

CAPITAL PROFILE REPORT

PROFILE NAME: **THREE-STREAM COMMUNAL COLLECTION**
 PROFILE NUMBER: **23-81-2054**
 DEPARTMENT: **Utilities**
 LEAD BRANCH: **Waste Services**
 PARTNER:
 BUDGET CYCLE: **2019-2022**

FUNDED

PROFILE STAGE:	Approved
PROFILE TYPE:	Standalone
LEAD MANAGER:	Denis Jubinville
PARTNER MANAGER:	
ESTIMATED START:	January, 2023
ESTIMATED COMPLETION:	December, 2043

Service Category: **Utilities**

Major Initiative:

GROWTH	RENEWAL
100	

PREVIOUSLY APPROVED:	29,011
BUDGET REQUEST:	-18,514
TOTAL PROFILE BUDGET:	10,497

PROFILE DESCRIPTION

This business case is in response to the June 25, 2021, Utility Committee motion which asked Administration to consider options for fully private services within a regulated utility. The business case describes the process that Administration took to respond to the motion and makes recommendations to keep the communal sector within the existing framework. The business case recommends that the changes recommended in the previous business case be implemented. Those include changes to the current waste collection program offered to residences receiving communal collection. Currently, residences on communal collection (typically condos and apartment buildings) receive garbage and recycle collection via large communal bins, with recycling being voluntary (i.e. not all properties have recycling collection). The changes recommended include mandatory three stream separation of waste for all residences receiving communal collection. The three streams are: garbage, recycling, and organics. The associated capital funds include funding for containers, vehicles and associated accessories.

To accommodate the unique needs and challenges of different properties, the implementation phase is expected to take four years and will include working with every property in Edmonton to ensure challenges such as space restrictions and resident education are taken into consideration when rolling out the program.

Edmonton's 25-year Comprehensive Waste Management Strategy (the Waste Strategy) was approved by City Council in September 2019. The Waste Strategy established a target of 90 percent waste diversion across all sectors, and calls for the implementation of mandatory three-stream source separation of waste as a critical component of making progress towards the target.

Research shows that source separation is most effective at increasing waste diversion when municipalities set clear and consistent rules across all sectors. Consistent expectations for sorting food scraps and recyclable materials at home (regardless of dwelling type), work, school and in the community help to reinforce concepts communicated through educational programs and encourage the formation of responsible waste habits.

Following the implementation of mandatory three-stream separation for residential properties that receive curbside collection (by way of the Edmonton Cart Rollout), this business case addresses the development of a mandatory three-stream source separation service for residential properties that receive communal collection.

In Scope:

- Work with all properties receiving communal collection to transition to mandatory three stream source separation.
- Introduce carts as a collection container in the communal program (currently only bins serviced with front load vehicles are used).
- Introduce volume limits and developer standards for new developments.
- Adjust frequency of collection as required.
- Updates to the Waste Services bylaw.
- Change in processing requirements related to the Edmonton Waste Management Centre.
- Capital and operating budgets to support the program changes.
- Net Present Value (NPV) analysis.
- Revenue Requirement (RR) analysis.
- Development and delivery of education and outreach programs and materials.

Out of Scope:

- All residences include in the Cart Rollout program.
- Non-residential waste programs.
- Waste Management Policy update.
- Securing any additional processing capacity needed to process the source separated waste.

PROFILE BACKGROUND

When the June 2021 business case was presented to the Utility Committee, haulers, landlords, and building owners indicated a desire for more private sector involvement in servicing the communal collection program. In response, the Utility Committee passed the following motion:

That the Business Case and cost of service study for Residential Communal Collection be referred back to Administration to provide an alternative business model for consideration, which allows for a fully privately operated service within the regulated utility model along with a robust data sharing and accountability framework to ensure that diversion targets contained within the 25 year waste strategy are met.

This business case evaluates options that could be implemented under the conditions described in the motion.

CAPITAL PROFILE REPORT

PROFILE JUSTIFICATION

The commitment to achieve 90 percent waste diversion across sectors provides an opportunity to align the communal collection program with best practices for sustainable waste management. Waste Services researched services provided in jurisdictions across North America, Europe and Australia, and engaged local stakeholders to gain insight on how best practices could be applied in Edmonton. The result is the attached business case, which recommends a mandatory three stream source separation program. The three streams are recycling, food scraps and garbage.

Currently, properties that receive communal collection can have waste collected in two streams: garbage and recycling. Containers collected via front load vehicles (referred to as front load bins) are used for both streams in the majority of cases.

It is estimated that approximately ten percent of communal collection waste was diverted from landfill in 2021. This number is representative of a gap that must be addressed to progress toward the target defined by the Waste Strategy.

Based on recent analysis of multiple municipalities, an additional 72 percent of the material that is currently collected as garbage could be diverted through a source separation program (reflecting estimates that 40 percent of garbage is food scraps, and 32 percent is recyclable). Furthermore, Edmonton's current communal collection recycling stream has a contamination rate of about 22 percent.

Communal waste collection differs from curbside waste collection in many ways including a need for more flexible servicing due to space constraints and anonymity of the users. Compared with properties receiving curbside collection, resident turnover in properties with communal collection has a higher impact to service participation and compliance, as there is a steeper learning curve for adhering to service guidelines when moving between communal collection sites than when moving between homes that receive curbside collection.

The low diversion rate and high contamination rate present an opportunity to design and implement changes to the communal collection program.

STRATEGIC ALIGNMENT

Mandatory source separation of waste is aligned with, and critical to support, the City of Edmonton's strategic goals as outlined in the original business case presented with the June 25, 2021, City Operations report CO00581.

Implementing mandatory source separation of waste for properties receiving communal collection through private services is less aligned with the goal of Climate Resilience than the same services offered through the Waste Utility, based on the compromised environmental outcomes privatization is expected to achieve.

ALTERNATIVES CONSIDERED

The options analysis used a two-stage approach. In the first stage, the detailed options were evaluated against a wide range of criteria. In the second stage, the condensed options were evaluated in terms of their risk and cost.

Alternatives considered are:

1. Full privatization
2. Privatization with City Processing
3. Privatization with City Education
4. Private Collection and Containers
5. City Managed Services (Status Quo)

Options were evaluated by a group of subject matter experts within Waste Services in a series of workshops.

