WASTE SERVICES
BUDGET

THE CITY OF EDMONTON
2019–2022

Edmonton

Approved December 4, 2018

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Branch - Waste Services
2019-2022 Operating Budget

Introduction

. aste Services plays an integral role in the day-to-day lives of Edmontonians and provides efficient waste management services for the City. The Utility collects, processes and disposes of waste for almost 400,000 residential households and various non-residential customers.

Waste is one of the biggest environmental challenges of our time. Edmontonians generate about 260,000 tonnes of residential waste per year. To meet this challenge and to meet the needs of a growing City, Waste Services will continue to focus on sustainable and innovative waste management solutions that divert waste from landfill. Waste Services is currently conducting extensive public engagement efforts with residents and a variety of stakeholders. The input provided will inform the proposed program and service changes and help shape a new waste strategy for Edmonton.

Waste Collection Services includes much more than curbside pick up. Residents have access to a number of facilities where large items can be dropped off for recycling, reuse or disposal including:

- Four Eco Stations
  (two with Reuse Areas)
- 20 Community Recycling Depots
- 12 Big Bin Events
- One Reuse Centre

Assisted Waste Collection is also available for residents with mobility restrictions.

Sustainable Waste Processing focuses on receiving and sorting residential and non-residential waste to recover valuable resources and to minimize the amount of waste going to landfill. The Edmonton Waste Management Centre is a unique collection of advanced processing and research facilities that transforms waste into useful resources. This integrated site, located on 233 hectares, is designed to process more than 500,000 tonnes of waste per year. Facilities and operations are either owned and operated by the City or run on a contract-basis.

Branch - Waste Services

Over the next four years, Waste Services will undergo a period of change and transition to ensure the Utility can reach its 90 percent diversion target. A new strategy will focus on establishing industry best practices, developing a performance management framework to guide decision making, optimizing operating and capital expenditures, implementing efficiencies, managing risks, and putting staff and customers first. Planned deliverables include:

- Introducing strategic program changes focused on source separation of organics and changes to curbside collection of grass, leaf and yard waste
- Operational improvement for the Edmonton Composting Facility and the Materials Recovery Facility
- Commissioning new technologies including the Anaerobic Digestion Facility and the Refuse Derived Fuel Dryer
- Evaluating capital requirements to ensure they are prioritized and optimized to improve the Utility's debt-to-net asset position
- Developing an asset management strategy
- Formal closure of Clover Bar Landfill and associated site remediation

Programs & Services	
Waste Collection Services	**Sustainable Waste Processing**
Residential Waste Collection	Organic Waste Processing
Multi-unit Waste Collection	Materials Recovery Facility (Recycling)
Non-Residential Waste Collection	Commercial Self-Haul
Litter Bin Collection	Construction and Demolition Recycling
Assisted Waste Collection	Aggregate Recycling
Waste Drop-off Service (Big Bin Events, Community Recycling Depots, Eco Stations)	Refuse Derived Fuel Production
Reuse Centre	Landfill Gas Management
Waste Education and Outreach	Residual Waste Disposal

Branch - Waste Services

Programs & Services

Waste Services is committed to delivering services that are cost effective, environmentally sustainable and customer-driven. During the 2019-2022 budget cycle, the focus will be on strategic program changes to move the Utility toward the 90 percent diversion goal set by Council.

Changes to Service Level

Waste Services is in a period of change and transition. How waste is collected and how residents manage waste in their homes will undergo significant changes starting in spring 2019.

- **Grass Clippings, Leaf and Yard Waste:** Alternate collection and diversion options for grass, leaf and yard waste will be introduced. Leaf and yard waste will be collected seasonally in the spring and fall. Additionally, residents will be able to drop off grass clippings, leaf and yard waste free of charge at Eco Stations and Big Bin Events. Residents will also be encouraged to leave grass clippings on their lawns. These changes will be supported with a comprehensive education and communication program.

- **Source Separated Organics:** Compostable materials, such as food waste, will be separated and set out for collection by residents separately from their garbage. The source separated organic materials will be processed into compost that will be sold to customers. The program anticipates increased residential waste diversion by improving the effectiveness of the organic waste materials process and reducing the amount of organics sent to landfill.

- **Waste Reduction:** Waste Services will focus on enhanced waste reduction efforts with both residents and businesses. Public engagement will help inform the scope of these efforts. Options could include food waste prevention, expanded reuse programs, separate collection of textiles and restrictions on single-use plastics.

Innovation

- Waste Services has an ongoing program to conduct innovative research in the waste industry and evaluate solutions that enable additional diversion of waste from landfill. It will also continue building relationships and partnerships with external stakeholders.

- Waste Services will continue to collaborate with other Alberta municipalities, such as Calgary, to encourage legislation of Extended Producer Responsibility (EPR). EPR holds the producer of materials financially and/or physically responsible for a product's life cycle up to and including the post-consumer stage, rather than having municipalities responsible for managing the waste.

Continuous Improvement

- **Contract Management:** Creating a contract management unit within Waste Services ensures contract obligations are managed effectively. Working in collaboration with relevant branches across the corporation, such as Corporate Procurement and Supply Services, Law, and Business Performance and Customer Experience, this unit is responsible for contract management compliance, governance, strategy development, planning and risk management.

Branch - Waste Services

- **Performance Management Framework:** Developing a performance management framework will ensure real-time feedback on the efficiency and effectiveness of the waste strategy. The framework will provide leadership with a rigorous tool for evidence-based decision-making and allow all areas to maximize efficiencies, increase value for money, minimize risk, and maintain the highest standards of safety for employees.

- **Asset Management:** Waste Services has identified asset management best practices which have been endorsed by the Office of the City Auditor. The guidelines provide funding for routine maintenance activities and capital maintenance of facilities and infrastructure based on a percentage of the total construction replacement value of those facilities.

Emerging Issues

Landfill Liability

- The Utility continues to work with internal partners, external consultants and Alberta Environment and Parks to proactively manage, close and revegetate the site. Allowances within the 2019-2022 operating budget attempt to mitigate the risk associated with legacy issues with the Clover Bar Landfill including the removal, treatment and containment of leachate.

Cost of Service Study

- In May 2018, the City of Edmonton retained a consulting firm to perform a Cost of Service Study for the Waste Services Utility. The study used the 2017 operational and financial results to conduct a cost allocation and recovery analysis. Waste Services will utilize the observations from the Cost of Service Study to improve the accuracy of tracking and billing of single and multi-unit customers, determine single and multi-unit rates independently, and will consider further analysis to improve the cost recovery of non-regulated programs.

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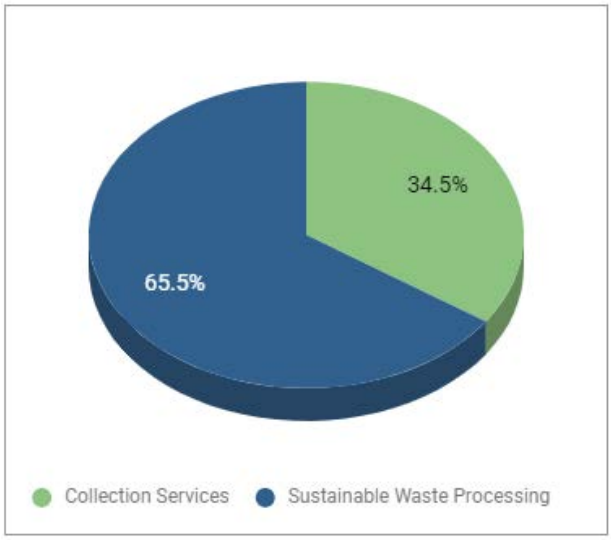
Branch - Waste Services

Proposed 2019-2022 Budget - Branch Summary by Program

($000)	2017 Actual	2018 Budget	2019 Proposed	2020 Proposed	2021 Proposed	2022 Proposed
Revenue & Transfers						
Rate Revenue	174,781	183,095	189,037	196,711	204,656	212,988
Program Revenue	35,876	40,838	37,292	34,870	35,460	36,084
Grant Revenue	4	1,500	4,600	-	-	-
Total Revenue & Transfers	$ 210,661	$ 225,433	$ 230,929	$ 231,581	$ 240,116	$ 249,072
Net Expenditure & Transfers						
Collection Services	62,162	72,895	75,505	79,512	87,086	89,782
Sustainable Waste Processing	150,888	132,760	138,587	139,821	142,526	144,668
Grants	-	1,500	4,600	-	-	-
Total Net Expenditure & Transfers	$ 213,050	$ 207,155	$ 218,692	$ 219,333	$ 229,612	$ 234,450
Net Income/(Loss)	$ (2,389)	$ 18,278	$ 12,237	$ 12,248	$ 10,504	$ 14,622
Regulatory Adjustments for Rate Filing						
Add: Write-down of tangible captial assets	12,316	-	-	-	-	-
Add: Amortization of Contributed Assets	848	1,118	1,389	1,389	1,389	$1,328
Less: ECF Deferred Costs	-	-	1,309	1,309	1,309	1,309
Net Income per Rate Filing	$ 10,775	$ 19,396	$ 12,317	$ 12,328	$ 10,584	$ 14,641
Full-time Equivalents	571.1	541.6	541.6	541.6	541.6	541.6

2019 Net Expenditures by Program



Branch - Waste Services

Proposed 2019-2022 Budget - Branch Summary by Category

($000)	2017 Actual	2018 Budget	2019 Proposed	2020 Proposed	2021 Proposed	2022 Proposed
Revenue & Transfers						
Rate Revenue	174,781	183,095	189,037	196,711	204,656	212,988
Program Revenue	35,876	40,838	37,292	34,870	35,460	36,084
Grant Revenue	4	1,500	4,600	-	-	-
Total Revenue & Transfers	$ 210,661	$ 225,433	$ 230,929	$ 231,581	$ 240,116	$ 249,072
Net Expenditure & Transfers						
Personnel	49,271	51,587	50,061	50,289	51,941	52,214
Materials, Goods & Supplies	2,848	7,087	7,014	7,140	7,270	7,408
External Services	90,528	77,782	83,998	85,617	90,594	91,816
Fleet Services	16,411	16,756	17,464	17,500	17,542	17,584
Shared Services	10,538	10,669	9,616	9,747	9,880	10,023
Intra-municipal Charges	2,812	2,063	5,012	5,038	5,371	5,404
Utilities & Other Charges	8,301	8,549	9,118	9,104	9,077	9,162
Amortization	21,627	24,733	25,289	28,072	29,725	30,972
Write-down of tangible captial assets	12,316	-	-	-	-	-
Debt	9,370	9,387	9,466	9,772	10,908	12,563
Grants	-	1,500	4,600	-	-	-
Subtotal	224,022	210,113	221,638	222,279	232,308	237,146
Intra-municipal Recoveries	(10,972)	(2,958)	(2,946)	(2,946)	(2,696)	(2,696)
Total Net Expenditure & Transfers	$ 213,050	$ 207,155	$ 218,692	$ 219,333	$ 229,612	$ 234,450
Net Income/(Loss)	$ (2,389)	$ 18,278	$ 12,237	$ 12,248	$ 10,504	$ 14,622
Regulatory Adjustments for Rate Filing						
Add: Write-down of tangible captial assets	12,316	-	-	-	-	-
Add: Amortization of Contributed Assets	848	1,118	1,389	1,389	1,389	$1,328
Less: ECF Deferred Costs	-	-	1,309	1,309	1,309	1,309
Net Income per Rate Filing	$ 10,775	$ 19,396	$ 12,317	$ 12,328	$ 10,584	$ 14,641
Full-time Equivalents	571.1	541.6	541.6	541.6	541.6	541.6

Branch - Waste Services

Summary of Budget Changes

($000)	2019 Proposed	2020 Proposed	2021 Proposed	2022 Proposed
Previous Year's Budgeted Revenue	$ 225,433	$ 230,929	$ 231,581	$ 240,116
Customer Growth	2,283	2,933	3,057	3,188
Utility Rate Increase	3,659	4,741	4,888	5,144
Program Revenue Changes	(3,546)	(2,422)	590	624
Grant Changes	3,100	(4,600)	-	-
Total Proposed Budget Revenue	**$ 230,929**	**$ 231,581**	**$ 240,116**	**$ 249,072**
Previous Year's Budgeted Expenditures	207,155	218,692	219,333	229,612
Previously Approved Adjustments	-	-	-	-
Administrative Adjustments	-	-	-	-
Revised Base Budget	207,155	218,692	219,333	229,612
Existing Services (Incremental to Base)				
Cost Changes	9,410	7,125	6,814	104
Grant Expenditures	3,100	(4,600)	-	-
Efficiency & Cost Savings	(2,000)	(4,000)	(4,000)	(4,000)
Total Impact on Existing Services	10,510	(1,475)	2,814	(3,896)
Growth/New Services				
Customer Growth & Program Changes	1,027	2,116	7,465	8,734
Total Growth/New Services	1,027	2,116	7,465	8,734
Total Proposed Budget Expenditures	**$ 218,692**	**$ 219,333**	**$ 229,612**	**$ 234,450**
Net Income/(Loss)	**$ 12,237**	**$ 12,248**	**$ 10,504**	**$ 14,622**
Incremental Change in Full-time Equivalents	0.0	0.0	0.0	0.0

Branch - Waste Services

Details of Budget Changes

Revenue Changes

- Average customer growth is forecast at 1.2% annually from 2019 to 2022.
- Proposed Utility Rate increase is 2.5% annually from 2019 to 2022.
- Anticipated decrease in program revenue from biosolids as a result of closing the Edmonton Composting Facility in late 2019 which will eliminate biosolids revenue, leaving dewatering as the sole source of revenue.
- Forecasted increase in third-party grant revenue. This is a flow-through grant that is offset under expenditures.

Expenditure Changes

Existing Services (Incremental to Base)

- Cost changes include increased costs related to commissioning the Anaerobic Digestion Facility and increased hauling and landfill costs related to closing the Edmonton Composting Facility.
- Forecasted increase in third-party grant expenditures. This is a flow-through grant that is offset under revenue.
- Efficiency and cost savings is made up of a general 1% operational efficiency and anticipated cost savings as a result of permanently closing the Edmonton Composting Facility which will create a budget savings impact beginning in 2020 and ending in 2022.

Growth/New Services

- Increased costs attributed to forecast average customer growth of 1.2% annually from 2019 to 2022.
- Increased costs attributed to the new Source Separated Organics program.

Incremental Change in Full-time Equivalents

- All programs and services are expected to be managed by utilizing existing full-time equivalents.

Branch - Waste Services

Proposed 2019 - 2022 Budget - Program Summary

Program Name - Collection Services

Description

Waste Collection Services provides residential waste and recyclables collection for single and multi-unit households, and optional waste and recyclables collection for non-residential customers. Waste Collection Services also operates a number of convenient residential drop-off locations for recycling, reuse or disposal.

Results to be Achieved

- Improve overall satisfaction with residential collection service to 91% by 2022
- Maintain two missed collections per 10,000 stops
- Maintain 94% annual overall satisfaction with Eco Stations

Cost Drivers

- Increased customer base due to growth of single and multi-unit residential households
- Collection of non-residential waste and recyclables from commercial businesses and institutions

Resources

($000)	2017 Actual	2018 Budget	2019 Proposed	2020 Proposed	2021 Proposed	2022 Proposed
Revenue & Transfers	$ 62,162	$ 72,895	$ 75,505	$ 79,512	$ 87,086	$ 89,782
Expenditure & Transfers	62,294	72,264	75,806	79,813	87,637	90,333
Subtotal	(132)	631	(301)	(301)	(551)	(551)
Intra-municipal Recoveries	132	(631)	301	301	551	551
Net Income/(Loss)	-	-	-	-	-	-
Full-time Equivalents	289.0	285.0	285.0	285.0	285.0	285.0

2018 Services

- Weekly collection of residential waste and recyclables for almost 400,000 single and multi-unit households
- Four conveniently located Eco Stations (two with reuse areas), Reuse Centre and 12 Big Bin Events annually
- 20 Community Recycling Depots located throughout the city
- Service existing non-residential customer base and promote new services
- Assisted waste collection for approximately 300 residents with mobility restrictions

Changes in Services for 2019 - 2022

Waste Collection Services aims to establish the following programs, each intended to increase waste diversion from landfill, and decrease infrastructure and operating costs.

- Changes to curbside collection of grass clippings, leaf and yard waste from single unit households
- Implementation of Source Separated Organics to improve compost quality

Branch - Waste Services

Proposed 2019 - 2022 Budget - Program Summary

Program Name - Sustainable Waste Processing

Description

Sustainable Waste Processing operates a unique collection of advanced waste processing and research facilities located at the Edmonton Waste Management Centre. These facilities work in tandem to process residential and non-residential waste streams with the goal of recovering valuable resources while minimizing the need to landfill.

Results to be Achieved

- Increase single unit residential diversion rate from 39% in 2017 to 80% by 2022
- Reduce kilograms of waste collected per capita from 262 in 2017 to 240 in 2022
- Increase kilograms of recycling collected per capita from 44 in 2017 to 53 in 2022
- Reduce reportable environmental incidents from 49 in 2017 to 32 by 2022

Cost Drivers

- Volatility of the markets for recycled commodities processed by the Materials Recovery Facility
- Final closure of the Clover Bar Landfill, including reduction of leachate levels and improvements to the leachate containment systems
- Hauling and landfilling of residential waste due to the seasonal shut down of the Edmonton Composting Facility
- Volume of waste processed through Waste to Biofuels and Chemical Facility to aid in diversion from landfill

Resources

($000)	2017 Actual	2018 Budget	2019 Proposed	2020 Proposed	2021 Proposed	2022 Proposed
Revenue & Transfers	$ 148,499	$ 152,540	$ 155,424	$ 152,069	$ 153,030	$ 159,290
Expenditure & Transfers	161,728	137,851	145,832	142,466	144,671	146,813
Subtotal	(13,229)	14,689	9,592	9,603	8,359	12,477
Intra-municipal Recoveries	10,840	3,589	2,645	2,645	2,145	2,145
Net Income/(Loss)	$ (2,389)	$ 18,278	$ 12,237	$ 12,248	$ 10,504	$ 14,622
Full-time Equivalents	282.1	256.6	256.6	256.6	256.6	256.6

2018 Services

The Edmonton Waste Management Centre processes approximately 500,000 tonnes of waste annually, including:
- 350,000 tonnes processed through the Integrated Processing and Transfer Facility, Edmonton Composting Facility and Refuse Derived Fuel Facility
- 100,000 tonnes processed through the Construction and Demolition Recycling Facility
- 50,000 tonnes of residential recyclable materials processed at the Materials Recovery Facility

Changes in Services for 2019 - 2022

Sustainable Waste Processing aims to implement the following programs, intended to increase waste diversion from landfill.
- Separate composting of residential yard waste at the outdoor compost cure site location
- Full operation of the Anaerobic Digestion Facility and Refuse Derived Fuel dryer
- Capital investment in the Edmonton Composting Facility to continue diversion of organic waste from landfill
- Upgrade Materials Recovery Facility to increase the diversion of recyclable materials from landfill

Branch - Waste Services

Pro-Forma Income Statement

($000)		2019 Proposed	2020 Proposed	2021 Proposed	2022 Proposed
Revenues					
	Rate revenue	189,037	196,711	204,656	212,988
	Program revenue	37,292	34,870	35,460	36,084
	Grant revenue	4,600	-	-	-
		$ 230,929	**$ 231,581**	**$ 240,116**	**$ 249,072**
Expenses					
	Operating and maintenance	182,283	184,435	191,675	193,611
	Intra-municipal recoveries	(2,946)	(2,946)	(2,696)	(2,696)
	Amortization of tangible capital assets	25,289	28,072	29,725	30,972
	Interest	9,466	9,772	10,908	12,563
	Grants	4,600	-	-	-
		$ 218,692	**$ 219,333**	**$ 229,612**	**$ 234,450**
Net Income/(Loss)		**$ 12,237**	**$ 12,248**	**$ 10,504**	**$ 14,622**
Opening Retained Earnings		86,540	105,629	118,506	129,123
	Net Income	12,237	12,248	10,504	14,622
	Net tax supported loan proceeds (repayment)	653	629	113	(853)
	Equity transfer from City of Edmonton	6,199	-	-	-
Ending Retained Earnings		**$ 105,629**	**$ 118,506**	**$ 129,123**	**$ 142,892**

Branch - Waste Services

Pro-Forma Balance Sheet

($000)	2019 Proposed	2020 Proposed	2021 Proposed	2022 Proposed
Assets				
Cash	64,134	64,206	61,403	63,072
Other current assets	31,222	31,222	31,222	31,222
	$ 95,356	**$ 95,428**	**$ 92,625**	**$ 94,294**
Liabilities				
Other liabilities	45,964	45,964	45,958	45,943
Landfill closure and post-closure care	29,208	28,756	28,300	27,832
Long-term debt	244,162	260,440	296,064	337,742
	$ 319,334	**$ 335,160**	**$ 370,322**	**$ 411,517**
Net Financial Assets (Net Debt)	**$ (223,978)**	**$ (239,732)**	**$ (277,697)**	**$ (317,223)**
Non-Financial Assets				
Contributed tangible capital assets	14,464	13,075	11,686	10,359
Non-contributed tangible capital assets	309,674	339,694	389,665	444,287
Prepaid Expenses	263	263	263	263
Inventory of materials & supplies	5,206	5,206	5,206	5,206
	$ 329,607	**$ 358,238**	**$ 406,820**	**$ 460,115**
Retained Earnings	**$ 105,629**	**$ 118,506**	**$ 129,123**	**$ 142,892**

Branch - Waste Services

Proposed 2019 - 2022 Capital Budget

($000)

Capital Projects	Proposed 4 Year Capital Budget				
	2019	2020	2021	2022	2019-2022 Total
Branch-wide					
Facilities & Infrastructure Planning & Design	$ 623	$ 467	$ 484	$ 477	$ 2,051
Facilities & Infrastructure Project Delivery	5,603	4,201	4,352	4,290	18,446
Waste Services Infrastructure Planning and Design (IIS)	5,473	1,610	1,800	400	9,283
Waste Services Project Delivery (IIS)	3,250	14,909	35,680	42,190	96,029
	14,949	**21,187**	**42,316**	**47,357**	**125,807**
Collection Services Facilities					
Collection Facilities and Infrastructure	2,369	-	-	-	2,369
Mayfield (NW) Eco Station	-	-	-	777	777
	2,369	-	-	**777**	**3,146**
Processing & Disposal Facilities					
Cure Site Land Use & Development	250	500	2,925	2,925	6,600
Groundwater Diversion	5,000	-	-	-	5,000
Material Recovery Facility Renewal (MRF)	411	-	-	-	411
	5,661	**500**	**2,925**	**2,925**	**12,011**
Vehicles & Equipment					
Waste Containers*	3,074	1,930	1,998	2,070	9,072
WM Services Equipment Acquisition	19,272	14,086	12,951	13,905	60,214
	22,346	**16,016**	**14,949**	**15,975**	**69,286**
Total Recommended Profiles	**45,325**	**37,703**	**60,190**	**67,034**	**210,250**
Profile to be Proposed in 2020 Rate Filing					
Waste Program Changes					
Source Separated Organics Program**	-	19,000	18,117	17,233	54,350
Grand Total	**$ 45,324**	**$ 56,703**	**$ 78,307**	**$ 84,266**	**$ 264,600**

* Includes waste containers for multi-unit and ICI customers.

** Includes green and black carts for single unit customers as part of the SSO program.

Branch - Waste Services

Financial Indicators

		2018 Budget	2019 Proposed	2020 Proposed	2021 Proposed	2022 Proposed
1	Rates Sufficient to Meet Expenditure and Cash Flow					
	Net Income per Rate Filing ($000)	$ 19,396	$ 12,317	$ 12,329	$ 10,584	$ 14,641
	Target: Positive Net Income	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
2	Cash Position ($000)					
	Pay As You Go Requirement	14,274	19,861	19,028	17,280	15,923
	Risk Allowance	3,122	3,366	3,572	3,855	3,937
	Target Cash Position	***17,396***	***23,227***	***22,600***	***21,135***	***19,860***
	Actual Cash Balance ($000)	18,626	53,471	39,560	23,023	21,646
	Actual Cash >= Target	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
3	Residential Customer Rate Impacts					
	Single Unit					
	Monthly Billing Increase	$ 1.03	$ 1.15	$ 1.18	$ 1.20	$ 1.24
	Impact of Customer Rate	*2.3%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*
	Monthly Unit Rate	$ 45.93	$ 47.08	$ 48.26	$ 49.46	$ 50.70
	Multi Unit					
	Monthly Billing Increase	$ 0.67	$ 0.75	$ 0.77	$ 0.78	$ 0.81
	Impact of Customer Rate	*2.3%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*
	Monthly Unit Rate	$ 29.85	$ 30.60	$ 31.37	$ 32.15	$ 32.96
	Target: Stable, consistent rate increases	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***
4	Financing of Capital Investments					
	Debt to Net Assets Ratio	73.3%	75.4%	73.6%	73.3%	73.7%
	Target: May vary between 50% and 70%	***No***	***No***	***No***	***No***	***No***

Branch - Waste Services

Edmonton Waste Management Centre Proposed Fee Changes (2018 to 2019)	Explanation
• Increase residential waste fee from $65 per tonne to $67 per tonne.	• To cover increases in operational costs.
• Increase non-residential waste fee from $94 per tonne to $96 per tonne.	• To cover increases in operational costs.
• Increase residential mattresses or box springs waste fee from $65 per tonne to $67 per tonne. Increase non-residential mattresses or box springs waste fee from $94 per tonne to $96 per tonne. Increase surcharge from $15 to $16 per item.	• To cover increases in operational costs and to align with the residential and non-residential waste fees.
• Increase grass and leaves waste fee from $37 per tonne to $38 per tonne.	• To cover increases in operational costs.
• Increase soil (clean, residential only) waste fee from $40 per tonne to $41 per tonne.	• To cover increases in operational costs.
• Increase charitable organization waste fee from $25 per tonne to $26 per tonne.	• To cover increases in operational costs.
• Increase special handling waste fee and tires (not managed under the Provincial Tire Recycling Program) waste fee from $125 per tonne to $128 per tonne. Increase minimum charge from $125 to $128.	• To cover the cost to process materials that require special handling.
• Increase mixed construction and demolition waste fee from $85 per tonne to $90 per tonne.	• To cover increases in operational costs. Moving towards cost recovery.
• Increase wood (painted or stained) waste fee from $85 per tonne to $90 per tonne.	• To cover increases in operational costs.
• Increase asphalt/concrete waste fee from $35 per tonne to $36 per tonne.	• To cover increases in operational costs.
• Increase asphalt/concrete (oversized) waste fee from $52 per tonne to $53 per tonne.	• To cover increases in operational costs.
• Increase asphalt shingles waste fee from $85 per tonne to $87 per tonne.	• To cover increases in operational costs.
• Increase drywall waste fee from $47 per tonne to $48 per tonne.	• To cover increases in operational costs.
• Increase brush and trees waste fee and wood chips waste fee from $37 per tonne to $65 per tonne.	• This material is no longer required for internal processing at the EWMC. Fee increase required to recover costs.
• Increase wood (unpainted and untreated) waste fee from $45 per tonne to $65 per tonne.	• Decreased need for this material at the EWMC. Fee increase required to cover increases in operational costs.

Branch - Waste Services

Eco Station Proposed Fee Changes (2018 to 2019)	Explanation
• Increase large items waste fee from $15 per item to $16 per item.	• To cover increases in operational costs.
• Increase items requiring CFC removal waste fee from $15 per item to $16 per item.	• To cover increases in operational costs.

UTILITY ADVISOR

RESPONSE TO THE EDMONTON WASTE MANAGEMENT

2019 RATE SUBMISSIONS

October 25, 2018

2019 EDMONTON WASTE MANAGEMENT RATE FILING
REVIEW BY THE UTILITY ADVISOR

1.0 PURPOSE OF THIS REPORT

This report is prepared to provide advice to the City of Edmonton Utility Committee and Edmonton City Council on the 2019 rate submissions of Waste Management. Pursuant to the terms of reference for the Utility Advisor, the rate submission has been reviewed by the Utility Advisor, and requests for additional information were sent and received.

Currently, City Council acts as both the governor and regulator of the Waste Management Utility, approving both operating and capital budgets as well as the utility customer rates.

As noted in a City of Edmonton internal legal memo dated December 7, 2009, the Municipal Government Act (MGA) provides Council with the authority to pass bylaws and otherwise regulate municipal public Utility. The MGA does not provide for any specific guidance for Council regarding municipal utility governance. To that end, the regulation of these municipal public Utility would be subject to the same duty of good faith that applies to general municipal governance. Municipal public Utility are regulated by the municipalities which operate those Utility within the municipalities. Unlike investor-owned Utility, the shareowners of the utility, and the customers of the utility are, to a large extent, the same. However, that does not change the overall objective of regulating such Utility, the establishment of just and reasonable rates, in the public interest, and not unduly discriminatory. The major difference between investor-owned Utility and municipally-owned Utility is the determination of what makes up the public interest.

2.0 EXECUTIVE SUMMARY

Last year, the Utility Advisor noted that with one exception, the Utility Advisor was very impressed with the quality of this rate application. The one exception was related to the quality of the capital business cases presented. For 2019, the quality of the capital business cases presented meets the expectations of the Utility Advisor.

The 2019 rate application is excellent, and provides adequate information to enable the Utility Committee and Council to make an evidence-based decision on rates for 2019. The Utility Advisor addresses some issues later in this report, but the issues fall into the forward-looking category, rather than the immediate rate application.

3.0 PROCESS

The following process was utilized by Waste Management and the Utility Advisor to review this application:

Monday, September 17 - Waste sends available Draft business cases to UA

Friday, September 21 - Waste sends preliminary rate filing to UA

Wednesday, September 26 - Informal meeting - Waste and UA

Wednesday, October 10 - Waste submits final rate filing to UA

Wednesday, October 17 - UA submits information requests to Waste

Monday, October 22 - Waste sends responses to UA

Tuesday, October 23 – Waste sends revised responses to UA

The Utility Advisor is very satisfied with this process, and with the responsiveness of Waste Management.

4.0 SPECIFIC FINDINGS

4.1 Cost of Service

The Cost of Service study identifies the ratio of revenue to costs allocated to different customer groups. Single unit residential cost recovery is 103.4%, a modest excess of revenue over costs. Multi-unit residential cost recovery is 109.6%, which is a significant over recovery. Non-residential cost recovery is 87.0%, which is a very significant under recovery.

Normally, utility rate making attempts to recover 100% plus or minus 5% (95%-105%) of costs through revenue. For single and multi-unit residential customers, Waste has some fine tuning to do with future rate design to achieve these targets.

Non-residential cost recovery is supposed to fully recover the incremental costs of providing the service while making a contribution to the fixed costs incurred to provide services to regulated customers, since the non-residential service is made possible by facilities that were put in place to

serve residential customers. This is clearly not happening, and the Utility Advisor does not see any likelihood that this state of affairs will improve in the future.

Misallocation of customers to the wrong customer groups unfairly burdens some customer (in this case single unit residential customers). Misallocations need to be corrected quickly, and processes need to be developed to ensure proper classification of customers.

4.2 Treatment of Capital Expenditures

A fundamental principle of most utility rate-making is that capital expenditures are not allowed into ratebase (and therefore do not impact customer rates) until the capital asset is "used and useful", or "used and required to be used". The reason for this is to ensure that today's utility customers are not paying for assets before they will begin to reap the benefits of having the asset in service.

Usually, costs incurred to develop a project before it is placed in service will span more than one rate-making period. Those costs are usually accumulated in an assets under construction account (AUC), where carrying costs associated with the capital are also accumulated. From the responses to IR-UA-1 and IR-UA-2, Waste has confirmed that this treatment is in place.

4.3 Affiliate Transactions

Those who have read the Utility Advisor's previous comments on city utility rate applications will recognize that he has strong feelings about affiliate transactions. In the past, based on urgings from the Utility Advisor and the Utility committee, several affiliate transactions were reviewed to ensure that the costs of the services provided were just and reasonable. The Utility Advisor was disappointed that there was no discussion of such reviews in this rate application. While it was helpful to have reassurances given in IR-UA-5, it appears that justifying these costs is not a top-of-mind exercise for Waste management.

Waste management can either address this issue proactively in future rate applications, or anticipate increasingly insistent requests from the Utility Advisor.

Appendix A
Information Requests from the Utility Advisor

IR-UA-1

Topic: **Integrated Infrastructure Services**

Reference: **Waste Services IIS Infrastructure Delivery Composite Capital Funding Request Page 9**

Request:

The report states that dollars will be transferred from this funding profile to a newly created standalone profile. What happens to dollars from this funding profile if the result of the analysis does not result in creation of a standalone profile?

RESPONSE:

The Waste Services IIS Infrastructure Delivery Composite capital profile CM-81-2045 sets the 2019 - 2022 capital delivery budget for Waste Services for capital projects that are anticipated to reach the third checkpoint in the PDDM process within the four year budget cycle. Waste Services began utilizing the PDDM approach under the direction of Council in 2017. Once a capital project reaches the third checkpoint, the project's business case will be updated and brought to Utility Committee and Council for approval. Until this step occurs, no funds are authorized to be spent on project delivery.

The amount included in this composite represents the Utility's best forecast of the capital costs based on concept level estimates. By forecasting future capital expenditures before full approval has been received (i.e. before reaching Checkpoint 3), the Utility is better able to provide stable consistent rate increases as requirements for PAYG can be anticipated in proposed and forecasted rates.

Adjustments to this composite will occur over time as part of the annual rate filing process, and through the Supplemental Capital Budget Adjustment process, as projects proceed through planning and design and approach Checkpoint 3. At the end of the 4 year cycle, any funding remaining within the composite would be released. Only Council approved capital expenditures are accumulated under an Asset Under Construction (AUC) account. As such, ratepayers would not bear any costs related to amortization or debt interest on unspent capital funding. Any sunk planning and design costs would be taken out of assets under construction (AUC) and written off in the year that the project is either cancelled or fails to receive approval.

IR-UA-2

Topic: **Inclusion of Capital Costs in Rates**

Reference: **Waste Services IIS Infrastructure Delivery Composite Capital Funding Request Page 11**

Request:

The report states that capital funding requests for both planning and delivery phases of approved capital projects within the PDDM approach are required in order to have funds allocated to the composite profile and determine the utility rates required to support the capital budget.

The normal regulatory treatment of capital costs is to only allow them into rate base once the resulting capital project is "used and useful." In other words, up front costs such as planning and delivery are not recovered as spent. They are accumulated (with interest) and added to the capital cost of the project, with cost recovery only beginning once the asset is placed in service.

Please explain why Waste Services planning and delivery costs should be included in rate base prior to the asset becoming used and useful.

RESPONSE:

Upfront funds requested under this composite capital funding request are not included in the calculation of rate revenue with the exception of Pay As You Go (required per Utility Fiscal Policy C558A). Project expenditures on Council approved capital profiles are accumulated under an Asset Under Construction (AUC) account until the projects are substantially complete. They are not recovered as spent. The 2019 revenue requirement only includes capital cost recovery for assets that are currently in service and any new assets going into service per their estimated in-service dates.

IR-UA-3

Topic: **Costs**

Reference: **Waste Services IIS Infrastructure Delivery Composite Capital Funding Request Page 15**

Request:

The table included in section 7.3 Costs includes a note "funded by Utility Pool". What does this mean?

RESPONSE:

The note is simply intended to indicate that this profile is funded through Utility rates, and is not funded through tax levy. The note is redundant and perhaps should have been removed as the profile is specific to Waste Services.

IR-UA-4

Topic: **Justification of Upgrade/Renewal Costs**

Reference: **Waste Services Facilities and Infrastructure Composite Upgrade/Renewal Capital Funding Request Page 16**

Request:

The conclusion states that this profile will provide capital funding for capital maintenance, renewal, upgrade, and improvement projects for Waste Services which are valued at less than $5 million. How will the Utility Committee be assured that such projects are subjected to a business case approach, with evaluation and costing of reasonable options, including a do-nothing option?

RESPONSE:

Within Waste Services, the Technical Services section is responsible for capital project management. In 2018, Technical Services developed and is implementing a formal project management process for managing capital projects. The project management process covers the full lifecycle of project management, including project intake, prioritization, business case development, project approval, planning, delivery, monitoring and closure.

In addition, Technical Services has developed an internal business case development process, as a part of the overall capital project management process, for capital projects that fall under this capital funding request. The business case template used throughout this process is consistent with the corporate template used for business cases intended for City Council approval although it is appropriately scaled to the level of project cost, impact and risk. In particular, the internal business case development process includes an examination of viable options and compares any recommendation against the "do nothing" scenario. During the project development phase, if the anticipated spend for a project is expected to exceed the $5 million threshold, a standalone profile will be created and a business case will be brought forward to the Utility Committee and Council for approval.

IR-UA-5

Topic: **Shared Services**

Reference: **Waste Services 2019 Rate Filing Section 9.5**

Request:

In the past, Waste Services has provided analysis of value of services received from several of the Shared Services providers.

a. Were any of the 2019 forecast costs identified in section 9.5 analyzed to ensure that Waste Services is receiving the indicated services at rates that are fair and reasonable to Waste Services customers?
b. Is there any plan going forward to review these costs on a regular basis to ensure that Waste Services continues to receive the indicated services at rates that are fair and reasonable to Waste Services customers?

RESPONSE:

The City of Edmonton employs a Shared Services model whereby support services required for the operations of all City businesses are provided through centralized areas of expertise. This approach takes advantage of efficiencies gained through economies of scale and opportunities to provide more robust systems and services (e.g. technology related services). The Waste Management Utility Fiscal Policy C558A requires that the Utility operate under a full cost approach thus requiring the Utility to pay for its portion of shared services.

As part of the City's 2019-2022 Operating Budget development, Shared Service providers performed a review of their costs and the shared service allocation methodologies resulting in updates to the cost allocation drivers. This change resulted in several changes to the allocation of shared service costs from the service providers to the Utility. For example, technology related services are now based on a weighting of the number of PCs and applications supported versus the prior methodology which allocated costs primarily based on FTEs. The allocation methodologies used by the Shared Service providers were reviewed by Waste Services for reasonableness.

In contrast, Intra-Municipal Services are charged to the Utility for on-demand services provided through other City of Edmonton programs which are not incorporated in shared services charges. These are direct charges for services such as dedicated support for communication and engagement initiatives,

on demand building repairs and maintenance, posting of vacant positions to job sites, and security services for special events.

For 2019, as part of the strategic review of Waste Services operations, a review of the key intra-municipal services required to support the Utility will be completed, including clarifying the resources, deliverables, and approximate costs associated with these services and, where appropriate, establishing service level agreements. This work will ensure the Utility continues to receive fair value for customers for these services.

City of Edmonton

Waste Services Utility

2019 Utility Rate Filing

October 12, 2018

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Executive Summary

Waste Services continues to strive towards achieving the financial indicators as set out in Waste Management Utility Fiscal Policy C558A, adopted by City Council in 2014, which is reflective of the foundational vision, principles and goals captured in the City Council's Strategic Plan 2019-2028. Over the next four year budget cycle (2019 - 2022), Waste Services expects to maintain a stable, consistent rate increase environment. This will be achieved through increases in operational efficiencies and prioritization of capital projects. The resulting rate impacts reflect services and infrastructure required to support the Branch initiatives.

In 2019, Waste Services will start implementing program changes that will better align the City with the goal of diverting 90 percent of residential waste from landfill. Some of these program changes include, but are not limited to, the Source Separated Organics Pilot, changes to curbside collection of grass, leaf and yard waste to improve compost quality, and the establishment of an asset management strategy to provide infrastructure maintenance funding guidelines. Additionally, Waste Services will focus on engagement with citizens, establishing effective working relationships with the private sector and exploring opportunities to recover, reduce and reuse materials from the waste stream. Waste Services is confident that through education, partnerships and expanded opportunities for environmental stewardship, the City of Edmonton will continue to be at the forefront of sustainable waste management and value recovery. These program changes ensure fiscal accountability with stable rate increases, continuous business improvements and renewed focus on safety for both employees and customers.

Waste Services has placed a high priority on achieving low, stable and consistent rate increases as it moves toward financial sustainability. The target will be achieved with a proposed 2.5 percent increase in each year, 2019 through 2022, before declining gradually to 1.5 percent in 2026 and beyond. Other financial indicators, as defined in the Waste Management Utility Fiscal Policy C558A, are trending positively as well. Specifically, Waste Services will meet the requirement of generating sufficient net income to cover operating expenses, the debt to net asset ratio decreases from projected 79.4 percent in 2018 to 73.7 percent by 2022, the target cash balance is met in each year to support the Waste Services capital spending plan and FTE counts will remain at 2018 levels through operating efficiencies and continuous improvements efforts.

Excess of revenues over expenses and rate increases are required on a go-forward basis to manage the Waste Services' long-term financial sustainability, ensure sufficient funding for operations and provide funding for capital initiatives, such as the rehabilitation or replacement of the composting facility and the roll-out of strategic program changes such as source separated organics. To provide reduced rate increases as reflected in this rate file, Waste Services has focused on operational efficiencies and managing within existing staff complements. The capital budget was also fully reviewed through a capital project prioritization effort. Pay-as-you-go funding, defined as cash for capital financing, was used to fund capital expenditures where feasible to reduce borrowing and improve the debt to net asset target.

Significant factors affecting Waste Services' programs over the next four years include:

- Increased customer base due to growth of single unit and multi-unit residential areas.
- Volatility of the markets for recycled commodities processed by the Materials Recovery Facility.
- Formal final closure of the Clover Bar Landfill, including the reduction of leachate levels and improvements in existing leachate containment systems.
- Commissioning of new technology such as the Anaerobic Digestion Facility and the Refuse Derived Fuel Dryer to support waste diversion.

