ottawa.ca 3-1-1
TTY/ATS 613-580-2401

Solid Waste Services
Asset Management Plan

May 2024

Version 1.1

Introduction

1.1 Background

Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure requires all municipalities to prepare baseline asset management plans for all their assets. The purpose of this legislation is to have municipalities demonstrate they can maintain their assets, balancing affordability, risk, and service levels to sustain them in their present state, with no change to the service level for the next ten years.

To meet the provincial requirements, the City has created this first version of its Solid Waste Services Asset Management Plan. It reports the current state of the assets, levels of service provided, strategies and activities applied by the City, historical and forecasted financial details, and potential improvement actions. It is a strategic document that provides a snapshot of current conditions and establishes a basis for future asset management planning and decision making.

The Asset Management Plan is based on asset data and financial information from 2023 developed for the Solid Waste Master Plan and Solid Waste Long Range Financial Plan, which when completed will inform subsequent updates to the Asset Management Plan.

1.2 Asset Classes and Types

The Solid Waste Services Asset Management Plan includes assets that support the development, management, and environmentally sound operation of the residential solid waste management system.

Solid Waste Services Asset Classes and Types

Solid Waste Facilities

- Solid Waste Admin Building
- Scale House and Front Entrance
- Small Loads Facility

Solid Waste Fleet

- Landfill Vehicles
- Operational Support Vehicles
- Waste Collection Vehicles

Solid Waste Landfill Systems

- Cover Systems
- GPS Equipment
- Groundwater Monitoring Wells
- Landfill Gas System
- Leachate Systems
- Stormwater Facilities

Solid Waste Landfill

- Landfill Airspace

Solid Waste Public Spaces Assets

- On-Street Garbage and Recycling Bins

State of Local Infrastructure

2.1 Asset Inventory and Valuation

The total replacement cost of solid waste services assets is approximately $518 million as summarized in the table below.

Solid Waste Services Asset Inventory and Replacement Cost[1]

Asset Class	Inventory	Replacement Cost
Solid Waste Landfill Systems	61 ha	$95 M
Solid Waste Landfill[2]	Used: 13,511,917 m^3 of total Available: 16,998,442 m^3	$368 M
Solid Waste Facilities	5	$15 M
Solid Waste Fleet	118	$38 M
Solid Waste Public Spaces Assets	584	$2 M

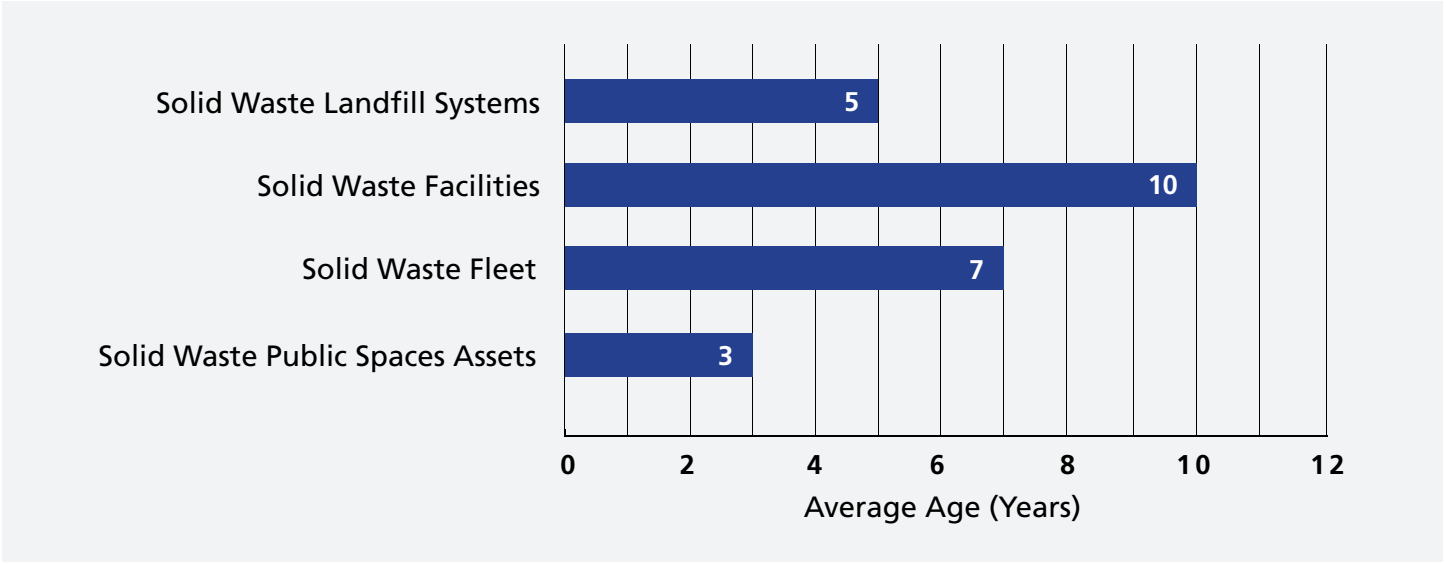
[1] Age is not reported for some assets because it is not an applicable/reliable measure for all asset types.

