The Corporation of the City of Guelph

Solid Waste Management Plan

Task 7 Report

November 2021

CITY OF Guelph
Making a Difference

DILLON CONSULTING

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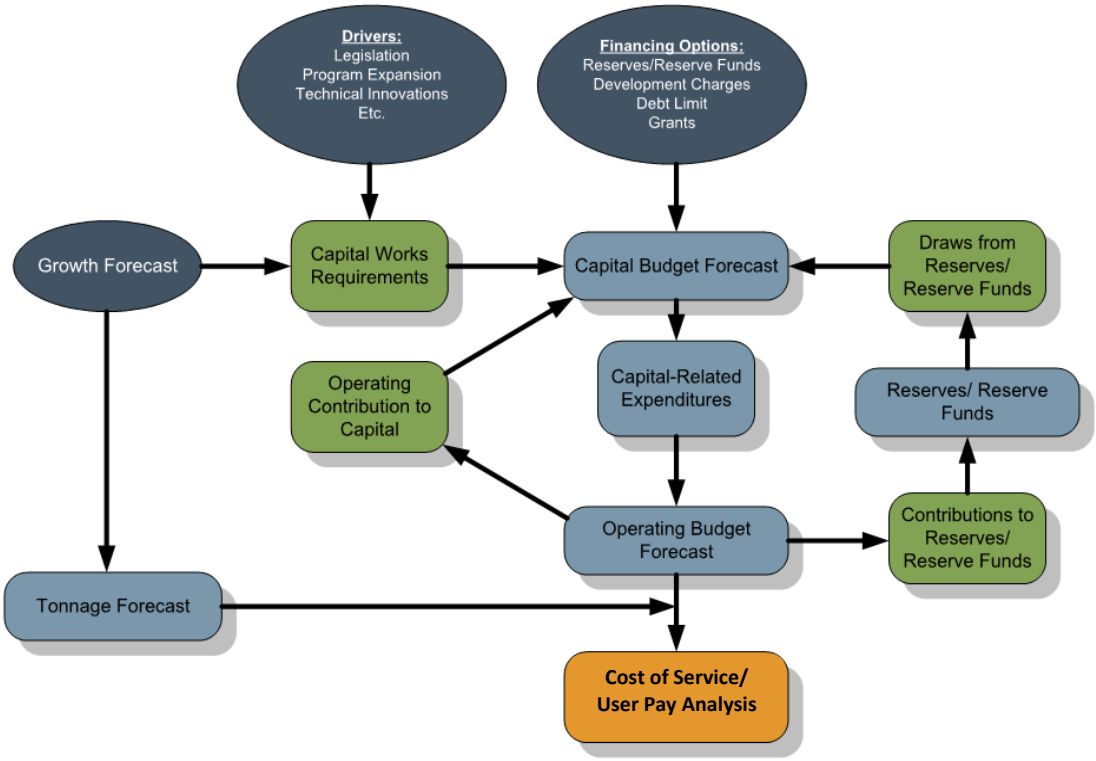
Executive Summary

The City of Guelph is reviewing and updating its Solid Waste Management Master Plan (SWMMP). The updated plan will guide the City in its waste management goals and objectives for the next 25 years through the completion of multiple tasks. Task 7 of the SWMMP has two main areas of focus:

1. Identify the Cost of Service; and
2. Review User Pay Options.

The Cost-of-Service review was undertaken by preparing a financial model that builds upon the growth forecast and tonnage forecast provided in Task 4 of the SWMMP. At a high-level, the model utilizes the City's capital and operating budget forecasts (including estimation of lifecycle replacement costs), along with existing reserve and reserve fund policies to estimate the Cost-of-Service for the Solid Waste Resources division, as outlined in Figure ES-1.

Figure ES-1: Financial Model Calculation Process



The goal of the Cost-of-Service review is to identify the total costs of providing the service and then to identify the revenues to fund the required expenditures. To understand these expenditures and revenues, the following City information was reviewed and analysed:

- 10-year capital budget;
- Operating budget;
- Asset inventory and replacement schedule; and
- Financial policies regarding capital funding, use of reserve/reserve funds, and debt.

The Cost-of-Service review also provided the expenditures and revenues allocated by waste stream to isolate the cost of service into the following categories:

- Garbage (grey carts);
- Recycling (blue carts);
- Organics (green carts);
- Leaf and Yard Waste;

- Household Hazardous Waste; and
- Other Materials (at the Public Drop-off).

Preparation of the model was undertaken through various workshops with staff and allocated to the various waste streams based on a variety of assumptions as they pertained to each revenue and expenditure.

The financial model that was developed forecasts the total cost of waste management services to 2041 based on the current waste management system. A summary of the total Cost-of-Service is provided in Table ES-1.

Table ES-1: Cost-of-Service – Net Costs to be Recovered - Current System

Waste Stream	2021	2025	2041	Average Annual Increase in Net Costs to be Recovered
Garbage	6,929,000	9,393,000	14,576,000	6%
Blue Box	3,338,000	3,907,000	5,694,000	4%
Green Bin	3,805,000	4,529,000	6,541,000	4%
Leaf/Yard	1,163,000	1,238,000	1,659,000	2%
HHW	126,000	127,000	171,000	2%
Other Materials (@PDO)	1,129,000	1,256,000	1,654,000	2%
Total	**16,490,000**	**20,450,000**	**30,295,000**	**4.19%**
Total Net of Blue Box Costs	**13,152,000**	**16,543,000**	**24,601,000**	

Note 1: Costs for Blue Box are based on the current system. Further discussions are provided regarding changes to Blue Box in the Blue Box Transition Strategy Technical Memo

Note 2: Net costs for 2021 include lifecycle expenditures, as well as transfers for capital projects, which are not currently included in the solid waste services budget.

It is noted that the legislation regarding the Blue Box program was approved in June 2021 and the City will transition responsibility for these services under the new provincial Individual Producer Responsibility (IPR) framework on January 1, 2025. This change may result in a reduction of net system costs by up to approximately $2.4 million in 2025 if blue box services are no longer provided. Although the Blue Box Regulation (O.Reg. 391/21:BLUE BOX) is now law, implementation details are not yet available to the City.

The financial impact of potential transition options is provided in a separate Blue Box Transition Strategy memo prepared by Dillon and Watson.

Once the Cost-of-Service review was undertaken, the financial model was utilized to assess various user pay options to fund the City's solid waste operations. The City of Guelph currently funds its solid waste services through a combination of user fees and property taxes. User fees seek to recover the costs of specific activities (e.g. non-residential tipping fees, residential drop-off fees, etc.) and property taxes are utilized to fund the remaining expenditures.

As part of the Solid Waste Management Master Plan, the City requested a review of user pay options to assess the potential of reducing or removing funding from property taxes. Currently, the total amount funded by property taxes ($13.56 million) comprises approximately 5.1% of the total property tax levy. The current funding approach relies on property taxes as the biggest source of revenue.

A best practices review was undertaken to assess the various ways in which municipal solid waste services are funded. The list of comparators included Toronto, Hamilton, Wellington County, Barrie, London, Region of Waterloo, and Peel Region. A summary of the funding sources is provided in Table ES-2.

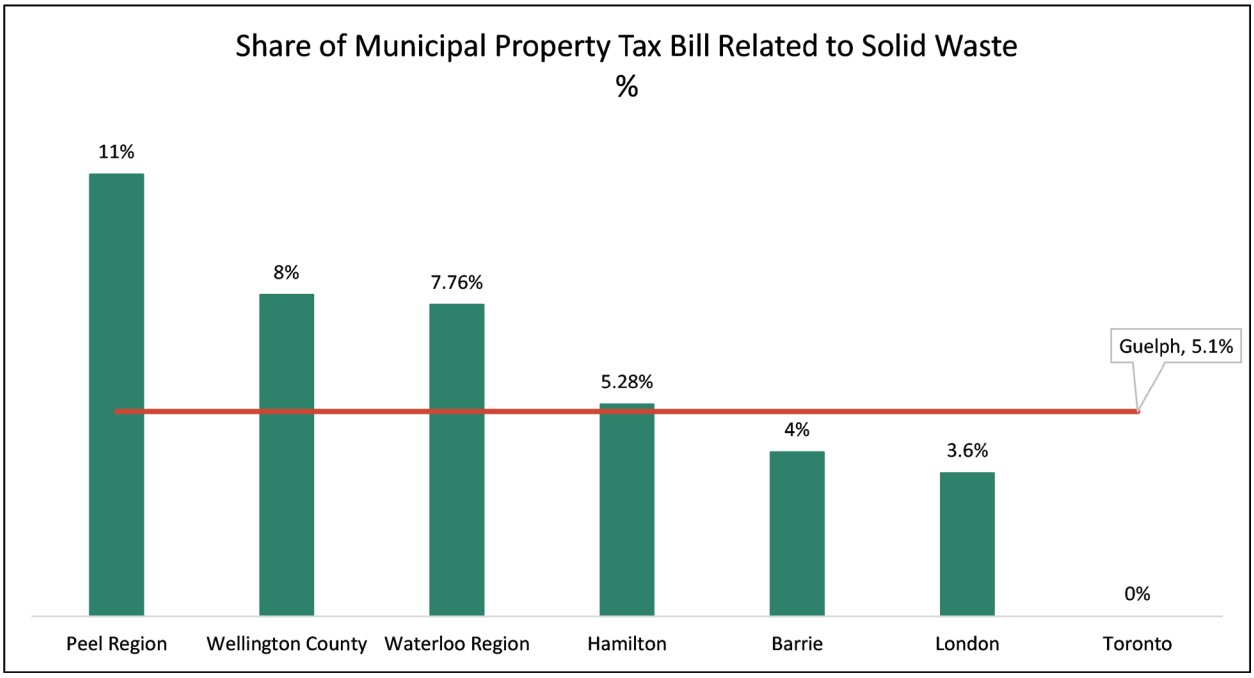
Table ES-2: Summary of Solid Waste Funding Sources by Municipality

Municipality	Property Taxes	User Fees	Grants/ Stewardship Funding	Sale of Recyclables	Other Sources
Guelph	✓	✓	✓	✓	
Peel Region	✓	✓	✓	✓	
Wellington County	✓	✓	✓	✓	User Pay (Garbage)
Waterloo Region	✓	✓	✓	✓	
Hamilton	✓	✓	✓	✓	
Barrie	✓	✓	✓	✓	
London	✓	✓	✓	✓	
Toronto		✓	✓	✓	Full User Pay

As most municipal comparators finance their solid waste budgets from property taxes and user fees, a comparison of the share of the Municipal property tax bill related to solid waste is provided in Figure ES-2. The City of Guelph share of 5.1% is shown on the horizontal line. When compared to other single-tier municipalities, (London – 3.6%, Barrie – 4%, and Hamilton 5.28%) the share of the tax bill related to solid waste is similar. The municipalities with the larger share of the budgets related to solid waste are upper-tier municipalities that provide less services (i.e. single-tier municipalities provide all services, whereas upper-tier municipalities split responsibility for services with lower tier municipalities).

As a result of the above, it appears that the City of Guelph is funding similar proportions from their tax rates, relative to other municipalities in Ontario with the exception of the City of Toronto.

Figure ES-2: Share of Municipal Property Tax Bills Related to Solid Waste, by Municipality



As a result of increasing costs, upcoming changes to the legislation, and a policy to align costs of service with those that benefit, various funding options (net costs to be recovered) were analysed through this exercise. These options are as follows:

1. Current funding approach (property taxes);
2. Partial Funding - Funding waste diversion programs from property taxes with garbage paid for by a user rate; and
3. Full Funding - Funding for all solid waste, with user fees applied to grey carts (garbage) only but covers funding for diversion programs as well.

The findings from this Task 7 exercise will be used to inform the City's review of the Council approved user fee structure and approval of user fee subsidization levels as part of the Corporate Service Rationalization Review recommendation (on a capital-inclusive costing methodology), with the opportunity for budget savings as well as an equitable and consistent user fee recovery practice.

It is recommended that staff seek City Council direction to investigate user pay options and report back as part of the 2023 budget process. The

financial model prepared for this Task may be utilized by the City to maintain and forecast future required user rates.

Should the City wish to implement a user rate system, it is recommended that the user rate be phased-in subsequent to the blue box transition in 2025. This will allow the City to complete their analysis with respect to the IPR transition strategy to fully understand the Cost-of-Service and required user rates. In addition, this timeline will allow the City to operate under the IPR framework for two years before the full user rate is implemented.

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Appendices

The following appendices are not included in this version of the report and are listed for awareness only. Please contact waste@guelph.ca or 519-767-0598 to obtain copies of these appendices.

1.0 Introduction

1.1 Overview of Task 7 as Part of Overall Solid Waste Management Master Plan

As part of the overall Solid Waste Management Master Plan, Watson & Associates Economists (Watson) was retained as sub-consultant to Dillon Consulting Limited (Dillon) by the City of Guelph to undertake the financial components to the master planning exercise. Two main financial analyses were undertaken; A cost of service review and financial options for user pay. Further discussion on each topic is provided below.

The financial analyses build upon the population and employment growth forecasts presented in Task 4. As the City continues to grow, sound financial management and policies will assist the City in their financial management goals.

In addition to the growth forecasts, the financial analyses also build upon the tonnage forecasts presented in Task 4 as the forecasted changes in tonnages can have a financial impact on City operations of garbage and waste diversion services.

1.2 Purpose of Assignment & Objectives

This report has been prepared to present the financial analyses of the Cost-of-Service review and financial options for user pay and provide the City with a sound financial basis upon which to implement recommendations through the Master Plan.

With the recent approval of The Blue Box Regulation (O. Reg. 391/21: BLUE BOX) in June 2021, the City is undertaking a review of its future role in the delivery of blue box services (e.g. collection and/or processing). The financial analysis is provided separately in the Blue Box Transition Strategy Technical Memo and not considered as part of this report.

The analyses for the report were compiled into an Excel based working financial model, to be provided to the City at the end of the project.

1.2.1 Cost of Service Review

The purpose of the Cost-of-Service review is to analyse the current state of the City's costs to provide solid waste services. A financial model of the City's current operating and capital budgets was prepared to ascertain the current cost of service. Further, consideration of lifecycle expenditures was included in the analysis to ensure a full cost of service was reviewed.

The financial analysis is provided in total for all solid waste streams as well as separately for each of the main waste streams:

- Garbage (grey carts),
- Recycling (blue carts),
- Organics (green carts),
- Leaf and Yard Waste,
- Household Hazardous Waste; and
- Other Materials (at the Public Drop-off).

1.2.2 Financial Options for User Pay

The City of Guelph currently funds solid waste services through a combination of user fees and property taxes. User fees seek to recover the costs of specific activities (e.g. non-residential tipping fees, residential waste drop-off fees, etc.) and property taxes are utilized to fund the remaining expenditures.

Financial modelling was undertaken to assess potential options for user rates. Various options were considered based on discussions with staff, a review of best practices, and consultation with residents of the City.

1.2.3 Additional Analyses

In addition to the above, further analyses were undertaken to complement the Cost-of Service and Financial Options for User Pay.

A general review of current user fees was undertaken to assess the revenues received against the full cost of these activities (i.e. operating costs, lifecycle costs, and overhead/administration). General commentary on the level of recovery is provided in this report.

A review of the collection services provided to the downtown service area is also included in this report. Although specific tonnages and costs are not

tracked, the report provides an estimated financial impact on the City of providing three stream collection services 6 days a week throughout the year.

1.3 Overview of Legislative Changes to Blue Box – Move to Individual Producer Responsibility (IPR)

As part of the master planning process, Dillon has been tasked with assisting the City in preparing for the transition of the Blue Box program to individual producer responsibility for these services. A Blue Box Transition Strategy Technical Memo has been prepared.

As provided by Dillon in a separate memorandum, The Blue Box Regulation (O. Reg. 391/21: BLUE BOX) was filed on June 3, 2021, under Resource Recovery and Circular Economy Act, 2016, S.O. 2016, c. 12, Sched. 1 and the transition schedule indicates the City will transition under the new provincial Individual Producer Responsibility (IPR) framework on January 1, 2025. Although the Regulation is now law, implementation details are being considered and are not yet available to the City. The regulated community is now organizing Producer Responsibility Organizations (PROs), establishing rules and territories as required under the legislation.

A financial analysis was undertaken by Watson on a number of scenarios for the City to consider. In addition, through the Cost-of-Service review, the recyclable material stream (blue box) was analysed in greater detail to ascertain the full cost of each component of providing the service.

As the City is undertaking a review of their potential engagement in the delivery of blue box services (e.g. collection and/or processing) the analysis is provided separately in the Blue Box Transition Strategy Technical Memo and not considered as part of this report.