- Introduction of proposed strategic program changes focused on household separation of organic waste and changes to curbside collection of grass, leaf and yard waste.
- Continued review and evaluation of the capital requirements to ensure that the capital program is prioritized and optimized in an effort to improve Waste Services' debt-to-net asset position.
- Development of an asset management strategy to ensure infrastructure rehabilitation is prioritized, pursued proactively and funded appropriately.
- Updated cost allocation methodology between customer classes, based on a third party conducted Cost of Service Study.

As part of the 2018 Utility Rate Filing, Waste Services applied for and received approval to establish a regulatory deferral account to capture known and anticipated financial losses related to the structural failure of the Edmonton Composting Facility (ECF). In its 2019 rate filing, Waste Services has established a regulatory asset to allow for collection of the incurred ECF expenses from ratepayers over the next 12 years to prevent rate shock and to maintain stable, consistent rate increases. The amortization expense attributed to the regulatory asset has been included in the revenue requirement for 2019 and subsequent years.

1.0 Introduction

City of Edmonton Waste Services is committed to fostering a healthy environment, improving fiscal responsibility and reducing the amount of materials that end up in landfill. To achieve these goals, the City delivers a wide range of programs and services to the public, including the delivery of solid waste collections and processing services, through the municipality-owned public utility - Waste Services. Waste Services plays an integral part in the day-to-day lives of City of Edmonton residents and helps promote City Council's overall vision and long-term strategic objectives.

The City's integrated waste management system closely aligns with the City Council's Strategic Plan 2019 - 2028: Healthy City, Urban Places, Regional Prosperity, and Climate Resilience. Waste Services is focused on sustainable waste solutions with innovative systems that divert waste from landfill and treat waste as a resource. Waste Services provides collection and sustainable waste processing services to residential (regulated) customers and provides optional waste collection and sustainable waste processing services for non-residential (non-regulated) customers. Regulated services are funded by utility rates while non-regulated services are funded by program revenues and are to be delivered on a profit basis. Waste Services is governed by the Waste Management Utility Fiscal Policy – C558A, which focuses on the financial sustainability of the utility. The policy reflects City Council's directions on the financial objectives and management for Waste Services. The purpose of the policy is to ensure Waste Services is operated in a manner that reflects City Council's overall vision and philosophical objectives, while maintaining a consistent approach for financial planning, budgeting and rate setting to ensure long term financial sustainability.

Over the next four year budget cycle, Waste Services will deliver programs and services that will help move Edmonton toward City Council's goal of 90 percent residential waste diversion from landfill; identify opportunities for the recovery of valuable waste resources; partner with stakeholders to encourage the development and commercialization of new technologies; engage citizens to define issues; consider solutions and identify priorities; and implement the necessary program and service changes to secure a sustainable future for Edmonton. Programs will also ensure fiscal accountability with stable rate increases, continuous business improvements and a renewed focus on safety, employees and customers. These efforts will result in significant changes to the waste management program, such as changes to the residential curbside collection of grass, leaf and yard waste and the implementation of a source separated organics program. Through the development of a performance management framework, Waste Services is examining and optimizing all areas of business to maximize efficiencies, increase value for money, minimize risk and maintain the highest standards of safety for employees.

2.0 Organizational Structure

Waste Services fulfills its mandate to foster a healthy environment, improving fiscal responsibility and reduce the amount of materials that end up in landfill through the following organizational structure:

Waste Collection Services

Waste Collection Services responds to the current and changing needs of customers through the following programs:

- Collection of residential waste and recyclables from approximately 392,000 single unit and multi-unit households;
- Assisted Waste Collection for approximately 300 residents with mobility restrictions; and
- Collection of non-residential waste and recyclables from commercial businesses and institutions, including construction and demolition waste.

In addition to direct collection, residents also have access to a number of facilities around the City where larger items, which cannot be collected curbside, can be dropped off for recycling, reuse or disposal. These include:

- Four Eco Stations for disposal of household hazardous waste and other material;
- 23 Community Recycling Depots accessible 24/7 offering drop-off locations for residents and small businesses;
- Big Bin Events for households to dispose of large or bulky items not suitable for regular waste collection; and
- The Reuse Centre for collection of small items that are reused by individuals and community groups.

Sustainable Waste Processing

The Edmonton Waste Management Centre is a unique collection of advanced waste processing and research facilities that turn waste into reusable and marketable materials. Sustainable Waste Processing focuses on receiving and sorting residential and non-residential waste streams to recover valuable resources and minimize the amount of waste going to landfill.

The Edmonton Waste Management Centre is an integrated site designed to process more than 500,000 tonnes of waste per year. This waste is processed through a combination of 14 waste processing facilities aligned to recover maximum value from waste products and transform waste into valuable resources. To increase residential diversion from landfill, the Edmonton Waste Management Centre is implementing waste processing technologies (e.g. Anaerobic Digestion Facility) in order to recover more from the organics stream.

Technical Services

Technical Services is dedicated to the engineering, technical support and environmental compliance of waste processing and collection operations. Technical Services also manages and provides oversight of the Waste Services capital projects and large operational investment programs to ensure effective, compliant and efficient waste operations.

Business Integration

Business Integration is responsible for defining Waste Services strategy, facilitating operational direction, resource allocation, financial governance and Branch-wide alignment to corporate directives. Key areas of focus in Business Integration include performance management, monitoring and reporting, contract management, workforce development and resource allocation, financial sustainability, communications and education programs, and safety training.

3.0 Methodology and Key Assumptions

The following subsections provide the methodology and key assumptions for the Waste Services Utility.

The 2019 Rate Filing is based on the June 30, 2018 Forecast incorporating significant changes up to August 31, 2018. The assumptions used to develop this Rate File include City Council approved corporate budget guidelines and forecasts from the City Economist:

- **Housing Starts and Consumer Price Index:**

	2019 Budget	2020 Proposed	2021 Proposed	2022 Proposed
Housing Starts	8,844	9,017	9,206	9,401
Consumer Price Index	1.6%	2.0%	1.9%	1.9%

- **Employee Benefits** - The 2019 – 2022 Operating Budget numbers were calculated by the City of Edmonton Capital and Operating Budget System (COBS) which allocates benefit dollars by employee. The 2019 Rate File includes an update for any recent benefit rate increases for the Local Authorities Pension Plan, Canada Pension Plan, Employment Insurance, Major Medical and Dental Plan, Group Life Insurance and Health Care Spending Account.
- **Cost of Debt:**

Term	2019	2020	2021	2022
10 Year	3.10%	3.35%	3.60%	3.85%
15 Year	3.35%	3.60%	3.85%	4.10%
20 Year	3.47%	3.72%	3.97%	4.22%
25 Year	3.55%	3.80%	4.05%	4.30%

Debt servicing calculations use cost of debt rate forecast provided by the City's Corporate Budget Office and are based on actual Alberta Capital Finance Authority borrowing rates up to the first quarter of 2018. The rates are mid-year estimates. An additional 0.25 percent increment is added per year starting in 2019.

Other Assumptions used include the following:

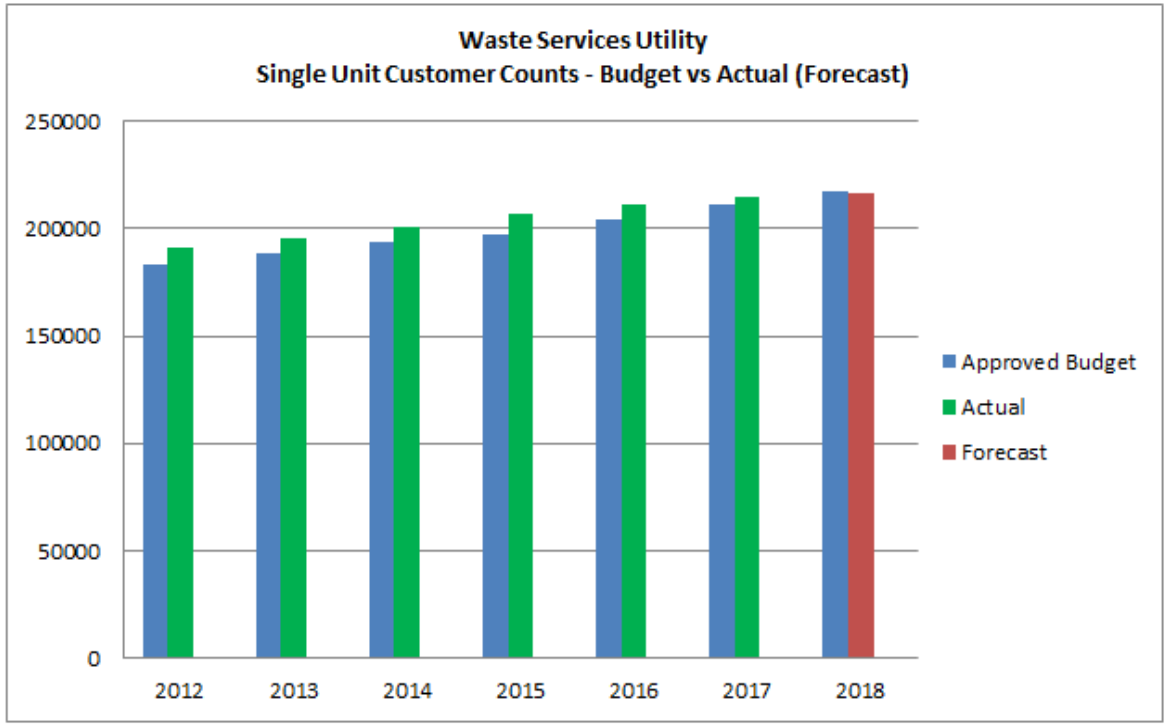
- Waste Services Utility Staff Vacancy – unless otherwise stated, the typical expected staff vacancy is 5 percent for all staff.
- Full-Time Equivalent – a full time equivalent (FTE) is defined as the hours (and associated personnel costs) one full-time employee would work in a year. For example, if a position is funded for one year, it is equivalent to 1.0 FTE, whereas a position funded for six months, is equivalent to 0.5 of an FTE. Funding for a

new position may be adjusted in the first year to reflect the timing between approval of a new position and hiring, with full funding for the position beginning the following year.

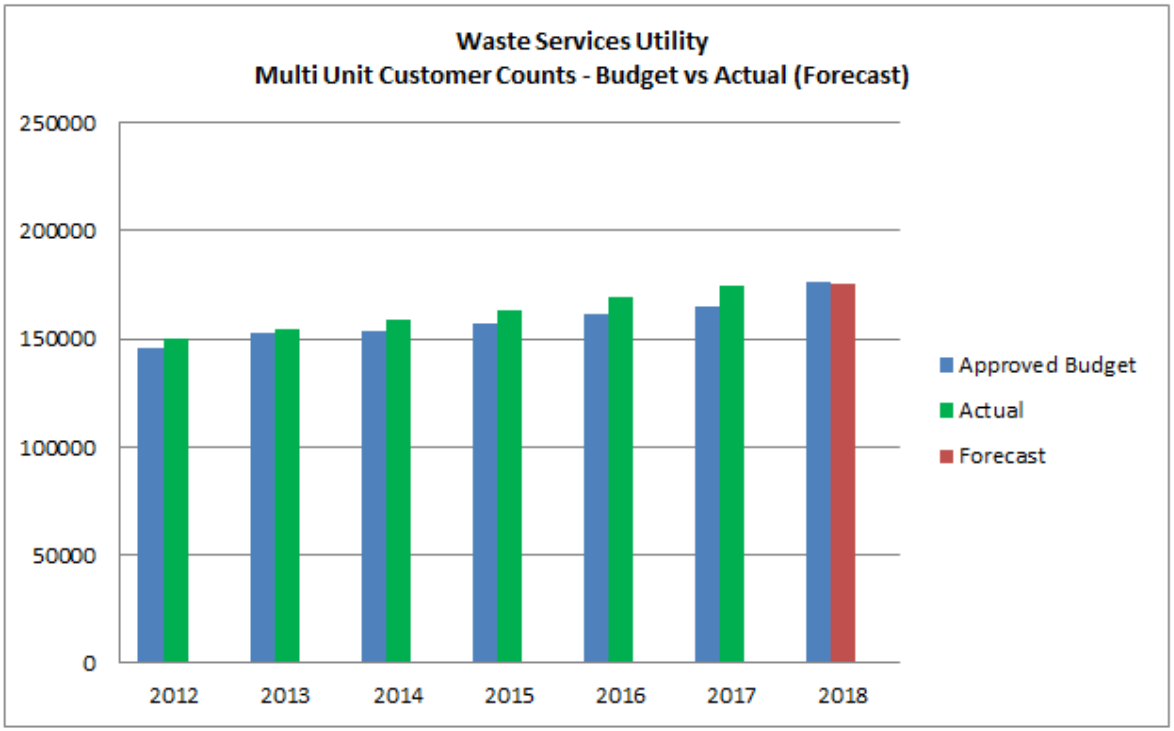
- Growth – Beginning with the 2018 Rate Filing, Waste Services changed its approach to the estimation of the proposed and forecast single unit and multi-unit customer counts. The customer counts are now based on historical trends and the anticipated household starts as projected by the City's Chief Economist[1]. The proposed customer billing base is represented in the figures below:

	2017 Actual	2018 Forecast	2019 Proposed	2020 Forecast*	2021 Forecast	2022 Forecast
Single Unit	214,900	216,495	219,141	235,339	238,093	240,905
Multi-Unit	174,196	175,489	177,634	166,321	168,553	170,833

** Includes the reclassification of 13,500 customers from Multi-Unit to Single Unit, see detailed discussion below.*



[1] Rate revenues year to date in 2018 are trending slightly below budget suggesng tha t the revised methodology has corrected the prior underesma on of gr owth.



As part of the Cost of Service Study (COSS) a review of customer accounts occurred. Through this review up to 27,000[2] households (townhouses, duplexes, etc) were identified as receiving service as if they were a single unit customer but were being charged the multi-unit rate. In 2019, Waste Services will undertake a detailed analysis of these accounts to determine the appropriate classification. The analysis will categorize each dwelling type, document the service provided, and review the related policies and procedures (some of which may requirement amendment). This rate filing anticipates the reclassification of 50 percent of these households (13,500 units) from the multi-unit rate to the single unit rate beginning in 2020. To avoid rate shock for these customers, Waste Services intends to adjust the rates from the multi-unit rate to the single unit rate over a period of five years.

[2] While the unit count was 24,895 in the 2017 COSS, as many as 27,000 units are expected by 2020.

4.0 Operational Performance

The four performance goals below summarize Waste Services' performance measures and align with the 2019-2022 Business Plan.

GOAL	PERFORMANCE MEASURE	ACTUALS	FORECAST	TARGETS			
		2017	2018	2019	2020	2021	2022
Customer Excellence	Overall Satisfaction with Eco Stations	94%	94%	94%	94%	94%	94%
	Overall Satisfaction with Residential Collection Service	90%	90.5%	90.5%	91%	91%	91%
	Number of Missed Collections per 10,000	2	2	2	2	2	2
Operational Excellence	Single Unit Residential Diversion Rate [3]	39%	41%	50%	64%	66%	80%
	Kilograms of Waste Collected per Capita	262	260	260	255	250	240
	Kilograms of Recycling Collected per Capita	44	48	49	51	52	53
	Number Reportable Environmental Incidents	49	40	38	36	34	32

[3] The Single Unit Residenal Div ersion Rate calculaon has been upda ted according to the methodology presented in Council Report CR_5824. The forecast and targets have been set based on the assumed implementaon of w aste reducon and div ersion acvies as outlined in Council R eport CR_5184.

GOAL	PERFORMANCE MEASURE	ACTUALS	FORECAST	TARGETS			
		2017	2018	2019	2020	2021	2022
Financial Accountability	Stable Rates	4.4%	2.3%	2.5%	2.5%	2.5%	2.5%
	Debt to Net Assets Ratio	86.3%	79.4%	75.4%	73.6%	73.3%	73.7%
	Cash Position ($000s)	50,860	61,383	53,471	39,560	23,023	21,646
Organizational Excellence	Engagement Survey Employee Response Rate	N/A	75%	N/A	78%	N/A	80%
	Percentage Turnover per 100 FTEs	4.8%	5.5%	5.5%	5.5%	5.5%	5.5%
	Lost Time Injury Frequency Rate	5.68	5.19	4.93	4.68	4.45	4.22

5.0 Cost of Service Study

In May 2018, Waste Services retained the consulting firm Grant Thornton LLP (GT) to perform a Cost of Service Study (COSS) using the Utility's 2017 operational and financial results to determine if costs had been properly allocated to the appropriate customer classes. The purpose of this study was to:

- Perform cost allocation analysis: this required allocating costs to Programs (i.e. Collections vs. Processing and Disposal), Functions (i.e. detailed work activities performed by Waste Services), and Customer Class (i.e. Single Unit, Multi-Unit, and Non-Residential) using agreed upon allocation methodologies. To accurately allocate costs to customer class, an up-to-date understanding of Waste Service's Regulated and Non-Regulated activities was required. GT worked in collaboration with Waste Services and Financial Services staff to achieve this understanding.
- Perform cost recovery analysis: this required comparing the revenues received for each customer class to their allocated costs and determining the implications of the cost recovery results. This allowed GT to identify potential opportunities for improvement.
- Inform the Utility rate setting model: customer rates are informed by the results of the cost of service study.

To meet these objectives, GT followed a standard cost of service methodology which utilized a 4-step process, as highlighted below:

1. Determine total revenue requirements;
2. Functionalize capital costs (i.e. depreciation and debt interest) and operating costs / revenues;
3. Confirm customer classes and cost allocation drivers and assumptions; and,
4. Allocate functionalized costs to customer classes and perform cost recovery analysis.

5.1 COSS Revenue Requirements

Based on review of Waste Services' 2017 financial results, GT made minor adjustments in order to determine the cost of service for a 'normal' or 'test year'. Adjustments included the removal of one-time Greenhouse Gas Revenue attributable to 2015 and 2016 in the amount of $1,805,000, and the addition of $5,291,551 of "Post Closure" costs to account for the annual required contribution towards the Post Closure Liability. These adjustments were determined in conjunction with representatives from Financial Services.

The 2017 test year's total revenue requirements were calculated to be $202,426,161, as summarized in the table below. Section 2.1 of the Fiscal Policy states that; "The target combined Cash Position of the Utility is the Pay as You Go required as identified in the Capital Plan plus an amount derived to mitigate the risk exposures". Based on this policy, the 2017 total revenue requirement calculated includes cash reserve amounts totalling $8,129,000, which includes funds from Pay As you Go (PAYG) of $5,954,000 and Risk Allowance of $2,175,000.

In the 2017 test year, Waste Services collected $6,430,490 in excess of the total costs.

Item	2017 Amount ($'s)
Single Unit & Multi-Unit Residential Rate Revenues	$ 175,262,446
Operating Expenses:	
Operating and Maintenance Expenses (net of recoveries)	$ 146,568,394
Overhead Expenses	$ 17,580,563
Depreciation Expense	$ 20,778,412
Debt Interest Expense	$ 9,369,793
2017 REVENUE REQUIREMENT - BEFORE CASH RESERVE AMOUNTS	**$ 194,297,161**
Cash Reserve Amounts:	
Pay-As-You-Go	$ 5,954,000
Risk Allowance	$ 2,175,000
2017 TOTAL REVENUE REQUIREMENT	**$ 202,426,161**
Net Gain (Loss) Before Non-Rate Revenues	$ (27,163,716)
Non-Rate Revenues	$ 33,594,206
Net Gain (Loss) After Non-Rate Revenues	$ 6,430,490

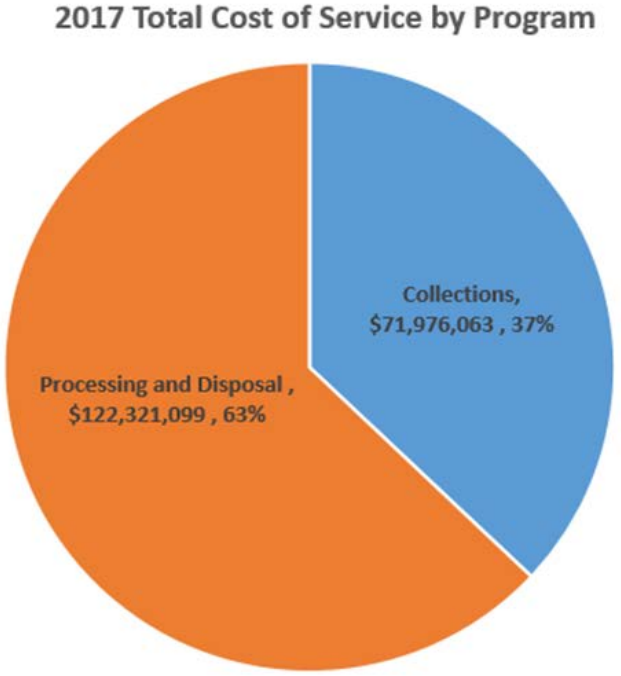
Note: In the absence of the Post Closure normalization adjustment (i.e. if the entire expense of $10,880,810 was included) the resulting Net Gain (Loss) After Non-Rate Revenues would be $841,231.

5.2 COSS Cost Allocations

Waste Services' total cost by Program is illustrated in the chart below. Processing and Disposal represents the majority of Waste Services' costs at 63%, while Collections makes up the remaining 37%.

2017 Total Costs by Service Program

Collections	$ 71,976,063
Processing and Disposal	$ 122,321,099
	$ 194,297,161



5.3 COSS Results

The following are the key findings from the 2017 COSS:

- Overall, Waste Services recovered approximately $6.4M[4] in excess of its costs;
- The combined cost recovery for the Regulated portion of Waste Services' business that provides service to Residential customers is 105.2%;
    - Single Unit cost recovery is 103.4%;
    - Multi-Unit cost recovery is 109.6%;
- In contrast, the cost recovery for the Non-Regulated portion of Waste Services' business that provides service to Non-Residential customers is 87.0%.

	Total Revenues	Total Revenue Requirement	Difference	Cost Recovery Ratio
Single Unit	$133,404,987	$129,018,674	$4,386,313	103.4%
Multi-Unit	$56,123,719	$51,190,818	$4,932,901	109.6%
Non-Residential	$19,327,946	$22,216,670	($2,888,724)	87.0%
Total	**$208,856,652**	**$202,426,161**	**$6,430,490**	**103.2%**

* *To address non-regulated program losses the Waste Services Utility was given authorization through the 2015 Operating Budget process to draw on a short-term loan from the City of Edmonton Financial Stabilization Reserve (FSR) over four years beginning in 2015.*

5.4 Single and Multi-Unit Rates

Multi-unit customer rates have been determined using a proportional method (i.e. charged 65% of Single unit rates) since 1995. As shown in the 2017 COSS, this methodological approach leads to a cost recovery ratio of 103.4% for single unit and 109.6% for multi-unit customers; a 6.2% gap between customer classes.

A key driver of costs, and therefore revenue requirements, for single and multi-unit customers is the tonnage of waste received from each group. While a detailed analysis of tonnage for the 2017 COSS showed a 72% / 28% split between single and multi-units, further analysis, including a review of 2018 actual tonnage received, will be undertaken before adjusting the methodological approach. In addition, implementation of changes to the collection of grass, leaf and yard waste and the proposed Source Separated Organics (SSO) program may shift the tonnage split between single and multi-units. The results of the proposed analysis and a new methodological approach will be used to inform rates in the 2020 Utility Rate Filing.

[4] *In the absence of the Post Closure normalization adjustment (i.e. if the entire expense of $10,880,810 was included) the resulting Net Gain (Loss) After Non-Rate Revenues would be $841,231.*

6.0 Financial Rate Impacts

The financial rate impacts are presented in the following. The resulting rate impacts reflect the services and processes required to support the Waste Services Utility's mission, values, and strategic initiatives. The rate impacts have been grouped into three categories: Operating Impacts, Capital Impacts on Operating, and Other Impacts.

	2018 Approved	2019 Proposed	2020 Forecast	2021 Forecast	2022 Forecast
Operating Impacts	$ 3.11	$ 1.95	$ 0.54	$ 1.86	$ 0.48
Capital Impacts	0.07	0.42	0.77	0.70	0.74
Other Impacts					
Non-rate revenue	(3.48)	0.89	0.61	(0.15)	(0.16)
Increase Customer Base	(0.56)	(0.57)	(0.73)	(0.76)	(0.80)
City of Edmonton Short Term Loan	-	(0.33)	(0.39)	(0.35)	(0.23)
Rate of Return	1.89	(1.21)	0.38	(0.10)	1.21
SUBTOTAL	**(2.15)**	**(1.22)**	**(0.13)**	**(1.36)**	**0.02**
TOTAL RATE IMPACTS	$ 1.03	$ 1.15	$ 1.18	$ 1.20	$ 1.24

Operating Impacts

- The increase in Operating Impacts from the 2018 budget includes an anticipated increase to external services due to population growth, increased waste volume and new contract rates for curbside and multi-unit services as well as increased operation of the Waste to Biofuels Facility (owned and operated by a third party) which impacts the rate through the Refuse Derived Fuel Facility (RDF) feedstock production resulting in higher material and utility costs.

Capital Impacts

- Capital impacts result from amortization and interest changes from the Capital Plan as outlined in Section 12.0 of this Rate Filing. Increased net amortization is associated with the upcoming commissioning of new facilities including the Refuse Derived Fuel Dryer, Anaerobic Digestion Facility, site infrastructure and facility projects, and growth vehicle and equipment purchases. Increases in interest are related to funding new infrastructure such as

the refurbishment of the Edmonton Compost Facility, implementation of a new asset management program, capital improvements for efficiency and safety and waste program changes commencing in 2019.

Other Impacts

- Contributions to the decrease in non-rate revenue include decreased revenue from commodity market growth on the sale of recyclable materials and lower biosolids revenue.
- Based on current economic conditions and housing starts the Customer Rate Base is forecast to grow in 2019. This growth allows regulated revenue to be allocated over a larger base therefore controlling the per unit Residential Customer Rate increase. The greater number of residential waste collection pick-ups will generate higher regulated revenue which will be used to offset the associated residential waste collection operational costs.
- To address non-regulated program losses and achieve target cash balances, the Waste Services Utility was given authorization through the 2015 Operating Budget process to draw on a short-term loan from the City of Edmonton Financial Stabilization Reserve (FSR) over four years beginning in 2015. This loan ensures non-regulated losses are covered by the FSR loan as opposed to regulated revenues and assists in reducing non-regulated rate increases.
- Approval of the Waste Management Utility Fiscal Policy C588A resulted in changes to the rate revenue calculation. A requirement for Pay As You Go (PAYG) funding is now included as part of the rate revenue calculation to ensure sufficient cash is generated to meet the Utility's current and future capital needs. The Rate of Return is calculated to achieve a Net Income position to meet cash and/or PAYG targets. This places greater emphasis on long-term planning and the financial sustainability of the Utility.

7.0 Financial Indicators & Risk Allowance

(in thousands of dollars)

Waste Management Utility Fiscal Policy C558A was adopted by City Council on September 23, 2014. The updated policy focuses on four Financial Indicators used to monitor the financial health of the Utility as illustrated below:

		Actual	Budget	Forecast	Proposed	Forecast								
		2017	2018	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
1	**Rate Sufficient to Meet Expenditures and Cash Flow**													
	Net Income ($000s)	$ 10,775	$ 19,396	$ 14,138	$ 12,317	$ 12,329	$ 10,584	$ 14,641	$ 15,682	$ 16,898	$ 15,163	$ 11,619	$ 12,657	$ 12,983
	Target: Positive Net Income	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
2	**Cash Position ($000s)**													
	Pay As You Go Requirement	19,597	14,274	21,159	19,861	19,028	17,280	15,923	16,784	12,638	18,772	21,259	22,643	22,643
	Risk Allowance	2,175	3,122	3,122	3,366	3,572	3,855	3,937	4,438	4,315	4,089	4,715	4,843	5,093
	Target Cash Position	21,772	17,396	24,281	23,227	22,600	21,135	19,860	21,222	16,953	22,861	25,974	27,486	27,736
	Actual Cash Balance	50,860	18,626	61,383	53,471	39,560	23,023	21,646	21,649	25,330	33,021	37,823	42,219	46,006
	Actual Cash >= Target	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
	Cash Over Target ($000s)	*29,088*	*1,230*	*37,102*	*30,244*	*16,960*	*1,888*	*1,786*	*427*	*8,377*	*10,160*	*11,849*	*14,733*	*18,270*
3	**Residential Customer Rate Impacts**													
	Single Unit													
	Monthly Billing Increase	$ 1.90	$ 1.03	$ 1.03	$ 1.15	$ 1.18	$ 1.20	$ 1.24	$ 1.16	$ 1.15	$ 1.11	$ 0.81	$ 0.82	$ 0.84
	Impact of Customer Rate	*4.4%*	*2.3%*	2.3%	2.5%	2.5%	2.5%	2.5%	2.3%	2.2%	2.1%	1.5%	1.5%	1.5%
	Monthly Unit Rate	$ 44.90	$ 45.93	$ 45.93	$ 47.08	$ 48.26	$ 49.46	$ 50.70	$ 51.86	$ 53.01	$ 54.12	$ 54.93	$ 55.75	$ 56.59
	Multi Unit													
	Monthly Billing Increase	$ 1.23	$ 0.67	$ 0.67	$ 0.75	$ 0.77	$ 0.78	$ 0.81	$ 0.75	$ 0.75	$ 0.72	$ 0.53	$ 0.53	$ 0.55
	Impact of Customer Rate	*4.4%*	*2.3%*	2.3%	2.5%	2.5%	2.5%	2.5%	2.3%	2.2%	2.1%	1.5%	1.5%	1.5%
	Monthly Unit Rate	$ 29.19	$ 29.85	$ 29.85	$ 30.60	$ 31.37	$ 32.15	$ 32.96	$ 33.71	$ 34.46	$ 35.18	$ 35.71	$ 36.24	$ 36.79
	Target: Stable, consistent rate increases	*No*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
4	**Financing of Capital Investments**													
	Debt to Net Assets Ratio	86.3%	73.3%	79.4%	75.4%	73.6%	73.3%	73.7%	72.7%	71.4%	69.3%	66.9%	64.3%	61.3%
	Target: May vary between 50% and 70%	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*No*	*Yes*	*Yes*	*Yes*	*Yes*

2017 Net Income: *For the purposes of this rate filing, 2017 net income was restated to account for deferral of the financial impacts related to the structural condition of the Edmonton Composting Facility. As a result of this deferral, a regulatory asset has been established to allow the utility to recover the incurred ECF expenses through customers rates over the next 12 years in order to maintain stable and consistent rates increases. The amortization of this regulatory asset has been included in the revenue requirement for 2019.*

General Comments for Financial Indicators

Target: Rates Sufficient to Meet Expenditures

All scenarios from 2019 forward meet the requirement of generating sufficient net income to cover operating expenses.

Target: Cash Position

The target cash position for Waste Services provides for capital funding to meet Pay-As-You-Go (PAYG) requirements for the next fiscal year plus a risk allowance to mitigate exposure, such as volatility of the markets for recyclable commodities, as outlined in the Waste Management Utility Fiscal Policy C558A. As the Utility replaces the current organics processing capacity and moves toward source separation of organics, the PAYG requirement will remain high over the next 4 year period peaking at $19.9 million in 2019 before declining to $15.9 million in 2022.

The calculation of the risk exposure includes the following identified risks: (in thousands of dollars)

	2018 Approved	2019 Proposed	2020 Forecast	2021 Forecast	2022 Forecast
Recyclable Market	$ 475	$ 475	$ 475	$ 475	$ 475
Greenhouse gas, landfill gas, 3rd party	500	500	500	500	500
REVENUE RISKS	975	975	975	975	975
Refuse Derived Fuel Processing (2017 opening)	250	-	-	-	-
Anaerobic Digestion Facility (2018 opening)	500	250	125	-	-
Leachate Removal and Treatment	-	500	500	500	500
Operational Impacts Agreements/Strategic Changes	1,397	1,641	1,972	2,380	2,462
EXPENDITURE RISKS	2,147	2,391	2,597	2,880	2,962
TOTAL RISK ALLOWANCE	**3,122**	**3,366**	**3,572**	**3,855**	**3,937**

The allowance for Leachate Removal and Treatment attempts to mitigate the risk associated with legacy issues with the Clover Bar landfill including the removal, treatment and containment of leachate. The Utility continues to work with internal partners, external consultants and Alberta Environment and Parks to proactively manage, close and revegetate the site.

After accounting for the PAYG requirements and risk allowance, the cash balance is positive in all years due in part to the short term loan from the City of Edmonton Financial Stabilization Reserve (FSR) which will be utilized in 2018 to cover non-regulated losses and due to the significant cash reserves held for both the Landfill Post Closure Liability and the Bremner Lagoon Liability.

Target: Low, Stable and Consistent Rate Increases

As the Utility moves toward financial sustainability achieving stable and consistent rate increases has been given a high priority. The target will be achieved with a proposed 2.5% increase in 2019 through 2022 before declining gradually to 1.5% in 2026 and beyond.

Target: Debt to Net Assets Ratio

The Utility has re-committed itself to enhanced asset management and the thoughtful replacement of damaged assets through ongoing prioritization of capital projects. Coupled with significant strategic program changes in 2020 to 2022, the target for the Debt to Net Asset Ratio is forecast to be achieved in 2025.

8.0 Utility Summary Schedule

(in thousands of dollars)

Line #		Reference	2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Operations and Maintenance	Schedule 9.0	$ 180,710	$ 174,493	$ 175,898	**$ 182,283**	$ 6,385	3.6%	$ 184,435	$ 2,152	1.2%	$ 191,675	$ 193,611
2	Amortization of Non-Contributed Assets	Schedule 10.0	20,779	23,615	22,187	**23,900**	1,713	7.7%	26,683	2,783	11.6%	28,336	29,644
3	Debt Interest	Schedule 10.0	9,369	9,387	9,509	**9,466**	(43)	(0.5%)	9,772	306	3.2%	10,908	12,563
4	Intra-municipal Recoveries	Schedule 9.8	(10,972)	(2,958)	(2,958)	**(2,946)**	12	(0.4%)	(2,946)	-	-	(2,696)	(2,696)
5	Grants	Schedule 9.0	-	1,500	3,000	**4,600**	1,600	53.3%	-	(4,600)	(100.0%)	-	-
6	ECF Deferred Cost		-	-	-	**1,309**	1,309	-	1,309	-	-	1,309	1,309
	TOTAL EXPENSES		199,886	206,037	207,636	**218,612**	10,976	5.3%	219,253	641	0.3%	229,532	234,431
7	Non-Rate Revenue	Schedule 11.1	35,880	42,338	39,583	**41,892**	2,309	5.8%	34,870	(7,022)	(16.8%)	35,460	36,084
8	Rate Revenue	Schedule 11.0	174,781	183,095	182,191	**189,037**	6,846	3.8%	196,711	7,674	4.1%	204,656	212,988
	TOTAL REVENUES		210,661	225,433	221,774	**230,929**	9,155	4.1%	231,581	652	0.3%	240,116	249,072
	NET INCOME/(LOSS)	Schedule 13.0	$ 10,775	$ 19,396	$ 14,138	**$ 12,317**	$ (1,821)	(12.9%)	$ 12,328	$ 11	0.1%	$ 10,584	$ 14,641

Further detailed analysis of proposed expenditures and revenues are provided in subsequent schedules.

Line 1 - Operations and Maintenance

The increase in operations and maintenance from 2018 Forecast includes additional contract cost and power charges required for the Refuse Derived Fuel facility and Anaerobic Digestion Facility, anticipated cost increases due to population growth, increased waste volume and new contract rates for curbside and multi-unit services, and increases in facility and building maintenance costs for Waste Services.

Line 2 - Amortization of Non-Contributed Assets

Increases in amortization are driven in part by the upcoming commissioning of new facilities including the Refuse Derived Fuel Dryer and the Anaerobic Digestion Facility.

Line 6 - ECF Deferred Cost

A regulatory asset has been established to allow the utility to recover the incurred ECF expenses through customers rates over the next 12 years in order to prevent rate shock and to maintain stable and consistent rates increases. The increase in ECF deferred cost from 2018 Forecast reflects the 2019 amortization of the regulatory asset established for ratemaking purposes.

9.0 Operations and Maintenance

(in thousands of dollars)

Line #		Reference	2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Personnel	Schedule 9.1	$ 49,271	$ 51,587	$ 51,188	**$ 50,061**	$ (1,127)	(2.2%)	$ 50,289	$ 228	0.5%	$ 51,941	$ 52,214
2	Materials, Goods & Supplies	Schedule 9.2	2,848	7,087	5,761	**7,014**	1,253	21.7%	7,140	126	1.8%	7,270	7,408
3	External Services	Schedule 9.3	90,528	77,782	80,837	**83,998**	3,161	3.9%	85,617	1,619	1.9%	90,594	91,816
4	Fleet Services	Schedule 9.4	16,411	16,756	17,210	**17,464**	254	1.5%	17,500	36	0.2%	17,542	17,584
5	Shared Services	Schedule 9.5	10,538	10,669	10,669	**9,616**	(1,053)	(9.9%)	9,747	131	1.4%	9,880	10,023
6	Intra-municipal Services	Schedule 9.6	2,812	2,063	2,063	**5,012**	2,949	142.9%	5,038	26	0.5%	5,371	5,404
7	Utilities	Schedule 9.7	4,434	6,716	5,883	**7,161**	1,278	21.7%	7,123	(38)	(0.5%)	7,047	7,081
8	Other Expenses		3,867	1,833	2,287	**1,957**	(330)	(14.4%)	1,981	24	1.2%	2,030	2,081
	TOTAL O&M EXPENSES		180,710	174,493	175,898	**182,283**	6,385	3.6%	184,435	2,152	1.2%	191,675	193,611
9	Intra-municipal Recoveries	Schedule 9.8	(10,972)	(2,958)	(2,958)	**(2,946)**	12	(0.4%)	(2,946)	-	-	(2,696)	(2,696)
	RECOVERIES		(10,972)	(2,958)	(2,958)	**(2,946)**	12	(0.4%)	(2,946)	-	-	(2,696)	(2,696)
10	Amortization of Non-Contributed Assets	Schedule 10.0	20,779	23,615	22,187	**23,900**	1,713	7.7%	26,683	2,783	11.6%	28,336	29,644
11	ECF Deferred Cost		-	-	-	**1,309**	1,309	-	1,309	-	-	1,309	1,309
12	Debt Interest	Schedule 10.0	9,369	9,387	9,509	**9,466**	(43)	(0.5%)	9,772	306	3.2%	10,908	12,563
	EXPENSES BEFORE ONE-TIMES		199,886	204,537	204,636	**214,012**	9,376	4.6%	219,253	5,241	2.4%	229,532	234,431
13	Grants		-	1,500	3,000	**4,600**	1,600	53.3%	-	(4,600)	(100.0%)	-	-
	NET EXPENSES		$ 199,886	$ 206,037	$ 207,636	**$ 218,612**	$ 10,976	5.3%	$ 219,253	$ 641	0.3%	$ 229,532	$ 234,431

Line 1 to 7 - Please refer to the schedule for each line for more details.

Line 13 - Grants

The 2019 grant is a flow through, received from Alberta Innovates Energy and Environment Solutions and disbursed to the owner of the Edmonton Waste to Biofuels and Chemicals Facility. The net operating impact of these grants is zero with the offset in grant revenue (Schedule 11.1).

9.1 Personnel

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Wages	$ 36,185	$ 37,289	$ 37,290	**$ 36,776**	$ (514)	(1.4%)	$ 36,816	$ 40	0.1%	$ 38,003	$ 38,033
2	Overtime	596	948	948	**948**	-	-	948	-	-	1,198	1,198
3	Allowances and Benefits	12,490	13,350	12,950	**12,337**	(613)	(4.7%)	12,525	188	1.5%	12,740	12,983
	TOTAL PERSONNEL	$ 49,271	$ 51,587	$ 51,188	**$ 50,061**	$ (1,127)	(2.2%)	$ 50,289	$ 228	0.5%	$ 51,941	$ 52,214

Personnel costs include Wages, Overtime, Employment Allowances, and Benefits. The City of Edmonton Capital and Operating Budget System (COBS) utilizes the City's payroll system as the source for the personnel budget for both wages and benefits, thereby providing a reliable and consistent source of information. Vacant positions are set at mid-range with family benefits. Included in the 2019 Proposed Budget is an assumption of a vacancy discount of 5% for all positions.

Line 1 - Wages

The change in wages from 2018 Forecast reflects merit increases for current positions and an increase in temporary staff cost for Waste Collections and Sustainable Waste Processing; offset by a reduction in wages due to the transfer of the Social Marketing team to Communications and Public Engagement and heavy duty mechanics to Fleet and Facility Services.

Line 2 - Overtime

Overtime is expected to increase during the roll out of new waste diversion programs due to alternate collection activities for grass, leaf and yard waste and the source separated organics program.

Line 3 - Allowances and Benefits

Benefits mainly consist of Local Authorities Pension Plan (LAPP), Canada Pension Plan, Employment Insurance, Major Medical and Dental Plan, Group Life Insurance and Health Care Spending Account. The change in allowances and benefits from 2018 Forecast reflects lower benefits cost due to transfer of positions to other departments and lower anticipated medical, dental, life insurance and health care spending account costs.