As described in Section 5.4, and in support of the options analysis, Waste Services requested information from private haulers & waste processors about their current capacity and future plans. The information collected was used to inform the options analysis as much as possible. However, Administration's ability to quantitatively evaluate options involving privatization was limited due to the lack of information about private sector operators.

COST BENEFITS

Based on limited available information about potential costs for privatized services, only the Capital and Operating savings and costs for the alternatives were evaluated, including stranded costs that would need to be managed with privatization. Please refer to the "Costs" section of the business case for cost benefit analysis. Further details are provided in the business case appendices.

KEY RISKS & MITIGATING STRATEGY

A comprehensive risk register was developed to assess the risks for each viable alternative. Through analysis of risk categories relating to Collection, Processing, Container Provision, Education and Outreach, alternative 5 for City Managed Services (Status Quo) demonstrated the lowest risk. Alternative 5 avoids risks related to:

- Achieving the waste reduction and diversion targets of the Waste Strategy;
- The City's inability to effectively or affordably regulate rates, rate increases, service outcomes, and waste processing and disposal under the current limitations of the MGA; &
- Inequitable service outcomes for some multi-unit properties and residents.

Please refer to the "Risks" section of the attached business case. Further details are provided in the business case appendices.

RESOURCES

The recommended alternative requires 30 Permanent and Seasonal FTE's and 14 Temporary FTE's for the program implementation. Please refer to the "Staff and Fleet Impacts" section of the attached business case.

CAPITAL PROFILE REPORT

CONCLUSIONS AND RECOMMENDATIONS

The recommended alternative is for mandatory colocation with voluntary chute closure within the current structure of City offered services through its own personnel and its contractors. Through risk and financial analysis, the City managed services option has the highest total score, presenting the lowest risk and has an acceptable NPV. The City's current service model, which includes significant private sector participation through competitively awarded service contracts, is a strong base upon which to introduce more flexible servicing options in collaboration with the private sector, as doing so becomes feasible.

CAPITAL PROFILE REPORT

PROFILE NAME: **Three-stream Communal Collection**
 PROFILE NUMBER: **23-81-2054**
 BRANCH: **Waste Services**

FUNDED
 PROFILE TYPE: **Standalone**

CAPITAL BUDGET AND FUNDING SOURCES (000's)

APPROVED BUDGET		Prior Years	2023	2024	2025	2026	2027	2028	2029	2030	2031	Beyond 2031	Total
	Approved Budget												
	Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-	-
	2022 Cap Capital Budget Adj (one-off)	-	7,323	1,525	1,548	-	-	101	88	4,659	89	13,679	29,011
	2022 Cap Carry Forward	14	-14	-	-	-	-	-	-	-	-	-	-
	Current Approved Budget	14	7,309	1,525	1,548	-	-	101	88	4,659	89	13,679	29,011
Approved Funding Sources													
	Self-Liquidating Debentures	-	-	1,525	1,548	-	-	101	88	4,659	89	13,679	21,688
	Waste Mgt Retained Earnings	14	7,309	-	-	-	-	-	-	-	-	-	7,323
	Current Approved Funding Sources	14	7,309	1,525	1,548	-	-	101	88	4,659	89	13,679	29,011

BUDGET REQUEST	Budget Request	-	-	-	-	-	101	-101	-88	-4,659	-89	-13,679	-18,514
	Revised Funding Sources (if approved)												
	Self-Liquidating Debentures	-	-	-	-	-	101	-101	-88	-4,659	-89	-13,679	-18,514
	Requested Funding Source	-	-	-	-	-	101	-101	-88	-4,659	-89	-13,679	-18,514

REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	14	7,309	1,525	1,548	-	101	-	-	-	-	-	10,497
	Requested Funding Source												
	Self-Liquidating Debentures	-	-	1,525	1,548	-	101	-	-	-	-	-	3,174
	Waste Mgt Retained Earnings	14	7,309	-	-	-	-	-	-	-	-	-	7,323
	Requested Funding Source	14	7,309	1,525	1,548	-	101	-	-	-	-	-	10,497

CAPITAL BUDGET BY ACTIVITY TYPE (000's)

REVISED BUDGET (IF APPROVED)	Activity Type	Prior Years	2023	2024	2025	2026	2027	2028	2029	2030	2031	Beyond 2031	Total
		Other Costs	14	7,309	1,525	1,548	-	101	-	-	-	-	-
	Total	14	7,309	1,525	1,548	-	101	-	-	-	-	-	10,497

OPERATING IMPACT OF CAPITAL

Type of Impact:

Branch:																
	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE
Total Operating Impact	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CAPITAL PROFILE REPORT

PROFILE NAME: **SOURCE SEPARATED ORGANICS PROGRAM**
 PROFILE NUMBER: **20-81-2041**
 DEPARTMENT: **Utilities**
 LEAD BRANCH: **Waste Services**
 PARTNER:
 BUDGET CYCLE: **2019-2022**

FUNDED

PROFILE STAGE:	Approved
PROFILE TYPE:	Standalone
LEAD MANAGER:	Michael Labrecque
PARTNER MANAGER:	
ESTIMATED START:	September, 2019
ESTIMATED COMPLETION:	December, 2022

Service Category: **Utilities**

Major Initiative:

GROWTH
20

RENEWAL
80

PREVIOUSLY APPROVED:

31,527

BUDGET REQUEST:

-

TOTAL PROFILE BUDGET:

31,527

CAPITAL PROFILE REPORT

PROFILE DESCRIPTION

Initiative Description

This business case proposes major changes to the current waste collection program and the way single-unit residents set out their waste for collection in the City of Edmonton. These changes will include three stream collection and processing streams instead of the current two streams. The associated capital profile includes funding for purchasing carts and associated accessories, automated collection and crew maintenance vehicles, storage yard and processing equipment required to successfully roll out and manage this program.