2.0 Financial Analysis and Model

2.1 Model Overview

To undertake the analysis, a financial model was prepared which includes all elements that may impact the Cost-of-Service and potential user pay options. The following flow chart provides an overview of the model calculation process:

Figure 2-1: Solid Waste Financial Model Calculation Process

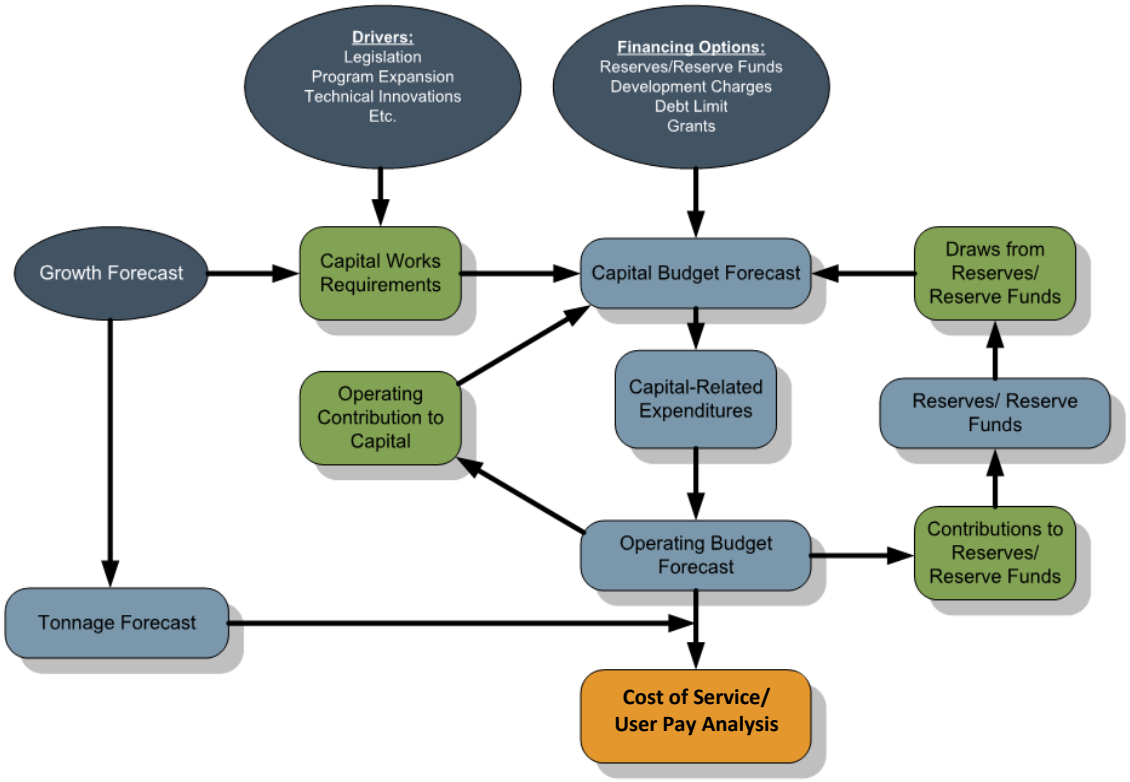

Figure 2-1 illustrates the interconnected elements, drivers and financing options within the model calculation for the Cost-of-Service.

At a high-level, the model utilizes the City's capital and operating budget forecasts, along with existing reserve and reserve fund policies to estimate the Cost-of-Service for Solid Waste Services. In addition, the costs are

analysed and allocated to each waste stream to provide for the various calculations discussed below.

Each of the main components of the financial analysis are discussed in further detail in the subsequent sections.

2.2 Current Approach to Financing Solid Waste Services

The City of Guelph currently utilizes a variety of revenue sources to finance solid waste services. These sources include:

- User fees & service charges;
- Sales of goods;
- Grants; and
- Property taxes.

The user fees and services charges, sales of goods, and grants assist in offsetting overall program expenditures. The remaining costs are recovered through property taxes.

2.3 Growth and Tonnage Forecast

The growth forecast (residential and non-residential) as well as the tonnage forecast are integral components in the financial model. These components assisted in deriving anticipated changes to the capital and operating budgets. Furthermore, with respect to the options for User Pay, the growth and tonnage forecasts represent the denominator in the User Pay calculation.

The following tables provide for a summary of the growth forecast and tonnage forecast information presented in Task 4.

Table 2-1: Residential Growth Forecast Summary

Year	Watson Adjusted Population (excluding undercount) Rounded	Low Housing Units	Med Housing Units	High Housing Units	Total Housing Units
2011	121,700	28,500	8,600	10,900	**48,100**
2012	123,700	28,600	9,000	11,200	**48,900**
2013	125,700	28,700	9,400	11,500	**49,600**
2014	127,800	28,700	9,800	11,800	**50,400**
2015	129,800	28,800	10,300	12,200	**51,200**
2016	131,800	28,900	10,700	12,500	**52,000**
2017	134,100	29,100	10,900	13,100	**53,100**
2018	136,400	29,200	11,100	13,900	**54,300**
2019	138,700	29,500	11,600	14,300	**55,500**
2020	141,000	29,800	12,100	14,700	**56,700**
2021	143,300	30,100	12,600	15,100	**57,800**
2022	145,600	30,400	13,000	15,500	**59,000**
2023	147,900	30,700	13,500	15,900	**60,200**
2024	150,100	30,800	13,900	16,400	**61,200**
2025	152,300	30,900	14,400	16,900	**62,200**
2026	154,500	31,000	14,800	17,400	**63,300**
2027	156,700	31,100	15,200	17,900	**64,300**
2028	158,900	31,200	15,700	18,400	**65,300**
2029	160,000	31,300	16,100	18,900	**66,400**
2030	**161,000**	**31,500**	**16,200**	**19,400**	**67,100**
2031	162,100	31,600	16,400	20,400	**68,300**
2032	163,100	31,700	16,500	21,300	**69,500**
2033	164,100	31,800	16,700	22,200	**70,700**
2034	166,700	31,900	16,800	23,200	**71,900**
2035	169,200	32,100	16,900	24,100	**73,100**
2036	171,800	32,200	17,100	25,100	**74,400**
2037	174,300	32,300	17,200	25,300	**74,800**
2038	176,900	32,400	17,400	25,500	**75,300**
2039	179,400	32,600	17,500	25,700	**75,700**
2040	182,000	32,700	17,600	25,900	**76,200**
2041	**184,500**	**32,800**	**17,800**	**26,100**	**76,700**

Based on Watson & Associates Economists Ltd. Growth Forecast, as per 2018 D.C. Background Study with addition of Clair Maltby Estimated Growth from 2031 to 2041

Table 2-2: Non-residential Growth Forecast Summary

	Non-Residential Employment	Non-Residential Employment	Non-Residential Employment	Non-Residential Employment	Non-Residential GFA (sq.ft.)	Non-Residential GFA (sq.ft.)	Non-Residential GFA (sq.ft.)	Non-Residential GFA (sq.ft.)
Year	Industrial	Commercial	Institutional	Total	Industrial	Commercial	Institutional	Total
2011	25,500	22,100	17,000		30,630,600	9,929,500	11,911,700	
2012	25,700	22,400	17,400	**65,500**	30,823,200	10,093,100	12,197,100	**53,113,300**
2013	25,800	22,800	17,800	**66,500**	31,015,800	10,256,700	12,482,400	**53,754,900**
2014	26,000	23,200	18,200	**67,400**	31,208,400	10,420,200	12,767,800	**54,396,400**
2015	26,200	23,500	18,600	**68,300**	31,401,000	10,583,800	13,053,100	**55,038,000**
2016	26,300	23,900	19,100	**69,300**	31,593,600	10,747,400	13,338,500	**55,679,500**
2017	26,600	24,200	19,200	**70,000**	31,966,800	10,879,500	13,434,800	**56,281,000**
2018	27,000	24,500	19,300	**70,800**	32,340,000	11,011,500	13,531,000	**56,882,500**
2019	27,200	25,000	19,700	**71,900**	32,688,000	11,232,000	13,765,500	**57,685,500**
2020	27,500	25,500	20,000	**73,000**	33,036,000	11,452,500	14,000,000	**58,488,500**
2021	27,800	25,900	20,300	**74,100**	33,384,000	11,673,000	14,234,500	**59,291,500**
2022	28,100	26,400	20,700	**75,200**	33,732,000	11,893,500	14,469,000	**60,094,500**
2023	28,400	26,900	21,000	**76,300**	34,080,000	12,114,000	14,703,500	**60,897,500**
2024	28,600	27,400	21,300	**77,300**	34,359,400	12,323,300	14,900,200	**61,582,800**
2025	28,900	27,900	21,600	**78,300**	34,638,700	12,532,500	15,096,900	**62,268,100**
2026	29,100	28,300	21,800	**79,300**	34,918,100	12,741,800	15,293,600	**62,953,500**
2027	29,300	28,800	22,100	**80,200**	35,197,400	12,951,000	15,490,300	**63,638,800**
2028	29,600	29,200	22,400	**81,200**	35,476,800	13,160,300	15,687,000	**64,324,100**
2029	29,800	29,400	22,600	**81,800**	35,709,000	13,246,400	15,789,700	**64,745,100**
2030	30,000	29,600	22,700	**82,300**	35,941,200	13,332,500	15,892,300	**65,166,100**
2031	30,100	29,800	22,900	**82,800**	36,173,400	13,418,700	15,995,000	**65,587,100**
2032	30,300	30,000	23,000	**83,300**	36,405,600	13,504,800	16,097,700	**66,008,100**
2033	30,500	30,200	23,100	**83,900**	36,637,800	13,590,900	16,200,400	**66,429,100**
2034	31,000	30,700	23,500	**85,200**	37,205,600	13,801,600	16,451,500	**67,458,700**
2035	31,500	31,100	23,900	**86,500**	37,773,500	14,012,200	16,702,600	**68,488,300**
2036	32,000	31,600	24,200	**87,800**	38,341,400	14,222,900	16,953,600	**69,517,900**
2037	32,400	32,100	24,600	**89,100**	38,909,200	14,433,500	17,204,700	**70,547,500**
2038	32,900	32,500	24,900	**90,400**	39,477,100	14,644,200	17,455,800	**71,577,100**
2039	33,400	33,000	25,300	**91,700**	40,045,000	14,854,800	17,706,900	**72,606,800**
2040	33,800	33,500	25,700	**93,000**	40,612,900	15,065,500	17,958,000	**73,636,400**
2041	34,300	33,900	26,000	**94,300**	41,180,700	15,276,100	18,209,100	**74,666,000**

Note: Employment excludes Primary, No Fixed Place of Work, and Work at Home. Non-res forecast post 2028 based on 2028 activity rates

Tables 2-3 provide a summary of tonnage forecast at each of the organics compost facility, transfer station, MRF, PDO, and MHSW over the period 2020 to 2040. Note: The original format of these tables includes all years between 2020 and 2041; some of these have been removed from this version of the report for formatting reasons. Please contact waste@guelph.ca or 519-767-0598 to obtain a copy of the full tables.

Table 2-3.1: Tonnage Forecast Summary - Organics Compost Facility

Incoming	Forecast Basis	Notes - Where Item is From	Forecast Metric	2020	2025	2030	2035	2040
City of Guelph	Based on the average per capita amount between 2017 to 2019	Curbside Collection	0.0748	10,547.97	11,393.30	12,044.14	12,657.56	13,615.11
Region of Waterloo	Continue with 20,000 tonnes as per the agreement amount	Region of Waterloo Dropoff	20,000.00	20,000.00	20,000.00	20,000.00	20,000.00	20,000.00
Brush, Amendment, and Mulch	Forecast as average % (2017-2019) of Mixed Organics	Incoming Materials directly from contractor for use in processing. Does not impact budget	1.5%	458.22	470.90	480.66	489.86	504.23
Total				**31,006.19**	**31,864.20**	**32,524.80**	**33,147.43**	**34,119.34**
Outgoing	**Forecast Basis**	**Notes - Where Item Goes**	**Forecast Metric**	**2020**	**2025**	**2030**	**2035**	**2040**
Finished Compost	Forecast as average % (2017-2019) of Mixed Organics	Sale to Market for Contractor - part of operating contract. No revenue for the City	21.9%	6,690.01	6,875.13	7,017.67	7,152.01	7,361.71
Overs	Forecast as average % (2017-2019) of Mixed Organics	Goes directly to Landfill - Organics Contractor. Does not impact budget	3.0%	916.44	941.80	961.32	979.73	1,008.45
Screening Waste	Forecast as average % (2017-2019) of Mixed Organics	Transfer Station	1.5%	458.22	470.90	480.66	489.86	504.23
Residual Compost Waste	Forecast as average % (2017-2019) of Mixed Organics	Transfer Station	1.5%	458.22	470.90	480.66	489.86	504.23
Organic Rejected Load	Forecast as average % (2017-2019) of Mixed Organics	Transfer Station	0.1%	30.55	31.39	32.04	32.66	33.62
Total			**-**	**8,553.43**	**8,790.12**	**8,972.36**	**9,144.12**	**9,412.23**

Table 2-3.2: Tonnage Forecast Summary - Transfer Station

Incoming	Forecast Basis	Notes - Where Item is From	Forecast Metric	2020	2030	2035	2040
Curbside Waste	Based on the average per capita amount between 2017 to 2019	Curbside Collection	0.09	13,110.85	14,970.55	15,733.02	16,923.23
PDO Waste	Based on the average per capita amount between 2017 to 2019	PDO. Residential waste drop off	0.07	9,486.16	10,831.71	11,383.39	12,244.54
Non-residential	Based on the average % share of total mixed solid waste from 2017 - 2019	Commercial haulers	55%	27,797.59	31,740.52	33,357.11	35,880.58
MRF Glass Residue	Based on the 2019 per capita amount.	MRF	0.003	464.17	530.01	557.01	599.14
MRF Residue	Based on the 2019 per capita amount.	MRF	0.008	1,197.33	1,367.17	1,436.80	1,545.49
Residual Compost Waste	Match to Outgoing amounts from Organics Facility	Organics Facility	-	458.22	480.66	489.86	504.23
Screening Waste	Match to Outgoing amounts from Organics Facility	Organics Facility	-	458.22	480.66	489.86	504.23
Organic Rejected Load	Match to Outgoing amounts from Organics Facility	Organics Facility	-	30.55	32.04	32.66	33.62
Total				**53,003.09**	**60,433.32**	**63,479.71**	**68,235.05**
Outgoing	**Forecast Basis**	**Notes - Where Item Goes**	**Forecast Metric**	**2020**	**2030**	**2035**	**2040**
Mixed Solid Waste	Average % over 2017 to 2019 of incoming materials	Landfill - as part of landfill contract	106.36%	53,598.07	61,200.64	64,317.69	69,183.33
Total				**53,598.07**	**61,200.64**	**64,317.69**	**69,183.33**

Table 2-3.3: Tonnage Forecast Summary - MRF

Incoming	Forecast Basis	Notes - Where Item is From	Forecast Metric	2020	2025	2030	2035	2040
OCC - Baled and Loose	Based on the average per capita amount between 2017 to 2019	Drop Off: PDO inbound and Commercial inbound to MRF	0.0123	1,729.17	1,867.74	1,974.44	2,075.00	2,231.97
OWP/Fine - loose	Based on the average per capita amount between 2017 to 2019	Drop Off	0.0025	348.43	376.36	397.86	418.12	449.75
Single Stream Loose	Based on the average per capita amount between 2017 to 2019	Residential Collection	0.0718	10,117.62	10,928.46	11,552.74	12,141.14	13,059.62
Total				**12,195.22**	**13,172.56**	**13,925.03**	**14,634.26**	**15,741.34**
Outgoing	**Forecast Basis**	**Notes - Where Item Goes**	**Forecast Metric**	**2020**	**2025**	**2030**	**2035**	**2040**
Total Aluminum	Average % of incoming materials for 2017-2019	Sale to Market	2.85%	288.58	311.71	329.51	346.29	372.49
Glass Residue(from process)	% of incoming materials for 2019	Transfer Station	4.76%	481.33	519.90	549.60	577.59	621.29
HDPE#2 - BALED	% of incoming materials for 2019	Sale to Market	1.35%	136.20	147.11	155.52	163.44	175.80
Mixed Glass	% of incoming materials for 2019	Sale to Market	7.24%	732.64	791.35	836.56	879.16	945.67
Baled Residue	Average % of incoming materials for 2017-2019	Direct to Landfill - as part of landfill contract	31.36%	3,172.78	3,427.05	3,622.82	3,807.34	4,095.36
OCC Baled	Average % of incoming materials for 2017-2019	Sale to Market	173.89%	3,006.80	3,247.77	3,433.30	3,608.16	3,881.12
ONP #8 Baled	% of incoming materials for 2019 (and include mixed paper)	Sale to Market	20.99%	2,123.38	2,293.56	2,424.57	2,548.06	2,740.82
OWP/Fine Paper	Subtracted out incoming amounts to isolate the residential share. Then forecast on a per capita basis using 2019 data.	Sale to Market	0.00024	33.95	36.67	38.77	40.74	43.83
PET #1	% of incoming materials for 2019	Sale to Market	4.45%	450.02	486.08	513.85	540.02	580.88
Residue (from processing)	Match to incoming materials	Transfer Station		1,197.33	1,293.29	1,367.17	1,436.80	1,545.49
Tubs and Lids	Forecast based on 2019 per capita amount	Sale to Market	0.0001	14.23	15.37	16.25	17.08	18.37
Total				**11,637.24**	**12,569.87**	**13,287.91**	**13,964.69**	**15,021.12**