9.2 Materials, Goods, & Supplies

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Collection Services	$ 662	$ 1,091	$ 1,086	**$ 1,065**	$ (21)	(1.9%)	$ 1,100	$ 35	3.3%	$ 1,120	$ 1,141
2	Organics	926	674	674	**1,311**	637	94.5%	1,331	20	1.5%	1,355	1,381
3	Integrated Processing & Transfer Operations	217	3,511	2,510	**2,526**	16	0.6%	2,564	38	1.5%	2,611	2,660
4	Haul and Landfill Operations	17	18	18	**20**	2	11.1%	20	-	-	20	21
5	Construction and Demolition Facility	482	558	558	**593**	35	6.3%	602	9	1.5%	613	624
6	Other	544	1,235	915	**1,499**	584	63.8%	1,523	24	1.6%	1,551	1,581
	TOTAL MATERIALS, GOODS & SUPPLIES	$ 2,848	$ 7,087	$ 5,761	**$ 7,014**	$ 1,253	21.7%	$ 7,140	$ 126	1.8%	$ 7,270	$ 7,408

Line 2 - Organics

The increase in Organics operations from 2018 Forecast includes direct material cost for the Cure Site and new Anaerobic Digestion Facility.

Line 6 - Other

The increase in other from the 2018 Forecast includes hired equipment and direct material for the Aggregates program.

9.3 External Services

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Waste Collection Services	$ 20,762	$ 27,230	$ 27,234	**$ 28,966**	$ 1,732	6.4%	$ 30,348	$ 1,382	4.8%	$ 34,714	$ 35,347
2	Materials Recovery Facility	8,278	8,035	7,285	**8,582**	1,297	17.8%	8,970	388	4.5%	9,142	9,318
3	Organics	16,544	15,406	12,906	**13,459**	553	4.3%	12,222	(1,237)	(9.2%)	12,585	12,913
4	Integrated Processing & Transfer Operations	6,353	9,117	6,417	**7,815**	1,398	21.8%	8,185	370	4.7%	8,645	8,953
5	Haul and Landfill Operations	14,448	5,413	13,802	**11,294**	(2,508)	(18.2%)	11,571	277	2.5%	10,415	9,898
6	Construction and Demolition Facility	3,563	2,758	2,758	**2,953**	195	7.1%	3,094	141	4.8%	3,153	3,214
7	Customer Billing Services	3,942	4,025	4,025	**4,122**	97	2.4%	4,221	99	2.4%	4,322	4,426
8	Other	16,638	5,798	6,410	**6,807**	397	6.2%	7,006	199	2.9%	7,618	7,747
	TOTAL EXTERNAL SERVICES	$ 90,528	$ 77,782	$ 80,837	**$ 83,998**	$ 3,161	3.9%	$ 85,617	$ 1,619	1.9%	$ 90,594	$ 91,816

Line 1 - Waste Collection Services

Collection Services external contracts include single and multi-unit residential refuse and recycling collection as well as costs for contracted equipment, services at Eco Stations and other Collection Services programs.

Contract work is anticipated to increase due to population growth, increased waste volume and new contract rates for curbside and multi-unit services. Current contracts are adjusted annually using a cost index that includes CPI, fuel and labour to better reflect annual changes in direct operating costs.

Line 2 - Materials Recovery Facility

The Materials Recovery Facility sorts and processes recyclables collected through the blue bag and recycling depot programs. Enhanced screening of materials required to address lower tolerances for contamination in the world market have a negative effect on costs.

Line 3 - Organics

The Anaerobic Digestion Facility is anticipated to be commissioned by the end of 2018 allowing for an additional 48,000 tonnes of organic material to be composted resulting in increased operational costs. These costs will be partially offset by potential savings from the seasonal operation of the ECF. Starting in 2020 and ending in 2022, net savings from the closure of the ECF have been incorporated.

Line 4 - Integrated Processing & Transfer Operations (IPTF)

Feedstock for the Waste to Biofuels and Chemicals facility is prepared at the Refuse Derived Fuel facility, located within the IPTF, resulting in higher contract costs for the IPTF. Waste Services pays a contractually agreed upon fee to Edmonton Waste to Biofuels and Chemicals Facility for the conversion of feedstock into alcohol fuels. The fee includes a tipping fee for the delivery of acceptable feedstock to the facility. Most of the increased costs incurred by the IPTF Operations and Biofuels Facility contract will be offset by a reduction in the costs of hauling and landfill, as demonstrated in Line 5 - Haul and Landfill Operations.

Line 5 - Haul and Landfill Operations

Hauling and Landfill Operations represents the contract fees for all of Waste Services Utility operations. Several factors influencing this budget include additions for start up of the Waste to Biofuels and Chemicals Facility, a reduction in hauling related to the commissioning of the Anaerobic Digestion Facility and Refuse Derived Fuel Facility, and anticipated savings from renegotiated landfill disposal fees.

Line 6 - Construction and Demolition Facility

The Construction & Demolition Facility is operated by City staff with significant additional contracted services including the provision of labour, equipment maintenance services and supplements to the Utility's operations to meet peak demands in grinding and crushing of wood. The wood grinding operation requires more extensive contract work in order to minimize the risk of fire and to prepare feedstock for Enerkem.

Line 7 - Customer Billing Services

Waste Services has a contract with EPCOR for the provision of customer billing and collection services. The 2019 through 2020 rate estimates, as provided by EPCOR, include a 2.4% increase per invoice. The increases include and allowance for the replacement of the customer database (UIS) system.

Line 8 - Other

Other contract costs include Community Relations and Program Management, Administrative Services, and other facilities such as Eco Stations, Edmonton Waste Services Centre Operations, Advanced Energy Research Facility, Marketing Compost Facility, Research & Development and Environmental.

9.4 Fleet Services

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Fleet Reserve Contribution	$ 120	$ 87	$ 87	**$ 86**	$ (1)	(1.1%)	$ 81	$ (5)	(5.8%)	$ 81	$ 81
2	Fuel	3,949	4,120	4,574	**4,153**	(421)	(9.2%)	4,194	41	1.0%	4,236	4,278
3	Direct Charge & Repairs	12,342	12,549	12,549	**13,225**	676	5.4%	13,225	-	-	13,225	13,225
	TOTAL FLEET SERVICES	$ 16,411	$ 16,756	$ 17,210	**$ 17,464**	$ 254	1.5%	$ 17,500	$ 36	0.2%	$ 17,542	$ 17,584

As Fleet Services recovers 100 percent of branch costs, a portion of indirect branch overhead is charged to Waste Services. The indirect overhead is allocated through work order fees, vendor work charges, and fuel surcharges. The remaining overhead costs are recovered through shop rates on shop labour hours. Indirect overhead includes branch administration, training, engineering, procurement, safety, client relations and facility and equipment maintenance. Estimates for Fuel and Direct Charges & Repairs are estimated by Fleet Services in consultation with Waste Services and aligned with Fleet Services four year operating budget.

Waste Services Utility is moving towards management of their vehicle and equipment replacement which has resulted in a decrease to the reserve contribution to the Fleet Services Replacement Reserve. This results in Waste Services purchasing vehicles through its own capital program rather than through Fleet Services. As older equipment purchased by Fleet gets replaced, the remaining reserve contribution will continue to decline.

9.5 Shared Services

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Corporate Allocation (Central Management)	$ 1,500	$ 1,545	$ 1,545	**$ 1,697**	$ 152	9.8%	$ 1,848	$ 151	8.9%	$ 2,000	$ 2,151
2	Communications & Public Engagement	464	478	478	**479**	1	0.2%	480	$1	0.2%	482	483
3	Financial Services	2,111	2,175	2,175	**2,071**	(104)	(4.8%)	1,968	(103)	(5.0%)	1,865	1,762
4	Safety	-	-	-	**118**	118	-	149	31	26.3%	181	213
5	Customer Information Services	541	557	557	**559**	2	0.4%	563	4	0.7%	565	567
6	Human Resources	1,067	1,099	1,099	**1,019**	(80)	(7.3%)	1,020	1	0.1%	1,027	1,032
7	Law	272	280	280	**284**	4	1.4%	287	3	1.1%	291	294
8	Corporate Procurement and Supply Services	432	445	445	**496**	51	11.5%	547	51	10.3%	598	649
9	Information Technology	2,084	2,146	2,146	**2,120**	(26)	(1.2%)	2,095	(25)	(1.2%)	2,071	2,047
10	Real Estate & Housing	646	697	697	**773**	76	10.9%	790	17	2.2%	800	825
11	Facilities and Landscape Infrastructure	1,421	1,247	1,247	-	(1,247)	(100.0%)	-	-	-	-	-
	TOTAL SHARED SERVICES	$ 10,538	$ 10,669	$ 10,669	**$ 9,616**	$ (1,053)	(9.9%)	$ 9,747	$ 131	1.4%	$ 9,880	$ 10,023

The City of Edmonton employs a Shared Services model whereby support services required for the operations of all City businesses are provided through centralized areas of expertise. This approach takes advantage of efficiencies gained through economies of scale and opportunities to provide more robust systems and services (e.g. technology related services). The Waste Management Utility Fiscal Policy C558A requires that the Utility operate under a full cost approach thus requiring the Utility to pay for its portion of shared services.

As part of the City's 2019-2022 Operating Budget development, Shared Service providers performed a review of their costs and the shared service allocation model resulting in updates to the cost allocation drivers. This change resulted in several changes to the allocation of shared service costs from the service providers to the Utility. One new service provider (Employee Services) was also added to the shared service pool. The net reduction in shared service cost from 2018 to 2019 is primarily due to the transfer of Facilities and Landscape Infrastructure from being a shared service provider to on-demand service provider (described in section 9.6).

9.6 Intra-Municipal Services

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Communications & Public Engagement	$ 101	$ 104	$ 104	**$ 963**	$ 859	826.0%	$ 963	-	-	$ 963	$ 963
2	Financial Services	190	202	202	**67**	(135)	(66.8%)	67	-	-	67	67
3	Human Resources	178	195	195	**136**	(59)	(30.3%)	136	-	-	136	136
4	Law	246	211	211	**56**	(155)	(73.5%)	56	-	-	364	371
5	Corporate Procurement and Supply Services	197	243	243	**364**	121	49.8%	364	-	-	364	364
6	Transportation Operations	53	64	64	**83**	19	29.7%	83	-	-	83	83
7	Facilities and Landscape Infrastructure	42	645	645	**1,758**	1,113	172.6%	1,758	-	-	1,758	1,758
8	Other	1,805	399	399	**1,585**	1,186	297.2%	1,611	26	1.6%	1,636	1,662
	TOTAL INTRA-MUNICIPAL SERVICES	$ 2,812	$ 2,063	$ 2,063	**$ 5,012**	$ 2,949	142.9%	$ 5,038	$ 26	0.5%	$ 5,371	$ 5,404

Intra-Municipal Services are charges for on-demand services provided through other City of Edmonton programs which are not incorporated in shared services charges. These are direct charges for services such as dedicated support for communication and engagement initiatives, on demand building repairs and maintenance, posting of vacant positions to job sites, and security services for special events. In 2019, as part of the strategic review of Waste Services operations, a review of the key intra-municipal services functions required to support the Utility will be completed including clarifying the resources, deliverables, and approximate costs associated with these services and, where appropriate, work to establish service level agreements.

Line 1 - Communications & Public Engagement

The increase in direct charges from 2018 Forecast includes the transfer of 6.0 FTEs and related cost for the social marketing team from Waste Services to Communications and Public Engagement. These costs were previously included under Personnel (Schedule 9.1).

Line 5 - Corporate Procurement and Supply Services

The increase in direct charge from 2018 Forecast includes additional costs for dedicated resources for procurement services from Corporate Procurement and Supply Services.

Line 7 - Facilities and Landscape Infrastructure

During the City's 2019-2022 Operating Budget process, Facilities and Landscape Infrastructure was transferred from being a shared service provider to an on-demand service provider. The increase in direct charge from 2018 Forecast is offset by reductions to shared service charges (Schedule 9.5).

Line 8 - Other

The increase in Other costs includes the 6.0 FTE transferred to City Operations Occupational Health and Safety and support for the City Operations Deputy City Managers Office.

9.7 Utilities

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Power	$ 3,066	$ 4,545	$ 3,545	**$ 4,791**	$ 1,246	35.1%	$ 4,717	$ (74)	(1.5%)	$ 4,596	$ 4,583
2	Natural Gas	917	1,607	1,774	**1,798**	24	1.4%	1,825	27	1.5%	1,859	1,894
3	Water	112	169	169	**171**	2	1.2%	174	3	1.8%	177	181
4	Other	339	395	395	**401**	6	1.5%	407	6	1.5%	415	423
	TOTAL UTILITIES	$ 4,434	$ 6,716	$ 5,883	**$ 7,161**	$ 1,278	21.7%	$ 7,123	$ (38)	(0.5%)	$ 7,047	$ 7,081

Power, natural gas, and water estimates are provided by Facility and Landscape Infrastructure, Office of Energy Management. Estimates are based on historical consumption and future forecasted rates for current service levels. Service level changes are applied to the estimates to determine the budget numbers for each utility.

Line 1 - Power

Increase in power costs as a result of:	2019
Commissioning of the High Solids Anaerobic Digestion Facility	**$ 627**
Residential Collection and Eco Stations	**31**
Refuse Derived Fuel Facility (production of feedstock)	**443**
Other	**145**
Total	**$ 1,246**

Line 2 - Natural Gas

Natural Gas consumption increased in 2018 due to the need to heat the ECF. Looking forward, the primary cause of the change to natural gas costs is the increased usage of natural gas at the Refuse Derived Fuel Facility (RDF) for production of feedstock for the Waste to Biofuels Facility.

9.8 Intra-Municipal Recoveries

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Organics	$ (6,050)	-	-	-	-	-	-	-	-	-	-
2	Nutri-Gold	(2,525)	-	-	-	-	-	-	-	-	-	-
	TOTAL BIOSOLIDS PROVIDED FOR DRAINAGE UTILITY	(8,575)	-	-	-	-	-	-	-	-	-	-
3	Litter Collection Recovery	(2,078)	(1,922)	(1,922)	**(1,922)**	-	-	(1,922)	-	-	(1,672)	(1,672)
4	Landfill Disposal Fees	(243)	(200)	(200)	**(188)**	12	(6.0%)	(188)	-	-	(188)	(188)
5	Charges to Capital	(76)	(836)	(836)	**(836)**	-	-	(836)	-	-	(836)	(836)
	TOTAL INTRA-MUNICIPAL RECOVERIES	$ (10,972)	$ (2,958)	$ (2,958)	**$ (2,946)**	$ 12	(0.4%)	$ (2,946)	-	-	$ (2,696)	$ (2,696)

Intra-Municipal Recoveries are billings to other areas within the City of Edmonton for services provided by Waste Services Utility. These recoveries include direct charges such as litter collection on behalf of Capital City Clean-Up and charges to other City of Edmonton areas for disposal of waste at the Edmonton Waste Management Centre.

Lines 1 and 2 - Organics and Nutri-Gold Operations

Organics and Nutri-Gold operations combined represent the total processing costs of biosolids which was an intra-municipal recovery from the Drainage Services. On September 1, 2017 Drainage Services was transferred to EPCOR. The transfer also included the Nutri-Gold Operation. All operational costs for Nutri-Gold were removed from the budget in 2018 and beyond. The recoveries for Organics have been reclassified to non-rate revenues.

Line 4 - Landfill Disposal Fees

Landfill disposal fees are charged to various City of Edmonton programs for disposal of waste at the Edmonton Waste Management Centre.

Line 5 - Charges to Capital

As in-house engineers work on capital projects, a portion of their time is capitalized instead of being charged to operating expenses.

10.0 Amortization and Interest Expense

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	2020 Forecast	2021 Forecast	2022 Forecast
1	Amortization of Non-Contributed Assets	$ 20,779	$ 23,615	$ 22,187	**$ 23,900**	$ 26,683	$ 28,336	$ 29,644
2	Amortization of Contributed Assets	848	1,118	1,118	**1,389**	1,389	1,389	$1,328
	TOTAL AMORTIZATION OF ASSETS	$ 21,627	$ 24,733	$ 23,305	**$ 25,289**	$ 28,072	$ 29,725	$ 30,972
3	Long-Term Interest - Existing Borrowing	$ 9,348	$ 8,278	$ 9,063	**$ 8,279**	$ 7,581	$ 6,905	$ 6,226
4	Long-Term Interest - Proposed Borrowing		1,045	398	**1,126**	2,120	3,923	6,255
		9,348	9,323	9,461	**9,405**	9,701	10,828	12,481
5	Short-Term Interest	21	65	48	**61**	71	80	82
	TOTAL INTEREST EXPENSE	$ 9,369	$ 9,387	$ 9,509	**$ 9,466**	$ 9,772	$ 10,908	$ 12,563
	COST OF DEBT							
6	Long-Term Debt Principal Repayment - Existing Borrowing	$ 19,837	$ 17,455	$ 19,229	**$ 17,604**	$ 16,431	$ 15,861	$ 15,952
7	Long-Term Debt Principal Repayment - Proposed Borrowing		2,794	553	**1,867**	3,633	6,247	9,356
		19,837	20,249	19,782	**19,471**	20,064	22,108	25,308
8	Short-Term Debt Principal Repayment		4,306	462	**651**	914	1,305	1,790
	TOTAL PRINCIPAL REPAYMENTS	$ 19,837	$ 24,555	$ 20,244	**$ 20,122**	$ 20,978	$ 23,413	$ 27,098
9	Long-Term Debt Balance - Existing Borrowing	$ 235,672	$ 187,038	$ 216,442	**$ 198,838**	$ 182,407	$ 166,546	$ 150,594
10	Long-Term Debt Balance - Proposed Borrowing		51,012	23,276	**45,324**	78,033	129,518	187,149
	TOTAL LONG-TERM DEBT BALANCE	$ 235,672	$ 238,050	$ 239,718	**$ 244,162**	$ 260,440	$ 296,064	$ 337,743
	MID-YEAR LONG-TERM DEBT BALANCE	$ 231,140	$ 244,139	$ 237,695	**$ 241,106**	$ 252,301	$ 278,252	$ 316,904

Amortization expense represents the amount of asset life used during a given operating period. The rate of amortization is dependent upon the asset class, each with a predetermined estimated useful life based upon historical experience. Waste Services Utility's assets are divided into 47 different classes with useful lives varying between 3 years and extending up to 60 years. Amortization expense is calculated using the straight-line method which incurs half year expenses in the first and last year of the asset's life.

Interest expense includes both interest for Alberta Capital Financing Authority (ACFA) debentures related to capital projects, as well as interest on short term loans from the City of Edmonton Financial Stabilization Reserve (FSR). Projected rates are provided by the City of Edmonton Budget Office and are based on historical ACFA rates and economic conditions (see section 3.0 Methodology and Key Assumptions).

Line 1 - Amortization of Non-Contributed Assets

The annual increases in amortization result from upcoming commissioning of new facilities including the Refuse Derived Fuel Dryer, Anaerobic Digestion Facility, site infrastructure and facilities projects and growth vehicle and equipment purchases. The majority of existing assets will not reach the end of their useful life for several more years.

Line 2 - Amortization of Contributed Assets

Amortization of Contributed Assets represents the amount of benefit from assets which were received or funded by third parties. The amortization from contributed assets decreases the amount of total amortization expense for the Waste Services Utility. Amortization of Contributed Assets are the benefits received from the Advanced Energy Research Facility, funded by Alberta Innovates - Energy and Environment Solutions, and EWMC Site 440 infrastructure. A large portion of Site 440 construction was funded by an external third party. The 2018 forecasted increase results from the commissioning of the Anaerobic Digestion Facility which is partially funded by Climate Change & Emissions Management Corporation and partnership funding with the University of Alberta.

Lines 5 and 8 - Short-Term Interest and Short-Term Debt Principal Repayments

Refer to Schedule 10.1 for additional details.

10.1 Short-Term Loan from the City of Edmonton

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	2020 Forecast	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast
1	**Loan To Cover Non-Regulated Program Losses and Maintain Cash Flow**												
	Beginning Balance	$ 1,425	$ 4,306	$ 3,232	**$ 4,056**	$ 4,709	$ 5,338	$ 5,451	$ 4,599	$ 2,317	-	-	-
	Draw	1,956	-	1,286	**1,304**	1,543	1,418	938	-	-	-	-	-
	Principal	149	4,306	462	**651**	914	1,305	1,790	2,282	2,318	-	-	-
	Interest	21	65	48	**61**	71	80	82	69	35	-	-	-
	Ending Balance	$ 3,232	-	$ 4,056	**$ 4,709**	$ 5,338	$ 5,451	$ 4,599	$ 2,317	-	-	-	-

Line 1 - Loan to Cover Non-Regulated Program Losses and Maintain Cash Flow

To address non-regulated program losses and achieve target cash balances, the Waste Services Utility was given authorization through the 2015 Operating Budget process to draw on a short-term loan from the City of Edmonton Financial Stabilization Reserve (FSR) over four years beginning in 2015. This ensures that non-regulated losses are covered by the FSR loan as opposed to regulated revenues and assists in reducing non-regulated rate increases. The first draw of $1.57 million was December 31, 2015; no draw was made in 2016; a draw of $1.96 million was made in 2017. This rate file incorporates additional annual draws up to December 31, 2018. Principal and Interest (1.5%) are paid annually for ten years from the first draw in 2015. Interest payments are reflected entirely within non-regulated program expenses. As part of the year end financial reporting process, the Waste Services Utility will determine the borrowing requirement to offset non-regulated program losses and cover the loan repayments. For this document a forecast draw was incorporated based on best estimates.

11.0 Revenue Requirement

(in thousands of dollars)

Line #		Reference	2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	2020 Forecast	2021 Forecast	2022 Forecast
1	**O&M Expenses and Grants**	Schedule 9.0	$ 180,710	$ 175,993	$ 178,898	**$ 186,883**	$ 184,435	$ 191,675	$ 193,611
2	Intra-municipal Recoveries	Schedule 9.0	(10,972)	(2,958)	(2,958)	**(2,946)**	(2,946)	(2,696)	(2,696)
	Net Operations and Maintenance Expenses		169,738	173,035	175,940	**183,937**	181,489	188,979	190,915
3	Amortization of Non-Contributed Assets	Schedule 9.0	20,779	23,615	22,187	**23,900**	26,683	28,336	29,644
4	ECF Deferred Cost	Schedule 9.0	-	-	-	**1,309**	1,309	1,309	1,309
5	Debt Servicing - Total Interest	Schedule 9.0	9,369	9,387	9,509	**9,466**	9,771	10,908	12,563
	Total Net Expense		199,886	206,037	207,636	**218,612**	219,252	229,532	234,431
6	**Return on Rate Base**	Schedule 11.3	10,775	19,396	14,138	**12,317**	12,329	10,584	14,641
	Total Revenue Requirement		210,661	225,433	221,774	**230,929**	231,581	240,116	249,072
7	Less Non-Rate Revenues	Schedule 11.1	35,880	42,338	39,583	**41,892**	34,870	35,460	36,084
	TOTAL RATE REVENUE REQUIRED		$ 174,781	$ 183,095	$ 182,191	**$ 189,037**	$ 196,711	$ 204,656	$ 212,988

Waste Services Utility Fiscal Policy C558A was adopted by City Council on September 23, 2014. As per this policy, "At a minimum, the projected total revenue generated will be equal to the projected expenses for the year, including sufficient cash to meet the cash flow requirements of the Utility." Costs associated with Contributed Capital, such as amortization, are excluded as these are not eligible to be funded through regulated utility rates.

11.1 Non-Rate Revenue

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Program Revenues - Tip Fees	$ 4,911	$ 6,100	$ 5,200	**$ 5,598**	$ 398	7.7%	$ 5,690	$92	1.6%	$ 5,806	$ 5,928
2	Program Revenues - C&D Waste	5,280	7,192	6,092	**6,273**	181	3.0%	6,371	$98	1.6%	6,494	6,622
3	Program Revenues - Materials Recovery Facility	5,826	4,177	3,200	**3,240**	40	1.3%	3,304	64	2.0%	3,365	3,429
4	Program Revenues - Commercial Collection	7,810	6,714	7,464	**7,704**	240	3.2%	7,808	104	1.3%	7,935	8,068
5	Program Revenues - Eco Stations	2,796	3,310	3,310	**3,360**	50	1.5%	3,410	50	1.5%	3,473	3,539
6	Program Revenues - Organics Operation	6,372	8,538	6,337	**6,261**	(76)	(1.2%)	3,685	(2,576)	(41.1%)	3,752	3,825
7	Program Revenues - Other	2,132	4,400	4,330	**4,506**	176	4.1%	4,452	(54)	(1.2%)	4,534	4,621
8	Late Payment Penalty	480	357	-	**-**	-	-	-	-	-	-	-
9	Investment Earnings	269	50	650	**350**	(300)	(46.2%)	$ 150	(200)	(57.1%)	101	52
10	Grants	4	1,500	3,000	**4,600**	1,600	53.3%	-	(4,600)	(100.0%)	-	-
	TOTAL NON-RATE REVENUE	$ 35,880	$ 42,338	$ 39,583	**$ 41,892**	$ 2,309	5.8%	$ 34,870	$ (7,022)	(16.8%)	$ 35,460	$ 36,084

Line 1 - Tip Fees Revenue

Tip Fee Revenues are generated by private haulers disposing of waste materials at the Edmonton Waste Management Centre (EWMC).

Line 2 - Construction and Demolition Waste Revenue

Direct tip fees collected from source segregated and mixed construction wastes are included in the Construction and Demolition Waste Facility revenues. The tip fees, when compared to the regular commercial disposal tip fees, provide an incentive for customers to recycle construction and demolition materials. The construction and demolition tip fees are reviewed annually and updated to improve cost-recovery and are in line with market rates.

Line 3 - Materials Recovery Facility Revenue

Materials Recovery Facility revenue from the sale of recyclable materials are highly influenced by both the commodities market and the US exchange rate. The 2019 proposed budget anticipates stabilization of the recyclable market following significant softening of the market in 2018.

Line 4 - Commercial Collection

Waste Services has participated in the commercial waste market since 2011. Commercial Collections revenue is dependant on the addition and retention of commercial contracts.

Line 5 - Eco Stations Revenue

Slow growth in Eco Station usage results in an anticipated revenue increase in 2019 and beyond.

Line 6 - Organics Operation

With the transfer of Drainage Services to Epcor, recoveries for the dewatering and processing of biosolids have been reclassified from intra-municipal recoveries to non-rate revenues. In 2018, EPCOR reduced the volume of biosolids sent for processing. While similar volumes are anticipated for 2019, the closure of the ECF in the fall of 2019 will eliminate biosolids revenue leaving only recoveries for dewatering.

Line 7 - Other Program Revenue

Other Program Revenue includes revenues generated from third parties operating at the Edmonton Waste Management Centre based on agreements, which includes sharing of third party sales revenues. Also included in this category are revenues generated from environmental initiatives such as the Sale of Landfill Gas and Greenhouse Gas (GHG) credits.

Line 8 - Late Payment Penalty

An outcome of the 2017 Cost of Service Study, revenue for late payments are now included in Rate Revenue totals.

Line 9 - Interest Earnings

Investment earnings include short term interest payments received on existing cash balances. Interest earned is expected to decline in the coming years as the amount of cash reserves for the Landfill Post Closure Liability and the Bremner Lagoon Liability are reduced.

Line 10 - Grant Revenue

The flow through grant forecasted in each of 2018 and 2019 is received from Alberta Innovates and disbursed to the owner of the Edmonton Waste to Biofuels and Chemicals Facility. As the grant revenue will be transferred to the third party, it will have a net zero impact on the operating budget, as indicated by the offsetting expense on Line 13 of Schedule 9.0.

11.2 Calculation of Rate Base

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	2020 Forecast	2021 Forecast	2022 Forecast
1	**Investments in Tangible Capital Assets**							
	Gross Book Value - Non Contributed	$ 527,060	$ 585,435	$ 557,777	**$ 605,035**	$ 661,737	$ 740,044	$ 824,311
	Gross Book Value - Contributed	16,994	27,916	21,167	**21,167**	21,167	21,167	21,167
	Gross Book Value - All Assets	544,054	613,351	578,944	**626,202**	682,904	761,211	845,478
	Accumulated Depreciation - Non Contributed	235,061	260,540	255,728	**282,456**	310,448	340,093	371,046
	Accumulated Depreciation - Contributed	4,196	5,309	5,314	**6,703**	8,092	9,480	10,808
	Accumulated Depreciation - All Assets	239,257	265,849	261,042	**289,159**	318,540	349,573	381,854
	Net Book Value - Non Contributed	291,999	324,895	302,049	**322,579**	351,289	399,951	453,265
	Net Book Value - Contributed	12,798	22,607	15,853	**14,464**	13,075	11,686	10,359
	Net Book Value - All Assets	$ 304,797	$ 347,502	$ 317,902	**$ 337,043**	$ 364,364	$ 411,637	$ 463,624
	Mid-Year Non-Contributed Assets	$ 285,952	$ 313,865	$ 297,024	**$ 312,314**	$ 336,934	$ 375,620	$ 426,608
2	Cash Flow Requirement							
	One Month Operations	16,657	16,889	17,064	**17,844**	17,713	18,602	19,168
	RATE BASE AT MID YEAR	$ 302,609	$ 330,754	$ 314,088	**$ 330,158**	$ 354,647	$ 394,222	$ 445,776

11.3 Return on Rate Base

(in thousands of dollars)

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	2020 Forecast	2021 Forecast	2022 Forecast
1	**Mid-Year Rate Base**	$ 302,609	$ 330,754	$ 314,088	**$ 330,158**	$ 354,647	$ 394,222	$ 445,776
	Mid-Year Capital Structure							
2	Debt	76.4%	71.6%	75.7%	**73.1%**	70.7%	70.0%	70.4%
3	Equity	23.6%	28.4%	24.3%	**26.9%**	29.3%	30.0%	29.6%
	Cost Rates							
4	Debt	3.1%	2.8%	3.0%	**2.8%**	2.7%	2.7%	2.8%
5	Equity	3.6%	5.9%	4.5%	**3.7%**	3.5%	2.7%	3.3%
	Weighted Average Cost of Debt	3.2%	3.7%	3.4%	**3.1%**	3.0%	2.7%	2.9%
	Return on Rate Base							
6	Debt	9,348	9,323	9,461	**9,405**	9,701	10,828	12,481
7	Equity	10,775	19,396	14,138	**12,317**	12,328	10,584	14,641
	Total Return	$ 20,123	$ 28,719	$ 23,599	**$ 21,722**	$ 22,029	$ 21,412	$ 27,122

Return on Rate Base is the net income/(loss) as a percentage of the Mid-Year Rate Base. The positive return on rate base is indicative of Waste Services Utility's increased focus on working towards financial sustainability and the need to meet Pay As You Go capital requirements.

12.0 Capital Budget and Forecast Plan - Capital Project Summary

(in thousands of dollars)

			Proposed 4 Year Capital Budget					Forecast						
Line #	Capital Projects	Appendix	2019	2020	2021	2022	2019-2022 Total	2023	2024	2025	2026	2027	2028	2019-2028 Total
	Branch-wide													
1	Facilities & Infrastructure Planning & Design	B.1	$ 623	$ 467	$ 484	$ 477	$ 2,051	$ 739	$ 2,077	$ 1,229	$ 1,122	$ 1,427	$ 1,529	$ 10,174
2	Facilities & Infrastructure Project Delivery	B.1	5,603	4,201	4,352	4,290	18,446	6,655	18,697	11,063	10,094	12,843	13,761	91,559
3	Waste Services Infrastructure Planning and Design (IIS)	B.2	5,473	1,610	1,800	400	9,283	1,000	-	3,000	500	-	-	13,783
4	Waste Services Project Delivery (IIS)	B.3	3,250	14,909	35,680	42,190	96,029	29,973	8,000	6,000	-	-	-	140,002
5			**14,949**	**21,187**	**42,316**	**47,357**	**125,807**	**38,368**	**28,774**	**21,292**	**11,716**	**14,270**	**15,290**	**255,518**
	Collection Services Facilities													
6	Collection Facilities and Infrastructure		2,369	-	-	-	2,369	-	-	-	-	-	-	2,369
7	Mayfield (NW) Eco Station		-	-	-	777	777	6,075	6,925	-	-	-	-	13,777
8			**2,369**	-	-	**777**	**3,146**	**6,075**	**6,925**	-	-	-	-	**16,146**
	Sustainable Waste Processing Facilities													
9	Cure Site Land Use & Development		250	500	2,925	2,925	6,600	-	-	-	-	-	-	6,600
10	Groundwater Diversion		5,000	-	-	-	5,000	-	-	-	-	-	-	5,000
11	Material Recovery Facility Renewal (MRF)		411	-	-	-	411	-	-	-	-	-	-	411
12			**5,661**	**500**	**2,925**	**2,925**	**12,011**	-	-	-	-	-	-	**12,011**
	Vehicles & Equipment													
13	Waste Containers	B.4	3,074	1,930	1,998	2,070	9,072	3,400	3,500	3,600	3,700	3,778	3,827	30,877
14	WM Services Equipment Acquisition	B.5	19,272	14,086	12,951	13,905	60,214	10,483	12,620	3,901	7,574	11,518	11,932	118,242
15			**22,346**	**16,016**	**14,949**	**15,975**	**69,286**	**13,883**	**16,120**	**7,501**	**11,274**	**15,296**	**15,759**	**149,119**
	Waste Program Changes													
16	Source Separated Organics Program		-	19,000	18,117	17,233	54,350	-	-	-	-	-	-	54,350
17	**Grand Total**		$ 45,324	$ 56,703	$ 78,307	$ 84,266	$ 264,600	$ 58,326	$ 51,819	$ 28,793	$ 22,990	$ 29,566	$ 31,049	$ 487,144

** The Southwest Waste Management Centre and Southeast Eco Station capital projects proposed in the 2018 Rate Filing are no longer included in the Waste Services Capital Plan. These profiles have been removed to make funding available for other higher priority capital projects.*

Lines 1 and 2 - Facilities & Infrastructure Planning and Design and Project Delivery Composite

These new composite profiles provide capital funding for planning and design and project delivery, which will be managed internally by Waste Services. The scope of the Facilities and Infrastructure profiles includes the capital maintenance, renewal, and upgrade of existing assets due to new or increased waste streams, safety concerns, and design improvements that increase the efficiency of Waste Services' operations. This also includes implementation of an asset management program to deliver sustainable waste services and maintain optimal service levels. Projects were prioritized using a branch-wide process that identifies and ranks projects based on strategic criteria such as environmental impact, health and safety, and alignment to strategy. Please refer to Appendix B.1

for the capital funding request to support these profiles. All projects managed by IIS and some of the larger projects managed by Waste Services will follow the Project Development & Delivery Model (PDDM) process.

Projects anticipated to be undertaken in this budget cycle include, but are not limited to:

- Design, fabrication, and installation of a surge bin to the RDF Dryer facility to provide more efficient operation within the RDF and ensure required feedstock is delivered to Enerkem.
- EWMC Site Fire Protection upgrades to address risk identified by a 3rd party consultant.
- Expansion of IPTF Locker Room to increase locker room capacity for COE and contract staff.
- Paving and Site Improvement to provide safe and efficient working conditions.

Lines 3 and 4 - Waste Services Planning and Design and Project Delivery Composites (IIS Managed)

These new composite profiles provide capital funding for planning and design and for project delivery for projects managed by Integrated Infrastructure Services (IIS). The profiles budget to support concept level planning for major capital initiatives in accordance to the CIty's Project Development & Delivery Model (PDDM). The PDDM is a framework to manage all capital infrastructure projects and represents best practice in project management from industry and comparable municipalities. This process ensures that sufficient information is prepared in advance of the capital budget process to support informed investment decisions, provides adequate resources for planning and design and provides an overall framework to guide the management of Waste Services' capital projects. Projects have been identified and prioritized based on strategic criteria such as environmental impact, health and safety and alignment with Branch and Corporate goals. Please refer to Appendix B.2 and B.3 for the capital funding requests to support these profiles.

Projects anticipated to be undertaken in this budget cycle include, but are not limited to, the following:

- Remediation of the Edmonton Compost Facility to meet structural integrity and safety standards.
- Upgrades to the Material Recovery Facility equipment to replace aging machinery and improve processing efficiency.
- Efficiency enhancements to the Refuse Derived Fuel facility to include a second pre-shredder and alternate offload.
- Site civil servicing projects to support the sustainability and ongoing operation of the Edmonton Waste Management Centre.

** Please note the business cases for the Edmonton Compost Facility and the Materials Recovery Facility will be brought forward to Utility Committee by Waste Services in February 2019.*

Line 6 - Collection Facilities and Infrastructure

Final year of approved profile costs for the Strathcona Eco Station upgrade has been carried forward from the 2015-2018 budget cycle. Total projected spend of $2.8 million, of which $0.4 million is forecasted to be spent up to 2018.

Line 9 - Cure Site Land Use and Development

This profile is carried forward from the 2015-2018 budget cycle. Of the total projected spend of $7.0 million, $0.4 million is forecasted to be spent in 2018 while the remaining $6.6 million will be spent between 2019 and 2022.

Line 10 - Groundwater Diversion

This profile is carried forward from the 2015-2018 budget cycle. Of the total projected spend of $13.3 million, $8.3 million is forecasted to be spent in 2018 while the remaining $5 million will be spent in 2019.

Line 11 - Material Recovery Facility Renewal

This profile is carried forward from the 2015-2018 budget cycle. Of the total projected spend of $2.0 million, $1.6 million is forecasted to be spent in 2018 while the remaining $0.4 million will be spent in 2019.

Lines 13 and 14 - Waste Containers and WM Services Equipment Acquisition

These new composite profiles provide capital funding for Waste Containers and Mobile Equipment. The objective of these profiles are to replace existing assets at the end of their useful lives and provide funding for growth assets to support the current market conditions and the changing needs of Waste Services customers. For waste containers, this entails the purchase of steel bins and litter baskets used in Waste Services' residential and non-residential collection programs as well as carts required to support the initial rollout of the residential Source Separated Organics (SSO) program in 2019. The equipment acquisition profile supports the purchase and capital refurbishment of Collections and Sustainable Waste Processing equipment such as waste collection vehicles, highway tractors and trailers, shredders and compost turners. Please refer to Appendix B.4 and B.5 for the business cases to support these profiles.

12.1 Capital Project Financing Summary

(in thousands of dollars)

Line #	Source of Financing	Proposed 4 Year Capital Budget					Forecast						
		2019 Proposed	2020	2021	2022	2019 - 2022 Total	2023	2024	2025	2026	2027	2028	2019 - 2028 Total
1	Self Liquidating Debentures	**$ 24,165**	$ 36,842	$ 59,279	$ 66,986	$ 187,272	$ 42,403	$ 35,035	$ 16,155	$ 4,218	$ 8,307	$ 8,407	$ 301,797
2	Pay As You Go Requirement	**21,159**	19,861	19,028	17,280	77,328	15,923	16,784	12,638	18,772	21,259	22,643	185,347
	Total Capital Project Financing	**$ 45,324**	**$ 56,703**	**$ 78,307**	**$ 84,266**	**$ 264,600**	**$ 58,326**	**$ 51,819**	**$ 28,793**	**$ 22,990**	**$ 29,566**	**$ 31,050**	**$ 487,144**

Line 1 - Self Liquidating Debentures

Self Liquidating Debentures are coordinated through the City of Edmonton and drawn from the Alberta Capital Financing Authority. The cost of debt varies according to economic conditions and length of term (see Section 3.0). Details on debt servicing costs are provided in Schedule 10.0.

Line 2 - Pay As You Go Requirement

With the approval of Fiscal Policy C558A on September 23, 2014, Pay As You Go requirements are incorporated into the Financial Indicators calculation for Target Cash Position as illustrated in Section 7.0 Financial Indicators. This term is used to identify the portion of a given capital project which is funded by cash (equity). Pay As You Go Requirement for the succeeding year is used in calculating a given year's target cash position.

