in the Province of Nova Scotia's 2022 Environmental Goals and Climate Change Reduction Act:
    - Reduce Nova Scotia's disposal rate from 402 kg per capita to 300 kg per capita by 2030. In 2020/2021 HRM's disposal rate was 361 kg per capita.

As part of the New Strategy staff would like to focus on initiatives that will need to be implemented over the next 5 to 7 years to achieve 2030 objectives. This will facilitate a more focused review and place the solid waste system on a trajectory towards meeting the 2050 objectives. It is anticipated that another strategic update of the solid waste system will need to be completed in the early 2030s to meet 2050 objectives.

Project Management Plan

Solid Waste Resources has developed an internal steering committee in developing these terms of reference for the New Strategy. The steering committee will continue to be engaged throughout the development of the New Strategy and includes representatives from:

- Government Relations and External Affairs
- Environment and Climate Change
- Corporate Real Estate
- Finance & Asset Management
- Planning and Development

Additionally, a representative from Halifax Water will be added to the steering committee.

Public consultation and completing key studies associated with the *Key Themes* presented in this report will be completed through a combination of staff and consultant led initiatives. *Key Themes* are described further in subsequent sections.

It is envisioned that it will take approximately two years to complete the New Strategy. During that time frame, staff plan on engaging the public and completing key studies associated with *Key Themes*. After returning to Regional Council to provide an update and to possibly get further direction, staff plan to complete further public consultation, address any data gaps, and return to Regional Council with a final report. The table below provides an overview of the schedule to complete the New Strategy.

Table 1 – New Strategy Schedule

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Public Consultation

The public consultation for the New Strategy will focus on obtaining input and feedback from the public and stakeholders related to the *Key Themes*. Considerations will be made to ensure that engagement is

efficient, accessible, and connects with diverse communities (e.g., African Nova Scotian communities). This will be accomplished by sending staff to diverse communities and conducting surveys on-site at public events. Promotion of the public consultation will be placed in media that serve these specific communities.

The survey will also be promoted to groups such as Immigrant Services Association of Nova Scotia. To address accessibility issues, large print versions of surveys will be made available, and staff will be available to verbally read and input survey responses. In person surveys will also be conducted at various events during the duration of the consultation process.

Public consultation will occur in two phases:

- Phase One Public Consultation – will occur at the onset of the review and is focused on obtaining public input and feedback on proposed objectives of the New Strategy including levels of service delivery, and resident satisfaction with current solid waste services. Public consultation will include the development and use of a survey through HRM's Shape Your City portal.
- Phase Two Public Consultation – will focus on obtaining input and feedback from the public and stakeholders on the *Key Themes* reviewed as part of the New Strategy. Staff envision a comprehensive public consultation program including a possible additional survey, stakeholder sessions, and public information sessions. Staff plan on further developing the scope of Phase Two Public Consultation with the update provided to Regional Council, noted above in Table 1, as Task 3.

Key Themes

The *Key Themes* to be addressed by the New Strategy are presented below, including background, scope of work, and approach.

1. Reviewing the impact of Provincial Extended Producer Responsibility (EPR) Legislation.

It is anticipated that the Province of Nova Scotia will announce EPR legislation within the next six months. The municipality has been extensively consulted in the past on EPR legislation and Regional Council has been supportive of the proposed change and transition of the recycling program from a linear to circular model. Staff have also previously presented key considerations with regards to potential EPR legislation to Regional Council[5], including potential savings to municipal taxpayers in the order of $5 to 6 million annually.

EPR is a policy approach in which a producer, who designs and markets a product and/or package, accepts the full cost, risk, and liability for managing waste at the end of its lifecycle. A producer has the greatest ability to prevent or reduce waste associated with packaging design. Service delivery of the recycling program in Nova Scotia would be administered through one or several Producer Responsible Organizations (PROs) on behalf of industry. The likely approach is that a PRO would submit a Stewardship Plan for Printed Paper and Packaging, with the Province being the ultimate decision maker. Once the Stewardship Plan has been accepted, it will form the basis for the framework of the new recycling program.

The next step for the PRO would be to establish service delivery. Under EPR legislation, it is likely that HRM will have the *"right of first refusal"* to either accept or decline continuing to be the service provider on behalf of the PRO, which is typically limited to collection services specifically. Additionally, there are numerous scenarios related to service delivery such as providing all services versus some of the services (i.e., education and/or collection and/or processing) and the possibility that the PRO may want HRM to operate part of the program for some time (e.g., processing).

Key items for assessment as part of the New Strategy include:

- Jurisdictional scan of service delivery models between PROs and municipalities including any

[5] Halifax Regional Council. Staff Report. November 12, 2019. Extended Producer Responsibility (EPR).

information and metrics around outcomes such as failure/successes, resident satisfaction, recyclable capture rate, impact to diversion rate, and integration of solid waste services.

- Review of potential service delivery gaps, such as how multi-residential properties not serviced by the municipality's curbside collection program will access the EPR program, or how the institutional, commercial, and industrial (IC&I) sector will continue to access recycling processing services.
- Future status of HRM's Material Recovery Facility (MRF), located on 20 Horseshoe Lake Dr, in Bayers Lake, which is also the same location of HRM's Household Special Waste (HSW) Depot. The MRF is 30+ years old and predominantly consists of manual sorting with some automated equipment.
    - What are potential operating models (e.g., full MRF, transfer station, hybrid) under an EPR program?
    - Should the municipality continue to operate the MRF on behalf of a PRO or potentially lease the MRF to the PRO?
    - Does the current MRF meet the needs for the future? Does HRM potentially need a new MRF?
    - What are the long-term upgrades required and capital, life cycle, and operating cost impacts for all scenarios?