Table 2-3.4: Tonnage Forecast Summary - PDO

Incoming	Forecast Basis	Notes - Where Item is From	Forecast Metric	2020	2025	2030	2040
Shingles	Use amount per capita (2017-2019)	Drop Off	0.0138	1,948.46	2,104.62	2,224.84	2,515.04
Drywall	Use amount per capita (2017-2019)	Drop Off	0.0031	441.47	476.85	504.09	569.84
Yardwaste (Residential Collection)	Based on the average per capita amount between 2017 to 2019	Residential Collection	0.0230	3,239.73	3,499.36	3,699.26	4,181.77
Yardwaste (Drop off)	Use amount per capita (2017-2019)	Drop Off	0.0003	38.71	41.81	44.20	49.97
Brush	Use amount per capita (2017-2019)	Drop Off - may be included with yard waste in the future	0.01381	1,947.39	2,103.46	2,223.62	2,513.66
Rubble/Brick/Toilets	Use amount per capita (2017-2019)	Drop Off	0.0032	446.94	482.75	510.33	576.90
Clean Wood	Use amount per capita (2017-2019)	Drop Off	0.0016	224.18	242.15	255.98	289.37
Clothing	Amount per capita (2017-2019)	Drop Off	0.00004	6.22	6.72	7.10	8.03
Scrap Metal	Amount per capita (2017-2019)	Drop Off	0.0040	559.61	604.46	638.99	722.34
Electronics	Amount per capita (2017-2019)	Drop Off	0.0013	182.98	197.64	208.93	236.19
Residential Waste	Based on PDO amounts at Transfer Station	Residential Waste Drop Off	0.0673	9,486.16	10,246.39	10,831.71	12,244.54
OCC - Baled and Loose		Drop Off	0.0006	91.01	98.30	103.92	117.47
Single Stream Loose		Drop Off	0.0038	532.51	575.18	608.04	687.35
Leaves	Based on the average per capita amount between 2017 to 2019	separate program, different department (operations) and removed by different department	0.0166	2,345.76	2,533.75	2,678.49	3,027.86
Total				**21,491.12**	**23,213.46**	**24,539.51**	**27,740.31**

Outgoing	Forecast Basis	Notes - Where Item Goes	Forecast Metric	2020	2025	2030	2040
Shingles	Average % over 2017 to 2019 of incoming materials	(Private Recycler) GFL	99.59%	1,940.39	2,095.89	2,215.62	2,504.61
Clean Wood	Average % over 2017 to 2019 of incoming materials	(Private Recycler) New West Gypsum	103.61%	232.28	250.89	265.22	299.82
Drywall	Average % over 2017 to 2019 of incoming materials	(Private Recycler) Lockhart Excavating	116.60%	514.76	556.01	587.77	664.44
Concrete, Rubble	Average % over 2017 to 2019 of incoming materials	(Private Recycler) Lockhart Excavating	140.16%	626.44	676.65	715.30	808.60
Brush	Match to incoming materials	Brush and Yard Waste Processor - separate contract	0.00%	1,947.39	2,103.46	2,223.62	2,513.66
Clothing	Match to incoming materials	Charity	-	6.22	6.72	7.10	8.03
Electronics	Match to incoming materials	(Private Recycler) Budget Environmental	-	182.98	197.64	208.93	236.19
Scrap Metal	Match to incoming materials	Sale to Market	-	559.61	604.46	638.99	722.34
Yard Waste	Match to incoming materials	Brush and Yard Waste Processor - separate contract	-	3,239.73	3,499.36	3,699.26	4,181.77
Residential Waste	Based on PDO amounts at Transfer Station	Transfer Station	0.07	9,486.16	10,246.39	10,831.71	12,244.54
Leaves	Match to incoming materials	separate program, different department (operations) and removed by different department		2,345.76	2,533.75	2,678.49	3,027.86
Total				**21,081.71**	**22,771.23**	**24,072.02**	**27,211.85**

Table 2-3.5: Tonnage Forecast Summary - MHSW

Incoming	Forecast Basis	Notes - Where Item is From	Forecast Metric	2020	2025	2030	2035	2040
Paints and Coatings Non-aerosol; #145 (L)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0267	3,766.59	4,068.46	4,300.86	4,519.91	4,861.85
Paints and Coatings Aerosol; # 331 (kg)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0039	544.53	588.17	621.77	653.43	702.87
Solvents # 213 (L)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0014	198.71	214.64	226.90	238.45	256.49
Antifreeze (L)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0004	56.09	60.58	64.05	67.31	72.40
Propane Cylinders (kg)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0002	21.21	22.90	24.21	25.45	27.37
Cleaners/Detergents #148 (L)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0016	227.59	245.83	259.87	273.11	293.77
Car Products #213 (L)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0018	251.85	272.03	287.57	302.22	325.08
Non-Paint Aerosols #331 (kg)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0004	63.36	68.43	72.34	76.03	81.78
Motor Oil (L)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0007	98.49	106.38	112.46	118.18	127.12
Plaster/Cement/Grout (kg)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0002	32.39	34.99	36.98	38.87	41.81
CFL Lightbulbs (kg)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0126	1,775.60	1,917.90	2,027.46	2,130.72	2,291.91
Fluorescent Tubes (kg)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0154	2,168.51	2,342.30	2,476.10	2,602.21	2,799.07
Alkaline Batteries (kg)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0624	8,793.56	9,498.29	10,040.87	10,552.27	11,350.55
Car Batteries (kg)	Based on the average per capita amount between 2017 to 2019	Residential Drop Off	0.0815	11,491.56	12,412.51	13,121.56	13,789.87	14,833.07

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2.4 Capital Infrastructure

The City currently prepares a 10-year capital forecast for solid waste services. This capital forecast formed the basis for the capital needs in the financial model.

With respect to fleet vehicle and equipment replacements, the City tracks the useful life (discussed in the subsequent section) of the fleet and maintains a schedule of anticipated replacement dates and costs. This information was incorporated into the capital forecast as well.

Further, collection carts, and front-end bins for new development were estimated post-2031 based on the anticipated growth forecast provided in Section 2.3.

The estimated capital forecast is provided in the following table based on the most recent Council approved 2021 budget and 10-year forecast (note: the costs are provided in uninflated dollars).

Table 2-4: Summary of Estimated Forecast of Capital Costs (Uninflated $)

Capital Expenditure Description	Budget 2021	Total 2022 to 2041	Years Undertaken
FT0012 Solid Waste Vehicle and Equipment Replacement	1,528,000	23,070,600	2022 to 2041
WC0002 Transfer Station Upgrades		3,500,000	2023, 2024
WC003 Administration Building Renewal/ Expansion		4,000,000	2022, 2023
WC0015 Inventory and Condition Assessment of all Solid Waste Assets		600,000	2025, 2030
WC0016 Vehicles Growth (Additional Collection Vehicles)		2,800,000	2022, 2025, 2028, 2030, 2033, 2036, 2041
WC0018 Materials Recovery Facility (Equipment Rebuild)	100,000	1,133,000	2022 to 2025
WC0020 Organic Waste Processing Facility (Equipment Replacement and Odour Control)	363,000	5,260,000	2022 to 2030
WC0022 Transfer Station (Equipment Upgrades)		1,529,000	2022 to 2026

Capital Expenditure Description	Budget 2021	Total 2022 to 2041	Years Undertaken
WC0023 Site Renewal (Asset Upgrades at WRIC)	330,000	1,645,000	2022 to 2029
WC0024 Collection Carts and Front End Bins Growth (Organic, Recycling, and Garbage Carts and Front End Bins for Residential Growth)		4,798,000	2022 to 2041
WC0025 Administration Building (Upgrades to Administration Building Assets)	10,000	80,000	2022 to 2029
WC0026 Public Drop Off Upgrades (Repairs and Upgrades to Public Drop Off)	21,000	948,000	2022 to 2029
WC0027 Eastview Site Renewal (Repairs and Replacement of leachate collection system, sanitary and groundwater systems, fencing, and road grading)		699,000	2024 to 2029
WC0030 Collection Operations Centre (Replacement building for Residential Collection Fleet)		9,513,000	2024
WP0007 Security Upgrades		50,000	2026
WP0008 Solid Waste Management Master Plan		400,000	2025
WR0002 Reuse Centre Construction		600,000	2028
Total Capital Expenditures	**2,352,000**	**60,625,600**	

2.5 Lifecycle Costing

2.5.1 Overview of Lifecycle Costing

2.5.1.1 Definition

For many years, lifecycle costing has been used in the field of maintenance engineering and to evaluate the advantages of using alternative materials in construction or production design. The method has gained wider acceptance and use in the areas of industrial decision-making and the management of physical assets.

By definition, lifecycle costs are all the costs which are incurred during the lifecycle of a physical asset, from the time of acquisition to the time it is

taken out of service for disposal or redeployment. The stages which the asset goes through in its lifecycle are specification, design, manufacture (or build), install, commission, operate, maintain and disposal. Figure 2-2 depicts these stages in a schematic form.

Figure 2-2: Lifecycle Costing

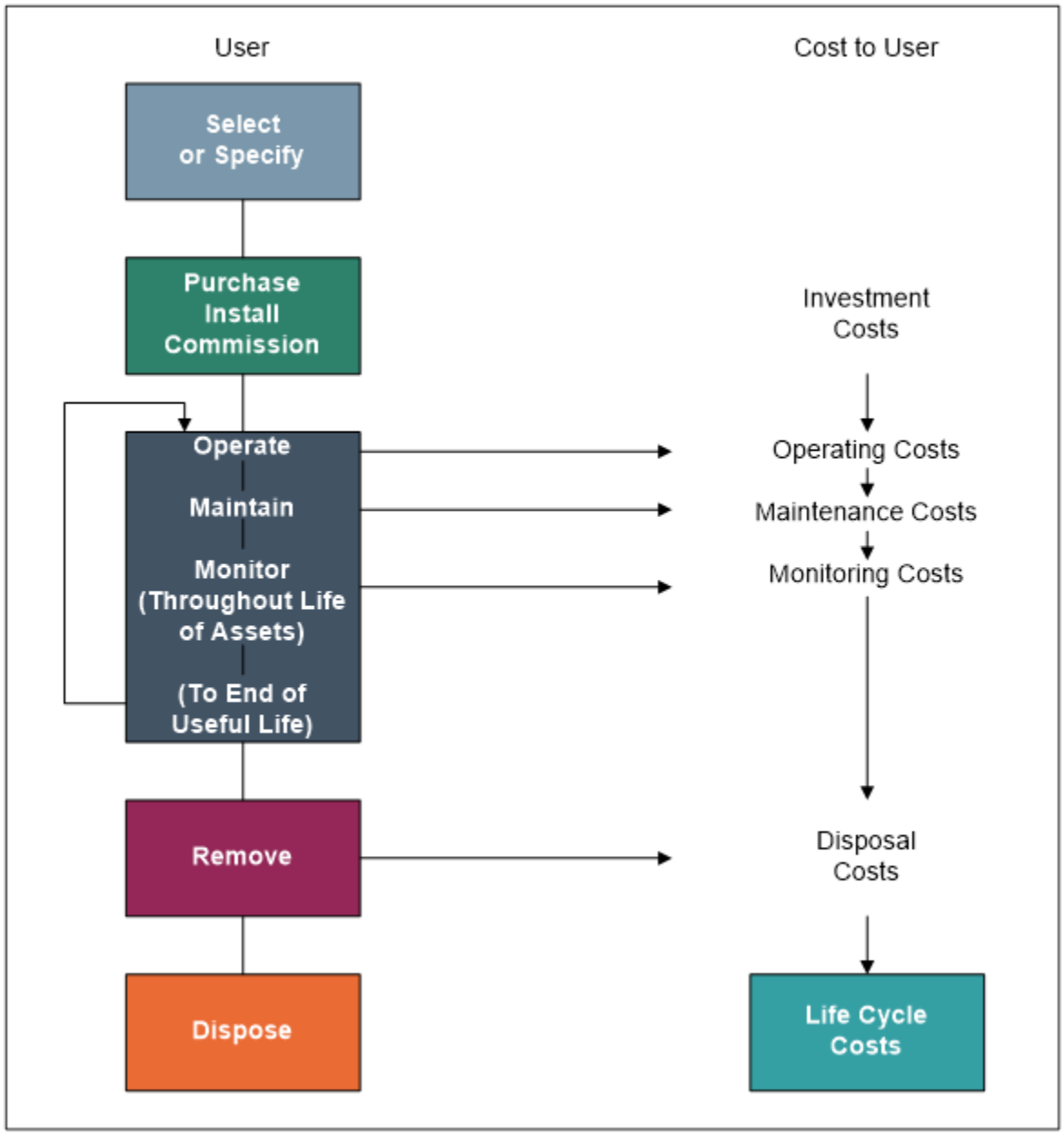


Figure 2-2 illustrates the stages and the costs throughout the lifecycle of a physical asset.

2.5.1.2 Financing Costs

This section will focus on financing mechanisms in place to fund the costs incurred throughout the life of the asset.

In a municipal context, services are provided to benefit tax/rate payers. Acquisition of assets is normally timed in relation to direct needs within the community. At times, economies of scale or technical efficiencies will lead to designing an asset to accommodate future growth within the City. Over the past few decades, new financing techniques such as development charges have been employed to recover costs for new development based on the underlying principle of having tax/rate payers who benefit directly from the service paying for that service. Operating costs which reflect the cost of the service for that year are charged directly to all existing tax/rate payers who have received the benefit. Operating costs are normally charged through the tax base or user rates.

Capital expenditures are funded through either property taxes, rates and fees, development charges, grants, external partners, or own revenue sources.

New construction related to growth could produce development charges and developer contributions to fund a significant portion of projects, where new assets are being acquired to allow growth within the City to continue. As well, debentures could be used to fund such works, with the debt charge carrying costs recovered from taxpayers in the future.

Capital construction to replace existing infrastructure, however, is largely not growth-related and will therefore not yield development charges or developer contributions to assist in financing these works. Hence, a municipality will be dependent upon other funding sources to fund these works.

Figure 2-3 depicts the costs of an asset from its initial conception through to replacement and then continues to follow the associated costs through to the next replacement.

As referred to earlier, growth-related financing methods such as development charges and developer contributions could be utilized to finance the growth-related component of the new asset. These revenues are collected (indirectly) from the new homeowner who benefits directly from

the installation of this asset. A capital project may also benefit existing tax/rate payers and other financing methods may be used to finance the non-growth-related component of this project, such as reserves which have been collected from past tax/rate payers, operating budget contributions which are collected from existing tax/rate payers and debenturing which will be carried by future tax/rate payers. Ongoing costs for monitoring, operating, and maintaining the asset will be charged annually to the existing tax/rate payer.

When the asset requires replacement, the sources of financing will be limited to reserves, debentures, and contributions from the operating budget. At this point, the question is raised: "If the cost of replacement is to be assessed against the tax/rate payer who benefits from the replacement of the asset, should the past tax/rate payer pay for this cost, or should future rate payers assume this cost?" If the position is taken that the past user has used up the asset, hence they should pay for the cost of replacement, then a charge should be assessed annually through the life of the asset, to have funds available to replace it when the time comes. If the position is taken that the future tax/rate payer should assume this cost, then debenturing and, possibly, a contribution from the operating budget should be used to fund this work.

Charging for the cost of using up an asset is the fundamental concept behind depreciation methods utilized as a best practice. This concept allows for expending the asset as it is used up in the production process. The tracking of these costs forms part of the product's selling price and, hence, end-users are charged for the asset's depreciation. The same concept can be applied in a municipal setting to charge existing users for the asset's use and set those funds aside in a reserve to finance the cost of replacing the asset in the future.