13.0 Segmented Reporting - Program Revenues and Expenses

(in thousands of dollars)

WASTE COLLECTION SERVICES

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Personnel	$ 23,437	$ 24,774	$ 28,677	**$ 28,479**	$ (198)	(0.7%)	$ 28,589	$ 110	0.4%	$ 29,511	$ 29,661
2	Materials, Goods & Supplies	662	1,091	1,621	**1,657**	36	2.2%	1,701	44	2.7%	1,732	1,765
3	External Services	20,762	27,228	29,576	**31,807**	2,231	7.5%	33,266	1,459	4.6%	37,890	38,589
4	Fleet Services	7,972	9,360	9,367	**9,408**	41	0.4%	9,429	21	0.2%	9,454	9,480
5	Shared Services	313	-	-	-	-	-	-	-	-	-	-
6	Intra-municipal Services	648	396	684	**1,775**	1,091	159.5%	1,786	11	0.6%	1,796	1,806
7	Utilities	584	909	934	**992**	58	6.2%	996	4	0.4%	1,014	1,033
8	Other Expenses	225	303	508	**564**	56	11.0%	571	7	1.2%	581	592
	SUBTOTAL	54,603	64,061	71,367	**74,682**	3,315	4.6%	76,338	1,656	2.2%	81,978	82,926
9	Intra-municipal Recoveries	(132)	631	(301)	**(301)**	-	-	(301)	-	-	(551)	(551)
	TOTAL O&M EXPENSES	54,471	64,692	71,066	**74,381**	3,315	4.7%	76,037	1,656	2.2%	81,427	82,375
10	Amortization	6,444	6,940	7,030	**1,098**	(5,932)	(84.4%)	3,449	2,351	214.1%	5,633	7,380
11	Debt Interest	1,247	1,263	3,711	**26**	(3,685)	(99.3%)	26	-	-	26	27
	EXPENSES BEFORE ONE-TIME	62,162	72,895	81,807	**75,505**	(6,302)	(7.7%)	79,512	4,007	5.3%	87,086	89,782
12	Grant Payment	-	-	-	-	-	-	-	-	-	-	-
13	Grant Revenue	-	-	-	-	-	-	-	-	-	-	-
14	Program Revenues	(11,794)	(10,951)	(11,612)	**(12,001)**	(389)	3.3%	(12,085)	(84)	0.7%	(12,269)	(12,466)
15	Rate Revenues	(50,368)	(61,944)	(70,195)	**(63,504)**	6,691	(9.5%)	(67,427)	(3,923)	6.2%	(74,817)	(77,316)
	NET INCOME/(NET LOSS)	-	-	-	-	-	-	-	-	-	-	-

SUSTAINABLE WASTE PROCESSING

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Personnel	$25,834	$26,813	$22,511	**$21,582**	$ (929)	(4.1%)	$21,700	$118	0.5%	$22,430	$22,553
2	Materials, Goods & Supplies	2,186	5,996	4,140	**5,357**	1,217	29.4%	5,439	82	1.5%	5,538	5,643
3	External Services	69,766	50,554	51,261	**52,191**	930	1.8%	52,351	160	0.3%	52,704	53,227
4	Fleet Services	8,439	7,396	7,843	**8,056**	213	2.7%	8,071	15	0.2%	8,088	8,104
5	Shared Services	10,225	10,669	10,669	**9,616**	(1,053)	(9.9%)	9,747	131	1.4%	9,880	10,023
6	Intra-municipal Services	2,164	1,667	1,379	**3,237**	1,858	134.7%	3,252	15	0.5%	3,575	3,598
7	Utilities	3,850	5,807	4,949	**6,169**	1,220	24.7%	6,127	(42)	(0.7%)	6,033	6,048
8	Other Expenses	3,642	1,530	1,779	**1,393**	(386)	(21.7%)	1,410	17	1.2%	1,449	1,489
	SUBTOTAL	126,106	110,433	104,531	**107,601**	3,070	2.9%	108,097	496	0.5%	109,697	110,685
9	Intra-municipal Recoveries	(10,840)	(3,589)	(2,657)	**(2,645)**	12	(0.5%)	(2,645)	-	-	(2,145)	(2,145)
	TOTAL O&M EXPENSES	115,266	106,844	101,874	**104,956**	3,082	3.0%	105,452	496	0.5%	107,552	108,540
10	Amortization	14,335	16,675	15,157	**22,802**	7,645	50.4%	23,234	432	1.9%	22,703	22,264
11	ECF Deferred Cost	-	-	-	**1,309**	-	-	1,309	-	-	1,309	1,309
12	Debt Interest	8,123	8,124	5,798	**9,440**	3,642	62.8%	9,746	306	3.2%	10,882	12,536
	EXPENSES BEFORE ONE-TIME	137,724	131,644	122,829	**138,507**	15,678	12.8%	139,741	1,234	0.9%	142,446	144,649
13	Grant Payment	-	1,500	3,000	**4,600**	1,600	53.3%	-	(4,600)	(100.0%)	-	-
14	Grant Revenue	(4)	(1,500)	(3,000)	**(4,600)**	(1,600)	53.3%	-	4,600	(100.0%)	-	-
15	Program Revenues	(24,082)	(29,887)	(24,971)	**(25,291)**	(320)	1.3%	(22,785)	2,506	(9.9%)	(23,191)	(23,618)
16	Rate Revenues	(124,413)	(121,153)	(111,996)	**(125,533)**	(13,537)	12.1%	(129,284)	(3,751)	3.0%	(129,839)	(135,672)
	NET INCOME/(NET LOSS)	$ 10,775	$ 19,396	$ 14,138	**$ 12,317**	$ (1,821)	(12.9%)	$ 12,328	$11	0.1%	$ 10,584	$ 14,641

**Program and Rate Revenues sufficient to achieve a net income of zero are transferred from Sustainable Waste Processing to Collection Services. The net income for Waste Services is therefore wholly contained within Sustainable Waste Processing.*

13.1 Revenues and Expenses by Regulated and Non-Regulated Program

(in thousands of dollars)

REGULATED PROGRAMS

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Personnel	$ 39,956	$ 42,462	$ 43,383	**$ 42,864**	$ (519)	(1.2%)	$ 43,072	$208	0.5%	$ 44,498	$ 44,735
2	Materials, Goods & Supplies	3,471	6,671	5,707	**6,506**	799	14.0%	6,624	118	1.8%	6,744	6,872
3	External Services	80,307	72,325	70,934	**72,661**	1,727	2.4%	74,144	1,483	2.0%	79,259	80,474
4	Fleet Services	13,172	13,353	13,526	**13,718**	192	1.4%	13,747	29	0.2%	13,780	13,813
5	Shared Services	10,538	10,669	10,669	**9,616**	(1,053)	(9.9%)	9,747	131	1.4%	9,880	10,023
6	Intra-municipal Services	2,100	1,898	2,005	**4,509**	2,504	124.9%	4,534	25	0.6%	4,868	4,901
7	Utilities & Others	7,694	7,612	7,113	**8,440**	1,327	18.7%	8,431	(9)	(0.1%)	8,432	8,524
	SUBTOTAL	157,238	154,990	153,337	**158,314**	4,977	3.2%	160,299	1,985	1.3%	167,461	169,342
8	Intra-municipal Recoveries	(7,490)	(818)	(1,036)	**(529)**	507	(48.9%)	(531)	(2)	0.4%	(529)	(529)
	O & M EXPENSES	149,748	154,172	152,301	**157,785**	5,484	3.6%	159,768	1,983	1.3%	166,932	168,813
9	Amortization	19,893	22,717	21,353	**23,184**	1,831	8.6%	26,036	2,852	12.3%	27,760	29,194
10	ECF Deferred Cost	-	-	-	**1,309**	-	-	1,309	-	-	1,309	1,309
11	Debt Interest	9,348	9,322	9,329	**9,278**	(51)	(0.5%)	9,580	302	3.3%	10,712	12,371
	EXPENSES BEFORE ONE-TIME	178,989	186,213	182,983	**191,556**	8,573	4.7%	196,693	5,137	2.7%	206,713	211,687
12	Grant Payment		(1,376)	(2,419)	**(3,710)**	(1,291)	53.4%	-	3,710	(100.0%)	-	-
13	Grant Revenue	4	1,376	2,419	**3,710**	1,291	53.4%	-	(3,710)	(100.0%)	-	-
14	Program Revenues	16,935	18,972	16,216	**16,140**	(76)	(0.5%)	13,855	(2,285)	(14.2%)	14,058	14,276
15	Rate Revenues	174,781	183,095	182,191	**189,037**	6,846	3.8%	196,711	7,674	4.1%	204,656	212,988
	NET INCOME/(LOSS)	$ 12,731	$ 15,854	$ 15,424	**$ 13,621**	$ (1,803)	(11.7%)	$ 13,873	$252	1.9%	$ 12,001	$ 15,577

NON-REGULATED PROGRAMS

Line #		2017 Actual	2018 Budget	2018 Forecast	2019 Proposed	YoY $ Variance	YoY % Variance	2020 Forecast	YoY $ Variance	YoY % Variance	2021 Forecast	2022 Forecast
1	Personnel	$ 9,315	$ 9,125	$ 7,805	**$ 7,197**	$ (608)	(7.8%)	$ 7,217	$20	0.3%	$ 7,443	$ 7,479
2	Materials, Goods & Supplies	(623)	416	54	**508**	454	840.7%	516	8	1.6%	526	536
3	External Services	10,221	5,457	9,903	**11,337**	1,434	14.5%	11,472	135	1.2%	11,335	11,342
4	Fleet Services	3,239	3,403	3,684	**3,746**	62	1.7%	3,753	7	0.2%	3,762	3,771
5	Intra-municipal Services	712	165	58	**503**	445	767.2%	504	1	0.2%	503	503
6	Utilities	608	937	1,057	**678**	(379)	(35.9%)	673	(5)	(0.7%)	645	638
	SUBTOTAL	23,472	19,503	22,561	**23,969**	1,408	6.2%	24,135	166	0.7%	24,214	24,269
7	Intra-municipal Recoveries	(3,482)	(2,140)	(1,922)	**(2,417)**	(495)	25.8%	(2,417)	-	-	(2,167)	(2,167)
	TOTAL O&M EXPENSES	19,990	17,363	20,639	**21,552**	913	4.4%	21,718	166	0.8%	22,047	22,102
8	Amortization	886	898	834	**716**	(118)	(14.1%)	647	(69)	(9.6%)	576	450
9	Debt Interest	21	65	180	**188**	8	4.4%	192	4	2.1%	196	192
	EXPENSES BEFORE ONE-TIME	20,897	18,325	21,653	**22,456**	803	3.7%	22,557	101	0.4%	22,819	22,744
10	Grant Payment	-	(124)	(581)	**(890)**	(309)	53.2%	-	890	(100.0%)	-	-
11	Grant Revenue	-	124	581	**890**	309	53.2%	-	(890)	(100.0%)	-	-
12	Program Revenues	18,941	21,866	20,367	**21,152**	785	3.9%	21,015	(137)	(0.6%)	21,402	21,808
	NET INCOME/(NET LOSS)	$ (1,956)	$ 3,541	$ (1,286)	**$ (1,304)**	$ (18)	1.4%	$ (1,542)	$ (238)	18.3%	$ (1,417)	$ (936)

** To address non-regulated program losses and achieve target cash balances, the Waste Services Utility was given authorization through the 2015 Operating Budget process to draw on a short-term loan from the City of Edmonton Financial Stabilization Reserve (FSR) over four years beginning in 2015. This ensures that non-regulated losses are covered by the FSR loan as opposed to regulated revenues and assists in reducing non-regulated rate increases.*

13.2 Regulated Activities Expense Changes

(in thousands of dollars)

Line #		2018 Forecast	Customer Growth	Consumption	Inflation	Efficiencies (Note 1)	Intra-municipal Transfers (Note 2)	Other (Note 3)	2019 Proposed
1	Personnel	$ 43,383	-	-	$ 869	-	$ (1,388)	-	**$ 42,864**
2	Materials, Goods & Supplies	5,707	70	644	85	-	-	-	**6,506**
3	External Services	70,934	867	1,803	1,057	(2,000)	-	-	**72,661**
4	Fleet Services	13,526	-	(488)	-	-	680	-	**13,718**
5	Shared Services	10,669	-	-	194	-	(1,247)	-	**9,616**
6	Intra-municipal Services	2,005	-	549	-	-	1,955	-	**4,509**
7	Utilities & Other Expenses	7,113	-	1,221	106	-	-	-	**8,440**
	SUBTOTAL	153,337	937	3,729	2,311	(2,000)	-	-	**158,314**
8	Intra-municipal Recoveries	(1,036)	-	-	-	-	-	507	**(529)**
	O & M EXPENSES	$ 152,301	$ 937	$ 3,729	$ 2,311	$ (2,000)	-	$ 507	**$ 157,785**

Line 1 - Personnel

Inflation reflects the merit increases for current positions. Intra-municipal transfers is related to FTE transfers to Occupational Health and Safety (OH&S), Communications and Public Engagement and Fleet Services under Note 2.

Line 2 - Materials Goods & Supplies

Consumption costs are related to increased volume from the Anaerobic Digestion Facility (ADF).

Line 3 - External Services

Increase in the number of customers represents the additional costs to provide service to a larger customer base. Consumption is related to the operation of the Waste to Biofuels and Chemicals Facility and the ADF. Efforts to reduce expenditures within Waste Services is identified as an Efficiency under Note 1.

Line 4 - Fleet Services

The overall decrease in fuel costs is based on the fuel forecast provided by Fleet Services. The transfer of 6.0 FTEs under intra-municipal transfers is reflected under Note 2.

Line 7 - Utilities & Other Expenses

Consumption represents the increases to power associated with the RDF and ADF.

Note 1: Efficiencies are part of Waste Services' review of contracts to Regulated Programs only.

Note 2: Intra-municipal transfers consist of regulated portion of FTE transfers from Waste Services to OH&S, Communications and Public Engagement and Fleet Services. Costs are now charged to Waste Services through Fleet Services and Intra-Municipal Services. Also, during the City's 2019-2022 Operating Budget process, Facilities and Landscape Infrastructure was transferred from being a shared service provider to an on-demand service provider.

Note 3: Other changes in intra-municipal recoveries are related to changes in allocation between the Regulated & Non-Regulated Programs as a result of the 2017 Cost of Service Study.

14.0 Historical Trends

(in thousands of dollars)

Line #		Reference	2012 Actual	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Forecast	2019 Proposed
1	Operations and Maintenance	Schedule 9.0	$ 121,371	$ 131,901	$ 141,496	$ 155,604	$ 164,316	$ 180,710	$ 175,898	**$ 182,283**
2	Amortization of Non-Contributed Assets	Schedule 10.0	16,099	17,074	17,466	19,227	20,310	20,779	22,187	**23,900**
4	Debt Interest	Schedule 10.0	10,124	10,104	9,852	9,750	9,588	9,369	9,509	**9,466**
5	Intra-municipal Recoveries	Schedule 9.8	(8,806)	(11,649)	(11,501)	(13,680)	(14,932)	(10,972)	(2,958)	**(2,946)**
6	Grants	Schedule 9.0	3,700	3,700	4,000	2,005	2,000	-	3,000	**4,600**
7	ECF Deferred Cost		-	-	-	-	-	-	-	**1,309**
	TOTAL EXPENSES		142,488	151,130	161,313	172,906	181,282	199,886	207,636	**218,612**
8	Non-Rate Revenue	Schedule 11.1	25,394	26,538	28,379	27,037	28,772	35,880	39,583	**41,892**
9	Rate Revenue	Schedule 11.0	113,325	122,403	133,177	148,611	163,010	174,781	182,191	**189,037**
	TOTAL REVENUES		138,719	148,941	161,556	175,648	191,782	210,661	221,774	**230,929**
	NET INCOME/(LOSS)	Schedule 13.0	$ (3,769)	$ (2,189)	$ 243	$ 2,742	$ 10,500	$ 10,775	$ 14,138	**$ 12,317**

Waste Services Utility Customer Counts

	2012 Actual	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Forecast	2019 Proposed	2020 Forecast	2021 Forecast	2022 Forecast
Single Unit	190,952	195,525	200,475	206,576	211,145	214,900	216,495	219,141	235,339	238,093	240,905
Multi Unit	149,989	154,850	158,821	163,636	169,386	174,196	175,489	177,634	166,321	168,553	170,833

** Includes the reclassification of 13,500 customers from Multi-Unit to Single Unit in 2020. Refer to Sec 3.0 for detailed information.*

All Customer Counts shown represent December 31st balances. For budget and forecast purposes the utility rates are calculated using a phased-in increase to Customer Counts over a given year to ensure representation of consistent growth. As a result, mid-year customer counts are used in these calculations.

Appendix A: Waste Services Utility Operating Business Cases

There are no Waste Services Operating Business Cases for the 2019 Utility Rate Filing.

Appendix B: Waste Services Utility Capital Business Cases & Capital Funding Requests

The following business cases support the capital funding requests outlined in Schedule 12.0 Capital Budget and Forecast Plan:

B.1 Waste Services Facilities and Infrastructure Composite Upgrade/Renewal - Capital Funding Request

B.2 Waste Services IIS Infrastructure Planning and Design Composite - Capital Funding Request

B.3 Waste Services IIS Infrastructure Delivery Composite - Capital Funding Request

B.4 Waste Services Containers - Business Case

B.5 Waste Services Vehicles and Equipment - Business Case

Appendix C: Waste Services - 2017 Cost of Service Study - Executive Summary

The following report supports the information provided in Schedule 5.0 Cost of Service Study:

C.1 Waste Services – 2017 Cost of Service Study - Final Executive Summary - October 12, 2018 - Grant Thornton LLP

City of Edmonton
2nd Floor Century Place
9803 102A Ave NW
Edmonton, AB T5J 3A3

edmonton.ca

Waste Services Facilities and Infrastructure Composite Upgrade/Renewal Capital Funding Request

City Operations | Waste Services

City of Edmonton

Capital Profile: CPP# CM-81-2046, CM-81-2047

Project Number: CP# / OP#

Project Owner: Ellen Tian

Project Sponsor: Michael Labrecque

Version #: 5.0

Date published: October 12, 2018

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Change History

Version #	Date	Author	Description
1.0	7/25/2018	Herbert Ramos	Version submitted to General Supervisor, Team Lead and Working Group for review
2.0	8/01/2018	Herbert Ramos	Revised version submitted for Directors review
3.0	8/15/2018	Herbert Ramos	Revised version submitted for Branch Manager review
4.0	9/10/2018	Herbert Ramos	Revised version submitted for Branch Manager and Utility Advisor review
5.0	10/12/2018	Herbert Ramos	Revised version submitted for Business Partner review

SUBMITTED BY:

Version #	Submitter Name	Title	Submission Date
5.0	Stephanie Zhang	Team Lead, Business Strategy, Planning & Performance	10/12/2018

REVIEWED BY:

Version #	Reviewer Name and Title	Signature	Signing Date
5.0	Ryan Kos General Supervisor, Business Strategy Planning & Performance		10/12/2018
5.0	Keith Knoblauch Operational Controller, Business Financial Analytics		10/12/2019
5.0	John Felix Director, Sustainable Waste Processing Services		10/12/2019
5.0	Doug Spark		10/12/19

	Acting Director, Waste Collections Services		10/12/2018
5.0	Paul Specht Director, Asset Management Strategy Development		10/12/2018
5.0	Cameron Grayson Director, Business Integration		10/12/2018

APPROVED BY:

Version #	Approver Name and Title	Signature	Signing Date
5.0	Ellen Tian Director, Technical Services		10/12/2018
5.0	Michael Labrecque Branch Manager, Waste Services		10/12/2018

1. Executive Summary

1.1. Waste Services Infrastructure and Facilities Composite Upgrade/Renewal

Waste Services assets include a number of facilities such as Eco Stations, employee workspaces, equipment facilities, administration buildings, waste processing facilities, and research and development facilities. These facilities contain heating, ventilation, air conditioning equipment, fire protection systems, plumbing, electrical distribution, and other building systems. In addition to these facilities, Waste Services owns and operates a series of specialized assets required to meet the branch mandate of efficient and environmentally sound waste management operations, such as those found at the Edmonton Waste Management Centre and Kennedale sites. Where most other city branches operate and sometimes maintain one type of infrastructure (roads for example), Waste Services is responsible for a variety of infrastructure including roads, buildings, material processing equipment, buried utilities and mobile equipment.

In order to deliver sustainable waste management services, maintain optimal service levels, and have an asset management program in place as recommended by the Office of the City Auditor, capital funds are required to carry out capital maintenance, renewal, and upgrade of Waste Services assets. This will result in safer and more reliable facilities and infrastructure while maintaining high levels of customer service. Without this funding in place, facilities and infrastructure will be at increased risk of failure as the waste collection and processing systems age. Emergency situations caused by unforeseen facilities and infrastructure failures will result in expensive unplanned repairs and interruption to operations.

This profile requires funding of approximately $20.5 million for the capital maintenance, renewal, and upgrade of these assets due to new or increased waste streams, safety concerns, and design improvements that increase efficiency of Waste Services' operations.

In order to ensure adequate levels of funding are available for the capital maintenance, renewal, and upgrade of these assets, Waste Services is adopting a new budgeting approach. For the 2019 - 2022 capital budget cycle, Waste Services will allocate capital budget to these activities as a targeted percentage of the asset replacement value, on an annual basis. This approach follows the recommendation from Report Number 131, Budgeting for Facilities Maintenance and Repair Activities[1] stating that the appropriate budget allocation for maintenance and repair of facilities are between two percent and four percent of the aggregate replacement value of those facilities. The recommendation in this report was further supported by the City of Edmonton's Office of the City Auditor in its 2008 Land and Buildings Branch Audit.[2] This approach informs overall required capital investment in the maintenance, renewal, and upgrade of facilities, and is combined with the implementation of formalized asset condition assessment and preventative maintenance programs. Throughout the four year budget cycle Waste Services will gain expertise in implementing both this method of capital budgeting as well as the asset management function. Funding levels will increase over time as the asset management function matures. Waste Services anticipates achieving a minimum level of funding of two percent within

[1] Budgeting for Facilities maintenance and Repair Activities: report Number 131 (1996) National Academic Press Washington D.C, 1996. http://www. nap.edu/openbook/N1000085.htm/1html

[2] 07206- Land & Buildings Branch Audit, January 21, 2008. Office of the City Auditor

the 2023 - 2026 capital business planning cycle.

2. Background

Waste Services has an extensive infrastructure inventory which include facilities such as Eco Stations, employee workspaces, equipment facilities, administration buildings, waste processing facilities, and research and development facilities. These facilities are equipped with mechanical, electrical, fire protection and other building systems. Infrastructure include the Edmonton Waste Management Centre and Kennedale site utilities, roadways, drainage, communications, transaction data collection hardware and software, and specialized systems like odour monitoring and gate access.

The asset condition, functionality, expected life cycle, replacement value and other information are updated and tracked in the Corporate Risk-based Infrastructure Management System (RIMS). RIMS is a tool used to assist in the ranking of rehabilitation needs and the allocation of renewal funds across the various infrastructure assets to ensure long-term value. RIMS provides information on the replacement value, average age, and life expectancy and condition of City of Edmonton assets including those of Waste Services.

Throughout the 2019 - 2022 capital budget cycle, Waste Services will continue to improve its understanding of the current asset replacement value and condition of its facilities and infrastructure, through facility condition assessments. In late 2018 to early 2019, Waste Services anticipates using external resources to assist in the verification of data pertaining to assets that are currently being reported through RIMS. This will allow the information captured through the RIMS process to be current and accurate as possible, informing a robust asset management program. The list of assets and replacement values captured through the Annual Infrastructure Inventory, as of December 31, 2016, can be found in Appendix A - Asset Replacement Values.[3]

As the assets age, their performance declines, thus replacing, rehabilitating and upgrading them are necessary to continue managing waste effectively and efficiently. In addition, carrying out operational improvements will further enhance operational efficiencies within the facilities and infrastructure.

During the 2017 Waste Services Audit, the Office of City Auditor found two areas in Waste Services operations that had deficiencies - lack of documented process to ensure condition assessments give an accurate state of its assets, and the absence of effective formal asset maintenance process. Waste Services took this as an opportunity to build a proactive and integrated approach to asset management by creating an action plan to address the auditor's findings and recommendations, as outlined in the Council Report CR_5486 Administration Response-Waste Services Audit Report[4]. The creation of the Condition Assessment and Data Verification Procedures and the ongoing development of the Asset Management Strategic Framework are the first steps in advancing Waste Services' maturity in affecting a sound asset

[3] 2017 Annual Infrastructure Inventory
[4] City Operations report CR_5486
http://sirepub.edmonton.ca/sirepub/cache/2/cayj42b2u5l5ytsdqsux05h4/706084073120180826468 74.PDF

management.

2.1. Problem / Opportunity

As Waste Services focuses on managing its assets effectively, there is an opportunity to adopt a proactive approach to sustain its facilities and infrastructure. This ensures that assets will be well maintained during their useful life and plans for maintenance, rehabilitation, replacement, and upgrading, resulting in an overall improvement in collection and processing efficiencies while reducing lifecycle costs. Projects included in this composite profile address a number of Waste Services business needs such as the renewal of assets that have reached the end of their useful life, mitigation and elimination of safety and environmental risks and opportunities for continuous improvement.

2.2. Current Situation

Following the 2017 audit findings and recommendations as contained in the 2018 Waste Services Audit report, Waste Services developed an action plan to implement a mature, proactive and integrated process geared towards managing its assets in a more effective way. The first step Waste Services took to start this transformation was the completion of the Waste Services Condition Assessment and Data Verification Procedure which outlines the roles, responsibilities and processes to be followed in the collection and processing of information required to determine the state of its infrastructure assets.

Waste Services has implemented a Branch-wide project initiation, evaluation, prioritization and decision making process. This process identifies and ranks projects based on strategic criteria such as environmental impact, health and safety, and alignment to strategy. Current and future projects can be prioritized, managed and recommended for funding to align with branch and corporate goals, the changing demands of the market and the needs of customers.

3. Initiative Description

3.1. Initiative Description

This initiative will ensure an adequate level of funding for capital maintenance, renewal, upgrades, and efficiency improvements is available for Waste Services facilities and infrastructure by allocating a certain percentage of asset replacement value towards these activities on an annual basis. Over the course of the 2019 - 2022 capital budget cycle, Waste Services will continue to build expertise in asset management through focusing on improving processes around facility condition assessments, implementing preventative maintenance programs, and implementing an approach to project prioritization.

Gaining expertise as an asset manager will unfold over time and is reflected in the proposed capital budget as outlined in section 7.5 of this report. The proposed budget is 1.59% of asset replacement value in 2019. This relates to deferred maintenance projects planned for this year. The proposed budget for 2020 is 1.19% of asset replacement value, 1.24% of asset

replacement value in 2021 and 1.22% of asset replacement value in 2022. Waste Services anticipates budgeting for this activity to reach the minimum 2% of asset replacement value target within the 2023 - 2026 capital budget cycle.

Waste Services is currently planning capital maintenance and renewal projects for its assets. These projects, as well as the estimated costs, will be further reviewed and validated to ensure alignment with the long term asset management strategic framework and plans that are being developed by Waste Services.

3.2. Urgency of Need

The need to effectively manage Waste Services' assets is of high priority to achieve its commitment of providing sustainable waste management services. This is also to address the issues raised in the auditor's report calling for Waste Services to manage its assets, including a sound maintenance program, in a more effective way. To carry out its commitment, assets must be managed for their entire life cycle including the provision of funds to acquire, maintain, operate, rehabilitate and replace them. The proper management of assets is fundamental to Waste Services operations, and will help to ensure continued delivery of uninterrupted services, and the optimal level of capital investment required to sustain reliable assets. Spending on this profile will be spread out over the four-year period based on priority, cost savings, safety factors, legislation compliance and other branch requirements.

3.3. Anticipated Outcomes

Effective asset management will ensure that Waste Services has the resources to achieve its objectives by aligning its vision, mission and strategic plan with daily activities to achieve its goals. Waste Services envisions the following outcomes:

Outcome /Deliverables
Better information to make capital investment decisions: Through a structured and integrated process, administration will ensure that projects identified as priorities by Waste Services receive robust evaluation of alternatives and scope identification.
Improved project schedule and budget estimates: Following industry best practices, a control budget and schedule is established on the basis of a completed design to ensure realistic expectations are aligned with Asset Management Plan prior to tendering and construction.
Reliable facilities and infrastructure that enable sustainable waste management in a cost effective manner.
High levels of customer service delivered in both an efficient and effective way through leading-edge waste processing facilities that use current and emergent technology to enable high rates of diversion of waste from landfill.

3.4. Scope

The scope of this profile encompassess capital maintenance, renewal, and upgrade work for

Waste Services facilities and infrastructure. This is including but not limited to site improvements, new process equipment, changes in existing facilities and infrastructure, upgrades to building systems, and upgrades to the current transaction data collection systems.

3.5. Out of Scope

- Renewal projects exceeding $5 million are out of scope for this capital funding request. For any renewal project with a total budget that meets this threshold, a separate capital funding request will be prepared.
- Operational maintenance activities.
- Vehicles and equipment. These are included in the Waste Services Vehicles and Equipment Business Case (Profile Number CM-81-2048 Composite).
- Projects to be managed by Integrated Infrastructure Services. These are included in the Waste Services Planning and Design-Composite (Profile Number CM-81-0005) and Waste Services Project Delivery (IIS Managed) Composite (Profile Number CM-81-2045).

3.6. Critical Success Factors

Critical success factors include:

- Adherence to asset management framework and plan
- Proper design and programming of space to meet the needs
- Timely execution of projects
- Regular check-ins with the Waste Services Leadership team to ensure alignment with the strategic direction and branch goals
- Accurate and sufficient data and cost analyses to support high level budget estimate and informed decision makings for the projects

4. Strategic Alignment

Waste Services is committed to advancing Council's vision and goals. Council's Strategic Plan and the Corporate Business Plan will provide a blueprint to coordinate activities and efforts between the goals and the corporation to make an impact towards achieving the vision. As these are developed, Waste Services will work collaboratively to ensure the strategic direction of the Branch is in alignment with that of the department, corporation, Council and citizens.

This profile also aligns with the new strategic goals of the City of Edmonton outlined below:

Healthy City	Urban Places	Regional Prosperity	Climate Resilience
Edmonton is a neighbourly city with community and personal wellness that embodies and promotes equity for all Edmontonians.	Edmonton neighbourhoods are more vibrant as density increases, where people and businesses thrive and where housing and mobility options are plentiful.	Edmonton grows prosperity for our Metro Region by driving innovation, competitiveness and relevance for our businesses at the local and global level.	Edmonton is a city transitioning to a low- carbon future, has clean air and water and is adapting to a changing climate.

In addition to this overarching corporate alignment structure, individual projects approved within this composite profile will align with the City of Edmonton's Waste Management Policy C527 and Waste Management Utility Fiscal Policy C558A. This profile also aligns with Waste Services integrated 25-year strategic outlook that will help to ensure Edmontonians receive maximum economic and environmental benefits while minimizing the cost increases of managing solid waste.

5. Context Analysis

In Report Number 131, Budgeting for Facilities Maintenance and Repair Activities, a guideline was established based on an earlier study from 1990 by the Building Research Board's (BRB) Committee entitled Committing to the Cost of Ownership: Maintenance and Repair of Public Buildings[5], stating "An appropriate budget allocation for routine M&R (maintenance and repair) for a substantial inventory of facilities will typically be in the range of two to four percent of the aggregate current replacement value of those facilities (excluding land and major associated infrastructure). In the absence of specific information upon which to base the M&R budget, this funding level should be used as an absolute minimum value. Where neglect of maintenance has caused a backlog of needed repairs to accumulate, spending must exceed this minimum level until the backlog has been eliminated." The same guideline was also referenced in the 2008 Land and Buildings Branch Audit conducted by Edmonton's Office of the City Auditor.[6]

For this profile, the above guideline was used to allocate funds for Waste Services to maintain its assets in safe and good working condition. This process is used when a detailed analysis of maintenance and long term renewal needs are not available. Over the next years, Waste Services would develop a program which can forecast in a more accurate manner, the financial resources required in a specific period to minimize the life cycle costs while maximizing operational effectiveness.

In addition, to determine the replacement values of the assets, information captured in Annual Infrastructure Inventory was used. As of December 2016, Waste Services assets were valued at approximately $392 million, excluding vehicles and equipment. For this budget period, the allocation of funding level in 2022 is at 1.22 percent of replacement value, funding levels will increase over time as the asset management function matures. Waste Services anticipates achieving a minimum level of funding of two percent within the 2023-2026 capital business planning cycle. Appendix A lists the asset replacement values.

A number of projects have been initially identified for this profile. A Project Intake Request Form (PIRF) was submitted by the project managers to Technical Services, indicating the project

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[5] Budgeting for Facilities maintenance and Repair Activities: report Number 131 (1996) National Academic Press Washington D.C, 1996. http://www. nap.edu/openbook/N1000085.htm/1html

[6] 07206- Land & Buildings Branch Audit, January 21, 2008. Office of the City Auditor

scope, justifications, scheduless, risks and estimates. These were then evaluated, ranked and prioritized based on the strategic and operational criteria set by the Technical Services. Appendix B - Waste Services Internal Project Intake Request Process outlines the PIRF process and criteria. Examples of projects include GORE Rebuild and Improvement, Paving and Site Improvement, and EWMC Site Fire Protection. Appendix C - List of Projects, shows the projects included in this profile. As the project costs used for requesting and evaluating the projects are estimates, they will be reviewed and validated in the early part of the budget period to assess the alignment with the long term asset strategic framework and plan that are being developed by Waste Services.

6. Organizational Change Impact

6.1. Stakeholder Impact

Stakeholder Requirement
Stakeholder 1: City of Edmonton Waste Services Branch (primary internal)
Minimal impact to the staff once upgrade of facilities and infrastructure are ongoing (example relocating some to give way to construction/installation)
Stakeholder 2: City Council (primary internal)
Utility rates for Waste Services have a financial impact on citizens, which may result in citizen complaints to Council.
Stakeholder 3: Residents (primary external)
Utility rates for Waste Services have a financial impact on citizens, which may result in citizen complaints to Council.
Stakeholder 4: Contractors within Waste Services facilities (primary external)
Minimal disruption in operation brought about by construction/installation
Stakeholder 5: Customers dropping off materials at Waste Services facilities (secondary external)
Inconvenience in going to facilities when they need to drop off materials.

6.2. Business and Operational Impact

Business & Operational Impact & Description
Human Resources: Waste Services (internal)
The development of Asset Management Strategic Framework might entail realignment of personnel to complete the scheduled work
Procurement: Corporate Procurement and Supply Services (internal)
Increase in resource demand to provide procurement support
Legal Support: Law Branch (internal)
May require additional resources for legal support, review of contract for non-standard contract terms and conditions as well as review of documents to support procurement for numerous low value projects

6.3. Tangible Benefits

The following tangible benefits of managing assets in a more proactive and integrated way are:

- Improved operational efficiency of infrastructure and facilities
- Reduction in safety-related incidents
- Long term savings due to reduction in repair costs
- Improved productivity due to better access to facilities and equipment, and increased availability due to reduced down time.

6.4. Intangible Benefits

Intangible benefits of managing assets in a more proactive and integrated are anticipated to be:

- Increased employee morale due to better working conditions
- Safer working environment for staff and customers
- Increased or maintained customer satisfaction.

6.5. Costs

Basis for Calculation of Costs for 2019-2022

	2019	2020	2021	2022
Replacement Values of Facilities and Infrastructure, $*	391,536,885	391,536,885	391,536,885	391,536,885
Profile Cost (CM-81-2046 and CM-81-2047)	6,225,000	4,667,807	4,835,995	4,766,130
% of Replacement Value	1.59	1.19	1.24	1.22

* Replacement values were based on the 2017 Annual Infrastructure Inventory

For 2019, Waste Services will continue with the ongoing projects and align with the audit's recommendation of effective asset management. Budget allocations, based on the percentage of replacement values, will ramp up after this budget period.

Total Facilities and Infrastructure Projects

Profile	2019	2020	2021	2022	2019-2022 Total
Facilities and Infrastructure Planning & Design (CM-81-2046), $	622,500	466,781	483,599	476,613	2,049,493
Facilities and Infrastructure Project Delivery (CM-81-2047), $	5,602,500	4,201,026	4,352,396	4,289,517	18,445,439
Total Cost, $ [7]	**6,225,000**	**4,667,807**	**4,835,995**	**4,766,130**	**20,494,932**

6.6. Assumptions

- Pricing may be impacted by market
- Asset replacement cost of $391,536,885 (value as of 2016) was used for the budget period

7. Resourcing

The projects will be led internally by Waste Services project managers in Operations and Technical Services. Once designs and equipment specifications have been finalized, these will be issued for public tender, and the authorized project managers will manage and administer the contractors during the construction/installation phase.

8. Key Risk(s) and Mitigation Strategy

Risks	Impact	Mitigation Strategy
Higher project costs due to imposition of higher US tariff	Medium	lock in prices prior to effectivity of new imposition source required parts and

[7] Ratio of 10% allocated to planning & design and 90% allocated to delivery.

		equipment outside US
Procurement delay for specialized equipment	Medium	start early looking for vendors to supply the specialized equipment
Health issues if numerous small value projects are not implemented on time	Medium	Prioritize projects and ensure timely implementation
Changes in processing equipment brought about by future waste initiatives to increase diversion rate	Medium	Develop asset management strategic plan incorporating required process equipment to address future waste initiatives

9. Conclusion and Recommendations

9.1. Conclusion

This profile will provide capital funding for capital maintenance, renewal, upgrade, and improvement projects for the Waste Services valued at less than $5 million. This funding will ensure assets provide overall improvement in operating efficiency and effectiveness, and safe working conditions.

9.2. Recommendations

It is recommended that this profile be approved to assist Waste Services to meet its commitment of delivering sustainable waste management services. This would ensure capital maintenance, renewal, and upgrade of the assets due to new or increased waste streams, safety concerns, and design improvements that increase efficiency of Waste Services' operations.

9.3. Project Responsibility and Accountability

The individual projects within this profile will be led by Waste Services Project Managers, who will be assigned later, based on their experience and knowledge. They will coordinate with the General Supervisors of the affected facilities and infrastructure, the operating and maintenance groups, Occupational Health & Safety coordinators, and other stakeholders.

The Project Sponsor is the Branch Manager of Waste Services. The overall capital program is jointly managed by Directors of Technical Services, Sustainable Waste Processing Services, Waste Collection Services and Asset Management Strategy Development.

10. Implementation Approach

As opportunities for improvement or production issues are identified, they are reviewed by the assigned project managers for the facilities, infrastructure or system and options for solutions are developed. These are reviewed with the operating and maintenance groups and Occupational Health & Safety, to determine the most cost effective solution that will resolve the issue.

The solution requirements are incorporated into a public tender. The tenders are evaluated by engineering, operations, and maintenance personnel to choose a vendor for award meeting the conditions of the tender.

11. Review and Approval Process

The following review and approval process was followed for this capital funding request:

Review Step	Reviewer
Review 1	Team Lead and General Supervisor of Business Strategy, Planning and Performance, Working Group, and General Supervisors of Technical Services
Review 2	Operational Controller of Business Financial Analytics, Director of Business Integration, Director of Sustainable Waste Processing Services, Director of Waste Collections Services, Director of Asset Management Strategy Development, Director of Technical Services, and Branch Manager of Waste Services
Review 3	Deputy City Manager of City Operations
Review 4	Communications
Review 5	Utility Advisor
Review 6	Utility Committee report presented

12. Appendices

Appendix A - Asset Replacement Value based on 2017 Annual Infrastructure Inventory
Appendix B - Waste Services Internal Project Intake Request (PIRF) Process
Appendix C - List of Projects
Appendix D - Financial Analysis Summary

Appendix A: Waste Services Asset Replacement Values (as of December 2016)

Waste Services Infrastructure and Facilities

Assets	*Replacement Value (as of December 2016)*
Edmonton Waste Management Centre (EWMC)	
Clover Bar Pumphouse	$3,500,000
Clover Bar Diversion System	$13,200,000
Clover Bar Boreholes	$1,352,258
EWMC Roads and Utilities	$11,111,197
Cure Site	$10,500,000
Gore Site	$7,875,000
Scale and Fuel Facility	$981,620
Site Equipment	$1,736,774
Land Improvements	$2,856,724
Edmonton Composting Facility	$95,696,361
Equipment Storage and Maintenance Facility	$6,630,372
Site 440	$9,725,589
Integrated Processing and Transfer Facility	$88,401,751
Leachate Plant	$5,838,360
Materials Recovery Facility	$15,899,561
Construction & Demolition Facility	$6,608,574
Minor Facilities	$3,810,809
Operations Building	$1,542,874
Scale House	$2,632,560
Research and Development Facility	$4,506,071
Advanced Energy Research Facility	$14,119,554
Main Admin Building	$4,365,000
Minor Temp Facilities	$722,032

Total EWMC Replacement Value	**$313,613,041**
Collections Services	
Coronation Eco Station	$2,110,336
Strathcona Eco Station	$5,861,608
Ambleside Eco Station	$18,480,953
Kennedale Eco Station	$12,767,734
Kennedale Waste East	$15,287,472
Kennedale Waste West	$13,067,691
Kennedale Transfer Station	$9,948,050
Total Collections Replacement Value	**$77,523,844**
Central Operations Replacement Value	**$400,000**
Total EWMC, Collections and Central Operations Replacement Value	**$391,536,885**
Collections Containers	$17,820,710
Collections Vehicles	$25,570,437
Specialized Vehicles	$3,161,053
Waste Processing Vehicles	$32,016,758
Grand Total	**$470,105,843**

Appendix B: Waste Services Internal Project Intake Request Form Process (PIRF)

The following list outlines the PIRF process:

1. Business needs are identified for all branch areas and a Project Intake Request Form (PIRF) is created for each proposed project for planning and design or delivery within budget cycle years (2019-2022)
2. Each PIRF is categorized as one of the following: High Priority Major Projects, Operational Efficiency Improvements, and Asset Management (Renewal).
3. Projects for each category is then evaluated based on defined strategic and operational criteria and assigned a score.
4. Projects are then prioritized within each category based on criteria score.
5. Budget is allocated to each category, with each category being assigned a percentage of the total budget:
    a. 92.5% to High priority Major Projects, 2.5% to Operational Efficiency Improvements, and 5% to Asset Management (Renewal)
6. Projects are recommended based on prioritization with budget estimates.
7. Waste Services Leadership Team review and approve the final list. Waste Services Leadership Team can adjust the project list according to the Branch priority.