2. Contributing towards the Province of Nova Scotia's objective outlined in the 2022 Environmental Goals and Climate Change Reduction Act by reducing HRM's disposal rate per capita from 361 kg per capita to 300 kg per capita by 2030.

HRM is a national leader in diverting waste from landfill disposal and its current disposal rate per capita is approximately half the national average. The disposal rate per capita is inclusive of all IC&I waste generated within the boundaries of HRM regardless of where the material is landfilled. A further approximate 20% reduction in the disposal rate per capita by 2030 will align with the provincial environmental goal and support HalifACT goals as landfills are significant sources of GHG emissions.

The residential program in HRM which includes single unit dwellings and small apartment buildings (up to and including six units) have performed well in part due to source separation programs being in place for 20+ years. In 2016, HRM observed a 25% reduction in residential garbage due to the implementation of clear bags. Currently the residential diversion rate in HRM is approximately 57%, amongst the higher performing programs in Canada.

Staff have identified several opportunities that could substantially reduce HRM's disposal rate per capita and meet the 2030 objective, including:

- Improvements to source separation for the IC&I sector, including for multi-residential properties.
- Diverting residues generated from HRM solid waste facilities from landfill disposal.
- Impact of proposed ERP legislation.

Institutional, commercial, and industrial (IC&I) Sector

The IC&I sector encompasses all properties who do not receive curbside solid waste collection, including but not limited to big box retail, schools, manufacturing, office and multi-residential buildings (with 7 or more units). Waste from the IC&I sector accounts for approximately 72% (or 260 kg) of the 361 kg per capita disposed in 2020/2021. Given population and economic growth in the region, diversion of IC&I sector waste represents a significant opportunity to support meeting the 2030 disposal rate per capita target.

Multi-Residential Property Education

Thousands of multi-residential unit residents have been reached between 2014 and 2022 through door-to-door multi-residential education visits. Each year 1,000+ hours of waste education is focused on apartment buildings and condominiums. Each year, approximately 20 lobby information sessions are held at multi-residential properties throughout HRM. Custom chute signage has been made for many buildings since

2014. Approximately 900 multi-unit property visits/education sessions have occurred since the 2014 Strategy Review, reaching 6,500 residents at over 400 individual multi-unit properties.
In 2016, Solid Waste staff developed a 'Recycling Ambassador' program to assist tenants or property managers who were waste champions in their buildings. The program involved training sessions and a manual delivered by educators. In 2019 this program was adapted into the 'Waste Management Certification Course for Multi-Residential Properties'. This half-day course is specifically designed for property managers and superintendents who manage waste rooms in apartment buildings and is offered free of charge. The goal of this training is to provide property management companies with the information and resources needed to solve waste room challenges and communicate more effectively with residents. The first cohort of managers from Southwest Properties graduated in November 2021, with Killam and Capreit following in November 2022.

Condo Clear Bag Success

Pilot projects conducted from 2016 to 2019 by Solid Waste staff in multi-unit residential buildings found increasing diversion rates (through better sorting) at properties that had implemented voluntary clear bag programs for garbage. To further test the effectiveness of this practice, a mandatory clear bag for garbage policy was implemented in condominium buildings in November 2021. Condo buildings are serviced with a commercial style service under contracts managed by HRM. Leading up to the change, condo boards and property management companies were notified by letter, new signage was posted and education sessions and door to door visits were offered. This simple change in policy resulted in an immediate 20% reduction in garbage. Given the similarities between condos and apartment buildings, it is reasonable to expect comparable results could be achieved should this policy be broadly implemented.

IC&I inspections

HRM By-Law S-600 requires source separation programs be in place at all IC&I sector properties in the municipality. Compliance with these provisions is ensured through inspections conducted by Diversion Planning Officers (DPOs). In a typical year, DPOs will conduct around 1,000 site inspections, with a focus on ensuring that required source separation receptacles and signage are in place (e.g., to divert organics, paper, cardboard, and containers).

Each load arriving at the Otter Lake Waste Transfer Facility is inspected by the staff on site or by a DPO. When unacceptable material is identified in the load, a Waste Discrepancy Report (WDR) is issued. WDRs may result in a warning, rejection (requiring material to be sorted before disposal) and a site inspection. Approximately 100 WDRs are issued annually.

As part of revisions to By-Law S-600 in 2021, a section was added giving DPOs the ability to request a waste management plan to by submitted by ICI&I sector properties as part of the compliance/inspection process. These plans have been effective in identifying areas for improvement and in promoting consistency in recycling programs at IC&I properties.

Development & Building Plans

While solid waste staff currently review IC&I building plans (5 to 7 per year) and provide advice on proper placement and storage for waste containers, this is not a requirement of the 'As of right' permitting process. building development agreement. This often results in inadequate space being allocated for containers and impacts the success of diversion programs.

When a property is subject to a development agreement, plans are intermittently submitted for solid waste staff to review and approve, however this is not regulated requirement. While the development agreement template does include wording around the requirements, the developer is not bound to follow the advice for staff when designating space for waste containers.

Key items for assessment as part of the New Strategy include:

- Introducing clear bag for garbage requirements for the IC&I sector, starting with multi-residential buildings.
- Introducing policies that support 'best practices' such as:
  - Alternate options for garbage chutes
  - Pro-active development of waste management plans
- Formalizing the review of all IC&I building plans to ensure adequate space and provision of waste containers.

Residues from HRM Solid Waste Facilities

Residue is material that is landfilled that is generated from HRM's two composting facilities and MRF. At the two composting facilities, non-compostable material is sorted from the incoming organics at the front end of the facilities (front-end residue) and after processing, the matured compost is screened where further non-compostables are removed (back-end residue). The residue consists of plastic, glass, or grit, as examples, mixed with some organic material. At the MRF where recyclables are processed, non-recyclable and non-marketable materials are generated as residue after processing and sorting of the incoming blue bags (container recyclables) and fiber (paper and cardboard). The residue consists of plastic, glass, and fibre, as examples, as well as garbage. Currently approximately 7,000 to 8,000 tonnes of residue are landfilled annually generated from HRM's two composting facilities and MRF.