Figure 2-3: Financing Lifecycle Costs

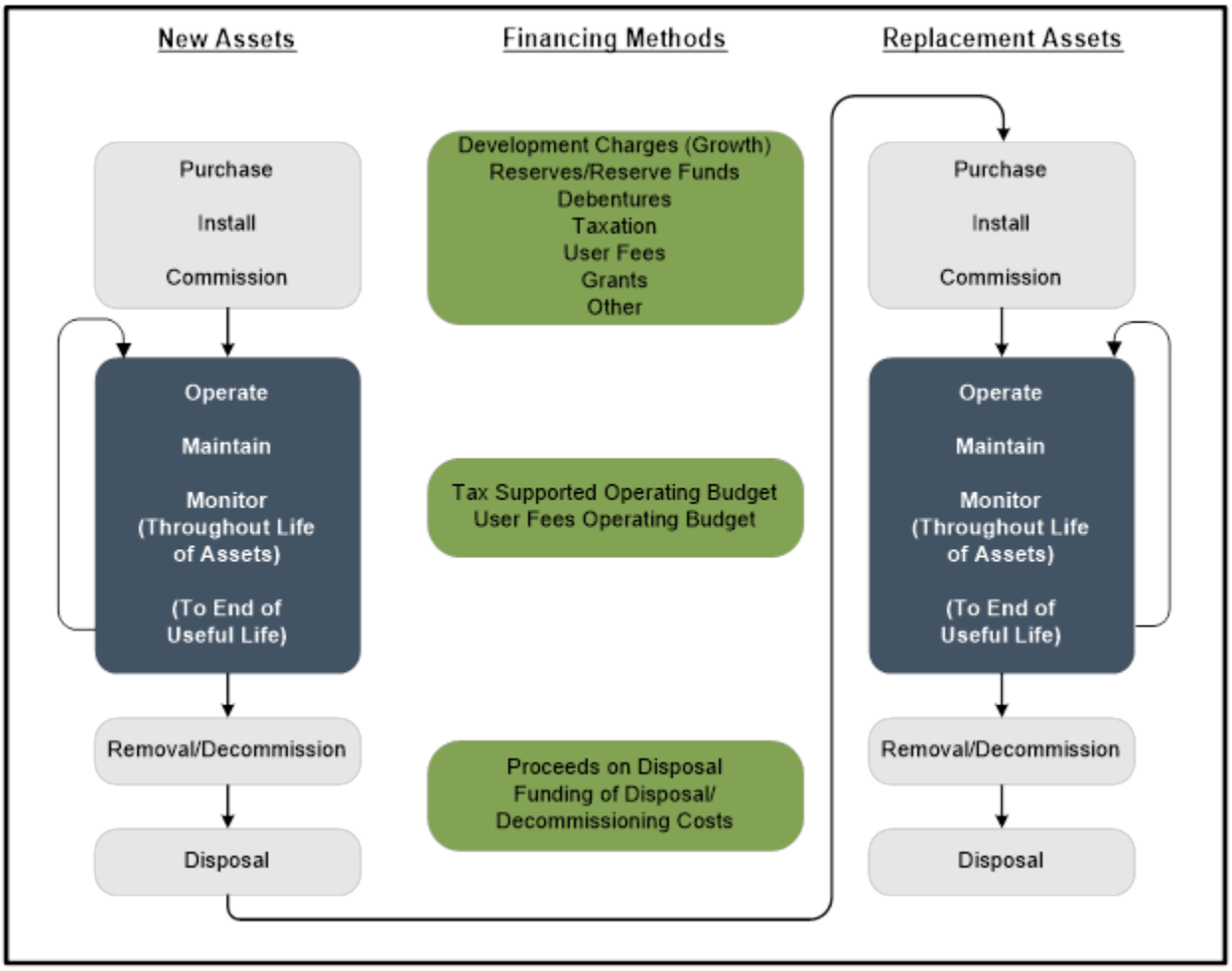


Figure 2-3 depicts the financing methods throughout the lifecycle of both new and replacement assets.

2.5.1.3 Costing Methods

There are two fundamental methods of calculating the cost of the usage of an asset and for the provision of the revenue required when the time comes to retire and replace it. The first method is the Depreciation Method. This method recognizes the reduction in the value of the asset through wear and tear and aging. There are two commonly used forms of depreciation: the straight-line method and the declining balance method (shown graphically in Figure 2-4).

The straight-line method is calculated by taking the original cost of the asset, subtracting its estimated salvage value (estimated value of the asset

at the time it is disposed of) and dividing this by the estimated number of years of useful life. The declining balance method is calculated by utilizing a fixed percentage rate and this rate is applied annually to the undepreciated balance of the asset value.

The second method of lifecycle costing is the sinking fund method. This method first estimates the future value of the asset at the time of replacement. This is done by inflating the original cost of the asset at an assumed annual inflation rate. A calculation is then performed to determine annual contributions (equal or otherwise) which, when invested, will grow with interest to equal the future replacement cost.

The method used herein for forecasting purposes is the straight-line depreciation method of lifecycle costing.

Figure 2-4: Lifecycle Costing Methods

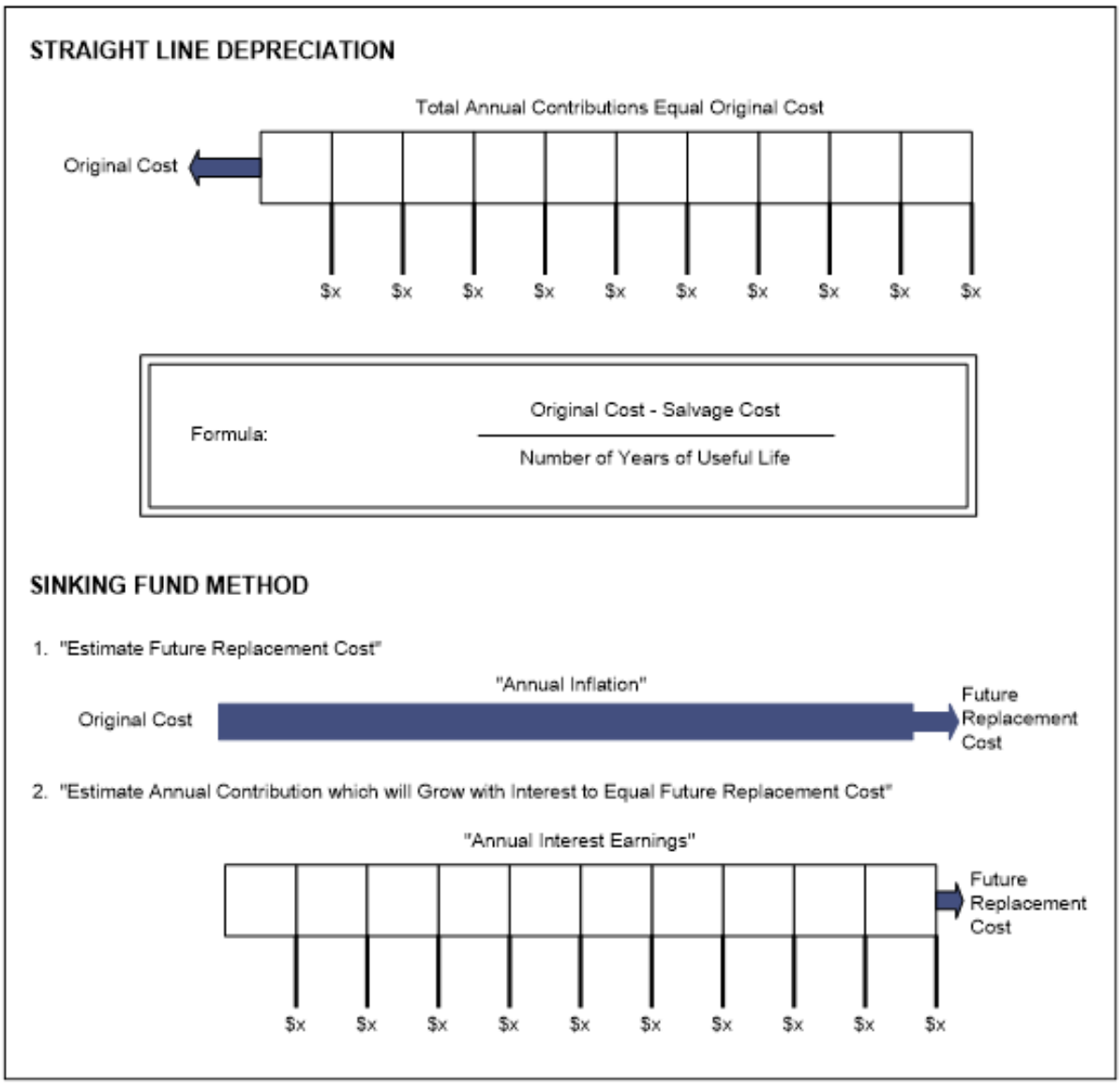


Figure 2-4 shows the two fundamental methods of lifecycle costing.

2.5.2 Impacts on Budgets

Detailed solid waste inventory information was provided by the City based on previous work undertaken by City staff and a consultant. The asset inventories were divided into two main categories; facilities and fleet.

Solid Waste Services utilizes six (6) main facilities to provide services to its residents:

1. Public Drop-off/Scale Houses;

2. Household Hazardous Waste Facility;
3. Transfer Station;
4. Administration Building and Office Portable (for administrative purposes);
5. Organics Facility; and
6. Materials Recovery Facility.

In addition to these facilities, the City also maintains the Eastview Landfill site.

In total, these facilities have a replacement value of $57.33 million. Utilizing the straight-line depreciation method and based on the estimated useful life of each facility, the annual lifecycle replacement costs related to facilities totals $1.61 million. Note: these costs are not currently included in the budget for Solid Waste Services as Guelph has a City-wide reserve for infrastructure renewal. For the Cost-of-Service review, these costs were added to the Solid Waste Services budget to ensure the full Cost-of-Service was identified.

With respect to fleet assets, the City maintains a "fleet replacement schedule" which identifies the solid waste vehicles and their scheduled replacement dates, based on their estimated useful life. This schedule has been refined by Solid Waste Services staff to incorporate all assets related to the provision of the service. The total replacement cost of all fleet assets is $10.49 million. As the City includes the replacement of these assets in the capital forecast, a separate annual lifecycle replacement cost has not been calculated. The following table summarizes the replacement value and annual lifecycle replacement cost of the facility and fleet assets.

Table 2-5: Solid Waste Fleet Replacement Schedule

Area	Total Replacement Value (2021$)	Annual Lifecycle Replacement (2021$)
Solid Waste Facilities	57,328,221	1,605,795
Fleet Inventory	10,486,900	Included in Forecast
Total	**67,815,121**	**1,605,795**

Note: the asset inventory information for facilities is based on a recently completed assessment prepared by GM BluePlan for the City. As a result,

replacement values identified above, may not align with the City's 2020 asset management plan.

2.6 Capital Cost Financing Options

2.6.1 Summary of Capital Cost Financing Alternatives

Historically, the powers that municipalities had to raise alternative revenues to taxation to fund capital services have been restrictive. Over the past decade, legislative reforms have been introduced. Some of these have expanded municipal powers (e.g. Bill 26 introduced in 1996 to provide for expanded powers for imposing fees and charges), while others appear to restrict them (Bill 98 in 1997 providing amendments to the Development Charges Act).

The Province passed a new Municipal Act which came into force on January 1, 2003. Part XII of the Act and O.Reg. 584/06 govern a municipality's ability to impose fees and charges. In contrast to the previous Municipal Act, this Act provides municipalities with broadly defined powers and does not differentiate between fees for operating and capital purposes. It is anticipated that the powers to recover capital costs under the previous Municipal Act will continue within the new Statutes and Regulations, as indicated by s.9(2) and s.452 of the new Municipal Act.

Under s.484 of Municipal Act, 2001, the Local Improvement Act was repealed with the in-force date of the Municipal Act (January 1, 2003). The municipal powers granted under the Local Improvement Act now fall under the jurisdiction of the Municipal Act. To this end, on December 20, 2002, O.Reg. 390/02 was filed, which allowed for the Local Improvement Act to be deemed to remain in force until April 1, 2003. O.Reg. 119/03 was enacted on April 19, 2003, which restored many of the previous Local Improvement Act provisions; however, the authority is now provided under the Municipal Act.

The methods of capital cost recovery available to municipalities are provided as follows:

- Development Charges Act, 1997;
- Municipal Act
    - Fees and Charges;
- Grant Funding (including federal gas tax);

- Own Revenues (Existing Reserves/Reserve Funds funded by taxes and/or user fees);
- Debt Financing (borrowing to fund capital projects).

2.6.2 Development Charges Act, 1997, as amended

In November 1996, the Ontario Government introduced Bill 98, a new Development Charges Act (D.C.A.). The Province's stated intentions were to "create new construction jobs and make home ownership more affordable" by reducing the charges and to "make municipal Council decisions more accountable and more cost effective." The basis for this Act is to allow municipalities to recover the growth-related capital cost of infrastructure necessary to accommodate new growth within the municipality. Generally, the Act provided the following changes to the former Act:

- Replace those sections of the 1989 Act that govern municipal development charges;
- Limit services which can be financed from development charges, specifically excluding parkland acquisition, administration buildings, and cultural, entertainment, tourism, solid waste management and hospital facilities;
- Ensure that the level of service used in the calculation of capital costs will not exceed the average level of service over the previous decade. Level of service is to be measured from both a quality and quantity perspective;
- Provide that uncommitted excess capacity available in existing municipal facilities and benefits to existing residents are removed from the calculation of the charge;
- Ensure that the development charge revenues collected by municipalities are spent only on those capital costs identified in the calculation of the development charge;
- Require municipalities to contribute funds (e.g. taxes, user charges or other non-development charge revenues) to the financing of certain projects primarily funded from development charges. The municipal contribution is 10 percent for services such as recreation, parkland development, libraries, etc.;
- Permit (but apparently not require) municipalities to grant developers credits for the direct provision of services identified in the development

charge calculation and, when credits are granted, require the municipality to reimburse the developer for the costs the municipality would have incurred if the project had been financed from the development charge reserve fund;

- Set out provisions for front-end financing capital projects (limited to essential services) required to service new development; and
- Set out provisions for appeals and complaints.

In late 2015, the Province approved further amendments to the D.C.A. Prior to these changes, all waste management services were not eligible for inclusion in the D.C. calculations. Subsequent to the changes waste diversion services became eligible for inclusion. Between 2019 and 2021, the Province introduced further refinements to the D.C.A. through Bills 108, 138, 197, and 213. Through these changes, the mandatory 10% deduction previously required was removed.

2.6.3 Municipal Act

Part XII of the Municipal Act provides municipalities with broad powers to impose fees and charges via passage of a by-law. These powers, as presented in s.391(1), include imposing fees or charges:

- "for services or activities provided or done by or on behalf of it;
- for costs payable by it for services or activities provided or done by or on behalf of any other municipality or local board; and
- for the use of its property including property under its control."

Restrictions are provided to ensure that the form of the charge is not akin to a poll tax. Any charges not paid under this authority may be added to the tax roll and collected in a like manner. The fees and charges imposed under this part are not appealable to the Ontario Land Tribunal (OLT, formerly known as the LPAT and O.M.B.).

2.6.4 Grant Funding

Currently, the City has not forecasted the receipt of any grant funding in their capital forecast (other than federal gas tax funding discussed in the next subsection), however, low interest loans and grant funding is available through organizations such as the Federation of Canadian Municipalities for waste reduction and diversion projects as well as waste stream management

projects. Additionally, the Continuous Improvement Fund in Ontario provides grants and loans to Ontario municipalities to execute projects that improve the effectiveness and efficiency of municipal blue box recycling. Note: as discussed briefly, with the Province's recent legislative changes regarding Individual Producer Responsibility, the grants for blue box efficiency are concluding and also would no longer derive a benefit for the City.

2.6.4.1 Canada Community-Building Fund

The Canada Community-Building Fund (CCBF), previously referred to as the Federal Gas Tax, is a permanent source of funding provided up front, twice-a-year, to Provinces and Territories, who in turn flow this funding to their municipalities to support local infrastructure priorities. Municipalities can pool, bank, and borrow against this funding, providing significant financial flexibility. Every year, the federal Gas Tax provides over $2 billion and supports approximately 2,500 projects in communities across Canada. Each municipality selects how best to direct the funds with the flexibility provided to make strategic investments across 18 different project categories, which includes solid waste management and diversion.

The City of Guelph's 10-year capital forecast identifies use of CCBF funding annually, totalling approximately $2.47 million.

2.6.5 Existing Reserves/Reserve Funds

This City does not currently have a separate reserve fund for Solid Waste Services capital and operating costs. Capital costs are funded from various other City-wide reserves and reserve funds including the following:

- Infrastructure renewal;
- City building;
- Growth; and
- CCBF (Federal Gas Tax).

With respect to development charges, a separate development charge reserve fund has been established for growth-related costs for waste diversion. This reserve fund has a 2021 opening deficit of $372,477.

2.6.6 Debenture Financing

Although it is not a direct method of minimizing the overall cost to the taxpayer and ratepayer, debentures are used by municipalities to assist in cash flowing large capital expenditures.

The Ministry of Municipal Affairs regulates the level of debt incurred by Ontario municipalities, through its powers established under the Municipal Act. Ontario Regulation 403/02 provides the current rules respecting municipal debt and financial obligations. Through the rules established under these regulations, a municipality's debt capacity is capped at a level where no more than 25% of the municipality's own purpose revenue may be allotted for servicing the debt (i.e. debt charges). The City of Guelph's calculation on Debt Capacity is shown on Schedule 81 of the City's most recent Financial Information Return (2019 F.I.R.). This calculates to the City's estimated annual repayment limit of approximately $78.79 million.

2.6.7 Recommended Capital Financing Approach

Of the various funding alternatives provided in this section, the following table provides for the summary of capital funding sources identified over the period 2021 to 2030.

Table 2-6: Capital Funding Summary 2021 to 2030

Funding Summary	Total $
9900-8150 CAPITAL-INFRASTRUCTURE RENEWAL	27,078,259
9900-8156 CAPITAL-GROWTH	3,061,719
9900-8159 CAPITAL-CITY BUILDING	4,128,250
9900-8328 DEV CHG - WASTE DIVERSION	6,550,227
9900-8318 DEV CHG - CORPORATE	240,000
9900-8343 FEDERAL GAS TAX	2,469,200
9900-9909 DEBT - INFRASTRUCTURE RENEWAL	4,423,545
Total	**47,951,200**

Table 2-6 provides a summary of the capital funding sources over the period 2021 to 2030

For the purposes of the Cost-of-Service review, the broader forecast of capital expenditures assumes the capital needs are financed directly through the development charges reserve fund and a solid waste reserve. This

approach provides simplicity in the preparation of the analysis. The full capital plan is provided in the detailed calculation tables in Appendix B.