[2] Based on Trail Waste Facility Landfill 2022 Annual Monitoring Report.

2.2 Age and Condition

The age of an asset gives a sense of how close it is to the end of its service life and what renewal interventions may be appropriate. The average age of the City's solid waste assets is shown in the figure below.

Average Age of Solid Waste Services Assets



The City uses a range of techniques and solutions to collect and assess condition data, and at various frequencies, which is summarized in the table below.

Condition Data Collection Methods for Solid Waste Services Assets

Asset Type	Condition Data Collection Technique	Frequency
Cover Systems	Inspection	Monthly
GPS Equipment	Inspection	Annually
Groundwater Monitoring Wells	Third-party assessment	Quarterly
Landfill Gas System	Third-party assessment	Annually
Leachate Systems	Third-party assessment	Annually
Stormwater Facilities	Inspection	Monthly
Solid Waste Landfill	N/A	N/A
Solid Waste Admin Building	Building Condition Audit	10 years
Scale House and Front Entrance	Age-based	Annually
Small Loads Facility	Inspections	Annually
Solid Waste Fleet	Inspection and maintenance	6 months & original equipment manufacturer maintenance schedule
Solid Waste Public Spaces Assets	Visual inspection	Varies

Based on condition data, supplemented by subject matter expert knowledge and professional judgment, the condition of assets is rated on a scale from "Very Good" to "Very Poor" as shown in the table below.

Five-point Scale for Solid Waste Services Asset Condition

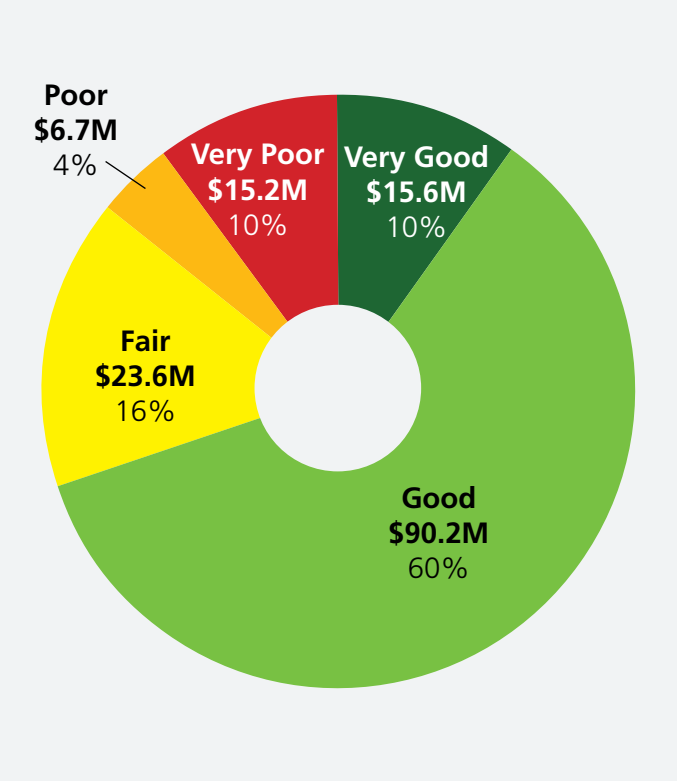
Rating	Rating Description	Subject Matter Expert Opinion	Life Consumed	Facility Condition Index (FCI)[1]	Life Remaining
		(Cover Systems, Groundwater Monitoring Wells, Landfill Gas System, Leachate Systems, Stormwater Facilities, Small Loads Facility, On-Street Garbage and Recycling Bins)	(GPS Equipment, Scale House and Front Entrance)	(Solid Waste Admin Building)	(Solid Waste Fleet)
Very Good	**Sound Physical Condition** No short-term failure risk and no work required.	Subject Matter Expert Opinion	<25%	<0.02	>75%
Good	**Adequate for Now** Acceptable, generally in mid stage of expected service life		26% – 50%	0.02 – 0.05	51% - 75%
Fair	**Requires Attention** Signs of deterioration, requires attention, some elements exhibit deficiencies		51% – 75%	0.05 – 0.15	26% - 50%
Poor	**Increasing Potential of Affecting Service** Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration		76% – 100%	0.15 – 0.30	1% - 25%
Very Poor	**Unfit for Sustained Service (built infrastructure) / Nearing end of life (fleet)** Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable.		>100%	> 0.30	<1% (outside of lifecycle)