Diverting residues from landfill disposal is an opportunity that can substantially contribute towards HRM meeting the 2030 disposal rate per capita objective. Key items for assessment as part of the New Strategy include:

- Maximizing recovery of recyclables as part of potential future MRF upgrades.
- Diverting residues in facilities currently under development in Nova Scotia (cement kiln and mixed waste processing facilities).

Impact of Proposed EPR Legislation

As previously discussed,[6] as part of the New Strategy a jurisdictional scan of EPR programs will be completed which will include identifying impacts to diversion. This information, in combination with forthcoming anticipated EPR legislation, will be used to evaluate the potential impact of EPR legislation on HRM's disposal rate per capita.

3. Aligning HRM's Solid Waste System with HalifACT.

A key objective of the New Strategy is to align HRM's Solid Waste System with HalifACT, which sets the following 2030 emissions reduction objectives for the municipality:

- Net-zero corporate emissions by 2030.
- 75% reduction in community emissions by 2030 as compared to 2016 baseline.

As part of the Public Works 2022/2023 Business Plan, Solid Waste Resources completed a Carbon Footprint Assessment of the solid waste system. Solid Waste Resources retained a consultant to complete the assessment, including developing a Carbon Footprint Model of the existing solid waste system and reviewing potential options to align HRM's Solid Waste System with 2030 HalifACT objectives. The model can be used by staff as part of the New Strategy to update the carbon footprint of the solid waste system, including to inform HalifACT updates, as well as to evaluate different scenarios towards meeting the 2030 HalifACT objectives.

[6] See: 1. Reviewing the impact of Provincial Extended Producer Responsibility (EPR) Legislation

As part of the Carbon Footprint Assessment, it was found that significant emissions reduction in the solid waste system can be achieved (approximately 44,000 CO_2e/year), in alignment with 2030 HalifACT goals, through implementing the following proposed options:

1. Meet the Province of Nova Scotia's objective outlined in the 2022 Environmental Goals and Climate Change Reduction Act: Reduce HRM's disposal rate per capita from 361 kg per capita to 300 kg per capita by 2030 (i.e., this will reduce landfill GHG emissions). A scope of work to address this as part of the New Strategy was previously described[7].
2. Utilizing existing landfill gas at the Otter Lake Waste Processing and Disposal Facility (Otter Lake), that is currently collected and treated (i.e., flared), to generate renewable electricity.
3. Generation of renewable solar energy at HRM solid waste facilities. Currently HRM Environment and Climate Change is collaborating with Solid Waste Resources on a feasibility study to implement a solar farm at the Highway 101 Landfill. The feasibility study is expected to be completed in 2022/2023.
4. Implementing a landfill gas treatment approach at the Highway 101 Landfill, which recently stopped producing renewable electricity due to reductions in the quantity of gas generated at the landfill, as expected, given that landfill operations ceased in 1996. This project has already been actioned through Public Work's 2022/2023 Business Plan and it is projected that a solution will be implemented in 2023/2024, subject to budget approval.
5. Requiring for future HRM residential and condo collection contracts that the waste collection fleet utilize zero emission (e.g., electric) vehicles.

Key items for assessment as part of the New Strategy include:

- Evaluate the use of solar energy at solid waste facilities to mitigate carbon emissions. The evaluation will include conceptual design, regulatory considerations, carbon mitigation estimates, and costs. Specific options to evaluate include:
    - The use of a solar farm at the location of the existing Ragged Lake Composting Facility (61 Evergreen Pl), once the facility is decommissioned, to supply renewable power to the new adjacent composting facility to be commissioned in 2024 (37 Evergreen Pl).
- Develop a conceptual design for a landfill gas renewable electricity utilization system at Otter Lake, including regulatory considerations, carbon mitigation estimates, and costs.
- Complete a review of the feasibility of requiring future residential and condo collection contracts to use zero emission (e.g., electric) vehicles, including considerations for cost impacts, infrastructure challenges, and impact to service providers.
- Update the Carbon Footprint Model for the solid waste system incorporating the specific work completed as part of the New Strategy and projects completed through normal business planning processes to further evaluate meeting the 2030 HalifACT objectives.

4. Promote the circular economy.

Circular Economy is based on the idea that there is no such thing as waste[8]. Products and systems are designed in a way that they can be reused, repurposed, or remanufactured. A circular economy considers environmental, financial and social principals. This is in contrast to the traditional 'take-make-waste' model where resources are made into products, then discarded as waste after a defined and limited life.

In October 2021, the Environmental Goals and Climate Change Reduction Act passed in the House of Assembly. This act supports initiatives to promote sustainable prosperity and the circular economy in Nova Scotia.

[7] See: 2. Contributing towards the Province of Nova Scotia's objective outlined in the 2022 Environmental Goals and Climate Change Reduction Act by reducing HRM's disposal rate per capita from 361 kg per capita to 300 kg per capita by 2030.
[8] National Zero Waste Council. Circular Economy Definition. 2022.

Examples of circular economy are present today in HRM through events such as Curbside Give Away Weekend when old or underutilized goods are given new life. During Waste Reduction Week (October 2022), Solid Waste Resources hosted sessions on 'Swap, Share, Thrift and Repair' in partnership with Halifax Public Libraries. Halifax Recreation lends equipment and the libraries loan music instruments. Additionally, HRM partners with the Halifax Food Policy Alliance to deliver the JustFOOD action plan which includes reducing food waste as a key pilar to tackle food insecurity.