2.7 Operating Expenditures and Revenues

2.7.1 Solid Waste Operating Expenditures

In this analysis, the forecast solid waste budget figures (2021 to 2041) are based on the City's 2021 operating budget. The costs for each component of the operating budget have been reviewed with staff to establish forecast adjustments, including inflationary adjustments. All of the operating expenditures have been assumed to increase at a rate of 2.0% annually.

Additional operating expenditures arising from new capital projects have been identified separately as "operating impacts from capital". Note that annual contributions have been provided to a solid waste capital reserve in order to minimize the need for additional debt to finance the capital program. Also included are any contributions to reserve funds and existing and future debenture payments.

A summary of the operating expenditures for 2021 to 2030 is provided in the following tables, based on the approved 2021 budget and forecasted to 2030:

Table 2-7: Solid Waste Operating Expenditures 2021-2025

Description	2021	2022	2023	2024	2025
720-7111 RESIDENTIAL COLLECTION	4,117,125	4,199,500	4,476,600	4,566,300	4,853,459
720-7113 ROLL-OFF OPERATIONS	262,660	267,900	273,200	278,700	281,354
720-7115 COLLECTION PROGRAMS	704,448	718,600	733,000	747,700	726,718
720-8103 ENVIR SERV ADMINISTRATION	317,760	324,100	330,600	337,200	350,059
720-8121 SITE MONITORING/REPORTING	279,250	284,800	290,400	296,200	293,992
720-8201 ADMIN. & CO-ORDINATION	2,343,380	2,390,000	2,475,700	2,525,300	2,853,114
720-8401 TRANSFER STATION OPERATIONS	4,047,180	4,128,200	4,254,800	4,494,100	5,047,788
720-8501 CUST SERV, PROMO & EDUCATION	1,197,380	1,221,300	1,245,700	1,270,500	1,463,840
720-8505 GOVERNANCE AND COMPLIANCE	320,680	327,100	333,700	340,400	348,137
720-8510 MRF OPERATIONS	3,400,260	3,468,200	3,537,500	3,608,200	3,655,570
720-8520 ORGANIC WASTE OPERATIONS	3,670,110	3,743,500	3,818,300	3,894,800	4,012,729
720-8530 H.H.W. OPERATIONS	177,600	181,200	184,800	188,500	183,903
720-8540 PUBLIC DROP OFF OPERATIONS	3,620,142	3,692,400	3,766,200	3,841,500	3,848,137
720-8630 SALES & PROCUREMENT	181,000	184,600	188,300	192,000	181,000
Adjustment for Rounding	(38)	100	-	300	488
Sub Total Operating	**24,638,937**	**25,131,500**	**25,908,800**	**26,581,700**	**28,100,288**
Transfer to Capital Reserve	2,352,000	4,918,542	6,818,358	10,776,534	3,761,485
Total Expenditures	**26,990,937**	**30,050,042**	**32,727,158**	**37,358,234**	**31,861,773**

Table 2-8: Solid Waste Operating Expenditures 2026-2030

Description	2026	2027	2028	2029	2030
720-7111 RESIDENTIAL COLLECTION	5,155,600	5,258,400	5,363,200	5,689,000	5,802,800
720-7113 ROLL-OFF OPERATIONS	286,900	292,600	298,300	304,200	310,200
720-7115 COLLECTION PROGRAMS	741,300	756,300	771,400	786,900	802,600
720-8103 ENVIR SERV ADMINISTRATION	357,100	364,200	371,500	378,900	386,500
720-8121 SITE MONITORING/ REPORTING	299,900	305,800	311,900	318,000	324,400
720-8201 ADMIN. & CO-ORDINATION	2,909,700	2,967,500	3,027,200	3,102,000	3,180,100
720-8401 TRANSFER STATION OPERATIONS	5,197,700	5,414,500	5,637,200	5,867,000	6,104,900
720-8501 CUST SERV, PROMO & EDUCATION	1,493,100	1,522,900	1,553,200	1,584,200	1,615,900
720-8505 GOVERNANCE AND COMPLIANCE	355,100	362,200	369,500	376,900	384,400
720-8510 MRF OPERATIONS	3,728,700	3,803,400	3,879,400	3,957,100	4,036,300
720-8520 ORGANIC WASTE OPERATIONS	4,093,000	4,174,900	4,258,400	4,343,600	4,430,400
720-8530 H.H.W. OPERATIONS	187,600	191,300	195,200	199,100	203,000
720-8540 PUBLIC DROP OFF OPERATIONS	3,925,000	4,003,500	4,083,600	4,165,300	4,248,600
720-8630 SALES & PROCUREMENT	184,600	188,300	192,000	195,800	199,700
Adjustment for Rounding	900	600	3,000	2,300	2,000
Sub Total Operating	**28,916,200**	**29,606,400**	**30,315,000**	**31,270,300**	**32,031,800**
Transfer to Capital Reserve	2,932,108	3,587,798	3,584,488	3,325,178	2,307,000
Total Expenditures	**31,848,308**	**33,194,198**	**33,899,488**	**34,595,478**	**34,338,800**

The detailed operating budget from 2021 to 2041 is provided in Appendix B.

2.7.2 Solid Waste Operating Revenues

With respect to operating revenues, solid waste service revenues come from a number of sources that include:

- Internal chargebacks;
- User fees and service charges;
- Sale of goods;
- External recoveries;
- Grants; and
- Property taxes.

Each of the specific revenue sources is discussed below.

Internal Chargebacks

The City of Guelph utilizes internal chargebacks to collect revenues from other City departments for services provided (e.g. waste collection).

User Fees and Service Charges

The City utilizes user fees to recover costs related to specific activities (e.g. non-residential tipping fees at the transfer station, residential drop-off at the PDO, etc.). These fees generate a significant portion of the anticipated revenues for solid waste ($6.2 million budgeted for 2021).

Sale of Goods

Through the processing at the Materials Recovery Facility, the City is able to sell recyclable products to generate revenue. The City also sells scrap metal and e-waste from the public drop-off.

External Recoveries

External recoveries have been identified for some activities at the Organics facility. The facility operator pays the City for lawn maintenance, etc. and is invoiced quarterly. This revenue is to recover the cost of providing the service to the facility operator.

Grants

Grants have been identified for the operations of the Household Hazardous Waste facility and under Material Recovery Facility sales and procurement. The grant for the Household Hazardous waste facility relates to the Ontario Stewardship Program funding for the cost of collection and depot overhead costs. The additional grant funding relates to money from the Ontario Stewardship Program for collection and processing of blue box materials.

Property Taxes

After all revenues described above are accounted for, the remaining difference between these revenues and the expenditures is funded from property taxes paid by residential and non-residential properties.

Summary

The detailed forecast of operating revenues is provided in Appendix B. The following tables summarize the operating revenues for 2021 to 2030:

Table 2-9: Solid Waste Operating Revenues 2021-2025

Description	2021	2022	2023	2024	2025
720-7111 RESIDENTIAL COLLECTION	3,270	3,300	3,400	3,500	4,023
720-7113 ROLL-OFF OPERATIONS	275,100	280,600	286,200	291,900	297,181
720-7115 COLLECTION PROGRAMS	30,000	30,600	31,200	31,800	32,400
720-8103 ENVIR SERV ADMINISTRATION	199,700	203,700	207,800	212,000	215,994
720-8121 SITE MONITORING/REPORTING	25,000	25,500	26,000	26,500	25,000
720-8401 TRANSFER STATION OPERATIONS	3,225,920	3,290,400	3,356,200	3,423,400	3,491,698
720-8501 CUST SERV, PROMO & EDUCATION	5,400	5,500	5,600	5,700	5,400
720-8520 ORGANIC WASTE OPERATIONS	3,221,180	3,285,600	3,351,300	3,418,300	3,487,000
720-8530 H.H.W. OPERATIONS	122,000	124,400	126,900	129,400	132,000
720-8540 PUBLIC DROP OFF OPERATIONS	1,577,600	1,609,100	1,641,200	1,674,100	1,707,700
720-8630 SALES & PROCUREMENT	2,392,000	2,439,800	2,488,600	2,538,400	2,589,000
Total Operating Revenues	**11,077,170**	**11,298,500**	**11,524,400**	**11,755,000**	**11,987,396**

Table 2-10: Solid Waste Operating Revenues 2026-2030

Description	2026	2027	2028	2029	2030
720-7111 RESIDENTIAL COLLECTION	4,100	4,200	4,300	4,400	4,500
720-7113 ROLL-OFF OPERATIONS	303,100	309,200	315,400	321,700	328,100
720-7115 COLLECTION PROGRAMS	33,000	33,600	34,200	34,900	35,600
720-8103 ENVIR SERV ADMINISTRATION	220,300	224,700	229,200	233,800	238,500
720-8121 SITE MONITORING/REPORTING	25,500	26,000	26,500	27,000	27,500
720-8401 TRANSFER STATION OPERATIONS	3,561,500	3,632,700	3,705,300	3,779,400	3,854,900
720-8501 CUST SERV, PROMO & EDUCATION	5,500	5,600	5,700	5,800	5,900
720-8520 ORGANIC WASTE OPERATIONS	3,556,800	3,627,900	3,700,500	3,774,500	3,850,000
720-8530 H.H.W. OPERATIONS	134,600	137,300	140,000	142,800	145,600
720-8540 PUBLIC DROP OFF OPERATIONS	1,741,800	1,776,600	1,812,200	1,848,400	1,885,300
720-8630 SALES & PROCUREMENT	2,640,800	2,693,600	2,747,500	2,802,400	2,858,400
Total Operating Revenues	**12,227,000**	**12,471,400**	**12,720,800**	**12,975,100**	**13,234,300**

3.0 Cost of Service

3.1 Overview

As part of the Solid Waste Management Master Plan, the City wished to review financial options for user pay to review and address the way the Solid Waste Service is funded. Before completing a review of the current funding model and the alternatives available, a Cost-of-Service review was undertaken.

The goal of the Cost-of-Service review is to identify the total costs of providing the service and then to identify the revenues to fund the required expenditures. To understand these expenditures and revenues, the following City information was reviewed and analysed:

- Current 10-year capital budget;
- Current operating budget;
- Asset inventory and replacement schedule; and
- Financial policies regarding capital funding, use of reserve/reserve funds, and debt.

The Cost-of-Service review also provided the expenditures and revenues allocated by waste stream to isolate the cost of service into the following categories:

- Garbage (grey cart);
- Recycling (blue cart);
- Organics (green cart);
- Leaf and Yard Waste;
- Household Hazardous Waste; and
- Other Materials (at the Public Drop-off).

3.2 Cost-of-Service Components by Waste Stream

The expenditures and revenues for the solid waste service were compiled into a financial model, to be provided to the City. This financial model can be summarized into the following components; capital costs, operating costs and revenues, and lifecycle costs.

3.2.1 Allocation of Capital Costs by Waste Stream

The City's 10-year capital forecast was reviewed and utilized for this analysis. This budget provided the capital expenditures currently identified by City staff out to 2030. Table 3-1 provides a summary of the 10-year capital budget and forecast.

From this capital budget, the expenditures were forecasted to 2041 for:

1. Fleet, vehicle, and equipment replacement: based on the City's replacement schedule;
2. Additional collection vehicles: based on the anticipated growth forecast (1 vehicle per 3,000 households); and
3. Collection carts and Front-end Bins: based on the average capital cost per unit from 2022 to 2029.

With the addition of the expenditures from 2031 to 2041, the total capital forecast increased to $60,624,900.

Through detailed discussion and workshops with staff, these costs were allocated to each waste stream as appropriate. Table 3-2 below identifies each capital project along with the basis for the allocation and the percentage allocated to each stream. The resultant 2022 to 2041 capital costs by waste stream are provided in the following summary table:

Table 3-1: Summary of Capital Forecast by Waste Stream (2021 $)

Waste Stream	Total Capital Cost (2022 to 2041)
Garbage	23,175,500
Blue Box	16,201,200
Green Bin	18,143,600
Leaf/Yard	1,030,500
HHW	7,600
Other Materials (@PDO)	2,066,500
Total	**60,624,900**

The expenditures noted above, were modelled on an annual basis and inflated by 2% per year to establish an "inflated capital forecast". These costs are identified in the detailed calculations provided in the financial model.

Table 3-2 – Solid Waste 10 Year Capital Budget and Forecast (2021-2030)

Project Name	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total $
Solid Waste Vehicle and Equipment Replacement	1,528,000	1,702,000	1,394,000	932,200	1,200,000	1,236,000	1,273,000	1,311,000	1,350,000	1,390,000	**13,316,200**
Transfer Station Upgrades	-	-	2,800,000	700,000	-	-	-	-	-	-	**3,500,000**
Administration Building Renewal	-	2,000,000	2,000,000	-	-	-	-	-	-	-	**4,000,000**
Inventory and Condition Assessment	-	-	-	-	300,000	-	-	-	-	300,000	**600,000**
Vehicles Growth	-	400,000	-	-	400,000	-	-	400,000	-	400,000	**1,600,000**
Materials Recovery Facility	100,000	374,000	284,000	240,000	235,000	-	-	-	-	-	**1,233,000**
Organic Waste Processing Facility	363,000	604,000	573,000	416,000	389,000	449,000	800,000	1,067,000	848,000	114,000	**5,623,000**
Transfer Station	-	527,000	189,000	250,000	263,000	300,000	-	-	-	-	**1,529,000**
Site Renewal	330,000	368,000	185,000	291,000	401,000	100,000	100,000	100,000	100,000	-	**1,975,000**
Collection Carts and Front-End Bins Growth	-	165,000	175,000	175,000	175,000	391,000	391,000	391,000	391,000	-	**2,254,000**
Administration Building	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	-	**90,000**
Public Drop Off Upgrades	21,000	50,000	50,000	50,000	98,000	50,000	550,000	50,000	50,000	-	**969,000**
Eastview Site Renewal	-	-	-	46,000	143,000	125,000	120,000	120,000	145,000	-	**699,000**
Collection Operations Centre	-	-	-	9,513,000	-	-	-	-	-	-	**9,513,000**
Security Upgrades	-	-	-	-	-	50,000	-	-	-	-	**50,000**
Master Plan	-	-	-	-	400,000	-	-	-	-	-	**400,000**
Reuse Centre	-	-	-	-	-	-	-	600,000	-	-	**600,000**
Total Solid Waste Services	**2,352,000**	**6,200,000**	**7,660,000**	**12,623,200**	**4,014,000**	**2,711,000**	**3,244,000**	**4,049,000**	**2,894,000**	**2,204,000**	**47,951,200**

Table 3-3: Allocation of Capital Projects by Waste Stream

Project Number & Name	Basis for Allocation	Garbage	Blue Box	Green Bin	Leaf/Yard	HHW	Other Materials (@PDO)
Total FT0012 Solid Waste Vehicle and Equipment Replacement	Weighted average allocation across all vehicles in capital budget	36%	35%	23%	2%	0%	5%
Total WC0002 Transfer Station Upgrades	Allocated based on tonnage at facility	95%	3%	2%	0%	0%	0%
Total WC0003 Administration Building Renewal	Allocated based on all incoming tonnages	52%	13%	27%	3%	0%	5%
Total WC0015 Inventory and Condition Assessment	Allocated based on all incoming tonnages	52%	13%	27%	3%	0%	5%
Total WC0016 Vehicles Growth	Allocated based on residential collection	34%	35%	31%	0%	0%	0%
Total WC0018 Materials Recovery Facility	Allocated based on tonnage at facility	0%	100%	0%	0%	0%	0%
Total WC0020 Organic Waste Processing Facility	Allocated based on tonnage at facility	0%	0%	100%	0%	0%	0%
Total WC0022 Transfer Station	Allocated based on tonnage at facility	95%	3%	2%	0%	0%	0%
Total WC0023 Site Renewal	Allocated based on all tonnage	52%	13%	27%	3%	0%	5%
Total WC0024 Collection Carts and Front End Bins Growth	Allocate evenly to garbage, blue, and green	33%	33%	33%	0%	0%	0%
Total WC0025 Administration Building	Allocated based on all incoming tonnages	52%	13%	27%	3%	0%	5%
Total WC0026 Public Drop Off Upgrades	Allocated based on tonnage at facility (not including leaves)	50%	3%	0%	17%	0%	30%
Total WC0027 Eastview Site Renewal	Allocated based on all tonnage	52%	13%	27%	3%	0%	5%
Total WC0030 Collection Operations Centre	New building for residential collection fleet (allocate based on residential collection tonnages)	34%	35%	31%	0%	0%	0%
Total WP0007 Security Upgrades	Allocated based on all incoming tonnages	52%	13%	27%	3%	0%	5%
Total WP0008 Master Plan	Allocated based on all incoming tonnages	52%	13%	27%	3%	0%	5%
Total WR0002 Reuse Centre	Allocated based on tonnage at PDO - except Garbage	0%	7%	0%	34%	0%	59%

3.2.2 Allocation of Operating Costs by Waste Stream

The City's 2021 operating costs related to solid waste services were also reviewed and analyzed, similar to the capital costs. Expenditures and revenues are identified in the budget based on various activities and facility operations within the department. A summary of the 2021 operating budget is provided in the table below:

Table 3-4: Summary of 2021 Operating Budget

2021 Budget Account	2021 Expenditures	2021 Revenues	2021 Net Amount to be Recovered
720-7111 RESIDENTIAL COLLECTION	4,113,855	-	**4,113,855**
720-7113 ROLL-OFF OPERATIONS	173,260	185,700	**(12,440)**
720-7115 COLLECTION PROGRAMS	704,448	30,000	**674,448**
720-8103 ENVIR SERV ADMINISTRATION	317,760	199,700	**118,060**
720-8121 SITE MONITORING/REPORTING	279,250	25,000	**254,250**
720-8201 ADMIN. & CO-ORDINATION	2,343,380	-	**2,343,380**
720-8401 TRANSFER STATION OPERATIONS	3,948,080	3,126,820	**821,260**
720-8501 CUST SERV, PROMO & EDUCATION	1,197,380	5,400	**1,191,980**
720-8505 GOVERNANCE AND COMPLIANCE	320,680	-	**320,680**
720-8510 MRF OPERATIONS	3,400,260	-	**3,400,260**
720-8520 ORGANIC WASTE OPERATIONS	3,670,110	3,221,180	**448,930**
720-8530 H.H.W. OPERATIONS	177,600	122,000	**55,600**
720-8540 PUBLIC DROP OFF OPERATIONS	3,620,142	1,577,600	**2,042,542**
720-8630 SALES & PROCUREMENT	181,000	2,392,000	**(2,211,000)**
Total	**24,447,205**	**10,885,400**	**13,561,805**

A detailed review of the solid waste operating budget was undertaken and allocation of each expenditure and revenue to the respective waste stream was completed following discussions and a workshop with staff. As the Solid Waste operating budget contains over 600 line items, the basis for allocation to each waste stream has not been identified in this report, however, these details are available in the City's Excel based financial model prepared by Watson as part of this Task.

