To: Chair and Members
Engineering and Public Works Committee

From: Renee Recoskie
Director, Waste Management and Environmental Services

Date: April 17, 2024

Subject: 2023 Waste Management Data - Collected Tonnages and Disposal Capacity Update

Report: PW-4-2024-7

Recommendation

This report is provided for information.

Origin

This report provides an update on the amount of garbage and divertible materials collected in 2023, The District Municipality of Muskoka's (District) diversion rate, and the projected disposal capacity remaining at the Rosewarne Landfill based on the annual survey completed last fall.

This is the first of two annual reports presenting annual Key Performance Indicators (KPIs) for the District's waste management system – a companion report on data related to the drop-off waste facilities is captured through report PW-4-2024-8

At the Engineering and Public Works (EPW) Committee meeting on June 21, 2021, staff presented report PW-8-2021-7 – an update on the District's Waste Strategy and recommendations for improving diversion. The report outlined a roadmap to 60% diversion and included several initiatives to reduce garbage and extend the life of the Rosewarne Landfill. Direction was received to report annually on KPIs related to the District's waste management system. KPIs provide an understanding of system changes and improvements, inform continued study on long-term disposal options, and assist in budgeting and subsequent related deliberations.

Background

The following are key points for consideration with respect to this report:

Regulatory Reporting and Municipal Datacall

- Ontario's "Blue Box Regulation" under the *Resource Recovery and Circular Economic Act, 2016*, requires producers to operate and pay for the collection and management of Blue Box materials from eligible sources.
- Resource Productivity and Recovery Authority (RPRA) is the regulator mandated by the Government of Ontario to enforce the province's circular economy laws, including the *Resource, Recovery and Circular Economy Act, 2016*.
- As of July 1, 2023, municipalities and First Nations communities started transitioning their Blue Box programs to a new regulatory framework with a province-wide system for collecting Blue Box materials to be operated by producer responsibility organizations (PROs) on behalf of producers.
- Prior to changes to a new producer responsibility regulatory framework, to obtain funding related to the Blue Box program, municipalities and First Nations throughout Ontario were required to annually submit both tonnage and program costs to RPRA. Information gathered and submitted was referred to as the "Municipal Datacall" (Datacall) and occurred in April annually.
- Data was made publicly available for all reporting entities, which provided an ability to compare performance consistently across several KPIs – such as diversion rate, waste generation rate, and kilogram (kg) disposed per capita, etc.
- With the new regulatory framework, the need to submit reporting through the Datacall has ceased. RPRA advised that the final Datacall report captured 2021 data and would not continue in the same format moving forward. Datacall statistics will continue to be published for municipalities, depending on their producer responsibility transition dates.
- The District's transition date is set for November 19, 2024, as a result Datacall reporting is no longer required.
- There is uncertainty in the industry regarding the framework or reporting that may occur in the future to compare municipal waste management systems and KPIs. This is a topic of on-going conversation in professional municipal waste associations.
- From the 2021 Datacall reporting, the District hovered around the 50th percentile – with the top municipal programs consistently performing at over 60% diversion.
- Further, the top 10 municipalities averaged 160 kg of garbage disposed per capita.

Ontario's Waste Disposal Capacity

- The Association of Municipalities of Ontario (AMO) published Ontario Baseline Waste and Recycling Report in March 2023. Within the report it identifies that according to Waste to Resource Ontario, the current landfill capacity remaining within Ontario is 10 years unless waste disposal rates change significantly.

- The report further highlights the challenges of managing waste within Ontario. Provincial and municipal goals of building new housing can further exacerbate waste disposal challenges.
- Given the criticality of the situation province-wide, Waste to Resource Ontario hosts a landfill countdown clock on their homepage to increase awareness to the issue and the important role that everyone plays in minimizing material being sent to landfill.
- Tipping fees at waste disposal facilities within the United States are increasing at higher than previous rates. Ontario sends over 3.7 million tonnes per year to waste disposal facilities within the United States. The increase in tipping fees, and anticipated pricing moving forward, adds more uncertainty and challenge for the future of waste disposal in the province as options to export waste may decrease based on affordability.
- The impact of a provincial disposal capacity shortage could significantly increase costs for the District to export garbage in the future, when space at the Rosewarne Landfill is exhausted.
- Alternatively, the advancement of future disposal options within the District are likely to require substantial capital investment and significant operating costs.
- Remaining capacity at the Rosewarne Landfill serves as a strategic reserve for current and future ratepayers across the District, helping to mitigate impacts of disposal capacity shortages across the Province.