Since 2016 HRM has been a member of the National Zero Waste Council (NZWC), collaborating with public and private sector partners to promote the principles of circular economy, food waste reduction, and innovation in packaging. NZWC is also a founding member of the Canadian Circular Cities & Regions Initiative[9] which brings local governments together to with support and opportunities for peer-to-peer exchange as they develop a roadmap to circularity.

Reuse Centres

Thrift stores are a primary example of Circular Economy in action. Local governments across Canada have supported these initiatives by establishing Reuse Centers. The goal of these centers is to capture goods that may have otherwise been destined for landfill disposal, and often a partnership is established with a not-for-profit or charitable organization to operate. For example, the opportunity exists to further develop relationships with social enterprises through the Directions Council Nova Scotia which assists and supports member organizations in the delivery of services that promote the abilities and inclusion of persons with disabilities in the everyday activities of their community. While not always profitable, these centres are often cited as having positive community engagement and social impacts.

Last Re-Sort is a reuse centre operated by Valley Waste Resource Management at their Kentville transfer station site. Items to be sold are retrieved from the public drop off area by Valley Waste staff. Prior to closing due to the COVID-19 pandemic, it was estimated that the center was diverting up to 70 tonnes of material per month from landfill disposal.

The Edmonton Reuse Centre[10] is operated by the City of Edmonton and works closely with local non-profits to support organizations who accept donation. The centre is the hub for their waste education activities where they host workshops and events like clothing swaps. To celebrate their 15th anniversary in 2022, all goods collected are made available free of charge to organizations and individuals for reuse.

Living Labs

A Living Lab is a physical and/or virtual space that brings together people from different backgrounds and allows them to foster innovation and research or test new ideas in a real-world setting. Living Labs promote collaboration between entrepreneurs, not-for-profits, government, industry, citizens to solve problems.

Guelph-Wellington, Ontario[11] is utilizing a living lab model to promote collaboration between food entrepreneurs, farmers, researchers and social innovators with a goal of increasing access to affordable, nutritious food, create 50 new circular food businesses and increase circular economic revenues by unlocking the value of waste.

Reuse Centres and Living Labs provide opportunities to foster new programs and innovations which can lead to increased collaboration, waste diversion, and overall sustainability. In HRM, these resources could support JustFOOD in reaching food security goals, promote textile recycling, or repair of household items to name a few initiatives.

[9] Canadian Circular Cities & Regions Initiative. Home Page. 2022.
[10] City of Edmonton. Reuse Centre Home Page. 2022.
[11] Guelph-Wellington. Our Food Future Home Page. 2022.

The impending de-commissioning of the Burnside Composting Facility[12] presents an opportunity to develop a multi-functional space to house innovative activities to support development of circular initiatives and learning.

Key items for assessment as part of the New Strategy include:

- Identify approach, potential partnerships and costs to develop a Reuse Centre, including potentially repurposing part of the Burnside Composting Facility for this use.
- Identify approach, partnerships, and costs to develop a Living Lab to help foster innovation, including repurposing part of the Burnside Composting Facility for this use. Explore the opportunity to participate in the Canadian Circular Cities and Regions Initiative.

5. Evaluating transitioning the curbside collection program to a full cart-based program with automated collection.

In 2020, Staff presented a comprehensive information report on Cart Based Garbage and Recycling Collection[13] (Information Report) to Regional Council on the potential to transition the residential curbside collection program for recycling and garbage from a bag-based system to a cart-based system, similar to the green cart program for the collection of residential organics. Cart-based collection of waste is an emerging trend across Canada and important factors in adopting a cart-based program are typically related to health and safety considerations, modernization of collection infrastructure, citizen satisfaction (e.g., ease of use, storage), and protection from animals/birds and associated litter. Furthermore, labour shortages have been another driving factor in other jurisdictions, as cart-based programs are typically implemented with automated collection which reduces labour requirements.

Key considerations for implementing cart-based collection for the garbage and recycling program outlined in the Information Report[13] include:

- Impact of EPR legislation: As previously mentioned[14], under EPR legislation, recycling program requirements, including collection specifications (e.g., streams, receptacle types), would be outlined in a Stewardship Plan, ultimately accepted by the Province. Additionally, HRM may or may not continue to be the service provider on behalf of the PRO. As part of the New Strategy, as previously mentioned, staff will complete necessary assessments to ensure that the municipality has adequate information in support of future decision making in response to EPR legislation.
- Methods of Collection and Processing:
    - Use of a split cart to maintain the multi-stream recycling program (i.e., fibres, containers) versus using separate carts for each recycling stream.
    - Consideration for semi-automated (similar to the green cart program) or fully automated collection systems, noting that fully automated collection systems achieve a higher rate of efficiency (e.g., less time to complete routes, less labour requirements).
    - Impact to MRF operations and infrastructure related to receiving loose (i.e., bagless) materials.
    - During Regional Council's deliberations it was identified that staff should review accessibility considerations for residents with respect to cart-based collection.
- Cost Impact: There are significant costs to transition HRM's solid waste program to a cart-based collection system. The upfront capital investment for purchase and distribution of garbage and recycling carts was estimated in the range of $26.34 to $30.48 million. There are several options available to fund this purchase, including through capital budget, a one-time fee on tax bills or a pay as you throw model. Additional costs are related to maintaining cart infrastructure (estimated in the order of $635k to $735k annually) and contracted residential collection costs (could not be

[12] The new HRM composting facility will be commissioned during winter 2024 which replace both the existing Burnside and Ragged Lake facilities
[13] Halifax Regional Council. Staff Report. May 26, 2020. Cart Based Garbage and Recycling Collection.
[14] See: 1. Reviewing the impact of Provincial Extended Producer Responsibility (EPR) Legislation

estimated due to the complexity in the variables for consideration).