In June 2017, the first steps were taken on the path towards the future of waste services when Administration presented the 2018-2020 Waste Services Business Plan to Utility Committee which identified increasing residential diversion activities as an essential focus area for Waste Services. This update, along with the findings from an extensive research study between the summer of 2017 and January 2018, set the stage for the recommended activities in CR_5184 Waste Management Strategy Update presented to the Council in March 2018. Council approved seven motions for Waste Services during this Strategy Update, which included: planning a source-separated organics program for organic waste processing and collection, with planned implementation starting in Fall 2020; providing a report on alternate collection methods for grass, leaf and yard waste; and continuing engagement with the citizens on the implementation of potential waste diversion programs.

In August 2018, Administration submitted reports on the Source Separated Organics (SSO) Pilot (CR_5832) and Alternate Collection and Diversion Options for Grass, Leaf and Yard waste (CR_5826). These reports outlined the options that would be included in the public engagement activities along with a demonstration phase for the program changes outlined in CR_5184 Waste Management Strategy Update. Council approved the demonstration phase with the 120 litre green organic cart and alternate collection of leaf and yard waste pilot programs in August 2018, thus giving approval for administration to proceed with planning for the implementation of an organics program city-wide.

The proposed waste collection and processing streams are:

- Source Separated Organic (SSO) Stream
- Seasonal Leaf and Yard Waste (L&YW) Stream
- Garbage Waste Stream
- Recycling Waste Stream

Source Separated Organic (SSO) Stream: Organics separation at the source is an effective method of reducing the environmental impact of solid waste. In the SSO program, households will segregate compostable kitchen organic waste materials, such as food waste. This organic waste will be set out for collection separately from their garbage. Once the organic waste is collected by the City, it can be processed directly at organics processing facilities (ie. ADF) without being pre-processed at the IPTF with other household garbage.

Seasonal Leaf & Yard Waste (L&YW) Stream: The seasonal L&YW program includes separate L&YW collection program and the free L&YW drop off service. Residents will be encouraged to set out their leaf and yard waste, separately from their garbage and SSO on predetermined dates from spring to fall. The L&YW will be collected by Waste Services. Residents will also be provided with the opportunities to drop off L&YW at the Eco Stations, Big Bin Events, and the Edmonton Waste Management Centre for free. Such materials can then be processed directly at the cure site without going through a processing facility.

Garbage Stream

Removal of the organic waste from the garbage will decrease the total tonnage of materials in this stream. In addition, residents will be limited to the space available in their black carts for their garbage materials. This increases the incentive to maximize recycling and organic separation. Waste Services will continue to provide collection of garbage to the residents. This stream will capture all remaining materials that do not enter the organic or the recycling stream.

Recycling Stream

Waste Services will continue to collect recyclable materials at the curbside. Residents will continue to separate recyclable materials such as plastic, paper, glass bottles, metal cans etc. in their blue bags and set it out for collection at the curb.

In Scope

Waste Collection

- Addition of automated collection of source separated organic stream.
- Addition of seasonal leaf and yard waste curbside collection program.
- Changing the current method of garbage collection from manual to automated.
- Potential change in collection method and/or frequency of the recycling stream.

Residential Waste Drop off

- Impact on Big Bin events, Eco-station programs and the Residential Transfer Station

Processing

- Change in processing requirements related to the new Organics Processing Facility (OPF), Curesite, IPTF Pre-Processing facility, MRF and landfill.

Financial

- Capital and operating budgets to support the program changes.
- Net Present Value (NPV) analysis.
- Revenue Requirement (RR) analysis
- Utility rate change for different black cart sizes.

Education, Outreach and Enforcement

- Development and delivery of education and outreach materials, programs, and strategies.

Out of Scope

The following services, although aligned, are managed separately and considered out of scope in this business case:

- Multi-unit residential sector receiving waste container collection service.
- Non-residential waste programs.
- Waste Bylaw update and related resourcing requirements.
- Waste Management Policy update.
- External Curesite Project: capital and operational expenses.
- OPF Business Case and financial approval.
- MRF retrofit.

CAPITAL PROFILE REPORT

PROFILE BACKGROUND

The current residential waste collection programs need significant changes to support the City's current 90% single unit residential diversion goal. The two stream residential collection offered by Waste Services allows for collecting unlimited comingled garbage (organic and refuse) and recycling at the curbside. The materials are processed at Edmonton Waste Management Centre (EWMC) where a portion is diverted from landfill. In the last few years, Edmonton's single-unit residential diversion rate has been slowly decreasing and it reached a low of 36% in 2018. The reduction in single unit residential waste diversion is linked to current challenges in processing at EWMC, including the seasonal operation of the Edmonton Co-Composting Facility, and the continued delay of full operation of Enerkem Alberta Biofuels. The Single Unit Residential Waste Diversion Rate was restated in 2018 based on a review of the City Auditor. Specifically, it was noted in the 2018 City Auditor report that Waste Services cannot achieve its 90% diversion target through the existing program, and will need to implement new waste diversion programs in order to achieve this goal.

PROFILE JUSTIFICATION

Opportunity

Edmonton's single unit residential diversion rate as of 2018 was 36 percent. Edmonton is currently faced with a large gap between this current residential diversion rate and the 90 percent goal. Getting to 90 percent requires focus on the entire waste stream, starting with how households are asked to manage their waste in the home. Waste Services' Strategy Update (CR_5124) outlines the path and program changes that will be required to achieve this goal.

The gap between the projected diversion rate and the 90 percent goal could be best addressed by aligning Edmonton's waste management practices with current best practices for municipal waste. It requires focus on the entire waste stream, including diversion, sorting activities, as well as reduction and reuse initiatives, undertaken at the household level, and allows for more effective processing of waste feedstock, with reduced moisture and contamination challenges.

This unique opportunity allows Waste Services to design a waste collection program at the same time as developing an organics processing facility using current technology. By making this combined decision and improving on a number of other processes, Waste Services is able to further advance towards its goal of diverting up to 90 percent of residential waste from landfill.

Anticipated Outcomes

The following anticipated outcomes will be achieved through this updated program:

- An estimated increase in the current diversion rate by approximately 8-12 percent to contribute towards the 90 percent single unit residential diversion target. This forecasted diversion rate impact is predicated on the assumptions that waste sorting and diversion facilities fully function at the EWMC, end product markets for all recyclable commodities are available, and that residents fully participate in the proposed program change
- An expected decrease in the amount of garbage set-out by single unit residents
- A cleaner organics stream as an input to ADF processes, resulting in an increase in higher quality compost
- Behavior changes in single unit residents, which includes how residents sort and set out their household waste
- Reduction in the expected moisture content in Refuse Derived Fuel.