The following table shows a sample scoring criteria for projects within the PIRF process

Strategic Criteria (50 pts)				Operational Criteria (50 pts)				
Legislated, Mandated, or Required by Law (20)	Health and Safety (15)	Energy and Climate (5)	Council Mandate (10)	Project Coordination (10)	Organization Impact (10)	Change in Demand (10)	Level of Service (10)	Strategic Risk (10)

Appendix C: List of Projects

The following table shows projects anticipated to be undertaken for this budget cycle:

Project	Description	Objective
GORE Rebuild and Improvement	Engineering assessment and report.Refinish gore pad with pony walls.	Efficiency improvement
Transformer Drainage Improvement	Engineering assessment of drainage post-ADF	Address risk of potential flooding
Paving and Site Improvement	Improvement of site and roadways	Provide safe and efficient working conditions
Aggregate Scale System Improvements	Complete fibre runs, add Geoware system, an inbound scale and video cameras to the Aggregate sites to improve control and oversight.	Efficiency improvement
Access Platform to the Vecobelt-IPTF/RDF	Install permanent access platform(s) and generate as-built drawings.	Efficiency improvement
C-110 Bunker and Platform - IPTF Pre Processing	Install new bunker, ladder and platform and generate as-built drawings of each.	Housekeeping and maintenance access improvement
C-211 Bunker	Install new bunker, at the end of the C211 conveyor and generate as-built drawings.	Housekeeping improvement
C&D PLC Connection to Historian	Connect the C&D to the Site Historian	Better reporting
C-100 Platform to Upper Sort Room-IPTF Pre Processing	Connect new stair and catwalk and generate as-built drawings.	Efficiency improvement
C-1200 Platform - IPTF/RDF	Install new hatches, platform extension and generate as-built drawings.	Makes it much safer to unplug the chute

Catwalk between C-900 and C-1000, Tail End Access Platform at 901	Build new platform and catwalk connection and generate as-built drawings.	Better access
Catwalks to connect Weigh Belt to Planned Stairwell-IPTF/RDF	Connect catwalks and stairs and generate as-built drawings.	Efficiency improvement
Connect Platforms on C-407 and Connection to C-402 and Stairs	Connect platforms and stair for easy access	Efficiency improvement
Dry Belt Spooling Tool	Install equipment for spooling of the dryer belt.	Efficiency improvement
Dust Collector Abort Gate Automation-IPTF/RDF	Replace mechanical gate with automated one - RDF old dust collector.	Efficiency improvement
EWMC Control Communication Enhancement	Install SCADA communication system between the plants/sites.	Efficiency improvement
Install Bin Moving System on RDF Heavies Bin	Install a bin moving system on the heavies bin outside the RDF, just like the systems that are in Pre Processing	Efficiency improvement
IPTF 3rd Floor Locker Room	Build additional locker room at the IPTF to increase capacity	Increase locker room capacity for COE staff and contract employees at IPTF
IPTF Lifting Devices over Trommel Trunnions	Install lifting devices (monorails or lifting davits)	Efficiency improvement
IPTF Pre-Sort Metal Detection/Removal	Install a metal detector that can detect larger pieces of metal so that they can be removed manually	Efficiency improvement
IPTF Tunnel Pit Covers	Install the existing tunnel pit covers above the pits, so that they can easily be lowered as required.	Efficiency improvement
Motor Control Centre (MCC) Room Positive Pressure	Pressurize the rooms the IPTF MCC	Minimize dust infiltration into the MCC rooms

Modifications Required to Perform Maintenance on Dryer Distribution Screws	Modify structure, remove monorail, and generate as-built drawings	Efficiency improvement
Narrowing of Tunnel Exit Door	Narrow the opening of the tunnels exit and install roll up doors	Efficiency improvement
Percolate Line to T-6	Install connection between percolate tank at the ADF and return line to biosolids lagoon	Efficiency improvement and cost reduction
Platform for 3-Way Valve Area - IPTF/RDF	Install platform and generate as-built drawings	Efficiency improvement
Platform for C-2012 Motor Access-IPTF/RDF	Install platform and ladder	Efficiency improvement
Platform for New Dust Collector Abort Gate	Install platform for new dust collector abort gate	Efficiency improvement
Platform for Wind Sifter in Alternate Feed-IPTF/RDF	Installation of platform on the new alternate feed system	Better access
Pre-Processing Vacuum Engg & Piping-IPTF/Prepro	Place vacuum piping stations for the Pre Processing area	Efficiency improvement
Preprocessing Electrical Arc Flash Study Improvement	Conduct Arc Flash Study for PreProcessing which will evaluate the electrical system	Efficiency improvement
RDF Dust Collector Upgrade	Upgrade conveyors and generate drawings	Efficiency improvement
RDF Plant PLC Cabinet Upgrade	Rebuild the PLC cabinet and update the PLC wiring diagram	Efficiency improvement
RDF Vacuum System	Install movable industrial type vacuum cleaner and two separate vertical stacks to access the required cleaning area	Efficiency improvement

Spray Foam of Lower Maintenance Shop , Ventilation & Fume Extraction	Apply spray foam to common wall with RDF, install an air handling unit and fume extraction for welding area.	This will result in a cleaner, healthier environment for the mechanics working in the shop. At present, it can be very dusty
Steel Rack with Davit Arm and Electric Hoist	Build a rack that holds steel plate and davit arm with hoist for loading and unloading the rack.	A steel rack keeps the area neater and safer. A hoist and davit arm is the safest way to load or unload the rack.
VHS Tape Removal in RDF	Design and install equipment over the weigh belt that will remove VHS tape from the RDF	Efficiency improvement
Vibration Analysis Equipment	Purchase vibration analysis equipment and use it to collect data from our stationary equipment	Vibration analysis can predict failures before they happen, so that repairs can be scheduled and reliability improved
EWMC Site Fire Protection	Address issues identified by consultant in their review of Waste Services operations with respect to fire risks	Address fire risks issues identified by consultant
RDF Surge Bin	Design, fabricate, and install surge bin into existing RDF Dryer system	Provide more efficient operation within RDF and ensure required feed is provided to Enerkem
North Download Building Renovation (to host ADF Scrubbers	Construct, draft engineering drawings, and refurbish building equipment, as needed.	Efficiency Improvement
Site 440 Repurposing	Correct all structural deficiencies listed in consultant's report	Efficiency improvement
EWMC Geoware Upgrade	Upgrade and enhance weight scale data collection program	System requirement
Waste Screen Bypass	Install equipment so RDF mix can bypass the waste screens to line 2, but not line 1	Allow bypass of the waste screen to go to line 1, or line2 or both at the same time.
Additional Asset Management Projects	Facility rehabilitation/renewal projects identified from building condition assessment reports	Extend the assets service life, reduce energy cost and GHG emissions

Appendix D: Financial Analysis Summary

Financial Analysis:

Waste Services Facilities and Infrastructure (2019-2022)	ALTERNATIVE 1- Build Through Capital Funding
Total Capital Cost	($20,494,932)
Total Revenues	$0
Total Operating and Maintenance Costs	($2,962,500)
Total Lease Costs	$0
Project Net Inflows (Outflows)	($23,457,432)
WACC Discount Rate	5.41%
Net Present Value	($19,056,039)

	Alternative
Reference	ALTERNATIVE 1- Build Through Capital Funding
Base Year	2018
In-Service Year	Various

Cumulative Revenue Requirement (from base year)	ALTERNATIVE 1- Build Through Capital Funding
CPV @ Yr 5	6,489,785
CPV @ Yr 10	13,463,060
CPV @ Yr 15	18,078,735

Capital Cost Summary (Base Year Dollars)	ALTERNATIVE 1- Build Through Capital Funding
Major Project	$3,380,000
Efficiency Improvement	$12,289,932
Committed ongoing work	$2,755,000
Asset Management (Renewal)	$2,070,000
Other (engineering/PM/etc)	$0
Total base costs	**$20,494,932**

Add: contingency, inflation	
Contingency	0
Inflation	0
Total Capital	**$20,494,932**

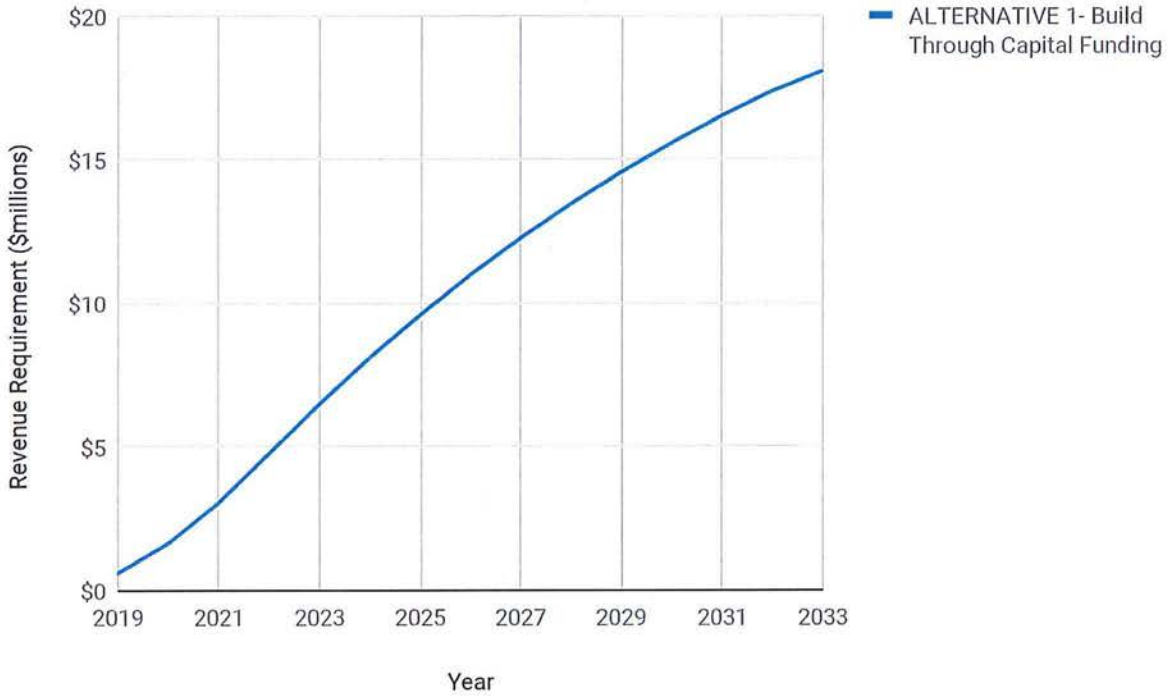
Note: contingency and inflation are included in the above base figures

Infrastructure and Facilities 2019 - 2022 Cost Impact
Cumulative Present Value of Revenue Requirement

Revenue Requirement Summary (CUMULATIVE PRESENT VALUE)

Year	Calendar Year	Alternatives
		ALTERNATIVE 1- Build Through Capital Funding
0	2018	$0
1	2019	$596,674
2	2020	$1,643,643
3	2021	$3,047,838
4	2022	$4,762,887
5	2023	$6,489,785
6	2024	$8,097,567
7	2025	$9,592,760
8	2026	$10,981,549
9	2027	$12,269,797
10	2028	$13,463,060
11	2029	$14,566,604
12	2030	$15,585,418
13	2031	$16,524,230
14	2032	$17,387,522
15	2033	$18,078,735

Infrastructure and Facilities 2019 - 2022 Cost Impact
Cumulative Present Value of Revenue Requirement



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Waste Services IIS Infrastructure Planning and Design Composite - Capital Funding Request

City Operations | Waste Services

City of Edmonton

Capital Profile: CPP# CM-81-0005

Project Number: CP# / OP# Various

Project Owner: Ellen Tian

Project Sponsor: Michael Labrecque

Version #: 5.0

Date published: October 12, 2018

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Change History

Version #	Date	Author	Description
1.0	7/20/2018	Natasha Singh	Version submitted for Team Lead, General Supervisor and Working Group review
2.0	8/1/2018	Natasha Singh	Revised version submitted for Director review
3.0	8/15/2018	Natasha Singh	Revised version submitted for Branch Manager Review
4.0	9/11/2018	Natasha Singh	Revised version submitted for Branch Manager and Utility Advisor Review
5.0	10/05/2018	Natasha Singh	Revised version submitted to Business Partner Review

Document Approval

SUBMITTED BY:

Version #	Submitter Name	Title	Submission Date
5.0	Stephanie Zhang	Team Lead Business Strategy Planning & Performance	10/12/2018

REVIEWED BY:

Version #	Reviewer Name and Title	Signature	Signing Date
5.0	Ryan Kos, General Supervisor, Business Strategy Planning & Performance		10/12/2018
5.0	Cameron Grayson, Director Business Integration		10/12/2018
5.0	Keith Knoblauch Operational Controller Business Financial Analytics		10/12/2018

APPROVED BY:

Version #	Approver Name and Title	Signature	Signing Date
5.0	Ellen Tian, Director Technical Services		10/12/2018
5.0	Michael Labrecque, Branch Manager Waste Services		10/12/2018

1. Executive Summary

1.1. IIS Project Development and Delivery Model (PDDM) composite renewal

The composite profile CM-81-0005 supports the preliminary planning and design work completed by Integrated Infrastructure Services (IIS) Infrastructure Planning and Design Branch for Waste Services capital projects. The approach followed for the preliminary planning and design work is consistent with Administration' implementation of the Project Development & Delivery Model (PDDM) as well as the Capital Project Governance Policy C591[1] that was approved by the Council in April 2017. The outcome of this profile is to provide Council with better information regarding the scope, schedule and budget of the proposed capital projects prior to full funding of the project.

Adherence to both the PDDM process as well as Policy C591 will ensure that sufficient information is prepared in advance of the Capital budget process to support informed investment decisions, provide adequate resources for planning and design to ensure appropriate level of planning and design is incorporated into budget submissions and provide an overall framework to guide the management of the Waste Services' capital projects.

As PDDM has previously been adopted by Council, this capital funding request establishes funding prioritization for Waste Services projects anticipated to enter the project planning stage within a checkpoint system with strategic controls on budget and schedule. The PDDM approach is a gated process for capital projects to ensure that projects are properly developed before they are funded for delivery.

While approval for funding in this profile is required to establish the initial 2019 - 2022 capital budget and projected utility rate increases over the 4 year period, approved funding for this profile does not indicate final budget or funding for any specific capital project.

This profile seeks funding for the planning and design work completed by IIS for Waste Services projects for 2019-2022 budget cycle. The four year capital projection for this profile is approximately $9.3 million. A high level list of projects and estimated budget allocations is listed in Appendix A.

2. Background

In 2016, the Integrated Infrastructure Services (IIS) Transformation program developed the PDDM which was endorsed by Council in 2017. The PDDM is a framework to manage all capital infrastructure projects and represents the best practices in project management from the industry and comparable municipalities.It aims to achieve the following outcomes[2]:

[1] https://www.edmonton.ca/documents/PoliciesDirectives/C591.pdf
[2] Integrated Infrastructure Services report CR_4120

(1) Better information to make capital investment decisions
(2) Improved project schedule and budget estimates through increased level of design to ensure realistic expectations are set prior to project tendering and construction
(3) Systematic evaluation of projects against the initial project business case and scope

The PDDM flow chart is as below:

IIS delivers Waste Services capital projects using the PDDM process.

2.1. Problem / Opportunity

The current council directed approach will assist Waste Services in the management of capital projects in alignment with the PDDM process. The PDDM process offers a gated system where budget for comprehensive planning and design can be released in advance and once complete, decisions can be made regarding investments pertaining to the delivery of the projects rather than releasing the project budget as a whole upfront, as was prior practice. Without the additional details from a comprehensive planning and design process, the project estimates contained high value contingencies and the accuracy of the schedule and budget estimates varied significantly. Following the PDDM process will mitigate this risk and improve project and budget management practices for Waste Services. Projects included in this composite profile will address a number of Waste Services business needs such as the renewal of assets that have reached the end of their useful life, mitigation and elimination of safety and environmental risks and the need and opportunity for growth and continuous improvement.

2.2. Current Situation

Waste Services started utilizing the PDDM model under the direction of Council in 2017. Under this, funding for the project design and planning will be released to IIS prior to the delivery of the project to ensure on time and budget completion of the capital projects for Waste Services. Waste Services will continue to follow this process in the future.

3. Initiative Description

3.1. Initiative Description

This capital profile supports preliminary planning and design work on Waste Services infrastructure capital projects prior to budget approval. This approach is consistent with Administration's implementation of the PDDM as well as the Capital Governance Policy that was approved by Council in 2017.

Funding in the profile will be used to support preliminary planning and design work for Waste Services capital initiatives planned for delivery between 2019 and 2026. These projects include, but not limited to:

- Edmonton Compost Facility (ECF) mid and long term renewal (organics processing)
- Material Recovery Facility (MRF) renewal - interim solutions
- Edmonton Waste Management Centre (EWMC) site security audit upgrades,
- EWMC site civil servicing
- Refuse Derived Fuel (RDF) facility enhancement
- Compost Cure Site resurfacing
- Residual Transfer Station (RTS) Building Replacement and Upgrade and
- Other Waste Services planning and design projects considered for the 2023-2026 budget cycle

The projects listed above were identified by a Project Intake Request Form (PIRF), which was submitted by the project managers to Waste Services, indicating the project scope, justifications, schedules, risks and estimates. Appendix A provides further detail on the Waste Services PIRF process and outlines key criteria. Projects were then evaluated, ranked and prioritized based on the strategic and operational criteria set by the Waste Services. As the project costs used for requesting and evaluating the projects are estimates, they will be reviewed and validated in the early part of the budget period to assess the alignment with the long term asset strategic framework and plan that are being developed by Waste Services. The description of projects under this profile for 2019-2022 budget cycle is attached in Appendix B.

3.2. Urgency of Need

To adhere with the PDDM approach, preliminary planning and design should be completed on projects prior to the project's budget being approved in its entirety. This composite profile funds this work for Waste Services, so Administration can provide Utility Committee with better information regarding the scope, schedule and budget prior to approving and funding the entire project.

3.3. Anticipated Outcomes

In alignment with the PDDM approach, Waste Services will realize the achievement of branch goals through working with Integrated Infrastructure Services to effectively manage the planning

and design of capital projects. Effective asset management will ensure that Waste Services has the resources to achieve its objectives by aligning its vision, mission and strategic plan with daily activities to achieve its goals. Waste Services envisions the following outcomes:

Outcome /Deliverables
Better information to make capital investment decisions: through a structured and integrated process, administration will ensure that projects identified as priorities by Waste Services receive robust evaluation of alternatives and scope identification. Through the PDDM process, project maturity is regularly assessed to ensure that projects are ready to advance to the next stage of development.
Improved project schedule and budget estimates based on enhanced design details. Early investment of capital design resources allows sufficient lead time allocated on planning of the projects, thus decreasing the possibility of project scope and budget changes. Completing design work early in a project lifecycle allows the greatest ability to impact overall project outcomes.
Reliable facilities and infrastructure that enable sustainable waste management in a cost effective manner
High levels of customer service delivered in both an efficient and effective way through leading-edge waste processing facilities that use current and emergent technology to enable high rates of diversion of waste from landfill
Facilities that can be operated in a safe manner, protecting employees, customers and contractors

3.4. Scope

Scope of this Capital Funding Request includes the concept and schematic design of the PDDM approach which includes Checkpoint 1 (Project initiation), Checkpoint 2 (Authorization for Design Expenditure) and Checkpoint 3 (Approval for Capital Budget) documentation and review for all Capital projects being managed by IIS on behalf of Waste Services.

Checkpoint 1: Projects are reviewed for readiness to begin design process and approve funding for concept planning. This stage includes assessment of the project for maturity, appropriate definition of scope and priority.[3]

Checkpoint 2: This checkpoint is to establish readiness of the project to complete the Concept Phase and begin to develop the project to an appropriate level of maturity to request capital funding. Once concept planning is complete, the project will be evaluated for priority to receive

[3] Source: https://sites.google.com/a/edmonton.ca/pmrg/pddm/checkpoint-1

additional design funding for Development Design. Project must be at an appropriate maturity level and the scope must be confirmed.[4]

Checkpoint 3:.This checkpoint is to verify the project has reached an appropriate level of maturity to request capital funding. Projects will be taken to a level of design that will yield more reliable estimates before being put forward for prioritization and inclusion in the Capital Budget. The project must be developed enough to move forward and the scope must be reviewed[5]

3.5. Out of Scope

Project delivery phase of the PDDM is out of the scope for this Capital Funding Request. This includes work after Checkpoint 3 is completed, Checkpoint 4 (Authorization for Construction expenditure) and Checkpoint 5 (Authorization for closeout) of the PDDM.

3.6. Critical Success Factors

Critical success factors include:

- Efficient, consistent and accurate communication between Waste Services and IIS
- Regular check-ins with IIS to ensure projects continue to meet the budget, scope and schedule requirements
- Regular check-ins with the Waste Services Branch Leadership team to ensure alignment with the branch asset management strategy
- Accurate and sufficient data and cost analysis to support high level budget estimate and informed decision making

4. Strategic Alignment

Waste Services is committed to advancing Council's vision and goals. Council's Strategic Plan and the Corporate Business Plan will provide a blueprint to coordinate activities and efforts between the goas and the corporation to make an impact towards achieving the vision. As these are developed, Waste Services will work collaboratively to ensure the strategic direction of the Branch is in alignment with that of the department, corporation, Council and citizens. This profile aligns with the following new strategic goals of the City of Edmonton.

Healthy City	Urban Places	Regional Prosperity	Climate Resilience
Edmonton is a neighbourly city with	Edmonton neighbourhoods are	Edmonton grows prosperity for our	Edmonton is a city transitioning to a low-

[4] Source: https://sites.google.com/a/edmonton.ca/pmrg/pddm/checkpoint-2
[5] Source: https://sites.google.com/a/edmonton.ca/pmrg/pddm/checkpoint-3

community and personal wellness that embodies and promotes equity for all Edmontonians.	more vibrant as density increases, where people and businesses thrive and where housing and mobility options are plentiful.	Metro Region by driving innovation, competitiveness and relevance for our businesses at the local and global level.	carbon future, has clean air and water and is adapting to a changing climate.

In addition to this overarching corporate alignment structure, individual projects approved within this composite profile will align with the City of Edmonton's Waste Management Policy C527 and Waste Management Utility Fiscal Policy C558A as well as the Capital Project Governance Policy C591.This profile also aligns with Waste Services integrated 25-year strategic outlook that will help to ensure Edmontonians receive maximum economic and environmental benefits while minimizing the cost increases of managing solid waste.

5. Context Analysis

Requested funding for project planning and design work for capital projects is consistent with Administration's implementation of the Project Development & Delivery Model as well as the Capital Governance Policy approved by Council in 2016.

6. Organizational Change Impact

Waste Management Services staff, reporting through Technical Services section, work closely with the Integrated Infrastructure Services Department to plan and design capital projects. This Capital Funding Request represents the continuation of current business practice, so no additional organizational change impact is expected.

6.1. Stakeholder Impact

The table below identifies the stakeholders and the potential impacts for the option recommended by Waste Services.

Stakeholder Requirement
Stakeholder 1: City of Edmonton Waste Services Branch (primary internal)
1. Well defined and consistent process in alignment with rest of the City

2. Enhanced consultation, recommendation and approval for Planning and Design checkpoints for Waste Projects managed by IIS as part of a project team
Stakeholder 2: Integrated Infrastructure Services *(primary internal)*
1. Enhanced Project Management for approved Capital projects utilizing input from Waste Services. 2. Improved process for capital funding for projects in composite profile for Waste Services
Stakeholder 3: City Council *(primary internal)*
1. Increased transparency, accuracy, reliability of project schedule and budget estimates 2. Ability to provide political direction and have access to accurate project information
Stakeholder 4: City of Edmonton public (secondary external)
1. Maintenance of stable/low utility rate through the effective delivery of capital projects 2. Minimal disruption to service levels through delivery process.

6.2. Business and Operational Impact

The table below identifies the business and operational impacts for continue to following PDDM model as recommended by Waste Services.

Business & Operational Impact & Description
Waste Services *(primary internal)*
• More upfront planning required from Waste Services allocated resources for completing Checkpoint 1 requirements and supporting Checkpoint 2 and Checkpoint 3 documents preparation
Integrated Infrastructure Services *(primary internal)*
• More upfront planning required from the allocated resources to support Checkpoint 1 transition and complete the conceptual and schematic design, as well as Checkpoint 2 and Checkpoint 3 documents preparation

7. Cost Benefits

7.1. Tangible Benefits

The following tangible benefits are expected to be realized by following this approach:

- Accurate information to make better capital investment decisions
- More accurate project budget and schedule estimate at checkpoint 3 for decision making
- Increased adherence to budget and schedule estimates
- Improved efficiency in project management
- Increased accuracy of forecasting capital expenditure thus allowing for more certainty in utility rates

7.2. Intangible Benefits

The following intangible benefits will be realized by following the new approach:

- Allow for early investment in design to support detailed business cases
- Structured process to evaluate project readiness, scope and prioritization
- Allow for better opportunities to make major changes in project scope if problems are identified during the early planning and design phases
- Increased project accountability
- Increased project awareness and controls
- Closer integration of City departments

7.3. Costs

REQUEST	2019	2020	2021	2022	TOTAL PROFILE BUDGET
Budget Request *(note: funded by Utility Pool)*	$5,473,000	$1,610,000	$1,800,000	$400,000	**$9,283,000**

The list of projects under this profile for 2019-2022 budget cycle is attached in Appendix B.

7.4. Assumptions

- Projects in this composite profile have allocated budget amounts that are based on high level estimates. The actual costs of the approved capital projects in this composite profile may vary once preliminary planning stage is completed by IIS.
- All of the proposed projects in this composite profile have been prioritized based on the

approval of Waste Services proposed program changes that are pending decision of Utility Committee and City Council.

8. Resourcing

Early investment in design by IIS will require reallocation of capital funding to planning and design efforts prior to project-specific approval from Waste Services. There is no expected additional resourcing impact on Waste Services FTE.

9. Key Risk(s) and Mitigation Strategy

RISK(S)	IMPACT	MITIGATION STRATEGY
Extended project planning time required due to additional inter-departmental coordination	Medium	• Clarify and implement mutual expectations between IIS and Waste Services • Work with IIS to fast track projects requiring Alberta Environment and Parks approval to meet the regulatory timelines
Projects scope may change and a revised preliminary planning and design plan is required to ensure project deliverables are met	Medium	• Rework the scope and design to fit the intended outcome • Enhanced project communication between IIS and Waste Services • Increased collaboration and shared decision making between IIS and Waste Services.
Scope is not fully developed during Strategy phase and requirements are not fully developed for Planning & Design or Delivery phases	Medium	• Scope is revisited during Planning & Design phase to ensure that all requirements are understood and documented. Requirements that are missed in Planning & Design phase would likely have a severe or higher impact during delivery
Capital project may not get approved after spending resources on concept planning and design	Low	• Re-work the scope and designs to fit Councils expectations or cancel the project based on Council's decision

Projects may not proceed or may be delayed due to other Branch priorities	Low	• Keep project team updated on branch priorities • Constantly checking the branch strategy and project alignment with the Branch goals • Change of project schedule and deliverables
Projects may be cancelled if the project planning and design does not meet the intended outcome	Low	• Rework the scope and design to fit the intended outcome • Enhanced project communication between IIS and Waste Services • Increased collaboration and shared decision making between IIS and Waste Services

10. Conclusion and Recommendations

10.1. Conclusion

This Capital Funding Request evaluated the overall capital budget for preliminary planning and design work completed by Integrated Infrastructure Services (IIS) Infrastructure Planning and Design Branch for Waste Services for the budget period 2019-2022. Funds are required for planning and design to adhere with the Project Development and Delivery Model, improve project schedule adherence and improve budget estimates through increased level of design. A capital budget of approximately $9.3 million is required for the preliminary planning and design for various projects in Waste Services composite profile in the next 4 years.

10.2. Recommendations

Waste Services is recommending to continue following the PDDM proposed by IIS and release funds for project planning and design phase for all capital projects managed by IIS. This will lead to better information to make capital investment decisions, and improved project schedule and budget estimates before full budget approval is received.

10.3. Project Responsibility and Accountability

The Project Sponsor and budget owner for all approved capital projects in this composite profile is the Branch Manager of Waste Services. The overall capital program is managed by the Director of Technical Services. Individual projects are led by Project Managers that report to the

General Supervisors of Technical Services.

11. Implementation Approach

IIS will complete the planning and design phase for the respective projects listed in Appendix B for Waste Services. The respective project managers from Waste Services and IIS will be responsible for accurate spending of these funds and timely completion of the projects. The estimated completion of the planning and design phase for the projects for 2019-2022 budget cycle is four years. This profile also requests funding for projects that will be delivered in 2023-2026 budget cycle. The planning and design for all the listed projects will be completed by 2022.

12. Review and Approval Process

The following review and approval process was followed for this Capital Funding Request:

Review Step	Reviewer
Review 1	Team Lead of Business Integration, General Supervisor of Business Integration and General Supervisor of Technical Services
Review 2	Operational Controller for Waste Services, Director of Business Integration, Director of Technical Services, IIS Supervisor for Waste Services and Branch Manager Waste Services
Review 3	Deputy City Manager
Review 4	Communications
Review 5	City Manager & Utility Advisor
Review 6	Utility Committee report presented

13. Appendices

Appendix A: Waste Services Internal Project Intake Request Process (PIRF)

Appendix B: Waste Services Planning and Design Project Description- 2019-2022 Projects

Appendix C: Financial Analysis Summary (Waste Services Planning and Design composite profile)

Appendix A: Waste Services Internal Project Intake Request Form Process (PIRF)

The following list outlines the PIRF process:

1. Business needs are identified for all branch areas and a Project Intake Request Form (PIRF) is created for each proposed project for planning and design or delivery within budget cycle years (2019-2022)
2. Each PIRF is categorized as one of the following: High Priority Major Projects, Operational Efficiency Improvements, and Asset Management (Renewal).
3. Projects for each category is then evaluated based on defined strategic and operational criteria and assigned a score.
4. Projects are then prioritized within each category based on criteria score.
5. Budget is allocated to each category, with each category being assigned a percentage of the total budget:
    a. 92.5% to High priority Major Projects, 2.5% to Operational Efficiency Improvements, and 5% to Asset Management (Renewal)
6. Projects are recommended based on prioritization with budget estimates.
7. Waste Services Leadership Team will review and approve the final list. Waste Services Leadership Team can adjust the project list according to the Branch priority.

The following table shows a sample scoring criteria for projects within the PIRF process

Strategic Criteria (50 pts)				Operational Criteria (50 pts)				
Legislated, Mandated, or Required by Law (20)	Health and Safety (15)	Energy and Climate (5)	Council Mandate (10)	Project Coordination (10)	Organization Impact (10)	Change in Demand (10)	Level of Service (10)	Strategic Risk (10)

Appendix B: Waste Services Planning and Design Project Description- 2019-2022 Projects:

Profile Name	Profile #	Project Name	Project Description
Waste Services Project Planning & Design (IIS Managed)	CM-81-0005	19-33-2045 Organics Processing	Project will deal with the repair or replacement to the ECF as well as the expansion of the Organic Processing Facility (OPF) tip floor to accommodate direct delivery of Source Separated Organics (SSO) program.
		19-33-2046 EWMC Site Civil Servicing	Project supports the development of an integrated master plan for the EWMC site, including items such as stormwater, groundwater, roads, parking lots, working areas and underground utilities among other and will be further aligned with existing plans such as groundwater diversion plan, and leachate management plan.
		22-33-2020 Material Recovery Facility Renewal (MRF)	A long term strategy is under development for the Materials Recovery Facility (MRF). This project will support the planning and design of the recommended option stemming from this long term strategy.
		EWMC Site Security Upgrade	Project supports upgrading EWMC site security to meet the corporate standards and includes but is not limited to replacing existing camera systems, installing new and replacing old fencing, increased signage, replacing existing card access system to the site and buildings and addressing some site access points.
		Compost Cure Site resurfacing	Project supports the renewal of the existing cure site. The current site is approaching the end of its lifecycle and major maintenance and/or repair work needs to be done with regard to the site liner and site drainage.
		RDF Enhancement	Project supports the installation of a second pre-shredder and an alternative RDF offloading system to deliver processed RDF material to Waste Services clients.
		Waste Services Planning & Design (Note 1)	These includes multiple initiatives that require planning and design for the new projects delivered in 2023-2026 budget cycle.
		RTS Building Replacement & Upgrade	Projects support the upgrade and replacement of aging RTS buildings and will include development of new customer drop off areas for household hazardous waste, E-waste, refrigerators *etc.*

Note 1: These funds ensure there is budget available to start planning/investigating potential capital initiatives in the next budget cycles in anticipation of new projects.

Appendix C: Costs - Financial Analysis Summary (Waste Services Planning and Design Composite Profile):

Waste Services Vehicle & Equipment (2019-2022)	ALTERNATIVE 1- Follow PDDM model
Total Capital Cost	($9,283,000)
Total Revenues	$0
Total Operating and Maintenance Costs	$0
Total Lease Costs	$0
Project Net Inflows (Outflows)	($9,283,000)
WACC Discount Rate	5.41%
Net Present Value	($8,064,654)

Note: Planning and Design costs have been added to the PDDM Delivery Capital Funding Request costs for revenue requirement calculation purposes in order to demonstrate the full project spending. Please refer to Appendix C of the Waste Services PDDM Delivery Capital Funding Request for the resulting analysis.

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Waste Services IIS Infrastructure Delivery Composite - Capital Funding Request

City Operations | Waste Services

City of Edmonton

Capital Profile: CPP# CM-81-2045

Project Number: CP# / OP#- Various

Project Owner: Ellen Tian

Project Sponsor: Michael Labrecque

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CHANGE HISTORY

Version #	Date	Author	Description
1.0	7/20/2018	Alison Abbink	Version submitted for Team Lead, General Supervisor and Working Group review
2.0	8/1/2018	Alison Abbink	Revised version submitted for Director review
3.0	8/15/2018	Alison Abbink	Revised version submitted for Branch Manager review
4.0	9/11/2018	Alison Abbink	Revised version submitted for Branch Manager and Utility Advisor review
5.0	10/12/2018	Alison Abbink	Revised version submitted to Business Partner review

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Version #	Submitter Name	Title	Submission Date
5.0	Stephanie Zhang	Team Lead Business Strategy Planning & Performance	10/12/2018

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5.0	Ryan Kos, General Supervisor, Business Strategy Planning & Performance		10/12/2018
5.0	Cameron Grayson, Director Business Integration		10/12/2018
5.0	Keith Knoblauch Operational Controller Business Financial Analytics		10/12/2018

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Version #	Approver Name and Title	Signature	Signing Date
5.0	Ellen Tian, Director Technical Services		10/12/2018
5.0	Michael Labrecque, Branch Manager Waste Services		10/12/2018

1. Executive Summary

1.1. IIS Project Development and Delivery Model (PDDM) composite renewal

The composite profile CM-81-2045 provides a level of funding for Waste Services capital projects that are intended to be delivered by Integrated Infrastructure Services - Infrastructure Delivery Branch in the 2019 - 2022 capital budget cycle. The approach is consistent with Administration's implementation of the Project Development & Delivery Model (PDDM) as well as the Capital Project Governance Policy C591[1] that was adopted by Council in April 2017.

Adherence to both the PDDM process and Policy C591 will ensure that sufficient information is prepared in advance of the capital budget process to support informed investment decisions, provide adequate resources for planning and design to ensure appropriate level of planning and design is incorporated into budget submissions and provide an overall framework to guide the management of Waste Services' capital projects.

As PDDM has previously been adopted by Council, this capital funding request establishes funding prioritization for Waste Services projects anticipated to enter the project delivery stage within a checkpoint system with strategic controls on budget and schedule. The PDDM approach is a gated process for capital projects to ensure that projects are properly developed before they are funded for delivery.

While approval for funding in this profile is required to establish the initial 2019 - 2022 capital budget and projected utility rate increases over the 4 year period, approved funding for this profile does not indicate final budget or funding for any specific capital project.

This capital funding request provides information at a concept level that pertains to the budget for projects that are anticipated to be delivered during the 2019-2022 budget cycle. Details of the individual projects listed in this profile, including budget and scheduling will be further disclosed once the project has reached checkpoint 3 and a detailed business case has been developed for approval from Utility Committee and Council.

This profile requires funding for Waste Services capital projects that are intended to be delivered by Integrated Infrastructure Services - Infrastructure Delivery Branch in the 2019 - 2022 capital budget cycle. The four year capital projection for this profile is approximately $96 million. A high level list of projects and estimated budget allocations is listed in Appendix A.

2. Background

In 2016, the Integrated Infrastructure Services (IIS) Transformation program developed the PDDM which was endorsed by the Council in 2017. The PDDM is a framework to manage all capital infrastructure projects and represents the best practices in project management from the

[1] https://www.edmonton.ca/documents/PoliciesDirectives/C591.pdf

industry and comparable municipalities. It aims to achieve the following outcomes[2]:

(1) Better information to make capital investment decisions
(2) Improved project schedule and budget estimates through increased level of design to ensure realistic expectations are set prior to project tendering and construction
(3) Systematic evaluation of projects against the initial project business case and scope.

The PDDM flow chart is as below:

IIS delivers Waste Services capital projects using the PDDM process.

2.1. Problem / Opportunity

The current council directed approach will assist Waste Services in the management of capital projects in alignment with the PDDM process. The PDDM process offers a gated system where budget for comprehensive planning and design can be released in advance and once complete, decisions can be made regarding investments pertaining to the delivery of the projects rather than releasing the project budget as a whole upfront, as was prior practice. Without the additional details from a comprehensive planning and design process, the project estimates contained high value contingencies and the accuracy of the schedule and budget estimates varied significantly. Following the PDDM process will mitigate this risk and improve project and budget management practices for Waste Services.Projects included in this composite profile will address a number of Waste Services business needs such as the renewal of assets that have reached the end of their useful life, mitigation and elimination of safety and environmental risks and the need and opportunity for growth and continuous improvement.

2.2. Current Situation

Prior to the implementation of the PDDM approach, the project delivery budget of any capital profile was approved as part of the whole project. However, without the additional details from a comprehensive planning and design process, the project estimates contained high value contingencies and the accuracy of the schedule and budget estimates varied significantly.

[2] Integrated Infrastructure Services report CR_4120

Waste Services began utilizing the PDDM approach under the direction of Council in 2017. Under this model, funding for project delivery is budgeted in a composite profile consisting of concept estimates for projects expected to be undertaken in the capital budget cycle.

While Integrated Infrastructure Services will manage the projects, Waste Services will provide subject matter expertise as part of a project team to inform work at all checkpoints throughout the PDDM process. Waste Services will continue to follow this approach in the future.

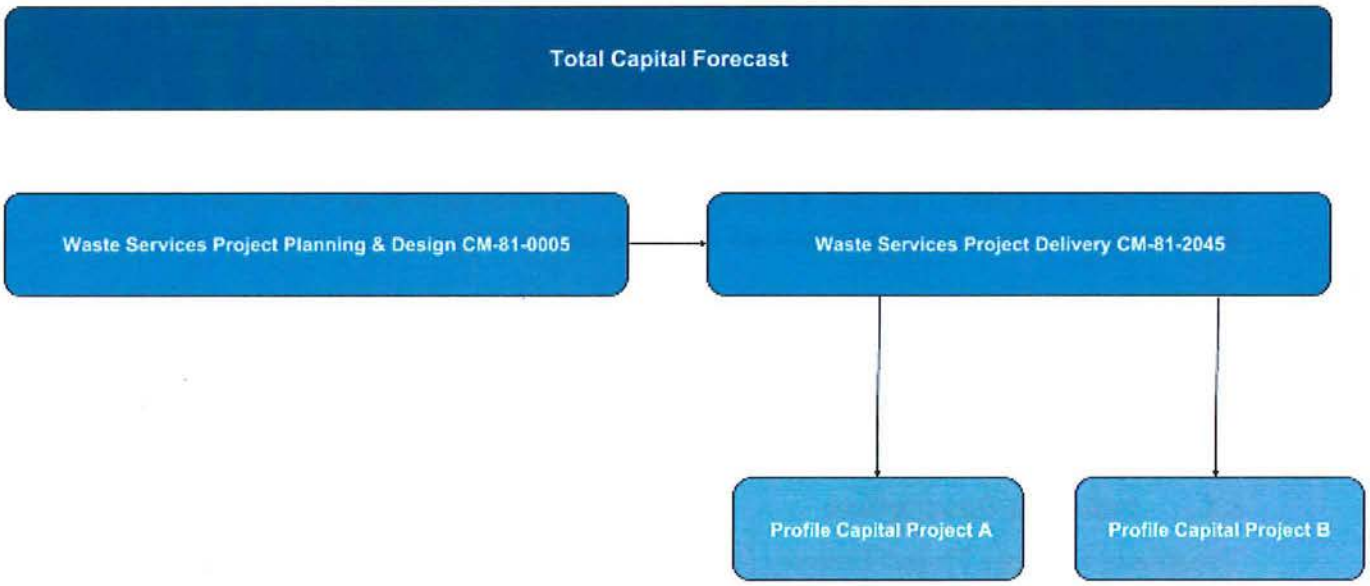
3. Initiative Description

3.1. Initiative Description

The Waste Services Project Delivery (IIS managed) CM-81-2045 composite capital profile sets the 2019 - 2022 capital budget for Waste Services for those capital projects that are anticipated to reach the third checkpoint in the PDDM process within the budget cycle. Once a capital project reaches this stage, a detailed standalone business case will be developed and brought to Utility Committee and Council for approval.

This approval will result in a capital budget adjustment that transfers budget from this profile to the newly created standalone profile. Until this transaction occurs, no funds are authorized to be spent on the delivery of a capital project.

This approach is consistent with Administration's implementation of the Project Development & Delivery Model as well as the Capital Governance Policy C591 that was adopted by Council in 2017.



Funding in the profile will be used to support project delivery work for the capital initiatives of Waste Services anticipated to be delivered in the 2019-2022 budget cycle, including but not limited to:

- Organics processing
- EWMC site civil servicing
- Materials Recovery Facility (MRF) renewal
- Anaerobic Digester process to further reduce pathogens
- EWMC site security audit upgrades
- Refuse Derived Fuel facility enhancement
- Compost cure site resurfacing
- Residential Transfer Station (RTS) building upgrade.

The projects listed above were identified by way of a Project Intake Request Form (PIRF), which was submitted by the project managers to Technical Services, indicating the project scope, justifications, scheduless, risks and estimates. These were then evaluated, ranked and prioritized based on the strategic and operational criteria set by the Technical Services. Appendix A - Waste Services Internal Project Intake Request Process outlines the PIRF process and criteria.