Analysis

2023 Collected Tonnages

The 2023 total collected waste tonnages are provided for reference in Schedule A.

This data outlines the tonnage of garbage and divertible materials collected both at curbside and at drop-off sites (waste facilities, bin sites, and Lakeside Waste Collection). As outlined in Schedule A, collected tonnages of garbage and divertible materials stabilized in 2023 – likely the result of more normalcy in routines as the pandemic waned. Key points with respect to collected tonnages are summarized below:

- 25,976 tonnes of residential and commercial garbage was landfilled at the Rosewarne Landfill in 2023 – a 2% decrease from 2022. A reduction in the amount of residential and commercial garbage landfilled was great to see. Drop-off garbage increased by 4% and bin site garbage decreased by 14%. Both collection programs had Waste Strategy-related changes over 2023.
- Curbside tonnages of organics increased by 28% over 2023. The increase in organics is well beyond what would be expected for annual growth – and reflects positively on the impact of expanding green bin collection within Bracebridge and Huntsville in 2023. Staff will continue to monitor curbside tonnage changes over 2024 as program changes were initiated last spring and the curbside organics program is further expanded this fall.
- Curbside garbage volumes decreased by 11%; however, curbside recycling was similar to 2022, indicating that the changes at curbside such as bag limit

reductions and expansion of the green bin program appear to be having an effect.

2023 Diversion Rate

The 2023 direct diversion rate for the District (considers both residential and commercial material) was 37% – a marginal improvement over 2022. It is noted that results are unaudited as the Datacall has been discontinued with the producer responsibility transition. However, staff have followed the same methodology for reporting as in prior years. Key points with respect to the diversion rate are summarized below:

- The District's diversion rate remains poor and lags behind top municipalities in the province. We continue to landfill significant amounts of garbage when compared to what we divert.
- The diversion rate varies for various collection programs. Curbside collection continues to have the greatest diversion rate (47%) followed by transfer stations (32%) and Lakeside Waste Collection (31%) – with bin sites performing exceptionally poorly (23%). Ownership of waste and supervision are critical to ensure bag limits are being respected and diversion tools used.
- Expansion of the organics program and the transition of a significant number of unstaffed bin sites are expected to bring some positive change to the District's diversion rate in 2024.
- Hampering efforts to increase diversion is the amount of "free" disposal that is still offered to residents – for residents with curbside collection, two (2) additional no charge bags are permitted at drop-off facilities throughout the District, for example.
- Municipal programs with more stringent limits on garbage have better diversion rates. Restricting garbage provides residents with an incentive to decrease consumption and/or increase utilization of "free" diversion programs – keeping waste out of the system entirely or shifting materials from the black bag in to the Blue and Green bins.
- A Four-Season Curbside audit is underway in 2024 to better determine curbside waste composition and what work needs to be done in promotion and education to improve diversion rates within the curbside collection program.

Residential Garbage Disposed Per Capita

As noted above, the District lags behind other Ontario municipalities in terms of diversion rate – disposing of more garbage than what is diverted through programs such as Blue Box recycling or Green Bin organics.

An important KPI related to garbage is the kg of garbage disposed per capita. This information was also previously released as part of the Datacall and future reporting availability is still under review.

This metric considers population – noting that there is a RPRA formula that accounts for the seasonal nature of some areas of the province. A "seasonal household", as defined

by RPRA, is allotted 2.5 persons per household and, further, a “seasonal resident” considered 2/12 of a “permanent resident”. In essence, RPRA calculations assume that seasonal population is present only two (2) months of the year generating waste within the community. Staff understand that this definition does not align with many of Muskoka’s second homes which are being utilized more frequently. While this may not be the reality and the actual figures marginally lower, the amount of garbage generated per capita remains relatively excessive. A summary of the garbage disposed per capita results is included below:

- Based on the last available Datacall reporting from 2021, the top 10 municipalities average 160 kg of garbage disposed per capita.
- Table 1, below, provides garbage disposed per capita data for the District, based on overall reporting and some granularity for highest and lowest amount disposed based on area municipality data.
- The District’s garbage disposed per capita is one of the worst in the province when compared to the 2021 Datacall. This represents a KPI with lots of potential for improvement.
- Disposal in kg per capita increased in 2023 by 20% compared to 2022. The average garbage disposed per capita is more than double the amount of garbage disposed per capita amongst the top performing municipalities in Ontario.