STRATEGIC ALIGNMENT

This business case aligns with the Corporate Strategic Objective related to Climate Resilience, the Service Objective related to Environmental Protection, and the Supporting Objective related to Environmental Stewardship. This profile aligns with the new strategic goals of the City of Edmonton and the City's Waste Management Policy C527 which commits to delivering sustainable waste service exceeding provincial waste diversion and processing standards. This profile also aligns with Waste Services Integrated 25-Year Strategic Outlook.

ALTERNATIVES CONSIDERED

Several options were reviewed, please refer to "Alternative Analysis" Section of the attached business case for details

COST BENEFITS

Please refer to "Single-Unit Set-Out Business Case Recommendation" Section of the attached business case for detailed financial analysis.

KEY RISKS & MITIGATING STRATEGY

Please refer to "Single – Unit Waste Set-Out Business Case Key Risk(s) and Mitigating Strategy" Section of the attached business case.

RESOURCES

Both the recommended set-out program demands 16.5 new permanent and seasonal FTEs required from 2022 onwards. On top of this, it also requires additional 19 temporary FTEs to cover the cart roll-out program, public education and outreach and GIS mapping between 2020 and 2023.

CONCLUSIONS AND RECOMMENDATIONS

This business case demonstrates the need to transition the single-unit waste collection program & the importance of separating the organic waste from the current mingled garbage stream. The recommended set-out solutions together with seasonal L&YW pick-ups & extra big bin events not only address residents' waste disposal demand, but also make a positive impact on the residential diversion rate. Tag-a-bag program was proposed to dispose additional garbage during the week or holidays at extract costs to the residents.

- 120L green cart with top-up: weekly in spring, summer and fall; bi-weekly in winter
- Manual seasonal collection of L&YW: 2 times in spring and 2 times in fall
- Resident choice between 120L or 240L black cart: bi-weekly
- Manual collection of recycling in blue bags: weekly

CHANGES TO APPROVED PROFILE

2022 Fall SCBA (#22-31, CFO.34): Change in source of funding by using excess cash to finance the capital program instead of borrowings, in order to save interest expenses. The adjustments result in no overall impact on the budget within the program.

CAPITAL PROFILE REPORT

PROFILE NAME: **Source Separated Organics Program**
 PROFILE NUMBER: **20-81-2041**
 BRANCH: **Waste Services**

FUNDED
 PROFILE TYPE: **Standalone**

CAPITAL BUDGET AND FUNDING SOURCES (000's)

	Prior Years	2023	2024	2025	2026	2027	2028	2029	2030	2031	Beyond 2031	Total
		APPROVED BUDGET										
Approved Budget												
Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-	-
2019 Cap Capital Budget Adj (one-off)	51,494	-	-	-	-	-	-	-	-	-	-	51,494
2021 Cap Release to Corp Pool	-10,145	-	-	-	-	-	-	-	-	-	-	-10,145
2022 Cap Release to Corp Pool	-9,822	-	-	-	-	-	-	-	-	-	-	-9,822
Current Approved Budget	31,527	-	-	-	-	-	-	-	-	-	-	31,527
Approved Funding Sources												
Self-Liquidating Debentures	24,712	815	-	-	-	-	-	-	-	-	-	25,527
Waste Mgt Retained Earnings	6,815	-815	-	-	-	-	-	-	-	-	-	6,000
Current Approved Funding Sources	31,527	-	-	-	-	-	-	-	-	-	-	31,527

BUDGET REQUEST	Budget Request	-	-	-	-	-	-	-	-	-	-	-
	Revised Funding Sources (if approved)											
	Self-Liquidating Debentures	-	-815	-	-	-	-	-	-	-	-	-815
	Waste Mgt Retained Earnings	-	815	-	-	-	-	-	-	-	-	815
	Requested Funding Source	-	-	-	-	-	-	-	-	-	-	-

REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	31,527	-	-	-	-	-	-	-	-	-	31,527
	Requested Funding Source											
	Self-Liquidating Debentures	24,712	-	-	-	-	-	-	-	-	-	24,712
	Waste Mgt Retained Earnings	6,815	-	-	-	-	-	-	-	-	-	6,815
	Requested Funding Source	31,527	-	-	-	-	-	-	-	-	-	31,527

CAPITAL BUDGET BY ACTIVITY TYPE (000's)

	Activity Type	Prior Years	2023	2024	2025	2026	2027	2028	2029	2030	2031	Beyond 2031	Total
		REVISED BUDGET (IF APPROVED)											
	Other Costs	31,527	-	-	-	-	-	-	-	-	-	-	31,527
	Total	31,527	-	-	-	-	-	-	-	-	-	-	31,527

OPERATING IMPACT OF CAPITAL

Type of Impact:

Branch:																
	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE
Total Operating Impact	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CAPITAL PROFILE REPORT

PROFILE NAME: **ORGANICS SCREENING AND MIXING SYSTEM**
 PROFILE NUMBER: **23-81-3060**
 DEPARTMENT: **Integrated Infrastructure Services**
 LEAD BRANCH: **Infrastructure Planning and Design**
 PARTNER: **Waste Services**
 BUDGET CYCLE: **2023-2026**

FUNDED

PROFILE STAGE:	Approved
PROFILE TYPE:	Standalone
LEAD MANAGER:	Pascale Ladouceur
PARTNER MANAGER:	Denis Jubinville
ESTIMATED START:	January, 2023
ESTIMATED COMPLETION:	December, 2024

Service Category: **Utilities**

Major Initiative:

GROWTH

RENEWAL
100

PREVIOUSLY APPROVED:	5,800
BUDGET REQUEST:	-
TOTAL PROFILE BUDGET:	5,800

PROFILE DESCRIPTION

The High Solids Anaerobic Digestion Facility (HSADF) at the Edmonton Waste Management Centre (EWMC) was designed to process up to 40,000 tonnes of a combination of source-separated organics and the organic fraction of municipal solid waste.