The resultant net amounts to be recovered from property taxation are as follows:

- Garbage (grey cart): $6.19 million;
- Recycling (blue cart): $2.10 million;
- Organics (green cart): $3.00 million;
- Leaf and Yard Waste: $1.12 million;
- Household Hazardous Waste: $114,000; and
- Other Materials (such as construction and demolition waste, electronics, clothing, scrap metal, etc.) at the Public Drop-off): $1.04 million.

To prepare the forecast of operating expenditures and revenues (2022 to 2041), the operating budget was inflated by 2%.

In addition to the operating budget, there were operating budget impacts identified arising from the capital program. That is, as a new facility is constructed or new vehicles are added to the fleet complement, there will be additional expenditures from salaries, wages, and benefits, hydro and utility costs, etc. City staff provided a schedule of the estimated operating cost impacts arising from capital. This schedule of costs was added into the operating budget forecast.

The operating budget forecast, allocated by waste stream, is identified in the detailed calculation tables provided in Appendix B.

3.2.3 Allocation of Lifecycle by Waste Stream

As discussed in section 2.5, an analysis of the City's solid waste inventory was conducted to estimate the annual lifecycle costs attributable to solid waste. Using the depreciation method, the total replacement value for solid waste fleet was approximately $10.49 million. As the fleet has been included in the capital forecast, a lifecycle cost analysis was not required (i.e. these costs have already been considered by the City when preparing the capital budget). With respect to facilities, the total replacement value for all facilities is $57.33 million, which translates into an annual lifecycle replacement cost of $1.61 million. Note, these costs are not currently included in the City's capital budget due to the limitations of the funding envelope and will be added as part of the full Cost-of-Service analysis.

The annual lifecycle costs were allocated to each respective waste stream, generally based on the tonnage of materials processed at each location. The following tables provide a summary of the facilities' annual lifecycle costs and the percentage allocations, respectively. Finally Table 3-7 provides a summary of the annual lifecycle costs attributable to each waste stream.

Table 3-5: Annual Lifecycle Contribution Amounts

Description	Business Unit	Year Installed	Weighted Average Useful Life*	Replacement Cost 2021$	Total Cost per Year 2021$	Annual Lifecycle Contribution
Materials Recovery Facility	MRF	1994	28	23,260,219	821,839	821,839
Administration Building	Administration	1994	37	1,872,238	50,290	50,290
East Scale House	Residential Drop Off (mainly)	2001	19	560,799	28,882	28,882
Public Drop Off Zone East	PDO	1998	37	132,258	3,569	3,569
West Scale House	Commercial Drop off (mainly)	2001	19	350,951	18,220	18,220
Public Drop Off Zone West	PDO	1998	28	101,012	3,642	3,642
Household Hazardous Waste	MSHW	1995	33	371,860	11,166	11,166
Office Portable	Administration	2016	41	100,960	2,436	2,436
Transfer Station	Transfer Station	1994	50	3,192,500	64,489	64,489
Organics Facility	Organics	2011	41	24,388,197	601,262	601,262
Eastview Landfill	Garbage	1985	n/a	2,997,228	112,199	-
Total				**57,328,221**		**1,605,795**

Note: Eastview Landfill annual lifecycle contribution is 0 as there are no replacement costs associated with the facility

*Based on City's asset management analysis - weighted average useful life of all components at facility

Table 3-6: Annual Lifecycle Percentage Allocations

Description	Annual Lifecycle Contribution	Basis for Allocation	Garbage	Blue Box	Green Bin	Leaf/ Yard	HHW	Other Materials (@PDO)
Materials Recovery Facility	821,839	Allocated based on tonnage at facility	0%	100 %	0%	0%	0%	0%
Administration Building	50,290	Allocated to all based on tonnage	52%	13%	27%	3%	0%	5%
East Scale House	28,882	Allocated to all based on tonnage	52%	13%	27%	3%	0%	5%
Public Drop Off Zone East	3,569	Allocated based on tonnage at PDO	50%	3%	0%	17%	0%	30%
West Scale House	18,220	Allocated to all based on tonnage	52%	13%	27%	3%	0%	5%
Public Drop Off Zone West	3,642	Allocated to all based on tonnage	52%	13%	27%	3%	0%	5%
Household Hazardous Waste	11,166	Allocated based on tonnage at facility	0%	0%	0%	0%	100 %	0%
Office Portable	2,436	Allocated to all based on tonnage	52%	13%	27%	3%	0%	5%
Transfer Station	64,489	Allocated based on tonnage at facility	95%	3%	2%	0%	0%	0%
Organics Facility	601,262	Allocated based on tonnage at facility	0%	0%	100%	0%	0%	0%
Eastview Landfill	-	Allocated 100% to garbage	100%	0%	0%	0%	0%	0%
Total	**1,605,795**							

Table 3-7: Annual Lifecycle Costs Attributable to Each Waste Stream

Description	Business Unit	Annual Lifecycle Contribution	Garbage	Blue Box	Green Bin	Leaf/Yard	HHW	Other Materials (@PDO)
Materials Recovery Facility	MRF	821,839	-	821,839	-	-	-	-
Administration Building	Administration	50,290	26,176	6,330	13,821	1,433	13	2,517
East Scale House	Residential Drop Off (mainly)	28,882	15,033	3,635	7,938	823	7	1,445
Public Drop Off Zone East	PDO	3,569	1,768	116	-	611	-	1,073
West Scale House	Commercial Drop off (mainly)	18,220	9,484	2,293	5,007	519	5	912
Public Drop Off Zone West	PDO	3,642	1,896	458	1,001	104	1	182
Household Hazardous Waste	MSHW	11,166	-	-	-	-	11,166	-
Office Portable	Administration	2,436	1,268	307	669	69	1	122
Transfer Station	Transfer Station	64,489	61,326	2,022	1,140	-	-	-
Organics Facility	Organics	601,262	-	-	601,262	-	-	-
Eastview Landfill	Garbage	-	-	-	-	-	-	-
Total		**1,605,795**	**116,952**	**837,001**	**630,839**	**3,560**	**11,192**	**6,251**

For the Cost-of-Service calculations for 2022 to 2041, where lifecycle costs are less than the anticipated expenditures in the 10-year capital forecast, the difference has been included in the calculations. Otherwise, all lifecycle costs are included in the calculations beginning in 2030.

3.3 Total Cost-of-Service

3.3.1 Overview

The Cost-of-Service analysis combines the reviews of the operating budget, capital forecast, and the lifecycle analysis to prepare a forecast of the potential financial recovery requirements to 2041. At a high-level, this is completed by identifying the following in each year:

- Capital needs;
- Funding of capital needs/reserve fund analysis;
- Operating costs (including transfers to pay for capital needs);
- Operating revenues; and
- Lifecycle Costs.

The annual required expenditures, less any operating revenue (e.g. user fees, sale of recyclables, etc.) provides the full Cost-of-Service to provide solid waste services to the residents of Guelph.

3.3.2 Adjustment for 2021 Budget Figures

It is noted that the publicly available 2021 budget information does not exactly match the analysis provided in the financial modelling. This is a result of two factors:

4. Transfers for Capital: The City currently funds capital works from outside the solid waste services budget. The expenditures are funded from various tax-supported reserves managed by the City. As a result, the City's current operating budget used to calculate recovery from property taxes (i.e. $13.56 million) does not include the $2.35 million for the capital needs; and
5. Annual Lifecycle Replacement Contribution: Similarly the solid waste services budget does not include all annual lifecycle costs. As a result, the budget does not include $576,000 for annual lifecycle replacement costs

for the Materials Recovery Facility and the Household Hazardous Waste Facility.

3.3.3 Results of Analysis

Based on the financial modelling prepared, along with the discussion and workshops with staff, the total net Cost-of-Service (after operating revenues) for 2021 is $15.91 million (or $16.49 million including lifecycle costs).

Over the forecast period, these expenditures are anticipated to increase by an average of 2% to 6% annually. By 2041, the anticipated net Cost-of-Service to be funded by property taxes will be approximately $30.30 million.

These costs have also been calculated for each waste stream in the following table:

Table 3-8: Total Net Cost-of-Service for Recovery, 2021 and 2041

Waste Stream	2021	2025	2041	Average Annual Increase in Net Costs to be Recovered
Garbage	6,929,000	9,393,000	14,576,000	6%
Blue Box	3,338,000	3,907,000	5,694,000	4%
Green Bin	3,805,000	4,529,000	6,541,000	4%
Leaf/Yard	1,163,000	1,238,000	1,659,000	2%
HHW	126,000	127,000	171,000	2%
Other Materials (@PDO)	1,129,000	1,256,000	1,654,000	2%
Total	**16,490,000**	**20,450,000**	**30,295,000**	**4.19%**
Total Net of Blue Box Costs	**13,152,000**	**16,543,000**	**24,601,000**	

Note 1: Costs for Blue Box are based on the current system. Further discussions are provided regarding changes to Blue Box in the Blue Box Transition Strategy Technical Memo

Note 2: Net costs for 2021 include lifecycle expenditures, as well as transfers for capital projects, which are not currently included in the solid waste services budget.

The detailed calculations worksheets are provided in Appendix B for the total solid waste program, along with the calculations for each waste stream.

Note: Further costs related to user rate system such as establishing an operating contingency, implementation costs and service support allocations would also need to be factored into the costs above.

3.4 Existing Gaps in User Fee Recovery

As part of the Cost-of-Service analysis the City requested a review of user fee recovery for the following activities: non-residential drop-off, residential drop-off, and the organics contract. For each activity, the costs of providing the service were identified including: direct operating costs, overhead costs, and lifecycle costs. Flowcharts for the waste streams through each facility (included in Appendix D), were utilized to identify all costs throughout the process.

3.4.1 Industrial, Commercial, and Institutional (ICI) Drop-off

The City of Guelph provides collection services to residential customers only with the exception a select number of small businesses and properties mainly in the downtown service area. The remaining ICI properties in the City hire private firms to collect and dispose of their waste and recyclable materials. When the materials are brought to the site, the City imposes a tipping fee per tonne for drop-off at the transfer station. The City also uses the Transfer Station to bulk and transfer the curbside residential waste collected.

To assess the Cost-of-Service, all costs related to the ICI drop-off at the transfer station were identified. The proportionate share of the total costs that relate to ICI drop-off were identified based on the tonnage related to ICI. Based on this review, the total expenditures related to ICI are $3.18 million. The tipping fee revenue identified for the ICI users is anticipated to total $2.09 million, resulting in a difference of $1.09 million. The information outlining the gap between ICI user fees and cost of providing the service is presented in the following table:

Table 3-9: ICI User Fee Gap Analysis, 2021

ICI Expenditure vs. Revenues	Total $	% Related to ICI	$ Related to ICI
Expenditures			
Operating Expenditures - Transfer Station (less landfill contract)	395,980	52%	207,712
Operating Expenditures - Administration	4,458,450	24%	1,055,753
Operating Expenditures - Landfill Contract	3,651,200	52%	1,915,240
Lifecycle Cost - Transfer Station	-	52%	-
Lifecycle Cost - Administration	-	24%	-
Total Expenditures	**8,505,630**		**3,178,705**
Revenues			
Tip Fee Revenues	2,088,520	100%	2,088,520
Total Revenues	**2,088,520**		**2,088,520**
		Difference	**1,090,185**
		% Difference	**52%**

Note: Similar to the forecast analysis described in the previous section, lifecycle costs are not assumed in the calculations until 2030. However, as the total lifecycle costs for the above would be approximately $45,000, this would only provide a marginal increase in the expenditures.

The above table implies that the user fees would need to be increased by 52% to achieve full cost recovery for 2021 expenditures. The main driver for the discrepancy is the inclusion of administration costs based on the allocation of ICI tonnage as a percentage of the total solid waste tonnage managed. However, it is important to note that although the user fees do not provide full cost recovery, non-residential properties in the City do pay property taxes, of which approximately 5.1% of each tax bill goes to solid waste services.

Over the forecast period to 2041, the gap in user fee recovery is anticipated to increase from approximately 50% in 2021 to 116% in 2041.

3.4.2 Residential and Non-residential Public Drop-off

Residential properties in the City may also utilize the public drop-off facility to dispose of their waste in addition to the curbside collection program.

Similar to ICI customers dropping off at the Transfer Station, both residential and ICI customers are charged a user fee by the City to drop off at the public drop-off. Note, ICI customers may use the public drop-off for smaller loads that are not on a tipping trailer (and therefore cannot use the transfer station) or for tipping construction and demolition material at the bunkers.

To assess the Cost-of-Service, all costs related to the residential public drop-off were identified. The proportionate share of the total costs that relate to this facility were identified based on the associated tonnage. Based on this review, the total expenditures related to residential drop-off are $1.96 million (in 2021). The user fee revenue identified for these users is anticipated to total $1.06 million, resulting in a difference of $0.89 million. This information outlining the gap between residential drop-off user fee revenues and expenditures is presented in the following table:

Table 3-10: Residential Drop-off User Fee Gap Analysis, 2021

Res Waste Drop off @ PDO Expenditure vs. Revenues	Total $	% Related to Residential	$ Related to Residential
Expenditures			
Operating Expenditures - PDO	3,367,442	44%	1,486,385
Operating Expenditures - Administration	4,458,450	8%	360,284
Operating Expenditures - Landfill Contract	252,700	44%	111,541
Lifecycle Cost - PDO	-	44%	-
Lifecycle Cost - Administration	-	8%	-
Total Expenditures	**8,078,592**		**1,958,211**
Revenues			
PDO Drop off Revenues	1,060,000	100%	1,060,000
Total Revenues	**1,060,000**		**1,060,000**
		Difference	**898,211**
		% Difference	**85%**

Table 3-10 presents a comparison of expenditures and revenues for residential waste drop-off at PDO and highlights the shortfall in user fees for 2021.

Note: Similar to the forecast analysis described in the previous section, lifecycle costs are not assumed in the calculations until 2030. However, as the total lifecycle costs for the above would be approximately $28,000, this would only provide a marginal increase in the expenditures.

The above table implies that the user fees would need to be increased by 85% to achieve full cost recovery for 2021 expenditures. The difference includes both direct operational costs related to the provision of service, as well as, the inclusion of administration costs based on the allocation of PDO tonnage as a percentage of the total solid waste tonnage managed. Over the forecast period to 2041, the gap in user fee recovery is anticipated to increase from approximately 85% in 2021 to 89% in 2041.

With respect to non-residential drop-off at the PDO, Table 3-11 provides for a summary of the expenditures and revenues. The proportionate share of the total costs that relate to this facility were identified based on the associated tonnage for non-residential drop-off. Based on this review, the total expenditures related to non-residential drop-off are $1.19 million (in 2021). The user fee revenue identified for these users is anticipated to total $237,000, resulting in a difference of approximately $0.95 million. This information outlining the gap between user fee revenues and expenditures is presented in the following table:

Table 3-11: Non-residential Drop-off User Fee Gap Analysis, 2021

Non-res Waste Drop off @ PDO Expenditure vs. Revenues	Total $	% Related to Residential	$ Related to Residential
Expenditures			
Operating Expenditures - PDO	3,367,442	27%	902,104
Operating Expenditures - Administration	4,458,450	5%	218,661
Operating Expenditures - Landfill Contract	252,700	27%	67,696
Lifecycle Cost - PDO	-	27%	-
Lifecycle Cost - Administration	-	5%	-
Total Expenditures	**8,078,592**		**1,188,460**
Revenues			
Transfer Station Tip Fees	237,000	100%	237,000
Total Revenues	**237,000**		**237,000**
		Difference	**951,460**
		% Difference	**401%**

Table 3-11 presents a comparison of expenditures and revenues for non-residential waste drop-off at PDO and highlights the shortfall in user fees for 2021.