Table 1: Comparison of Garbage Disposed Per Capita

Garbage Disposed Per Capita	2023 (kg per capita)	2022 (kg per capita)
Lowest Amount – Area Municipality	251	244
Highest Amount – Area Municipality	623	466
District Wide – All Area Municipalities	357	298

Provision of unstaffed bin sites and depots, “free” drop-off bagged garbage, “free” large item drop-off and “free” large item events are likely contributors to these results since there is no ownership of waste.

Further, it is suspected that leakage of materials from commercial businesses and non-District residents are causing increased pressure on the District’s system, further inflating the per capital statistics. The leakage of materials from sources that do not fund their share of the waste system transfers these additional financial pressures onto current and future ratepayers.

Rosewarne Landfill – 2023 Landfill Assessment

The District currently manages one (1) active landfill site, the Rosewarne Landfill (West), located in Bracebridge. The landfill was designed based on nine (9) cells with a total capacity of 1,460,000 m^3, with each cell developed and constructed sequentially as additional capacity is needed. Currently, garbage is being landfilled in Cell 3, where garbage was first placed on December 15, 2021, and was fully brought online over the

course of 2022. Cell 3 is projected to reach capacity in late 2024. Preparation for the development of Cell 4 is underway with the award of the Subgrade Construction last month through report PW-3-2024-2. The subsequent cell completion and commissioning contract is expected to be finalized and issued imminently to ensure completion prior to the end of 2024.

Required in the Environmental Compliance Approval (ECA) for the landfill and reported annually to the Ministry of the Environment, Conservation and Parks (MECP), is a survey at the end of the year to provide the topographical plan showing the site's progressing contours. The contours and the quantity of waste received at the site are used to calculate the remaining landfill capacity.

Table 2: Rosewarne Landfill (West) – Remaining Capacity

Year	Garbage Landfilled (tonnes)	Annual Volume Utilized (m^3)	Remaining Landfill Capacity (m^3)
Design	N/A	N/A	1,460,000
2016	N/A	3,008	1,456,992
2017	27,902	52,447	1,404,545
2018	28,299	64,338	1,340,207
2019	29,019	70,440	1,269,767
2020	32,635	73,459	1,196,308
2021	31,214	61,696	1,134,612
2022	26,631	51,538	1,083,074
2023	29,113	60,935	1,022,139

Key points from the 2023 survey are summarized below:

- The volume of landfill capacity utilized in 2023 increased by 18% over 2022. 2023 data was in-line with that reported in 2022. In 2023, 60,935 m^3 were utilized, noting an average compaction density of 594 kg/m^3. Staff are pleased with the compaction results and will continue to monitor rates to inform operations and equipment adjustments to optimize compaction. It is noted that a new compactor was incorporated as part of landfill operations in the fall of 2023. As part of the 2024 report, the first complete year of performance for the new compactor will be reviewed and the average compaction density determined.
- Based on the average volume landfilled from 2017 to 2023 and without consideration for growth or program changes/increased diversion rate, the estimated closure year of the Rosewarne Landfill (West) is 2039 (closure was originally expected no later than 2041). This projection is what is reported annually to the MECP.

- If reductions materialize in annual volumes, the landfill life could be extended beyond 2040. Reducing the amount of garbage received will have a direct effect on the expected closure date and when alternative disposal options must be available.
- While there was a reduction in the annual volume from 2021 to 2022, 2023 saw the annual volume increase. Should this trend continue, extending the landfill life will not be possible.
- As outlined in previous KPI reporting, prudent future planning for garbage disposal must consider population growth, program changes resulting in an increased diversion rate, and holding some contingency capacity (i.e., one year).

Solid Waste Master Plan

Planning for long-term management of the garbage generated by the District's residents, business owners and visitors is a priority given the length of time and complexity of planning/approvals for future disposal and/or processing (noting that landfill development could take in excess of 10 years and is contingent on finding a willing host community). For reference, Council approval was granted in 2006 to proceed with the Rosewarne West site following partial completion of an Environmental Assessment – and the first garbage was landfilled in 2016. Since then, complexity of developing landfills in Ontario has changed with the 2020 approval of Bill 197 which provides in the Environmental Assessment Act additional veto powers for neighbouring municipalities.

The District is not alone – municipalities throughout the province are eagerly advancing waste management master plans and strategies to ensure that future options are advanced to manage garbage. Further, program changes – which are sometimes impactful on residents in the short term – are being recommended and rolled-out to extend the lifespan of existing landfills.