The recommended screening and mixing system consists of two screens and two mixers in the facility to remove non-organic foreign material (garbage) from the compost prior to outdoor windrowing at EWMC. This screening and mixing system is the best successor to the old Finishing Circuit in the now demolished Composting Facility. The new screening and mixing system will help the City increase the quality of the compost created and manage the current litter problem at the cure site and in the neighbouring wetland. In addition, the system will allow for the reuse of woodchips back into the process, reducing usable material to landfill.

PROFILE BACKGROUND

The HSADF uses microorganisms to degrade the organic waste without oxygen and produces biogas and nutrient-rich semi-solid digestate. The digestate is further processed in the facility's aeration boxes to produce compost.

The High Solids Anaerobic Digestion Facility relied on the Edmonton Composting Facility for important processing steps (specifically screening). With the decommissioning and demolition of the Edmonton Composting Facility, further investment into the overall process is required, such as the screening and mixing system project.

PROFILE JUSTIFICATION

The goal of the facility's digestate screening and mixing system is to screen the digestate indoors, thereby reducing the amount of litter from dispersing on and off site. Screening early in the process will reduce costs related to processing non-organic material (such as film plastic) and help fully utilize the systems capacity. The mixers will efficiently mix woodchips with the digestate and allow for the reuse of two thirds of the woodchips into the process. Adding screening and mixing will result in a higher quality of compost. If the compost is contaminated by not screening it properly, it has restricted end uses with an associated fee. The screened compost will allow for a broader variety of uses and will likely open up the opportunity to sell into different markets such as agricultural lands, residential gardens, horticultural operations, the nursery industry and other businesses.

STRATEGIC ALIGNMENT

This project aligns with ConnectEdmonton and the 25-Year Waste Strategy by ensuring that food waste is processed responsibly and the amount landfilled is minimized.

ALTERNATIVES CONSIDERED

HSADF Digestate Screening and Mixing System Business Case contemplates five alternatives, two of which were considered viable. The viable options considered were netting the cure site and adding a trommel screen in the HSAD (Option 2) or adding two screeners and two mixers in the HSAD (Option 4). As outlined in the Business Case, Option 2 was found to have a lower total cost of \$6.7 million (in present value) compared to \$7.5 million (in present value) for Option 4. The costs for Option 4 were higher due to higher operating costs associated with this option.

The current capital estimate for Option 4 is \$5.8 million starting in 2022 with the majority of the costs being incurred in 2023.

COST BENEFITS

The program is focused on reducing the amount of waste going to the landfill and reducing the litter problem. This project will expand the organic waste processing capabilities and contribute to the 25-Year Waste Strategy's goal of diverting 90% of waste from landfill.

KEY RISKS & MITIGATING STRATEGY

Challenge: Economical - The equipment suppliers have different technologies that could meet the City's requirements but at varied price points. In addition, fluctuating exchange rates and escalation (in part due to COVID-19) may affect the cost estimation of this project.

RESOURCES

Dedicating Integrated Infrastructure Services (IIS) resources to the project will or has occurred.
 No additional operating personnel within the facility will be recruited.

CAPITAL PROFILE REPORT

CONCLUSIONS AND RECOMMENDATIONS

The screening and mixing system consists of two screens and two mixers to remove non-organic foreign material (garbage) from the compost prior to outdoor windrowing at the EWMC Cure Site. This system is the best successor to the old Finishing Circuit in the now demolished Edmonton Composting Facility and will help the City increase the quality of the compost created, manage the current litter problem at the cure site and in the neighbouring wetland, and allow for the reuse of woodchips back into the process, reducing usable material to landfill. Status quo, or doing nothing, is not a practical option as continued cure site littering is considered a significant environmental problem and a potential regulatory non-compliance that can't be ignored.

CAPITAL PROFILE REPORT

PROFILE NAME: **Organics Screening and Mixing System**
 PROFILE NUMBER: **23-81-3060**
 BRANCH: **Infrastructure Planning and Design**

FUNDED
 PROFILE TYPE: **Standalone**

CAPITAL BUDGET AND FUNDING SOURCES (000's)

APPROVED BUDGET		Prior Years	2023	2024	2025	2026	2027	2028	2029	2030	2031	Beyond 2031	Total
	Approved Budget												
	Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-	-
	2022 Cap Budget Request for Next Cycle	-	5,800	-	-	-	-	-	-	-	-	-	5,800
	Current Approved Budget	-	5,800	-	-	-	-	-	-	-	-	-	5,800
Approved Funding Sources													
	Self-Liquidating Debentures	-	5,800	-	-	-	-	-	-	-	-	-	5,800
	Current Approved Funding Sources	-	5,800	-	-	-	-	-	-	-	-	-	5,800

BUDGET REQUEST	Budget Request	-	-	-	-	-	-	-	-	-	-	-	-
	Revised Funding Sources (if approved)												
	Self-Liquidating Debentures	-	-5,800	-	-	-	-	-	-	-	-	-	-5,800
	Waste Mgt Retained Earnings	-	5,800	-	-	-	-	-	-	-	-	-	5,800
	Requested Funding Source	-	-	-	-	-	-	-	-	-	-	-	-

REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	-	5,800	-	-	-	-	-	-	-	-	-	5,800
	Requested Funding Source												
	Self-Liquidating Debentures	-	-	-	-	-	-	-	-	-	-	-	-
	Waste Mgt Retained Earnings	-	5,800	-	-	-	-	-	-	-	-	-	5,800
	Requested Funding Source	-	5,800	-	-	-	-	-	-	-	-	-	5,800

CAPITAL BUDGET BY ACTIVITY TYPE (000's)

REVISED BUDGET (IF APPROVED)	Activity Type	Prior Years	2023	2024	2025	2026	2027	2028	2029	2030	2031	Beyond 2031	Total
	Construction		-	5,700	-	-	-	-	-	-	-	-	-
Design		-	100	-	-	-	-	-	-	-	-	-	100
	Total	-	5,800	-	-	-	-	-	-	-	-	-	5,800

OPERATING IMPACT OF CAPITAL

Type of Impact:

Branch:																
	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE
Total Operating Impact	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CAPITAL PROFILE REPORT