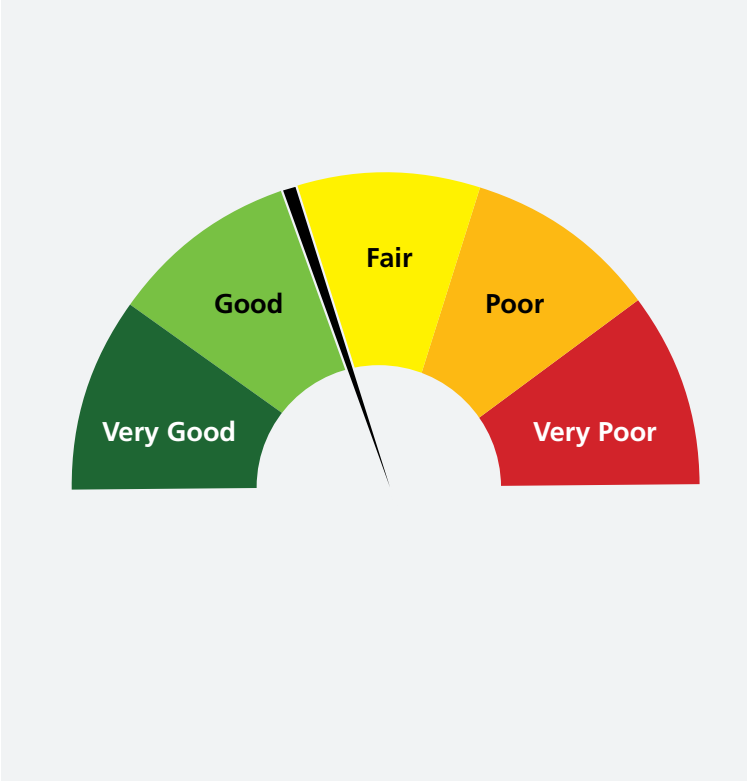
(1) Where FCI = 0, or no deferred maintenance is reported, or required maintenance is reported but has not yet been deferred, condition is reported based on typical useful life consumed as follows:

	Very Good	Good	Fair	Poor	Very Poor
Typical Useful Life Consumed	<40%	40% - 70%	70% - 90%	90% - 100%	≥100%

The overall condition rating for solid waste services assets is "Good to Fair" and a breakdown of the various asset classes are shown in the figures below.