The District has benefitted from the experiences of other municipalities and recent developments in the waste management world. As a result, a comprehensive Solid Waste Master Plan will be initiated in 2024 building on the processes and success of recently completed municipal initiatives. While communicated as a Master Plan, numerous technical studies and deliverables will form part of the scope and process of the project. The "Muskoka Community Energy and Emissions Reduction Plan", planned for Council endorsement in April 2024, will also be a foundational study to assist with incorporating greenhouse gas reduction potential as part of the consideration of future options and strategies.

An introduction and review of the Solid Waste Master Plan project is planned to come forward in Q3 2024 to review the full scope, engagement and consultation, and presentation of information and decision points along the project pathway. The project is anticipated to take over two years to complete with multiple opportunities for input and engagement.

Financial Considerations

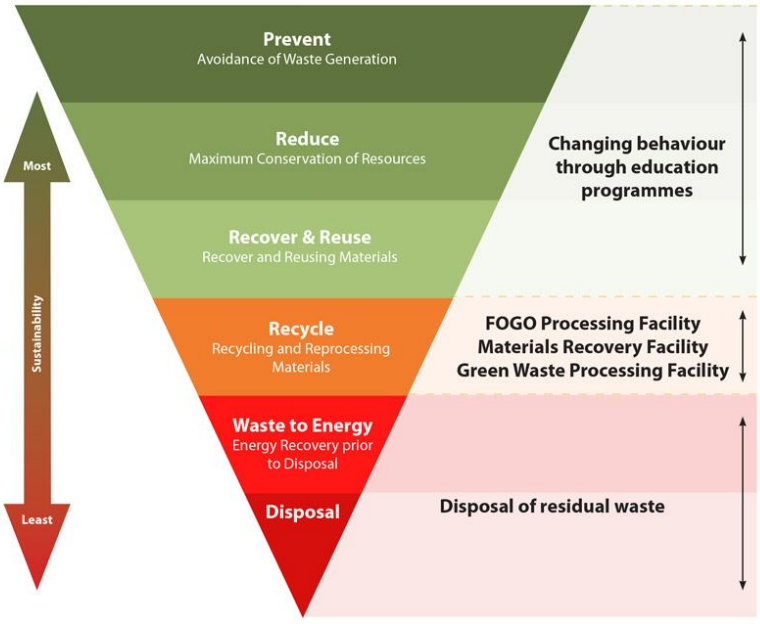
Costs associated with landfill cell development are budgeted over the lifespan of the landfill. The budget for Cell 4 is $5,215,820 and is included in the approved 2024 Rate Supported Capital Budget and Forecast. It is anticipated that the cost of landfill development will continue to increase due to inflation and the changing regulatory requirements to develop new landfills in Ontario. Staff will continue to assess long-term capital and operating impacts associated with the management of solid waste, along with making adjustments as the District's diversion and disposal rates change over time.

The approved 2024 Rate Supported Capital Budget and Forecast includes funds for advancing components of the Solid Waste Master Plan outlined above. The budget for Project 450117 – Future Disposal Capacity Study is $250,000 and the budget for Project 450156 – DMM Waste Management Strategy 2024 is $170,000. It is anticipated that additional capital budget will be required to complete the various phases of the Solid Waste Master Plan. These requirements will be addressed through the upcoming 2025-2026 Budget deliberations.

Climate Change Implications

The District assesses climate implications in all staff reports using the Clean Air Partnership's 'Municipal Climate Lens Tool' to consider climate impacts or benefits associated with any project, program or initiative. There is no direct climate impact related to this report.

Properly managing materials (or simply reducing unnecessary consumption) will reduce the environmental footprint created in the management of waste and ensure the most beneficial use of these materials (e.g. recycling vs. disposal). In reducing the amount of waste landfilled, climate change impacts and community GHG emissions will inevitably be reduced as less materials require management and/or are landfilled. The waste management hierarchy is illustrated in the image below and indicates the least environmentally sustainable component of the hierarchy is disposal.



Source: Resource Recovery Group Website - The Waste Hierarchy

Communications

Understanding the urgency of changes to our waste system continues to be a focus and part of Waste Strategy messaging. Communicating KPIs and the importance of diverting waste from the landfill in presentations relating to waste management – to Council, to Area Municipalities, to community groups, and to cottage associations – is critical to increasing the lifespan of our landfill.