PROFILE NAME: **HIGH SOLIDS ANAEROBIC DIGESTION FACILITY**
 PROFILE NUMBER: **13-33-2023**
 DEPARTMENT: **Integrated Infrastructure Services**
 LEAD BRANCH: **Infrastructure Delivery**
 PARTNER: **Waste Management Services**
 BUDGET CYCLE: **2012-2014**

FUNDED

PROFILE STAGE:	Approved
PROFILE TYPE:	Standalone
LEAD MANAGER:	Jason Meliefste
PARTNER MANAGER:	Michael Labrecque
ESTIMATED START:	January, 2013
ESTIMATED COMPLETION:	December, 2021

Service Category: Utilities

Major Initiative:

GROWTH	RENEWAL
100	

PREVIOUSLY APPROVED:	42,237
BUDGET REQUEST:	-
TOTAL PROFILE BUDGET:	42,237

PROFILE DESCRIPTION

The amount of residential organic waste material generated and collected in the City of Edmonton has increased to the degree that the capacity of the Edmonton Composting Facility is not sufficient to handle current demand during high waste generation periods. Additional processing capacity at the Edmonton Waste Management Centre is needed to avoid landfilling of recyclable organic material and to meet anticipated growth for the next eight to ten years. The construction and operation of a High Solids Anaerobic Digestion Facility will process 40,000 tonnes of organic waste per year. The Facility will be fully integrated with existing facilities and operations at the Edmonton Waste Management Centre.

PROFILE BACKGROUND

Edmonton's residential waste is brought to the Edmonton Waste Management Centre where the organics are processed at the Integrated Process and Transfer Facility and composted in the Edmonton Composting Facility. The capacity of the Edmonton Composting Facility is 125,000 tonnes of waste plus 10,000 dry tonnes (equals 40,000 wet tonnes) of biosolids. Due to the high volumes of residential waste generated during peak spring and fall seasons, the Waste Management Utility diverts the peak waste volumes to landfill as the composting facility processing capacity is exceeded, causing the residential waste diversion to not achieve the goal of 60%. As the amount of residential waste generated in Edmonton increases, more organic waste will be transported to the Ryley landfill located 80 km southeast of the City, increasing hauling and disposal costs, decreasing diversion from landfill rates and increasing GHG emissions from City operations.

PROFILE JUSTIFICATION

The existing maximum capacity at the Edmonton Composting Facility is 125,000 tonnes of municipal solid waste plus 40,000 wet tonnes of biosolids. The facility is operating at full capacity and organic waste recycling is especially challenged during peak grass growing months. Waste Management Utility's need to deal with increasing organic waste generation over the next 8 to 10 years has led to a successful grant submission to provide \$10,000,000 towards the construction of a new High Solids Anaerobic Digestion Facility which can process an additional 40,000 tonnes per year of organic waste and create revenue to the Utility through renewable energy generation, sale of Greenhouse Gas credits, tip fees for commercial wastes, and for the avoidance of hauling and landfilling activities.

STRATEGIC ALIGNMENT

The project aligns with City Council's vision outlined in The Way Ahead by encouraging activities that support The Way We Green, The Way We Live, and The Way We Finance.

ALTERNATIVES CONSIDERED

The following alternatives were considered during the development of this project:

- Expansion of composting operation: Added processing capacity cannot be effectively and efficiently provided by expansion of the existing Edmonton Composting Facility. The plan for the provision of new organic processing capacity reflects this reality as well as the opportunity for grant funding if an alternate technology such as the proposed High Solids Anaerobic Digestion Facility is used.
- Landfilling of the organics: A return to landfilling of the organics waste stream would have a significant impact on the Utility's current and future goal to divert 60% and 90% of residential waste from landfill.

COST BENEFITS

In 2016, the expected revenue of \$1.8 million and the avoided costs of \$1.9 million (\$3.7 million total) offset the operating costs of \$1.8 million and the financial costs of \$1.6 million (\$3.4 million total), producing a favorable net position in 2016 of \$300,000. The net positions for the following four years range from \$400,000 to \$600,000 positive. The project will therefore require no funding from the monthly user fees.

KEY RISKS & MITIGATING STRATEGY

Financial Risks: low
 Operational Risks: low
 Environmental Risks: medium

CAPITAL PROFILE REPORT

RESOURCES

- 1.0 FTE: Plant operator
- 1.0 FTE Laboratory technician
- 0.5 FTE Millwright
- 0.5 FTE Instrument technician
- 0.5 FTE Administrative assistant

CONCLUSIONS AND RECOMMENDATIONS

That the project be recommended to City Council for approval at a project cost of \$30,828,000, with financing of \$20,047,000 through Self Liquidating Debt, \$10,000,000 through a grant from CCEMC and \$781,000 from the U of A.

CHANGES TO APPROVED PROFILE

An increase is required in the budget for the High Solids Anaerobic Digestion Facility. The required increase is \$6,166,000 in total, to be comprised of an additional \$6,104,000 in debenture borrowing supported by the Utility's rates financing, and \$62,000 in Partner Funding (University of Alberta). The total project funding requirement thus increases from \$30,828,000 to \$36,994,000. The initial tender for the High Solids Anaerobic Digestion Facility was cancelled in April 2014 as bids came in significantly over budget. With the goal of lowering the overall project costs, the Utility restructured the procurement process to tender several different elements of the project separately. With one of the two major contracts now awarded and with responses received to the second one, administration has updated projected costs and determined that the final project will still exceed the approved budget. However, a review of the business case based on the chosen technology provider for the facility also identified the following improved business considerations:

- processing capacity of the facility will increase from 40,000 to 48,000 tonnes per year on the same footprint,
- the facility has reduced material and maintenance requirements, and
- its operation will benefit from higher value of greenhouse gas credits and distributed power usage.

It is projected that improvements to operational efficiency and revenues resulting from the chosen technology will offset the increased borrowing costs over the life of the project.

#17-4 Admin (CM): During the detailed design phase, additional cost impacts were discovered which were not initially identified by the Contractor. As a result, the total project estimate has increased to \$38,977K and the capital budget requirement has increased by \$1,983K, in order to maintain the current project schedule to complete the project.