As the project costs used for requesting and evaluating the projects are estimates, they will be reviewed and validated in the early part of the budget period to assess the alignment with the long term asset strategic framework and plan that are being developed by Waste Services. Additional information regarding these projects can be found in Appendix B.

3.2. Urgency of Need

The need to effectively deliver capital projects is essential for Waste Services to achieve its commitment to deliver quality sustainable waste management services to the City of Edmonton

as well as effectively meet the changing needs of its customers. Projects that are anticipated to reach the third checkpoint in the PDDM process within this budget cycle have been identified and prioritized based on strategic criteria such as environmental impact, health and safety and alignment with Branch and Corporate goals. Delivery of these concept level projects within this profile will be fundamental to Branch operations and will help to ensure continued delivery of sustainable waste collection and processing services.

As Waste Services capital budget is supported by the utility rate, capital funding request for both planning and delivery phases of approved capital projects within the PDDM approach are required in order to have funds allocated to the composite profile and determine the utility rates required to support the capital budget. While approval for funding in this profile is necessary to determine capital budget and utility rates, approved funding for this profile does not indicate final budget or funding for any specific capital project.

3.3. Anticipated Outcomes

In alignment with the PDDM approach, Waste Services will realize the achievement of branch goals through working with Integrated Infrastructure Services to effectively manage the delivery of capital projects. Effective asset management will ensure that Waste Services has the resources to achieve its objectives by aligning its vision, mission and strategic plan with daily activities to achieve its goals. Waste Services envisions the following outcomes:

Outcome /Deliverables
Better information to make capital investment decisions: Through a structured and integrated process, administration will ensure that projects identified as priorities by Waste Services receive robust evaluation of alternatives and scope identification.Through the PDDM process, project maturity is regularly assessed to ensure that projects are ready to advance to the next stage of development
Improved project schedule and budget estimates: Following industry best practices, a control budget and schedule is established on the basis of a completed design to ensure realistic expectations are set with IIS prior to tendering and construction
Reliable facilities and infrastructure that enable sustainable waste management in a cost effective manner.
High levels of customer service delivered in both an efficient and effective way through leading-edge waste processing facilities that use current and emergent technology to enable high rates of diversion of waste from landfill
Facilities that can be operated in a safe manner, protecting employees, customers and contractors
Capitalize on opportunities to reduce cost to operate and process waste in an environmentally and fiscally responsible way

3.4. Scope

The scope of this capital funding request includes the detailed design, construction and project closeout stages, which subsumes work after completing Checkpoint 3 through Checkpoint 4 (Authorization for Construction expenditure) and Checkpoint 5 (Authorization for closeout) for all authorized Capital projects being led by IIS on behalf of Waste Services.

Checkpoint 4: Final check before the project goes to tender, to verify the project is ready to be tendered and develop a refined control budget. This will include an assessment of readiness and a final scope review. If the project is within the approved scope, schedule, and budget, an Internal Control Budget, Control Schedule and Authorization for Expenditure will result. If it is not, it will either be forwarded for a Change Request or will be sent back for revision. Approved projects are authorized to spend up to their control budget levels. [3]

Checkpoint 5: This checkpoint is to verify that the project is ready for the final closeout within Integrated Infrastructure Services. Closeout will ensure that the scope has been met satisfactorily and that all closeout activities have been completed[4].

3.5. Out of Scope

Project planning and design phase of the PDDM approach is out of scope for this capital funding request. (This includes Checkpoint 1 (Project initiation), Checkpoint 2 (Authorization for Design Expenditure) and Checkpoint 3 (Approval for Capital Budget) of the PDDM approach.

3.6. Critical Success Factors

Critical success factors include:

- Efficient, consistent and accurate communication between Waste Services and IIS
- Regular check-ins with the Waste Services Branch Leadership team to align with the strategic direction and branch goals
- Accurate and sufficient data and cost analyses to support high level budget estimate and informed decision makings for the projects
- On time, on budget delivery of capital projects within the PDDM approach.

4. Strategic Alignment

Waste Services is committed to advancing Council's vision and goals. Council's Strategic Plan and the Corporate Business Plan will provide a blueprint to coordinate activities and efforts between the goals and the corporation to make an impact towards achieving the vision. As

[3] Source: https://sites.google.com/a/edmonton.ca/pmrg/pddm/checkpoint-4
[4] Source : https://sites.google.com/a/edmonton.ca/pmrg/pddm/checkpoint-5

these are developed, Waste Services will work collaboratively to ensure the strategic direction of the Branch is in alignment with that of the department, corporation, Council and citizens. This profile aligns with the following new strategic goals of the City of Edmonton.

Healthy City	Urban Places	Regional Prosperity	Climate Resilience
Edmonton is a neighbourly city with community and personal wellness that embodies and promotes equity for all Edmontonians.	Edmonton neighbourhoods are more vibrant as density increases, where people and businesses thrive and where housing and mobility options are plentiful.	Edmonton grows prosperity for our Metro Region by driving innovation, competitiveness and relevance for our businesses at the local and global level.	Edmonton is a city transitioning to a low- carbon future, has clean air and water and is adapting to a changing climate.

In addition to this overarching corporate alignment structure, individual projects approved within this composite profile will align with the City of Edmonton's Waste Management Policy C527 and Waste Management Utility Fiscal Policy C558A as well as the Capital Project Governance Policy C591.This profile also aligns with Waste Services integrated 25-year strategic outlook that will help to ensure Edmontonians receive maximum economic and environmental benefits while minimizing the cost increases of managing solid waste.

5. Context Analysis

Requested funding for project delivery for capital projects is consistent with Administration's implementation of the Project Development & Delivery Model as well the Capital Project Governance Policy C591 that was approved by the Council in April 2017.

6. Organizational Change Impact

Waste Management Services staff, reporting through the Technical Services section, work closely with the Integrated Infrastructure Services as part of a project team to plan, develop and deliver approved capital projects. No change to organization is expected.

6.1. Stakeholder Impact

The table below identifies the stakeholders and the potential impacts for the PDDM process followed by Waste Services.

Stakeholder Requirement
Stakeholder 1: City of Edmonton Waste Services Branch (primary internal)
1. To establish well defined and consistent process in alignment with rest of the City. 2. To act in an enhanced consultation, recommendation and approval role for Delivery checkpoints for Waste projects managed by IIS as part of a project team.
Stakeholder 2: Integrated Infrastructure Services (primary internal)
1. Enhanced Project Management role for approved Capital projects utilizing input from Waste Services. 2. Improved process for capital funding for projects in composite profile for Waste Services
Stakeholder 3: City Council (primary internal)
1. Increased transparency, accuracy, reliability of project schedule and budget estimates 2. Ability to provide political direction and have access to accurate project information
Stakeholder 4: City of Edmonton public (secondary external)
1. Maintenance of stable/low utility rate through the delivery of capital projects 2. Minimal disruption to service levels through delivery process.

6.2. Business and Operational Impact

The table below identifies the business and operational impacts for the PDDM approach to the delivery of Waste Services projects.

Business & Operational Impact & Description
Waste Services (Internal)
1. Longer process with the addition of multiple checkpoints.

2. Dedicated project management resources to provide consult, recommend and approve functions as part of a project team.
Integrated Infrastructure Services (internal)
1. Allocated resource of Project Management team for the detailed design, construction and project closeout. Checkpoint 4/5 documents

7. Cost Benefits

7.1. Tangible Benefits

The following tangible benefits will be realized by following the new approach:

- Accurate information to make better capital investment decisions
- More accurate project budget and schedule estimate at checkpoint 3 for decision making
- Increased adherence to budget and schedule estimates
- Improved efficiency in project management
- Increased accuracy of forecasting capital expenditure thus allowing for more certainty in utility rates.

7.2. Intangible Benefits

Following intangible benefits will be realized by following the new approach:

- Structured process to evaluate readiness, scope and prioritization
- Increased project accountability
- Increased project awareness and controls
- Closer integration of City departments
- More efficient and consistent procurement process.

7.3. Costs

REQUEST	2019	2020	2021	2022	TOTAL PROFILE BUDGET
Budget Request *(note: funded by Utility Pool)*	$3,250,200	$14,908,750	$35,680,032	$42,189,781	**$96,028,763**

7.4. Assumptions

- Projects in this composite profile have allocated budget amounts that are based on high level project estimates. The actual costs of the approved capital projects in this composite profile may vary once the design stage is completed by IIS.
- All of the proposed projects in this composite profile have been prioritized based on the approval of Waste Services proposed program changes pending decision of Utility Committee and City Council.
- Projects listed in this capital funding request are at a concept level only. The individual project details, budget and schedule will be outlined in a full business case to be presented to Utility Committee and Council for funding.

8. Resourcing

All capital projects in this composite profile will be managed by the Infrastructure Delivery Branch within Integrated Infrastructure Services. Where outside resources are required, the tender process and external vendor relationship will be managed by IIS. Subject matter expertise will be contributed by Waste Services to the project teams from current staff complement. There will be no addition to the current approved Waste Services FTE complement.

9. Key Risk(s) and Mitigation Strategy

RISK(S)	IMPACT	MITIGATION STRATEGY
PDDM is a gated process and the additional steps required in this new process may increase timelines or compromise scheduled completion dates.	Medium	• Waste Services will work closely on the project team with IIS and other parties to ensure project planning process is started in advance, timely review and approval is occurring and schedules are adhered to.
Emerging priorities may cause projects scheduled to proceed to delivery stage to be delayed	Low	• Profile project list is concept level only, allowing for allocation changes, however in order to

		foster continuity of information, project team will be informed of updated branch priorities • Waste Services and IIS through project teams will have regular meetings to ensure integration and implementation of planned projects as well as responding to emergent projects

10. Conclusion and Recommendations

10.1. Conclusion

This capital funding request outlines the overall capital budget requirement for capital projects anticipated to move into the Project Delivery phase of the PDDM approach for the 2019-2022 budget cycle. These capital projects are proposed to receive budget under the composite profile Waste Services Project Delivery (IIS Managed) CM-33-2045 for a total capital budget of approximately $96M. Projects moving into the delivery phase will be allocated budget through a detailed project level business case and a budget adjustment pending approval from Utility Committee and Council. Adherence with the PDDM approach is expected to improve project schedule adherence and improve budget estimates through increased level of design to ensure realistic expectations are set prior to project tendering and construction.

10.2. Recommendations

Waste Services recommends continuing to follow the PDDM approach and release funds for project delivery phase for all capital projects handled by IIS. This will lead to higher control on the project scope, schedule, budget and delivery.

10.3. Project Responsibility and Accountability

The project sponsor and budget owner for all approved capital projects in this composite profile is the Branch Manager of Waste Services. The delivery of capital projects within this composite profile will be overseen by the Branch Manager of Infrastructure Delivery, Integrated Infrastructure Services . Individual projects are led by Project Managers within Infrastructure Delivery.

11. Implementation Approach

The Waste Services Project Delivery (IIS managed) CM-81-2045 composite capital profile sets the 2019 - 2022 capital budget for Waste Services for those capital projects that are anticipated to reach the third checkpoint in the PDDM process within the budget cycle. Once a capital project reaches this stage, a detailed standalone business case will be developed and brought to Utility Committee and Council for approval.

This approval will result in a capital budget adjustment that transfers budget from this profile to the newly created standalone profile.

From that point, respective project managers from IIS will utilize approved funds in those standalone profiles for project execution,which will be governed by the gated project management system of the the PDDM process.

12. Review and Approval Process

The following review and approval process was followed for this capital funding request:

Review Step	Reviewer
Review 1	Team Lead of Business Integration, General Supervisor of Business Integration and General Supervisor of Technical Services
Review 2	Operational Controller for Waste Services, Director of Business Integration, Director of Technical Services, IIS Supervisor for Waste Services and Branch Manager Waste Services
Review 3	Deputy City Manager
Review 4	Communications
Review 5	City Manager & Utility Advisor
Review 6	Utility Committee report presented

13. Appendices

Appendix A: Waste Services Internal Project Intake Request Process (PIRF)

Appendix B: Waste Services Delivery Project Description- 2019-2022 Projects

Appendix C: Financial Analysis Summary (Waste Services Delivery composite profile)

Appendix D: Costs - Revenue Requirements

Appendix A: Waste Services Internal Project Intake Request Form Process (PIRF)

The following list outlines the PIRF process:

1. Business needs are identified for all branch areas and a Project Intake Request Form (PIRF) is created for each proposed project for planning and design or delivery within budget cycle years (2019-2022)
2. Each PIRF is categorized as one of the following: High Priority Major Projects, Operational Efficiency Improvements, and Asset Management (Renewal).
3. Projects for each category is then evaluated based on defined strategic and operational criteria and assigned a score.
4. Projects are then prioritized within each category based on criteria score.
5. Budget is allocated to each category, with each category being assigned a percentage of the total budget:
    a. 92.5% to High priority Major Projects, 2.5% to Operational Efficiency Improvements, and 5% to Asset Management (Renewal)
6. Projects are recommended based on prioritization with budget estimates.
7. Waste Services Leadership Team will review and approve the final list. Waste Services Leadership Team can adjust the project list according to the Branch priority.

The following table shows a sample scoring criteria for projects within the PIRF process

Strategic Criteria (50 pts)				Operational Criteria (50 pts)				
Legislated, Mandated, or Required by Law (20)	Health and Safety (15)	Energy and Climate (5)	Council Mandate (10)	Project Coordination (10)	Organization Impact (10)	Change in Demand (10)	Level of Service (10)	Strategic Risk (10)

Appendix B - Waste Services Delivery Project Description- 2019-2022 Projects:):

Profile Name	Profile #	Project Name	Project Description
Waste Services Project Delivery (IIS Managed)	CM-81-2045	19-33-2045 Organics processing	Project will deal with the repair or replacement to the ECF as well as the expansion of the Organic Processing Facility (OPF) tip floor to accommodate direct delivery of Source Separated Organics (SSO) program.
		19-33-2046 EWMC Site Civil Servicing	Project supports the development of an integrated master plan for the EWMC site, including items such as stormwater, groundwater, roads, parking lots, working areas and underground utilities among other and will be further aligned with existing plans such as groundwater diversion plan, and leachate management plan.
		22-33-2020 Material Recovery Facility Renewal (MRF)	A long term strategy is under development for the Materials Recovery Facility (MRF). This project will support the delivery of the recommended option stemming from the long term strategy
		Anaerobic Digester Process to Further Reduce Pathogens	Project supports waste diversion and enhances digester output material characteristics by adding additional heat exchangers to the facility and incorporate post-processing screening to the finishing circuit processes.
		EWMC Site Security Upgrade	Project supports upgrading EWMC site security to meet the corporate standards and includes but is not limited to replacing existing camera systems, installing new and replacing old fencing, increased signage, replacing existing card access system to the site and buildings and addressing some site access points.
		Compost Cure Site resurfacing	This project exists to facilitate the renewal of the existing cure site; the current site is approaching the end of its lifecycle and major maintenance and/or repair work

			needs to be done with regard to the site liner and site drainage.
		RDF Enhancement	Project supports the supply and installation of a second pre-shredder at the RDF facility as well as an alternative RDF offloading system.

Appendix C Costs - Financial Analysis Summary (Waste Services Delivery Composite Profile):

Waste Services Project Delivery Composite Profile (2019-2022)	Follow PDDM for delivery
Total Capital Cost	**($96,028,763)**
Total Revenues	$0
Total Operating and Maintenance Costs (Note 1)	$0
Total Lease Costs	$0
Project Net Inflows (Outflows)	($96,028,763)
WACC Discount Rate	5.41%
Net Present Value	($82,951,673)

Note 1: Capital projects within this profile are presented at a concept level and as such, associated operating and maintenance costs are not identified at this time. These costs for each project will be considered and included in the individual standalone business cases.

Appendix D Costs - Revenue Requirements

	Alternatives
Reference	ALTERNATIVE 1- Follow PDDM for delivery
Base Year	2018
In-Service Year	Various

Cumulative Revenue Requirement (from base year)	ALTERNATIVE 1- Follow PDDM for delivery
CPV @ Yr 5	10,559,090
CPV @ Yr 10	33,157,857
CPV @ Yr 15	49,304,820
CPV @ Yr 20	60,574,552
CPV @ Yr 25	68,171,524
CPV @ Yr 30	72,943,113

Capital Cost Summary (Base Year Dollars)	ALTERNATIVE 1- Follow PDDM for delivery	
Equipment	35,028,763	
Building	61,000,000	
Other (engineering/PM/etc)	0	
Total base costs	**96,028,763**	Note: this does not include Planning & Design Costs
Add: contingency, inflation		
Contingency	0	Note: these are already included in above base costs
Inflation	0	
Total Capital	**96,028,763**	

Economic Assumptions

Inflation (compounded each year) 0.00%

Contingency

Analysis is based on 35 years to capture the full life cycle costs of the assets

Assumes borrowing required at 84% (based on current Utility split) at 4%

Appendix D Costs - Revenue Requirements (Continued)

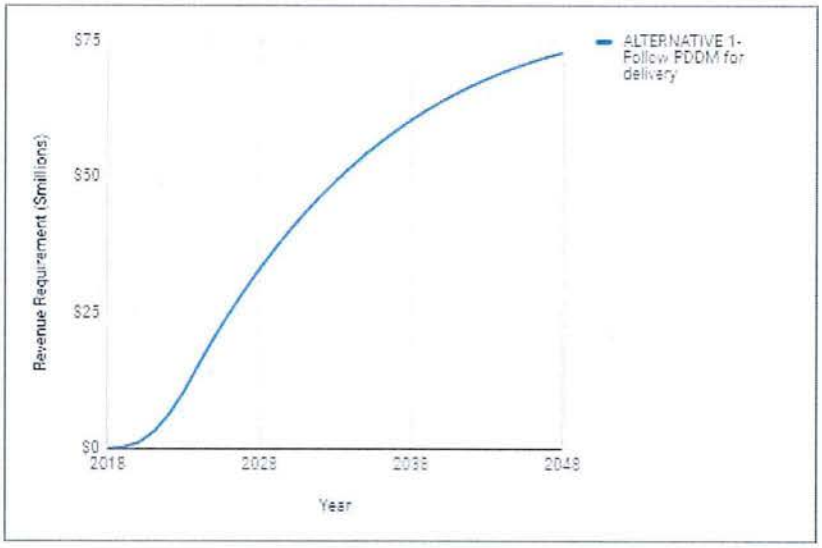
Note: Planning and Design costs have been added to the PDDM Delivery capital funding request costs for revenue requirement calculation purposes below in order to demonstrate the full project spending. Revenue requirements below only include estimated amortization and interest; O&M will be determined at stage of detailed design.

Revenue Requirement Summary (Cumulative Present Value)

		Alternatives
Year	Calendar Year	ALTERNATIVE 1- Follow PDDM for delivery
0	2018	$0
1	2019	$289,903
2	2020	$1,117,481
3	2021	$3,120,647
4	2022	$6,319,634
5	2023	$10,559,090
6	2024	$15,685,707
7	2025	$20,492,125
8	2026	$24,995,554
9	2027	$29,212,308
10	2028	$33,157,857
11	2029	$36,846,862
12	2030	$40,293,224
13	2031	$43,510,120
14	2032	$46,510,039
15	2033	$49,304,820
16	2034	$51,905,686
17	2035	$54,323,272
18	2036	$56,567,659
19	2037	$58,648,400
20	2038	$60,574,552
21	2039	$62,354,693
22	2040	$63,996,956
23	2041	$65,509,045
24	2042	$66,898,262
25	2043	$68,171,524
26	2044	$69,335,387
27	2045	$70,396,058
28	2046	$71,356,566
29	2047	$72,212,620
30	2048	$72,943,113

Project Title: PDDM Composite Renewal: Delivery Cost Impact

Cumulative Present Value of Revenue Requirement
Note: includes PDDM Planning & Design Costs, however O&M costs will be determined when individual project business cases are prepared.



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Waste Services Containers
Business Case

City Operations | Waste Services
City of Edmonton

Capital Profile: CPP# CM-81-2005
Project Number: CP# / OP# TBD

Project Owner: Doug Spark
Project Sponsor: Michael Labrecque

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5.0	10/05/2018	Natasha Singh	Revised version submitted to Business Partner Review

Document Approval

SUBMITTED BY:

Version #	Submitter Name	Title	Submission Date
5.0	Stephanie Zhang	Team Lead Business Strategy Planning & Performance	10/12/2018

REVIEWED BY:

Version #	Reviewer Name and Title	Signature	Signing Date
5.0	Ryan Kos, General Supervisor, Business Strategy Planning & Performance		10/12/2018
5.0	Cameron Grayson, Director Business Integration		10/12/2018
5.0	Keith Knoblauch Operational Controller Business Financial Analytics		10/12/2018

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Version #	Approver Name and Title	Signature	Signing Date
5.0	Doug Spark, Acting Director, Waste Collection Services		10/12/2018
5.0	Michael Labrecque, Branch Manager, Waste Services		10/12/2018

1. Executive Summary

1.1. Waste Containers

The Waste Container Capital Profile # CM-81-2005 supports the replacement of existing assets and growth to support the current market conditions and the changing needs of Waste Services customers. An outcome of this profile is to provide funding for the purchase of front load, side load, roll-off containers and litter baskets used in the Waste Services' residential and non-residential collection programs. This profile also provides funding for purchasing the carts required to support the residential Source Separated Organics (SSO) pilot program in 2019.

The four-year total capital projection is approximately $9.1 million. Out of this, approximately $2.8 million is for growth, $2.5 million is for replacement of containers and $1.5 million for purchasing new plastic carts for the SSO pilot program. The remaining is for buying accessories for the containers and plastic carts. Front load containers, used primarily at multi-family sites, comprise the largest portion of the container capital profile by volume and asset value, and will be the main focus of this business case.

Alternatives identified and reviewed in this business case include:

Alternative 1: Continue funding through capital

Alternative 2: Refurbishment of containers currently in Waste Services inventory

Taking full consideration of the effectiveness, efficiency, and risks, Alternative 1-**Continue Funding Through Capital**, is recommended. This alternative will continue to manage the inventory of containers to achieve maximum life while reducing the cost of service delivery and retaining the potential to earn a return on rate base for Waste Services.

2. Background

2.1. Problem / Opportunity

Waste Services has inventory of approximately 13,400 containers, each with an average life cycle of 15-years that require replacement at the end of their useful life. New containers are also required to match growing demands in residential and non-residential services due to conditions such as an increase in construction of new condos and multi-unit apartment buildings, new community commercial program partners, and an increase in number of litter basket locations across the City to better serve the public. Waste containers for both replacement and growth need to be purchased on a regular basis in order to maintain inventory levels and availability of stock on site to meet the demand requests.

Photo: Sample of front load containers in inventory

2.2. Current Situation

Waste Services provides waste collection services for the multi-unit residential sector in the City. Part of this service includes the provision of waste and recycling containers. A waste or recycling container, is defined as a metal or plastic container used to temporarily store both refuse and recycling waste at various locations such as multi-unit residences, Eco-Stations, the Edmonton Waste Management Centers (EWMC), etc. Waste Services currently has the following container asset inventory, inclusive of those currently in use and in storage:

Waste Containers	Total Inventory, as of May 2018	Programs
Front Load Containers	10,790	Multi-Family Refuse and Recycling Collection Program Commercial Refuse and Recycling Collection Program
Side Load Containers	485	Community Recycling Depot

		Program
Roll-off Containers	207	Eco Stations, big bin events, Edmonton Waste Management Center and Commercial Program
Litter Baskets	1,885	Litter Basket Collection Program

Waste Services operates a container maintenance program that intakes containers for service, replace parts and accessories along with pick up for painting and/or minor repairs when required. Containers that are still structurally sound may be repaired to extend their service life. However, some containers are damaged by fire or have other structural failures that require early replacement. The current weighted average age of Waste Services containers is nine years and is outlined in Appendix A. If this profile is not approved for funding, at the end of 2022 the weighted average age of the containers is projected to be 13 years, which is very close to their end of asset life age of 15 years.

In August 2018, Administration submitted a report on the Source Separated Organics (SSO) Pilot[1] which was approved by Utility Committee and Council for implementation in 2019. This pilot program will test multiple options for source separating kitchen organic waste from the regular curbside garbage collection stream. This implementation requires one time purchase of plastic carts for the program in 2019.

3. Initiative Description

3.1. Initiative Description

Waste container assets are required for continued collection of waste in Edmonton. The City of Edmonton owns front load containers for the multi-unit sector, side load containers for the Community Recycling Depots and Eco-stations, litter baskets, and roll-off containers for big bin events, EWMC and the Commercial Waste Collection program. Waste Services maintains an inventory of waste containers for the replacement of in-service containers that are either damaged beyond economic repair or that reach the end of their useful life. The inventory of waste containers is also used to supply new containers to new developments throughout the budget cycle. Containers are purchased each year gradually to ensure an even expenditure patterns and average lifecycle of containers.

3.2. Urgency of Need

New containers are needed on an ongoing basis as Waste Services retains a limited inventory.

[1] CR_5832 Source Separated Organics Pilot

Waste Services currently has a capital funding profile to purchase the required inventory, and to maintain proper growth and replacement of container assets and accessories required for proper functioning of these containers. It is critical that this profile is approved at this time to ensure continuity of container and accessory replacement. Once approved, this profile will replace approximately 654 steel containers in 2019. This profile also provides funding for the one-time purchase of carts required for SSO pilot program in 2019.

3.3. Anticipated Outcomes

Outcomes/Deliverables	Estimated Timeline
Maintain high levels of customer service delivered in both an efficient and effective way through different waste collection services that use current and new equipment to deliver excellent service to Waste clients.	85 percent satisfaction with multi-unit services in 2017. Waste Services will continue to monitor the satisfaction in this sector on an ongoing basis.
Maintain an effective infrastructure to meet the service demands for both growth and replacement	Ongoing
Ensure a competitive market for services provided to commercial customers	Reviewed constantly and on an ongoing manner as contracts are tendered for various services with different timelines
Provide carts for the SSO pilot project	Spring 2019
Capitalize on opportunities to reduce cost to operate	Ongoing

3.4. Scope

The scope of this business case encompasses the purchase of waste container inventory stock for both replacement and growth in the 2019-2022 capital budget cycle . Included in this are the following types of container assets:

1. Front load steel containers
2. Side load steel containers
3. Roll-off steel containers
4. Litter baskets
5. Plastic carts for the SSO pilot program

3.5. Out of Scope

The following containers are out of scope for this business case:

1. Private sector containers
2. ETS waste containers/baskets
3. Parks and Recreational Services waste containers/baskets
4. Eco station containers provided by on-site contractor

3.6. Critical Success Factors

Critical success factors include:

- Timely acquisition of required containers.
- Timely tender process as majority of containers are fabricated metal products that are directly impacted by local labour rates, global metal prices and any tariffs affecting the Canadian market.
- Adherence to container maintenance program plan.

4. Strategic Alignment

Waste Services is committed to advancing Council's vision and goals. Council's Strategic Plan and the Corporate Business Plan will provide a blueprint to coordinate activities and efforts between the goas and the corporation to make an impact towards achieving the vision. As these are developed, Waste Services will work collaboratively to ensure the strategic direction of the Branch is in alignment with that of the department, corporation, Council and citizens. This profile aligns with the following new strategic goals of the City of Edmonton:

Healthy City	Urban Places	Regional Prosperity	Climate Resilience
Edmonton is a neighbourly city with community and personal wellness that embodies and promotes equity for all Edmontonians.	Edmonton neighbourhoods are more vibrant as density increases, where people and businesses thrive and where housing and mobility options are plentiful.	Edmonton grows prosperity for our Metro Region by driving innovation, competitiveness and relevance for our businesses at the local and global level.	Edmonton is a city transitioning to a low-carbon future, has clean air and water and is adapting to a changing climate.

This profile aligns to the City of Edmonton's Waste Management Policy C527 which commits to delivering sustainable waste management service exceeding provincial waste diversion and processing standards.This profile also aligns with Waste Services integrated 25-year strategic outlook that will help to ensure Edmontonians receive maximum economic and environmental benefits while minimizing the cost increases of managing solid waste. Besides these, this profile

is aligning with the SSO pilot program that addresses the separation of kitchen organic waste from regular garbage initiative, that will be piloted in 2019 by Waste Services.

5. Context Analysis

The City of Edmonton is unique in its approach to multi-unit waste services in North America. In the majority of Canadian municipalities, multi-unit residential waste is treated as Industrial, Commercial and Institutional (ICI) Waste and collection services are provided by the private sector. The City of Edmonton includes multi-unit waste residences in its residential collection program and administers the distribution of containers to collect waste from various streams (namely garbage and recycling) for all multi-unit residential building sites.

Currently, approximately 70 percent of waste collection and 50 percent of recycling collection services are delivered by contractors and the remainder is serviced directly by Waste Services. Waste Services administers the distribution of waste containers for all the sites both for the City and the contractors.

In 1995, Waste Services began providing waste collection services to the multi-unit residential sector. For the first five years of the program, contractors provided the containers along with hauling and disposal as part of the service. From 2000-2002, Waste Service began transitioning to City-owned containers for multi-unit residential collection services as a result of service issues and disruptions during the handover process between contractors. An example of issues experienced with this process would be when a contract ended, the previous contractor would remove their containers and the new contractor would deliver their own for the start of the new contract. This switch out typically did not go smoothly and the contractor would not remove their containers in a timely fashion causing the new service provider to be unable to deliver their containers to site and begin collection services. Residents were negatively impacted by missed collections, multiple containers or no containers at all. If the timing of exchange of containers during this period is un-coordinated, sites can go without a container for a period of time.

This led to a noticeable decrease in customer satisfaction and increase of litter on the ground. There was little incentive for the outgoing service provider to rush or cooperate with the new contractor causing disruption in service in these locations.

A comparison between the cost in 2000/2001 (contractor provided containers) and 2006 (City provided containers) shows a 33 percent reduction in cost when the City provides containers.

This was largely due to eliminating the cost of container exchange for the contractors, and increased competition due to the reduced start up cost for new competitors. The most significant benefit of having Waste Services provide the containers was the elimination of the service disruption described above.

Not all containers in use are owned by Waste Services. In an event, when the switching of containers and contractors does not negatively impact operations, the containers may be provided under the contract. The Eco Station program is an example of this process. The

contractor providing hauling services is responsible for providing the roll-off containers. The option to purchase containers or lease in this instance was evaluated during the tender review when contractors were required to supply a hauling cost with and without supplying containers. At that time, it was operationally effective and cost efficient to have the contractor supply the containers.

Waste Services currently operates a container maintenance program to retain them in working condition. Container accessories are serviced on an as-needed basis. Damaged containers are either reported by the building or by the Waste Services collection crews. The damage is inspected and reported by the Waste inspectors, the container repair is carried out by the container maintenance crew. If the damage is irreparable, the container is replaced and the damaged containers brought back to the Waste Services lot and re-assessed. At this point if the damage is too extensive the container is salvaged for any usable item and the rest is scrapped.

In 2019, Waste Services will review both its non-residential waste strategy[2] and approach to waste collection and diversion programs in the multi-unit sector. Inclusive in this review is the provision of waste collection for non-residential customers. This review will determine how best to improve the financial results and waste diversion statistics in these sectors. Any impact of this review on the procurement and provision of waste containers for this sector will result in an amendment to this business case.

6. Alternatives

Several options were reviewed for this business case and these are outlined below:

Option Description	Advantages	Disadvantages	Further Consideration
1. Continue funding through capital	• Reduced operating costs, consistent program • Little impact to resident	• City responsible for capital and operating expenses	Yes
2. Refurbishment of the containers in inventory	• Extended container life • Increased maintenance of the containers	• Life of the container can be enhanced for limited time only after which they have to be replaced. • An increase in inventory is required.	Yes
3. Lease containers	• Reduces capital spending and container	• Not all types of containers are available to lease	No, Not all waste containers have available leasing

[2] CR_ 6217 Industrial, Commercial and Institutional Sector Strategic Review Report.

	maintenance cost	• Leasing costs are high, offsetting reduced capital cost	options currently. It is not economically or administratively feasible to manage waste container assets through multiple financing approaches. Waste Services will revisit this option in the future if leasing of all waste container types becomes feasible
4. Developers of new multi-unit properties supply the containers	• Reduce the capital required for growth	• Increased costs related to ensuring containers comply with the Waste Management Bylaw • Capital cost of waste containers is shifted to multi-unit properties	No, requires unnecessary and excessive administration to ensure compliance
5. Discontinue providing containers for multi-unit waste management service contract area	• Reduces capital and maintenance costs	• Increases contract costs that negatively impacts residents during contract renewal • This alternative does not address all of the containers in service • Will be administratively burdensome and cost prohibitive when a contractor is changed	No, current contract savings and resident satisfaction support Waste Services existing model
6. Redistribute existing containers to high volume sites and collect smaller sites by hand	• Reduced capital cost for the containers	• Inefficient process that leads to high labor cost • It generates additional litter and public nuisance issues if collected manually	No, current contract savings and resident satisfaction support Waste Services existing model

Based on the information provided above, Waste Services is recommending the following potential alternatives:

Alternative 1: Continue funding through capital: All services remain the same and Waste Services continue to supply the waste containers to multi-family units and the purchase of these

containers is funded through the Capital profile.

Alternative 2: Refurbishment of containers currently in Waste Services inventory: All services remain the same and the damaged containers are refurbished through contract to enhance their life and usage. Refurbishment includes structural repair work such as welding needed to extend the useful life of the waste containers, which will be done on top of the container maintenance program currently in place.

The shortlisted alternatives identified above were further analyzed for their respective advantages and disadvantages. A detailed list of this provided in the tables below:

Alternative 1: Continue funding through capital	
Advantage	**Disadvantage**
• Limited impact to residents • No disruption in service during contract changes • No change to Waste Services programs, contracts or services • Maintain high level of standards in the type and quality of bins provided.	• City responsible for capital and operating expenses

Alternative 2: Refurbishment of containers currently in Waste Services inventory	
Advantage	**Disadvantage**
• Life of the container can be extended by maintenance program in place	• Refurbishment only increases the life of the container by maximum of 5-10 years after which they have to be replaced • Higher inventory is needed to maintain the same number of containers • New contract will need to be in place which will increase the operating expenses • The need for resources to manage and monitor refurbishment process. • Cost of refurbishment is more expensive than new purchases.

7. Organizational Change Impact

This profile is a continuation of the current practice and no organizational changes in the Waste Services structure is anticipated.

7.1. Stakeholder Impact

The table below identifies the stakeholders and the potential impacts for the two alternatives recommended by Waste Services.

Stakeholder Requirement	Alternative 1 (Capital Funding)	Alternative 2 (Refurbished Containers)
Stakeholder 1: Waste Services (internal)		
To maintain adequate container inventory in place for both growth and replacement	Yes	Yes
To secure adequate capital budget approved for the purchase of inventory required for both growth and replacement	Yes	Yes
Stakeholder 2: Multi-unit properties (external)		
To limit disruption in services when lease/contract expires	Yes	Yes
To maintain multi-family waste rates/limit increase in the costs for waste services	Yes	Yes
Stakeholder 3: Residents (external)		
To limit disruption in services when contract expires	Yes	Yes
Stakeholder 4: Commercial Customers (external)		
To limit disruption in services when lease/contract expires	Yes	Yes
To maintain commercial hauling waste rates/fees increase in the costs for waste services	Yes	Yes
Stakeholder 5: Waste Services Contractors (external)		
To decrease service disruptions when contract expires	Yes	Yes

Stakeholder 6: Corporate Communication (internal)		
To generate high quality communication information for public education and engagement	Yes	Yes
Stakeholder 7: Legal (internal)		
To provided informed legal advice to Waste Services during tendering process	Yes	Yes
Stakeholder 8: City Council (internal)		
To increase transparency, accuracy, reliability of project schedule and budget estimates	Yes	Yes
To enhance the ability to provide political direction and have access to accurate project information	Yes	Yes
Stakeholder 9: Fleet Services (internal)		
To maintain adequate fleet resources are in place for both growth and replacement	Yes	Yes
To secure adequate capital budget approved for the purchase of additional fleet required for both growth and replacement	Yes	Yes

7.2. Business and Operational Impact

The table below identifies the business and operational impacts for the two alternatives considered for this business case by Waste Services.

Business & Corporate Impact & Description	Alternative 1 (Capital Funding)	Alternative 2 (Refurbished Containers)
Corporate Communication (internal)		
Resource demands for preparing communication information	Yes	Yes
Corporate Finance (internal)		

Resource demands for providing finance support	Yes	Yes
Fleet Services (internal)		
Resource demands for maintaining adequate fleet for multi-unit residence container pick up	Yes	Yes
Waste Services contractor (external)		
Provide contracted goods or services under the City's administration	Yes	Yes
Waste Services (internal)		
Increase in cost for services	No	Yes
Need for additional resources (labour, equipment and facility)	No	Yes
Need for additional storage capacity	No	No
Service disruptions when contract expires	No	Yes
Increase resource demands to meet tender requirements	No	Yes
Multi-unit properties (external)		
Service disruptions when contract expires	No	No
Increased setup costs	No	Yes
Residents (external)		
Service disruptions when contract expires or containers are picked up for refurbishment	No	Yes

This evaluation indicates that Alternative 1- Capital Funding has the least impacts and has the best alignment with Waste Services strategic goals. Alternative 2 has the potential for a negative customer service impact.

8. Cost Benefits

8.1. Tangible Benefits

The following tangible benefits are anticipated to be realized:

- Increased accuracy of forecasting capital expenditure to make informed capital decisions
- Increased adherence to budget and inventory schedules estimates

8.2. Intangible Benefits

The following intangible benefits are anticipated to be realized:

- Structured process to evaluate readiness, scope and prioritization will improve project management practices within the organization
- Increased awareness and having controls in place for growth-based needs of the consumer
- Better inventory management practices in place to enhance business area's accountability

8.3. Costs

Each alternative has been evaluated based on the financial cost below which indicates the demand for both the containers and the accessories required for these containers over the 2019-2022 business plan period.

8.3.1 Assumptions

The following assumptions are applied to all of the evaluated alternatives for the financial analysis:

1. This business case provides bins for both multi-unit residential and commercial waste programs.
2. Only front load, side load and roll-off containers may be refurbished, litter containers would be purchased.
3. There is no change in current service delivery methods.
4. The multi-unit growth rate of 3 percent was used for forecasting the growth and replacement container numbers for the financial analysis.
5. An average inflation rate of 1.9 percent projected by the City of Edmonton Corporate Budget Office was used as Consumer Price Index (CPI) for analysis. The final capital numbers are estimates and may fluctuate based on market demand.
6. A 25 percent steel tariff was added to the base cost of steel containers due to the recent tariff imposed on Canada by USA.
7. An 8 percent steel price inflation has been added to the 2018 base price for all steel containers and accessories to compensate for the increase in price demand of our current vendor.
8. A 15 percent price increase in the container price is anticipated to be realized with the

renewal of this contract in 2020.

9. A container inventory will be maintained by Waste Services which will be approximately 10 percent of the total number of containers on customer sites. The excess inventory above the 10 percent will be then used to meet the increasing demands in the years these inventory shortages occur.
10. Replacement will not be required for Side-Load and Roll-Off containers as they tend to last longer than front-load containers and none are anticipated to require replacement within the 2019 - 2022 capital budget period.

Additional assumptions were made for each alternative which have been captured under financial costs for them respectively.

8.3.2 Financial Costs

Alternative 1: Continue Funding through Capital:

Cost Items	2019	2020	2021	2022	4 year Forecast
Waste Container Capital Cost	$3,074,089	$1,930,098	$1,998,480	$2,070,059	$9,072,726
Operating Cost[3]	$10,168	$13,229	$13,815	$14,429	$51,643

Assumptions: Following assumptions were made for this alternative:

1. A 10 percent contingency has been added to the final capital cost numbers to allow for unforeseen event in the future.
2. All containers have a 15 year useful life.
3. Plastic carts costs are added to the capital costs for the SSO pilot program once in 2019.
4. There are no operating expenses required to maintain the plastic carts purchased in 2019 at this time.
5. Up to 17,600 carts will be purchased for the SSO pilot program.

Discussion: Capital cost for growth and replacement of the waste containers for the next 4 years is approximately $9.1 million for this alternative.

Alternative 2: Refurbishment of Waste Containers in inventory:

[3] Operating Costs includes incremental costs related to waste container maintenance.related to the additional containers purchased through this profile.

Cost Items	2019	2020	2021	2022	4 year Forecast
Waste Container Capital Cost	$4,070,812	$3,053,424	$3,147,125	$3,244,922	$13,516,283
Operating Cost[1]	$11,077	$14,392	$15,008	$15,654	$56,131

Assumptions: Following assumptions were made for this alternative:

1. 100 percent of the replaced containers in the alternative 1 will be refurbished in alternative 2.
2. The refurbishment costs are based of 2012 tender document received by Waste Services. CPI index has been applied to it for forecasting purposes to obtain the 2018 base cost numbers resulting in an estimated refurbishment cost of $6,650.00 per container.
3. Refurbishment for litter baskets is same as growth as new baskets are purchased to replace the ones broken hence same numbers used for calculation
4. A 20 percent contingency has been added to the final numbers for capital cost for cost analysis to allow for unforeseen event in the future to count for an event when the containers can not be refurbished and need to be replaced in the 4 year period.
5. Refurbishment of waste containers extends the useful life by five to ten years and will need to be replaced after this period.
6. Replacement schedule for refurbished bins has not been accounted for due to lack of information at this point.
7. Plastic carts costs are added to the capital costs for the SSO pilot program once in 2019.
8. There is no operating expenses required to maintain the plastic carts purchased in 2019 at this time.
9. Up to 17,650 carts will be purchased for the SSO pilot program. Approximately half of these carts will be utilized for the organic waste collection program and the remaining for the residual waste program. Further details on the type of the carts purchased will be informed by the results of the 2018 public engagement.