As noted above with respect to ICI user fee recovery, it is noted that although the user fees do not provide full cost recovery, non-residential properties in the City do pay property taxes, of which approximately 5.1% of each tax bill goes to solid waste services.

3.4.3 Organics

The City contracts operations of its organics facility to Wellington Organics. This facility receives organic waste from the residents of Guelph, as well as 20,000 tonnes of organics waste from the Region of Waterloo. Waterloo pays a waste processing fee to the City of Guelph. The Region of Waterloo tonnage represents approximately 64% of the total tonnage processed at the City's organics facility.

To assess the Cost-of-Service, all costs related to the organics facility were identified. The proportionate share of the costs that relate were identified based on the associated tonnage. Based on this review, the total expenditures related to organics are $4.26 million (in 2021, adjusted for expenditures related to internal chargeback). Based on a proportional share of the costs, the Region of Waterloo related costs would represent $2.73 million of the total expenditures. The waste processing fee revenue paid by the Region of Waterloo is anticipated to total $2.65 million, resulting in a difference of approximately $85,000. This information is presented in the following table:

Table 3-12: Organics User Fee Gap Analysis, 2021

Organics Expenditure vs. Revenues	Total $	% Related to Organics	$ Related to Organics	% Related to Waterloo Contract	$ Related to Waterloo Contract
Expenditures					
Operating Expenditures Organics	3,098,110	100%	3,098,110	64%	1,987,189
Operating Expenditures - Administration	4,458,450	26%	1,165,241	64%	747,409
Lifecycle Cost - Organics	-	100%	-	64%	-
Lifecycle Cost - Administration	-	26%	-	64%	-
Total Expenditures	**7,556,560**		**4,263,351**		**2,734,598**
Revenues					
Waste Processing Fees	2,649,180	100%	2,649,180	100%	2,649,180
Total Revenues	**2,649,180**		**2,649,180**		**2,649,180**
				Difference	**85,418**
				% Difference	**3%**

Table 3-12 presents a comparison of expenditures and revenues for organics facilities and highlights the shortfall in user fees for 2021.

Note: Similar to the forecast analysis described in the previous section, lifecycle costs are not assumed in the calculations until 2030. However, as the total lifecycle costs for the above would be approximately $461,000, this would provide significant increase in the expenditures and increase the difference in 2021 from 3% to 21%.

The above table implies that the fee recovery should be reviewed in further detail. The identified revenues would need to be increased by 3% to achieve full cost recovery for 2021 expenditures. The difference includes both direct operational costs related to the provision of service, as well as the inclusion

of administration costs based on the allocation of contract organics tonnage as a percentage of the total solid waste tonnage managed. Over the forecast period to 2041, the gap in user fee recovery is anticipated to increase from approximately 3% in 2021 to 18% in 2041.

3.4.4 Observations

Based on the above analysis, it is recommended that the City consider these findings to inform the City's review of the Council approved user fee structure and approval of user fee subsidization levels as part of the Corporate Service Rationalization Review recommendation. This will potentially increase user fees towards full-cost recovery and minimize the requirement of funds from property taxes.

3.5 Impacts of IPR Legislation

In preparing the Cost-of-Service analysis, the financial model has been set-up to accommodate changes to the budgets resulting from the legislative changes regarding IPR. A fulsome discussion of the IPR legislation along with results of various Cost-of-Service scenarios are provided in a separate memorandum.

To assist the City in understanding the current Cost-of-Service for Blue Box materials, the financial model was prepared to isolate the Blue Box-related costs. In addition, costs were provided in the financial model on a per tonne basis for the following (in 2021):

- Public Drop-off: $121.83 per tonne;
- Residential Collection and Collection Programs: $124.70 per tonne;
- Materials Recovery Facility: $226.96 per tonne;
- Administration: $44.31 per tonne; and
- Capital-related (transfers, debt, and lifecycle): $94.99 per tonne.

These costs have also been forecasted to 2041. This information may be utilized by the City when negotiating contract prices with potential service providers.

3.6 Downtown Collection

As noted in the Task 4 report and the Task 8 report, the City provides waste collection service to a portion of the downtown area. This service area receives three stream collection services 6 days per week, 52 weeks per year. There are 334 total addresses and 884 total units in this service area which includes The Sleeman Centre.

An analysis of the Cost-of-Service was undertaken to identify all of the associated costs for downtown collection. Through meetings with staff, it was determined that the total operating costs related to labour, truck maintenance, and supervision was $233,000 in 2021. In addition to these costs, the proportionate share of administration and lifecycle costs have also been identified. As a result, the total operating costs for the downtown service are $293,907 as outlined in the following table:

Table 3-13: Downtown Cost-of-Service Analysis, 2021

Downtown Expenditure vs. Revenues	Total $	% Related to Downtown	$ Related to Downtown
Expenditures			
Operating Expenditures Downtown	233,000	100%	233,000
Operating Expenditures - Administration	4,458,450	1.2%	52,612
Lifecycle Cost - Organics	-	1.4%	-
Lifecycle Cost - Garbage	-	1.4%	-
Lifecycle Cost - Recycling	564,839	1.5%	8,295
Lifecycle Cost - Administration	-	1.2%	-
Total Expenditures	**5,256,289**		**293,907**

Table 3-13 shows the total operating costs and lifecycle costs for services and facilities, along with the related costs to DT.

Note: Similar to the forecast analysis described in the previous sections, lifecycle costs are not assumed in the calculations until 2030. However, as the total lifecycle costs for the above would be approximately $9,500, this would provide a marginal increase the expenditures from $290,000 to $300,000.

Over the forecast to 2041, the downtown service costs are anticipated to increase from $290,000 in 2021 to $435,000 in 2041. Note that as there is no anticipated growth in the downtown service area, it is not anticipated the expenditures would increase significantly (currently the operating costs for the downtown service area represent approximately 1% of all expenditures for the solid waste service).

4.0 Feedback from Engagement Activities

4.1 Overview of Engagement Activities

Public and stakeholder engagement was an important component throughout the SWMMP. Feedback on the options to fund Guelph's waste management system was gathered through Survey #1 and #2, interviews and workshops. Overall there was a range of feedback provided on the potential options to fund waste management, ranging from supportive to not very supportive. The feedback received from the engagement activities on the options is summarized by category below.

4.1.1 Public Survey #1

As part of the SWMMP, the City of Guelph ran the first of two public online surveys from August 17 to September 30, 2020. The survey solicited feedback on the current system and included questions feedback on the approaches the City could explore in the future to fund the waste management system.

In response to the question on which potential funding approach the City should explore for residential waste collection programs, most participants indicated that it should stay as it currently is, through property taxes (50%).

Participants were asked about what potential funding approaches should be explored for garbage brought to the Public Drop-off (PDO). Most participants indicated that funding for managing garbage brought to the PDO should stay as it currently is, through property taxes (68%).

Participants were asked about what potential funding approaches should be explored for blue cart recyclables brought to the PDO. Most participants indicated that funding for managing blue cart recyclables brought to the PDO should stay as it currently is, through property taxes (87%).

Participants were asked about what potential funding approaches should be explored for electronics brought to the PDO. Most participants indicated that funding for managing electronics brought to the PDO should stay as it currently is, through property taxes (87%).

4.1.2 Public Survey #2

The second of two public online surveys ran from June 2 to June 30 2021. The survey solicited feedback on the proposed opportunities and programming options to help Guelph manage its waste more sustainably, and guide waste management over the next 25 years. The survey also asked about the proposed options to reduce single-plastics, and for feedback on different ways to fund the waste management system.

The survey included closed and open ended questions. Participants were asked to indicate their level of support for potential ways to fund the residential waste collections. No change to the current approach was strongly supported, and a full user-pay system removing funding from the tax base and applying a user rate to every grey cart collected at the curb was the least supported. The survey results are shown below.

Figure 4-1: Public Survey #2 Results on Funding Waste Management Services and Programs for Residential Collections

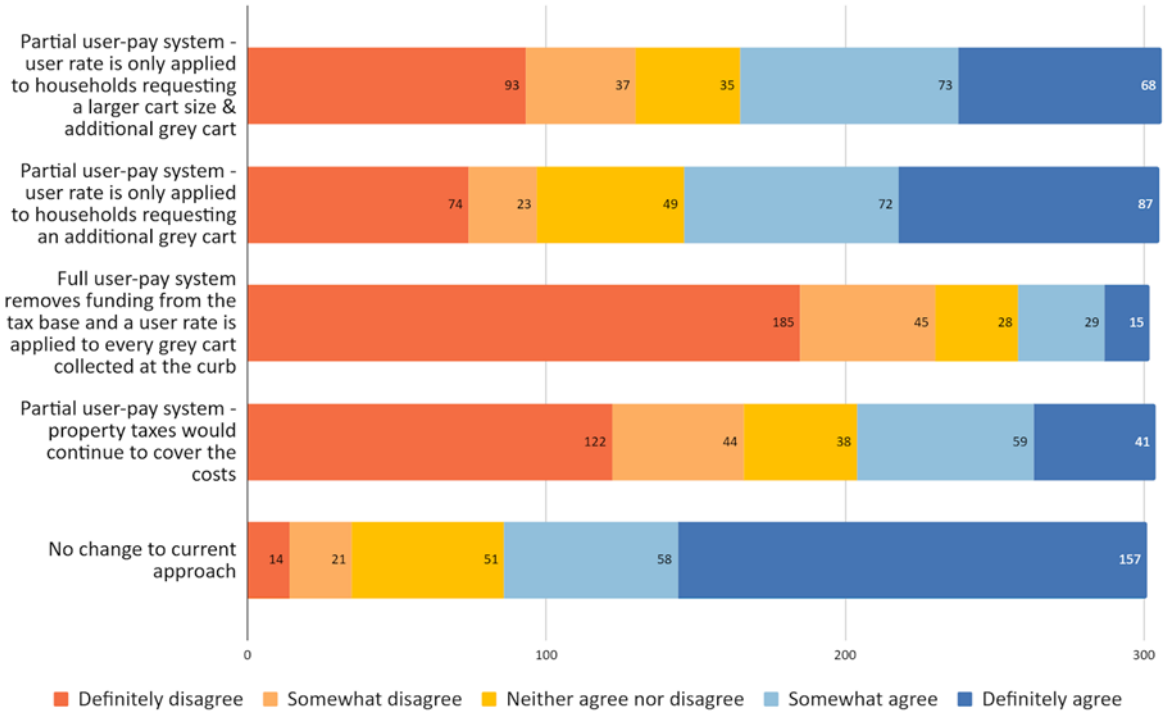


Figure 4-1 presents the results of public survey #2 that ran from June 2 to June 30 2021, regarding funding options and proposed future programs for waste management services for residential collection in Guelph.

Participants were asked to indicate their level of support for potential ways to fund the PDO. No change to the current approach (mix of user fees – 55% and tax base 45%) was strongly supported, and an increase in user fees to cover the true costs to run the PDO was somewhat supported. The survey results are shown below.

Figure 4-2: Public Survey #2 Results on Funding Waste Management Services and Programs for the PDO

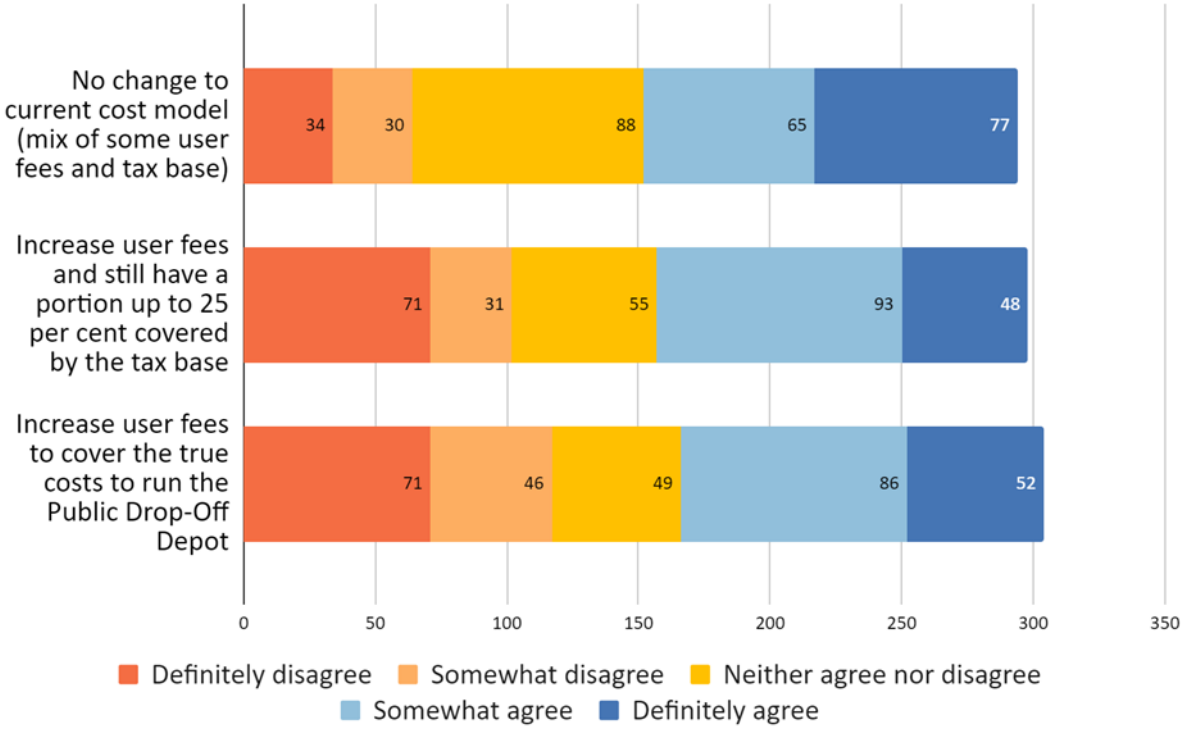


Figure 4-2 presents the results of public survey #2 that ran from June 2 to June 30 2021, regarding funding options and proposed future programs for waste management services for PDO in Guelph.

Participants were asked if they have other comments about the funding options presented. Of the 79 responses to this open ended question, the most common themes included:

- Ensure accessibility and affordability of user pay option to avoid illegal dumping;
- Enforcement of proper disposal will be required if there is an affordability concern;
- Consider equity in terms of household size (multi-generational / multi-family households).

4.1.3 Interviews

In late summer 2020, after a pause in community engagement because of the COVID-19 pandemic, the Engagement Plan for the SWMMP was reviewed and reconfigured to replace in-person engagements with online or virtual engagement opportunities.

Conversations with community members and organizations were organized in fall 2020, and spring 2021 to replace the discussions that would have taken place during the in-person pop-up engagement events. These conversations were more targeted then the planned pop-up events, and sought feedback from various sectors, groups, and community members within Guelph, some of which were underrepresented in the first online survey.

Conversations were held by phone or video conference by City staff to gather feedback on key topics explored in the online surveys that were most relevant to groups participating.

Feedback from participants on the approaches to funding the waste management included the following themes:

- Ensure accessibility and affordability of user pay option;
- Consider the potential for illegal dumping as a result;
- Consider enforcement approaches.

4.1.4 Workshops

Dillon Consulting hosted three workshops on behalf of the City of Guelph to engage stakeholders and members of the community on three key issues being explored in the SWMMP:

- Industrial, Commercial and Institutional Waste Collections;
- Community Partnerships;
- Single-Use Plastics.

The objective of the workshops was to have balanced discussions with stakeholders and members of the community to understand perspectives on the three issues explored, and understand the impacts of implementing the options related to each issue. The approached to funding the waste management system were presented in the workshop on Industrial,

Commercial and Institutional Waste Collections. Feedback included the following themes:

- Consider equity and accessibility of user pay options - don't disadvantage marginalized groups;
- Make sure people understand the changes, and understand the impact of increased diversion through promotions and education.

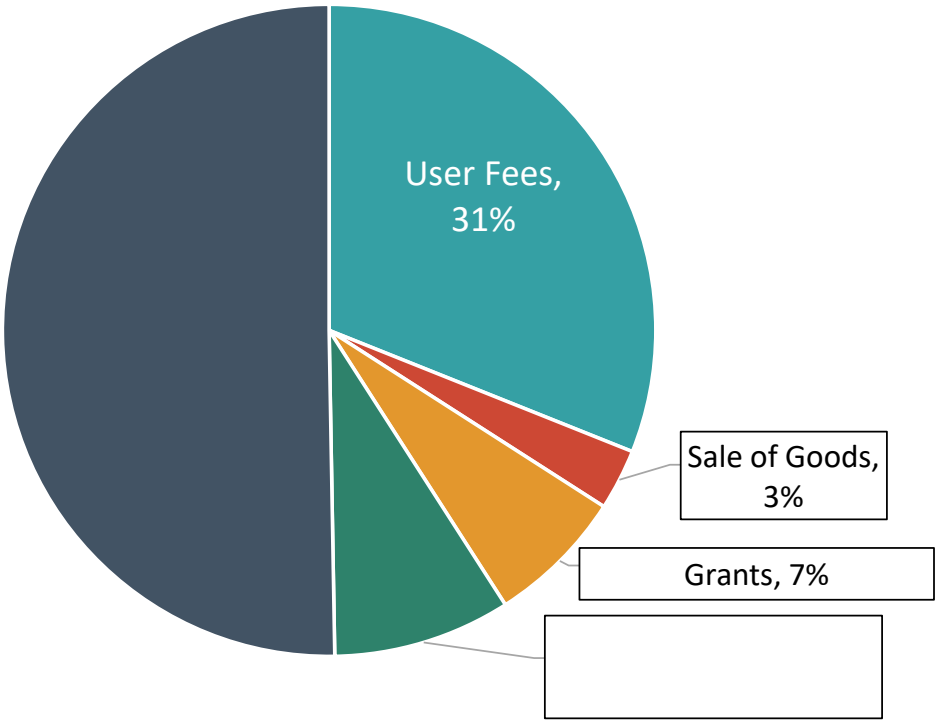
5.0 User Pay Options

5.1 Overview and City of Guelph Current Approach

The City of Guelph currently funds its solid waste services through a combination of user fees and property taxes. User fees seek to recover the costs of specific activities (e.g. non-residential tipping fees, residential drop-off fees, etc.) and property taxes are utilized to fund the remaining expenditures.