CAPITAL PROFILE REPORT

PROFILE NAME: **High Solids Anaerobic Digestion Facility**
 PROFILE NUMBER: **13-33-2023**
 BRANCH: **Infrastructure Delivery**

FUNDED
 PROFILE TYPE: **Standalone**

CAPITAL BUDGET AND FUNDING SOURCES (000's)

	Prior Years	2023	2024	2025	2026	2027	2028	2029	2030	2031	Beyond 2031	Total	
APPROVED BUDGET	Approved Budget												
	Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-	
	2013 CBS Budget Adjustment	30,828	-	-	-	-	-	-	-	-	-	30,828	
	2015 Cap Capital Budget Adj (one-off)	6,166	-	-	-	-	-	-	-	-	-	6,166	
	2017 Cap Capital Budget Adj (one-off)	1,983	-	-	-	-	-	-	-	-	-	1,983	
	2018 Cap Council	2,730	-	-	-	-	-	-	-	-	-	2,730	
	2021 Cap Council	530	-	-	-	-	-	-	-	-	-	530	
	2022 Cap Carry Forward	-7	7	-	-	-	-	-	-	-	-	-	
	Current Approved Budget	42,230	7	-	-	-	-	-	-	-	-	-	42,237
	Approved Funding Sources												
Partnership Funding	9,843	1,000	-	-	-	-	-	-	-	-	-	10,843	
Self-Liquidating Debentures	30,864	530	-	-	-	-	-	-	-	-	-	31,394	
Waste Mgt Retained Earnings	1,523	-1,523	-	-	-	-	-	-	-	-	-	-	
Current Approved Funding Sources	42,230	7	-	-	-	-	-	-	-	-	-	42,237	

BUDGET REQUEST	Budget Request	-	-	-	-	-	-	-	-	-	-	-
	Revised Funding Sources (if approved)											
	Self-Liquidating Debentures	-	-530	-	-	-	-	-	-	-	-	-530
	Waste Mgt Retained Earnings	-	530	-	-	-	-	-	-	-	-	530
Requested Funding Source	-	-	-	-	-	-	-	-	-	-	-	-

REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	42,230	7	-	-	-	-	-	-	-	-	42,237
	Requested Funding Source											
	Partnership Funding	9,843	1,000	-	-	-	-	-	-	-	-	10,843
	Self-Liquidating Debentures	30,864	-	-	-	-	-	-	-	-	-	30,864
	Waste Mgt Retained Earnings	1,523	-993	-	-	-	-	-	-	-	-	530
Requested Funding Source	42,230	7	-	-	-	-	-	-	-	-	42,237	

CAPITAL BUDGET BY ACTIVITY TYPE (000's)

	Activity Type	Prior Years	2023	2024	2025	2026	2027	2028	2029	2030	2031	Beyond 2031	Total
REVISED BUDGET (IF APPROVED)	Construction	523	7	-	-	-	-	-	-	-	-	-	530
	Other Costs	41,707	-	-	-	-	-	-	-	-	-	-	41,707
	Total	42,230	7	-	-	-	-	-	-	-	-	-	42,237

OPERATING IMPACT OF CAPITAL

Type of Impact:

Branch:																
	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE
Total Operating Impact	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CAPITAL PROFILE REPORT

PROFILE NAME: **REFUSE DERIVED FUEL FACILITY ENHANCEMENTS**
 PROFILE NUMBER: **20-81-2052**
 DEPARTMENT: **Integrated Infrastructure Services**
 LEAD BRANCH: **Infrastructure Delivery**
 PARTNER: **Waste Services**
 BUDGET CYCLE: **2019-2022**

FUNDED

PROFILE STAGE:	Approved
PROFILE TYPE:	Standalone
LEAD MANAGER:	Jason Meliefste
PARTNER MANAGER:	Michael Labrecque
ESTIMATED START:	April, 2020
ESTIMATED COMPLETION:	March, 2021

Service Category: **Utilities**

Major Initiative:

GROWTH
100

RENEWAL

PREVIOUSLY APPROVED:	7,226
BUDGET REQUEST:	-
TOTAL PROFILE BUDGET:	7,226

PROFILE DESCRIPTION

The Refuse Derived Fuel (RDF) process is part of the Integrated Processing and Transfer Facility (IPTF). Residential waste is tipped at the IPTF and processed to separate household hazardous waste, organics, and incompatible materials. The remaining items (mostly soiled paper, plastics, and composite items), are processed to produce refuse derived fuel.

This initiative includes adding an alternative offloading system to the RDF process, which will improve maintenance management by allowing planned maintenance during operational hours; and improve reliability of RDF material delivery to BioFuels facility and/or others.

Currently, all RDF production travels along a single tube belt conveyor to the BioFuels facility. If the BioFuels facility is unable to accept more RDF, or the tube belt conveyor has a mechanical problem, the RDF production must shut down. Due to limited storage space at the feed end of the RDF process, any shutdown results in RDF feedstock being transferred to the IPTF tip floor for transfer to landfill.

The alternative system will add conveyors and diverters to direct the RDF material to a new building where two sets of conveyors will be used to fill long-haul trailers. Drivers and truck/trailer units that are currently staged to load and transport material to landfill will be staged to be filled with RDF to be transported to the BioFuels facility or other locations.

Checkpoint #3 readiness approval is dependent on the Funding Approval. Target project completion is Q4 2020 with the assumption that all milestones of the project management will be achieved on time.

The RDF facility will be constantly under the risk of the single point of failure of the offloading by Vecobelt before the full completion of the project.

PROFILE BACKGROUND

Currently, the RDF process has a single off-loading tube belt conveyor that feeds the BioFuels facility only. When the tube belt conveyor has mechanical problems or the BioFuels facility cannot accept more material, the RDF process must be shut down.

This initiative includes adding an alternative offloading system to the RDF, which will improve maintenance management by allowing planned maintenance during operational hours; and improve reliability of RDF material delivery to the BioFuels facility and/or others.

PROFILE JUSTIFICATION

Having an alternative off-loading system will allow the City to provide more reliable delivery of RDF material to the BioFuels facility and will add the ability to deliver the material to other consumers.

Current excess RDF material could be diverted from landfill if contracts can be made with other potential RDF users.

STRATEGIC ALIGNMENT

This project aligns with Vision 2050, as well as with the Waste Services 2019 business plan in maximizing residential waste diversion from landfill. In addition, by adding more options for potential RDF use, this project could allow for commercial waste to also be diverted, assuming commercial processing contracts can be developed.