A comprehensive community engagement and consultation plan will be created through the initiation of the Solid Waste Master Plan in 2024. Future reports to the EPW Committee will provide additional updates around engagement and consultation opportunities.

Strategic Plan

The District assesses the impact or influence of the information or recommendations included in staff reports toward achieving Council's Strategic Plan objectives.

This report includes information or recommendations that impact or influence the following Strategic Plan Objectives:

- Objective 1 Taking action together – Preserve and protect our natural environment, take climate action and be more resilient to its impacts.
- Objective 2 Walking the talk – Lead by example, celebrate what Muskoka is doing, and encourage us all to do more.

Respectfully submitted,

Renee Recoskie, P.Geo., PMP, Director, Waste Management and Environmental Services; and
James Steele, P.Eng., Commissioner, Engineering and Public Works

District Municipality of Muskoka
Solid Waste Management - Collected Tonnages 2017 to 2023

		2023 (tonnes)	2022 (tonnes)	2021 (tonnes)	2020 (tonnes)	2019 (tonnes)	2018 (tonnes)	2017 (tonnes)
Curbside Collection	Curbside Garbage	7,632	8,612	9,199	9,062	8,169	8,451	8,429
	Blue Box Recycling	4,785	4,696	5,014	4,906	4,590	4,638	4,746
	Organics	1,339	1,049	1,116	898	949	723	739
	Leaf and Yard Waste	594	657	523	776	505	523	327
	Curbside Diversion (tonnes)	6,718	6,402	6,654	6,581	6,044	5,885	5,812
	Total Curbside Collected (tonnes)	14,350	15,014	15,853	15,643	14,213	14,335	14,241
Drop-off Garbage	Transfer Station Garbage	14,936	14,712	17,212	17,923	17,015	17,134	16,713
	Rosewarne Landfill Garbage (direct drop-off)	1,573	1,177	1,638	1,534	60	91	223
	Recycling Residuals (from MRF, Diversion Building)	4	6	352	1,468	1,472	222	269
	Bin Sites and Depots Garbage	1,773	2,071	2,787	2,637	2,429	2,401	2,267
	Lakeside Waste Collection Garbage[1]	57	63	29	12			
Drop-off Diversion	Transfer Station Blue box Recycling (includes OCC)	1,616	1,597	1,718	1,731	1,706	1,738	1,730
	Bin Sites and Depots Blue Box Recycling	531	586	815	699	625	695	451
	Lakeside Waste Collection Blue Box Recycling	26	31	15	6			
	HHW	198	264	284	299	270	254	334
	Textiles	19	25	13		8	22	
	Organics - drop-off	184	146	346	492	477	1,193	1,015
	Leaf and Yard Waste - drop-off	2,559	2,109	1,823	2,212	1,995	2,435	2,295
	Clean Shingles	528	542	668	696	633	765	803
	Re-use Drop-off[2]	262	114	3				
	Scrap Metal	1,224	1,491	1,877	1,877	1,629	1,541	1,522
	Tires	162	212	153	176	133	129	72
	Electronic Waste	129	120	158	133	129	139	225
	Brush	1,248	1,328	1,403	1,703	1,629	105	112
	Clean Wood	155	120	216	303	254	274	282
	Christmas Trees	3	2	5	3	3	4	1
	Recycling Contamination - Divertables	0	1	5				
	Mattresses & Box Springs[3]	175	348	471	315	190		
	Propane Tanks (units)	860	803	994	847	722	1,456	1,109
	Drop-off Diversion (tonnes)[4]	8,334	8,376	9,971	10,542	9,481	9,108	8,675
Direct Diversion Rate (unaudited)	Curbside	47%	43%	42%	42%	43%	41%	41%
	Transfer stations	32%	33%	32%	32%	33%	33%	33%
	Bin Sites and Depots	23%	22%	23%	21%	20%	22%	17%
	Lakeside Waste Collection	31%	33%	34%	33%			
	Overall Waste Management System	37%	36%	35%	34%	35%	35%	34%
	Landfilled garbage - Rosewarne Landfill	25,976	26,631	31,215	32,635	29,144	28,299	27,902
	Cover	7,638	6,647	2,891	2,405	2,214	3,928	1,645
	Number of Site Transactions	421,397	400,984	422,163	399,510	350,422	339,123	325,934

Notes:

1 Some garbage taken directly to contractor to faciliate winter program.
2 Tracking of re-use tonnage initiated in December 2021.
3 Tonnage based on average weight of mattress.
4 Does not include the number of propane units.