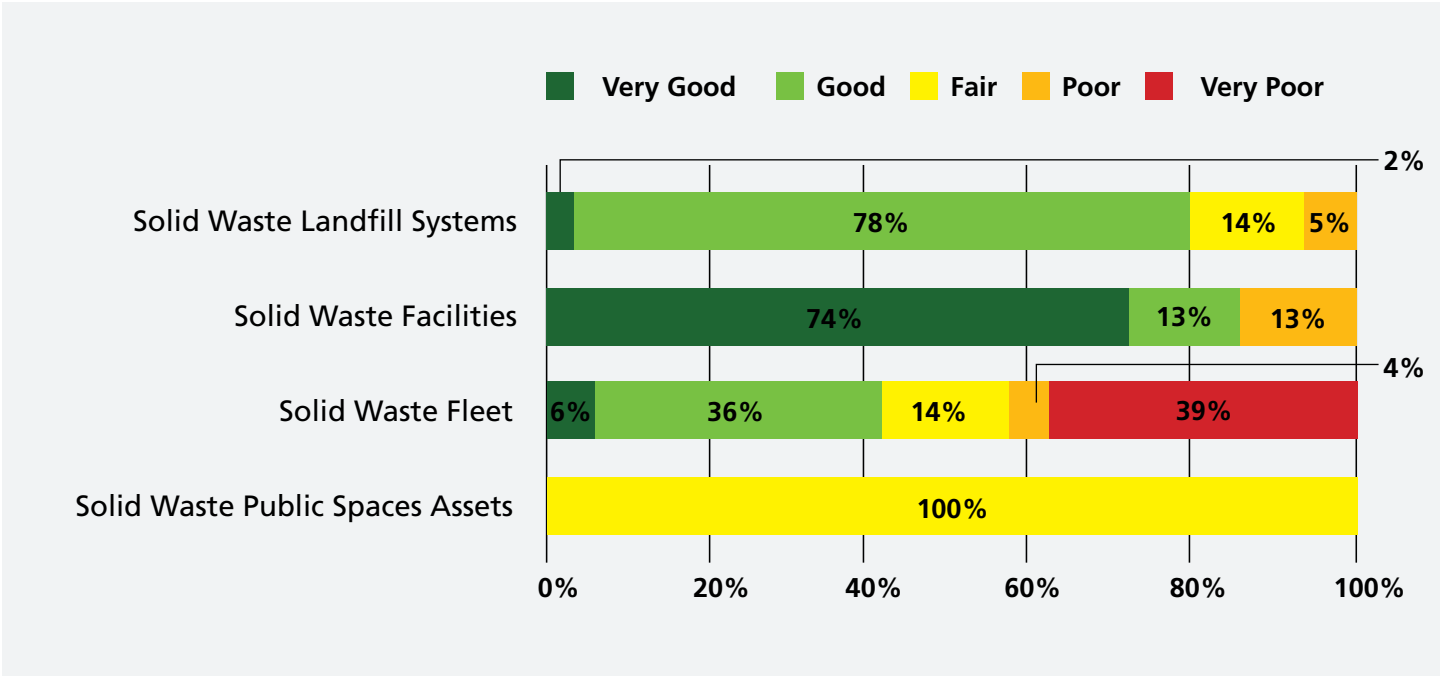
Overall Condition Profile of Solid Waste Services Assets[3]





[3] Condition reporting excludes Solid Waste Landfill as condition is not applicable to this asset type.

Condition Profile of Solid Waste Services Assets[4]



[4] Condition reporting excludes Solid Waste Landfill as condition is not applicable to this asset type

Levels of Service

The City's assets exist to deliver service to customers. Levels of service measure the actual service delivered so that decisions can be made about the assets based on the service that they provide rather than simply on their condition.

The Solid Waste Asset Management Plan establishes level of service measures and reports the current levels of service being provided. The measures align with City goals and recognize that solid waste assets should be managed in a way that:

- Reduces waste generation
- Increases the diversion rate
- Reduces emissions associated with the City's operations and facilities
- Increases resiliency to extreme weather and changing climate conditions
- Maintains assets in a state of good repair
- Provides sustainable and affordable services over the long-term

The level of service measures for solid waste services are shown in the table below.