Key items for assessment as part of the New Strategy include:

- Development of cart-based collection program options based on the Information Report.
- Full financial assessment of moving to a semi-automated or fully automated cart-based collection program for all streams.
- Engineering assessment of possible infrastructure and process changes for the processing of recyclables.

Upon returning to Regional Council with the above noted findings, potential further steps that could be required include:

- Pilot project to evaluate the use of a split-cart and standard cart, and to assess impacts to the program (e.g., time in motion, impacts to routes, litter, resident satisfaction). A 12-month duration is recommended to assess seasonal considerations.
- Further public consultation to obtain input and feedback from public and stakeholders on the key themes included in the New Strategy.
- Development of full Implementation Plan including cart procurement and distribution plan, communication strategy, and implementation schedule.

6. Evaluating expanding the household special waste (HSW) program.

HRM provides a household special waste (HSW) program to capture residentially generated hazardous wastes. The program consists of a permanent depot located at the MRF at 20 Horseshoe Lake Dr., Bayer's Lake and is open most Saturdays from 9 am to 4 pm (42 days per year). Additionally, the municipality hosts up to 17 mobile HSW Depot events each year to service residents in communities across HRM to provide access to those further away from Bayer's Lake. This number has increased from 11 mobile events annually.

Many items that are accepted at the HSW Depots are also managed through industry stewardship programs and can be taken to alternate locations for disposal which may be more convenient for residents. Programs for used motor oil, paint and batteries are identified through the Halifax Recycles App, Halifax.ca website, and through multi-media advertisements.

An estimated 903 tonnes of HSW were collected in HRM in 2021, an increase of over 40% above pre-pandemic disposal. While the average number of cars visits per depot operational day is around 280, some mobile events have drawn between 600 and 800 visits.

Expansion of the permanent HSW depot infrastructure or hours of operation has been a common request from residents for many years. Given the co-location of the current depot, HSW hours are limited to those when the MRF is not operating. Adding a second location to service the east side of the Harbour has been obstructed due to lack of suitable property being available.

Several models for delivery of HSW drop-off can be found around Nova Scotia. The Municipality of Colchester hosts three mobile events each year, in addition to a drop-off site in Debert on the first Saturday of each month. In CBRM, Kentville, West Hants, Yarmouth, Digby and East Hants, residents can drop material off during regular operating hours of the respective transfer site. Most other jurisdictions host two to four mobile events per year.

The municipality should explore expanding the HSW program at the MRF and Burnside Composting Facility, including hours of operation, given pending future changes at those facilities as previously discussed.

Key items for assessment as part of the New Strategy include:

- Develop conceptual plans and detailed capital, life cycle, and operating cost estimates related to:
  - Possible expansion of the HSW depot at the MRF in Bayer's Lake to be open approximately 35-40 hours per week.
  - Possible repurposing of part of the Burnside Composting Facility for a new permanent HSW depot, open approximately 35-40 hrs per week.

7. Evaluating expanding the new composting facility.

In December 2020, Regional Council awarded RFP 19-060 for establishing a new composting facility, located at 37 Evergreen Place, Ragged Lake to replace HRM's existing Burnside and Ragged Lake composting facilities. Harbour City Renewables (HCR) was awarded to design, build, and operate the new facility for 25 years as part of the awarded contract. Construction of the new facility began in Spring 2021 and is planned to be completed by Winter 2024. The procurement of the new facility was completed in accordance with HRM's 2017 Organic Management Strategy[15], which included a comprehensive review of the green cart program including no proposed changes to acceptable items in the organics stream such as pet waste. As part of the New Strategy, staff are not proposing any changes to acceptable items in the green cart program.

The new facility is being developed with an annual processing capacity of up to 60,000 tonnes per year of organics delivered by the municipality from residential and IC&I sources. As part of the RFP process and reflected in HRM's 2017 Organic Management Strategy[15], the municipality planned to increase the capacity of the facility from 60,000 tonnes per year to 75,000 tonnes per year in the future as needed. Based on current projections, the municipality will likely exceed the 60,000 tonnes per year of organics being delivered to the facility by 2028-2029, due to population growth.

As such the municipality has several options:

1. Look to reduce the quantities of food waste entering the solid waste system through the circular economy initiatives noted previous (i.e., Living Labs).
2. Expand the new composting facility from 60,000 to 75,000 tonnes per year, or more based on further analysis, as originally planned in collaboration with HCR.
3. Expand the new composting facility from 60,000 to 75,000 tonnes per year, or more based on further analysis, based on an innovative solution that could produce renewable energy (e.g., anaerobic digester) in collaboration with HCR and that could potentially compliment the potential installation of a solar farm at the existing Ragged Lake Composting Facility, as previously discussed[16].
4. Pre-processing organics at the Burnside Composting Facility or new composting facility and transferring to other processing facilities, such as the proposed Halifax Water Anaerobic Digestion Facility or other organics facilities located outside of HRM. This would require re-purposing part of the Burnside Composting Facility as a pre-processing facility or making modifications to the new composting facility.

As part of the New Strategy, it is proposed that the above noted options are further evaluated, including developing conceptual plans and detailed capital, life cycle, and operating cost estimates (as applicable).

8. Evaluating expanding the Rural Refuse Depot operation.

HRM owns two Rural Refuse Depots which act as transfer stations for garbage collected from the eastern part of the municipality, with the garbage being ultimately consolidated, transferred, and disposed of at

[15] Halifax Regional Council. Staff Report. April 20, 2017. Organics Management Consultation and Strategy (See Attachment A, Key Term 10)
[16] See 3. Aligning HRM's Solid Waste System with HalifACT

Otter Lake. Additionally, local residents and businesses are permitted to drop off garbage and scrap metal at no cost.

The Middle Musquodoboit Depot is located at #249 Sibley Rd. in Middle Musquodoboit, and is open 3 days per week including Tuesday, Friday, and Saturday, from 8 am to 5 pm. It is a relatively small site, approximately 20,000 square metres on the developed portion of a larger rectangular lot. There is no electrical power at this site.