Discussion: Capital cost for growth and replacement of the waste containers for this alternative is approximately $13.5 million. Out of this approximately, $1.5 million is the capital cost for the SSO pilot program.The total capital cost for this alternative is higher than the capital cost for alternative 1 because of higher contract prices for refurbishment. Analyses of this alternative were completed using tender documents from 2012 and it was observed that welding work costs on an old container were higher due to multiple charges, such as pick-up and delivery of containers and labor, than purchasing a new container. A new tender needs to be put in place for this alternative which may be a time consuming process and may affect the current service level provided to customers by Waste Services. The refurbishment process may enhance the asset life by five or more years but eventually these containers will have to be replaced and this

has not been accounted for in the analysis.

Four Year Total Summary:

Four year Total ($)	Alternative 1 (Capital Funding)	Alternative 2 (Refurbished containers)
Waste Container Capital	$9,072,726	$13,516,283
Operating Cost	$51,643	$56,131
Net Present Value [4]	**$7,783,331**	**$11,484,806**

A financial comparison of the both the alternatives is outlined in Appendix B. Financial analysis for revenue generation comparison between the alternatives is outlined in Appendix C.

9. Resourcing

Alternative 1: Continue Funding through Capital:

Waste Services is not expected to incur any additional resource costs for new FTE's and equipment under this alternative.

Alternative 2: Refurbishment of Containers currently in inventory:

Waste Services will not incur any additional resourcing and equipment costs because they will be part of the contractor tender for this alternative.

10. Key Risk(s) and Mitigation Strategy

The risks and mitigation strategies for the outlined alternatives are summarized below.

RISK(S)	IMPACT	MITIGATION STRATEGY
Escalation in container pricing	Medium	• Managed by adding contingency and increased contractual cost

[4] *Note 1: Net present value includes the full 15 years of operating costs over the useful life of the containers, as shown in Appendix A.*

		percentages within the business case financial analysis • Achieve lowest possible cost through open and transparent competitive tendering process.
Limited numbers of manufacturing companies to provide containers	Medium	• Waste Services will work with Corporate Procurement and Supply Services to adopt better tendering strategies and improve tender process to ensure specifications and timelines are well managed by both the City and all manufacturers and leasing companies.
Delay in issuing tender and getting contract signed	Medium	• Waste Services operational model will require adjustments to reflect the new supply and demand in the future
Capital funding is not approved at the amount requested	Low	• Waste Services will maintain assets in serviceable condition to manage short term requirements
Limited space for storing waste containers	Low	• Site planning and low inventory strategy will be adopted to reduce the likelihood of occurrence
Change in growth rate leading to increased inventory need in the year than what was budgeted	Low	• Contingency planned in the financial analysis will reduce the financial impact of the risk
Risk of natural disasters like fire etc.	Low	• Current inventory in stock will be used to replenish the lost containers • Additional container orders will be placed based on the demand at that time
Change in strategic business direction resulting in increased requirement of a certain type of container in the future	Low	• Waste Services will align with new corporate strategy in an event it changes in the future

11. Conclusion and Recommendations

11.1. Conclusion

Waste Services provides waste collection services to both residential and non-residential sectors in the City of Edmonton. This is achieved through both City staff and contract services. Waste and recycling is collected at multi-unit residential, commercial, Eco-Stations and big bin events by use of containers which are provided by the City at all these sites except the Eco-Stations. Capital funding is required to replace these containers after their useful life of 15 years, and for additional containers that are required to service additional multi-unit buildings. This business case analyzes two different alternatives: either the City continues to fund the containers needed for growth and replacement or contracts out and refurbishes the old containers to increase their asset life for 5-10 more years. Financial analysis shows that Alternative 1 (funding through capital) has a lower financial impact of approximately $9.1 million than Alternative 2 (refurbishment of containers in Waste Services inventory), where the capital impact is approximately $13.5 million.. This business case indicates that Alternative 1 has the least overall impact on Waste Services through comprehensive risk and impact analyses.

11.2. Recommendations

Based on the preceding analyses, Alternative 1, Funding Through Capital is recommended. This alternative will continue to manage the inventory of containers to achieve maximum life while reducing the cost of service delivery and retaining the potential to earn a return on rate base for Waste Services.

11.3. Project Responsibility and Accountability

The Project Sponsor is the Branch Manager of Waste Services. The overall capital program is managed by the Director of Technical Services is responsible for the capital program which includes the procurement of the containers. The Director of Collection Services is responsible for the operation and maintenance of the containers.

12. Implementation Approach

When containers are required and funding is secured, purchases of new containers are made through existing contracts. Containers will be purchased on time to maintain the inventory needed to provide current and future demands. The table below identifies the scheduled growth and replacement schedule for 2019-2022 budget cycle as recommended to continue funding

through capital.

Steel Containers Required	2019	2020	2021	2022	2019-2022 Total (Qty)
Replacement	375	467	468	468	**1,778**
Growth	284	363	372	382	**1,401**
Total (Qty)	**659**	**830**	**840**	**850**	**3,179**

Additionally, approximately 17,647 plastic carts will be purchased in 2019 under this profile for the SSO pilot program in 2019.

The General Supervisor (GS) of Collections, reporting to the Director of Collections, is responsible for inspection, maintenance and procurement of containers. Waste services is currently working on improving its inventory management system to incorporate best industry practices for tracking, managing and reporting on waste containers in the future. This will enable the branch to purchase containers on time and maintain appropriate level of inventory. This will also help Waste Services to measure performance of the container program by measuring if adequate inventory is in place and the timeliness of container inspection and the procurement process.

13. Review and Approval Process

The following review and approval process was followed for this business case:

Review Step	Reviewer
Review 1	Team Lead of Business Integration, General Supervisor of Business Integration and General Supervisor of Waste Collection Services
Review 2	Operational Controller for Waste Services, Director of Business Integration, Director of Waste Collection Services and Branch Manager Waste Services
Review 3	Deputy City Manager
Review 4	Communications
Review 5	Utility Advisor; City Manager
Review 6	Utility Committee report presented

13.1. Business Case Sign-off

The business case will be approved (signed and dated) by the Waste Services Branch Manager and the Deputy City Manager prior to submission to Utility Committee and the Council.

14. Appendices

Appendix A: Average weighted life of waste containers
Appendix B: Financial analysis summary comparison for the alternatives
Appendix C: Comparison of Revenue Requirement of alternatives

Appendix A: Weighted Average Age of Waste Containers

	Existing Assets up to December 31, 2017						
Asset Type	SUM of Purchase Amount	SUM of 2018 Accumulated Deprec	SUM of 2018 Ending NBV	SUM of 2018 Annual Amortization	Current Weighted Average Age in 2018	Weighted Average Age in 2022 (without proposed replacement)	Weighted Average Age in 2022 (with proposed replacement)
Front/side/roll off bins	13,860,323	8,604,192	5,256,129	667,858	9	13	10
Litter baskets	132,612	40,632	91,980	8,841	4	8	4
Grand Total	**13,992,935**	**8,644,824**	**5,348,109**	**676,699**			

The projected weighted average age of waste containers, as at December 31, 2018, is nine years. The expected useful life of waste containers is 15 years, indicating that approximately 30 percent of their useful life is remaining. If this profile is not funded, the weighted average age of waste containers in 2022 is projected to be 13 years. However, if proposed replacements are approved, the average age of all waste containers will be reduced to approximately ten years. Purchasing the replacement containers over the 2019-2022 budget cycle will help to smooth out annual expenditure requirements of future replacements.

Appendix B: Costs- Financial Analysis Summary Comparison (Waste Services Waste Containers Renewal Capital Profile):

Waste Services Vehicle & Equipment (2019-2022)	Alternative 1 - Status Quo	Alternative 2- Refurbishment of Waste Containers currently in Inventory	Alternative 2 Net Change from Status Quo
Total Capital Cost	($9,072,726)	($13,516,283)	($4,443,557)
Total Revenues	$0	$0	$0
Total Operating and Maintenance Costs	($264,252)	($284,896)	($20,645)
Total Lease Costs	$0	$0	$0
Project Net Inflows (Outflows)	($9,336,978)	($13,801,180)	($4,464,202)
WACC Discount Rate	5.41%	5.41%	n/a
Net Present Value	($7,783,331)	($11,484,806)	($3,701,475)

Note: The above table demonstrates the full life-cycle costing approach of the four year capital requirements. The operating and maintenance costs shown here include the impact of the capital over the 15 year useful life of the containers.

Appendix C: Comparison of Revenue Requirement of Alternatives (Waste Services Waste Containers Renewal Capital Profile):

Cost Comparison & Revenue Requirement

	Alternatives	
Reference	ALTERNATIVE 1- Continue funding through Capital	Alternative 2- Refurbishment of Waste Containers currently in Inventory
Base Year	2018	2018
In-Service Year	All	All

Cumulative Revenue Requirement (from base year)	ALTERNATIVE 1- Continue funding through Capital	Alternative 2- Refurbishment of Waste Containers currently in Inventory
CPV @ Yr 5	2,497,678	3,612,495
CPV @ Yr 10	5,237,314	7,677,292
CPV @ Yr 15	7,093,913	10,426,423

Capital Cost Summary (Base Year Dollars)	ALTERNATIVE 1- Continue funding through Capital	Alternative 2- Refurbishment of Waste Containers currently in Inventory
Equipment	7,925,327	10,845,355
Building	0	0
Other (engineering/PM/etc)	0	0
Total base costs	**7,925,327**	**10,845,355**
Add: contingency, inflation		
Contingency	792,533	2,169,071
Inflation	354,866	501,857
Total Capital	**9,072,726**	**13,516,283**

Economic Assumptions

Inflation (compounded each	1.90%	
Contingency	10.00%	20.00%

Operating and maintenance analysis is based on 15 years to capture the full life cycle costs of the assets

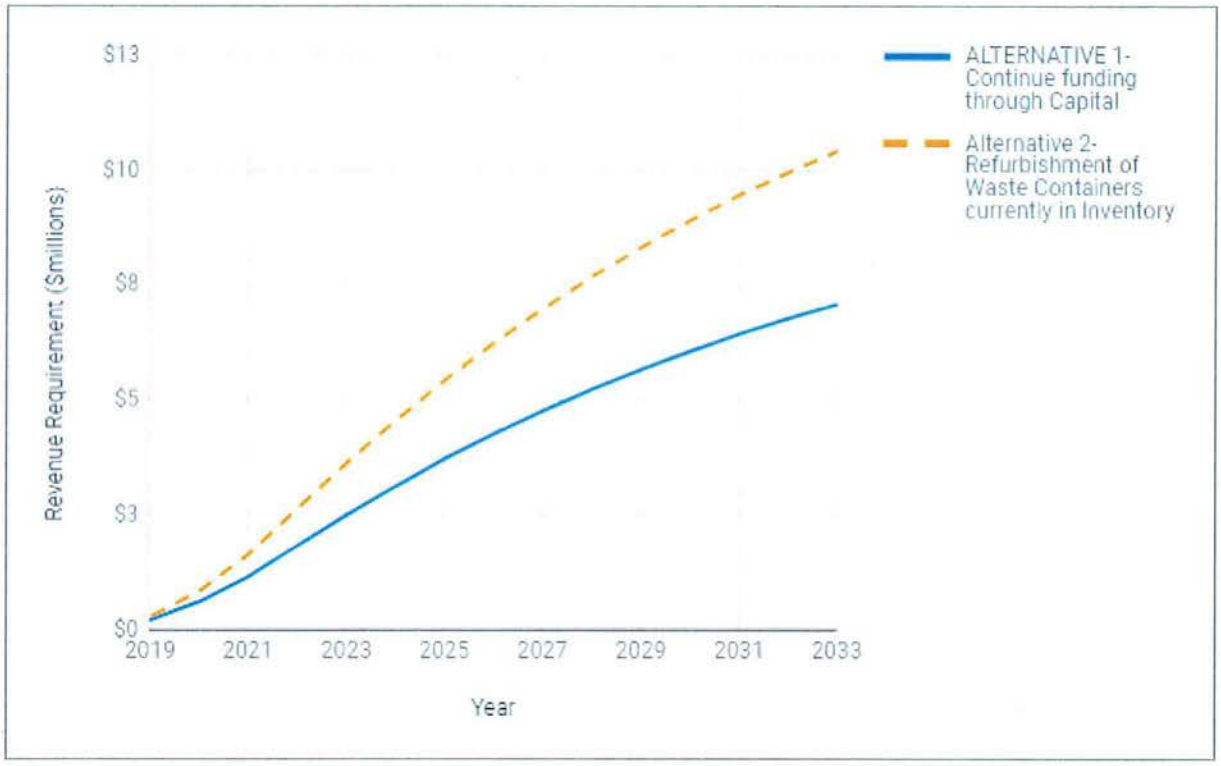
Assumes borrowing required at 84% (based on current Utility split) at 4% interest rate

Assumes 20 % contingency for alternative 2 due to unforeseen event in the future wherein containers can not be refurbished and need to be replaced.

Revenue Requirement Summary (Cumulative Present Value)

		Alternatives	
Year	Calendar Year	ALTERNATIVE 1- Continue funding through Capital	Alternative 2- Refurbishment of Waste Containers currently in Inventory
0	2018	$0	$0
1	2019	$204,836	$268,986
2	2020	$605,736	$827,023
3	2021	$1,148,315	$1,613,202
4	2022	$1,819,717	$2,605,794
5	2023	$2,497,678	$3,612,495
6	2024	$3,129,015	$4,549,730
7	2025	$3,716,286	$5,421,309
8	2026	$4,261,915	$6,230,844
9	2027	$4,768,198	$6,981,757
10	2028	$5,237,314	$7,677,292
11	2029	$5,671,324	$8,320,523
12	2030	$6,072,185	$8,914,363
13	2031	$6,441,748	$9,461,572
14	2032	$6,781,770	$9,964,766
15	2033	$7,093,913	$10,426,423

Waste Container Renewal Business Case
Cost Impact
Cumulative Present Value of Revenue Requirement



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Waste Services Vehicles and Equipment

Business Case

City Operations | Waste Services

City of Edmonton

Capital Profile: CM-81-2048 Composite

Project Number: CP# / OP#

Project Owners: John Felix and Doug Spark

Project Sponsor: Michael Labrecque

Version #: 4.0

Date published: October 12, 2018

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Change History

Version #	Date	Author	Description
1.0	7/25/2018	Herbert Ramos	Version submitted to General Supervisor, Team Lead and Working Group for review
2.0	8/1/2018	Herbert Ramos	Revised version submitted for Directors review
3.0	8/15/2018	Herbert Ramos	Revised version submitted for Branch Manager and Utility Advisor review
4.0	10/12/2018	Herbert Ramos	Revised version submitted for Business Partner review

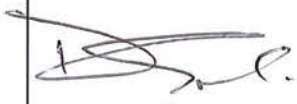
SUBMITTED BY:

Version #	Submitter Name	Title	Submission Date
4.0	Stephanie Zhang	Team Lead, Business Strategy, Planning and Performance	10/12/2018

REVIEWED BY:

Version #	Reviewer Name and Title	Signature	Signing Date
4.0	Ryan Kos, General Supervisor, Business Strategy Planning & Performance		10/12/18
4.0	Cameron Grayson Director, Business Integration		10/12/18
4.0	Keith Knoblauch Operational Controller, Business Financial Analytics		10/12/18

APPROVED BY:

Version #	Approver Name and Title	Signature	Signing Date
4.0	Michael Labrecque Branch Manager, Waste Services		10/12/18
4.0	Doug Spark Acting Director, Waste Collection Services		10/12/18
4.0	John Felix Director, Sustainable Waste Processing Services		10/12/18

1. Executive Summary

1.1. Waste Services Vehicles and Equipment

This business case requests funding for Waste Services Vehicles and Equipment under the CM-81-2048 composite profile. Waste Services has a fleet of over 400 units including vehicles and equipment used in the collection of waste and recyclables as well as processing these materials at the Edmonton Waste Management Centre. Some of the equipment are considered specialty equipment, such as shredders, compost turners, and tub grinders while other equipment are typically heavy duty vehicles such as waste collection vehicles, highway tractors and trailers.

Vehicles and equipment deteriorate as they age even with regular preventive maintenance and operating cost per kilometre increases over time. Replacing the vehicles and equipment, as scheduled, does not only improve the availability of fleet assets, but also results in lower fleet average operating cost per kilometre. Replacement can be done by purchasing new units or where possible, by refurbishment/rehabilitation to extend the useful life. These options were investigated to arrive at the best possible solution.

Waste Services requests approximately $60.2 million replacement funding over the next four-year capital plan for the replacement of equipment and vehicles as they reach the end of their useful life. This business case requests funds to replace and refurbish/rehabilitate equipment as they age and wear. With the replacement of vehicles and equipment as scheduled, additional customer needs can be met within the budget period.

Alternatives shortlisted to address the funding requirements are as follows:

- Alternative 1: Replace vehicles and equipment as they reach the end of their expected useful life with new ones
- Alternative 2: Replace vehicles and equipment as they reach the end of their expected useful life with new ones, rehabilitate some vehicles/equipment to extend their useful life
  Alternative 3: Replace vehicles and equipment as they reach the end of their expected useful life with new ones, lease some vehicles and equipment

Taking into full consideration the alternatives evaluated in this business case and their impact on the financial well being of Waste Services, residential rates and public service, Alternative 2: Replace vehicles and equipment as they reach the end of their expected useful life with new ones and rehabilitate some vehicles/equipment to extend their useful life, is recommended for the acquisition of replacement vehicles.

2. Background

2.1. Problem / Opportunity

As vehicles and equipment reach or near end of life, they need to be replaced on an ongoing basis to meet Waste Services' commitment of providing sustainable waste management services to the residents. In this business case, the additional needs of customers for the next four years can be met with the replacement of vehicles and equipment as scheduled.

The four-year capital plan for vehicles and equipment, which must be funded through rates, identifies 216 vehicles required for replacement (including ten trailers that were deferred from 2018). The level of funding requested will enable Waste Services to continue to meet its commitment to provide sustainable waste management services as set out in the Waste Management Policy C527 and align with Waste Services integrated 25-year strategic outlook.

2.2. Current Situation

Waste Services uses vehicles and equipment to collect and process waste and recyclables. The economic and operating life of most of the heavy duty waste collection vehicles is ten years. The replacement of vehicles ensures higher fleet availability and newer technology to meet all new emission, fuel use and efficiency standards. Sustainable Waste Processing equipment is maintained on site, where possible. Some equipment is refurbished at least once based on its use, condition, and operating time. Another refurbishment may be performed in some circumstances before the equipment is replaced. Refurbish/replace decisions are made in collaboration with Fleet and Facility Services subject matter experts. The economic and operating life of most of the Sustainable Waste Processing heavy duty vehicles is between five and 15 years.

Mobile equipment is integral for the successful operation of Waste Service. As such, Waste Services tracks the performance of its fleet on a regular basis. One key metric is fleet availability. This metric shows the availability of the fleet for work over time. As of September 2018, Waste Collection fleet availability is at 83.9% while the Sustainable Waste Processing fleet availability is at 89.8%. Trend analysis of this metric is shown in Appendix C.

Table below shows the inventory of the Waste Services vehicles, services/programs they are intended for, and average age of each vehicle type as of September 2018:

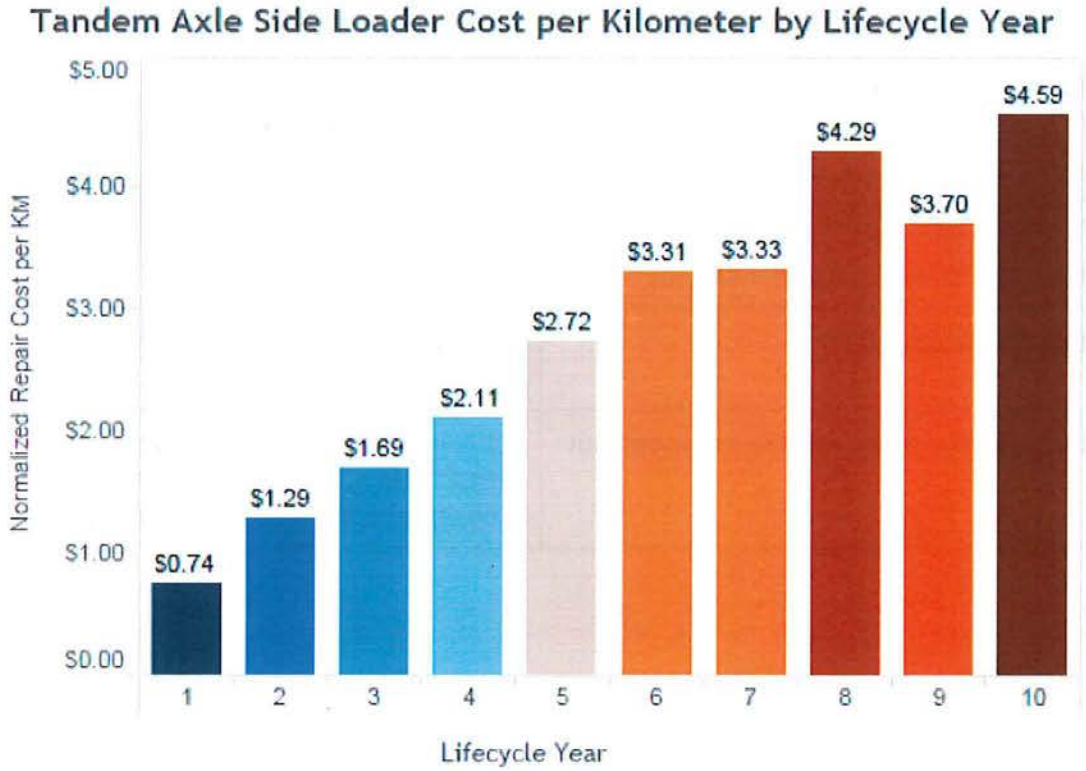
Vehicle Type	Inventory as of September 2018	Average Age/Useful Life (September 2018)	Services/Programs
Tandem Collection Trucks	58	6.6/10	Curbside Collection

Midsize collection trucks	21	8.5/10	Curbside Collection
Rear Load Collection Trucks	11	6.2/10	Single Family Collection
Front end collection trucks	24	8.6/10	Multi-Unit Bin Collection
Automated side loaders	4	4.7/10	Community Recycle Depots
Roll-off trucks	14	5.9/10	Eco Stations,Big Bin events, Commercial Collection, and internal material transfers between facilities at the Edmonton Waste Management Centre
Telescopic Loader	1	8.8/10	Drop-Off
Forklifts	4	6.0/10	Drop-Off
Skid steer	3	8.0/10	Drop-Off
Madvacs	4	4.7/10	Drop-Off
Picker (Crane) Truck	1	6.4/10	Drop-Off
Litter collection vehicles	6	6.7/10	Litter Collection
Long Haul Tractors	23	7.9/6	Waste Transport
Long Haul Trailers	50	7.6/8	Waste Transport
Wheel Loaders	22	3.8/5	Material movement and stacking for waste processing
Pick-up trucks	41	4.3/10	Site Operations
Other major heavy pieces >$250,000	18	7.6/10	Compost Turners, Screeners, Shredders, Grinders, Track Grapples
Other < $250,000	48	6.0/10	Various smaller pieces skid steers, manlifts, conveyors, attachments etc

Source: FAST (Fleet Analytics & Strategic Technology)

Illustration: Waste Services collections and processing vehicles and equipment

In 2016, Fleet and Facility Services performed a detailed Total Cost of Ownership and Life Cycle review on the Tandem Collection Trucks fleet. This review confirmed an ideal 10-year life for the Tandem Collection Trucks (the largest individual component of the Collections fleet), and in addition recommended smoothing out large purchasing events to better evenly distribute the age of the fleet and avoid large cost fluctuations. An even annual purchasing plan results in a fleet with an average age that is approximately half of the expected useful life of that class. This results in the lowest possible total cost of ownership. This can be shown through an example comparing the operating cost per kilometre (km) in the vehicle's first year compared to its last year. During the Total Cost of Ownership and Life Cycle review on Tandem Collection Trucks, it was found that a unit of this type would cost $0.74/km of operation in the first year of life, but $4.59/km by the tenth (and final) year of life. Assuming the approximate average 2017 usage of 12,500 km per unit, a truck in the final year of life would cost $48,125 more to operate than a unit in the first year of life.



3. Initiative Description

3.1. Initiative Description

This business case reviews alternatives and requests funding for the acquisition of replacement (renewal) vehicles for Waste Services daily operations. Waste Services funding is outlined in Waste Services Equipment profile CM-81-2048.

3.2. Urgency of Need

Fleet replacements are required on an ongoing basis to replace aging equipment (especially those still operating past their useful lives). Curbside collection requires one tandem truck per 4,800 households to collect waste and one tandem truck per 9,600 households to collect recyclables. Multi-unit bin collection requires one front loader per 9,350 households to collect waste and one front loader per 14,500 households to collect recyclables. Edmonton's population is expected to increase by about 2% annually during this budget period with an estimated 9,000 additional households per year. A review of the waste collection fleet indicated that while it is necessary to replace vehicles that have reached the end of their useful life, Waste Services is expected to be able to continue to provide full collection with the existing fleet.

3.3. Anticipated Outcomes

In addition to the fundamental outcome of optimizing existing capital assets while effectively delivering services to residents, Waste Services envisions the following outcomes:

Outcome /Deliverables	Estimated Timeline
Maintain high level of customer service	90% satisfaction rating
Maintain an effective fleet	Meet availability KPI targets in partnership with Fleet and Facility Services
Maintain effective fleet lifecycle management	Achieved by maintaining equipment in serviceable and reliable condition without excessive repair costs or down times

3.4. Scope

The profile is required to provide the funding for replacement of vehicles and equipment required for the daily operations of the Waste Collections and Sustainable Waste Processing Services.

3.5. Out of Scope

- Light duty equipment leased by Corporate Procurement and Supply Services
- Fixed or non-mobile equipment
- Future initiatives to increase diversion rate (example: source separation and grass ban)

3.6. Critical Success Factors

Critical success factors include:

- Timely acquisition of required vehicles and equipment.
- Availability of Fleet Services engineering and procurement expertise.
- Adherence to vehicles and equipment replacement and maintenance plan.

4. Strategic Alignment

Waste Services is committed to advancing Council's vision and goals. Council's Strategic Plan and the Corporate Business Plan will provide a blueprint to coordinate activities and efforts

between the goals and the corporation to make an impact towards achieving the vision. As these are developed, Waste Services will work collaboratively to ensure the strategic direction of the Branch is in alignment with that of the department, corporation, Council and citizens.

This profile aligns with the new strategic goals of the City of Edmonton outlined below:

Healthy City	Urban Places	Regional Prosperity	Climate Resilience
Edmonton is a neighbourly city with community and personal wellness that embodies and promotes equity for all Edmontonians.	Edmonton neighbourhoods are more vibrant as density increases, where people and businesses thrive and where housing and mobility options are plentiful.	Edmonton grows prosperity for our Metro Region by driving innovation, competitiveness and relevance for our businesses at the local and global level.	Edmonton is a city transitioning to a low-carbon future, has clean air and water and is adapting to a changing climate.

In addition to this overarching corporate alignment structure, this composite profile will align with the City of Edmonton's Waste Management Policy C527 and Waste Management Utility Fiscal Policy C558A. This profile also aligns with Waste Services integrated 25-year strategic outlook that will help to ensure Edmontonians receive maximum economic and environmental benefits while minimizing the cost increases of managing solid waste.

5. Context Analysis

The current model for Waste Collection fleet replacement is based on a life-cycle costing completed by Fleet and Facility Services. Fleet and Facility Services currently maintains about 420 vehicles and equipment for Waste Services (out of roughly 3,600 units across the corporation maintained by Fleet), and advises on unit condition towards the end of its prescribed life cycle and potential options for replacement. Fleet and Facility Services also performs the purchasing of new assets and disposal of assets that have been replaced.

Sustainable Waste Processing has also contracted out some long haul transfer and processing that is done using mobile equipment. This option is used most often to address activities that are intermittent and to deal with peaks when analysis shows that bringing on additional equipment and staff to do the work is not warranted. The contracting option is assessed on a case by case basis.

Solid waste processing is similar to many bulk materials handling operations, requiring a large amount of mobile equipment to move materials for processing and for moving processed materials. One method to reduce the requirement for mobile equipment is to install permanent infrastructure like hoppers, feeders, conveyors, and bins to handle the material. This option

would be capital intensive due to distances involved, and using permanent infrastructure may cause issues due to the seasonal nature of the material inputs and outputs

In 2019, Waste Services will review both its non-residential waste strategy[1] and approach to waste collection and diversion programs in the multi-unit sector. Inclusive in this review is the provision of waste collection for non-residential customers. This review will determine how best to improve the financial results and waste diversion statistics in these sectors. Any impact of this review on the procurement and provision of vehicles and equipment for this sector will result in an amendment to this business case.

6. Alternatives

In preparation of this business case several options were reviewed as outlined below:

Option Description	Advantages	Disadvantages	Further Consideration
1. Replace aging equipment/vehicle (purchase new)	• Maximizes useful life and capital value	• Higher initial cost	Yes
2. Replace (purchase new) and rehabilitate vehicles and equipment	• Extends useful lives of some vehicles and equipment	• Refurbished/ rehabilitated vehicles and equipment may be less reliable than brand new ones	Yes
3. Replace (purchase new) and lease vehicles and equipment	• Lesser capital requirement	• Increased operating rates and not all vehicle types available	Yes
4. Rehabilitate/ refurbish all vehicles and equipment to extend useful lives	• Extends useful lives of all vehicles and equipment	• Changing technology and models may limit rehabilitation • Increase in repair costs and not all vehicles can be	No, Fleet and Facility Services does not support rehabilitation/ refurbishment of all Waste Services

[1] CR_ 6217 Industrial, Commercial and Institutional Sector Strategic Review Report.

		rehabilitated	vehicles and equipment
5. Lease all fleet or equipment	• No capital or major maintenance required	• Increased operating rates and not all vehicle types are available	No, leasing all vehicles is not possible due to fleet standardization and configuration

To further investigate the options identified in above section, Waste Services considered three short list alternatives (those that were categorized "for further consideration"). The following are the detailed advantages and disadvantages for each alternative:

Alternative 1: Replace vehicles/equipment with new ones	
Advantages	**Disadvantages**
• New vehicles are generally more efficient than refurbished or reconditioned vehicles • Owning the equipment gives more options to make alterations if necessary • Ability to order more precise specification for an application • Lower repair costs over the life of the asset than Alternative 2, on average • Newer equipment (compared to refurbishment) may have new technology or upgrades that mitigate safety risks that can be presented by old equipment, even if well-maintained	• There may be less ability to upgrade quickly to new technologies, as compared to short term leasing • This option may lead to the highest yearly operating cost of the three options late in a unit's life.

Alternative 2: Replace vehicles and equipment with new ones, Rehabilitate/ Refurbish to extend useful life	
Advantages	**Disadvantages**
• Lower capital requirement • In general, it's more cost-effective to refurbish large equipment than smaller	• Dependent on type of machine, age and condition of machine - Not all equipment can be refurbished economically

equipment • In certain cases, refurbishment can more efficiently extract the full useful life of equipment.	• Equipment will be unavailable during refurbishment, potentially leading to service level disruptions • Refurbished equipment will carry higher yearly operating costs than newly purchased equipment.

For this business case, Fleet and Facility Services and Waste Services have identified the vehicle types that may be rehabilitated/refurbished. In addition, estimates were provided for expected rehabilitation costs and extended useful lives of the equipment that can be rehabilitated/refurbished.

Alternative 3: Replace vehicles and equipment with new ones,and Lease vehicles and equipment	
Advantages	**Disadvantages**
• Generally more flexible lease terms • Allows short term equipment testing or pilot programs without long-term equipment investment • Regular short term leasing can better keep pace with new technologies	• Depending on lease terms, overall cost is higher than owning • Not all types of equipment are available for leasing in the Edmonton market

For this business case, Fleet and Facility Services and Waste Services have identified the vehicle types that may be leased and provided the lease costs.

7. Organizational Change Impact

This profile is a continuation of the current practice and no organizational changes in the Waste Services structure is anticipated.

7.1. Stakeholder Impact

The table below identifies the stakeholders and the potential impacts for the three alternatives considered by Waste Services:

Stakeholder Requirement	Alternative 1	Alternative 2	Alternative 3
Stakeholder 1: Waste Services (primary internal)			

Increase maintenance costs	No	Yes	No
Potentially affect service delivery level	No	No	No
Lower Availability due to varying average fleet age	No	No	No
Potential need for additional resources	No	No	No
Stakeholder 2: City Council (primary internal)			
Higher utility rates may result in more citizen complaints	Yes	Yes	Yes
Stakeholder 3: Residents (primary external)			
Higher cost alternatives means higher utility rates	No	No	Yes
Stakeholder 4: Developers (secondary external)			
Ensure that Waste Services can meet the demand for collection and processing of waste and recyclables as the City grows	Yes	Yes	Yes
Stakeholder 5: Commercial Customers (secondary external)			
Limit disruption in services when lease/contract expires	Yes	Yes	Yes
Limit commercial hauling waste rates/fees increase in the costs for waste services	Yes	Yes	Yes

7.2. Business and Operational Impact

Business & Corporate Impact & Description	Alternative 1	Alternative 2	Alternative 3
Corporate Finance (internal)			

Administrative Support: • Resource demands for providing finance support especially in leasing vehicles with varying terms	No	No	Yes
Corporate Procurement and Supply Services (internal)			
Procurement: • More new contracts may be required for Leasing and Refurbishment Alternatives • Lease contracts may require more contract administration with monthly payment terms, as well as additional Law Branch and Risk Management requirements.	No No	Yes No	Yes Yes
Fleet and Facility Services (internal)			
Fleet Support: • Rehabilitation options may require more maintenance resources than replacement (purchase new) standard replacement, while leasing vehicles may require less maintenance resources. • More resources may be required to perform rehabilitation while maintaining required service levels for repair of remaining fleet. • More Engineering and Procurement resources for replacement (purchase new). • Additional fleet units will require additional maintenance resources: 1 FTE HD mechanic in the 2019-2022 budget cycle and 1 FTE HD Mechanic in the 2023-2026 budget cycle.	No No Yes Yes	Yes Yes No Yes	No No No Yes
Law Branch (internal)			
Legal Support: • May require additional resources for	No	No	Yes

legal support, review of contracts for non-standard contract terms and conditions, especially for lease.			

8. Cost Benefits

8.1. Tangible Benefits

The following tangible benefits are anticipated to be realized:

- Increased efficiency and reliability with lesser manual labour
- Reduced maintenance costs and downtime due to newer vehicles
- Improved safety

8.2. Intangible Benefits

The following intangible benefits are anticipated to be realized:

- Increased or maintained customer satisfaction
- Better vehicle conditions

8.3. Financial Costs

Table below shows the comparative capital costs for each alternative:

Alternative 1: Replace vehicles/equipment with new ones

Vehicles and Equipment	**2019** ($)	**2020** ($)	**2021** ($)	**2022** ($)	**2019-2022 Total ($)**
Capital Cost,	23,712,670*	15,383,000	13,040,964	14,088,330	**66,224,964**
Incremental O&M Cost, **	7,314	90,710	179,341	442,702	**720,067**
Total Cost	**23,719,984**	**15,473,710**	**13,220,305**	**14,531,032**	**66,945,031**

* Including deferred purchases from 2018
** This table only shows the incremental O&M for 2019-2022, however Financial analysis captures O&M cost (maintenance and fuel) for the full life cycle of vehicles and equipment

Discussion: Capital cost required for this budget cycle is approximately $66.2 million. Incremental O&M cost for the budget cycle of vehicles and equipment is $720,067. Total capital and incremental costs for the budget cycle is approximately $67 million.

Alternative 2: Replace vehicles and equipment with new ones, and Rehabilitate/Refurbish to extend useful life

Vehicles and Equipment	2019 ($)	2020 ($)	2021 ($)	2022 ($)	2019-2022 Total ($)
Capital Cost,	19,271,698*	14,085,746	12,950,751	13,905,019	**60,213,214**
Incremental O&M Cost, **	7,314	90,710	179,341	442,702	**720,067**
Total Cost	**19,279,012**	**14,176,456**	**13,130,092**	**14,347,721**	**60,933,281**

* Including deferred purchases from 2018
** This table only shows the incremental O&M for 2019-2022, however Financial analysis captures O&M cost (maintenance and fuel) for the full life cycle of vehicles and equipment

Discussion: Capital cost required for this budget cycle is approximately $60.2 million. Incremental O&M cost for the budget cycle of vehicles and equipment is $720,067. Total capital and incremental costs for the budget cycle is approximately $61 million, the lowest among the three alternatives.

Alternative 3: Replace vehicles and equipment with new ones, and Lease vehicles and equipment

Vehicles and Equipment	2019 ($)	2020 ($)	2021 ($)	2022 ($)	2019-2022 Total ($)
Capital Cost,	19,915,362*	13,590,132	8,807,100	12,851,613	**55,164,207**
Incremental O&M and Lease Costs, **	4,071,893	7,120,150	12,086,040	14,279,556	**37,557,639**
Total Cost	**23,987,255**	**20,710,281**	**20,893,140**	**27,131,169**	**92,721,846**

* Including deferred purchases from 2018
** This table only shows the incremental O&M and Lease costs for 2019-2022, however financial analysis captures O&M cost (maintenance and fuel) for the full life cycle of vehicles and equipment

Discussion: Capital cost required for this budget cycle is approximately $55 million. Incremental O&M and lease costs for the budget cycle of vehicles and equipment is approximately $37.6 million. While this alternative has the lowest capital cost among the three alternatives, it has the highest incremental O&M cost plus leasing cost. Total capital, incremental O&M and leasing costs for the budget cycle is approximately $93 million.

Financial Analysis

	Alternative 1 $	Alternative 2 $	Alternative 3 $
Net Present Value of Outflow @5.4% discount rate,	(58,874,697)	(53,556,885)	(86,902,164)

Alternative 2 yields the most optimal Net Present Value (NPV) of outflow among the alternatives using the weighted average cost of capital (WACC) of 5.4%.

Please refer to Appendix A - Financial Analysis for more details
Please refer to Appendix B - Revenue Requirement Impact Analysis for more details

8.4. Assumptions

- Equipment pricing may be significantly impacted by the market
- Inflation for the budget period is assumed at 1.9% as per the average Corporate assumption for 2019-2022
- 20% contingency is added to absorb minor scope changes and contract price adjustments, market volatility and tariff
- Vehicles/equipment useful life was assumed as between five to 15 years
- Costs to purchase, rehabilitate and lease as well as units to be rehabilitated (including their extended life) and leased, were provided by Waste Collections Services, Sustainable Waste Processing Services, and Fleet and Facility Services
- O&M costs for leased vehicles are not included in leasing costs
- Number of units to purchase were provided by Waste Collections Services and Sustainable Waste Processing Services and reviewed by Fleet and Facility Services
- Only incremental operating and maintenance costs were considered in the financial analysis
- Automated collection system, which is still being studied as part of future strategic initiatives is not considered in this business case.

9. Resourcing

No additional resources are required for the implementation of the alternatives. This project will be led by the Equipment Supervisor who will arrange for equipment replacement through Fleet and Facility Services. For new specialty equipment, an Operations Project Engineer, in collaboration with the operating group, will develop equipment specifications and an RFP for purchase direct from vendors.

10. Key Risk(s) and Mitigation Strategy

Risks	Impact	Mitigation Strategy
Health and customer issues if waste are not collected in a timely manner	High	• Timely procurement of vehicles and equipment
HIgher costs due to imposition of higher US tariff	Medium	• Lock in prices prior to effectivity of new imposition • Source required parts and equipment outside US
Some vehicles to be purchased may not be required anymore as new waste strategy is implemented	Medium	• Update procurement strategy to reflect Council decisions
The vehicles and equipment are not going to be replaced on time	Medium	• Opt for short term lease for some vehicles and adjust schedule
Procurement delay for specialized equipment	Medium	• start early in looking for vendors to supply the specialized equipment
Increased maintenance cost, lower availability, risk of unit failure leading to service level disruption due to aging equipment	Medium	• Replace equipment according to replacement schedule

11. Conclusion and Recommendations

11.1. Conclusion

The business case analyzes three different alternatives to acquire replacement vehicles and equipment. Financial analysis shows that Alternative 2 yields the most optimal net present value of outflow of ($53,556,885) at 5.4% discount rate. Alternative 2, Replace vehicles and equipment with new ones and Rehabilitate /Refurbish to extend useful life, is the most reasonable cost fleet acquisition model.

11.2. Recommendations

Taking into full consideration the alternatives evaluated in this business case and their impacts on the financial well being of the Waste Services, residential rates and public service,

Alternative 2 (Replace new and Rehabilitate/Refurbish vehicles and equipment to extend useful life) is recommended for the acquisition of vehicles and equipment. This profile will provide funding for replacement vehicles and equipment requirements of Waste Services. This funding is critical to meet Waste Services commitment of providing and delivering sustainable waste management services.

11.3. Project Responsibility and Accountability

The Project Sponsor is the Branch Manager of Waste Services. The overall capital program is managed by the Director of Waste Collections Services and Director of Sustainable Waste Processing Services. The Equipment Supervisors act as customers for the equipment acquisitions for their operations.