As part of the Solid Waste Management Master Plan, the City requested a review of user pay options to assess the potential of reducing or removing funding from property taxes. Currently, the total amount funded by property taxes ($13.56 million) comprises approximately 5.1% of the total property tax levy. The current funding approach relies on property taxes as the biggest source of revenue. As provided in the following graph, property taxes fund approximately 50% of all expenditures:

Figure 5-1: How the Current Solid Waste System is Funded



As provided in Figure 5-1, approximately 31% ($8.44 million) of revenues are from user fees. These fees, relate to internal recoveries for bin lifts and tipping fees for residential collection and roll-off operations, lease agreement revenue, transfer station tip fees, organics waste processing fees, public drop off, and yard waste fees.

Sale of goods provides for approximately 3% ($810,000) of all revenues, with the majority arising from sale of recyclable materials ($680,000). Grants comprise approximately 7% ($1.83 million) of the overall funding sources. These grants are provided from the provincial stewardship program for operations at the hazardous waste facility, public drop-off facility and recycling program activities under the current provincial product stewardship legislation.

Existing reserves finance the proposed capital expenditures.

The current approach is common for municipalities across Ontario (further discussion is provided in the next section). The following provides some pros and cons of the current approach in the context of the City of Guelph:

Pros of Current Funding Approach

- Non-residential properties contribute to the service, while paying for private disposal (Non-residential property taxes comprise approximately 25% of the tax levy). This helps cover the cost to operate the transfer station and drop off for ICI customers and also offsets the cost of the service to residential properties;
- Property tax revenue is a sound revenue source;
- No additional bills/administration is required to receive tax revenue.

Cons of Current Funding Approach

- Property tax revenue is limited based on Council approved tax rate increases;
- Does not consider lifecycle costs for facilities;
- Does not utilize separate reserves/reserve funds to pay for major capital expenditures;
- Limited incentive to increase waste diversion activities.

5.2 Best Practices and User Pay Options

5.2.1 Best Practices Review

A review of cost recovery practices was undertaken for other jurisdictions in Council's approved municipal comparator list within proximity to the City of Guelph. The City of Toronto was also reviewed since it is the only Ontario municipality that has implemented a full rate-based system for solid waste services, similar to water and wastewater services. This review identifies how the net expenditures to be recovered from users are funded. As noted above, the City of Guelph utilizes a variety of revenue sources, with the majority of the costs funded by property taxes (50%) and user fees (31%).

Note: this review focusses on cost recovery of the system as a whole. A detailed review of best practices for ICI collection is provided in the Task 6 report.

The list of comparators surveyed for best practices are as follows:

- The City of Toronto;
- The City of Hamilton;
- Wellington County;
- The City of Barrie;
- The City of London;
- Waterloo Region; and
- Peel Region.

5.2.1.1 City of Toronto

Beginning in 2008, a volume-based rate structure was implemented to fund a service objective of 70% waste diversion. This rate revenue is utilized for garbage, recycling, green bin, litter prevention, landfill management and other diversion-related programs. These fees are part of the City's Utility Bill (along with water charges). In addition to user rate revenues, the City receives funding from various user fees, funding from Waste Diversion Ontario, and sales proceeds from recyclable materials. No fee recovery from property taxes is required.

Residential

The user rate is based on the size of the garbage bin utilized. For residential properties, the fees range from $270.23 per year for a 75-litre bin to $516.79 per year for a 360-litre bin. Additional garbage bags may be set out, with the purchase of bag tags.

Apartments, Condos, and Co-ops

Fees are based on the overall volume of garbage, with different rates applicable for compacted versus un-compacted garbage. The fee includes collection of recycling, organics, yard waste and household hazardous waste. Any amount over the base rate is considered excess and the building will be charged an excess fee per cubic yard. The following table provides for the 2021 fees:

Table 5-1: City of Toronto Multi-Residential Fees 2021

Waste Type	Volume (yd^3)	Base Rate (per unit/year)	Rebate (per unit/year)	Net Rate (per unit/year)	Excess/yd^3
Un-compacted	1.917	$221.88	$185.00	$36.88	$15.40
Compacted	0.9585	$221.88	$185.00	$36.88	$30.81

Non-residential

Businesses may receive curbside collection. The following provides an overview of the fee structure:

- Collection frequency is determined by the City;
- All fees for Garbage Bin subscription service and premium Green Bin organics service must be prepaid three months in advance;
- There is no fee for recycling and once-a-week organics collection. These are included as part of your collection services;
- Commercial customers who receive curbside collection must purchase 95-gallon Garbage Bins and Blue Bins (recycling) and 35 or 26-gallon Green Bins (organics);
- Two weeks' notice is required to cancel service.

2021 fees for curbside collection are $551.61 bi-weekly, $1,103.23 weekly, or $2,206.47 twice per week. Premium green bin organics collection fees are

$438 for two times per week, $1,642.52 for 5 times per week, or $2,190.02 for 6 times per week.

5.2.1.2 All Other Comparators

Overview

In review of all other comparator municipalities, funding approaches are similar. That is each municipality funds its solid waste services through a variety of user fees, reserves, grants and subsidies, sales of recyclable materials, and property taxes. Similar to the City of Guelph, property taxes and user fees comprise the majority of funding.

Table 5-2: Comments on Revenue Sources by Municipality

Municipality	Comments
Peel Region	Total funding for solid waste of $160M anticipated for 2021. Of this amount, 81% will be funded from property taxes, 9% from user fees, 9% from grants and subsidies, and 1% from reserves
Wellington County	Hybrid user pay/property tax system. User pay is used for garbage cost recovery only whereby residents and businesses must purchase yellow County garbage bags ($2 per bag). The remainder of the solid waste budget is funded from other user fees, grants and subsidies (9%), sales of recyclable material (3%), internal recoveries (3%), and property taxes (58%).
Waterloo Region	The total funding for 2021 is $64.37M. Of this amount, user fees and charges account for 25% and property taxes account for 71%. The remaining 3% is funded from interdepartmental recoveries and reserves.
City of Hamilton	The City funds their solid waste expenditures with a combination of user fees, grants and subsidies, sales of recyclable materials, reserves, and property taxes.
City of Barrie	The City funds their solid waste expenditures with a combination of user fees, grants and subsidies, sales of recyclable materials, reserves, and property taxes. As part of the user fees, Barrie utilizes bag tags to allow for additional garbage collection.

Municipality	Comments
City of London	The City funds their solid waste expenditures with a combination of user fees, grants and subsidies, sales of recyclable materials, reserves, and property taxes.Approximately 62% of the funding comes from property taxes.
City of Toronto	Full user pay system, including revenues from grants, subsidies, other user fees, and reserves. Details noted above.

Note: "user fees" relate to various charges (e.g. drop-off fees, bulk items, etc.) whereas "user pay" refers to a rate-based charge for collection.

5.2.1.3 Summary

The following table provides for a summary of funding sources used by the municipal comparators. As was noted above, all municipalities, except for Toronto and Wellington County fund solid waste services predominantly through property taxes and various user fees. Toronto has moved to a fully-funded user pay system and Wellington County utilizes a partial user pay system for garbage.

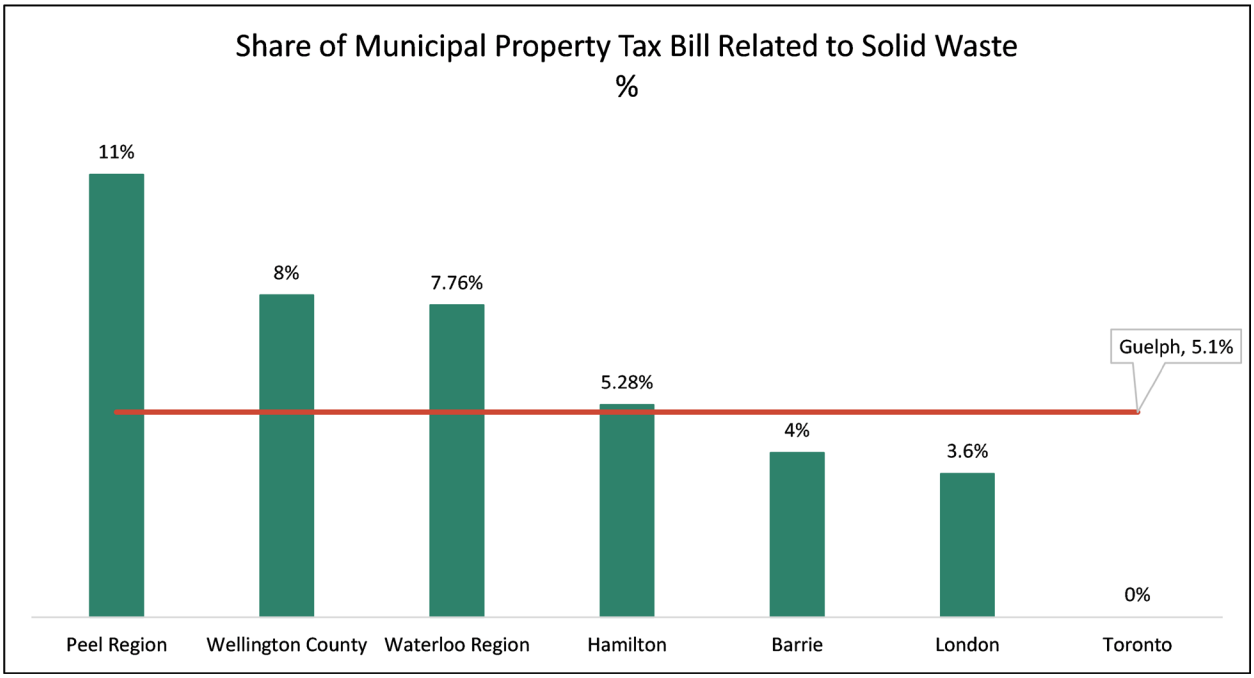
Table 5-3: Summary of Solid Waste Funding Sources by Municipality

Municipality	Property Taxes	User Fees	Grants/ Stewardship Funding	Sale of Recyclables	Other Sources
Guelph	✓	✓	✓	✓	
Peel Region	✓	✓	✓	✓	
Wellington County	✓	✓	✓	✓	User Pay (Garbage)
Waterloo Region	✓	✓	✓	✓	
Hamilton	✓	✓	✓	✓	
Barrie	✓	✓	✓	✓	
London	✓	✓	✓	✓	
Toronto		✓	✓	✓	Full User Pay

As most municipal comparators finance their solid waste budgets from property taxes and user fees, a comparison of the share of the Municipal property tax bill related to solid waste is provided in Figure 5-2. The City of Guelph share of 5.1% is shown on the horizontal line. When compared to other Single-tier municipalities, (London – 3.6%, Barrie – 4%, and Hamilton 5.28%) the share of the tax bill related to solid waste is similar. The municipalities with the larger share of the budgets related to solid waste are upper-tier municipalities that provide less services (i.e. single-tier municipalities provide all services, whereas upper-tier municipalities split responsibility for services with lower tier municipalities).

As a result of the above, it appears that the City of Guelph is funding similar proportions from their tax rates, relative to other municipalities in Ontario with the exception of the City of Toronto.

Figure 5-2: Share of Municipal Property Tax Bills Related to Solid Waste, by Municipality



5.3 Options Analysed for Consideration

Various funding options (net costs to be recovered) were analysed through this exercise. These options are as follows:

1. Current funding approach (property taxes);

2. Partial Funding - Funding waste diversion programs from property taxes with garbage paid for by a user rate; and
3. Full Funding - Funding for all solid waste, with user fees applied to grey carts (garbage) only but covers funding for diversion programs as well.

The following provides a brief summary of each option, along with the user rate per single-detached household based on the 2021 budget. Note that the 2021 budget does not include lifecycle costs, therefore the estimated user rates would be higher.

5.3.1 Current Funding Approach (Property Taxes)

As noted, the current funding approach provides that the solid waste service receives approximately $13.56 million from property taxes which equates to approximately 5.1% of the total property tax levy. Based on an average residential assessed value of $400,000, the City portion of the tax bill would equate to $3,868. The total City portion of the tax bill multiplied by the share that relates to solid waste (5.1%) provides for a total amount of $197.27 per household.

5.3.2 Partial Funding - Waste Diversion From Tax, Garbage from User Rate

For this alternative funding option, consideration was provided to funding the waste diversion streams from taxes as they provide a broader benefit to the community and the environment. The share of the costs that relate to garbage would be funded by a user rate applied on a per household basis.

The total solid waste recovery is currently $13.56 million (excluding lifecycle costs). Of this amount, $7.37 million relates to waste diversion and $6.19 million relates to garbage. Note: should the City move to a user rate for garbage, it is not anticipated that the tax levy would necessarily decrease.

The current number of households in the City (single family homes, and townhouses) along with apartments (assumed 50% serviced) totals 50,250. In addition, residential collection is provided to approximately 206 businesses. This provides for a total of 50,456 users. Based on the total cost recovery for garbage-related costs and the number of users, the annual cost per household would be $122.75 ($137.33 including lifecycle and capital costs) as outlined in Table 5-4.

Table 5-4: Annual Cost per Household – Partial Funding

Recovery from Rates (garbage)	6,193,402
Number of Households (single family + towns + apartments*0.5)	50,250
Number of Businesses included in Collection	206
Total Number of Households and Businesses	50,456
Annual Cost per Household	**$122.75**

If the City were to implement a user pay system for solid waste services, additional costs, not yet fully determined, would be required such as establishing an operating contingency (potentially 10% of operating expenditures), implementation costs (yet to be determined) and service support allocations would also need to be factored into the costs above.

5.3.3 All Costs Funded from User Rate on Garbage

For this alternative funding option, consideration was provided to funding all solid waste net expenditures based on the number of grey carts.

As noted, the total solid waste recovery is currently $13.56 million (excluding lifecycle costs). Note: should the City move to a user rate for garbage, it is not anticipated that the tax levy would necessarily decrease. The current number of households in the City (single family homes, and townhouses) along with apartments (assumed 50% serviced) totals 50,250. In addition, residential collection is provided to approximately 206 businesses. This provides for a total of 50,456 users. Based on the total cost recovery for solid waste costs and the number of users, the annual cost per household would be $268.78 ($315.40 including lifecycle and capital costs) as outlined in Table 5-5.

Table 5-5 – Annual Cost per Household – Full Funding

Amount to be Recovered from Rates	13,561,767
Number of Households (single family + towns + apartments*0.5)	50,250
Number of Businesses included in Collection	206
Total Number of Households and Businesses	50,456
Annual Cost per Household	**$268.78**

Table 5-5 provides the annual cost per household based on full user pay funding to recover solid waste costs along with the number of users.

As noted in the previous section, if the City were to implement a user pay system for solid waste services, additional costs, not yet fully determined, would be required such as establishing an operating contingency (potentially 10% of operating expenditures), implementation costs (yet to be determined) and service support allocations would also need to be factored into the costs above.

5.3.4 Refinements to Approaches

The alternative options above may be refined to address various policy decisions and options. For example, funding all expenditures based on the grey carts may be refined to offer various sizes of grey carts, whereby the larger carts are more expensive. In addition, fees for garbage used in excess of the allowable limit could be subject to additional costs. These changes could incentivize diversion activities by making it more expensive to use the grey box.

6.0 Observations and Commentary

The purpose of this study was to undertake a Cost-of-Service review as well as a review of potential User Pay options. In preparing these analyses, a financial model was created for use by City staff. This financial model includes all expenditures and revenues incurred for Solid Waste Services. The Cost-of-Service review provided an allocation of net costs by waste stream. This review was utilized in preparing the analysis for User Pay options.

The findings from this Task 7 exercise will be used to inform the City's review of the Council approved user fee structure and approval of user fee subsidization levels as part of the Corporate Service Rationalization Review recommendation (on a capital-inclusive costing methodology), with the opportunity for budget savings as well as an equitable and consistent user fee recovery practice.

It is recommended that the City provide Council with the various user pay options for their consideration for implementation. The financial model prepared for this Task may be utilized by the City to maintain and forecast future required user rates.

Should the City wish to implement a user rate system, it is recommended that the user rate be phased-in subsequent to the blue box transition in 2025. This will allow the City to complete their analysis with respect to the IPR transition strategy to fully understand the Cost-of-Service and required user rates.