The Sheet Harbour Depot is located at #21611 Highway No. 7 in Sheet Harbour and is open 4 days per week including from Wednesday through Saturday, from 8 am to 5 pm. It is somewhat larger than the Middle Musquodoboit Depot, being approximately 24,000 square metres on a generally square developed lot. There is electrical power at this site.

One of the challenges for the eastern part of the municipality is access to a disposal location for construction and demolition (C&D) debris. The nearest location for residents and businesses located in the eastern part of the municipality, is the Halifax C&D Transfer Station located at 188 Ross Rd, which is a 75 minutes one-way trip from Sheet Harbour for example.

HRM has a policy enacted since 2001 that currently requires 75% of C&D debris generated in HRM to be diverted from landfill disposal. Additionally, HRM enacted in 2001 By-Law L-200 Respecting Licensing of Construction and Demolition Materials Recycling and Disposal Operations.

As such the municipality has developed policies related to C&D debris management, including regulatory oversight and compliance, but does not have direct operational responsibility in managing C&D debris in HRM. The municipality generally does not accept C&D debris at Otter Lake or the Middle Musquodoboit or Sheet Harbour Depots, except for small quantities collected curbside as part of the residential collection program.

Modifying the Sheet Harbour Depot to facilitate the collection of C&D debris is possible, however, there are technical, financial, and regulatory considerations. HRM would need to partner with Halifax C&D to facilitate the processing and management of C&D debris.

Key items for assessment as part of the New Strategy:

- Evaluate feasibility of modifying Sheet Harbour Depot to include a C&D debris collection operation, including the installation of scale to facilitate cost recovery for C&D. Determine capital, life cycle, and operating costs.

9. Other

Ongoing benchmarking is helpful to evaluate effectiveness and efficiency in a program. Data collected can help inform policy and support development of new programs to move towards reaching goal. The last comparison between the solid waste programs of HRM and other comparable jurisdictions was conducted in 2018 as part of the Municipal Benchmarking Network Canada initiative[17].

Before implementing policy or programs, it is important to understand the composition of each waste stream and how they can contribute to reaching goals. Solid waste staff currently conduct quarterly audits of blue bag recyclables. Province-wide landfill audits are being conducted by Divert NS in spring of 2023, including samples to be taken from Otter Lake (residential and IC&I waste). Since the IC&I sector includes a mix of multi-unit residential and commercial properties, it would be of further value to quantify how much material in this stream is attributed to each property type. The last characterization of the organics waste stream was conducted in 2017.

[17] While HRM currently reports to the World Council on City Data, access to data from other cities is not available for comparison.

Solid Waste Resource Collection and Disposal By-Law S-600 came into effect in 1999, since which time several amendments have been approved. Modernizing By-law S-600 would allow for easier interpretation and ensure consistency in language and definitions.

Key items for assessment as part of the New Strategy include:

- Comprehensive benchmarking exercise to compare environmental and financial metrics.
- Characterization audits of residential and IC&I organics.
- Assessment of IC&I waste to determine allocation to different property types.
- Review to inform modernization of By-law S-600.

FINANCIAL IMPLICATIONS

The budget to complete the New Strategy is presented in the table below.

Table 2 – New Strategy Budget

Item	Details	Estimated Amount (Including Net HST)
Phase 1 Public Engagement	Includes facilitating public survey, analysis, and reporting. Will include paid advertisements in daily newspapers, local monthly newspapers, paid social media advertising and paid radio advertising to promote participation in survey. Consultant support will be utilized for design and interpretation of survey results.	$40,000
Technical Studies	Includes consultant fees to complete studies related to be spent during Fiscal Year 2023/2024: • EPR jurisdictional scan • MRF options • Multi-residential best practices • Solar assessment at the Ragged Lake Composting Facility • Zero emission Waste Collection Vehicles • Burnside Composting Facility options • Sheet Harbour Rural Refuse Depot assessment • Benchmarking • Organics Waste Audits	$375,000
Phase 2 Public Engagement	Includes comprehensive public consultation including possibly surveys, stakeholder sessions, and information session. Includes paid advertisements in weekly and local monthly newspapers, paid social media advertising and paid radio advertising. Advertising will be used to promote participation in potential survey and public information sessions. Consultant support will be utilized for design and interpretation of potential survey results as well as interpretation of results from public information sessions and stakeholder engagement sessions.	$75,000
	Total	$490,000

Total (including net HST)	$511,001

The New Strategy will be funded as a transfer from the Solid Waste Recapitalization Reserve Q556 of $432,787 in 2023/24 and $78,214 in 2024/25 for a total of $511,001.

Staff are also looking to secure external funding. At this point, it is uncertain if applications for external funding will be accepted, but any amounts received would reduce the total amount of funding required from reserves.

The intent of the **Solid Waste Recapitalization Reserve Q556***,* is to accumulate funds to upgrade and replace solid waste facilities. By doing so the reserve enables the municipality to plan for the replacement and upgrade of solid waste facilities while maintaining a stable, predictable property tax level. Source of funding arises from: a) amounts transferred to the fund as approved by Regional Council; b) the Capital Cost Charge (CCC's) for Solid Waste Facilities as incorporated into Bylaws C-600, respecting Regional Capital Cost Charges and C-800, respecting Regional Capital Cost Charges for Solid Waste; and c) accumulated interest. Funds are allocated for: a) construction, design and build of solid waste facilities, b) the payment of principle, and, c)the payment of interest if the underlying funds are not raised by the sale of assets.
Recommendation in this report doesn't have negative impact on reserve since it would be budgeted reserve withdrawal.

RISK CONSIDERATION

There are no significant risks associated with the recommendations in this report.