12. Implementation Approach

Table below identifies the scheduled replacement of vehicles and equipment (purchase and rehabilitate/refurbish) recommended by the Alternative through capital funding:

Vehicles and Equipment Required	2019	2020	2021	2022	2019-2022 Total
Total Vehicles and Equipment Requirement	76*	47	53	46	222

* Including deferred purchases from 2018

When equipment requirements are identified through the Equipment Replacement List and funding is secured, equipment purchases are made through Fleet and Facility Services. In some cases, specialty equipment is researched and desirable requirements are incorporated into a public tender. Acquisition plan and schedule is developed in collaboration with Waste Services, Fleet and Facility Services, and Corporate Procurement and Supply Services. The proposals are evaluated by engineering and maintenance personnel to select a vendor for award, considering features, reliability, customer references, and other criteria. City Operations Delegation of Authority/Expenditure Authority Limits are followed in the approval of procurement, contract management and payment lifecycle.

When vehicles and equipment are acquired, they are listed in the Fleet Services Information system, M5. The replaced vehicles and equipment are turned over to Fleet and Facility Services for disposal.

Equipment and vehicles listed in M5 are catalogued and classified for routine maintenance. Preventive maintenance schedules are determined by Fleet Services Planning group which are

sent to vehicle coordinators and maintenance providers when they are due for maintenance. Waste Services and Fleet Services shop controllers coordinate maintenance activities.

Ages and other attributes of the vehicles and equipment are tracked and reported in the Fleet Analytics & Strategic Technology (FAST). As well, FAST tracks performance measures. Examples of the performance measures are availability and utilization rates of the vehicles and equipment which are tracked to substantiate decisions on equipment inventory and projected maintenance ratios to ensure service delivery standards are maintained.

13. Review and Approval Process

The following review and approval process was followed for this business case:

Review Step	Reviewer
Review 1	Team Lead and General Supervisor of Business Strategy, Planning and Performance, Working Group, and Manager of Client and Vendor Services (Fleet and Facility Services)
Review 2	Operational Controller for Waste Services, Director of Business Integration, Director of Waste Collections Services, Director of Sustainable Waste Processing Services, and Branch Manager of Waste Services
Review 3	Deputy City Manager of City Operations
Review 4	Communications
Review 5	Utility Advisor
Review 6	Utility Committee report presented

14. Appendices

Appendix A - Financial Analysis Summary
Appendix B - Comparison of Revenue Requirement of Alternatives
Appendix C - Waste Services Fleet Availability and Trend Analysis

Appendix A: Financial Analysis Summary

Waste Services Vehicle & Equipment (2019-2022)	Alternative 1: Replace vehicles/equipment with new ones	Alternative 2: Replace vehicles and equipment with new ones, Rehabilitate /Refurbish to extend useful life	Alternative 2 Net Change from Status Quo	Alternative 3: Replace vehicles and equipment with new ones, Lease vehicles and equipment	Alternative 3 Net Change from Status Quo
Total Capital Cost	($66,224,964)	($60,213,214)	$6,011,750	($55,164,207)	$11,060,757
Total Revenues	$0	$0	$0	$0	$0
Total Operating and Maintenance Costs	($4,812,522)	($4,812,522)	$0	($39,104,712)	($34,292,190)
Total Lease Costs	$0	$0	$0	($14,556,480)	($14,556,480)
Project Net Inflows (Outflows)	($71,037,486)	($65,025,736)	$6,011,750	($108,825,399)	($37,787,913)
WACC Discount Rate	5.41%	5.41%	0.00%	5.41%	0.00%
Net Present Value	($58,874,697)	($53,556,885)	$5,317,812	($86,902,164)	($28,027,467)

Appendix B: Comparison of Revenue Requirement of Alternatives

	Alternatives		
Reference	Alternative 1: Replace vehicles/equipment with new ones	Alternative 2: Replace vehicles and equipment with new ones, Rehabilitate /Refurbish to extend useful life	Alternative 3: Replace vehicles and equipment with new ones, Lease vehicles and equipment
Base Year	2018	2018	2018
In-Service Year	All	All	All

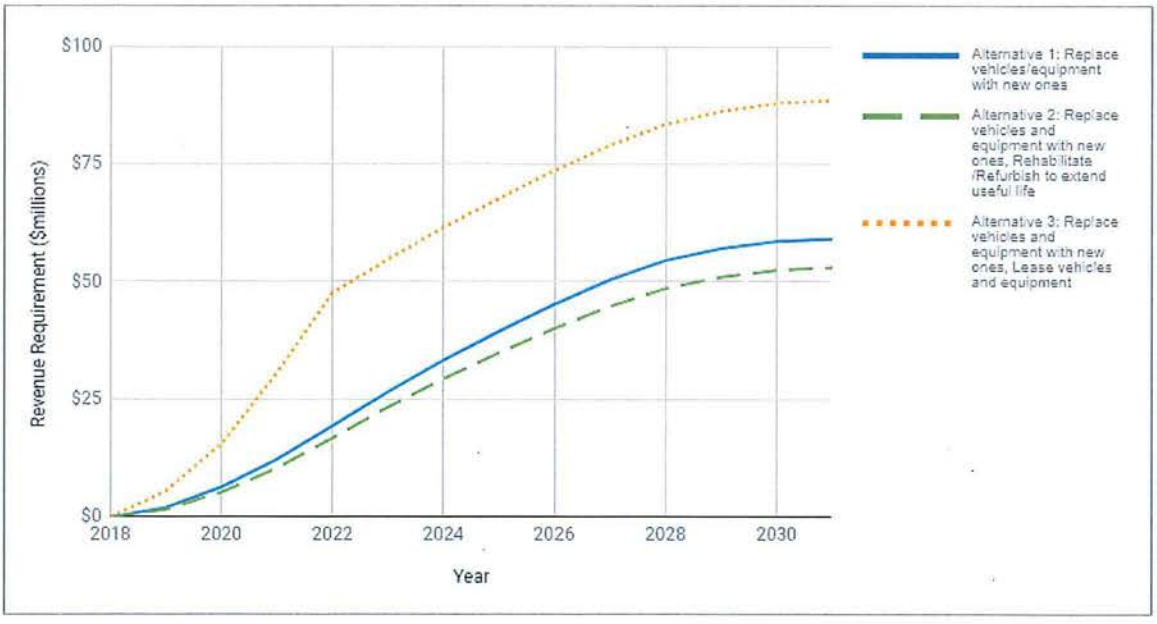
Cumulative Revenue Requirement (from base year)	Alternative 1: Replace vehicles/equipment with new ones	Alternative 2: Replace vehicles and equipment with new ones, Rehabilitate /Refurbish to extend useful life	Alternative 3: Replace vehicles and equipment with new ones, Lease vehicles and equipment
CPV @ Yr 5	26,578,453	23,325,662	54,763,341
CPV @ Yr 10	54,537,635	48,566,099	83,422,529
CPV @ Yr 15	59,132,740	53,050,033	88,471,020

Capital Cost Summary (Base Year Dollars)	Alternative 1: Replace vehicles/equipment with new ones	Alternative 2: Replace vehicles and equipment with new ones, Rehabilitate /Refurbish to extend useful life	Alternative 3: Replace vehicles and equipment with new ones, Lease vehicles and equipment
Equipment	53,262,372	48,356,567	44,366,635
Building	0	0	0
Other (engineering/PM/etc)	0	0	0
Total base costs	**53,262,372**	**48,356,567**	**44,366,635**
Add: contingency, inflation			
Contingency	10,652,474	9,671,313	8,873,327
Inflation	2,310,117	2,185,333	1,924,245
Total Capital	**66,224,964**	**60,213,214**	**55,164,207**

Revenue Requirement Summary (CUMULATIVE PRESENT VALUE)

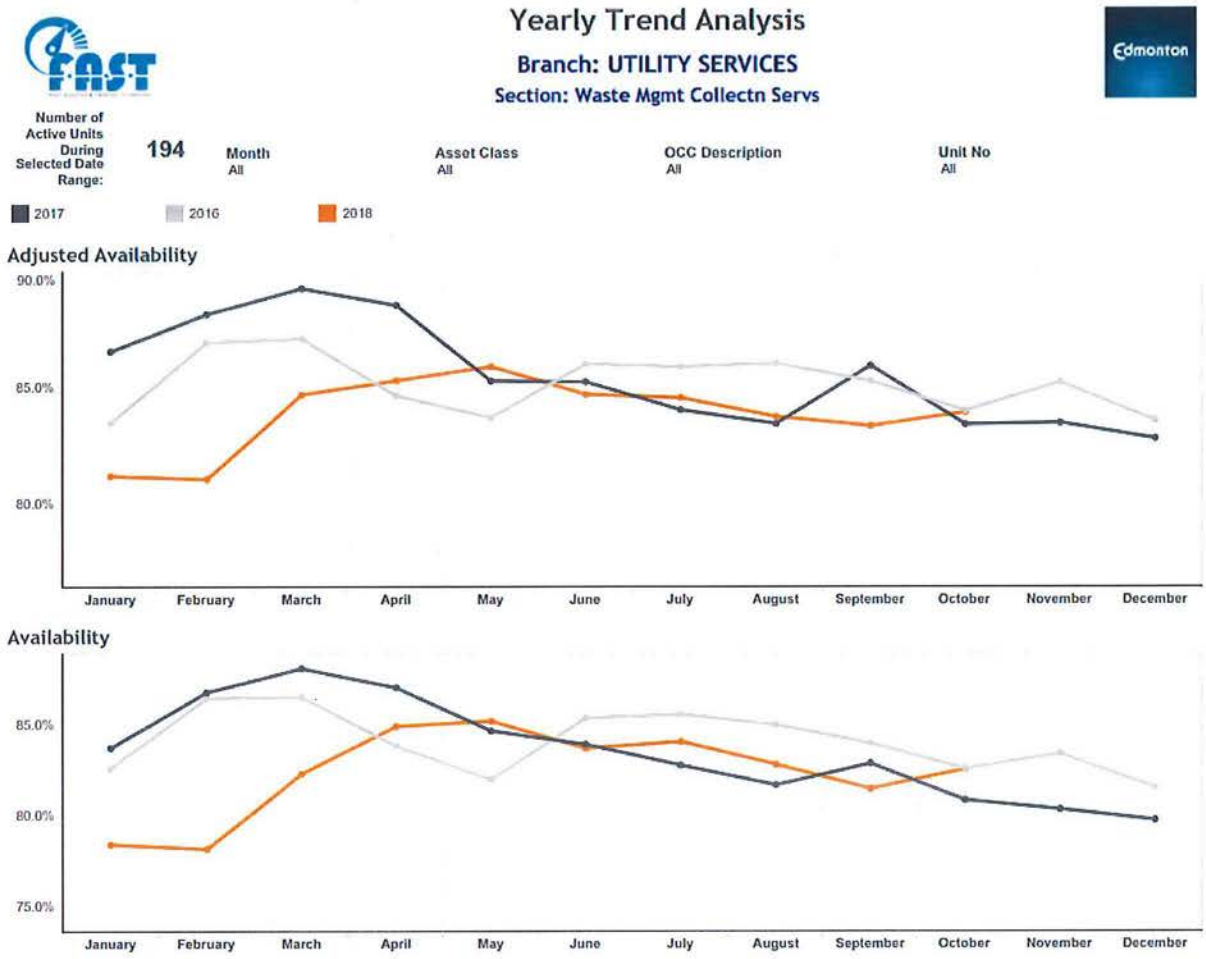
		Alternatives		
Year	Calendar Year	Alternative 1: Replace vehicles/equipment with new ones	Alternative 2: Replace vehicles and equipment with new ones, Rehabilitate /Refurbish to extend useful life	Alternative 3: Replace vehicles and equipment with new ones, Lease vehicles and equipment
0	2018	$0	$0	$0
1	2019	$2,012,465	$1,636,865	$5,547,110
2	2020	$6,348,585	$5,282,511	$15,560,149
3	2021	$12,151,242	$10,348,703	$30,490,996
4	2022	$19,332,447	$16,798,003	$47,613,145
5	2023	$26,578,453	$23,325,662	$54,763,341
6	2024	$33,286,779	$29,350,914	$61,487,608
7	2025	$39,487,158	$34,914,783	$67,746,490
8	2026	$45,207,772	$40,054,820	$73,575,914
9	2027	$50,475,329	$44,805,398	$79,008,842
10	2028	$54,537,635	$48,566,099	$83,422,529
11	2029	$57,075,259	$51,020,388	$86,175,430
12	2030	$58,586,704	$52,509,129	$87,906,013
13	2031	$59,132,740	$53,050,033	$88,471,020

Project Title: Waste Services Vehicle & Equipment 2019-2022
Cost Impact
Cumulative Present Value of Revenue Requirement

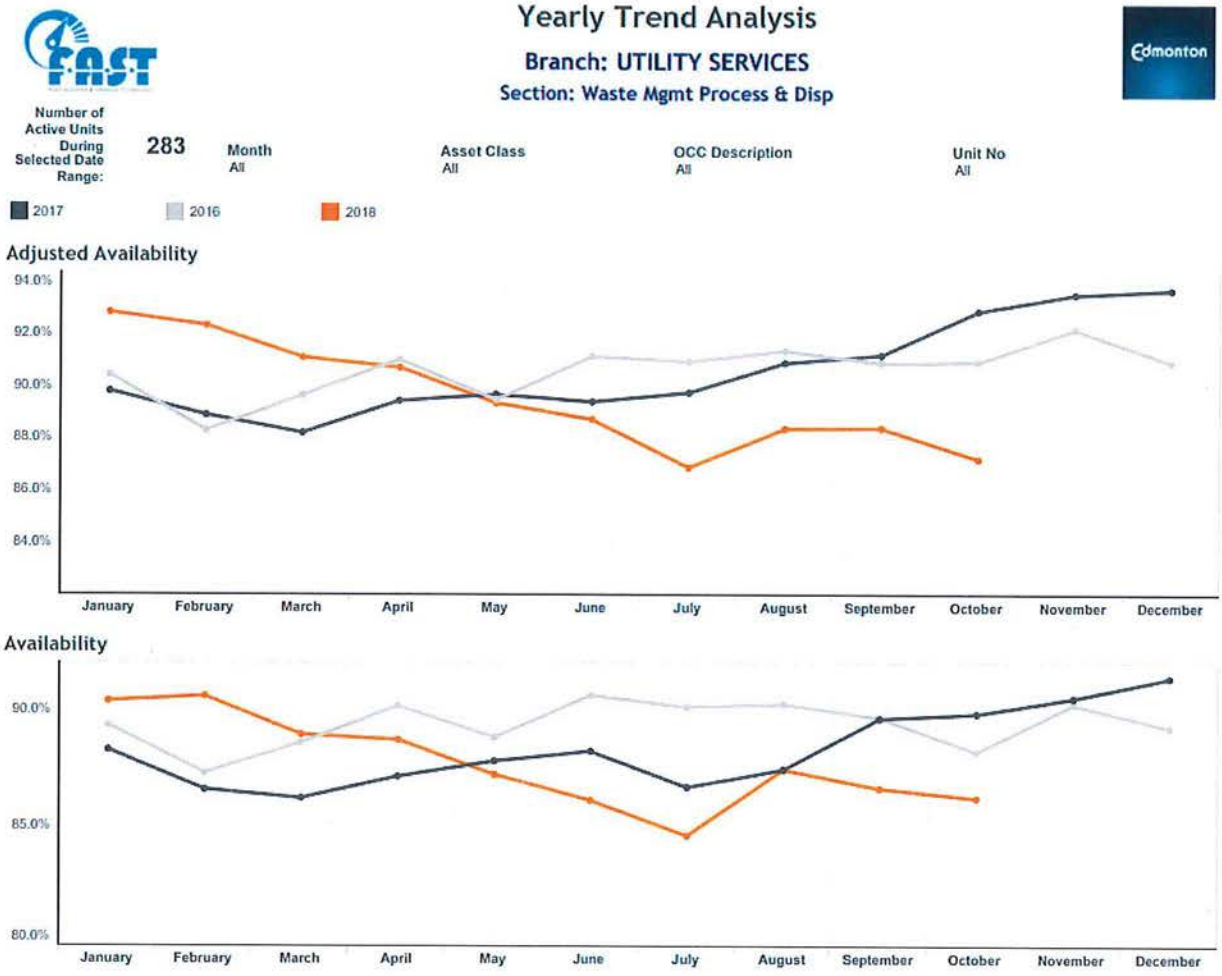


Appendix C - Waste Services Fleet Availability and Trend Analysis

Waste Collection Services



Sustainable Waste Processing Services



City of Edmonton

Waste Services – 2017 Cost of Service Study

Executive Summary

October 19, 2018

Executive Summary

1.1 Project Overview

In May 2018, the City of Edmonton (the "City") retained the consulting firm of Grant Thornton LLP ("Grant Thornton", "We") to perform a Cost of Service Study (COSS) for its Waste Services Utility ("Waste Services", "Waste", the "Utility"). The COSS used the Utility's 2017 operational and financial results to determine if costs had been properly allocated to the appropriate customer classes. The purpose of this study was to:

- Perform Cost Allocation Analysis: this required allocating costs to Programs (i.e. Collections vs. Processing and Disposal), Functions (i.e. detailed work activities performed by Waste Services), and Customer Class (i.e. Single Unit, Multi-Unit and Non-Residential) using agreed upon allocation methodologies. In order to accurately allocate costs to customer class, an up-to-date understanding of Waste Service's Regulated and Non-Regulated activities was required. This work was conducted in collaboration with The City's Waste Services and Financial Services staff.
- Perform Cost Recovery Analysis: this required comparing the revenues received for each customer class to their allocated costs and determining the implications of the cost recovery results. This allowed us to identify potential opportunities for improvement.

To meet these objectives, a standard cost of service methodology was followed. The methodology utilized was a 4-step process, as highlighted below:

1. Determine total revenue requirement;
2. Functionalize capital costs (i.e. depreciation and debt interest) and operating costs / revenues;
3. Confirm customer classes and cost allocation drivers and assumptions; and
4. Allocate functionalized costs to customer classes and perform cost recovery analysis.

1.2 Context

In order to effectively carry out this project, it was important to understand the financial context of the Utility. Waste Services has been a partial Utility (i.e. partially funded by tax levy) since 1995 and became a full Utility (i.e. entirely funded through customer rates) in 2009. As a Utility, Waste Services is governed by the Waste Management Utility Fiscal Policy ("Fiscal Policy"); Policy Number C558A[1], first introduced in 2011 and further updated in 2014. In 2012, Waste Services staff recognized that while this fiscal policy sets the criteria for allocating full costs to the Utility, it does not provide guidance on how to allocate costs to the Non-Regulated programs (services competitively offered to Non-

[1] The City of Edmonton, Financial Services and Utilities, "Waste Management Utility Fiscal policy; Policy Number C558A", adopted September 2014.

Residential customers). In 2012, the Price-Setting Principles for Non-Regulated Waste Services (the "Non-Regulated Price Setting Principles")[2] report was received and approved by Utility Committee and provided guidance for allocating costs to the Non-Regulated programs.

The Non-Regulated Price Setting Principles helped provide the framework in developing a cost allocation approach referred to as the "Incremental Cost Approach", whereby variable cost associated with the Non-Regulated Programs were allocated to Non-Residential customers but costs associated with indirect Operating and Maintenance (O&M), Overhead, Depreciation, and Debt Interest were treated as "sunk costs" and thus allocated only to Residential customers[3].

Since 2012, Waste has used an Incremental Cost Approach for the purpose of internal cost allocation, rate filing and establishing rates. The Incremental Cost Approach forms the basis of the cost allocation methodology behind this COSS.

1.3 Summary of Findings

The following sections summarize the methods used to perform the COSS and the main results.

1.3.1 Revenue Requirement

Based on review of Waste Services' 2017 financial results, minor adjustments were made in order to determine the cost of service for a 'normal' or "test year"[4]. These adjustments were determined in conjunction with representatives from Financial Services. The 2017 test year's total revenue requirement was calculated to be $202,426,161, as summarized in **Table 1** below. Section 2.1 of the Fiscal Policy states that; "The target combined Cash Position of the Utility is the Pay As You Go required as identified in the Capital Plan plus an amount derived to mitigate the risk exposures". Based on this policy, the 2017 total revenue requirement calculated includes cash reserve amounts totalling $8,129,000, which includes funds from Pay As You Go (PAYG) of $5,954,000 and Risk Allowance of $2,175,000.

[2] City of Edmonton, Infrastructure Services, "Price-Setting Principles for Non-Regulated Waste Services" 2012IS3568, 2012.

[3] The only exception was Construction and Demolition, as a facility built to specifically service Non-Residential customers, the depreciation and debt interest associated with the facility was allocated exclusively to Non-Residential customers.

[4] As later described in the report, adjustments included the removal of one-time Greenhouse Gas Revenue attributable to 2015 and 2016 in the amount of $1,805,000, and the addition of $5,291,551 of "Post Closure" costs to account for the annual required contribution towards the Post Closure Fund.

Item	2017 Amount ($'s)
Single Unit & Multi-Unit Residential Rate Revenues	$ 175,262,446
Operating Expenses:	
Operating and Maintenance Expenses (net of recoveries)	$ 146,568,394
Overhead Expenses	$ 17,580,563
Depreciation Expense	$ 20,778,412
Debt Interest Expense	$ 9,369,793
2017 REVENUE REQUIREMENT - BEFORE CASH RESERVE AMOUNTS	**$ 194,297,161**
Cash Reserve Amounts:	
Pay-As-You-Go	$ 5,954,000
Risk Allowance	$ 2,175,000
2017 TOTAL REVENUE REQUIREMENT	**$ 202,426,161**
Net Gain (Loss) Before Non-Rate Revenues	$ (27,163,716)
Non-Rate Revenues	$ 33,594,206
Net Gain (Loss) After Non-Rate Revenues	$ 6,430,490

Table 1: Summary of 2017 Total Revenue Requirements

In the 2017 test year, Waste Services collected $6,430,490 in excess of the total costs[5].

1.3.2 Functionalization of Revenues and Cost

The next step in the process was to allocate revenues and costs to a Program; Collections or Processing and Disposal. Subsequently, costs were allocated to the relevant Function; which represent distinct activities performed in the delivery of waste management services.

With the exception of Cash Reserve amounts, which includes Pay As You Go and Risk Allowance, all revenue requirements were allocated based on Program and Function. The specific Functions identified within each Program are briefly described below. The purpose of identifying Functions is to ensure that the full extent of the activities performed by Waste Services are included in the COSS.

1.3.2.1 Collections Functions

The Collections Program, also referred to as "Collection Services", includes the provision of direct collection services for waste and recyclables for all Residential (Single Unit and Multi-Unit) and Non-Residential customers. It also includes the management of drop-off centres for the collection of waste, recyclables and household hazardous waste which are intended to serve Residential households.

The costs within the Collections Program have been allocated to the following Functions; Direct Collection, Big Bin Events, Recycling Depots, Eco Stations and Reuse Centre.

1.3.2.2 Processing and Disposal Functions

The Processing and Disposal Program, renamed in 2018 to Sustainable Waste Processing Services, provides for processing and disposal services through a range of integrated facilities and programs at the Edmonton Waste Management Centre (EWMC) and contracted landfills. These facilities and programs support all waste hauled by City-managed and contracted collection services as well as Non-

[5] In the absence of the Post Closure normalization adjustment (i.e. if entire $10,880,810 was included) the resulting Net Gain (Loss) After Non-Rate Revenues would be $841,231.

Residential customers. The purpose of these activities is to re-direct specific waste streams away from landfill disposal and into reusable and marketable products. Other waste streams which cannot be recovered are hauled to area landfills for disposal.

The costs within the Processing and Disposal Program have been allocated to the following Functions; Integrated Processing and Transfer Facility (IPTF), Material Recovery Facility (MRF), Organics, Post Closure, Haul and Disposal, Construction and Demolition (C&D), Aggregate Recycling (Aggregates).

1.3.2.3 Indirect Activity Functions

Indirect Activities are a series of identified Functions that are required to support the entire Edmonton EWMC, or are focused on innovation, research, and development for which Edmonton residents are deemed to be the beneficiaries.

1.3.2.4 Overhead Activities

There are also overhead activities which support the Utility. In considering these activities, the following three categories were identified; Community Relations, Shared Services and Billing Charges.

1.3.3 Customer Classes, Cost Allocation Drivers and Assumptions

This section defines the Customer Classes served by the Utility to which all costs are ultimately allocated to, describes the two major services offered by Waste (Regulated and Non-Regulated), and discusses the cost allocation drivers and assumptions for the 2017 test year.

1.3.3.1 Customer Classification

Waste Services provides services to Residential and Non-Residential customers. Within the Residential sector, Waste Services provides services to both Single Unit and Multi-Unit customers in the form of **Regulated** services. Regulated services are defined by the Fiscal Policy as "activities that are core to the services provided by the Utility". The Non-Residential sector is comprised of commercial, industrial and institutional customers. Services focused on these customers are deemed as **Non-Regulated** and are defined by the Fiscal Policy as "activities that are not essential to the provision of core services by the Utility". In 2017, Waste Services operated four main Non-Regulated Programs for Non-Residential customers; Commercial Collections, C&D, Commercial Self-Haul and Aggregates.

We first confirmed the customer classes from property assessment records or other means including site verification using the Waste Management Bylaw[6] definitions as follows:

- **Single Unit Residential ("Single Unit"):**
  - A class of building containing no more than one dwelling unit:
  - Row housing where each dwelling unit is on a separate tax parcel; or
  - A mobile home located in a trailer park;

[6] The City of Edmonton Bylaw 17555 – Waste Management Bylaw

- **Multi-Unit Residential ("Multi-Unit"):**
  - A class of building containing more than one dwelling unit, except for row housing where each dwelling unit is on a separate tax parcel; or
  - A class of property containing more than one building with dwelling units on a single tax parcel

  As determined from property assessment records or other means including site verification.
- **Non-Residential Premises ("Non-Residential"):** any property, or self-contained portion of a property, that does not contain a dwelling unit (i.e. private commercial, institutional, or industrial businesses).

1.3.3.2 Regulated and Non-Regulated Services

Through facilitated discussions with Waste Services and Financial Services, costs of service were separately determined for Single Unit, Multi-Unit and Non-Residential Customer Classes. With respect to which activities Waste Services performs that are Regulated versus Non-Regulated, the following principles were noted:

1. Regulated Programs: are activities and services provided by Waste Services that are:
   a. Focused on collection, processing and disposal activities for Residential customers (i.e. both curbside collection and self-haul Residential customers);

   b. Services that the City can provide given rights enabled to it through the Alberta Municipal Government Act (i.e. other providers are not permitted to provide); and

2. Non-Regulated Programs: are non-core services provided to Non-Residential customers. In 2017, Waste Services operated four main Non-Regulated Programs:
   a. Commercial Collections;

   b. C&D;

   c. Commercial Self-Haul; and

   d. Aggregates

1.3.3.3 Cost Allocation Methodology - Cost Drivers and Assumptions

Key Waste Services and Financial Services representatives were engaged to help identify and confirm the most appropriate cost drivers to allocate revenues and revenue requirement across Program and Function and ultimately to Customer Class. The main three cost drivers identified were; tonnage[7], percentage of direct O&M and customer unit counts. These cost drivers, along with a number of key assumptions, were used to form a cost allocation methodology consistent with the Incremental Cost Approach.

[7] Tonnage metrics used include; EWMC – Total tonnage, EWMC – Collections tonnage, EWMC – Processing and Disposal tonnage (i.e. C&D, MRF, IPTF), Residential – Collections tonnage, Residential – Processing and Disposal tonnage (i.e. MRF and IPTF).

Refer to **Appendix A** for the cost allocation methodology and key assumptions, and **Appendix B** for the detailed listing of all cost drivers and tonnage summary, made to support the cost of service analysis.

1.3.4 Cost Allocations

1.3.4.1 Allocating Costs to Program and Function

Waste Services' total cost by Program[8] (i.e. total costs before cash reserve amounts and non-rate revenue) is illustrated in the charts below. Processing and Disposal represents the majority of Waste Services' costs at 63%, while Collections makes up the remaining 37%.

2017 Total Costs by Service Program

Collections	$ 71,952,998
Processing and Disposal	$122,344,163
	$194,297,161

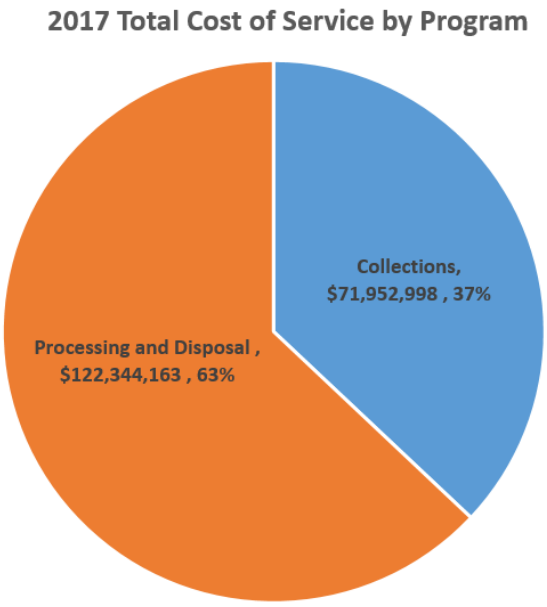


Figure 1: 2017 Total Costs by Service Program

Individual costs were then allocated to the various functions within each of the Collections and Processing and Disposal Programs.

[8] Cash Reserve Amounts are included in the Total Revenue Requirement (**Table 1**), but have been excluded from these analyses. The totals in these figures reconcile to the Total Revenue Requirement Before Cash Reserve Amounts of $194,297,161.

The following table and chart presents the breakdown of Collections Program's costs by function[9]:

2017 Total Collections Costs by Function

Direct Collections	$ 52,378,326
Big Bin Events	722,038
Recycling Depots	2,263,027
Eco-Stations	12,251,045
Reuse Centre	732,245
Indirect Activities	3,606,318
	$ 71,952,998

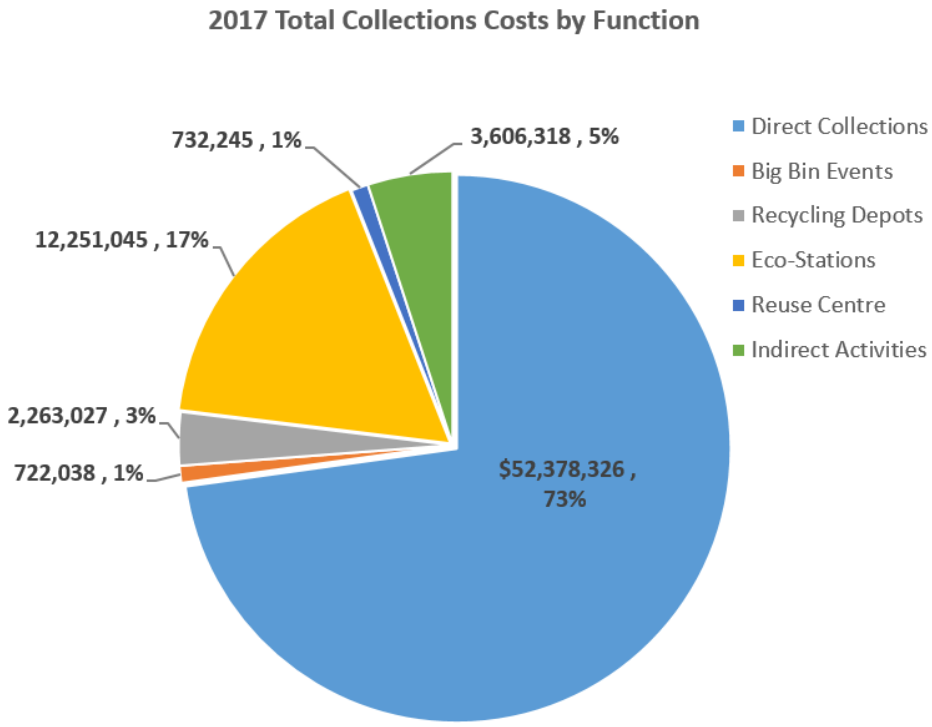


Figure 2.1: 2017 Collections Costs by Function

From the above chart, Direct Collections account for the largest proportion of service Program costs with 73% of the Program's total costs. Eco Stations rank second with 17% of the total, while Indirect Activities rank third, at 5% of the total.

[9] *Ibid*

The following table and chart presents the breakdown of Processing and Disposal program's cost by function[10]:

2017 Total Processing and Disposal Costs by Function

C & D Operations	$ 7,623,090
IPTF	22,391,854
MRF	10,579,207
Organics	24,511,427
Post Closure	6,094,213
Biofuels	(30,677)
Aggregates	897,065
Haul and Disposal	25,084,881
Indirect Activities	25,193,102
	$ 122,344,163

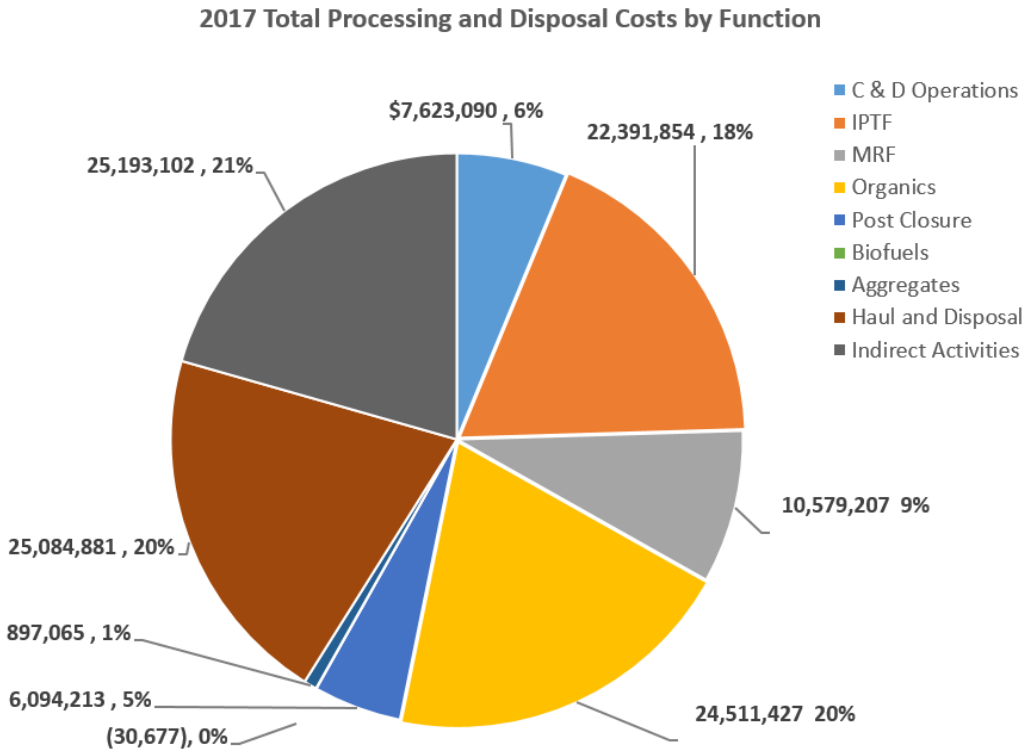


Figure 2.2: 2017 Processing and Disposal Costs by Function

From the above chart, the top three Processing and Disposal Program's costs are Indirect Activities[11] with 21% of the Program's total costs followed by Organics and Haul and Disposal each accounting for 20% of the Program's total costs. Biofuels shows a negative amount as a result of the net internal recoveries.

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[10] *Ibid*

[11] Indirect Activities are a series of identified Functions that are required to support the entire EWMC, or are focused on innovation, research, and development for which Edmonton residents are deemed to be the beneficiaries. These functions are described in detail in **Section 4.2.1.3**.

1.4 Cost of Service Results

To support this COSS, a review of the financial results and operational processes was performed. The 2017 financial results were reviewed and minor adjustments were made in order to determine the revenue requirement for the 2017 "test year". This was required to support the specific cost and revenue analysis. The results are presented below in **Table 3**.

The following are the key findings from the 2017 COSS:

- In the 2017 test year, Waste Services collected $6,430,490 in excess of the total costs;
- Single Unit cost recovery is 103.5%;
- Multi-Unit cost recovery is 109.7%;
- The combined cost recovery for the Regulated portion of Waste Services' business that provides service to Residential customers is 105.3%;
- In contrast, the cost recovery for the Non-Regulated portion of Waste Services' business that provides service to Non-Residential customers is 86.4%.
    - To address Non-Regulated program losses and achieve target cash balances, the Waste Services Utility was given authorization, through the 2015 Operating Budget process, to draw on a short-term loan from the City of Edmonton Financial Stabilization Reserve (FSR) over four years beginning in 2015. The FSR loan was intended to fund Non-Regulated losses as opposed to applying regulated revenues or increasing rates to Residential customers.

	Total Revenues	Total Revenue Requirement	Difference	Cost Recovery Ratio
Single Unit	$133,404,987	$128,903,700	$4,501,287	103.5%
Multi-Unit	$56,123,719	$51,153,688	$4,970,031	109.7%
Non-Residential	$19,327,946	$22,368,773	($3,040,828)	86.4%
Total	**$208,856,652**	**$202,426,161**	**$6,430,490**	**103.2%**

Table 3: Cost Recovery Performance - 2017 COSS - Incremental Cost Approach

1.4.1 Comparing 2017 and 2010 Cost Recovery Performances

To evaluate how the Utility performance has changed since the time of the previous COSS in 2010[12], we compared the 2017 Incremental Cost Approach results **(Table 3)** to those of the previous COSS in 2010[13]. The results are summarized in the table below in **Table 4**.

The key findings from comparing the studies are:

[12] It should be noted that at the time of the previous COSS in 2010, Waste Services had recently completed its transition to a full utility and many of the Programs were quite new in their implementation. Since that time, Waste Services has created many new cost centres, improving the accuracy with which revenues and costs can be allocated to Programs, Functions and Customer Classes.

[13] The 2010 COSS was performed using an approach resembling the Incremental Approach described herein, including selective allocation of indirect O&M, Overhead, Amortization and Debt Interest to Non-Residential customers.

- Overall, Waste Services has improved cost recovery from 94.6% in 2010 to 103.2% in 2017.
- While there continues to be a revenue requirement deficiency for the Non-Residential customer class, this recovery has improved from 69.4% in 2010 to 86.4% in 2017.
- Single Unit cost recovery went from 94.4% in 2010 to 103.5% in 2017.
- Multi-Unit cost recovery went from 103.6% in 2010 to 109.7% in 2017.

	Total Revenues	Total Revenue Requirement	Difference	Cost Recovery Ratio
Single Unit	$71,855,000	$76,157,000	($4,302,000)	94.4%
Multi-Unit	$37,347,000	$36,037,000	$1,310,000	103.6%
Non-Residential	$8,455,000	$12,189,000	($3,734,000)	69.4%
Total	**$117,657,000**	**$124,383,000**	**($6,726,000)**	**94.6%**

Table 4: Historical Cost Recovery Performance - 2010 COSS

1.5 Cost of Service Summary

The following are key summary observations based on the analysis completed for this study.

Reclassification of Multi-Unit customers receiving Single Unit service: In 2017, Waste Services identified 24,895 Multi-Unit customers receiving Single Unit services but only being charged Multi-Unit rates (i.e. Multi-Unit households were receiving hand-collection services consistent with Single Unit households but only paying 65% of the Single Unit rate).

- The Multi-Unit revenues collected for the 24,895 identified households totalled $8,720,221 and were re-allocated to the Single Unit Customer Class to contribute towards the associated Single Unit costs.

- Further analysis should be considered to improve the accuracy of tracking and billing of Single Unit and Multi-Unit customers[14].

Recovery from Multi-Unit customers relative to Single Unit customers: On the whole, Residential customers recover 105.3% of their costs, with Multi-Unit customers recovering 109.7% of their costs and Single-Unit customers recovering 103.5% of their costs.

- Collectively, Residential customers were considered to have recovered their costs[15] (105.3% combined cost recovery).

- Single Unit and Multi-Unit customers were considered to have recovered their costs relative to each other[16] (6.2% gap in cost recovery). Waste Services should consider narrowing this gap further

[14] Waste Services is currently working towards reclassifying the identified Multi-Unit households as Single Unit.
[15] A ratio of 100% suggests that a customer is appropriately covering its cost of service, though due to the assumptions involved to allocate costs, a reasonable +/- % range near 100% is deemed acceptable as per industry practice. A common range used within industry is +/- 10%. As Waste Services matures the accuracy of its cost and tonnage tracking among customer classes and gathers additional information beyond the 2017 test year, it would be reasonable to narrow the +/- % target range to account for the increased precision of cost allocation to each customer class.
[16] *ibid*

by taking into account potential impacts to customer tonnage and determining Single Unit and Multi-Unit rates independently as discussed below.

- In 2017, Multi-Unit customer rates were determined using a proportional method (i.e. charged a percentage (65%) of the monthly fee paid by Single Unit customers). An analysis of the 2017 residential tonnage indicates that Single Unit customers contribute more to Residential tonnage than in the past (72% in 2017 vs. 67% in 2010). With the availability of the tonnage data and the identification of the cost allocation drivers herein, Waste Services should consider revisiting the proportional method and determine Single Unit and Multi-Unit rates independently in order to achieve cost recovery ratios of 100% on a forecast basis.

On an aggregate basis, the Non-Regulated Programs do not fully recover their costs: Non-Regulated Programs recover 86.4% of their costs using an Incremental Cost Approach.

- Further analysis should be considered to improve the cost of recoveries of Non-Regulated Programs on an aggregated and program specific basis.

  - Cost recoveries can be improved by increasing Non-Regulated Program rates. However, the Non-Regulated Programs operate in a competitive market and may have limited flexibility to substantially increase rates while remaining competitive.

  - Alternatively, the costs associated with Non-Regulated Programs can be reduced. This can be achieved, for example, by reducing the level of service for Non-Regulated Programs, where possible.

- Furthermore, the provision of Non-Regulated Program services extend beyond the financial considerations to include environmental impacts, through the recovery of resources and increased landfill diversion.