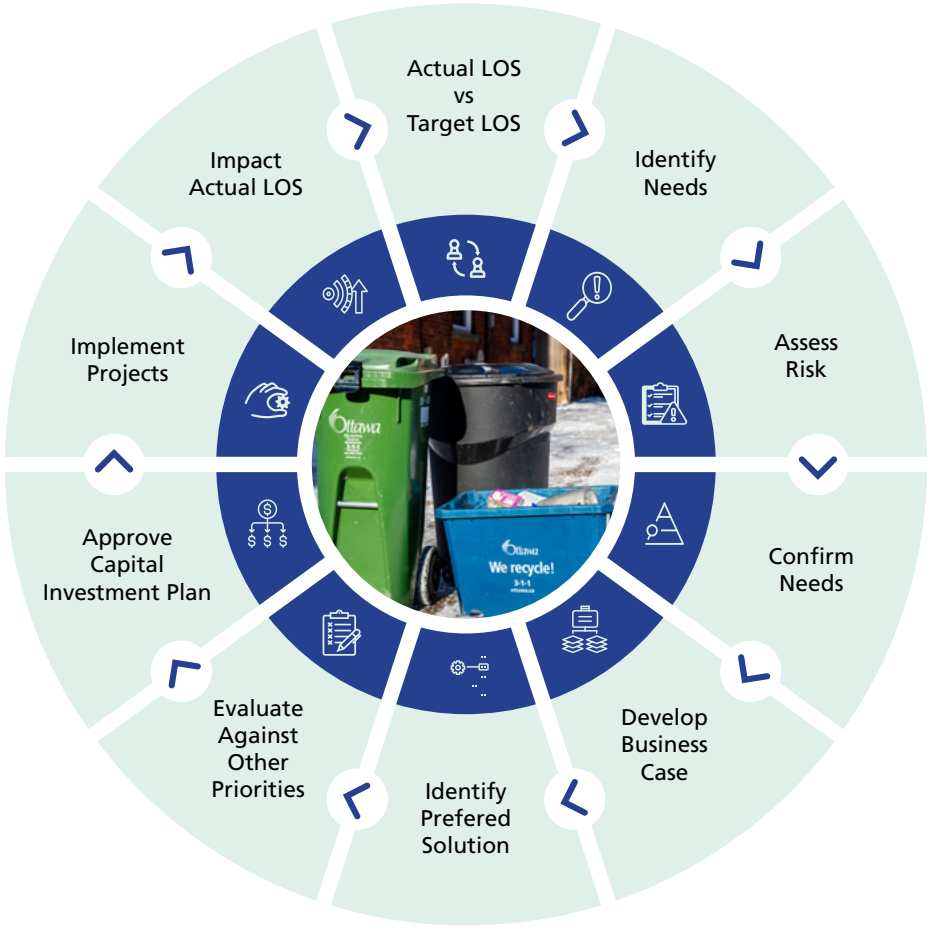
Level of Service Measures for Solid Waste Services

Service Attribute	Community Level of Service	Technical Level of Service	Current Performance (2022)
Capacity and Use	Reduce waste generation	Residential waste generation rate – residential curbside and containerized collection programs	343 kg/capita
	Increase the diversion rate	Percent of solid waste diverted – residential curbside and containerized collection service programs	53%
		Percent of solid waste diverted – multi-residential properties and City facilities	17%
Function	Reduce emissions associated with the City's operations and facilities	Landfill GHG emissions	To be determined
		GHG emissions per total fleet (tonnes CO2e)	4,857 tonnes CO2e
	Increase resiliency to extreme weather and changing climate conditions	Percent of facilities with backup power for critical building systems	0%
Reliability	Maintain assets in a state of good repair	Percent of assets in fair or better condition	86%
Affordability	Provide sustainable and affordable services over the long-term	Asset Renewal Funding Ratio	93%
		Average Annual Renewal Investment	$8.8M

Asset Management Strategy

4.1 Practices, Procedures and Tools

One of the key objectives of asset management is to recognize the objectives of the City and align them with the City's long term financial plans. This will allow Council to make informed decisions and provide clear direction on how the City will balance service levels, risks, and costs. The City has well-established practices to assess the risk of not meeting community and technical level of service standards and to determine the lowest lifecycle cost activities to reduce the risks to acceptable levels and the associated costs of undertaking them. The Asset Management Plan provides the needs forecast associated with maintaining current levels of service and compares it to the planned budget to determine funding gaps or surpluses.



4.2 Future Demand and Service Enhancement

In developing the Solid Waste Services Asset Management Plan, a preliminary estimate of the financial needs for solid waste services over the next 10 years was prepared based on the financial analysis contained in the Draft Solid Waste Master Plan (Phase 3) report (ACS2023-PWD-SWS-0005).