There is a risk that the Province may not announce new EPR legislation. If this were to occur, staff would need to adjust the scope of work in the Key Themes, as possible. The potential impact is that some effort is made as of part of the New Strategy to evaluate the potential impact of EPR on the solid waste system.

There is a low risk that the budget and schedule presented in this report are not met due to market conditions (e.g., consultants proposals meeting proposed schedule and budget allocations).

COMMUNITY ENGAGEMENT

No community engagement was completed as part of development of this report. Public Consultation is proposed as part of the New Strategy scope of work, as outlined in the Public Consultation section.

ENVIRONMENTAL IMPLICATIONS

The New Strategy is focused on achieving the following objectives:

- Align HRM's Solid Waste System with HalifACT, including contributing towards:
  - Net-zero corporate emissions by 2030
  - 75% reduction in community emissions by 2030 as compared to 2016 baseline
  - Net-zero community emissions by 2050
  - Reducing waste generation by 30% by 2050
  - 100% waste diversion by 2050
- Contribute towards meeting the following objective outlined in the Province of Nova Scotia's 2022 Environmental Goals and Climate Change Reduction Act:
  - Reduce Nova Scotia's disposal rate from 402 kg per capita to 300 kg per capita by 2030.

In 2020/2021 HRM's disposal rate was 361 kg per capita.

By completing the New Strategy, the municipality will develop the necessary plans to meet long-term environmental objectives related to climate change and waste diversion.

ALTERNATIVES

Regional Council could choose not to approve the recommendation (i.e., proceed with the New Strategy). This would mean that staff would not be able to meet the following objective in the Strategic Priorities Plan 2021-2025:

- ***Improve Waste Diversion and Align Halifax's Solid Waste Strategy with HalifACT***

Conduct a review and update of the municipality's Solid Waste Strategy including aligning the strategy with HalifACT, promoting the circular economy and reviewing the municipality's recycling program.

Additionally, as the last strategy update was completed in 2014, the municipality would not have strategic plans in place for the solid waste system to meet long-term objectives.

Therefore, staff do not recommend this alternative.

ATTACHMENTS

Attachment 1 – Jurisdictional Summary of Strategy Reviews/Waste Management Plans
Attachment 2 – Key Performance Indicators for Solid Waste Resources

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A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

Report Prepared by: Andrew Philopoulos, Director Solid Waste Resources, 902.864.6833

Attachment 1
Jurisdictional Summary of Strategy Reviews/Waste Management Plans

City	Population	Year of Review	Current Waste System	Key Strategies/Initiatives	Strategic Review Approach
Edmonton, AB	1,321,426	2019	Three-stream curbside collection (organics implemented post review)	• Established goal of 90% diversion • Implementation of organics collection ○ Curbside (2020) and multi-residential (2022) • Single-use plastic restrictions	Surveys, public meetings, focus groups, tours of apartments and condo buildings, trade shows and events

Guelph, ON	151,984	2021	Three-stream curbside collection	• Local Circular Food Economy
				• Blue Box Transition (Extended Producer Responsibility)
				• Reduction of single-use plastics
				• Reuse
				  - Community Sharing and Repair
				  - Reuse center
				  - Textile reuse and recycling (partnered with charities)
				• Increased access to public drop offs for bulky items
				• Organic waste
				  - Enhanced collection options for yard waste (currently private)
				  - Education around backyard composting
					Public consultation, consultant review/report

Ottawa, ON	934,243	In Progress	Three-stream curbside collection	• Increased diversion with focus on:
				  - Waste prevention and reuse
				  - Regulation of the waste industry
				  - Resource recovery
				  - Residual management
				• Increased diversion from multi-residential:
				  - Chute closure
				  - Standards for waste rooms and provision of shared bins
				• Review of the City's role on a broader context:
				  - Circular Economy
				  - Extended Producer Responsibility
				  - Single-Use plastics
					Baseline study followed by a draft plan with options informed by public and stakeholder feedback.

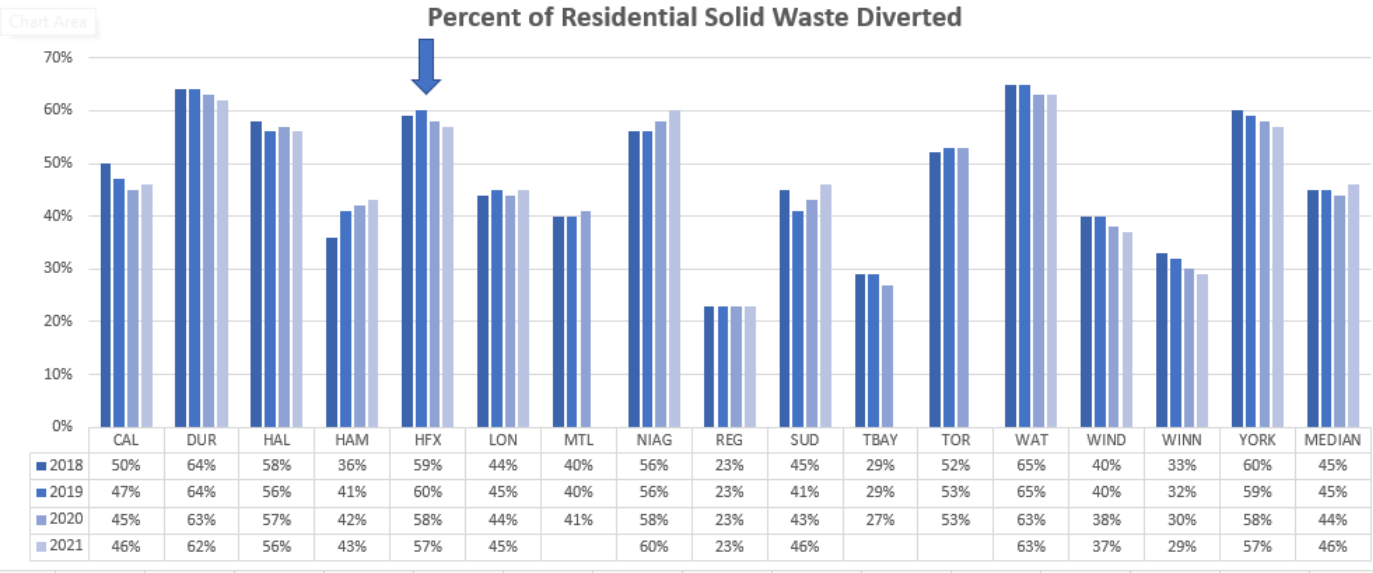
Durham, ON	428,939	2022	Three-stream curbside collection with Blue Box recycling	• Build understanding of the 5Rs (Rethink, Reduce, Reuse, Recycle, Recover) and the Region's waste management programs and services. • Reduce quantity of waste • Implement Extended Producer Responsibility • Circular Economy • Reduce greenhouse gas emissions from waste management activities	Consultant led public consultation (other approaches not identified)