ALTERNATIVES CONSIDERED

The Edmonton Waste Management Centre site, particularly RDF Facility, has a limited space available for the addition of an off-loading building. With the overall consideration of the process requirements, the need of the operations, reduce the traffic impact to IPTF tipping floor, and the dust control activities to meet Alberta Environment and Parks Approval for Operation No. 383681-00-00, no other alternatives were proposed except for Status Quo and Deliver the project.

COST BENEFITS

There is a potential to save on hauling costs if local RDF users can take excess material that is currently going to the Ryley landfill, which is 85 kilometres away.

CAPITAL PROFILE REPORT

KEY RISKS & MITIGATING STRATEGY

Risk associated with requesting budget and schedule approval before process equipment (conveyor and diverters) are procured is considered high. This risk will be mitigated by specifying standard equipment which should reduce risk of unknown dimensions and weight, as well as delivery

The risk that management of combustible dust may add complexity to the project is considered medium. This risk will be mitigated by hazard identification (HAZID) and hazardous operation (HAZOP) reviews during detailed design.

The risk that the project construction may affect operations is considered medium. This risk will be mitigated by scheduling major construction activities during production down times. This constraint will also be made part of trade contracts developed by the construction manager.

RESOURCES

The project will be delivered by Facility Infrastructure Delivery, with support from Facility Planning and Design.

A design consultant firm and a construction management firm were engaged during the project development phase and will continue on the project team.

CONCLUSIONS AND RECOMMENDATIONS

The tube belt conveyor segment of the Refuse Derived Fuel Facility is vulnerable to unplanned maintenance resulting in lost time and reduced waste diversion. This project is to accomplish (1) addition of an offloading building (alternate outfeed system), including equipment procurement, construction, integration with the existing RDF system, and commissioning with a target completion date by 2020.
(2) integrating the new constructed equipment and building associated with (1) with the existing RDF system.
with a total capital investment of \$6.5M.

It is recommended that funding of \$6.5M be approved to progress this project through Delivery Phase for the Offloading Building scope, to the completion of the Checkpoint #5.

CHANGES TO APPROVED PROFILE

2020 Spring SCBA: 20.12: The RDF Enhancement project has met the PDDM checkpoint 3 readiness criteria. A capital budget adjustment is required to fund a stand alone capital profile by transferring approved funding from composite profile CM-81-2045 to progress this project through the delivery phase of PDDM. There is no resulting financial implication to the Utility as this will be funded by budget transfers from the approved composite profile CM-81-2045.

2021 July 26 #21-14 (CFO): A Budget Adjustment is requested for the transfer of \$900K in Self Liquidating Debentures (Waste) funding from Profile CM-81-2045: Waste Services IIS Infrastructure Delivery to Profile 20-81-2052: Refuse Derived Fuel Facility Enhancements. This adjustment is required to accommodate the re-design and re-work of some building components i.e. pile size & additions, steel beam locations and sizes, the redesign of the new dust extraction system and the addition of supplemental fire rating of the exterior wall of the existing IPTF facility.

2022 Fall SCBA (#22-31, CFO.33): Change in source of funding by using excess cash to finance the capital program instead of borrowings, in order to save interest expenses. The adjustments result in no overall impact on the budget within the program.

CAPITAL PROFILE REPORT

PROFILE NAME: **Refuse Derived Fuel Facility Enhancements**
 PROFILE NUMBER: **20-81-2052**
 BRANCH: **Infrastructure Delivery**

FUNDED
 PROFILE TYPE: **Standalone**

CAPITAL BUDGET AND FUNDING SOURCES (000's)

	Prior Years	2023	2024	2025	2026	2027	2028	2029	2030	2031	Beyond 2031	Total	
APPROVED BUDGET	Approved Budget												
	Original Budget Approved	-	-	-	-	-	-	-	-	-	-	-	
	2020 Cap Council	6,500	-	-	-	-	-	-	-	-	-	6,500	
	2021 Cap Capital Budget Adj (one-off)	900	-	-	-	-	-	-	-	-	-	900	
	2021 Cap Release to Corp Pool	-174	-	-	-	-	-	-	-	-	-	-174	
	2022 Cap Carry Forward	-94	94	-	-	-	-	-	-	-	-	-	
	Current Approved Budget	7,132	94	-	-	-	-	-	-	-	-	-	7,226
	Approved Funding Sources												
	Self-Liquidating Debentures	5,668	478	-	-	-	-	-	-	-	-	-	6,145
	Waste Mgt Retained Earnings	1,464	-384	-	-	-	-	-	-	-	-	-	1,081
Current Approved Funding Sources	7,132	94	-	-	-	-	-	-	-	-	-	7,226	

BUDGET REQUEST	Budget Request	-	-	-	-	-	-	-	-	-	-	-
	Revised Funding Sources (if approved)											
	Self-Liquidating Debentures	-	-478	-	-	-	-	-	-	-	-	-478
	Waste Mgt Retained Earnings	-	478	-	-	-	-	-	-	-	-	478
Requested Funding Source	-	-	-	-	-	-	-	-	-	-	-	-

REVISED BUDGET (IF APPROVED)	Revised Budget (if Approved)	7,132	94	-	-	-	-	-	-	-	-	7,226
	Requested Funding Source											
	Self-Liquidating Debentures	5,668	-	-	-	-	-	-	-	-	-	5,668
	Waste Mgt Retained Earnings	1,464	94	-	-	-	-	-	-	-	-	1,559
Requested Funding Source	7,132	94	-	-	-	-	-	-	-	-	-	7,226

CAPITAL BUDGET BY ACTIVITY TYPE (000's)

	Activity Type	Prior Years	2023	2024	2025	2026	2027	2028	2029	2030	2031	Beyond 2031	Total
REVISED BUDGET (IF APPROVED)	Construction	7,132	94	-	-	-	-	-	-	-	-	-	7,226
	Total	7,132	94	-	-	-	-	-	-	-	-	-	7,226

OPERATING IMPACT OF CAPITAL

Type of Impact:

Branch:																
	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE	Rev	Exp	Net	FTE
Total Operating Impact	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-