The strategies and funding requirements to address future demand and service enhancement expectations are based on the Draft Solid Waste Master Plan (Phase 3) report (ACS2023-PWD-SWS-0005) for the status quo system. The draft Solid Waste Master Plan (Phase 3) does identify 50 actions that are recommended for implementation to meet the objectives of the plan and work towards the plan's Zero Waste vision.

At the time the analysis for this Asset Management Plan was completed, the Solid Waste Master Plan was not yet complete. In order to meet the provincial deadline, the Asset Management Plan was completed based on the information available for the status quo system at the time (December 2023). Therefore, the Asset Management Plan does not reflect all of the solutions and financial implications of the final Solid Waste Master Plan and the associated Long Range Financial Plan, which should be referred to for the latest information and is expected to be presented to Committee and Council in June 2024.

Ottawa's population is expected to increase to 1.4 million people by 2046, a significant increase of 40% since 2018, as summarized in the table below. This growth will put pressure on existing assets and services, and may require new or expanded assets to meet growing needs.

City of Ottawa Population Projections for 2046

	2046 Projection	Growth since 2018
Population	1,409,649	402,148
Private Households	590,600	194,800
Jobs	827,040	189,500

Source: New Official Plan report to Council (ACS2021-PIE-EDP-0036), October 2021

Asset management planning also needs to consider the City's Climate Change Master Plan goals for both mitigation strategies to slow climate change impacts, such as reducing greenhouse gas emissions, and adaptation strategies to reduce negative impacts associated with existing and future climate change. The Asset Management Plan estimates the additional future costs due to climate change shown in the table below. These are preliminary estimates based on the latest information available, which will be refined over time.

Estimated Additional Future Costs Due to Climate Change for Solid Waste Services

Additional Costs due to Climate Change	Estimated 10-Year Total Additional Cost ($ Millions)
Increased operations and maintenance and capital renewal costs for buildings due to gradual, long-term impacts of climate change	$0.2 (operating & maintenance) $5.7 (capital renewal)
Increased operations and maintenance costs due to extreme weather events	$4.3
Increased capital costs to implement climate change mitigation actions including municipal fleet electrification and building retrofits	$0.0
Total	**$10.2**

Some climate change costs have been or are expected in future to be at least partially recovered from upper levels of government; these recoveries are not factored into the estimates. Also, the estimates do not capture damage to capital infrastructure due to catastrophic/extreme weather events (e.g., tornadoes); increased capital renewal needs due to accelerated asset deterioration; increased capital renewal costs for assets other than buildings (such as landfill cover systems, landfill gas system, fleet and equipment); and gradual, long-term impacts due to climate hazards other than extreme heat, extreme rainfall, and freeze-thaw cycles (such as drought, ice storms and wildfires).

4.3 Lifecycle Management and Risk

Lifecyle management activities refer to the set of planned activities and actions undertaken to maintain the current levels of service and achieve good economic life of the assets. The activities undertaken range from operations and maintenance activities, including planned and reactive maintenance, renewal activities (such as condition assessments and rehabilitations), disposal activities and non-infrastructure solutions (such as policies and processes that reduce costs, mitigate risks or maintain/enhance service delivery).

The City applies a risk-based approach to prioritizing asset renewals. The risk assessment frameworks and methods vary across the different types of assets, but are generally based on the importance of each asset in terms of service delivery/continuity and the number of users who could be impacted.

Financing Strategy

The City continues to invest responsibly in maintaining infrastructure and has been increasing its capital investments to align with long-range financial plans. Funding targets recommended in the 2017 Comprehensive Asset Management Program were focused on maintaining critical infrastructure in a state of good repair. There will be a need to update the long range financial plans once new service levels are defined to ensure financial sustainability.

5.1 Expenditure History

For information on historical operating and capital expenditures, refer to the City's historical annual budget documents.

5.2 Expenditure Forecast

Based on the financial information that was contained in the Draft Solid Waste Master Plan (Phase 3) Report (ACS2023-PWD-SWS-0005), over the next ten years (2023-2032), there is a need for capital expenditures of approximately $200 million; a significant portion, around $130 million, is needed to cover regulatory costs for the existing landfill and to maintain existing waste services for residents. These figures do not reflect funding for Draft Solid Waste Master Plan actions – they are solely for status quo services and encompass various capital investments, including asset renewal, fleet renewal, technology upgrades, long-term planning and landfill-related expenses. These estimates are based on the City's 10-year Capital Plan which is updated annually as part of the City's budget process to reflect updated cost estimates.