City	Population	Year of Review	Current Waste System	Key Strategies/Initiatives	Strategic Review Approach
Seattle, WA	3,489,000	2022	Three-stream cart based curbside collection	• Waste prevention and reuse • Responsible recycling and compost policy and markets • Improvements to waste handling and collection contracts • Outreach, education, compliance • Emergency preparedness • Construction and demolition debris	Public consultation (other approaches not identified)
Baltimore, MD	2,343,000	2020	Single-stream curbside recycling	• Food waste recovery strategy • Single-use plastic restrictions • Disposal bans • Waste reduction and reuse • Recycling and diversion	Community meetings, online surveys (other approaches not identified)
Stockholm, Sweden	976,000	2017	Multi-stream curbside collection in divided bins	• Waste reduction • Proper management of hazardous waste • Accessible waste management systems • Waste management to be a natural part of the city's planning	Not identified
Amsterdam, Netherlands	908,000	2020	Public containers for drop-off of household waste	• Goal of becoming 100% circular economy by 2050 with focus on three value chains: - Food/Organic waste - Consumer goods - Built environment	Not identified

Attachment 2

Key Performance Indicators for Solid Waste Resources

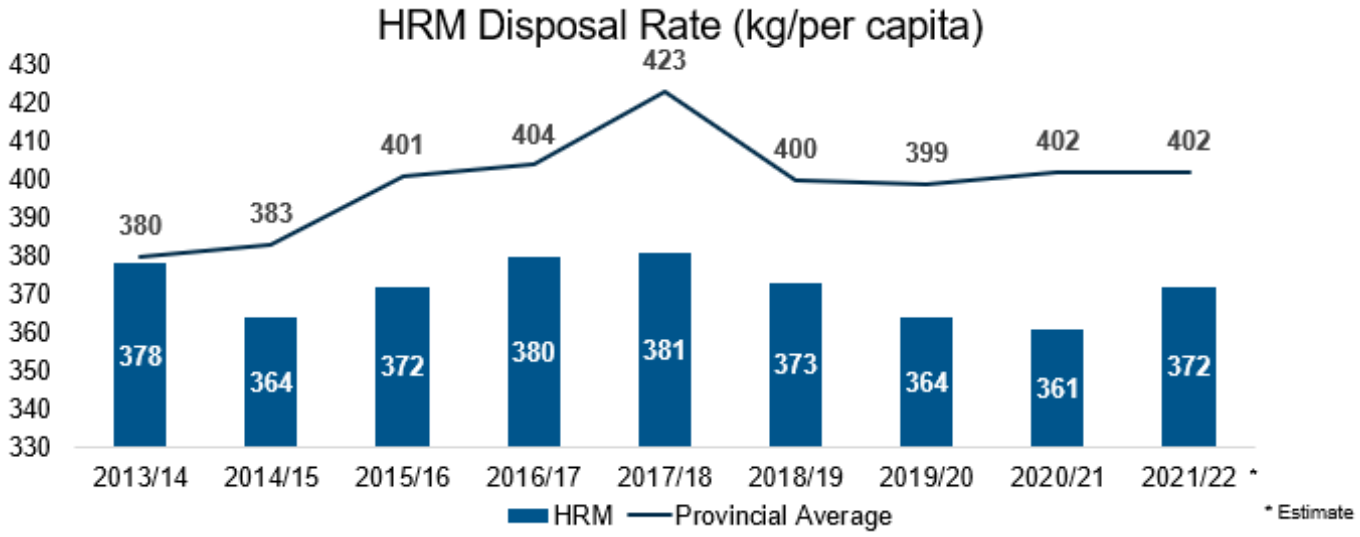
The following KPIs were presented as part of the 2022/2023 Public Works Business Plan.



	CAL	DUR	HAL	HAM	HFX	LON	MTL	NIAG	REG	SUD	TBAY	TOR	WAT	WIND	WINN	YORK	MEDIAN
2018	50%	64%	58%	36%	59%	44%	40%	56%	23%	45%	29%	52%	65%	40%	33%	60%	45%
2019	47%	64%	56%	41%	60%	45%	40%	56%	23%	41%	29%	53%	65%	40%	32%	59%	45%
2020	45%	63%	57%	42%	58%	44%	41%	58%	23%	43%	27%	53%	63%	38%	30%	58%	44%
2021	46%	62%	56%	43%	57%	45%		60%	23%	46%			63%	37%	29%	57%	46%

Note: Montreal, Thunder Bay and Toronto did not report in 2021.

Source: Halifax compared to 2021 MBNCanada Performance Measurement Report



Source: Nova Scotia Provincial DataCall Calculations