Expenditures Forecast for Solid Waste Services
(based on 2024 operating budget and draft Solid Waste Master Plan capital financial analysis)

Component	Expenditure/Budget Forecast ($ Millions)									
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Operating Expenditure[5]	$106.6	$114.8	$118.3	$121.8	$125.5	$129.3	$133.1	$137.1	$141.2	$145.5
Capital Expenditure	$37.6	$37.9	$10.61	$72.4	$23.5	$7.5	$22.7	$9.2	$6.7	$5.3

[5] Values shown are net operating budget requirement after expenditure recoveries and revenues.

5.3 Funding Gap

The funding gap is the difference between the forecasted asset needs and the planned capital budget. Over the next 10 years, the total needs for solid waste services are $636.7 million, while the planned budget is $232.6 million, leading to a funding gap of $404.1 million. The Solid Waste capital reserve is currently in a deficit, without funding to support these future needs to maintain current services. Even without implementing the recommended Solid Waste Master Plan actions, rate increases will be required to cover the cost of the City's current forecasted budget needs.

Since 2020, Council has approved rate increases between $8 and $12 per household per year to support funding needs to make solid waste operations whole and to bring the capital reserve into a positive position. Despite these recent investments, the City's 10-year Capital Plan and historical rate increases will not be sufficient to fund future operations. A Long Range Financial Plan (LRFP) is being developed to present a sustainable and affordable funding model to fund current and future solid waste service needs and Master Plan actions. The scope of the LRFP will include:

- Exploring the debt limit restrictions to determine whether the waste program costs can be reasonably spread out over the decades to come;
- Assessing the potential to spread the significant capital costs anticipated in 2030 and 2044 across several years to ease the financial burden in those years;
- Assessing the policy, social and financial implications of raising user fees for City residents; and,
- Reviewing any planned user fee increases and considering making adjustments based on the anticipated waste program costs and within affordability parameters.

The LRFP will be presented to Committee and Council for approval alongside the Final Solid Waste Master Plan in Q2 2024.

The City has planned dedicated funding over the next 10 years to address climate change needs. The funding supports not only solid waste services, but various other services provided by the City. The climate change capital funding needs identified for the various City services and the total planned capital funding for climate change initiatives are summarized in the table below. These are preliminary estimates that are being refined through various initiatives, but they give a sense of the order-of-magnitude of future planned budgets and potential needs.

Estimated Future Climate Change Capital Budgets and Capital Needs for All City Services*

Capital Program	10-Year Total Capital Budget ($ Millions)	Service/Asset Needs Supported	10-Year Total Climate Change Capital Needs ($ Millions)	10-Year Total Capital Funding Gap/Surplus ($ Millions)
Climate Change Master Plan	$190.0	All	$401.9	($179.1)
Emergency Reception Lodging Generators	$4.1	Buildings		
Energy Management & Investment Strategy	$28.7	Buildings		
Total	**$222.8**		**$401.9**	**($179.1)**

**Excludes:*
(1) Core assets (refer to Drinking Water, Stormwater, Transportation and Wastewater Asset Management Plans).
(2) Transit services (all needs and budgets for transit services are covered by the Transit Long Range Financial Plan).

Improvement and Monitoring Plan

Based on the snapshot of current conditions and existing plans presented in the Solid Waste Services Asset Management Plan, areas of potential improvement include:

- Level of service measures and targets
- Data gaps, data management, and record keeping
- Increased promotion and education of solid waste programming
- Asset maintenance practices for vehicles and facilities
- Cost estimating
- Climate change resiliency
- Applying an equity and inclusion lens

The Solid Waste Services Asset Management Plan will be reviewed and updated on a regular basis and over time these improvements will be reflected in future versions of the Asset Management Plan.

More Information

For more information about comprehensive asset management, or to learn more about the City's Comprehensive Asset Management Program, please visit Ottawa.ca.